DPS Schedule 6 (Order Form Template and Order Schedules)

Order Form

ORDER REFERENCE:	CW71418 / tfl_scp_002468 - Electric Vehicle Infrastructure Delivery (EVID) - Tranche 2, Batch 1
THE BUYER:	**Transport for London**
BUYER ADDRESS	5 Endeavour Square, London E20 1JN
THE SUPPLIER:	**TotalEnergies Charging Solutions UK Ltd (TCSUK)**
SUPPLIER ADDRESS:	10 Upper Bank Street (19th floor), Canary Wharf E14 5BF London, UK
REGISTRATION NUMBER:	8803842
DUNS NUMBER:	219782772

DPS SUPPLIER REGISTRATION SERVICE ID: Not Know

APPLICABLE DPS CONTRACT

This Order Form is for the provision of the Deliverables and dated **20 January 2025**.

It's issued under the DPS Contract with the reference number **RM6213** for the provision of Electric Vehicle Infrastructure Delivery (EVID) Tranche 2 Batch 1.

DPS FILTER CATEGORY(IES):
Supplier Funded, Full End to End Service

ORDER INCORPORATED TERMS

The following documents are incorporated into this Order Contract. Where numbers are missing we are not using those schedules. If the documents conflict, the following order of precedence applies:

1. This Order Form including the Order Special Terms (at Appendix 1), the list of Sites the Deliverables applies to (at Appendix 2) and the Order Special Schedules.
2. Joint Schedule 1 (Definitions and Interpretation) **RM6213**
3. *The following Schedules in equal order of precedence:*
    - *Joint Schedules for* **RM6213** *DPS reference number*
        - Joint Schedule 2 (Variation Form)
        - Joint Schedule 3 (Insurance Requirements)
        - Joint Schedule 4 (Commercially Sensitive Information)
        - Joint Schedule 5 (Corporate Social Responsibility)
        - Joint Schedule 6 (Key Subcontractors)
        - Joint Schedule 7 (Financial Difficulties)
        - Joint Schedule 10 (Rectification Plan)
        - Joint Schedule 11 (Processing Data) – *please note the Buyer has made some updates to the original version of this Schedule to align with the Buyer's requirements, current legislation and the consequences of Brexit.*
    - Order *Schedules for* **RM6213**
        - *Order* Schedule 1 (Transparency Reports)
        - *Order* Schedule 3 (Continuous Improvement)
        - *Order* Schedule 7 (Key Supplier Staff)
        - *Order* Schedule 20 (Order Specification)
        - Order Schedule 22 (Licence Terms) – *please note the Buyer has renamed this Schedule 'Licence Terms' (rather than its original title of 'Lease Terms') to reflect the Sites being situated on highways land and therefore requiring a Licence and not a Lease. The content of this Schedule has also been updated to reflect the Buyer's requirements*
4. CCS Core Terms (DPS version)
5. Order Schedule 4 (Order Tender) as long as any parts of the Order Tender that offer a better commercial position for the Buyer (as decided by the Buyer) take precedence over the documents above.

No other Supplier terms are part of the Order Contract. That includes any terms written on the back of, added to this Order Form, or presented at the time of delivery.

ORDER SPECIAL TERMS
The following Special Terms are incorporated into this Order Contract:

- As detailed in Appendix 1 to this Order Contract – Order Special Terms

ORDER START DATE: **24 January 2025**

ORDER EXPIRY DATE: **23 January 2040**

ORDER INITIAL PERIOD: N/A

DELIVERABLES
See details in Order Schedule 20 (Order Specification)

MAXIMUM LIABILITY
The limitation of liability for this Order Contract is stated in Clause 11.2 of the Core Terms. Further liability provisions applicable to this Order Contract, on an individual Site basis, are stated in Clause 5 of DPS Order Schedule 22 (Licence Terms)

SUPPLIER PAYMENTS
Supplier Payments will be made to the Buyer in accordance with Clause 5 of Appendix 1 to the Order Special Terms.

The Turnover Charge applicable to this Order Contract is [redacted].

The Site Charges to be paid by the Supplier to the Buyer are:

#	Ref Number	Borough	Site Name	Postcode	Maximum number of proposed Charging Bays	Supplier's proposal: number of Charging Bays	Site Charge per Site per annum
1	#Croy115	Croydon	O/S 1487-1493 LONDON ROAD SW16	SW16 5PY	1	[redacted]	[redacted]
2	#Croy127	Croydon	O/S 3-4 RUSSELL HILL PARADE CR8	CR8 2LE	1	[redacted]	[redacted]
3	#Croy147	Croydon	O/S 800 - 814 WICKHAM ROAD CR0	CR0 8EB	1	[redacted]	[redacted]
4	#Croy167	Croydon	O/S 932/926 BRIGHTON ROAD CR8	CR8 2LN	1	[redacted]	[redacted]
5	#Croy178	Croydon	O/S 178 - 188 WICKHAM ROAD CR0	CR0 8BG	1	[redacted]	[redacted]
6	#Croy184	Croydon	O/S 8-38 GODSTONE ROAD CR8	CR8 5JE	2	[redacted]	[redacted]
7	#Croy195	Croydon	O/S LEGION HSE GODSTONE RD TW1	CR8 5JE	1	[redacted]	[redacted]
8	#Croy219	Croydon	O/S ORCHARD COURT WICKHAM ROAD BR3	CR0 8EH	2	[redacted]	[redacted]
9	#Gren29	Greenwich	O/S 151-159 WELL HALL ROAD SE9	SE9 6UF	2	[redacted]	[redacted]
10	#Hack42	Hackney	O/S 35-85 RECTORY ROAD N16	N16 7SD	1	[redacted]	[redacted]
11	#Haringey7	Haringey	O/S 472 - 482 ARCHWAY ROAD N6	N6 4NA	1	[redacted]	[redacted]
12	#Haringey12	Haringey	O/S 419-449 ARCHWAY ROAD N6	N6 4HX	2	[redacted]	[redacted]

13	#Haringey33	Haringey	O/S 191-205 THE ROUNDWAY N17	N17 7BP	1	[redacted]	[redacted]
14	#Haringey67	Haringey	O/S 283-291 THE ROUNDWAY N17	N17 7AB	1	[redacted]	[redacted]
15	#Haringey70	Haringey	O/S 221-227 THE ROUNDWAY N17	N17 7DG	1	[redacted]	[redacted]
16	#Isl46	Islington	OPP 141-155 ISLEDON ROAD N7	N4 3NT	2	[redacted]	[redacted]
17	#Isl64	Islington	O/S 62-70 TOLLINGTON ROAD N4	N7 7JJ	2	[redacted]	[redacted]
18	#Lam62	Lambeth	OPP KENNINGTON PARK KENNINGTON PARK ROAD SE11	SE11 4DE	1	[redacted]	[redacted]
19	#Lam69	Lambeth	O/S 27-33 CAVENDISH ROAD SW12	SW12 0BH	1	[redacted]	[redacted]
20	#Lam160	Lambeth	O/S 86-98 STREATHAM HIGH ROAD SW16	SW16 1BS	1	[redacted]	[redacted]
21	#Lam169	Lambeth	O/S VICTORIA HOUSE SOUTH LAMBETH ROAD SW8	SW8 1QX	2	[redacted]	[redacted]
22	#Lam230	Lambeth	O/S VICTORIA MANSIONS S LAMBETH ROAD SW8	SW8 1QX	2	[redacted]	[redacted]
23	#Lew109	Lewisham	O/S 523-529 BROMLEY ROAD BR1	BR1 4JX	1	[redacted]	[redacted]
24	#Lew130	Lewisham	526-538 BROMLEY ROAD BR1.	BR1 4JX	1	[redacted]	[redacted]
25	#Tow66	Tower Hamlets	O/S 58-60 COMMERCIAL ROAD E1	E1 1LP	1	[redacted]	[redacted]

REIMBURSABLE EXPENSES
None

PAYMENT METHOD
Bank account and relevant details to be confirmed by the Buyer in writing post Order Start Date.

BUYER'S PAYMENT DOCUMENT ADDRESS:
[redacted]

BUYER'S AUTHORISED REPRESENTATIVE
[redacted]

Responsible for: Contract and Performance Management

BUYER'S KEY STAFF

Name, Role and Department	Area of Responsibility	Contact Details
[redacted]		

BUYER'S ENVIRONMENTAL POLICY
Is available online at: https://content.tfl.gov.uk/tfl-safety-health-and-environment-policy.pdf

BUYER'S SECURITY POLICY
Is available online at: https://tfl.gov.uk/corporate/privacy-and-cookies/privacy-and-data-protection-policy

SUPPLIER'S AUTHORISED REPRESENTATIVE

[redacted]

SUPPLIER'S CONTRACT MANAGER

[redacted]

10 Upper Bank Street (19th floor), Canary Wharf, E14 5BF London, UK

PROGRESS REPORT FREQUENCY
All reporting requirements are detailed in Order Schedule 20 (Order Specification) and Appendix 1 (Order Special Terms)

PROGRESS MEETING FREQUENCY
All meeting requirements are detailed in Order Schedule 20 (Order Specification) and Appendix 1 (Order Special Terms)

SUPPLIER'S KEY STAFF

Key Role	Key Staff	Contract Details	Address
[redacted]			

KEY SUBCONTRACTOR(S)

- Alpitronics- Supply of High-Power Charging Equipment. Registered office: 39100- Bolzano, Italy via di Mezzo ai Piani 33. Registration number: 539072819. VAT number 02632180218, Private Limited Company.

- Envevo- Full turnkey service comprising connections to the grid, civil engineering services, and full installation of electric vehicle chargers. Envevo Ltd 3 Dove Wynd, North Lanarkshire House, Strathclyde Business Park, Bellshill, ML4 3AD. Registration Number- SC619434 VAT Number- 327 8929 56. Private Limited Company.

- TotalEnergies charging Services- Delivery of back office, operation tools, AC equipment. Registration Number- 844192443. VAT Number- R73844192443. 4 COURS MICHELET 92800 PUTEAUX, France. Simplified joint-stock company.

- Konecta Holding France 3-5 Rue Albert Vatimesnil 92300 LEVALLOIS PERRET Tel (+33)8.20.89.20.00 - VAT: FR35831004957

E-AUCTIONS
Not applicable

COMMERCIALLY SENSITIVE INFORMATION

Please refer to Joint Schedule 4 (Commercially Sensitive Information).

SERVICE CREDITS
Not applicable

ADDITIONAL INSURANCES
In accordance with Clause 8 of DPS Order Schedule 22 (Licence Terms)

GUARANTEE
A Parent Company Guarantee is applicable and has been obtained from TotalEnergies UK Finance Limited (Company Registration Number: 03988955).

SOCIAL VALUE COMMITMENT
The Supplier agrees, in providing the Deliverables and performing its obligations under the Order Contract, that it will comply with the social value commitments in Order Schedule 4 (Order Tender)

Appendix 1 to the Order Form

Order Contract Reference: tfl_scp_002468

Order Special Terms

1. **Definitions**

1.1 In this Appendix 1 (*Order Special Terms*) to the Order Contract (including the Annexes), unless the context indicates otherwise, the following expressions shall have the following meanings:

"**Affected Charging Bay(s)**"	has the meaning given to it in paragraph 3.3A.1;
"**Buyer**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Buyer Group**"	means the Buyer in its own right, its Holding Company (where applicable) and all of its subsidiaries (as defined in section 1159 of the Companies Act 2006) from time to time and all subsidiaries from time to time of its Holding Company (where applicable) together;
"**Buyer Premises**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Cessation Plan**"	means a plan agreed between the Parties or determined by the Buyer pursuant to paragraphs 24.1 to 24.5 (inclusive) to give effect to a Declaration of Ineffectiveness or paragraphs 24.6 to 24.10 (inclusive) to give effect to a Public Procurement Termination Event;
"**Charge Points**"	the charge points and related infrastructure for electric vehicles to be financed, installed, operated and maintained by the Supplier at the Site(s) in accordance with the Order Contract;
"**Charging Bay**"	means, in respect of a Multi-Bay Site, a marked parking space which is designated for use by electric vehicles for the purposes of accessing a Charge Point which is situated adjacent to that parking space, as more particularly described (as the case may be): (a) (prior to the applicable Site Agreement Date) in Appendix 2 (*Site List*) to the Order Contract; and (b) (following the applicable Site Agreement Date) in: (i) Appendix 2 (*Site List*) to the Order Contract; (ii) **Annex 1** (*Detailed Description of Apparatus*) to the applicable Site Agreement, including for these purposes any separate document or cover sheet referenced in such **Annex 1**; and (iii) **Annex 2** (*Site Location Plan*) to the applicable Site Agreement, it being acknowledged that (depending on the Site in question) a "Charging Bay" may be

TfL RESTRICTED

	specified as being served by a single dedicated Charge Point or alternatively by a Charge Point which also serves one or more other Charging Bays;
"Consumer Prices Index"	means the United Kingdom consumer prices index as published from time to time by the Office for National Statistics as "CPI" or, if such index shall cease to be published or there is, in the reasonable opinion of the Buyer, a material change in the basis of the index or if, at any relevant time, there is a delay in the publication of the index, such other prices index as the Buyer may, after consultation with the Supplier, determine to be appropriate in the circumstances;
"**Contract Manager**"	means such person as is notified to the Supplier by the Buyer from time to time;
"**Customer(s)**"	has the meaning given to it in the Order Specification;
"**Declaration of Ineffectiveness**"	means a declaration of ineffectiveness in relation to the Order Contract made by a Court of competent jurisdiction pursuant to Regulation 98 of the Public Contracts Regulations 2015;
"**Deliverables**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**DPS Core Terms**"	means the document entitled "*Core Terms – DPS*" as incorporated by reference into the Order Contract;
"**Early Cessation Date**"	has the meaning given to it in paragraph 3.3;
"**Electronics Watch**"	has the meaning given to it in paragraph 15.11;
"**Financial Principles**"	means the financial principles on which the Turnover Charge element of the Supplier Payments due under the Order Contract shall be calculated, reported on and paid as set out in **Annex 5** (*Calculation and payment of the Turnover Charge*) to these Order Special Terms;
"**GLA**"	means the Greater London Authority;
"**Go-Live Date**"	means the date specified in the Project Plan as the "Go-Live Date", being the date by which the Charge Points are to have been installed and commissioned at all of the Sites;
"Go-Live Delay Event"	means any circumstance which: (a) is beyond the Supplier's reasonable control; (b) is caused by or arises as a result of:

TfL RESTRICTED

(i) any act or omission (including delay) of a statutory undertaker; or

(ii) any act or omission (including delay) of a local or other competent public authority;

which gives rise to a delay in: (A) the granting of any Statutory Consent; or (B) the doing of any other act or thing required to be done by the applicable undertaker or public authority; and

(c) causes the Supplier to be unable to meet the Go-Live Date;

"**Holding Company**"	any company which from time to time directly or indirectly controls the relevant Party as set out by section 1159 of the Companies Act 2006;
"**Multi-Bay Site**"	a Site which: (a) the Order Contract; and (b) (following the applicable Site Agreement Date) the relevant Site Agreement, specifies will be comprised of more than one (1) Charging Bay;
"**Non-Affected Charging Bay(s)**"	has the meaning given to it in paragraph 3.3A.1;
"**Order Contract**"	has the meaning given to it in Joint Schedule 1 (*Definitions*), it being acknowledged that the Order Contract to which these Order Special Terms relate is the Order Contract with the "Order Contract Reference" specified on page 1 of this Appendix 1 (*Order Special Terms*);
"**Order Contract Period**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Order Form**"	has the meaning given to it in Joint Schedule 1 (*Definitions*), being the Order Form relating to and comprised in the Order Contract;
"**Order Special Terms**"	means this Appendix 1 (*Order Special Terms*) and the Annexes to it;
"**Order Specification**"	means the specification for, and associated requirements in respect of the provision of, the Deliverables pursuant to the Order Contract as set out in Order Schedule 20 (*Order Specification*) (and which, for the avoidance of any doubt, shall comprise a part of the Order Contract);
"**Party**" and "**Parties**"	have the meaning given in Joint Schedule 1 (*Definitions*);

TfL RESTRICTED

"**Procurement Manager**"	means such person as is notified to the Supplier by the Buyer from time to time;
"**Project Plan**"	means the project plan set out in **Annex 9** (*Project Plan*) in relation to the performance and timing of the Deliverables under the Order Contract (including the specified Go-Live Date) as submitted to the Buyer by the Supplier as part of the applicable Order Tender (as defined in Joint Schedule 1 (*Definitions*)) in connection with the award of the Order Contract;
"**Public Procurement Termination Event**"	has the meaning given to it in paragraph 24.7;
"**Public Procurement Termination Grounds**"	means any one or more of the grounds described in Regulation 73(1) of the Public Contracts Regulations 2015;
"**Removed Site(s)**"	has the meaning given to it in paragraph 3.2.2;
"**Reporting Period**"	means each period of typically twenty eight (28) days within the Buyer's financial calendar as set out in **Annex 7** (*Reporting Periods*) or otherwise supplied by the Buyer from time to time, provided that: (a) where the Order Contract Period commences on a day other than the first day of a Reporting Period ("**First Reporting Period**"), such First Reporting Period shall be shortened to the number of days running from and including the first day of the Order Contract Period until and including the last day of such First Reporting Period; and (b) where the Order Contract Period terminates or expires on a day other than the last day of a Reporting Period ("**Last Reporting Period**"), such Last Reporting Period shall be shortened to the number of days running from and including the first day of such Last Reporting Period until and including the day on which the Order Contract Period expires or is terminated;
"**Requested Personal Data**"	has the meaning given to it in paragraph 10.2.1;
"**Site**"	means any site (including, for the avoidance of doubt, any Multi-Bay Site) from which the Supplier will be required to provide the Deliverables as set out in the Order Contract, subject to and in accordance with the relevant Site Agreement;
"**Site Agreement**"	means the legally binding licence (in substantially the form set out Order Schedule 22 (*Licence Terms*)) governing the basis on which the

TfL RESTRICTED

	Supplier may use a Site for the provision of the Deliverables pursuant to the Order Contract;
"**Site Agreement Date**"	means, in respect of a Site, the date of the Site Agreement entered into between the Buyer and the Supplier in respect of that Site;
"**Site Charge**"	means the charge payable by the Supplier in relation to a Site as specified in the Order Form and the relevant Site Agreement;
"Site Commissioning Checklist"	means the 'Site Commissioning Checklist' referred to in paragraph 7.4 of the Order Specification (the prescribed form of which is appended to the Order Specification as "Appendix T");
"**Site Commissioning Date**"	means, in respect of a Site, the date on which the Supplier issues to the Buyer a completed Site Commissioning Checklist for that Site in accordance with the requirements of the Order Specification;
"**Start Date**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"Statutory Consents"	means any statutory approvals, consents, licences or permissions required from any local or other competent public authority to enable the Supplier lawfully to carry out and complete the Deliverables or to reinstate them following their damage or destruction (and any reference to a "**Statutory Consent**" shall be construed accordingly);
"**Subcontractor**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Supplier**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Supplier Equipment**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Supplier Payments**"	means (together): (a) the Turnover Charge due in respect of each Site under the Order Contract, which shall be calculated and paid in accordance with (and subject to) the Financial Principles set out in **Annex 5** (*Calculation and payment of the Turnover Charge*) to these Order Special Terms; and (b) the Site Charge due in respect of each Site under the Order Contract (as reflected in the relevant Site Agreement(s));

TfL RESTRICTED

"**Supplier Requested Removed Site**"	has the meaning given to it in paragraph 3.3.4;
"**Supplier Staff**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Supplier's Reasonable and Evidenced Costs**"	means, in respect of a Terminated Site, any costs (including, without limitation, capital costs) which: (a) have been reasonably and properly incurred by the Supplier prior to the applicable effective date of termination of the Order Contract (in whole or in part) pursuant to clause 10.3.2 of the DPS Core Terms in consequence of the Supplier's performance of its obligations under the Order Contract specifically and exclusively in respect of that Terminated Site; and (b) the Supplier has evidenced and demonstrated to the reasonable satisfaction of the Buyer;
"**TfL**"	means Transport for London, a statutory corporation established under the Greater London Authority Act 1999;
"**Terminated Sites**"	means if the Buyer exercises its right to terminate the Order Contract: (a) as a whole pursuant to clause 10.3.2 of the DPS Core Terms, the Sites which are comprised in the Order Contract; or (b) in part pursuant to clause 10.3.2 (and in accordance with clauses 10.8.3 and 10.8.4) of the DPS Core Terms, the Removed Site(s) which is/are to be removed in its/their entirety from the scope of the Order Contract pursuant to such partial termination of the Order Contract, and references to a "**Terminated Site**" will be construed accordingly;
"**Termination Amount**"	means, in respect of a Terminated Site, an amount determined in accordance with paragraph 2.5.2.2 (subject always to paragraph 2.5.2.3);
"**Termination Notice**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Turnover Charge**"	has the meaning given to it in paragraph 1 of **Annex 5** (*Calculation and payment of the Turnover Charge*) to these Order Special Terms;

TfL RESTRICTED

"**VAT**"	has the meaning given to it in Joint Schedule 1 (*Definitions*);
"**Working Day**"	has the meaning given to it in Joint Schedule 1 (*Definitions*).

1.2 The Parties acknowledge that the rules of interpretation set out in paragraph 1.3 of Joint Schedule 1 (*Definitions*) apply to the Order Special Terms.

2. **Provision of the Deliverables and Operational Management**

2.1 **Order Specification**

2.1.1 Without prejudice to clause 3.1.1 of the DPS Core Terms, the Supplier shall:

2.1.1.1 comply with the requirements of the Order Specification; and

2.1.1.2 provide the Deliverables and perform the Order Contract at all times in accordance with the Order Specification.

2.2 **Project Plan and Go-Live Date**

2.2.1 The Parties acknowledge and agree that:

2.2.1.1 the Project Plan specifies the Go-Live Date applicable to the Order Contract; and

2.2.1.2 the Buyer requires the Charge Points to be installed and commissioned at all of the Sites by the Go-Live Date.

2.2.2 Without prejudice to any right to terminate at common law, the Buyer may terminate the Order Contract by giving notice to the Supplier (specifying that such termination will have immediate effect or otherwise stating the date on which such termination shall take effect) if the Supplier fails to meet the Go-Live Date, save for where a delay is caused by:

2.2.2.1 a failure by the Buyer to perform its obligations pursuant to the Order Contract (including where an approval has been unreasonably withheld or delayed), except where such failure by the Buyer to perform its obligations is caused by any act or omission of the Supplier (or its employees, agents or Subcontractors); or

2.2.2.2 a Go-Live Delay Event,

in which case time shall be extended for a period equal to the delay caused by the Buyer or the Go-Live Delay Event **provided always** that the Supplier has used and continues to use its reasonable endeavours to mitigate and/or resolve the Go-Live Delay Event and shall provide regular updates to the Buyer on the actions being taken by it in such regard.

2.2.3 Any termination of the Order Contract pursuant to paragraph 2.2.2 shall be treated for the purposes of clause 10 (*Ending the Contract*) of the DPS Core Terms as if the Order Contract had been terminated pursuant to clause 10.4.1 of the DPS Core Terms.

TfL RESTRICTED

2.3 **Service Levels**

The Parties acknowledge and agree that **Annex 8** (*Service Levels*) shall apply to the Order Contract and the Parties shall comply with their respective obligations thereunder.

2.4 **Operational Management**

2.4.1 The Buyer authorises the Contract Manager to act as the Buyer's representative for the Order Contract.

2.4.2 The Supplier shall deal with the Contract Manager (or their nominated representative) in respect of all matters arising under the Order Contract, except as set out below or unless otherwise notified by the Buyer:

2.4.2.1 variations to the Order Contract;

2.4.2.2 any matter concerning the terms of the Order Contract; and

2.4.2.3 any financial matter (including any issues in respect of the Supplier Payments as referred to in paragraph 5 (*Supplier Payments*)),

which shall be referred to the Procurement Manager.

2.4.3 The Supplier shall, at the Buyer's request, provide promptly to the Buyer such reports on the provision of the Deliverables as the Buyer may reasonably request.

2.5 **Termination of the Order Contract (in whole or in part) by the Buyer for convenience**

2.5.1 **Supplemental amendment to clause 10.3.2 of the DPS Core Terms**

The Parties acknowledge and agree that, for the purposes of the Order Contract, the following provision shall be added below the existing wording of clause 10.3.2 of the DPS Core Terms:

"Without prejudice to the foregoing provisions of this clause 10.3.2, each Buyer has the right to terminate their Order Contract:

(i) as a whole in circumstances where the Site Commissioning Date (as defined in the Order Contract) has yet to occur in relation to any of the Sites (as defined in the Order Contract) comprised in the Order Contract; or

(ii) in part (for the purposes of removing one or more Sites (as defined in the Order Contract) from the scope of the Order Contract) in circumstances where the Site Commissioning Date (as defined in the Order Contract) has yet to occur in relation to such Site(s) (as defined in the Order Contract),

without reason or liability by giving the Supplier not less than 5 (five) Working Days' written notice (and if it's terminated Clause 10.5.2 to 10.5.7 applies)."

2.5.2 **Compensation on termination of the Order Contract (in whole or in part) by the Buyer for convenience pursuant to clause 10.3.2 of the DPS Core Terms**

2.5.2.1 Without prejudice to paragraph 3.2 below, clause 10.3.2 and clauses 10.5.2 to 10.5.7 of the DPS Core Terms, but subject always to paragraph 2.5.2.3 below, if the Buyer exercises its right to terminate the Order Contract (in whole or in part) pursuant to

TfL RESTRICTED

clause 10.3.2 of the DPS Core Terms and the effective date of such termination occurs, in respect of a Terminated Site, on or following the applicable Site Agreement Date but prior to the third anniversary of the Site Commissioning Date for that Site, then the Buyer shall pay to the Supplier, in respect of that Terminated Site, a Termination Amount subject to (and determined in accordance with) paragraph 2.5.2.2.

2.5.2.2 For the purposes of paragraph 2.5.2.1 (but subject always to paragraph 2.5.2.3 below) if the effective date of termination of the Order Contract (in whole or in part) pursuant to clause 10.3.2 of the DPS Core Terms occurs in respect of the Terminated Site in question during the period:

(a) commencing on the applicable Site Agreement Date and ending on the day prior to the first anniversary of the Site Commissioning Date for such Terminated Site, then the Buyer will pay to the Supplier in accordance with paragraph 2.5.2.1 a Termination Amount in respect of that Terminated Site which is equal to the Supplier's Reasonable and Evidenced Costs (if any) **provided that** any such Termination Amount determined pursuant to this paragraph 2.5.2.2(b) may not in any circumstances exceed £50,000 (fifty thousand pounds sterling);

(b) of twelve (12) months commencing on the first anniversary of the Site Commissioning Date for such Terminated Site, then the Buyer will pay to the Supplier in accordance with paragraph 2.5.2.1 a Termination Amount in respect of that Terminated Site which is equal to the Supplier's Reasonable and Evidenced Costs (if any) **provided that** any such Termination Amount determined pursuant to this paragraph 2.5.2.2(b) may not in any circumstances exceed £40,000 (forty thousand pounds sterling);

(c) of twelve (12) months commencing on the second anniversary of the Site Commissioning Date for such Terminated Site, then the Buyer will pay to the Supplier in accordance with paragraph 2.5.2.1 a Termination Amount which is equal to the Supplier's Reasonable and Evidenced Costs (if any) **provided that** any such Termination Amount determined pursuant to this paragraph 2.5.2.2(c) may not in any circumstances exceed £30,000 (thirty thousand pounds sterling).

2.5.2.3 The Parties acknowledge and agree that:

(a) for the avoidance of doubt:

(1) this paragraph 2.5.2 shall not apply in consequence of any termination of the Order Contract in respect of a Supplier Requested Removed Site pursuant to paragraph 3.3;

(2) if the Buyer exercises its right to terminate the Order Contract in part pursuant to clause 10.3.2 (and in accordance with clauses 10.8.3 and 10.8.4) of the DPS Core Terms and the effective date of such termination occurs, in respect of a Terminated Site, on or following the applicable Site Agreement Date but prior to the third anniversary of the Site Commissioning Date for that Site, the Buyer shall only be liable to make payment to the Supplier of a Termination Amount in respect of that Terminated Site in consequence of such termination if the Site in question has been removed in its entirety from the scope of the Order Contract; and

TfL RESTRICTED

(3) in no circumstances shall more than one Termination Amount be or become payable in respect of a particular Site;

(b) if the effective date of termination of the Order Contract (in whole or in part) pursuant to clause 10.3.2 of the DPS Core Terms occurs in respect of a Terminated Site either: (i) prior to the applicable Site Agreement Date for such Terminated Site; or (ii) on or after the third anniversary of the applicable Site Commissioning Date for such Terminated Site, then no Termination Amount shall be or become payable by the Buyer to the Supplier in respect of that Terminated Site pursuant to paragraphs 2.5.2.1 or 2.5.2.2 under any circumstances;

(c) the Buyer shall make payment to the Supplier of any Termination Amount which is payable in respect of a Terminated Site pursuant to paragraphs 2.5.2.1 and 2.5.2.2 above within ninety (90) days of the date on which the Buyer confirms to the Supplier in writing that it is satisfied with, and accepts, the Supplier's Reasonable and Evidenced Costs in respect of that Terminated Site (it being acknowledged that this paragraph 2.5.2.3 shall survive termination of the Order Contract for the purposes of clause 10.5.7 of the DPS Core Terms); and

(d) other than (if applicable) the obligation to make payment of any Termination Amount in respect of a Terminated Site which is payable by it pursuant to paragraphs 2.5.2.1 and 2.5.2.2 above in the timescale specified in paragraph 2.5.2.3(c) above, the Buyer shall have no other liability to the Supplier arising out of or in connection with the exercise by the Buyer of its right to terminate the Order Contract (in whole or in part) pursuant to clause 10.3.2 of the DPS Core Terms.

3. **Site Agreement(s)**

3.1 The Parties acknowledge and agree that:

3.1.1 the Supplier will at such time as the Buyer may require enter into a Site Agreement (or Site Agreements) in substantially the form set out in Order Schedule 22 (*Licence Terms*) as a condition of its entry into the Order Contract with the Buyer (it being acknowledged that each Site will be the subject of a separate Site Agreement);

3.1.2 clause 11 (*How much you can be held responsible for*) of the DPS Core Terms does not (for the avoidance of doubt) apply in respect of the Supplier's liability under any Site Agreement;

3.1.3 if the Buyer terminates any Site Agreement pursuant to clause 12.2 (*Breach of the Licence*) of the relevant Site Agreement, then:

3.1.3.1 the Buyer may (at its absolute discretion) terminate the Order Contract by issuing a Termination Notice (such termination to take effect on the date specified in the Termination Notice); and

3.1.3.2 any termination of the Order Contract pursuant to paragraph 3.1.3.1 shall be treated for the purposes of clause 10 (*Ending the Contract*) of the DPS Core Terms as if the Order Contract had been terminated pursuant to clause 10.4.1 of the DPS Core Terms;

3.1.4 any right of the Buyer to terminate the Order Contract in accordance with its terms shall entitle the Buyer to terminate the Site Agreement(s) by the service

TfL RESTRICTED

of notice, such termination to take effect on the date of termination of the Order Contract (or such other date as the Buyer may specify in such notice of termination); and

3.1.5 the Supplier shall not install (or permit to be displayed) any:

(a) sponsorship;

(b) advertising; and/or

(c) marketing,

signage or other notices at any Site (and clause 2.6 of each Site Agreement shall be construed accordingly).

3.2 **Partial termination of the Order Contract and Site Agreement(s)**

3.2.1 The Parties acknowledge:

3.2.1.1 clauses 10.8.3 and 10.8.4 (*Partially ending and suspending the contract*) of the DPS Core Terms which entitle the Buyer to partially terminate the Order Contract in circumstances where:

(a) the Buyer has the right to otherwise terminate the Order Contract as a whole; and

(b) the remaining parts of the Order Contract can still be used to effectively deliver the intended purpose; and

3.2.1.2 that in practice a partial termination of the Order Contract in accordance with clauses 10.8.3 and 10.8.4 (*Partially ending and suspending the contract*) of the DPS Core Terms may involve the Buyer requiring the termination of the Order Contract and Site Agreement(s) in respect of individual Site(s).

3.2.2 Accordingly, and without prejudice to any rights or remedies under the Order Contract, the relevant Site Agreement(s) or at common law, the Parties agree that where (pursuant to clauses 10.8.3 and 10.8.4 (*Partially ending and suspending the contract*) of the DPS Core Terms) the Order Contract terminates in respect of individual Site(s) (the "**Removed Site(s)**"):

3.2.2.1 the Order Contract will continue in respect of any remaining Site(s) under the terms of the Order Contract and surviving Site Agreement(s); and

3.2.2.2 unless otherwise agreed between the Buyer and the Supplier, the Buyer shall have the same rights and the Supplier shall have the same obligations in respect of the Removed Site(s) and the Supplier Equipment relevant to the Removed Site(s) as if the partial termination of the Order Contract and Site Agreement(s) in respect of the Removed Site(s) was a termination of the Order Contract as whole (and the terms of the Order Contract shall be interpretated accordingly).

3.3 **Request by Supplier to remove a Site from the scope of the Order Contract**

If in respect of a Site:

3.3.1

3.3.1.1 there has been a change in circumstances beyond the control of the Supplier relating specifically to that Site, and that as a direct

TfL RESTRICTED

result of that change in circumstances that Site has permanently ceased to be economically viable for the Supplier as a result of a shortfall in revenue relating specifically to that Site and/or an increase in costs associated specifically with that Site (in each case when compared to those projected by the Supplier at the time of its Order Tender in respect of the Order Contract);

3.3.1.2 the Supplier identifies technical limitations or constraints affecting the Site which render the Site permanently unviable for use as a Site for the purposes of the Order Contract;

3.3.2 the Supplier gives written notice to the Buyer that the Supplier wishes to remove the Site from the scope of the Order Contract together with information:

3.3.2.1 evidencing (in such format as the Buyer may specify):

(a) where paragraph 3.3.1.1 applies:

(1) the relevant change in circumstances as referred to in paragraph 3.3.1.1; and

(2) the change in the revenues of and/or costs to the Supplier, and that the Site has as a direct result permanently ceased to be economically viable. (For this purpose, and for the avoidance of doubt, if the Supplier's costs associated with the Site already (prior to the change of circumstances) exceeded its revenues associated with the Site, then the position must have worsened as a direct result of the identified change of circumstances for the Site to be regarded as having permanently ceased to be economically viable for this purpose); and

(b) where paragraph 3.3.1.2 applies, the technical limitations or constraints which render the Site permanently unviable for use as a Site for the purposes of the Order Contract as referred to in paragraph 3.3.1.2;

3.3.3 the Supplier has within 10 (ten) Working Days after a request by the Buyer (or within such other timescale as the Buyer may agree), provided such further information as the Buyer may have reasonably requested in order to be satisfied (acting reasonably) that the conditions in paragraphs 3.3.1 - 3.3.2 (inclusive) have been met,

then the Buyer may (acting reasonably) agree to the removal of the Site from the scope of the Order Contract from such time as the Buyer is satisfied for the purposes and in accordance with this paragraph 3.3 that the Site will permanently cease to be economically or technically viable (the "**Early Cessation Date**") provided that if the Buyer so agrees (acting reasonably) then, without prejudice to any rights or remedies under the Order Contract, the relevant Site Agreement or at common law:

3.3.4 the Order Contract shall:

3.3.4.1 terminate in respect of the relevant Site (as if such termination was pursuant to clauses 10.8.3 and 10.8.4 (*Partially ending and suspending the contract*) of the DPS Core Terms)) (the "**Supplier Requested Removed Site**"), it being acknowledged that clause 10.5.1 of the DPS Core Terms will not apply in consequence of such termination; and

3.3.4.2 continue in respect of any remaining Site(s) under the terms of the Order Contract and surviving Site Agreement(s); and

TfL RESTRICTED

3.3.5 unless otherwise agreed between the Buyer and the Supplier, the Buyer shall have the same rights and the Supplier shall have the same obligations in respect of the Supplier Requested Removed Site and the Supplier Equipment relevant to the Supplier Requested Removed Site as if the partial termination of the Order Contract and termination of the relevant Site Agreement in respect of the Supplier Requested Removed Site was a termination of the Order Contract as whole (and the terms of the Order Contract shall be interpretated accordingly).

3.3A **Request by Supplier to remove one or more Charging Bays at a Multi-Bay Site from the scope of the Order Contract**

If in respect of a Multi-Bay Site:

3.3A.1

3.3A.1.1 there has been a change in circumstances beyond the control of the Supplier relating specifically to that Multi-Bay Site and as a direct result of that change in circumstances, one (1) or more Charging Bays at that Multi-Bay Site (but not, for the avoidance of doubt, the Multi-Bay Site as a whole) have permanently ceased to be economically viable for the Supplier as a result of a shortfall in revenue relating specifically to that Multi-Bay Site and/or an increase in costs associated specifically with that Multi-Bay Site (in each case when compared to those projected by the Supplier at the time of its Order Tender in respect of the Order Contract);

3.3A.1.2 the Supplier identifies technical limitations or constraints affecting one (1) or more Charging Bays at that Multi-Bay Site which render such Charging Bay(s) (but not, for the avoidance of doubt, the Multi-Bay Site as a whole) permanently unviable for use as Charging Bay(s) for the purposes of the Order Contract,

(in the case of paragraphs 3.3A.1.1 and 3.3A.1.2 the affected Charging Bay(s) being the "**Affected Charging Bay(s)**"),

but provided that in either case one (1) or more other Charging Bays comprised in such Multi-Bay Site (the "**Non-Affected Charging Bay(s)**") remain economically and technically viable;

3.3A.2 the Supplier gives written notice to the Buyer that the Supplier wishes to remove the Affected Charging Bay(s) at the Multi-Bay Site from the scope of the Order Contract together with information:

3.3A.2.1 evidencing (in such format as the Buyer may specify):

(a) where paragraph 3.3A.1.1 applies:

(1) the relevant change in circumstances as referred to in paragraph 3.3A.1.1; and

(2) the change in the revenues of and/or costs to the Supplier in consequence of which one (1) or more Charging Bays at the Multi-Bay Site has/have as a direct result permanently ceased to be economically viable. (For this purpose, and for the avoidance of doubt, if the Supplier's costs at the Multi-Bay Site already (prior to the change of circumstances) exceeded its revenues associated with that Multi-Bay Site, then the position must have worsened as a direct result of the identified change of circumstances at that Multi-Bay Site for any Affected Charging Bay(s) to be regarded as having permanently ceased to be economically viable for this purpose); and

TfL RESTRICTED

(b) where paragraph 3.3A.1.2 applies, the technical limitations or constraints which render one (1) or more Charging Bays at that Multi-Bay Site (but not, for the avoidance of doubt, the Multi-Bay Site as a whole) permanently unviable for use as Charging Bay(s) for the purposes of the Order Contract;

3.3A.3 the Supplier has within 10 (ten) Working Days after a request by the Buyer (or within such other timescale as the Buyer may agree), provided such further information as the Buyer may have reasonably requested in order to be satisfied (acting reasonably) that the conditions in paragraphs 3.3A.1 – 3.3A.3 (inclusive) have been met,

then the Buyer may (acting reasonably) agree to the removal of such Affected Charging Bay(s) from the scope of the Order Contract and (if the Site Agreement Date has occurred in respect of the Site in question) the applicable Site Agreement subject to the Supplier entering into a Variation to the Order Contract and (if applicable) a variation to the relevant Site Agreement on terms specified by and acceptable to the Buyer for the purposes of giving effect to such removal of the Affected Charging Bay(s) from the scope of the Order Contract and (if applicable) the relevant Site Agreement (the Variation to the Order Contract and the separate variation to the Site Agreement together being a "**Bay Removal Variation**").

3.3A.4 The Parties acknowledge and agree that:

3.3A.4.1 the Order Contract and applicable Site Agreement shall (as amended by a Bay Removal Variation) continue in respect of the Non-Affected Charging Bay(s) at the Multi-Bay Site in question under the terms of the Order Contract and the applicable Site Agreement (it being acknowledged that if the Bay Removal Variation leaves only one (1) Charging Bay within the scope of the Order Contract then such Site shall no longer constitute a Multi-Bay Site for the purposes of the Order Contract); and

3.3A.4.2 without prejudice to (and without limiting) any other provision of or requirement of the Order Contract or relevant Site Agreement, the Supplier shall upon and following the implementation of the Bay Removal Variation comply with all relevant requirements of the Order Specification regarding the decommissioning of individual Charging Bays.

3.4 **Insurances specified in clause 8 of the Site Agreement(s)**

The Parties acknowledge and agree that:

3.4.1 the required insurances specified in Annex 1 of Joint Schedule 3 (*Insurance Requirements*) will not apply and instead the required insurances for the purposes of Joint Schedule 3 (*Insurance Requirements*) will be the insurances specified in clause 8 of each relevant Site Agreement (and the provisions of Joint Schedule 3 (*Insurance Requirements*) will be construed accordingly); and

3.4.2 in the event of any conflict between paragraphs 1 to 7 (inclusive) of Joint Schedule 3 (*Insurance Requirements*) and clause 8 of the Site Agreement(s), the terms of clause 8 of Site Agreement(s) will prevail.

4. **Supplier Equipment**

4.1 Without prejudice to the generality of clause 3.3.3 of the DPS Core Terms, the Parties acknowledge and agree that:

4.1.1 risk in all Supplier Equipment shall be with the Supplier at all times;

TfL RESTRICTED

4.1.2 the Supplier shall ensure that the Supplier Equipment meets all minimum safety standards required from time to time by law; and

4.1.3 ownership of the Supplier Equipment shall at all times during the Order Contract remain vested in the Supplier free from all encumbrances and the Supplier shall not charge, transfer, dispose of or otherwise alienate its interest or permit any interest or other encumbrance to be created in or over the Supplier Equipment or any part of it.

5. Supplier Payments

5.1 The Supplier Payments (and any other sums payable by the Supplier under the Order Contract) are exclusive of VAT (or similar tax) and shall be paid free and clear of all deductions and withholdings whatsoever, unless the deduction or withholding is required by law. If any deduction or withholding is required by law the Supplier shall pay the Buyer such sum as will, after the deduction or withholding has been made, leave the Buyer with the same amount as it would have been entitled to receive in the absence of any such requirement to make a deduction or withholding.

5.2 The Supplier Payments and any other sums payable under the Order Contract shall be paid in sterling to the credit of a bank account to be designated in writing by the Buyer.

5.3 The Supplier shall bear its own costs and expenses incurred in the course of carrying out the activities, and performing the obligations, envisaged under the Order Contract (including, for the avoidance of doubt, the activities and obligations envisaged under these Order Special Terms) and shall not be entitled to charge the Buyer for any of its costs or expenses.

5.4 Interest shall accrue at the rate of two percent (2%) above the base rate of the Bank of England from time to time on all sums due and payable under the Order Contract from the due date until the date of actual payment (both before and after judgement). All such interest shall be calculated on the basis of the actual number of days elapsed, over a three hundred and sixty five (365) day year and compounded at monthly intervals. The Parties agree that this provision constitutes a substantial remedy for late payment of any sum payable under the Order Contract in accordance with s8(2) of the Late Payment of Commercial Debts (Interest) Act 1998.

5.5 The provisions of this paragraph 5 shall remain in effect notwithstanding termination or expiry of the Order Contract until the settlement of all subsisting claims by the Buyer.

5.6 <u>Adjustment to Site Charge (Indexation)</u>

5.6.1 The Order Form sets out the Site Charge which is applicable to each Site as at the date of the Order Contract.

5.6.2 On and with effect from the first 1 April to occur during the Order Contract Period and each subsequent anniversary of that date, and subject always to paragraph 5.6.3, the Site Charge for each Site shall be increased (as applicable) by the amount of the change (if any) in the Consumer Prices Index between its rate last published (as final) immediately before such date (or anniversary of such date) and its rate published (as final) twelve (12) months before that.

5.6.3 The percentage change in the Consumer Prices Index over any twelve (12) month period for the purposes of paragraph 5.6.2 (and accordingly the percentage adjustment to each Site Charge) may never be:

5.6.3.1 greater than 3% (three per cent); and

5.6.3.2 less than 0% (zero per cent).

6. No Charges payable by the Buyer under the Order Contract

TfL RESTRICTED

6.1 The Parties acknowledge and agree that:

6.1.1 no Charges (as defined in Joint Schedule 1 (*Definitions*)) shall be payable by the Buyer under the Order Contract; and

6.1.2 relevant provisions of the DPS Core Terms (and any other Joint Schedule or Order Schedule which applies to the Order Contract) which refer or relate to the payment of "Charges" shall be construed accordingly.

7. Security

7.1 As a condition precedent to the Order Contract, the Supplier shall (to the extent that it has not already done so) provide at its expense:

7.1.1 a parent company guarantee (from such Holding Company of the Supplier as the Buyer may require unless otherwise agreed with the Buyer) and, if requested by the Buyer, a legal opinion as to its enforceability; or

7.1.2 a performance bond, together with a legal opinion as to its enforceability in a form acceptable to the Buyer,

each as set out (as applicable) in Attachment A (*Form of Parent Company Guarantee*), Attachment B (*Form of Opinion for use with Guarantee*) and Attachment C (*Form of Performance Bond*) to **Annex 1** (*Form of Parent Company Guarantee, Performance Bond and Legal Opinion*) to these Order Special Terms (as applicable).

7.2 The Supplier shall be regarded as being in material Default (as defined in Joint Schedule 1 (*Definitions*)) of the Order Contract which is incapable of remedy in the event that any parent company guarantee or performance bond (as the case may be) is or becomes invalid or otherwise unenforceable.

7.3 Where the Supplier has provided the Buyer with a performance bond and thereafter any variation is made to the Deliverables pursuant to the terms of the Order Contract, the Buyer may in its discretion require the Supplier to provide at its expense a replacement performance bond for a greater sum where such variation either alone or when aggregated with any other variations has resulted in a material increase to the value of the Order Contract to the Buyer.

7.4 Where the Supplier has provided a parent company guarantee, the Supplier shall give notice to the Buyer within ten (10) Working Days where there is any change in the ownership of the guarantor of the parent company guarantee where such change relates to 50% or more of the issued share capital of the guarantor. The Buyer shall have the right to terminate the Order Contract within sixty (60) calendar days of receipt of the required notice from the Supplier, or in the event that the Supplier fails to give the required notice, within sixty (60) calendar days of the Buyer becoming aware of such event, unless the Supplier has within such period provided a parent company guarantee or other appropriate security from a replacement guarantor acceptable to the Buyer on terms identical to the parent company guarantee. Any termination of the Order Contract pursuant to this paragraph 7.4 shall be treated for the purposes of clause 10 (*Ending the Contract*) of the DPS Core Terms as if the Order Contract had been terminated pursuant to clause 10.4.1 of the DPS Core Terms.

8. Subcontractor Warranty Agreement(s)

Where the Supplier sub-contracts all or any part of the Deliverables to any person in accordance with the Order Contract, the Supplier shall, if so required by the Buyer, procure that a Subcontractor enters into a warranty agreement with the Buyer substantially in the form specified in **Annex 2** (*Form of Subcontractor Warranty Agreement*) to these Order Special Terms or in such other form as has been previously approved in writing by the Buyer.

TfL RESTRICTED

9. Compliance with policies and standards

9.1 Without prejudice to the Supplier's obligations under clauses 3.1.1 and 12 of the DPS Core Terms, the Supplier undertakes to procure that all the Supplier Staff comply with all of the Buyer's policies and standards that are relevant to the provision of the Deliverables and the performance of the Order Contract (including where the GLA is the Buyer the GLA's Dignity at Work policy as updated from time to time and with the GLA's Code of Ethics as updated from time to time, and, where TfL is the Buyer, TfL's workplace harassment policy as updated from time to time (copies of which are available on request from TfL) and with TfL's Code of Conduct (which is available on TfL's website, www.tfl.gov.uk)) and those policies and standards relating to safety, security, business ethics, drugs and alcohol and any other on site regulations specified by the Buyer for personnel working at Buyer Premises or accessing the Buyer's computer systems. The Buyer shall provide the Supplier with copies of such policies and standards on request.

10. Data Protection

10.1 Amendments to Joint Schedule 1 (*Definitions*)

10.1.1 For the purposes of the Order Contract, the following amendments shall apply in respect of Joint Schedule 1 (*Definitions*):

10.1.1.1 the following existing definitions shall be amended as shown in blue underlining and red strikethrough (with text in blue underlining constituting additions to the existing text and text in red strikethrough constituting deletions from the existing text):

"**Controller**"	has the meaning given to it in the UK GDPR or DPA 2018;
"**Data Protection Legislation**"	(i) the UK GDPR~~, the LED and any applicable national implementing Laws as amended from time to time~~ (ii) the DPA 2018 to the extent that it relates to Processing of Personal Data and privacy; (iii) all other applicable Law about the Processing of personal data and privacy;
"**Data Protection Officer**"	has the meaning given to it in the UK GDPR or DPA 2018;
"**DPA 2018**"	~~a)~~ the Data Protection Act 2018;
"**Data Subject**"	has the meaning given to it in the UK GDPR or DPA 2018;
"**Personal Data**"	has the meaning given to it in the UK GDPR or DPA 2018;
"**Personal Data Breach**"	has the meaning given to it in the UK GDPR or DPA 2018;
"**Processing**"	has the meaning given to it in the UK GDPR or DPA 2018;
"**Processor**"	has the meaning given to it in the UK GDPR or DPA 2018;

10.1.1.2 the existing definition of "GDPR" shall be deleted in its entirety; and

TfL RESTRICTED

10.1.1.3 the following new definitions shall be inserted at the correct alphabetical locations:

"**Law Enforcement Purposes**"	the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including the safeguarding against and the prevention of threats to public security as set out in section 31 DPA 2018;
"**Law Enforcement Processing**"	means any processing of Personal Data for Law Enforcement Purposes;
"**UK GDPR**"	the General Data Protection Regulation (Regulation (EU) 2016/679) as it forms part of domestic law by virtue of section 3 of the European Union (Withdrawal) Act 2018;

10.2 Data Sharing

10.2.1 Whilst there is no intention for the Supplier to process Personal Data on behalf of the Buyer under the Order Contract, in the event that the Buyer (acting as a Controller) requires access to Personal Data ("**Requested Personal Data**") processed by the Supplier under the Order Contract:

10.2.1.1 where the Supplier is acting as a Processor, the Supplier shall provide such Requested Personal Data in accordance with the written request of the Buyer; or

10.2.1.2 where the Supplier is acting as a separate Controller or a Joint Controller (with the Buyer), the Supplier shall provide such Requested Personal Data only after the Parties have entered into a data sharing agreement containing the relevant provisions as set out in Joint Schedule 11 (*Processing Data*).

10.2.2 The Parties acknowledge that the references in paragraph 10.2.1 to "Controller", "Joint Controller", "Personal Data" and "Processor" shall have the meanings given to them in Joint Schedule 1 (*Definitions*) (as amended, where applicable, by virtue of paragraph 10.1).

11. **Construction (Design and Management) Regulations 2015**

11.1 For the purpose of this paragraph 11, the terms "**construction work**", "**design**", "**principal designer**", "**principal contractor**", "**contractor**" and "**designer**" are as defined in the Construction (Design and Management) Regulations 2015 ("**the CDM Regulations**").

11.2 The Buyer appoints and/or reserves the right to appoint as part of the Deliverables the Supplier to act as any or all of the following pursuant to regulation 5 of the CDM Regulations:

11.2.1 the principal designer; and

11.2.2 the principal contractor.

11.3 The Supplier accepts and/or agrees to accept any appointment as principal designer and/or principal contractor pursuant to paragraph 11.2 and shall perform all the functions and duties of the principal designer and/or principal contractor under the CDM Regulations.

TfL RESTRICTED

11.4 Where the Supplier is not appointed as the principal contractor and/or the principal designer, the Supplier shall perform all the functions and duties of a contractor (in so far as the Supplier is responsible for carrying out, managing or controlling construction work) and (where the Supplier is responsible for preparing, modifying (or arranging for or instructing others to prepare or modify) design) a designer.

11.5 The Supplier shall comply with the requirements of the CDM Regulations and confirms that it has the skills, knowledge, experience, organisational capability and level of resources necessary to fulfil the role of principal designer, principal contractor, designer and contractor (as applicable).

11.6 The Parties will provide each other with all necessary assistance which they may reasonably require in order to fulfil their respective obligations under the CDM Regulations.

12. **Timber Standards**

12.1 For the purposes of this paragraph 12, unless the context indicates otherwise, the following expressions shall have the following meanings:

"Independent Report"	an independent report by an individual or body: (a) whose organisation, systems and procedures conform to: (i) ISO Guide 65:1996 (EN 45011:1998); and (ii) general requirements for bodies operating product certification systems; and (b) who is accredited to audit against forest management standards by a national or international body whose organisation, systems and procedures conform to ISO Guide 61 General Requirements for Assessment and Accreditation of Certification Bodies;
"Legal Timber"	Timber in respect of which the organisation that felled the trees and/or provided the Timber from which the wood supplied under the Order Contract derived: (a) had legal rights to use the forest; (b) holds a register of all local and national laws and codes of practice relevant to forest operations; and (c) complied with all relevant local and national laws and codes of practice including environmental, labour and health and safety laws and paid all relevant royalties and taxes;
"Recycled Timber" and "Reclaimed Timber"	recovered wood that has been reclaimed or re-used and that has been in previous use and is no longer used for the purpose for which the trees from which it derives were originally felled. The terms 'recycled' and 'reclaimed' are interchangeable and include, but are not limited to the following categories: pre-consumer recycled wood and wood fibre or industrial by-products but excluding sawmill co-products (sawmill co-products are deemed to fall within the

TfL RESTRICTED

	category of Virgin Timber), post-consumer recycled wood and wood fibre and drift wood. Recycled or Reclaimed Timber must be capable of being evidenced as such to the Buyer's satisfaction in order to satisfy this definition;
"Sustainable Timber"	Timber, which in order to meet the Buyer's criteria for sustainable timber, must be: (a) Recycled Timber; or (b) Sustainably Sourced Timber; or (c) a combination of (a) and (b);
"Sustainably Sourced Timber"	Timber sourced from organisational, production and process methods that minimise harm to ecosystems, sustain forest productivity, ensure that both forest ecosystem health and vitality, and forest biodiversity is maintained. In order to satisfy this definition, Timber must be accredited to meet the Forest Stewardship Council (FSC) or equivalent. Where it is not practicable to use Forest Stewardship Council (FSC) standard accredited timber, the Buyer will accept timber accredited through other schemes approved by the Central Point of Expertise on Timber (CPET), as listed below: (a) Canadian Standards Association (CSA); (b) Programme for the Endorsement of Forest Certification (PEFC); or (c) Sustainable Forestry Initiative (SFI), or such other source as the Supplier may demonstrate to the Buyer's satisfaction is equivalent;
"Timber"	wood from trees that have been felled for that purpose, but excludes any item where the manufacturing processes applied to it has obscured the wood element (by way of example only, paper would not be treated as timber). Where the term Timber is used as a generic term it includes both Virgin Timber and Recycled Timber; and
"Virgin Timber"	Timber supplied or used in performance of the Order Contract that is not Recycled Timber.

12.2 **Supplier's Obligations and the Buyer's Rights**

12.2.1 The Supplier shall ensure that all Timber supplied or used in the performance of the Order Contract shall be Sustainable Timber. If it is not practicable for the Supplier to meet this condition the Supplier must inform the Buyer in writing prior to the supply of any Timber that is not Sustainable Timber and stating the reason for the inability to comply with this condition. The Buyer reserves the right, in its absolute discretion, to approve the use of Timber that is not Sustainable Timber.

TfL RESTRICTED

Where the Buyer exercises its right to reject any Timber, the provisions of paragraph 12.2.4 shall apply.

12.2.2 Without prejudice to paragraphs 12.2.1 and 12.4.2, all Virgin Timber procured by the Supplier for supply or use in performance of the Order Contract shall be Legal Timber.

12.2.3 The Supplier shall ensure that Virgin Timber it procures for supply or use in performance of the Order Contract shall not have derived from any species of tree that is protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) unless the supplier can prove, by producing official documentation, that he has complied with the CITES requirements that permit trading in the particular species of tree so listed under that Convention.

12.2.4 The Buyer reserves the right to reject at any time any Timber that does not comply with the conditions of the Order Contract (or the Order Specification). Where the Buyer exercises its right to reject any Timber, the Supplier shall supply contractually compliant alternative Timber, at no cost to the Buyer and without causing delay to the performance of the Order Contract.

12.2.5 The Supplier shall maintain records of all Timber supplied and used in the performance of the Order Contract. Such information shall be made available to the Buyer promptly if requested at any time.

12.3 **Buyer's Reporting Requirements**

12.3.1 Unless the Buyer has given its written approval in accordance with paragraph 12.2.1 that Timber that is not Sustainable Timber may be used, then, if requested, the Supplier shall promptly provide evidence to the Buyer's satisfaction that the Timber is Sustainable Timber.

12.3.2 The Supplier shall report quarterly on its use of Sustainable Timber in the performance of the Order Contract, in accordance with the Timber Standards Appendix (as set out in **Annex 3** (*Timber Standards*) to these Order Special Terms).

12.3.3 The Supplier shall report on the amount of Timber that has been supplied to the Buyer in accordance with paragraph 12.2.1 which is not Sustainable Timber.

12.4 **Verification**

12.4.1 **Evidence of Sustainable Timber**

The Buyer reserves the right to determine whether the evidence supplied by the Supplier is sufficient to satisfy it that the conditions of the Order Contract have been fully complied with. In the event that the Buyer is not so satisfied, the Supplier shall, on written request by the Buyer, commission and meet the costs of an Independent Report to:

(a) verify the source of the Timber; and

(b) assess whether the forests of origin were managed in accordance with the specified local laws and regulations.

12.4.2 **Evidence of Legal Timber**

(a) The Supplier shall, before delivering any Virgin Timber under the Order Contract, obtain documentary evidence to the Buyer's satisfaction that the Timber is both Legal and Sustainable Timber. If requested in writing by the Buyer, the Supplier shall submit such documentary evidence to the Buyer either prior to delivery or at such

TfL RESTRICTED

other times as the Buyer may require. For the avoidance of doubt, the Supplier shall identify, as part of the evidence submitted, a chain of custody from the source of the Timber through to delivery of the final product.

(b) The Buyer reserves the right at any time during the execution of the Order Contract and for a period of six (6) years from final delivery of any Timber under the Order Contract to require the Supplier to produce the evidence required for the Buyer's inspection within fourteen (14) days of the Buyer's written request.

13. **Waste Electrical and Electronic Equipment Regulations**

13.1 For the purposes of this paragraph 13, unless the context indicates otherwise, the following expressions shall have the following meanings:

"Waste Electrical and Electronic Equipment"	has the same meaning as is given to "WEEE" in the WEEE Regulations;
"WEE Equipment"	means any Supplier Equipment which falls within the scope of the WEEE Regulations;
"WEEE Regulations"	means Waste Electrical and Electronic Equipment Regulations 2013 (as amended by the Waste Electrical and Electronic Equipment and Restriction on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (Amendment) Regulations 2014 and the Waste Electrical and Electronic Equipment (Amendment) Regulations 2015).

13.2 When procuring any WEE Equipment for use in accordance with the Deliverables whether by direct purchase by the Supplier, purchase on behalf of the Buyer, lease or otherwise the Supplier will ensure that in accordance with the WEEE Regulations that the producer of the WEE Equipment (whether that be the Supplier or a third party) shall assume responsibility for financing the costs of the collection, treatment, recovery and environmentally sound disposal of:

(a) all Waste Electrical and Electronic Equipment arising from the WEE Equipment; and

(b) all Waste Electrical and Electronic Equipment arising from equipment placed on the market prior to 13 August 2005 where such equipment is to be replaced by the WEE Equipment and the WEE Equipment is of an equivalent type or is fulfilling the same function as the equipment.

13.3 The Supplier shall indemnify and keep indemnified the Buyer as a result of any Losses (as defined in Joint Schedule 1 (*Definitions*)) which it incurs as a result of any failure on the part of the Supplier or the relevant producer to comply with the terms of this paragraph 13.

14. **Work Related Road Risk**

14.1 For the purposes of this paragraph 14, unless the context indicates otherwise, the following expressions shall have the following meanings:

"Approved Progressive Driver Training"	an ongoing programme of Drivers' training to ensure they have the appropriate knowledge, skills and attitude to operate safely on urban roads. This includes the training specific for the urban environment (including on-road

TfL RESTRICTED

	experience from a cyclist's perspective), which is required to be completed at least once every 5 years;
"Car-derived Van"	a vehicle based on a car, but with an interior that has been altered for the purpose of carrying larger amounts of goods and/or equipment;
"Category N2 HGV"	a vehicle designed and constructed for the carriage of goods having a MAM exceeding 3,500 kilograms but not exceeding 12,000 kilograms;
"Category N3 HGV"	a vehicle designed and constructed for the carriage of goods and having a MAM exceeding 12,000 kilograms;
"Collision Report"	a report detailing all collisions during the previous 12 months involving injuries to persons or fatalities;
"Delivery and Servicing Vehicle"	a HGV, a Van or a Car-derived Van;
"Driver"	any employee of the Supplier (including an agency or contracted driver), who operates Delivery and Servicing Vehicles on behalf of the Supplier while delivering the Deliverables;
"DVLA"	Driver and Vehicle Licensing Agency;
"Equivalent Scheme"	has the meaning given to it in paragraph 14.2.1;
"FORS"	the Fleet Operator Recognition Scheme, which is an accreditation scheme for businesses operating commercial vehicles including vans, HGV, coaches and powered two wheelers. It offers impartial, independent advice and guidance to motivate companies to improve their compliance with relevant laws and their environmental, social and economic performance;
"FORS Standard"	the standard setting out the accreditation requirements for the Fleet Operator Recognition Scheme, a copy of which can be found at: www.fors-online.org.uk;
"Gold Accreditation"	the highest level of accreditation within the FORS Standard, the requirements of which are more particularly described at: www.fors-online.org.uk;
"HGV"	a vehicle with a MAM exceeding 3,500 kilograms;
"MAM"	the maximum authorised mass of a vehicle or trailer including the maximum load that can be carried safely while used on the road;
"Silver Accreditation"	the minimum level of accreditation within the FORS Standard acceptable for the contract schedule, the requirements of

	which are more particularly described at: www.fors-online.org.uk;
"Van"	a vehicle with a MAM not exceeding 3,500 kilograms; and
"WRRR Self-Certification Report"	has the meaning given to it in paragraph 14.6.

Fleet Operator Recognition Scheme Accreditation

14.2 Where the Supplier operates Delivery and Servicing Vehicles to provide the Deliverables, it shall within ninety (90) days of the date on which the Order Contract comes into force:

14.2.1 (unless already registered) register for FORS or a scheme, which in the reasonable opinion of the Buyer, is an acceptable substitute to FORS (the **"Equivalent Scheme"**); and

14.2.2 (unless already accredited) have attained the standard of Silver Accreditation (or higher) or the equivalent within the Equivalent Scheme and shall maintain the standard of Silver Accreditation (or equivalent standard within the Equivalent Scheme) by way of an annual independent audit in accordance with the FORS Standard or take such steps as may be required to maintain the equivalent standard within the Equivalent Scheme. Alternatively, where the Supplier has attained Gold Accreditation, the maintenance requirements shall be undertaken in accordance with the periods set out in the FORS Standard.

Safety Features on HGVs

14.3 The Supplier shall ensure that every HGV, which it uses to provide the Deliverables, shall be fitted with safety features consistent with the FORS Silver Accreditation.

Driver Training

14.4 Where the Supplier operates Delivery and Servicing Vehicles to provide the Deliverables the Supplier shall ensure that each of its Drivers attend the Approved Progressive Driver Training throughout the Order Contract Period.

Collision Reporting

14.5 Where the Supplier operates Delivery and Servicing Vehicles to deliver the Order Contract, the Supplier shall within 15 days of the Start Date, provide to the Buyer a Collision Report. The Supplier shall provide to the Buyer an updated Collision Report within 5 Working Days of a written request from the Buyer at any time.

Self-Certification of Compliance

14.6 Where the Supplier operates Delivery and Servicing Vehicles to provide the Deliverables, within 90 days of the Start Date, the Supplier shall provide a written report to the Buyer detailing its compliance with paragraphs 14.2, 14.3, 14.4 and 14.5 (as applicable) (the "**WRRR Self-Certification Report**"). The Supplier shall provide updates of the WRRR Self-Certification Report to the Buyer on each six month anniversary of its submission of the initial WRRR Self-Certification Report.

Obligations of the Supplier Regarding Subcontractors

14.7 The Supplier shall ensure that those of its Subcontractors who operate Category N2 HGVs, Category N3 HGVs, Vans and/or Car-derived Vans to provide the Deliverables shall comply with the corresponding provisions of these Order Special Terms:

14.7.9 paragraphs 14.2, 14.4, 14.5, 14.6; and

14.7.10 for Category N2 HGVs – paragraph 14.3; and

14.7.11 for Category N3 HGVs – paragraph 14.3;

as if those Subcontractors were a party to the Order Contract.

Failure to Comply

14.8 Without limiting the effect of any other provision of the Order Contract relating to termination, if the Supplier fails to comply with paragraphs 14.2, 14.3 (where applicable), 14.4, 14.5, 14.6 and 14.7:

14.8.1 the Supplier has committed a material Default (as defined in Joint Schedule 1 (*Definitions*)) of the Order Contract; and

14.8.2 the Buyer may refuse the Supplier, its employees, agents and Delivery and Servicing Vehicles entry onto any property that is owned, occupied or managed by the Buyer for any purpose (including but not limited to deliveries).

15. **Ethical Sourcing and Supply Chain Transparency**

ETI Base Code and Ethical Sourcing and Modern Slavery Action Plan

15.1 The Buyer is committed to ensuring that workers employed in its supply chains in the UK and throughout the world are treated fairly, humanely and equitably. In the course of complying with the Order Contract, the Supplier shall adhere to the principles of and shall procure that its Subcontractors (as applicable) adhere to the principles of the Ethical Trading Initiative ("**ETI**") Base Code as set out in **Annex 4** (*The ETI Base Code*) to these Order Special Terms.

15.2 The Supplier shall, where relevant, train its employees and Subcontractors to ensure compliance with this paragraph 15. The Supplier shall keep a record of all training completed by its employees and Subcontractors and shall make a copy of the record available to the Buyer on request.

15.3 During the course of the Order Contract, if the Buyer has reasonable cause to believe that the Supplier is not complying with any provision of paragraph 15, then the Buyer shall notify the Supplier and the Parties shall agree a remediation plan with appropriate timeframes for compliance by the Supplier, such remediation plan to be agreed by the Parties by no later than 30 days from the date of the Buyer's notification to the Supplier that remedial action is required or such other period as the Parties may otherwise agree in writing.

15.4 Following agreement of the remediation plan described in paragraph 15.3, the Buyer reserves the right to conduct, or require to be conducted, one or more audits, (either itself or via a third-party auditor approved by the Buyer) in relation to compliance by the Supplier with the remediation plan.

15.5 For the avoidance of doubt, the right of audit contained in this paragraph 15 shall include without limitation the right of the Buyer (or an auditor appointed by the Buyer) acting reasonably to undertake physical inspections of relevant sites/factories, to conduct interviews with relevant personnel and to inspect relevant documents. The Supplier shall co-operate and shall procure that its Subcontractors (as applicable) co-operate with the Buyer and the Buyer's auditor in relation to all aspects of any audit.

TfL RESTRICTED

15.6 The Supplier shall make the audit reports required pursuant to paragraph 15.5 available to the Buyer through the Suppliers Ethical Data Exchange ("**Sedex**"), or an equivalent process.

Supply Chain Transparency

15.7 The Buyer is committed to protecting and enhancing labour rights in its supply chains and has partnered with Electronics Watch to seek to achieve greater transparency in respect of its electronics supply chains.

15.8 Accordingly, the Supplier will:

15.8.1 at the Buyer's reasonable request co-operate and collaborate with the Buyer and Electronics Watch for the purposes of:

15.8.1.1 establishing and/or enhancing supply chain transparency; and

15.8.1.2 securing improved working conditions in the Buyer's electronics supply chains,

(together, the "**Supply Chain Transparency Objectives**"); and

15.8.2 as soon as reasonably practicable, and in any event within 90 days of the Start Date, provide to the Buyer and Electronics Watch a "road map" to support delivery of the Supply Chain Transparency Objectives (the "**Transparency Road Map**" (as the same may be updated from time to time pursuant to paragraph 15.9)) including identifying the main risks to human rights violations in its electronics supply chains, the challenges to achieving transparency and highlighting the main products and countries involved and the steps to be taken by the Supplier to overcome these challenges and mitigate the risks in the short, medium and long term (and shall take reasonable account of such comments as the Buyer may specify in respect of such Transparency Road Map),

it being acknowledged that the Supplier's obligations under paragraph 15.8.1 shall not extend beyond it participating actively in relation to the Supply Chain Transparency Objectives including through the application of management time and internal resources, correspondence and attendance at meetings, in each case as the Supplier reasonably considers in all of the circumstances to be an appropriate use of its resources and effective to support delivery of the Supply Chain Transparency Objectives.

15.9 The Supplier shall:

15.9.1 use all reasonable endeavours to monitor, on an ongoing basis, potential areas for adjustment to the Transparency Road Map by reference to evolving market best practice and other relevant matters (and shall identify any such potential areas for adjustment to the Transparency Road Map to the Buyer);

15.9.2 by each anniversary of the Start Date:

15.9.2.1 conduct a review of the Transparency Road Map by reference to then-current market best practice and any other relevant matters (such review to be conducted on a basis which is reasonably acceptable to the Buyer and in accordance with such instructions as the Buyer may reasonably provide from time to time); and

15.9.2.2 identify to the Buyer any potential areas for adjustment to the Transparency Road Map arising out of such review;

15.9.3 co-operate and collaborate with the Buyer and Electronics Watch in considering potential changes to be made to the Transparency Road Map arising out of or in connection with:

TfL RESTRICTED

15.9.3.1 the Supplier's obligations under paragraphs 15.9.1 or 15.9.2; and/or

15.9.3.2 any potential areas for improvement or enhancement of the Transparency Road Map which are proposed by the Buyer (acting reasonably) from time to time,

it being acknowledged that if the Parties do not agree any change(s) to the Transparency Road Map which are proposed by either Party in accordance with this paragraph within 30 calendar days of such change(s) being proposed then the Buyer (acting reasonably) shall be entitled to determine the change(s) to be made to the Transparency Road Map in such circumstances and the date from which such change(s) will take effect; and

15.9.4 monitor, on an ongoing basis, the Supplier's performance against the actions and/or steps which are identified in the Transparency Road Map and shall at such time and such frequency as the Buyer may reasonably specify provide such information as the Buyer may reasonably request in relation to the same.

15.10 The Parties acknowledge and agree that any information provided by the Supplier to the Buyer and/or Electronics Watch pursuant to paragraph 15 (including the Transparency Road Map) shall constitute Transparency Information (as defined in Joint Schedule 1 (*Definitions*)) for the purposes of the Order Contract and accordingly pursuant to clause 15.6 of the DPS Core Terms shall not constitute Confidential Information (as defined in Joint Schedule 1 (*Definitions*)).

15.11 In this paragraph 15, "**Electronics Watch**" means the independent monitoring organisation of that name (being a not-for-profit non-governmental organisation incorporated under Dutch law (No. 62721445 in the Dutch Chamber of Commerce Trade Register)).

16. **Step in**

16.1 If the Buyer reasonably believes that it needs to take action in connection with the Deliverables:

16.1.1 because a serious risk exists to the health or safety of persons or property or to the environment; and/or

16.1.2 to discharge a statutory duty,

then the following provisions shall apply.

16.2 The Buyer shall provide notice to the Supplier in writing of the following:

16.2.1 the action it wishes to take;

16.2.2 the reason for such action;

16.2.3 the date it wishes to commence such action;

16.2.4 the time period which it believes will be necessary for such action; and

16.2.5 to the extent practicable, the effect on the Supplier and its obligations to provide the Services during the period such action is being taken.

16.3 Following service of the notice required in paragraph 16.2, the Buyer or a third party appointed by the Buyer for the purpose shall take such action as is notified under these provisions and any consequential additional action as the Buyer reasonably believes is necessary (the "**Required Action**") and the Supplier shall give all reasonable assistance to the Buyer or such third party while it is taking such Required Action (such assistance to be at the expense of the Supplier).

TfL RESTRICTED

16.4 For so long as and to the extent that the Required Action is taken, and this prevents the Supplier from providing any part of the Deliverables, the Supplier shall be relieved from its obligations to provide such part of the Deliverables.

17. **London Living Wage**

For the purposes of this paragraph 17, unless the context indicates otherwise, the following expressions have the corresponding meanings:

"CCSL"	the Centre for Civil Society Limited or any relevant replacement organisation as notified by the Buyer from time to time; and
"London Living Wage"	the London rate for the basic hourly wage as updated and published annually by the CCSL (or any relevant replacement organisation) on its website (www.livingwage.org.uk).

17.1 The Supplier acknowledges and agrees that the Mayor of London pursuant to section 155 of the Greater London Authority Act 1999 has directed that members of the Buyer Group ensure that the London Living Wage be paid to anyone engaged by any member of the Buyer Group who is required to discharge contractual obligations (whether as a direct contractor or a sub-contractor (of any tier) of that direct contractor) on the Buyer's estate in the circumstances set out in paragraph 17.2.1.

17.2 Without prejudice to any other provision of this Order Contract, the Supplier shall:

17.2.1 ensure that its employees and procure that the employees of its Subcontractors engaged in the provision of the Deliverables:

17.2.1.1 for two (2) or more hours of work in any given day in a week, for eight (8) or more consecutive weeks in a year; and

17.2.1.2 on the Buyer's estate including (without limitation) premises and land owned or occupied by the Buyer,

be paid an hourly wage (or equivalent of an hourly wage) equivalent to or greater than the London Living Wage;

17.2.2 ensure that none of:

17.2.2.1 its employees; nor

17.2.2.2 the employees of its Subcontractors,

engaged in the provision of the Deliverables be paid less than the amount to which they are entitled in their respective contracts of employment;

17.2.3 provide to the Buyer such information concerning the London Living Wage as the Buyer or its nominees may reasonably require from time to time, including (without limitation):

17.2.3.1 all information necessary for the Buyer to confirm that the Supplier is complying with its obligations under paragraph 17; and

17.2.3.2 reasonable evidence that paragraph 17 has been implemented;

17.2.4 disseminate on behalf of the Buyer to:

17.2.4.1 its employees; and

17.2.4.2 the employees of its Subcontractors,

TfL RESTRICTED

engaged in the provision of the Deliverables such perception questionnaires as the Buyer may reasonably require from time to time and promptly collate and return to the Buyer responses to such questionnaires; and

17.2.5 cooperate and provide all reasonable assistance in monitoring the effect of the London Living Wage including (without limitation):

17.2.5.1 allowing the CCSL to contact and meet with the Supplier's employees and any trade unions representing the Supplier's employees;

17.2.5.2 procuring that the Supplier's Subcontractors allow the CCSL to contact and meet with the Subcontractors' employees and any trade unions representing the Subcontractors' employees,

in order to establish that the obligations in paragraph 17.2.1 have been complied with.

17.3 For the avoidance of doubt the Supplier shall:

17.3.1 implement the annual increase in the rate of the London Living Wage; and

17.3.2 procure that its Subcontractors implement the annual increase in the rate of the London Living Wage,

on or before 1 April in the year following the publication of the increased rate of the London Living Wage.

17.4 The Buyer reserves the right to audit (acting by itself or its nominee(s)) the provision of the London Living Wage to the Supplier's staff and the staff of its Subcontractors.

17.5 Without limiting the Buyer's rights under any other termination provision of the Order Contract, the Supplier shall remedy any breach of the provisions of this paragraph 17 within four (4) weeks' notice of the same from the Buyer (the "**Notice Period**"). If the Supplier remains in breach of the provisions of this paragraph 17 following the Notice Period, the Buyer may by written notice to the Supplier immediately terminate this Order Contract. Any termination of the Order Contract pursuant to this paragraph 17.5 shall be treated for the purposes of clause 10 (*Ending the Contract*) of the DPS Core Terms as if the Order Contract had been terminated pursuant to clause 10.4.1 of the DPS Core Terms.

18. **Strategic Labour Needs – Green Skills**

18.1 In this paragraph 18, the following term shall have the corresponding meaning:

"Quarterly SLNT Monitoring Report"	means the report to be prepared by the Supplier in the form set out at **Annex 6** (*Quarterly SLNT Monitoring Report Template*) and submitted to the Buyer in accordance with paragraph 18.4.

18.2 The Buyer is committed to developing skills in London and the recommendations in the Department for Transport's Transport Infrastructure Skills Strategy (TISS) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/495900/transport-infrastructure-strategy-building-sustainable-skills.pdf. The strategy outlines the need to build sustainable skills in the transport and infrastructure sector.

18.3 The GLA and the Buyer are supporting individuals into good work in the green economy. The Supplier shall explore opportunities to engage with the Mayor of London's Academy Hubs, Skills Bootcamps for Londoners and other relevant initiatives which promote green skills and jobs through the delivery of the Order Contract.

18.4 The Supplier shall provide the Buyer with a Quarterly SLNT Monitoring Report within ten (10) Working Days of the quarter end date in order to report any relevant skills and employment activity in connection with the Order Contract using the Quarterly SLNT Monitoring Report.

18.5 The Supplier shall ensure at all times that it complies with the requirements of the Data Protection Legislation in the collection and reporting of the information to the Buyer pursuant to paragraph 18.4 above.

19. **Interface with the EU – continuity of Order Contract**

19.1 The Parties confirm that the occurrence or non-occurrence of an event associated with:

19.1.1 economic and monetary union in the European Union; or

19.1.2 the UK's relationship and/or interface with the European Union,

will not have the effect of altering any term of, or discharging or excusing performance under the Order Contract or any transaction, or give either Party the right unilaterally to alter or terminate the Order Contract or any transaction.

19.2 The words "**an event associated with economic and monetary union in the European Union**" will include each and any combination of the following:

19.2.1 the introduction of, changeover to or operation of a single or unified European currency (whether known as the Euro or otherwise);

19.2.2 the fixing of conversion rates between a member state's currency and the new currency or between the currencies of member states;

19.2.3 the introduction of that new currency as lawful currency in a member state;

19.2.4 the withdrawal from legal tender of any currency which, before the introduction of the new currency, was lawful currency in one of the member states;

19.2.5 the disappearance or replacement of a relevant rate option or other price source for the national currency of any member state, or the failure of the agreed sponsor (or successor sponsor) to publish or display a relevant rate, index, price, page or screen; or

19.2.6 the withdrawal of any member state from a single or unified European currency.

20. **NOT USED**

20.1 This paragraph 20 shall only apply in relation to Site(s) which are located on land or premises comprised in the London Underground.

20.2 In this paragraph 20, unless the context indicates otherwise the following expressions shall have the following meanings:

"London Underground"	the stations and depots, assets, systems, track and other buildings which are used in the maintenance and provision of underground services known as "London Underground";
"LUL"	London Underground Limited;
"**LUL Standards"**	the mandatory requirements in force on the London Underground from time to time that the Supplier must comply with in the provision of the Deliverables, comprising mandatory category 1

TfL RESTRICTED

	standards, applicable LUL rules, procedures, codes, standards and safety agreements in relation to, without limitation, health and safety, environment, security, operational, engineering and ambience standards and other customer service delivery standards (including, without limitation, the Contract QUENSH Conditions); and
"Contract QUENSH Conditions"	the Quality Environmental Safety and Health Contract Conditions in force and as supplied to the Supplier by LUL from time to time.

20.3 Without prejudice to any other provision of the Order Contract (including these Order Special Terms):

20.3.1 The Supplier acknowledges its awareness of the Buyer's statutory duty to provide or secure a safe, economic and efficient public passenger transport services by railway for Greater London and shall at all times during the Order Contract have regard to the Buyer's statutory duties. The Supplier shall not, in the performance of the Deliverables, in any manner endanger the safety of or interfere with the operation of the London Underground or endanger the public and shall minimise any disruption to both the London Underground and the public.

20.3.2 The Supplier acknowledges, and undertakes to inform all its employees, agents and Subcontractors who will be using the Buyer's communication facilities that the Buyer reserves the right from time to time to:

20.3.2.1 intercept, for the purposes of monitoring and / or recording, any communication made through any system capable of transmitting communications including but not limited to telephone, electronic mail, facsimile, voicemail or internet facility provided by the Buyer; and

20.3.2.2 use any information obtained as a result of any intercepted communication referred to in paragraph 20.3.1 for the purposes permitted by the Telecommunications (Lawful Business Practice) (Interception of Communications) Regulations 2000.

20.4 In providing the Deliverables, the Supplier shall comply with LUL Standards.

20.5 One of the LUL Standards which may be of relevance to the Order Contract is QUENSH which governs safety for places of work on or around the operational railway. If relevant, the Supplier shall be required to comply with LUL's Contract QUENSH Conditions as indicated and respond to the menu provided by the Contract Manager.

20.6 It is the responsibility of the Supplier to ensure that it receives the LUL Standards from LUL for the required Deliverables and must ensure that it has been appraised by LUL as capable of providing the Deliverables in terms of the LUL Standards. If the Supplier has not been appraised or has not been provided with the Contract QUENSH Conditions, it is the Supplier's obligation to raise this with the Contract Manager and if necessary cease work until the appraisal is completed.

20.7 Where there is a requirement indicated in the Contract QUENSH Conditions to comply with one or more conditions, it is the responsibility of the Supplier to satisfy itself of the requirements of the indicated conditions as contained in the Contract QUENSH Conditions. Access to LUL Standards can be gained through the intranet, which access can be obtained on request through the Contract Manager.

TfL RESTRICTED

21. Payment Card Industry Data Security Standard

21.1 For the purposes of this paragraph 21, unless the context indicates otherwise, the following expressions shall have the following meanings:

"PCI DSS"	has the meaning given to it in paragraph 21.2; and
"QSA"	has the meaning given to it in paragraph 21.2.1.

21.2 If the Supplier processes payment card data under the Order Contract, it shall ensure that it is and that its internal processes and procedures, information technology systems and any equipment that it provides or is provided on its behalf pursuant to the Order Contract are compliant with the Payment Card Industry Data Security Standard as updated from time to time ("**PCI DSS**"). In addition the Supplier shall:

21.2.1 at least once every twelve (12) months appoint a PCI DSS Qualified Security Assessor ("**QSA**") to validate that the Supplier is compliant with (including as set out above) PCI DSS when providing the Deliverables;

21.2.2 without prejudice to any other audit and inspection rights that the Buyer has under the Order Contract, provide the Buyer with copies of any reports and other documents provided by or to the QSA in respect of each such validation; and

21.2.3 where the QSA recommends that certain steps should be taken by the Supplier, promptly take those steps and demonstrate to the Buyer that those steps have been taken.

22. Corrupt Gifts and Payment of Commission

The Supplier shall not, and shall ensure that its employees, agents and Subcontractors do not, pay any commission, fees or grant any rebates to any employee, officer or agent of any member of the Buyer Group nor favour any employee, officer or agent of any member of the Buyer Group with gifts or entertainment of significant cost or value nor enter into any business arrangement with employees, officers or agents of any member of the Buyer Group other than as a representative of the Buyer, without the Buyer's prior written approval.

23. Crime and Disorder Act 1998

23.1 Without prejudice to the Supplier's obligations under clauses 3.1.1 and 12 of the DPS Core Terms, the Supplier acknowledges that the Buyer is under a duty in accordance with Section 17 of the Crime and Disorder Act 1998:

23.1.1 to have due regard to the impact of crime, disorder and community safety in the exercise of the Buyer's duties;

23.1.2 where appropriate, to identify actions to reduce levels of crime and disorder; and

23.1.3 without prejudice to any other obligation imposed on the Buyer, to exercise its functions with due regard to the likely effect of the exercise of those functions on, and the need to do all that it reasonably can to prevent, crime and disorder in its area,

and in the performance of the Order Contract, the Supplier will assist and co-operate with the Buyer, and will use reasonable endeavours to procure that its Subcontractors observe these duties and assists and co-operates with the Buyer where possible to enable the Buyer to satisfy its duty.

24. Declaration of Ineffectiveness and Public Procurement Termination Event

TfL RESTRICTED

24.1 In the event that a court makes a Declaration of Ineffectiveness, the Buyer shall promptly notify the Supplier. The Parties agree that the provisions of Clauses 10.5.2 to 10.5.7 (inclusive) of the DPS Core Terms and paragraphs 24.1, 24.2, 24.4 to 24.6 (inclusive) and 24.12 shall apply as from the time when the Declaration of Ineffectiveness is made.

24.2 The Declaration of Ineffectiveness shall not prejudice or affect any right, liability or remedy which has accrued or shall accrue to either Party prior to or after such Declaration of Ineffectiveness in respect of the period prior to the Declaration of Ineffectiveness, save as otherwise expressly provided to the contrary in paragraphs 24.1 to 24.6 inclusive.

24.3 During any court proceedings seeking a Declaration of Ineffectiveness, the Buyer may require the Supplier to prepare a Cessation Plan in accordance with this paragraph 24.3 by issuing a notice in writing. As from the date of receipt by the Supplier of such notification from the Buyer, the Parties (acting reasonably and in good faith) shall agree or, in the absence of such agreement, the Buyer shall reasonably determine an appropriate Cessation Plan with the object of achieving:

24.3.1 an orderly and efficient cessation of the Deliverables or (at the Buyer's request) a transition of the Deliverables to the Buyer or such other entity as the Buyer may specify; and

24.3.2 minimal disruption or inconvenience to the Buyer or to customers of the Deliverables or to public passenger transport services or facilities,

in accordance with the provisions of paragraphs 24.1 to 24.6 (inclusive) and which the Parties agree would have effect in the event that a Declaration of Ineffectiveness is made.

24.4 Where there is any conflict or discrepancy between the provisions of Clauses 10.5.2 to 10.5.7 (inclusive) of the DPS Core Terms and paragraphs 24.1 to 24.6 (inclusive) and 24.12 or the Cessation Plan, the provisions of these paragraphs 24.1 to 24.6 (inclusive) and 24.12 and the Cessation Plan shall prevail.

24.5 The Parties will comply with their respective obligations under the Cessation Plan (as agreed by the Parties or, where agreement cannot be reached, as reasonably determined by the Buyer) in the event that a Declaration of Ineffectiveness is made.

24.6 The Buyer shall (notwithstanding the provisions of paragraph 5.3) pay the Supplier's reasonable costs in assisting the Buyer in preparing, agreeing and complying with the Cessation Plan. Such costs shall be based on any comparable costs or as otherwise reasonably determined by the Buyer. Provided that the Buyer shall not be liable to the Supplier for any loss of profit, revenue, goodwill or loss of opportunity as a result of the early termination of the Order Contract pursuant to any Declaration of Ineffectiveness.

24.7 Without prejudice to the Buyer's rights of termination implied into the Order Contract by Regulation 73(3) of the Public Contracts Regulations 2015, in the event that the Buyer exercises its right to terminate pursuant to this paragraph 24.7 (a **"Public Procurement Termination Event"**), the Buyer shall promptly notify the Supplier and the Parties agree that:

24.7.1 the provisions of Clauses 10.5.2 to 10.5.7 (inclusive) of the DPS Core Terms and these paragraphs 24.7 to 24.12 (inclusive) shall apply as from the date of receipt by the Supplier of the notification of the Public Procurement Termination Event; and

24.7.2 if there is any conflict or discrepancy between the provisions of Clauses 10.5.2 to 10.5.7 (inclusive) of the DPS Core Terms and these paragraphs 24.7 to 24.12 or the Cessation Plan, the provisions of these paragraphs 24.7 to 24.12 and the Cessation Plan shall prevail.

24.8 Termination on the Public Procurement Termination Grounds shall not prejudice or affect any right, liability or remedy which has accrued or shall accrue to either Party prior to or after such termination on Public Procurement Termination Grounds, in respect of the period

TfL RESTRICTED

prior to such termination, save as otherwise expressly provided in paragraphs 24.7 to 24.11 inclusive.

24.9 As from the date of receipt by the Supplier of the notification of the termination on Public Procurement Termination Grounds, the Parties (acting reasonably and in good faith) shall agree or, in the absence of such agreement, the Buyer shall reasonably determine an appropriate Cessation Plan with the object of achieving:

24.9.1 an orderly and efficient cessation or (at the Buyer's election) a transition to the Buyer or such other entity as the Buyer may specify of: (i) the Deliverables; or (at Buyer's election), (ii) the part of the Deliverables which are affected by the Public Procurement Termination Grounds; and

24.9.2 minimal disruption or inconvenience to the Buyer or to customers of the Deliverables or to public passenger transport services or facilities,

in accordance with the provisions of these paragraphs 24.7 to 24.11 (inclusive) and to take account of the circumstances of the Public Procurement Termination Grounds.

24.10 Upon agreement, or determination by the Buyer, of the Cessation Plan the Parties will comply with their respective obligations under the Cessation Plan.

24.11 The Buyer shall (notwithstanding the provisions of paragraph 5.3) pay the Supplier's reasonable costs in assisting the Buyer in preparing, agreeing and complying with the Cessation Plan. Such costs shall be based on any comparable costs or as otherwise reasonably determined by the Buyer, provided that the Buyer shall not be liable to the Supplier for any loss of profit, revenue, goodwill or loss of opportunity as a result of the early termination of the Order Contract as a result of Public Procurement Termination Grounds.

24.12 For the avoidance of doubt, the provisions of this paragraph 24 (and applicable definitions) shall survive any termination of the Order Contract following a Declaration of Ineffectiveness or termination on Public Procurement Termination Grounds.

25. Further Assurance

Each Party will do or procure the doing of all acts and things and execute or procure the execution of all such documents as the other Party reasonably considers necessary to give full effect to the provisions of the Order Contract.

26. Counterparts

The Order Contract may be executed in any number of counterparts or duplicates, each of which shall be an original, and such counterparts or duplicates shall together constitute one and the same agreement.

27. Electronic signature

Where the Parties agree to execute the Order Contract using an electronic signature, the Parties agree and acknowledge that the use of an electronic signature will have the same validity and legal effect as the use of a signature made by hand and is made with the intention of authenticating the Order Contract and evidencing the Parties' intention to be bound by the terms and conditions contained in the Order Contract.

TfL RESTRICTED

Annex 1 to the Order Special Terms

[Form of Parent Company Guarantee, Performance Bond and Legal Opinion]

Attachment A – Form of Parent Company Guarantee

(Letterhead of Parent Company)

To: [*insert name and address of the Buyer*] (the "**Buyer**")

Date:

Dear Sir/Madam

We, [*insert name of Guarantor*] ("**the Guarantor**"), understand that you have agreed to enter into an Order Contract No [*insert Contract number*]("**the Contract**") with [*insert name of Supplier*] ("**the Supplier**") in respect of [*briefly describe nature of Contract*] on the condition that the obligations of the Supplier under the Contract be guaranteed by a Guarantor.

We are [*recite the relationship of the Guarantor to the Supplier*], and we warrant to you that this description of our relationship with/to the Supplier is true and accurate in all material respects.

WE HEREBY AGREE AND UNDERTAKE with you as follows:-

(a) Subject to paragraph (c) below, we unconditionally guarantee on demand:

(i) the proper, complete and punctual performance by the Supplier of any and all its obligations, undertakings and responsibilities under the Contract and we shall forthwith make good any default thereunder on the part of the Supplier; and

(ii) the due and punctual payment by the Supplier of all sums, liabilities, awards, losses, damages, costs, charges and expenses that may be or become due and payable to you under or arising out of the Contract in accordance with its terms or otherwise by reason or in consequence of any such default on the part of the Supplier

when and as the same shall become due for performance or payment (as the case may be).

(b) Subject to paragraph (c) below, as a separate and primary obligation we unconditionally guarantee to you that in the case of default by the Supplier in making any of the payments or in performing any of the obligations, undertakings and responsibilities set out in paragraph (a) above, we shall on demand pay all sums and observe and perform any or all of such obligations, undertakings and responsibilities as if we instead of the Supplier were the primary obligor. Any payment under this Guarantee shall be made by us in pounds sterling or in any currency which may from time to time replace pounds sterling.

(c) Our maximum aggregate financial liability to you arising out of or in connection with this Guarantee shall be limited to £10,000,000 (ten million pounds Sterling), it being acknowledged and agreed that you shall be entitled to make more than one demand under this Guarantee provided that in total those demands do not exceed £10,000,000 (ten million pounds Sterling).

(d) This Guarantee shall be a continuing security and shall remain in full force and effect until all obligations to be performed or observed by the Supplier under or arising out of the Contract have been duly and completely performed and observed and the Supplier shall have ceased to be under any actual or contingent liability to you thereunder.

(e) Any demand or other notice made by you under this Guarantee shall be duly made if sent by first class recorded delivery post to us.

(f) You shall be entitled to enforce this Guarantee without first notifying the Supplier of any default or taking any proceedings or demanding upon, enforcing or exhausting any right or remedy against the Supplier or any other person or taking any action to enforce any other security, bond or guarantee held by you or making or filing any claim in a bankruptcy, liquidation, administration or insolvency of the Supplier or any person.

(g) If any sum due or purportedly due under this Guarantee is not or would not be recoverable under a guarantee for any reason whatsoever, whether or not known to you, such sum shall still be recoverable from us as a sole principal debtor upon the terms of this Guarantee.

PROVIDED THAT:

1. We shall be under no greater obligation or greater liability under this Guarantee than we would have been under the Contract if we had been named as the Supplier in the Contract.

2. Our obligations hereunder are those of primary obligor and shall remain in full force and effect and shall not be terminated, reduced, discharged or otherwise affected by:

   (a) any alteration or variation to the terms of the Contract made by agreement between you and the Supplier (including, without limitation, any increase in the Supplier's obligations under the Contract or any alteration in the extent or nature or sequence or method or timing of the Services to be carried out under the Contract) or any novation of the Contract (in whole or in part); or

   (b) any time being given to the Supplier or any other indulgence, waiver, concession, forbearance or forgiveness to the Supplier (whether express or by conduct) or any other thing done, omitted or neglected to be done under the Contract; or

   (c) any other bond, security or guarantee now or hereafter held by you for all or any part of the obligations of the Supplier under the Contract; or

   (d) the release or waiver of any such bond, security or guarantee referred to in paragraph 2(c) above; or

   (e) any amalgamation, reconstruction or dissolution including, without limitation, winding-up of the Supplier; or

   (f) the winding-up, bankruptcy, administration, receivership or insolvency of the Supplier; or

   (g) any legal limitation, disability or incapacity relating to the Supplier or discharge by operation of law or any change in the constitution, name or style of the Supplier or any other person (whether or not known to you); or

   (h) any total or partial invalidity in, irregularity affecting or unenforceability of any of the obligations of the Supplier under the Contract; or

   (i) the termination or partial termination of the Contract or the cessation of any Services for any reason or the making of any variation to the Services in accordance with the Contract; or

   (j) any claim or enforcement of payment from the Supplier or any other person;

   (k) any act or omission which would not have discharged or affected the liability of a sole principal debtor instead of a guarantor or any act or omission, matter or thing which, but for this provision, might operate to exonerate, discharge, reduce or extinguish our liability under this Guarantee.

3. So long as we remain under any actual or contingent liability under this Guarantee, we shall not exercise any right of subrogation or any other right or remedy which we may have against the Supplier in respect of any payment made by or sum recovered from us

TfL RESTRICTED

pursuant to or in connection with this Guarantee or prove in any liquidation of the Supplier in competition with you for any sums or liabilities owing or incurred to us by the Supplier in respect of any such payment by or recovery from us or take or hold any security from the Supplier in respect of any liability of ours hereunder. We shall hold any monies recovered or security taken or held in breach of this provision in trust for you.

4. Except where prevented from doing so by law, we waive and agree not to enforce or claim the benefit of any and all rights we have or may from time to time have as guarantor under any applicable law which is or may be inconsistent with any of the provision of this Guarantee.

5. This Guarantee is irrevocable.

6. This Guarantee, executed and delivered as a deed, is governed by and shall be construed in accordance with the law of England and Wales. The courts of England shall have exclusive jurisdiction to settle any dispute which may arise out of or in connection with this Guarantee except that you have the right in your absolute discretion to enforce a judgment and/or to take proceedings in any other jurisdiction in which we are incorporated or in which any of our assets may be situated. You and we agree to submit to that jurisdiction.

[For non-UK resident Guarantors only:

7. For the purposes of this Guarantee we hereby appoint ..... of ..... (to be a London address) to accept service of process on our behalf, and service on the said ..... at the said address shall be deemed to be good service on us; and we hereby irrevocably agree not to revoke or terminate such appointment.]

8. You will be entitled to assign the benefit of this Guarantee in whole or in part but we may not assign the benefit and/or delegate the burden of this Guarantee in whole or in part or enter into any transaction which would result in any of those benefits and/or burdens passing to another person.

9. If any provision (in whole or in part) of this Guarantee is found by any court, tribunal, administrative body or authority of competent jurisdiction to be wholly or partly illegal, invalid or unenforceable then that provision shall, to the extent required, be severed from this Guarantee and shall be ineffective, without, so far as is possible, modifying any other provision of this Guarantee and this shall not affect any other provisions of this Guarantee which shall remain in full force and effect.

Executed as a Deed and delivered the day and year written above.

Executed as a Deed by)_____

[Parent Company]) Director

acting by a Director and the)

Secretary or by two Directors) _____

Director/Secretary

OR

The common seal of)_____

TfL RESTRICTED

[Parent Company]) Director

was affixed in the presence of:)

) _____

Director/Secretary

TfL RESTRICTED

Attachment B – Form of Legal Opinion for used with Parent Company Guarantee

To: [*insert name and address of the Buyer*]

Date:

Dear Sir/Madam

I am counsel to ..... and I am giving this legal opinion in connection with the making by ..... of the Guarantee (as defined below) in your favour.

1. I have examined the Deed of Guarantee (the "**Guarantee**") dated ..... made between ..... (the "**Guarantor**") and [*insert name of Buyer*] (the "**Buyer**"). Terms defined in or for the purpose of the Guarantee have the same meanings in this opinion.

2. Having considered the Guarantee and examined any other document, resolution or certificate I deemed necessary to enable me to give the opinion contained herein and having regard to all applicable laws of ..... I am pleased to advise that in my opinion:

   (a) the Guarantor was incorporated in ..... on ..... as a [company with limited liability] and validly exists under the laws of ..... as a separate legal entity possessing the capacity to sue or be sued in its own name. To the best of my knowledge having carried out [DESCRIBE APPLICABLE SEARCHES] today, no steps have been, or are being, taken to appoint a receiver or liquidator (or similar encumbrancer or officer) over, or to wind up, the Guarantor;

   (b) the Guarantor has the necessary power and authority, and all necessary corporate and other action (including, without limitation, approvals and consents of members, stockholders, debenture holders or governmental or other regulatory authorities) has been taken to enable the Guarantor to enter into the Guarantee and to perform the obligations of the Guarantor and the transactions contemplated thereby; and

   (c) the entry into and performance of the Guarantee and the transactions contemplated thereby will not cause:

      (i) any limit on the Guarantor or its directors (whether imposed by the documents constituting the Guarantor, statute, regulation, agreement or otherwise) to be exceeded;

      (ii) any law or order or constitutional document in respect of the Guarantor to be contravened;

      (iii) any default under, or give rise to an obligation to create or impose any security interest of any nature whatsoever pursuant to, any agreement or other instrument or any judgment or other requirement known to us after due enquiry to which the Guarantor is a party or by which it or any of its assets is bound. Further, no event has occurred that, with the giving of notice, lapse of time, determination of materiality or other conditions might constitute a default under or in respect of such agreement, instrument or judgment;

   (d) the Guarantee has been properly signed and delivered on behalf of the Guarantor and the obligations on the part of the Guarantor contained in the Guarantee, assuming them to be valid and binding according to English law by which they are expressed to be governed, are valid, legally binding on and enforceable against the Guarantor under the laws of ..... and in the courts of .....;

TfL RESTRICTED

(e) the signature, delivery and performance of the Guarantee by the Guarantor constitute private and commercial acts by it rather than public or governmental acts;

(f) all authorisations, approvals, consents, licences, exemptions, filings, registrations, notarisations and other requirements of governmental, judicial and public bodies and authorities of or in [COUNTRY] required or advisable in connection with the entry into, performance, validity and enforceability of the Guarantee and the transactions contemplated thereby have been obtained or effected and are in full force and effect;

(g) the obligations of the Guarantor under the Guarantee rank at least equally and rateably (pari passu) in point of priority and security with any and all other unsecured obligations of the Guarantor;

(h) all amounts payable by the Guarantor under the Guarantee may be made free and clear of, and without deduction for, or on account of, any taxes imposed, assessed or levied by [COUNTRY] or any authority of or in [COUNTRY];

(i) there are no registration, stamp or other taxes or duties of any kind payable in ..... in connection with the Guarantor including its signature, performance or enforcement by legal proceedings;

(j) the Buyer will not violate any law or regulation in ..... nor become liable to tax in ..... by reason of entering into the Guarantee or performing its obligations thereunder. It is not necessary to establish a place of business in ..... in order to enforce any provisions of the Guarantee;

(k) the choice of English law to govern the Guarantee will be upheld as a valid choice of law in any action in respect of the Guarantee in the ..... Courts;

(l) the consent to the jurisdiction by the Guarantor contained in the Guarantee is valid and binding on the Guarantor and not subject to revocation;

(m) any judgment obtained in the courts of England against the Guarantor would be recognised and accepted by the ..... courts without re-trial or re-examination of the merits of the case;

(n) neither the Guarantor nor any of its assets enjoys any right or immunity from set-off, suit or execution in respect of its obligations under the Guarantee;

(o) so far as I am aware after due enquiry, no litigation, arbitration or administrative proceedings are at present current, pending or threatened that might, if adversely determined, have a material effect on the business, assets or financial condition of the Guarantor.

3. This legal opinion is confined to matters of [*tbc*] law in force as at the date on which this opinion is given [including any European Union law applicable in [*tbc*]]. I express no opinion on European law as it affects or would be applied in any jurisdiction other than [*tbc*]. I express no opinion on any laws of any jurisdictions other than [*tbc*]. This legal opinion is given on the basis that all matters relating to its enforceability will be governed by, and that it (including all terms used in it) will be construed in accordance with English law and that any question arising from the interpretation of this letter of opinion will be subject to the exclusive jurisdiction of the English courts.

This legal opinion is based solely on an examination of the documents and the enquiries listed in Schedule I (Documents and Enquiries), subject to the assumptions set out in Schedule 2 (Assumptions) and to the qualifications and observations, set out in Schedule 3 (Qualifications). I have assumed that any matters which are or could be material in the context of my delivery of this legal opinion have been disclosed to me.

4. I do not purport to be expert on and do not purport to be generally familiar with or qualified to express legal opinions based on any law other than the laws of ..... and accordingly express no legal opinion herein based upon any law other than the laws of .....

Signed

Schedule 1 (Documents and Enquiries): [tbc to the reasonable satisfaction of the Buyer)]

Schedule 2: (Assumptions): [tbc to the reasonable satisfaction of the Buyer)]

Schedule 3:(Qualifications): [tbc to the reasonable satisfaction of the Buyer)]

TfL RESTRICTED

Attachment C – Form of Performance Bond

(Letterhead of Bank)

To: [*insert name and address of the Buyer*]

Date:

Dear Sir/Madam

IN CONSIDERATION of you entering into Order Contract No [ ] ("**the Contract**") with [*insert name of Supplier*] ("**the Supplier**") in respect of [*insert brief description of scope of contract*] we [*insert name of Bank*] ("**the Bank**") hereby undertake upon first demand in writing made by you upon us from time to time or at any time to pay on each occasion the sum demanded by you on the terms and conditions set out in this letter (**"this Bond"**).

PROVIDED THAT:

1. This Bond shall come into force on the date of this Bond.

2. Any demand under this Bond shall be substantially in the form of either Annex 1 or Annex 3 to this Bond as required by the circumstances in which such demand is made, and as between you and us the facts set out in that demand shall (a) be deemed to be true and (b) shall be accepted by us as conclusive evidence for the purposes of this Bond that the amount claimed in the demand is due to you under this Bond.

3. Any demand in the form of Annex 1 shall be accompanied by a copy of a letter from you sent to the Supplier by first class recorded post 14 or more days before the date of the demand, substantially in the form of Annex 2 of this Bond.

* Delete as appropriate

*** (Option 1 - No reduction in amounts payable under the Bond.)**

4. Our liability under this Bond shall be limited so as not to exceed the aggregate sum of £_____ and we shall have no liability under this Bond in respect of any demand dated after the expiry date of the Contract.

*** (Option 2 - Reducing amounts payable under the Bond.)**

4. Our liability under this Bond shall be limited as follows:-

   (a) in respect of a demand or demands dated before the date of [*e.g. on the completion of a delivery milestone*] under the Contract, our liability shall not exceed in aggregate the sum of £_____ ;
   (b) in respect of a demand or demands dated after the date of _____ [*e.g. completion of a delivery milestone*] under the Contract but before the expiry date of the Contract, our liability shall not exceed an amount equal to the aggregate sum of £_____ less the aggregate of sums already paid by us in respect of demands made pursuant to paragraph 4(a) above; and
   (c) we shall have no liability under this Bond in respect of any demand dated after the expiry date of the Contract.

5. Our obligations under this Bond shall remain in full force and effect and shall not be terminated, reduced, discharged or otherwise affected by:

   (a) any alteration or variation to the terms of the Contract made by agreement between you and the Supplier including, without limitation, any alteration in the extent or nature or sequence or method or timing of the Deliverables to be carried out under the Contract or any novation of the Contract (in whole or in part); or

TfL RESTRICTED

(b) any defence, counterclaim, withholding, set off or other deduction available to the Supplier under the Contract or otherwise; or

(c) any time being given to the Supplier or any other indulgence, waiver, concession, forbearance or forgiveness to the Supplier whether express or by conduct or any other thing done, omitted or neglected to be done under the Contract; or

(d) any other bond, security or guarantee now or subsequently held by you for all or any part of the obligations of the Supplier under the Contract; or

(e) the release or waiver of any such bond, security or guarantee referred to in paragraph 5(d) above; or

(f) any amalgamation, reconstruction or dissolution including, without limitation, winding-up of the Supplier;

(g) the termination of the Contract for any reason; or

(h) any other event which would or might operate to discharge a guarantor or any act or omission, matter or thing which, but for this provision, might operate to exonerate, discharge, reduce or extinguish your liability under this Bond; or

(i) the winding-up, bankruptcy, administration, receivership or insolvency of the Supplier; or

(j) any legal limitation, disability, incapacity, discharge by operation of law, change in the constitution, name or style of the Supplier or any other person relating to the Supplier (whether or not known to you); or

(k) any total or partial invalidity in, irregularity affecting or unenforceability of any of the obligations of the Supplier.

6. Any payment under this Bond shall be made by us in pounds sterling [or in any currency which may from time to time replace pounds sterling].

7. This Bond is irrevocable.

8. Terms defined in the Contract and not otherwise defined in this Bond shall have the same meaning in this Bond.

9. This Bond, executed and delivered as a deed, is governed by and shall be construed in accordance with the law of England and Wales. The courts of England shall have exclusive jurisdiction to settle any dispute which may arise out of or in connection with this Bond except that you have the right in your absolute discretion to enforce a judgment and/or to take proceedings in any other jurisdiction in which we are incorporated or in which any of our assets may be situated. You and we agree to submit to that jurisdiction.

10. You will be entitled to assign the benefit of this Bond in whole or in part but we may not assign the benefit and/or delegate the burden of this Bond in whole or in part or enter into any transaction which would result in any of those benefits and/or burdens passing to another person.

11. If any provision (in whole or in part) of this Bond is found by any court, tribunal, administrative body or authority of competent jurisdiction to be wholly or partly illegal, invalid or unenforceable then that provision shall, to the extent required, be severed from this Bond and shall be ineffective, without, so far as is possible, modifying any other provision of this Bond and this shall not affect any other provisions of this Bond which shall remain in full force and effect.

12. Any demand or other notice made by you under this Bond shall be duly made if sent by first class recorded delivery post to us.

[For non-UK resident banks with only a branch or office in the UK :

10. For the purposes of this Bond we hereby appoint ..... of ..... [*to be a London address*] to accept service of process on our behalf, and service on the said ..... at the said address shall be deemed to be good service on us and we hereby irrevocably agree not to revoke or terminate such appointment.]

Executed as a Deed and delivered the day and year written above.

Executed as a Deed by	)	_____
[*Bank*]	)	Director
acting by a Director and the	)	
Secretary or by two Directors	)	_____
		Director/Secretary

The common seal of [*Bank*]	)	_____
was affixed to this Deed in	)	Director
the presence of	)	
	)	_____
		Director/Secretary

TfL RESTRICTED

Annex 1 to Performance Bond

Form of Demand from the Buyer to [the bank]

Dear Sirs

Order Contract No [ ] (the "Contract") in respect of services for [ ]

We refer to the Bond given by you to us dated [ ]. We enclose a copy of a letter from us to [*insert name of Supplier*] ("**the Supplier**") which was sent to the Supplier by first class recorded post on [ ] which is more than 14 days before the date of this demand.

The Supplier has not taken steps which we consider adequate to remedy the breaches.

* Delete as appropriate

*** (Option 1 -** No reduction in amounts payable under the bond.)

The expiry date under the Contract has not been reached.

*** (Option 2** - Reducing amounts payable under the bond.)

[*e.g. a delivery milestone*] has/has not been achieved and the expiry date under the Contract has not been reached.

We hereby demand from you the sum of £[ ] under your Bond. Please make payment by your cheque in sterling payable to [*insert name of Buyer*].

Yours faithfully

On behalf of [*insert name of Buyer*]

TfL RESTRICTED

Annex 2 to Performance Bond

Form of letter from the Buyer to the Supplier

To be sent by first class Recorded Delivery post

Dear Sirs

Order Contract No [ ] in respect of services for [ ]

As explained in [previous letters to you/our letter dated ..... to you] you are in breach of your obligations under Order Contract No. [ ], and you have neither remedied nor implemented sufficient steps to remedy, those breaches.

This letter therefore notifies you that unless within 14 days from the date of this letter you take steps which we consider adequate to remedy the breaches we shall be entitled without further notice to you to call for payment under the Bond given on your behalf by [*name of bank*] dated [DATE].

Yours faithfully

On behalf of [*insert name of Buyer*]

TfL RESTRICTED

Annex 3 to Performance Bond

Alternative form of demand from the Buyer to [the bank]

Dear Sirs

Order Contract No [ ] (the "Contract") in respect of services for [ ]

We refer to the Bond given by you to us dated [ ].

* Delete as appropriate

*** (Option 1** - No reduction in amounts payable under the Bond.)

An event has occurred of a type described in in Clause 10.4.1 of the DPS Core Terms (or which is otherwise provided in the Order Contract as being an event to which Clause 10.4.1 of the DPS Core Terms applies) which entitles us (inter alia) to terminate the Contract in accordance with that Clause.

The expiry date under the Contract has not been reached.

*** (Option 2** - Reducing amounts payable under the Bond.)

An event has occurred of the type described in Clause 10.4.1 of the DPS Core Terms (or which is otherwise provided in the Order Contract as being an event to which Clause 10.4.1 of the DPS Core Terms applies) which entitles us (inter alia) to terminate the Contract in accordance with that clause.

[*e.g. a delivery milestone*] has/has not been achieved and the expiry date under the Contract has not been reached.

We hereby demand payment from you of the sum of £[ ] under your Bond. Please make payment by your cheque in sterling payable to [*insert name of Buyer*].

Yours faithfully

On behalf of [*insert name of Buyer*]

TfL RESTRICTED

Annex 2 to the Order Special Terms

Form of Subcontractor Warranty Agreement

THIS AGREEMENT made the day of 20

BETWEEN

1. [*The Buyer – company details to be inserted*](the "**Buyer**"); and

2. [ ] a company registered in England and Wales under number [ ] and having its registered office at [ ] (the "**Subcontractor**").

WHEREAS

(1) The Buyer has entered into an Order Contract dated [ ] day of [ ] 20[ ] ("**the Contract**") with [ ] (the "**Supplier**") for the [insert description of Services] (the "**Services**"); and

(2) By an agreement dated [ ] day of [ ] 20[ ] (the "**Subcontract**") the Supplier appointed the Subcontractor to [insert description of Services] (the "**Subcontract Services**").

IN CONSIDERATION of the payment of £5 (five pounds Sterling) by the Buyer to the Subcontractor (receipt of which the Subcontractor acknowledges), it is agreed that:

1. Without prejudice to any other warranties expressed in the Subcontract or implied by law, the Subcontractor warrants and undertakes to the Buyer that:

1.1 it shall provide the Subcontract Services in a good and workmanlike manner in accordance with the Contract;

1.2 the Subcontract Services:

1.2.1 shall be carried out with the high degree of skill, care and diligence normally exercised by recognised professional firms or by highly skilled and experienced service Suppliers providing services of a similar scope, type, and complexity to the Subcontract Services;

1.2.2 shall be provided using materials and goods which are of sound and satisfactory design and quality and in accordance with the standards referred to in the Contract;

1.2.3 shall be provided in a safe manner and free from any unreasonable or avoidable risk to the health and well-being of persons using, operating or subsequently maintaining any equipment or using any premises referred to in the Contract, or of any other person, and in a safe, economic and efficient manner and free from any unreasonable or avoidable risk of pollution, nuisance, interference or hazard;

1.2.4 shall be provided in accordance with the best industry principles and practices in the activity concerned and in accordance with the standards referred to in the Contract;

1.3 shall comply with all the requirements of any Act of Parliament, Statutory Instrument or Order or any other regulation having the force of law or bye-law and all regulatory requirements relevant to the Subcontractor's business and/or the Buyer's business from time to time in force which are or may become applicable to the Subcontract Services;

1.4 all materials and/or goods supplied under the Subcontract and any equipment (or any part thereof) designed or replaced by the Subcontractor shall be new and shall in all respects be fit for the purposes for which such is intended (awareness of which purposes the Subcontractor acknowledges) and in particular but without limitation will be capable of operation as part of any system referred to in the Contract or Subcontract and be so fit at least for the Contract period and will have a rate of deterioration no more than is reasonably to be expected of high quality, reliable, well designed and engineered, materials and goods;

TfL RESTRICTED

1.5 it has complied and shall continue to comply with the terms of, and shall regularly and diligently carry out, its obligations under the Subcontract;

1.6 it shall procure that any subcontractor engaged by it who undertakes any part of the Subcontract Services shall enter into warranties in favour of the Buyer in terms identical (save as to the parties) to those set out in this Agreement, insofar as the terms contained in this Agreement are relevant to the scope of such subcontractor responsibility; and

1.7 the obligations contained in this Agreement shall apply to the Subcontractor's agents, employees and suppliers, provided that the Subcontractor shall have no greater liability to the Buyer hereunder than it would have had if the Buyer were the Supplier.

2. Each warranty referred to in Clause 1 shall be construed as a separate warranty and shall not be limited or restricted by reference to, or reference from, the terms of any other warranty or any term of the Subcontract.

3. In addition and without prejudice to the warranties given in Clause 1 above, the Subcontractor hereby grants to the Buyer the same warranties as contained in the Contract.

4. The Subcontractor shall (at its own expense) upon request by the Buyer prove to the Buyer's reasonable satisfaction that the goods, materials and workmanship comply with the standards required by the Contract.

5. The Subcontractor shall, save insofar as it is delayed by any event in respect of which the Supplier is granted an extension of time under the Contract for completion of the Services:

5.1 execute, complete and maintain the Subcontract Services in accordance with the provisions of the Subcontract; and

5.2 ensure that the Supplier shall not become entitled to any extension of time for completion of the Services or to claim an additional payment under the Contract due to any failure or delay by the Subcontractor.

6. The Subcontractor shall from time to time supply the Buyer and the Supplier with such information as either may reasonably require.

7. Where the copyright in any drawings, designs, specifications, calculations, sketches and other documents ("**copyright material**") prepared by the Subcontractor in connection with the Subcontract Services is the property of the Subcontractor, the Subcontractor hereby grants to the Buyer a world-wide, perpetual, royalty-free, non-exclusive and irrevocable licence to copy and use such copyright material for any purposes related to the project including but not limited to the completion, modification, extension, maintenance and reinstatement of the Subcontract Services, as well as operating, maintaining, modifying, repairing, configuring, replacing, correcting, extending, interfacing with, integrating with, connecting into and adjusting any equipment provided under the Contract and/or continuing any element of the Subcontract Services and the Buyer shall be entitled to assign such rights to any nominee or successor and sub-license such rights to any third party.

8. The parties hereby agree that:

8.1 This Agreement shall be personal to the Subcontractor who shall not be entitled to assign or subcontract any part of the Subcontract or this Agreement without the prior written consent of the Buyer;

8.2 The Buyer may assign the benefit of this Agreement to any third party;

8.3 The rights and remedies contained in this Agreement are cumulative and shall not exclude any other right or remedy available to either party in law or equity.

9. Nothing in the Subcontractor's tender or any specification, drawing, programme or other document put forward by or on behalf of the Subcontractor and no approval, consent, comment, acknowledgement, confirmation or advice at any time given by or on behalf or

TfL RESTRICTED

any person shall operate to exclude or limit the Subcontractor's liability for any breach of its obligations hereunder.

10. Any provisions relating to dispute resolution which are set out in the Agreement shall be deemed to apply to this Agreement as if they were set out herein (mutatis mutandis).

11. If any dispute of any kind whatsoever (the "**Dispute**") arises between the parties in connection with this Agreement or the Subcontract Services which raises issues which are in the opinion of the Buyer the same as or substantially the same as issues raised in a related dispute (the "**Related Dispute**") between the Buyer and the Supplier and such Related Dispute has already been referred to a mediator appointed under provisions to that effect contained in the Contract, then the Subcontractor hereby agrees that the Buyer may, at its discretion, by giving notice in writing to the Subcontractor, refer the Dispute to the mediator appointed to determine the Related Dispute. In this event such conciliator shall have power to give such directions for the determination of the Dispute and the Related Dispute as he/she may think fit and to make such awards as may be necessary in the same way as if the procedure of the High Court as to joining one or more defendants or joint co-defendants or third parties was available to the parties and to him/her.

12. Both the Buyer and the Subcontractor acknowledge that in entering into this Agreement they are not relying upon any representation, warranty, or assurance made or given by the other party or any other person, whether or not in writing at any time prior to the execution of the Contract which is not expressly set out herein provided that nothing in this Clause 12 excludes any liability which one party would otherwise have in respect of any statement it has made fraudulently to the other party.

13. Any notice to be given to either party hereunder shall be deemed to be duly given if it is delivered by hand or sent by registered post or recorded delivery:

13.1 in the case of the Buyer to the Buyer's address for notices as set out in the Contract; and

13.2 in the case of the Subcontractor to: [ ]

and any such notices shall be deemed to be received 2 working days after being posted, if sent by registered post or recorded delivery, or immediately, if delivered by hand.

14. It is agreed that nothing in this Agreement shall negate or diminish any duty or obligation owed to the Buyer by the Subcontractor.

15. This Agreement shall be governed by and construed according to laws of England and Wales and the parties hereby submit to the exclusive jurisdiction of the English Courts.

16. Subject to Clause 16.1 below, any person who is not a party to this Agreement shall not have any benefit from or any rights under this Agreement pursuant to the Contracts (Rights of Third Parties) Act 1999, or otherwise.

16.1 The Contracts (Rights of Third Parties) Act 1999 shall apply to the Contract to the effect that any member of the Buyer (as such term is defined in the Contract) shall have the right to enforce any provision contained in the Contract against the Subcontractor to the extent that such provision confers a benefit or purports to confer a benefit on that member of the Buyer (as such term is defined in the Contract).

16.2 Notwithstanding Clause 16.1 above, the Parties are entitled to waive time, vary any term of the Agreement or rescind the Agreement (if applicable) without the consent of any or all members of the Buyer (as such term is defined in the Agreement).

TfL RESTRICTED

Annex 3 to the Order Special Terms

Timber Standards

Timber Standards Appendix

Aim of KPI:

Implement the GLA Sustainable Timber Policy
Implement TfL environmental objective: Reduce resource consumption and improve green procurement

Reporting period	
Date	
Completed by	
Title	

Desired Outcome	Service Performance Indicator	Quantity (KG)	Value (£)	% of good represented	Reporting Frequency	objective	2007	2008	2009	2010	2011
Reduce resource consumption and improve green procurement (TfL Env' KPI)	Timber complies with Sustainable Timber definition and obligations as per Order Contract.				Quarterly, with Annual report.	**Increase/maintain % of sustainable timber supplied**					
Reduce resource consumption and improve green procurement (TfL Env' KPI)	Timber does NOT comply with Sustainable Timber definition and obligations as per Order Contract				Quarterly, with Annual report.	**Reduce amount of Non Sustainable Timber procured.**					

TfL RESTRICTED

Annex 4 to the Order Special Terms

The ETI Base Code

1.1 **EMPLOYMENT IS FREELY CHOSEN**

1.1.1 There is no forced, bonded or involuntary prison labour.

1.1.2 Workers are not required to lodge "deposits" or their identity papers with their employer and are free to leave their employer after reasonable notice.

1.2 **FREEDOM OF ASSOCIATION AND THE RIGHT TO COLLECTIVE BARGAINING ARE RESPECTED**

1.2.1 Workers, without distinction, have the right to join or form trade unions of their own choosing and to bargain collectively.

1.2.2 The employer adopts an open attitude towards the activities of trade unions and their organisational activities.

1.2.3 Workers representatives are not discriminated against and have access to carry out their representative functions in the workplace.

1.2.4 Where the right to freedom of association and collective bargaining is restricted under law, the employer facilitates, and does not hinder, the development of parallel means for independent and free association and bargaining.

1.3 **WORKING CONDITIONS ARE SAFE AND HYGIENIC**

1.3.1 A safe and hygienic working environment shall be provided, bearing in mind the prevailing knowledge of the industry and of any specific hazards. Adequate steps shall be taken to prevent accidents and injury to health arising out of, associated with, or occurring in the course of work, by minimising, so far as is reasonably practicable, the causes of hazards inherent in the working environment.

1.3.2 Workers shall receive regular and recorded health and safety training, and such training shall be repeated for new or reassigned workers.

1.3.3 Access to clean toilet facilities and to potable water, and, if appropriate, sanitary facilities for food storage shall be provided.

1.3.4 Accommodation, where provided, shall be clean, safe, and meet the basic needs of the workers.

1.3.5 The company observing the code shall assign responsibility for health and safety to a senior management representative.

1.4 **CHILD LABOUR SHALL NOT BE USED**

1.4.1 There shall be no new recruitment of child labour.

1.4.2 Companies shall develop or participate in and contribute to policies and programmes which provide for the transition of any child found to be performing child labour to enable her or him to attend and remain in quality education until no longer a child.

1.4.3 Children and young persons under 18 shall not be employed at night or in hazardous conditions.

1.4.4 These policies and procedures shall conform to the provisions of the relevant ILO standards.

1.5 **LIVING WAGES ARE PAID**

TfL RESTRICTED

1.5.1 Wages and benefits paid for a standard working week meet, at a minimum, national legal standards or industry benchmark standards, whichever is higher. In any event wages should always be enough to meet basic needs and to provide some discretionary income.

1.5.2 All workers shall be provided with written and understandable information about their employment conditions in respect to wages before they enter employment and about the particulars of their wages for the pay period concerned each time that they are paid.

1.5.3 Deductions from wages as a disciplinary measure shall not be permitted nor shall any deductions from wages not provided for by national law be permitted without the expressed permission of the worker concerned. All disciplinary measures should be recorded.

1.6 **WORKING HOURS ARE NOT EXCESSIVE**

1.6.1 Working hours comply with at least UK national laws and benchmark industry standards, whichever affords greater protection.

1.6.2 In any event, workers shall not on a regular basis be required to work in excess of 48 hours per week and shall be provided with at least one day off for every 7 day period on average. Overtime shall be voluntary, shall not exceed 12 hours per week, shall not be demanded on a regular basis and shall always be compensated at a premium rate.

1.7 **NO DISCRIMINATION IS PRACTICED**

1.7.1 There is no discrimination in hiring, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.

1.8 **REGULAR EMPLOYMENT IS PROVIDED**

1.8.1 To every extent possible, work performed must be on the basis of recognised employment relationship established through national law and practice.

1.8.2 Obligations to employees under labour or social security laws and regulations arising from the regular employment relationship shall not be avoided through the use of labour-only contracting, subcontracting, or home-working arrangements, or through apprenticeship schemes where there is no real intent to impart skills or provide regular employment, nor shall any such obligations be avoided through the excessive use of fixed-term contracts of employment.

1.9 **NO HARSH OR INHUMANE TREATMENT IS ALLOWED**

1.9.1 Physical abuse or discipline, the threat of physical abuse, sexual or other harassment and verbal abuse or other forms of intimidation shall be prohibited.

1.10 **NOTE ON THE PROVISIONS OF THE ETI BASE CODE**

1.10.1 The provisions of the ETI Base Code constitute minimum and not maximum standards, and this code should not be used to prevent companies from exceeding these standards. Companies applying this ETI Base Code are expected to comply with national and other applicable law and, where the provisions of law and this ETI Base Code address the same subject, to apply that provision which affords the greater protection.

1.11 **DEFINITIONS**

1.11.1 In this **Annex 4**:

"Child" shall mean any person less than 15 years of age unless local minimum age law stipulates a higher age for work or mandatory schooling, in which case the higher age shall apply. If however, local minimum age law is set at 14 years of age in accordance with developing country exceptions under ILO Convention No. 11, the lower will apply;

TfL RESTRICTED

"Child labour" shall mean any work by a child or young person younger than the age(s) specified in the above definitions, which does not comply with the provisions of the relevant ILO standards, and any work that is likely to be hazardous or to interfere with the child's or young person's education, or to be harmful to the child's or young person's health or physical, mental, spiritual, moral or social development.

"ILO" means the "International Labour Organization"; and

"Young person" shall mean any worker over the age of a child as defined above and under the age of 18.

TfL RESTRICTED

Annex 5 to the Order Special Terms

Calculation and payment of the Turnover Charge

1. **Defined terms**

1.1 In this Annex:

1.1.1 "**Gross Turnover**" means, in relation to a Site (the "**Relevant Site**"), the total of all moneys or other consideration received or receivable by the Supplier or any other person for all goods and services sold or performed by the Supplier or on the Supplier's behalf from the Relevant Site calculated in accordance with this Annex, it being acknowledged and agreed that where any moneys or other consideration are received or receivable in part in relation to goods and services sold or performed by the Supplier (or on the Supplier's behalf) from the Relevant Site and in part in relation to other activities of the Supplier which are not connected with the Relevant Site (including, for example, income deriving from any Customer subscription charging schemes operated by the Supplier across multiple sites within its portfolio of charge point locations) (the "**Intermingled Turnover**"):

1.1.1.1 a reasonable proportion of such Intermingled Turnover (having regard to all the circumstances, including the respective size and nature of the relevant Site) (the "**Reasonable Proportion**") shall be included in the Gross Turnover for such Relevant Site; and

1.1.1.2 the Supplier shall provide such information as the Buyer may reasonably require to evidence the total amount of the Intermingled Turnover received by the Buyer and the basis on which the applicable Reasonable Proportion has been calculated by the Supplier;

1.1.2 "**Turnover Certificate**" means the certificate to be produced by the Supplier under paragraph 2.3 of this Annex;

1.1.3 "**Turnover Charge**" means an amount equal to the Gross Turnover for a Turnover Period multiplied by the Turnover Percentage;

1.1.4 "**Turnover Charge Advance Payment Dates**" means:

1.1.4.1 31 March;

1.1.4.2 30 June;

1.1.4.3 30 September; and

1.1.4.4 31 December;

and references to "**Turnover Charge Advance Payment Date**" shall be construed accordingly;

1.1.5 "**Turnover Percentage**" means the percentage amount specified in the Order Form to which the Relevant Site relates;

1.1.6 "**Turnover Period**" means:

1.1.6.1 first, the annual period starting on the Start Date of the Order Contract to which the Relevant Site relates;

1.1.6.2 then, each subsequent annual period falling wholly within the Order Contract Period of the Order Contract to which the Relevant Site relates; and

TfL RESTRICTED

1.1.6.3 finally, the annual or shorter period ending on the last day of the Order Contract Period of the Order Contract to which the Relevant Site relates; and

1.1.7 "**Turnover Records**" means all accounts, bank statements, tax records and other written or computer records or documents maintained or which ought to be maintained for the purpose of recording and verifying the Gross Turnover.

1.2 The following are to be included in the Gross Turnover:

1.2.1 all moneys received or receivable from any sales which are received, made at or fulfilled from the Relevant Site; and

1.2.2 all bonuses, commissions, payments or discounts received or receivable from third parties relating to any activity, transactions or services concluded at or from the Relevant Site.

1.3 Sums received or receivable in respect of VAT will not be included in the Gross Turnover.

1.4 For the purposes of calculating the Gross Turnover:

1.4.1 no deduction is to be made for bad or doubtful debts or for discounts or commissions payable to the supplier of credit; and

1.4.2 moneys are to be treated as being received or receivable by the Supplier notwithstanding that payment is made or is payable in whole or in part to any other person.

2. **Turnover Records**

2.1 The Supplier must maintain Turnover Records at a place where the Buyer can reasonably inspect them. The Supplier must allow the Buyer and its accountants and other authorised agents to have access to and inspect the Turnover Records.

2.2 The Supplier acknowledges that it owes the Buyer a duty of the utmost good faith to maintain full and accurate Turnover Records to enable the Buyer properly and accurately to determine the Gross Turnover.

2.3 Within thirty (30) days after the end of each Turnover Period, the Supplier must deliver a Turnover Certificate to the Buyer signed by a professionally qualified independent accountant from a reputable firm of chartered accountants certifying the amount of the Gross Turnover during that Turnover Period.

2.4 Without limiting any other rights the Buyer may have:

2.4.1 any inaccurate maintenance of Turnover Records by the Supplier; or

2.4.2 the provision of an inaccurate Turnover Certificate by the Supplier,

which the Buyer (acting reasonably) considers to be deliberate shall be regarded as a material Default (as defined in Joint Schedule 1 (*Definitions*)) of the Order Contract not capable of remedy for the purpose of clause 10.4 of the DPS Core Terms (unless the Buyer in its sole discretion elects to permit the Supplier to remedy the same).

3. **Calculation and payment of Turnover Charge**

3.1 Upon receipt of a Turnover Certificate, the Buyer will calculate the Turnover Charge payable for the relevant Turnover Period and serve a written demand on the Supplier for the relevant Turnover Charge. In calculating the Turnover Charge payable:

3.1.1 the Buyer will take into account any sums paid by the Supplier under paragraph 3.4; and

TfL RESTRICTED

3.1.2 if any sums paid by the Supplier under paragraph 3.4 exceed the Turnover Charge for the relevant Turnover Period, the excess is to be credited by the Buyer against the next payment of Turnover Charge due from the Supplier under paragraph 3.4.

3.2 The Supplier must pay the Buyer the amount of Turnover Charge demanded by the Buyer within thirty (30) calendar days after the service of the demand. If the Supplier does not do so, the Supplier will be liable to pay the Buyer interest in accordance with paragraph 5.4 of the Order Special Terms calculated from the date the Buyer demanded the Turnover Charge.

3.3 If the Supplier does not deliver a Turnover Certificate within the period required by paragraph **2.3**:

3.3.1 the Buyer's agent, acting as an expert, will make a reasonable estimate of the Turnover Charge that the Supplier should have paid for the relevant Turnover Period;

3.3.2 the Supplier must pay to the Buyer on demand an amount equal to that reasonable estimate together with interest in accordance with paragraph 5.4 of the Order Special Terms on the amount demanded calculated for the period starting on the date by which the Supplier should have provided the Turnover Certificate under paragraph 2.3 and ending on the date on which the Supplier pays the Buyer the amount demanded; and

3.3.3 any overpayment of Turnover Charge that results from this is to be credited by the Buyer against the next payment of Turnover Charge due from the Supplier. The Supplier will not be entitled to any credit in respect of interest paid by the Supplier under this paragraph 3.3.

3.4 If the Buyer requests the Supplier to do so, after the first Turnover Period the Supplier must pay to the Buyer in advance on each Turnover Charge Advance Payment Date on account of the Supplier's liability for Turnover Charge an amount equal to one quarter of the Turnover Charge for the previous Turnover Period.

TfL RESTRICTED

Annex 6 to the Order Special Terms

Quarterly SLNT Monitoring Report Template

SLNT Reporting Table

Organisation	
TfL Contract / Project	
Date	
SLNT Reporiting Period (Quarter)	

SLNT Activity Area	Priority Output	Outputs this Period	Total Outputs to date	Cross Check		Additional Detail / Information
				SLNT Value	SLNT Totals	
Apprentices *(monitoring data to be provided on Sheet 3)*						
New Entrant - Level 2-3 (FTE)	Y			1	0	
New Entrant - Level 4+ (FTE)	Y			1.5	0	
Social Mobility - Level 2-3 (FTE)	Y			1	0	
Social Mobility - Level 4+ (FTE)	Y			1.5	0	
Exisiting Employee - Level 2-3 (FTE)	Y			1	0	
Exisiting Employee - Level 4+ (FTE)	Y			1.5	0	
Apprenticeship Success *(monitoring data to be provided on Sheet 2)*						
Completion (FTE)				1	0	
Job Creation *(monitoring data for placements to be provided on Sheet 2)*						
Social Mobility (FTE)				1	0	
Job Creation *(monitoring data to be provided on Sheet 2)*						
Targeted Placement Position (Days)				10	0	
Placement Positions (Days)				20	0	
Educational Engagement (Days)				20	0	
			Total SLNT Activity		**0**	
			Priority Activities		**0**	

TfL RESTRICTED

Annex 7 to the Order Special Terms

Reporting Periods

Financial Year	Start of Reporting Period 1	Start of Reporting Period 2	Start of Reporting Period 3	Start of Reporting Period 4	Start of Reporting Period 5	Start of Reporting Period 6	Start of Reporting Period 7	Start of Reporting Period 8	Start of Reporting Period 9	Start of Reporting Period 10	Start of Reporting Period 11	Start of Reporting Period 12	Start of Reporting Period 13	End of Reporting Period 13
2024-25	01/04/2024	28/04/2024	26/05/2024	23/06/2024	21/07/2024	18/08/2024	15/09/2024	13/10/2024	10/11/2024	08/12/2024	05/01/2025	02/02/2025	02/03/2025	31/03/2025
2025-26	01/04/2025	27/04/2025	25/05/2025	22/06/2025	20/07/2025	17/08/2025	14/09/2025	12/10/2025	09/11/2025	07/12/2025	04/01/2026	01/02/2026	01/03/2026	31/03/2026
2026-27	01/04/2026	03/05/2026	31/05/2026	28/06/2026	26/07/2026	23/08/2026	20/09/2026	18/10/2026	15/11/2026	13/12/2026	10/01/2027	07/02/2027	07/03/2027	31/03/2027
2027-28	01/04/2027	02/05/2027	30/05/2027	27/06/2027	25/07/2027	22/08/2027	19/09/2027	17/10/2027	14/11/2027	12/12/2027	09/01/2028	06/02/2028	05/03/2028	31/03/2028
2028-29	01/04/2028	30/04/2028	28/05/2028	25/06/2028	23/07/2028	20/08/2028	17/09/2028	15/10/2028	12/11/2028	10/12/2028	07/01/2029	04/02/2029	04/03/2029	31/03/2029
2029-30	01/04/2029	29/04/2029	27/05/2029	24/06/2029	22/07/2029	19/08/2029	16/09/2029	14/10/2029	11/11/2029	09/12/2029	06/01/2030	03/02/2030	03/03/2030	31/03/2030
2030-31	01/04/2030	28/04/2030	26/05/2030	23/06/2030	21/07/2030	18/08/2030	15/09/2030	13/10/2030	10/11/2030	08/12/2030	05/01/2031	02/02/2031	02/03/2031	31/03/2031
2031-32	01/04/2031	27/04/2031	25/05/2031	22/06/2031	20/07/2031	17/08/2031	14/09/2031	12/10/2031	09/11/2031	07/12/2031	04/01/2032	01/02/2032	29/02/2032	31/03/2032
2032-33	01/04/2032	02/05/2032	30/05/2032	27/06/2032	25/07/2032	22/08/2032	19/09/2032	17/10/2032	14/11/2032	12/12/2032	09/01/2033	06/02/2033	06/03/2033	31/03/2033
2033-34	01/04/2033	01/05/2033	29/05/2033	26/06/2033	24/07/2033	21/08/2033	18/09/2033	16/10/2033	13/11/2033	11/12/2033	08/01/2034	05/02/2034	05/03/2034	31/03/2034
2034-35	01/04/2034	30/04/2034	28/05/2034	25/06/2034	23/07/2034	20/08/2034	17/09/2034	15/10/2034	12/11/2034	10/12/2034	07/01/2035	04/02/2035	04/03/2035	31/03/2035

TfL RESTRICTED

Annex 8 to the Order Special Terms

Service Levels

1A. **Definitions**

In this Annex:

(a) "**Acceptable Service Level**" has the meaning given to it in paragraph 1.10(d);

(b) "**Contact Centre**" means a customer service function operated by the Supplier to enable Customers to register queries and/or complaints with the Supplier in connection with the provision of the Deliverables by the Supplier;

(c) "**Incident**" has the meaning given to it in paragraph PI 2.1;

(d) "**End Point**" has the meaning given to it in paragraph 1.10(c);

(e) "**Management Information Data**" means data which shows the pattern and extent of usage of the Charge Points operated under the Order Contract, including as a minimum the categories of data set out at in Section 12 of the Order Specification;

(f) "**Performance Indicator Table**" has the meaning given to it in paragraph 1.10;

(g) "**PIs**" has the meaning given to it in paragraph 1.10 (and reference to a "**PI**" shall be construed accordingly);

(h) "**Service Levels**" means the minimum service levels for the Deliverables as set out in this Annex;

(i) "**SL Rectification Plan**" has the meaning given to it in paragraph 2.1;

(j) "**SLRP Implementation Timeframe**" has the meaning given to it in paragraph 2.1(ii);

(k) "**SLRP Improvements**" has the meaning given to it in paragraph 2.1(i); and

(l) "**Start Point**" has the meaning given to it in paragraph 1.10(b).

1. **Service Level Monitoring**

1.1 This Annex sets out the Service Levels required for:

(a) operation and maintenance of Charge Point infrastructure; and

(b) Customer support and the processes to facilitate the monitoring of these Service Levels.

1.2 The Supplier shall implement systems to monitor the performance of its service to ensure that its Charge Points and Customer support functions adhere to the requirements of the Order Contract.

1.3 The Supplier's performance in meeting the Service Levels in respect of each PI shall be reported, monitored and assessed each Reporting Period in accordance with the Order Specification.

1.4 In addition to providing the Management Information Data each Reporting Period in accordance with the Order Specification, the Supplier shall measure and provide such data as is reasonably required by the Buyer for the purposes of monitoring the Supplier's performance in meeting the Service Levels below in accordance with the Order Specification.

TfL RESTRICTED

1.5 The Supplier shall be responsible for ensuring that all Management Information Data is accurately prepared, using up to date and accurate data.

1.6 In complying with its obligations under Section 6.4 of the Order Specification, the Supplier shall:

(a) make available Management Information Data to the Buyer via a dedicated SharePoint site provided by the Buyer **on condition that**:

(i) the Supplier shall ensure that the Management Information Data provided via the SharePoint site is an accurate reflection of the data held by the Supplier; and

(ii) where the SharePoint site is unavailable for any reason, the Supplier shall provide the required Management Information Data via electronic transfer and in so doing shall ensure that all such Management Information Data is compatible with the Buyer's software and is an accurate reflection of the data held by the Supplier; and

(b) at the Buyer's request, transfer electronically such Management Information Data (or reports in relation to the same) as the Buyer may specify and shall at all times ensure that all such Management Information Data, or reports in relation to the same, are compatible with the Buyer's software and are an accurate reflection of the data held by the Supplier.

1.7 The Supplier shall ensure that the production and analysis of the Management Information Data does not affect the performance of any other element of the Deliverables provided by the Supplier.

1.8 If the Buyer or the Supplier identify any errors, omissions or discrepancies in the Management Information Data, without prejudice to any other rights and remedies of the Buyer, the Supplier shall:

(a) promptly correct such errors, omissions or discrepancies; and

(b) republish the Management Information Data within five (5) Business Days of such errors, omissions or discrepancies being identified, or such other period as the Parties may agree.

1.9 Where the Supplier believes there are mitigating circumstances for any inaccurate and/or unavailable Management Information Data (as referred to in paragraph 1.8), the Supplier may present to the Buyer:

(a) reasons why such data is inaccurate and/or unavailable;

(b) details of when the data will be accurate and/or available;

(c) what actions shall be taken to ensure it shall be accurate and/or available in future; and

(d) provide reasonable evidence that the relevant Service Levels were not adversely affected during the period of time in which the relevant data was inaccurate and/or unavailable.

It is then at the Buyer's discretion as to whether these mitigating circumstances are accepted and that data can be temporarily removed from the Management Information Data for the relevant Reporting Period.

1.10 The table in Attachment A (Performance Indicator Table) to this Annex sets out the Performance Indicators ("**PIs**") and the Service Levels for the Services (the "**Performance**

TfL RESTRICTED

Indicator Table"). The Performance Indicator Table sets out the following details in respect of the PIs:

(a) the 'Performance Indicator Title' column in the Performance Indicator Table gives the name of the PI on which the performance of the Supplier shall be measured;

(b) the 'Start Point' column in the Performance Indicator Table details the time from when the PI shall start to be measured (the "**Start Point**");

(c) the 'End Point' column in the Performance Indicator Table details the time at which the relevant PI ceases to be measured (the "**End Point**"); and

(d) the 'Acceptable Service Level' column in the Performance Indicator Table specifies the minimum Service Level that is expected of the Supplier (each an "**Acceptable Service Level**").

2. **Service Failures**

2.1 If the Supplier fails to meet the Acceptable Service Level in respect of (as the case may be):

(a) a specific Service Level in each of three (3) consecutive Reporting Periods;

(b) different Service Levels in each of six (6) consecutive Reporting Periods; or

(c) any of the Service Levels in seven (7) of thirteen (13) consecutive Reporting Periods,

then the Supplier shall, without limiting the Buyer's other rights, provide a rectification plan (an "**SL Rectification Plan**"), which must set out:

(i) specific performance improvements (the "**SLRP Improvements**") to be delivered by the Supplier;

(ii) an associated timeframe for such SLRP Improvements to be achieved (an "**SLRP Implementation Timeframe**"); and

(iii) relevant remedial actions to be taken by the Supplier in order to achieve the SLRP Improvements within the SLRP Implementation Timeframe.

The Supplier shall provide such SL Rectification Plan within five (5) Working Days (or such other longer period as the Buyer may, at its discretion, agree).

2.2 Following provision of an SL Rectification Plan in accordance with paragraph 2.1, if the Buyer:

(a) accepts the Supplier's proposed SL Rectification Plan, then (without limiting the Buyer's other rights) the Supplier shall immediately commence implementation of such SL Rectification Plan in accordance with paragraph 2.4;

(b) (giving reasonable grounds for its decision) rejects the Supplier's proposed SL Rectification Plan, then paragraph 2.5(b) shall apply; or

(c) requests amendments to be made to the Supplier's proposed SL Rectification Plan, then the Supplier shall amend the SL Rectification Plan to reflect such amendments and shall re-submit the revised SL Rectification Plan to the Buyer within five (5) Working Days of the Buyer's request (and in such circumstances paragraph 2.3 shall apply).

2.3 If the Buyer:

TfL RESTRICTED

(a) accepts a revised SL Rectification Plan submitted to it pursuant to paragraph 2.2(c), then (without limiting the Buyer's other rights) the Supplier shall immediately commence implementation of such revised SL Rectification Plan in accordance with paragraph 2.4; or

(b) (giving reasonable grounds for its decision) rejects a revised SL Rectification Plan submitted to it pursuant to paragraph(c) 2.2(c), including where such revised SL Rectification Plan does not incorporate the amendments requested by the Buyer pursuant to paragraph 2.2(c) to the Buyer's satisfaction, then paragraph 2.5(b) shall apply.

2.4 Where the Buyer accepts a proposed SL Rectification plan pursuant to paragraph 2.2(a) (or a revised SL Rectification plan pursuant to paragraph 2.3(a)) then the Supplier shall deploy any additional resources and take all remedial action that is necessary to implement the relevant SLRP Improvements to the Buyer's satisfaction (including by taking the actions referred to in paragraph 2.1(iii)) within the applicable SLRP Implementation Timeframe and to prevent the relevant performance failure(s) in question from recurring.

2.5 If:

(a) the Supplier fails to provide an SL Rectification Plan to the Buyer within the required timescale as specified in paragraph 2.1 (or fails to provide a revised SL Rectification Plan to the Buyer within the required timescale as specified in paragraph 2.2(c));

(b) the Buyer (giving reasonable grounds for its decision) rejects any SL Rectification Plan submitted to it pursuant to paragraph 2.1 (or rejects any revised SL Rectification Plan submitted to it pursuant to paragraph 2.2(c)); or

(c) the Supplier fails to implement relevant SLRP Improvements to the Buyer's satisfaction within the applicable SLRP Implementation Timeframe in accordance with paragraph 2.4,

then, without prejudice to any right to terminate at common law, the Buyer may terminate the Order Contract by giving notice to the Supplier (specifying that such termination will have immediate effect or otherwise stating the date on which such termination shall take effect).

2.6 Any termination of the Order Contract pursuant to paragraph 2.5 shall be treated for the purposes of clause 10 (*Ending the Contract*) of the DPS Core Terms as if the Order Contract had been terminated pursuant to clause 10.4.1 of the DPS Core Terms.

3. Performance Indicators

PI 1 <u>Charge Point Availability</u>

PI 1.1 Subject to paragraphs PI 1.4 and 1.5 below, and without prejudice to the Supplier's obligations under Law (in particular, but without limitation, the Supplier's obligations under regulation 7 (*Reliability*) of The Public Charge Point Regulations 2023), each Charge Point shall be available for use by Customers in charging their vehicles for more than 97% of the time that the Charge Points are accessible during each Reporting Period. For this purpose, a Charge Point will be deemed to be accessible at all times except to the extent that a Site Agreement explicitly provides otherwise (in which case the period of accessibility specified in the Site Agreement will be the period the Charge Points are or could be accessible for the purposes of this Annex).

PI 1.2 A Charge Point is "available" for use by a Customer for the purposes of this PI 1 if it is providing a Charge Point status of charging or available to the Charge Point management system and there is no issue at the Charge Point that prevents it from:

(a) allowing a Customer to start a charging session; and

TfL RESTRICTED

(b) allowing a Customer to end a charging session,

and references to "unavailable" will be construed accordingly.

PI 1.3 "**Charge Point Availability**" for the purposes of the Service Level will be calculated by dividing the sum of the time in minutes that each and every Charge Point within the scope of the Order Contract was both accessible to Customers and available during the applicable Reporting Period (excluding scheduled maintenance time) by the sum of the maximum time in minutes that each and every Charge Point within the scope of the Order Contract could be both accessible to Customers and available during the applicable Reporting Period, expressed as a percentage, as illustrated below:

$$Charge\ Point\ Availability = \frac{\text{Actual minutes Charge Points accessible and available to Customers in a Reporting Period}}{\text{Minutes Charge Points could be both accessible and available to Customers in a Reporting Period}}$$

PI 1.4 In the event of a power failure, where such failure is outside of the control of the Supplier, those Charge Points affected by such power failure shall not be included in the calculation of Charge Point Availability for the purposes of this Service Level for so long as the power failure continues, provided that, to the extent that any continuation of the power failure is attributable to a failure by the Supplier to carry out any action required by the distribution network operator (DNO) to remedy the fault, any such continuation shall be included in the calculation of Charge Point Availability.

PI 1.6 Where a Charge Point is unavailable as a result of a Force Majeure Event (as defined in Joint Schedule 1 (*Definitions*)), then (subject to the Supplier complying with its obligations under clause 20.1 of the DPS Core Terms) such Charge Point shall not be included in the calculation of Charge Point Availability for the period during which the Force Majeure Event continues to apply.

PI 2 **Incident Management**

PI 2.1 The Supplier may be susceptible to a number of incidents whilst operating Charge Points and these have been summarised below including the time frames for resolution which will be the service level for which this PI is measured (each an "**Incident**"):

	Incident 1	Incident 2	Incident 3	Incident 4	Incident 5	Incident 6	Incident 7
Incident Detail	Supplier's Assets present a potential public hazard or serious safety issue	Customer unable to release a vehicle from a Charge Point	Breach of Customer data or financial security	Serious incident impacting on reputation of Supplier or Buyer	Environment and cleanliness of site and Supplier's Charge Points	Major services outage. More than 25% of Supplier's Charge Points (Comprising a minimum of at least 5 Charge Points) are unavailable at any one time.	Permanent damage to a Charge Point
Supplier to Notify Buyer	Yes – Within 30 minutes	No	Yes – Within two hours	Yes – Within two hours	No	Yes – Within two hours	Yes – within 30 minutes
Timeframe to Resolve	2 Hours	2 Hours	5 Days	3 Days	5 Days	5 Days	6 weeks
Incident Examples	a) Charge Point has exposed or live wiring b) Charge Point is causing an obstruction to carriageway		a) Cyber attack	a) Death or serious injury of a Customer or Supplier Staff whilst on duty	a) Litter (not applicable in respect of on-highway Sites) b) Detritus (not applicable in respect of on-highway Sites) c) Fly Posting d) Graffiti	a) Power outage b) Communications failure	a) Road traffic collision with the Charge Point b) Other user damage to the Charge Point

PI 2.2 An Incident is deemed as having started as soon as the Supplier is notified of the Incident either by a Customer, the Buyer or automatically via the Supplier's own Charge Point management system.

TfL RESTRICTED

PI 2.3 An Incident is deemed as having been resolved when:

(a) in the case of an Incident relating to a Charge Point, a suitably qualified engineer has repaired, inspected and signed that the Charge Point has been made safe and is functioning correctly; or

(b) in the case of any other Incident, the Supplier has provided satisfactory evidence to the Buyer that the Incident has been resolved.

PI 2.4 Notifications to the Buyer pursuant to this PI 2 shall be provided to the Buyer's Contract Manager or such other person as is in each case specified for the purpose in the Order Contract.

PI 2.5 The primary format for notifications pursuant to this PI 2 will be e-mail communication, provided that the Buyer shall be entitled to specify other methods or formats for notification as part of the applicable requirements associated with the Order Contract.

PI 3 Contact Centre Availability

PI3.1 This PI measures the total amount of time that the Contact Centre is available for in a Reporting Period.

PI 3.2 The Supplier shall ensure that the Contact Centre is available for no less than 100% of the time within a Reporting Period.

PI 3.3 "**Contact Centre Availability**" for the purposes of the Service Level is defined as the proportion of time on each day during a Reporting Period that the Contact Centre is available to receive calls from Customers.

PI 3.4 "**Available to receive calls**" means, for the purposes of PI 3.3, that Customers are able to successfully connect to an operator who is able to take the call from the Customer.

PI 3.5 Contact Centre Availability for the purposes of the Service Level shall be determined by reference to industry standard automated system performance reports, to be provided by the Supplier to the Buyer each Reporting Period as part of the Management Information Data.

PI 4 Queuing Time

PI 4.1 At least 98% of calls into the Contact Centre each Reporting Period shall be answered by an operator within two hundred and forty (240) seconds of the call being received on the queue at the Contact Centre.

PI 4.2 At least 70% of calls into the Contact Centre each Reporting Period shall be answered by an operator within ninety (90) seconds of the call being received on the queue at the Contact Centre.

PI 4.3 Where calls are queued from an Internal Voice Response (IVR) system, the PI shall be measured from when:

(a) a Customer chooses to redirect the call to an operator; or

(b) a Customer is automatically redirected to an operator by the IVR system.

PI 4.4 "**Queuing Time**" for the purposes of the Service Level shall be determined by reference to industry standard automated system performance reports, to be provided by the Supplier to the Buyer each Reporting Period as part of the Management Information Data.

PI 5 Correspondence

PI 5.1 100% of all e-mail (or other means of correspondence agreed by the Parties) shall be responded to by the Supplier on a substantive basis (meaning for these purposes providing

TfL RESTRICTED

a response which seeks to resolve the relevant question, complaint or other relevant matter and which is not merely a holding response) within five (5) Working Days of receipt.

PI 5.2 The processing time shall be measured as the elapsed time and date received on the inbound email (or other means of correspondence agreed by the Parties) until the time and date recorded on the response when dispatched.

TfL RESTRICTED

Attachment A

Performance Indicator Table

PI ref	PI title	Start Point	End Point	Acceptable Service Level
PI1	Charge Point Availability	00:01 on 1st day of Reporting Period	23:59 on last day of Reporting Period	> 97%
PI2	Incident Management	00:01 on 1st day of Reporting Period	23:59 on last day of Reporting Period	Various levels – please refer to the row entitled "Timeframe to Resolve" in the table at PI 2.1
PI3	Contact Centre Availability	00:01 on 1st day of Reporting Period	23:59 on last day of Reporting Period	100%
PI4	Queuing Time	00:01 on 1st day of Reporting Period	23:59 on last day of Reporting Period	98% of calls answered within 240 seconds of thecall being received 70% of calls answered within 90 seconds of the call being received
PI5	Correspondence	00:01 on 1st day of Reporting Period	23:59 on last day of Reporting Period	100% of e-mail (or other means of correspondence agreed by the Parties) shall be responded to by the Supplier on a substantive basis (meaning for these purposes providing a response which seeks to resolve the relevant question, complaint or other relevant matter and which is not merely a holding response) within five (5) Working Days of receipt.

TfL RESTRICTED

Annex 9 to the Order Special Terms

Project Plan

[redacted]

[redacted]

TfL RESTRICTED

Transport for London

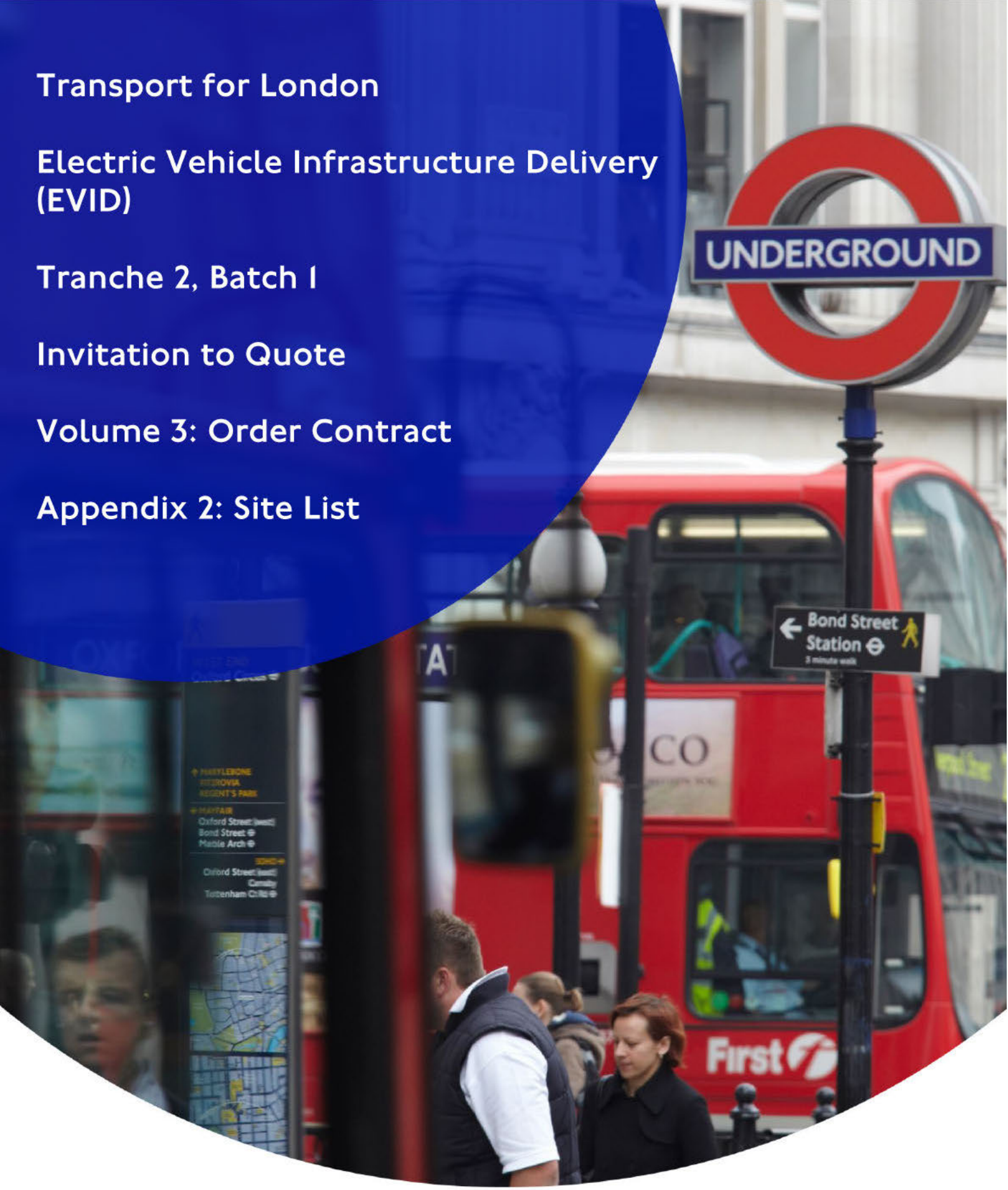
Electric Vehicle Infrastructure Delivery (EVID)

Tranche 2, Batch 1

Invitation to Quote

Volume 3: Order Contract

Appendix 2: Site List



EVERY JOURNEY MATTERS

Contents

Site Ref: Croy 115 4
Site Ref: Croy 127 8
Site Ref: Croy 147 12
Site Ref: Croy 167 16
Site Ref: Croy 178 20
Site Ref: Croy 184 24
Site Ref: Croy 195 28
Site Ref: Croy 219 32
Site Ref: Gren 29 36
Site Ref: Hack 42 40
Site Ref: Har 7 44
Site Ref: Har 12 48
Site Ref: Har 33 52
Site Ref: Har 67 56
Site Ref: Har 70 60
Site Ref: Isl 46 64
Site Ref: Isl 64 68
Site Ref: Lam 62 72
Site Ref: Lam 69 76
Site Ref: Lam 160 80
Site Ref: Lam 169 84
Site Ref: Lam 230 88
Site Ref: Lew 109 92
Site Ref: Lew 130 96
Site Ref: Tow 66 100

Volume 3, Appendix 2 to Order Contract – Site List

- This document contains the list of 25 Sites the Deliverables apply to.
- The Sites are located on Transport for London Road Network (TLRN).
- **Bidders must carry out their own due diligence checks (including technical feasibility and economic viability checks) on the Sites and rely on their own enquiries before submitting their tenders.**
- Please review individual Site Summary Sheets for Site information.

#	Ref Number	Borough	Site Name	Postcode	Maximum number of proposed Charging Bays
1	#Croy115	Croydon	O/S 1487-1493 LONDON ROAD SW16	SW16 5PY	1
2	#Croy127	Croydon	O/S 3-4 RUSSELL HILL PARADE CR8	CR8 2LE	1
3	#Croy147	Croydon	O/S 800 - 814 WICKHAM ROAD CR0	CR0 8EB	1
4	#Croy167	Croydon	O/S 932/926 BRIGHTON ROAD CR8	CR8 2LN	1
5	#Croy178	Croydon	O/S 178 - 188 WICKHAM ROAD CR0	CR0 8BG	1
6	#Croy184	Croydon	O/S 8-38 GODSTONE ROAD CR8	CR8 5JE	2
7	#Croy195	Croydon	O/S LEGION HSE GODSTONE RD TW1	CR8 5JE	1
8	#Croy219	Croydon	O/S ORCHARD COURT WICKHAM ROAD BR3	CR0 8EH	2
9	#Gren29	Greenwich	O/S 151-159 WELL HALL ROAD SE9	SE9 6UF	2
10	#Hack42	Hackney	O/S 35-85 RECTORY ROAD N16	N16 7SD	1
11	#Haringey7	Haringey	O/S 472 - 482 ARCHWAY ROAD N6	N6 4NA	1
12	#Haringey12	Haringey	O/S 419-449 ARCHWAY ROAD N6	N6 4HX	2
13	#Haringey33	Haringey	O/S 191-205 THE ROUNDWAY N17	N17 7BP	1
14	#Haringey67	Haringey	O/S 283-291 THE ROUNDWAY N17	N17 7AB	1
15	#Haringey70	Haringey	O/S 221-227 THE ROUNDWAY N17	N17 7DG	1
16	#Isl46	Islington	OPP 141-155 ISLEDON ROAD N7	N4 3NT	2
17	#Isl64	Islington	O/S 62-70 TOLLINGTON ROAD N4	N7 7JJ	2
18	#Lam62	Lambeth	OPP KENNINGTON PARK KENNINGTON PARK ROAD SE11	SE11 4DE	1
19	#Lam69	Lambeth	O/S 27-33 CAVENDISH ROAD SW12	SW12 0BH	1
20	#Lam160	Lambeth	O/S 86-98 STREATHAM HIGH ROAD SW16	SW16 1BS	1
21	#Lam169	Lambeth	O/S VICTORIA HOUSE SOUTH LAMBETH ROAD SW8	SW8 1QX	2
22	#Lam230	Lambeth	O/S VICTORIA MANSIONS S LAMBETH ROAD SW8	SW8 1QX	2
23	#Lew109	Lewisham	O/S 523-529 BROMLEY ROAD BR1	BR1 4JX	1
24	#Lew130	Lewisham	526-538 BROMLEY ROAD BR1.	BR1 4JX	1
25	#Tow66	Tower Hamlets	O/S 58-60 COMMERCIAL ROAD E1	E1 1LP	1

Site Ref: Croy 115

Site Location Information

Location	Outside 1487-1493 London Road
Postal Code	SW16 5PY
Site Coordinates	530649.078, 169623.8699
Street View Link	https://goo.gl/maps/3nSyzsuwKRqck6x99
Measurements	Width of Footway: 3.1m Width of Bay: 2.1m Total length of Bay: 20.0m
Maximum Number of Proposed Charging Bays	1

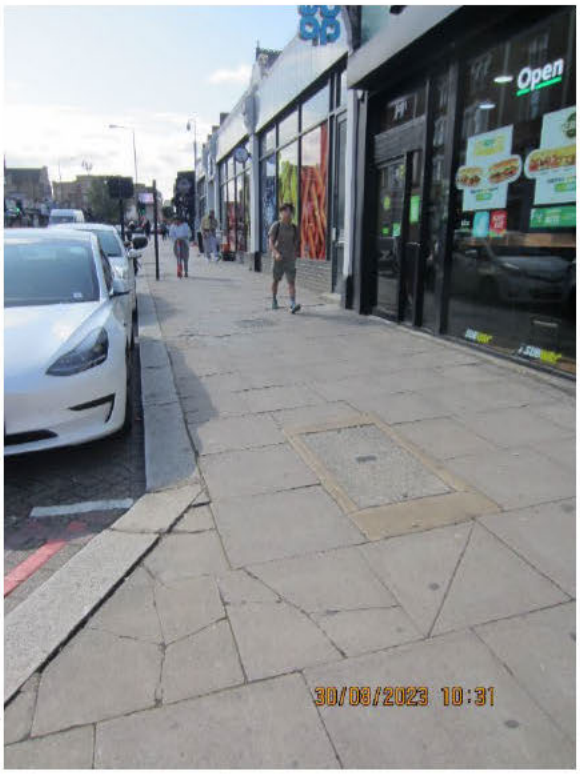
Location Plan

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway



View Looking Downstream – Footway

Photo of Restriction – Sign Face

Site Ref: Croy I 27

Site Location Information

Location	O/S 3 – 4 Russell Hill Parade
Postal Code	CR8 2LE
Site Coordinates	531227.682, 161684.0317
Street View Link	https://goo.gl/maps/xDDyynkHHsxp62pD6
Measurements	Width of Footway: 2.5m Width of Bay: 1.8m Total length of Bay: 10.3m
Maximum Number of Proposed Charging Bays	1

Location Plan

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

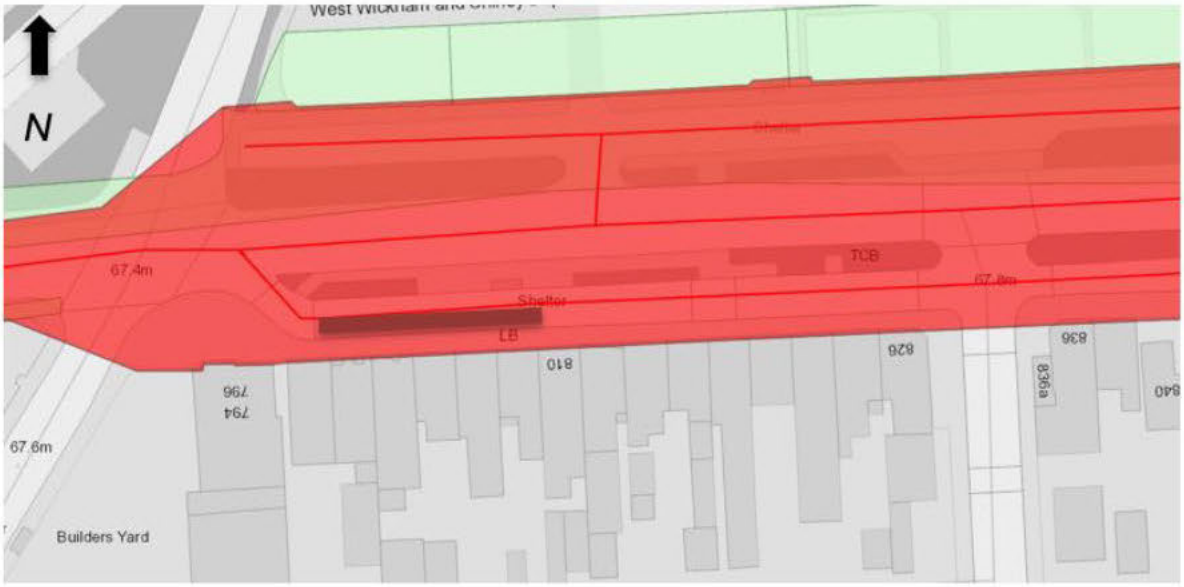
Photo of Restriction – Sign Face

Site Ref: Croy 1 47

Site Location Information

Location	O/S 800-814 Wickham Road CR0
Postal Code	CR0 8EB
Site Coordinates	51.377177,-0.0278991
Street View Link	https://goo.gl/maps/z8IYANde24UPv8zW9
Measurements	Width of Footway: 2.5m Width of Bay: 2.0m Total length of Bay: 53.3m
Maximum Number of Proposed Charging Bays	1

Location Plan



- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

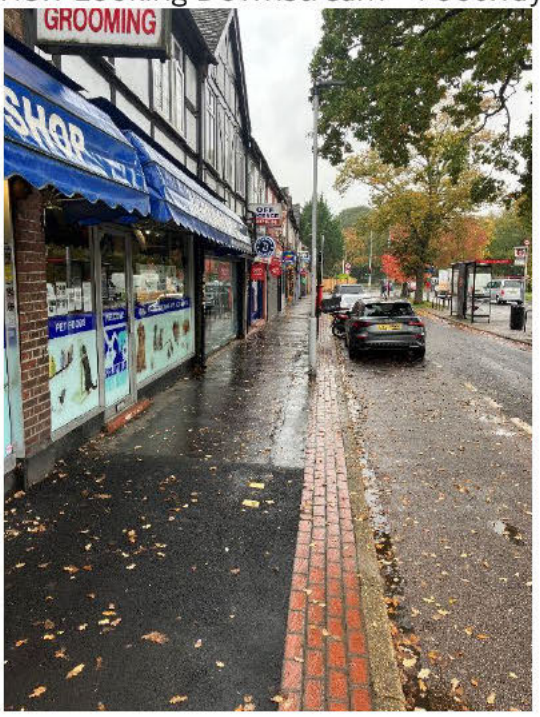


Photo of Restriction – Sign post

Site Ref: Croy 1 67

Site Location Information

Location	O/S 932/ 936 Brighton Road
Postal Code	CR8 2LN
Site Coordinates	531342.5371, 161713.9241
Street View Link	https://goo.gl/maps/Uqdk3EJu3eXMT4mW8
Measurements	Width of Footway: 3.1m Width of Bay: 2.7m Total length of Bay: 20.2m
Maximum Number of Proposed Charging Bays	1

Location Plan

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

Photo of Restriction – Sign Face

Site Ref: Croy 178

Site Location Information

Location	O/S 178 – 188 Wickham Road
Postal Code	CR0 8BG
Site Coordinates	530962.4604, 167485.1771
Street View Link	https://maps.app.goo.gl/baXn4KcrMzSi28dw7
Measurements	Width of Footway: 4m Width of Bay: 2.1m Total length of Bay: 15.6
Maximum Number of Proposed Charging Bays	1

Location Plan

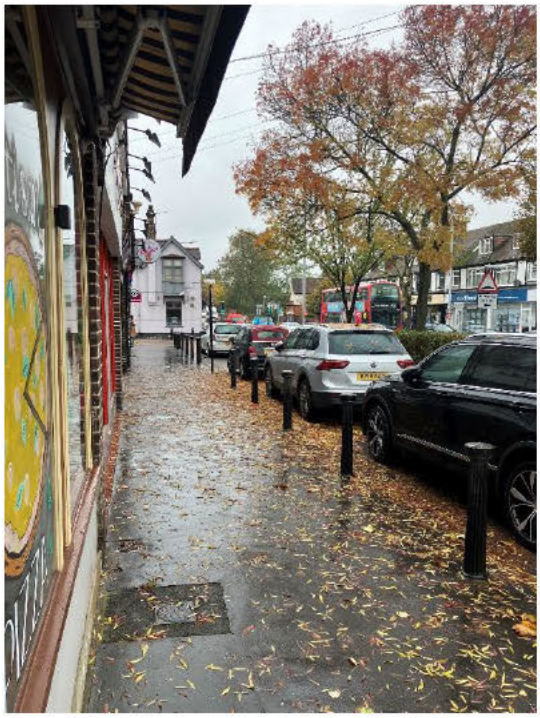
- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway



View Looking Downstream – Footway

Photo of Restriction – Sign Face

Site Ref: Croy 1 84

Site Location Information

Location	O/S 8 – 38 Godstone Road
Postal Code	CR8 5JE
Site Coordinates	531942.017, 160600.5969
Street View Link	https://goo.gl/maps/BYjciTXfqyioCnxL8
Measurements	Width of Footway: 4.8m Width of Bay: 2.1m Total length of Bay: 57.1m
Maximum Number of Proposed Charging Bays	2

Location Plan

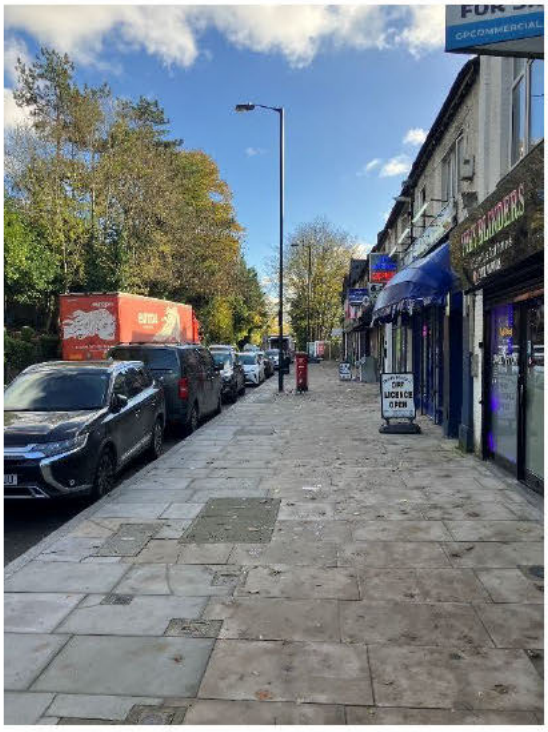
- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway



View Looking Downstream – Footway

Photo of Restriction – Sign Face

Site Ref: Croy 1 95

Site Location Information

Location	O/S Legion House, Godstone Road
Postal Code	CR8 5JE
Site Coordinates	532052.6574, 160468.6556
Street View Link	https://goo.gl/maps/YuVUDSjQJmmff8nE6
Measurements	Width of Footway: 2.6 Width of Bay: 2.0m Total length of Bay: 52.5
Maximum Number of Proposed Charging Bays	1

Location Plan

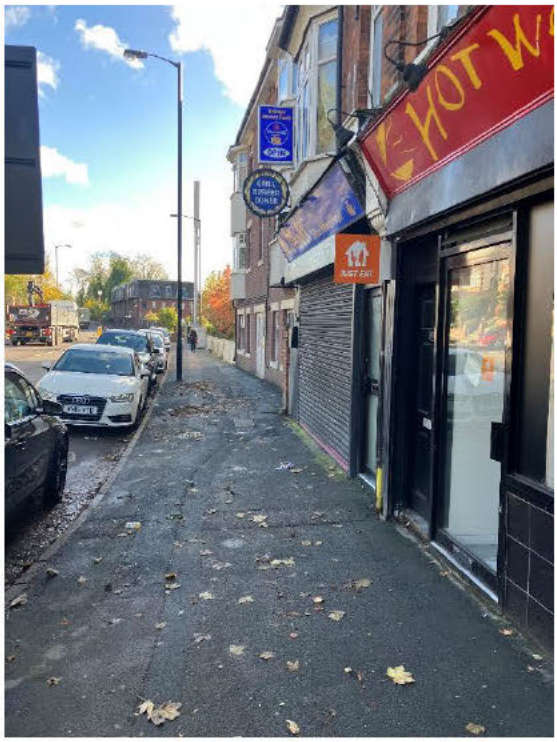
- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway



View Looking Downstream – Footway

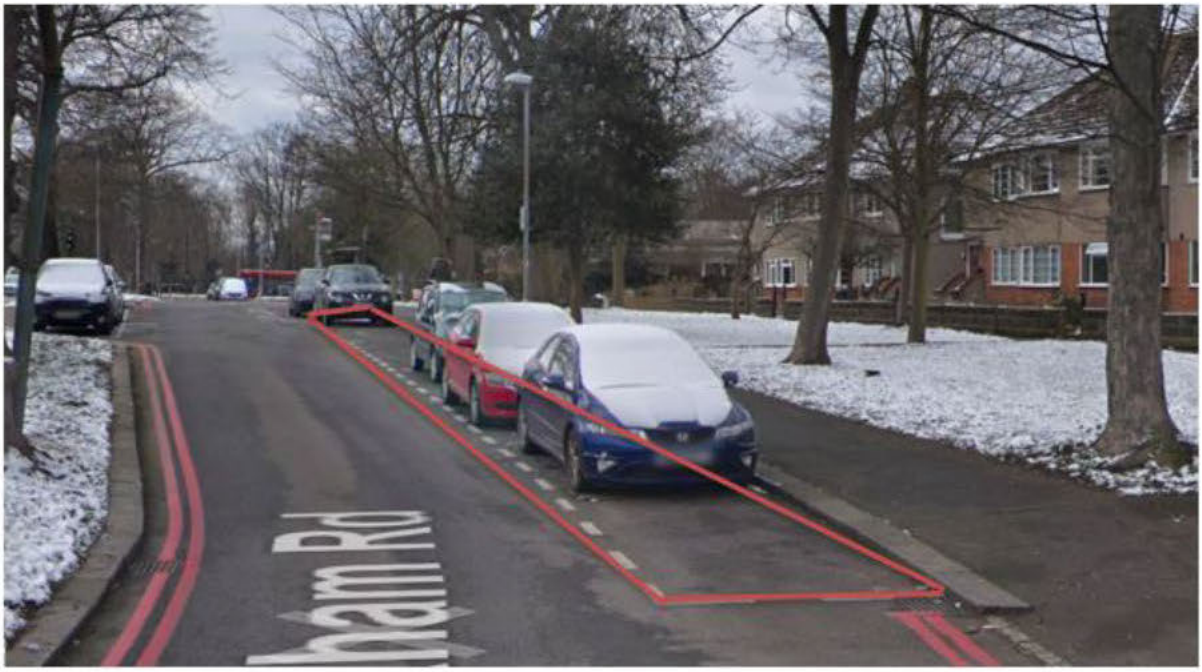
Photo of Restriction – Sign Face

Site Ref: Croy 21 9

Site Location Information

Location	Opposite Orchard Court, 12 Wickham Road
Postal Code	CR0 8EH
Site Coordinates	51.3774009,-0.0268036
Street View Link	https://maps.app.goo.gl/LWc2ujYe5vpUqQCJ7
Measurements	Width of Footway: 2.0m Width of Bay: 1.8m Total length of Bay: 36.7m
Maximum Number of Proposed Charging Bays	2

Location Plan

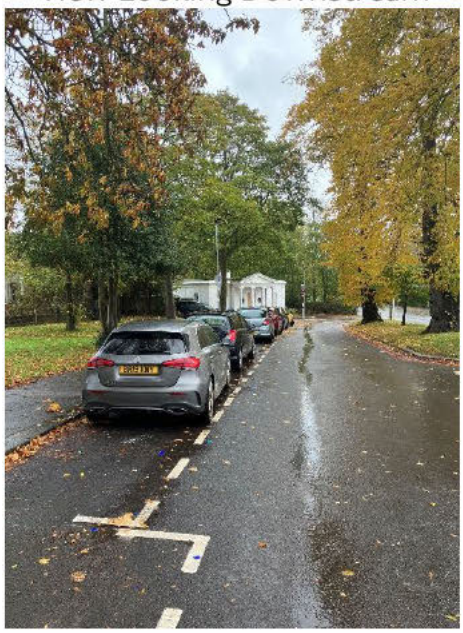


- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

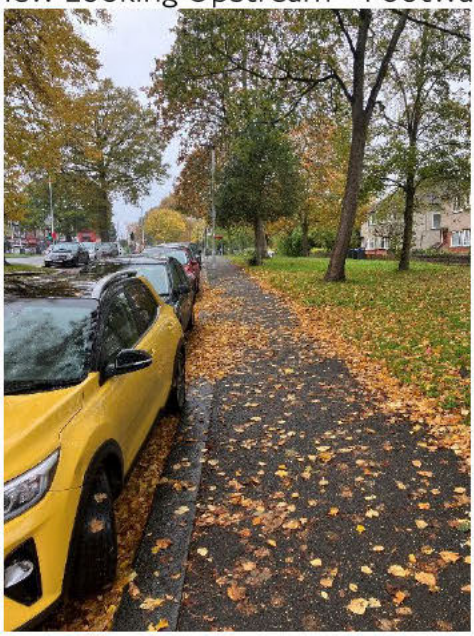
Site Photos

View Looking Upstream

View Looking Downstream



View Looking Upstream – Footway



View Looking Downstream – Footway

Photo of Restriction – Sign post

Site Ref: Gren 29

Site Location Information

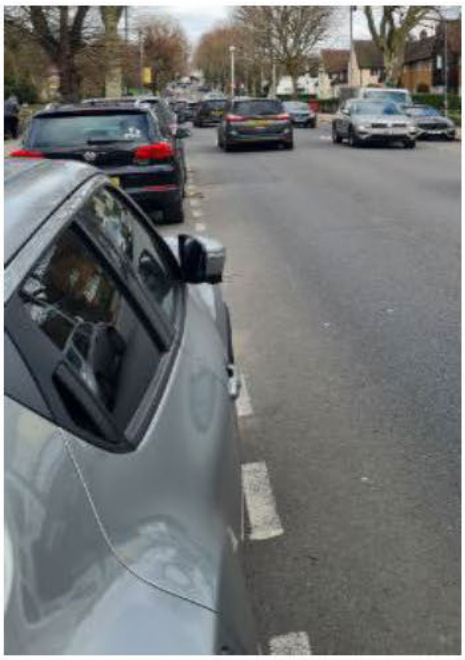
Location	O/S 151-159 WELL HALL ROAD SE9
Postal Code	SE9 6UF
Site Coordinates	542518, 175728.4
Street View Link	https://goo.gl/maps/5Q9hncG3HEQG4IGB9
Measurements	Width of Footway: 3.6m Width of Bay: 2m Total length of Bay: 42.5m
Maximum Number of Proposed Charging Bays	2

Location Plan

Site Photos

View Looking Upstream

View Looking Downstream



View Looking Upstream-Footway

View Looking Downstream – Footway

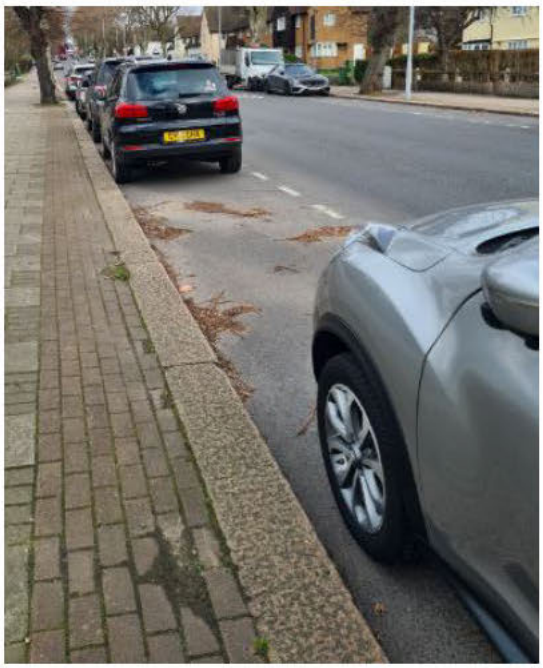


Photo of Restriction – Sign Face

Site Ref: Hack 42

Site Location Information

Location	O/S 35-85 RECTORY ROAD N16
Postal Code	N16 7SD
Site Coordinates	533892.6, 186221.4
Street View Link	https://goo.gl/maps/itf9Wzz68A9hSdV4A
Measurements	Width of Footway: 2.7m Width of Bay: 2.1m Total length of Bay: 143.6m
Maximum Number of Proposed Charging Bays	1

Location Plan

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream-Footway

View Looking Downstream – Footway

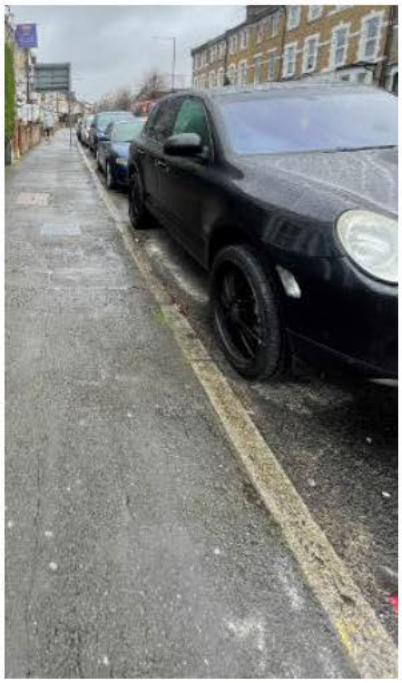


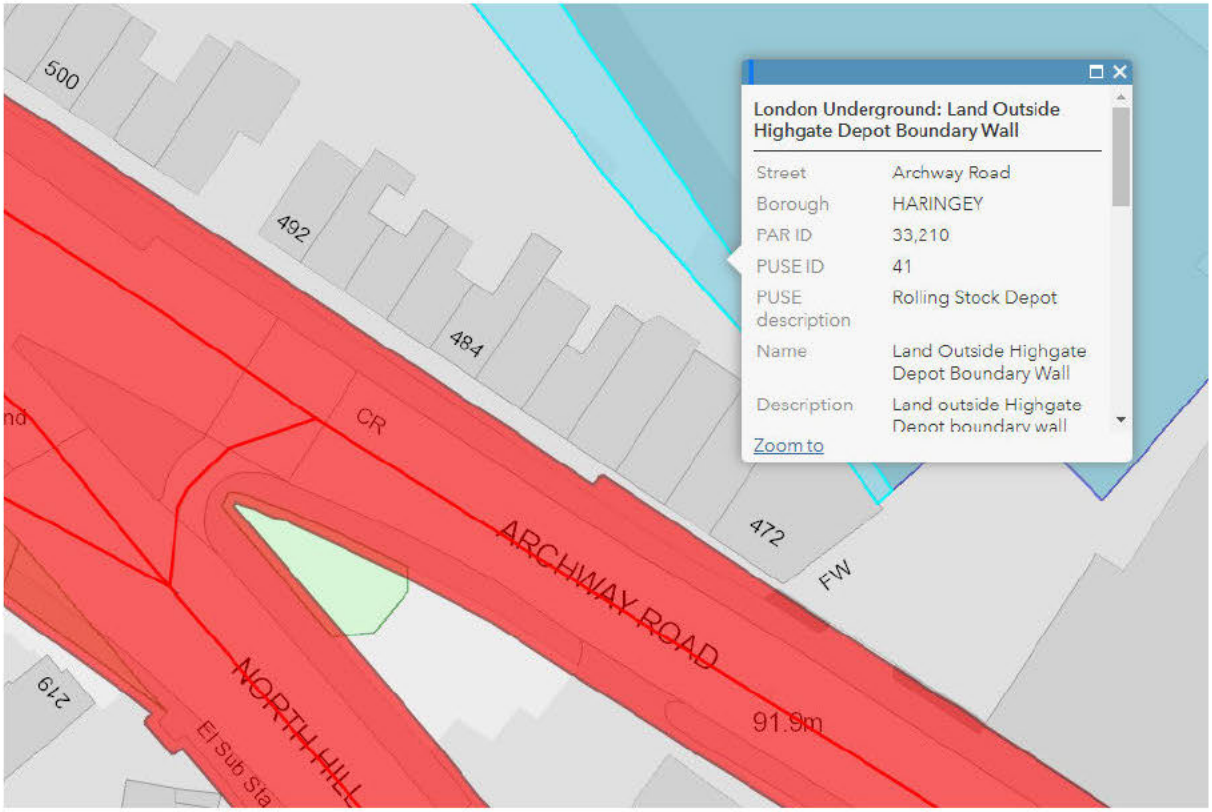
Photo of Restriction – Sign Face

Site Ref: Har 7

Site Location Information

Location	O/S 472 - 482 ARCHWAY ROAD N6
Postal Code	N6 4NA
Site Coordinates	527880.4 , 188567
Street View Link	https://maps.app.goo.gl/GbQY96fyd3MfaEi3A
Measurements	Width of Footway: 2.3m Width of Bay: 2m Total length of Bay: 37
Maximum Number of Proposed Charging Bays	1

Location Plan



- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

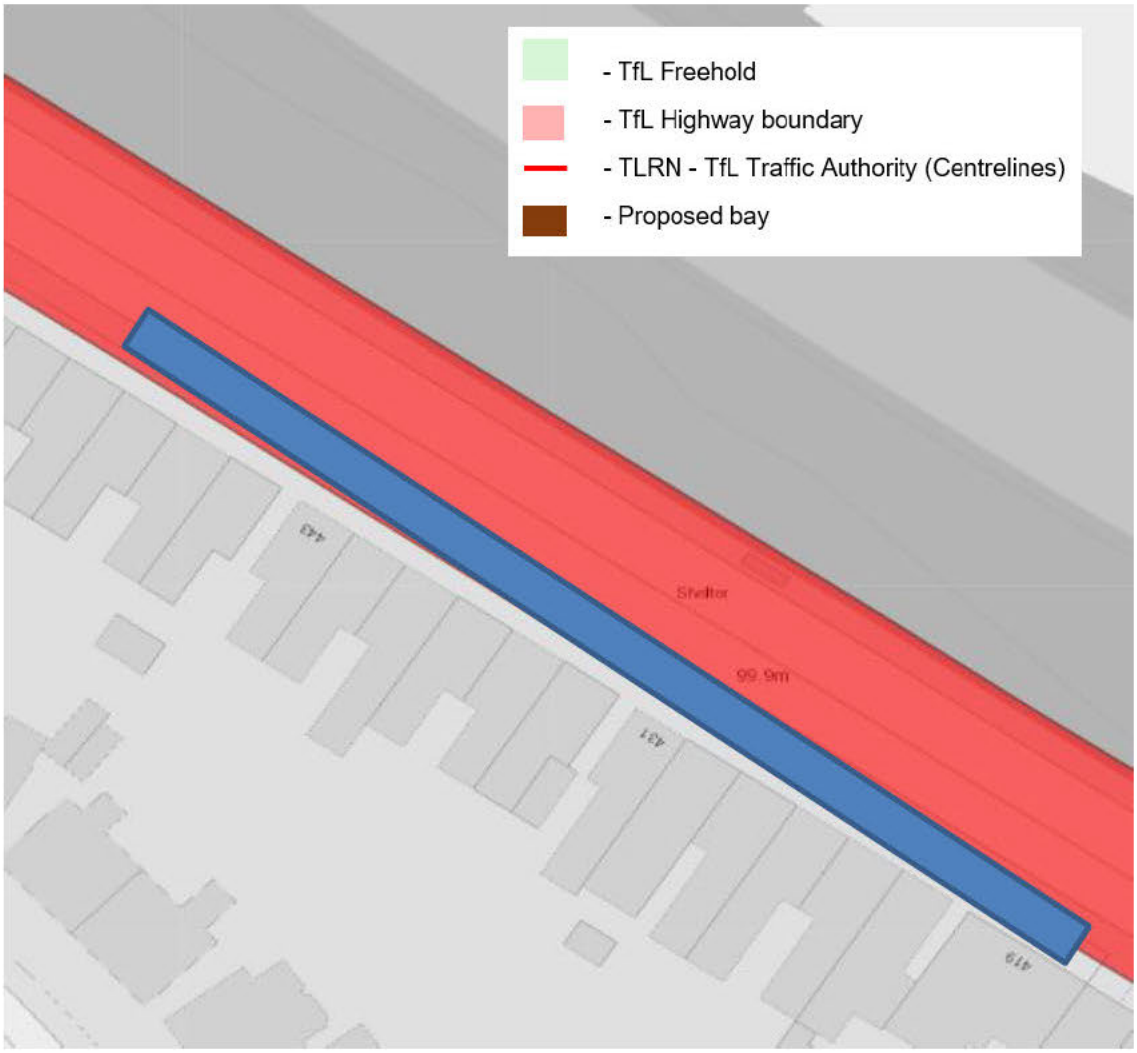
Photo of Restriction – Sign Face

Site Ref: Har I 2

Site Location Information

Location	O/S 419-449 ARCHWAY ROAD N6
Postal Code	N6 4HX
Site Coordinates	528176.7,188358.3
Street View Link	https://goo.gl/maps/Pxs7c3m4zBL6FEUK7
Measurements	Width of Footway: 2.4m Width of Bay: 2.5m Total length of Bay: 98.4
Maximum Number of Proposed Charging Bays	2

Location Plan

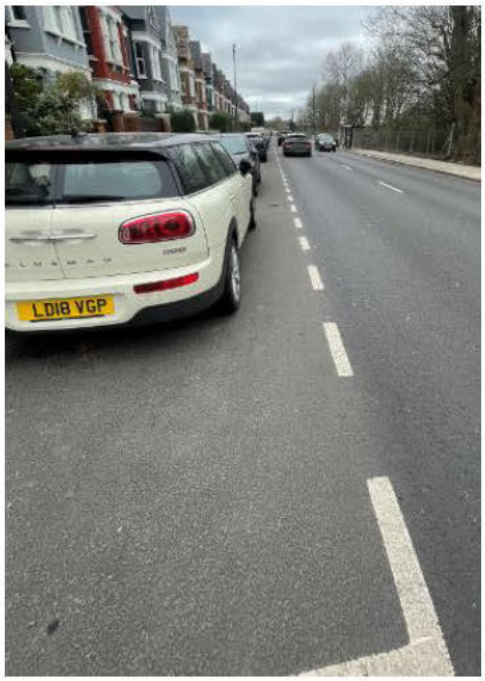


Site Photos

View Looking Upstream

View Looking Upstream – Footway

View Looking Downstream



View Looking Downstream – Footway

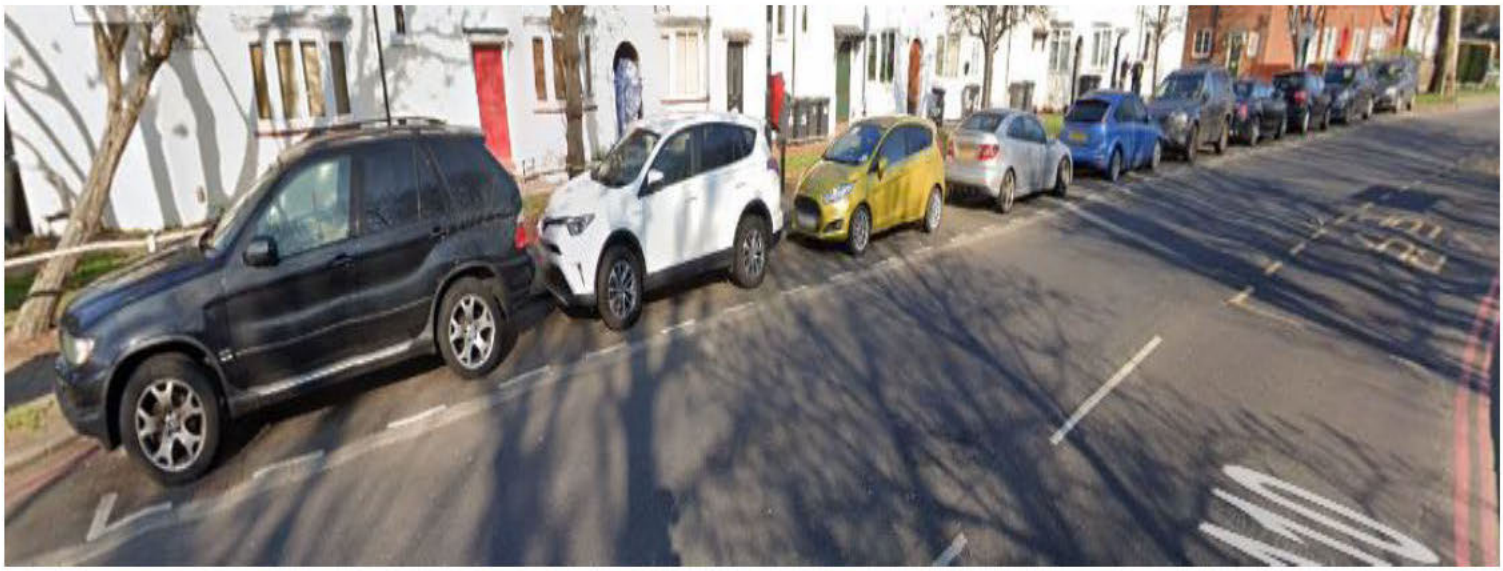
Photo of Restriction – Sign Face

Site Ref: Har 33

Site Location Information

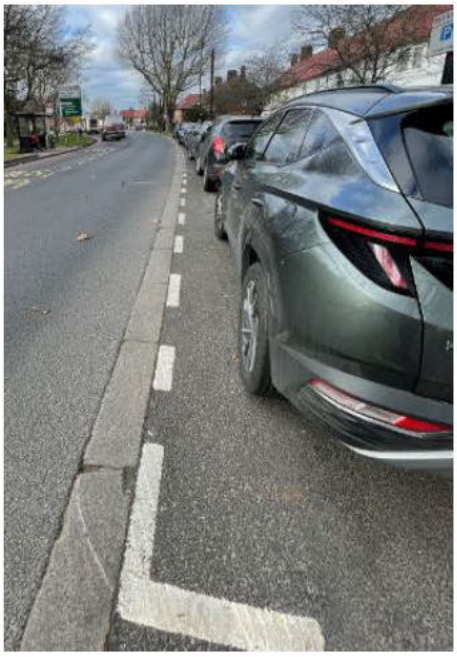
Location	O/S 191-205 THE ROUNDWAY N17
Postal Code	N17 7BP
Site Coordinates	532683.6, 191058.4
Street View Link	https://goo.gl/maps/JFIAhZQkTf7NzGiH8
Measurements	Width of Footway: 2.4m Width of Bay: 2.3m Total length of Bay: 42.4m
Maximum Number of Proposed Charging Bays	1

Location Plan



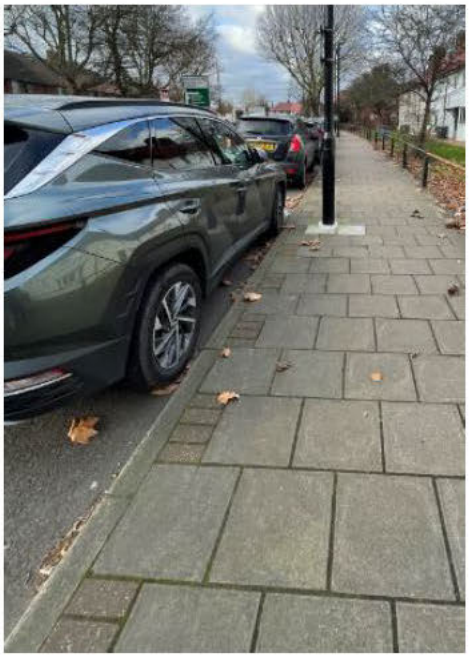
Site Photos

View Looking Upstream



View Looking Downstream

View Looking Upstream-Footway



View Looking Downstream – Footway

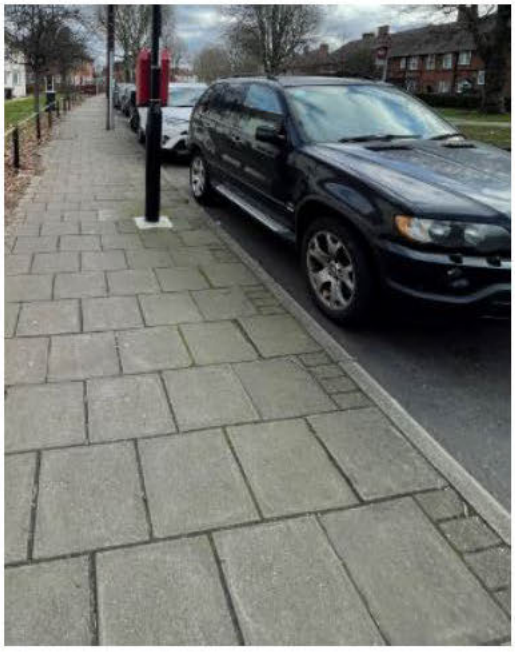


Photo of Restriction – Sign Face

Site Ref: Har 67

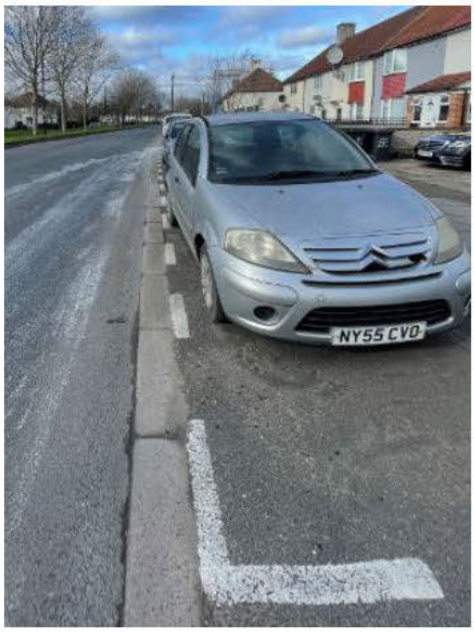
Site Location Information

Location	O/S 283-291 THE ROUNDWAY N17
Postal Code	N17 7AB
Site Coordinates	533012.3, 190796.3
Street View Link	https://goo.gl/maps/eMFGEHsj9Bg7XkfG6
Measurements	Width of Footway: 2.2m Width of Bay: 2.1m Total length of Bay: 35m
Maximum Number of Proposed Charging Bays	1

Location Plan

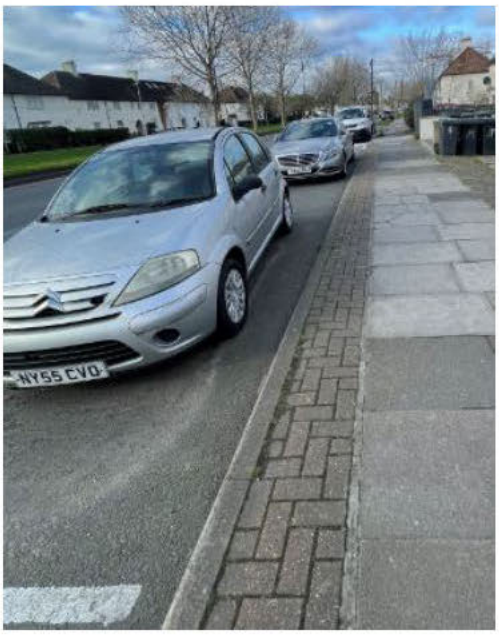
Site Photos

View Looking Upstream



View Looking Downstream

View Looking Upstream-Footway



View Looking Downstream – Footway

Photo of Restriction – Sign Face

Site Ref: Har 70

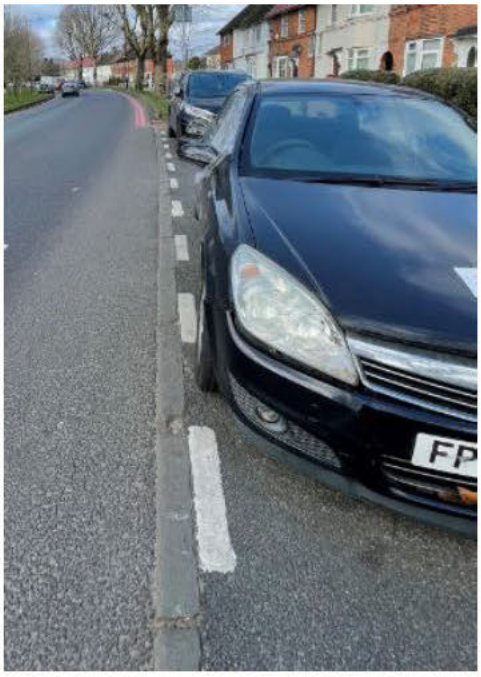
Site Location Information

Location	O/S 221-227 THE ROUNDWAY N17
Postal Code	N17 7DG
Site Coordinates	532795.4, 190976.3
Street View Link	https://goo.gl/maps/SaP9v3GEjMpkIyDb8
Measurements	Width of Footway: 2.4m Width of Bay: 2m Total length of Bay: 11.9m
Maximum Number of Proposed Charging Bays	1

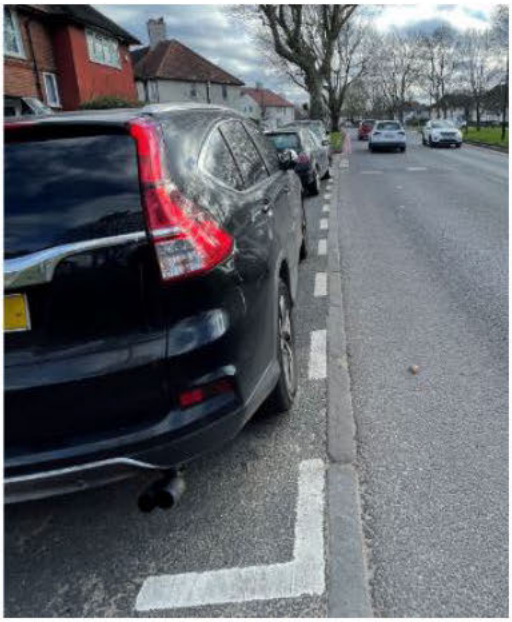
Location Plan

Site Photos

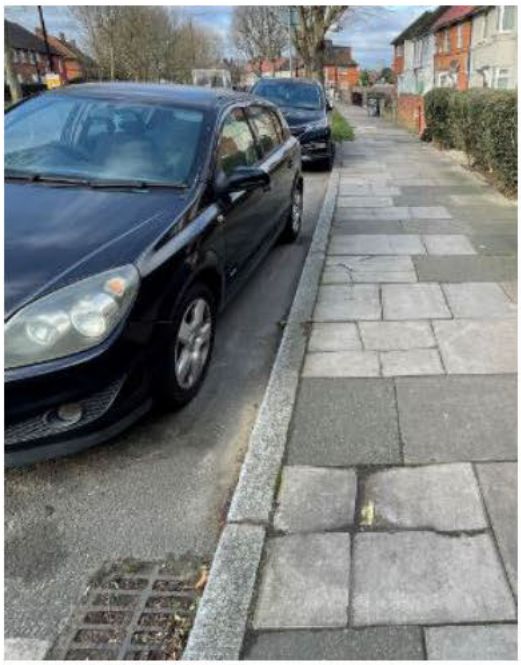
View Looking Upstream



View Looking Downstream



View Looking Upstream-Footway



View Looking Downstream – Footway

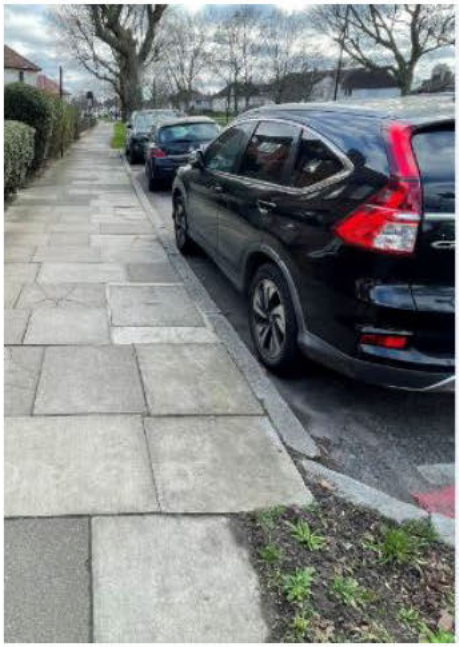


Photo of Restriction – Sign Face

Site Ref: Isl 46

Site Location Information

Location	OPP 141-155 ISLEDON ROAD N7
Postal Code	N4 3NT
Site Coordinates	531179.7, 186400.8
Street View Link	https://goo.gl/maps/dAEKYmBiXZzZSxrh6
Measurements	Width of Footway: 1.8m Width of Bay: 2.6m Total length of Bay: 47m
Maximum Number of Proposed Charging Bays	2

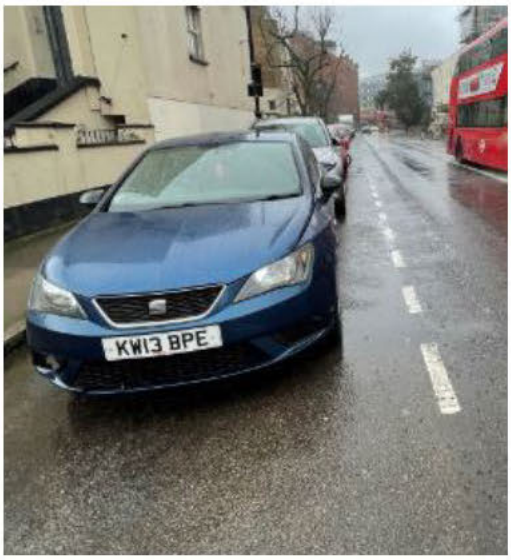
Location Plan

- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream



View Looking Upstream-Footway

View Looking Downstream – Footway

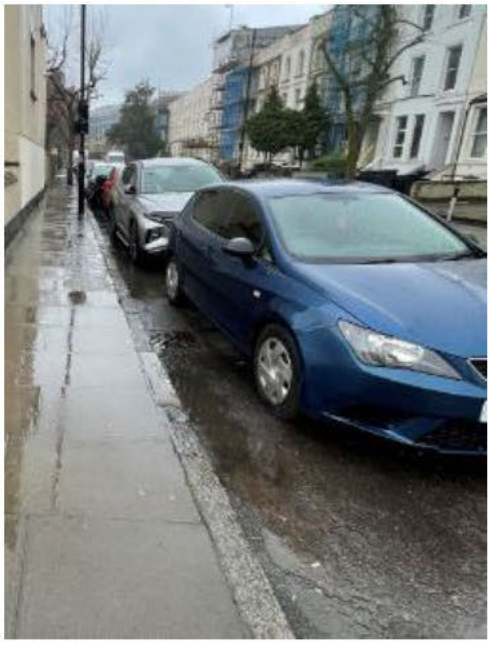


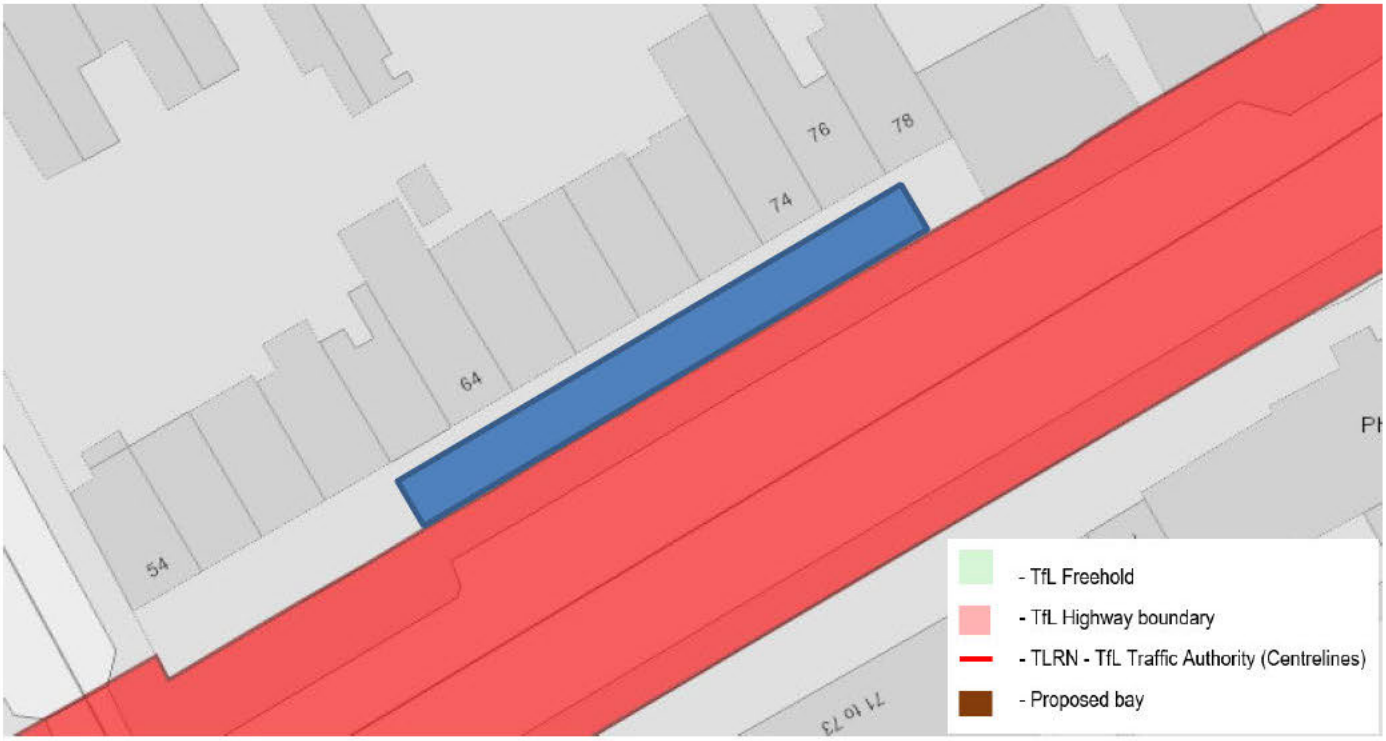
Photo of Restriction – Sign Face

Site Ref: Isl 64

Site Location Information

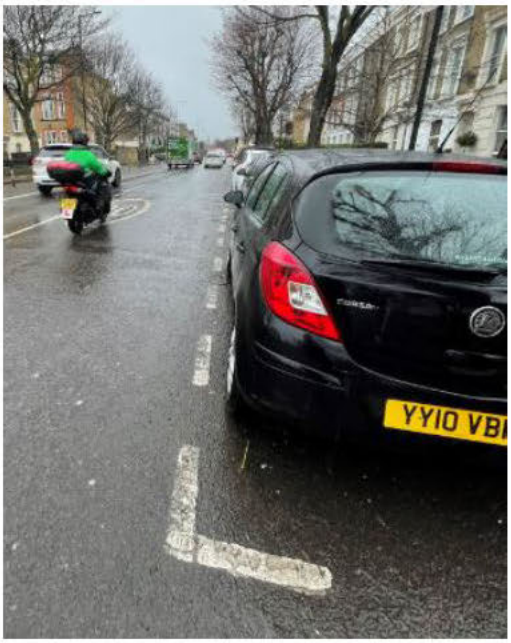
Location	O/S 62-70 TOLLINGTON ROAD N4
Postal Code	N7 7JJ
Site Coordinates	531069.5, 186226.6
Street View Link	https://maps.app.goo.gl/MWIpvhAT2HXj4iUcA
Measurements	Width of Footway: 3m Width of Bay: 1.9m Total length of Bay: 42m
Maximum Number of Proposed Charging Bays	2

Location Plan



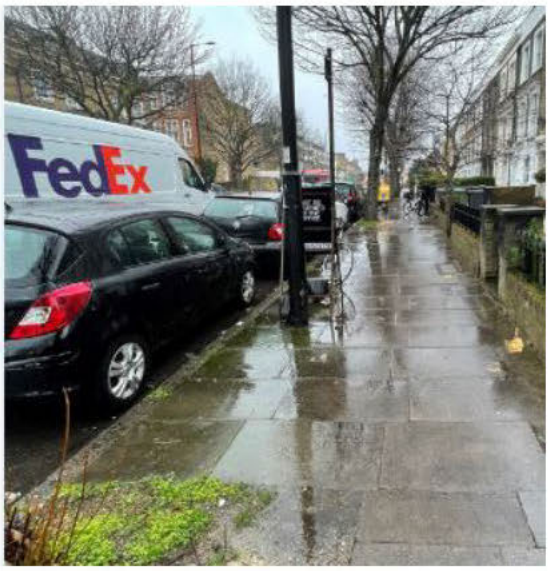
Site Photos

View Looking Upstream



View Looking Downstream

View Looking Upstream-Footway



View Looking Downstream – Footway

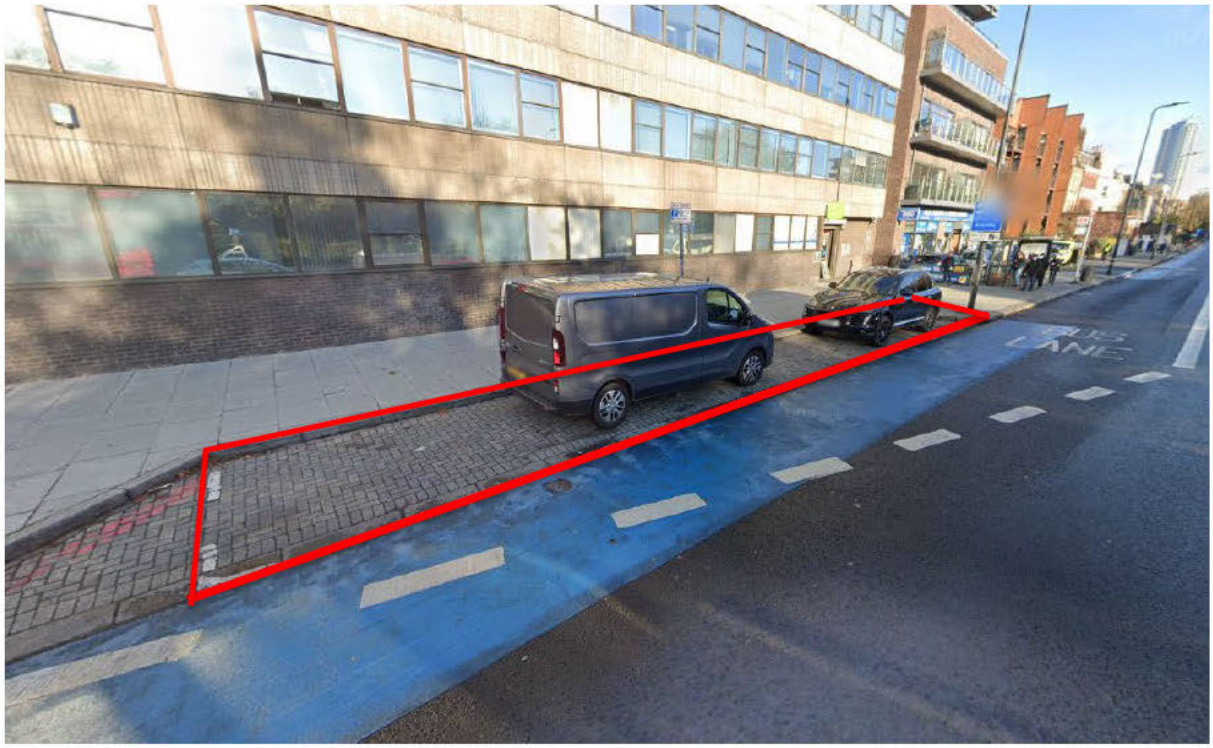
Photo of Restriction – Sign Face

Site Ref: Lam 62

Site Location Information

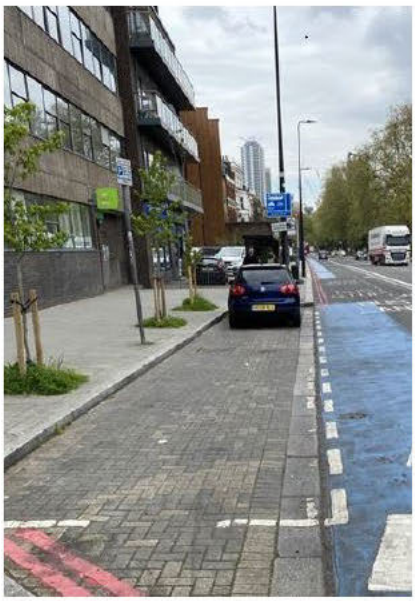
Location	OPP KENNINGTON PARK KENNINGTON PARK ROAD SE11
Postal Code	SE11 4DE
Site Coordinates	531350.5, 177906.1
Street View Link	https://goo.gl/maps/ofSy1HSGr25LNt8W8
Measurements	Width of Footway: 4.7m Width of Bay: 2.5m Total length of Bay: 16m
Maximum Number of Proposed Charging Bays	1

Location Plan



Site Photos

View Looking Upstream



View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

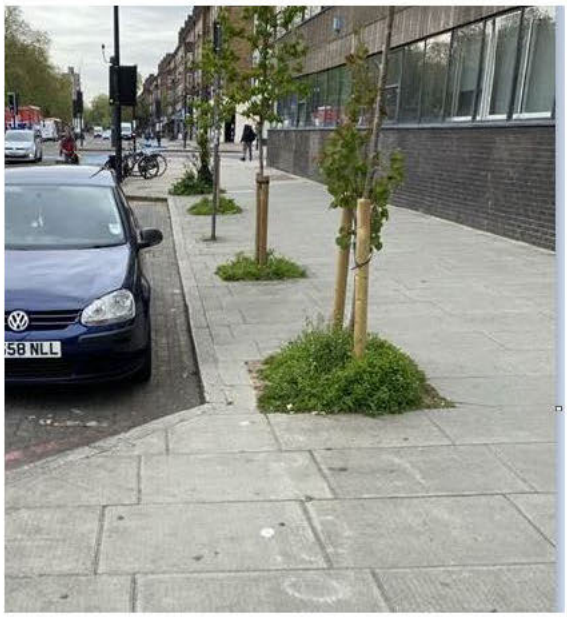


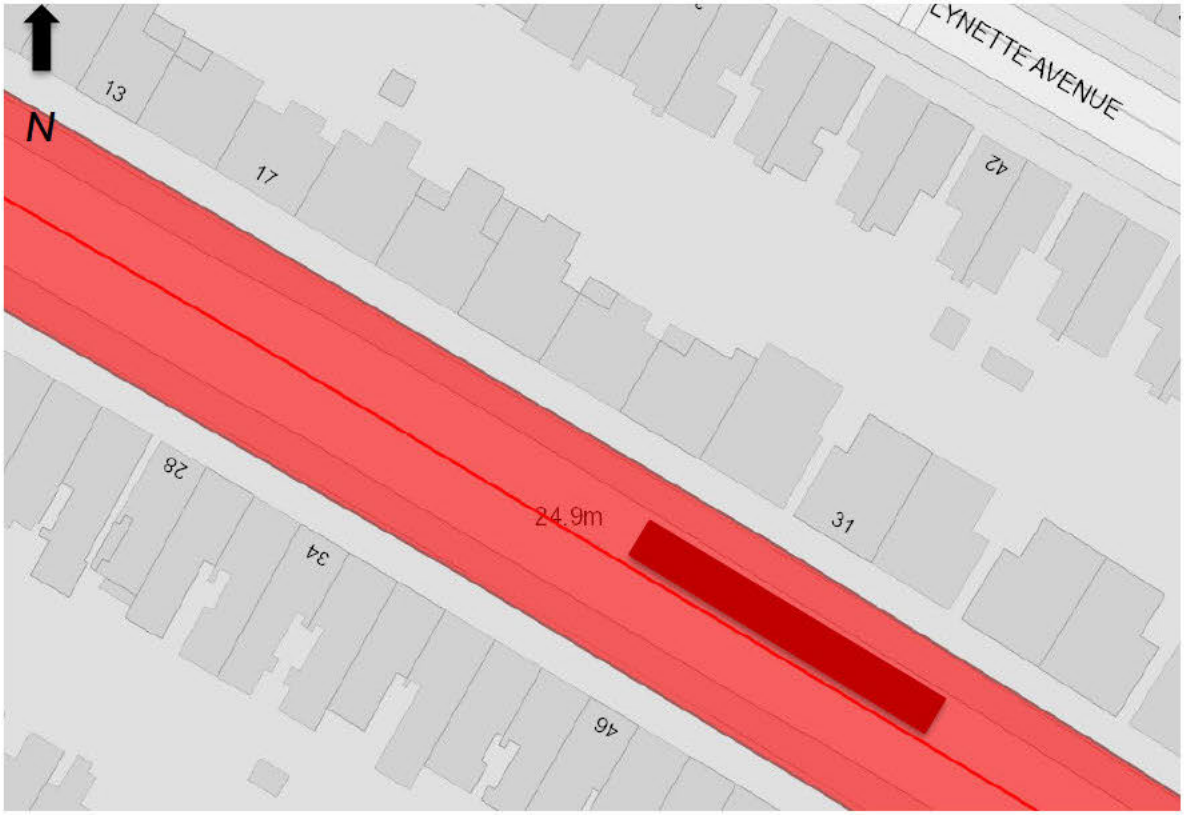
Photo of Restriction – Sign Face

Site Ref: Lam 69

Site Location Information

Location	O/S 27-33 CAVENDISH ROAD SW12
Postal Code	SW12 0BH
Site Coordinates	529054.9, 174341.7
Street View Link	https://maps.app.goo.gl/ECSWItj2qJJjCwpU7
Measurements	Width of Footway: 2.8m Width of Bay: 1.9m Total length of Bay: 42m
Maximum Number of Proposed Charging Bays	1

Location Plan



- TfL Freehold
- TfL Highway boundary
- TLRN - TfL Traffic Authority (Centrelines)
- Proposed bay

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

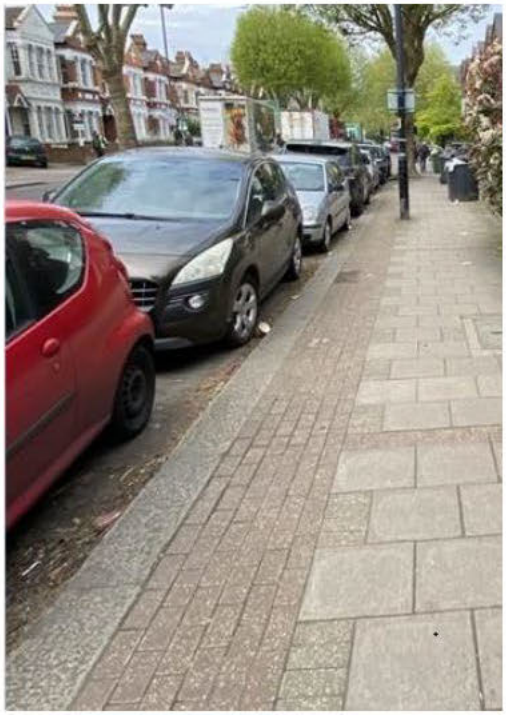


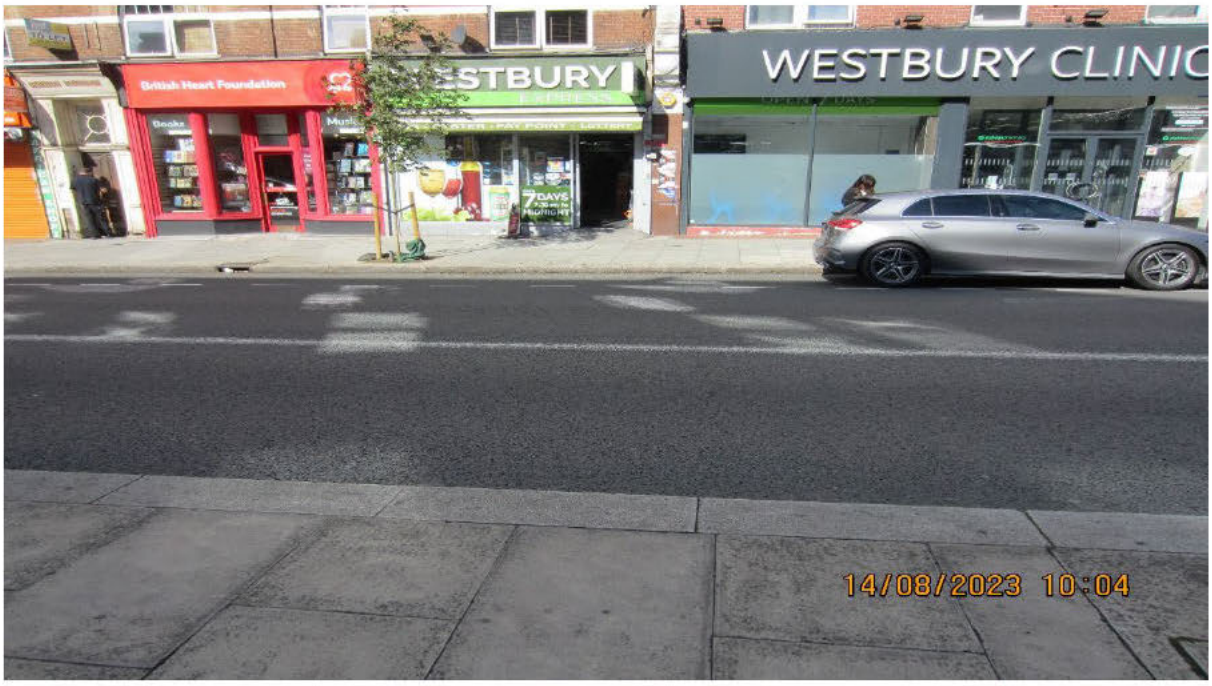
Photo of Restriction – Sign post

Site Ref: Lam 1 60

Site Location Information

Location	Outside 86-98 Streatham High Road
Postal Code	SW16 1BS
Site Coordinates	530193.3397, 172334.7815
Street View Link	https://goo.gl/maps/48e5d6uW8gUi6xHX8
Measurements	Width of Footway: 4.2m Width of Bay: 2m Total length of Bay: 29.9m
Maximum Number of Proposed Charging Bays	1

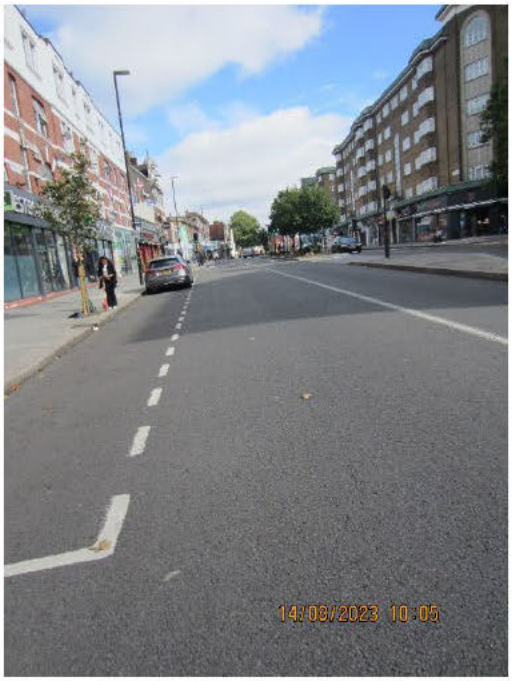
Location Plan



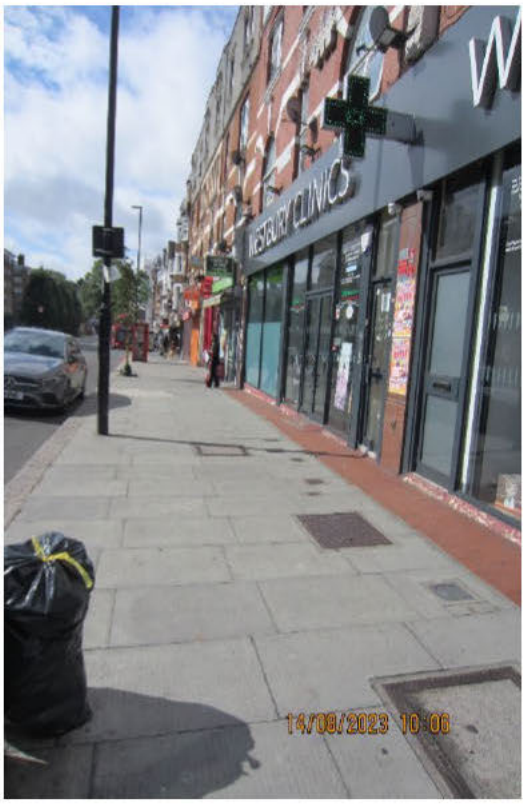
Site Photos

View Looking Upstream

View Looking Downstream



View Looking Upstream – Footway



View Looking Downstream – Footway

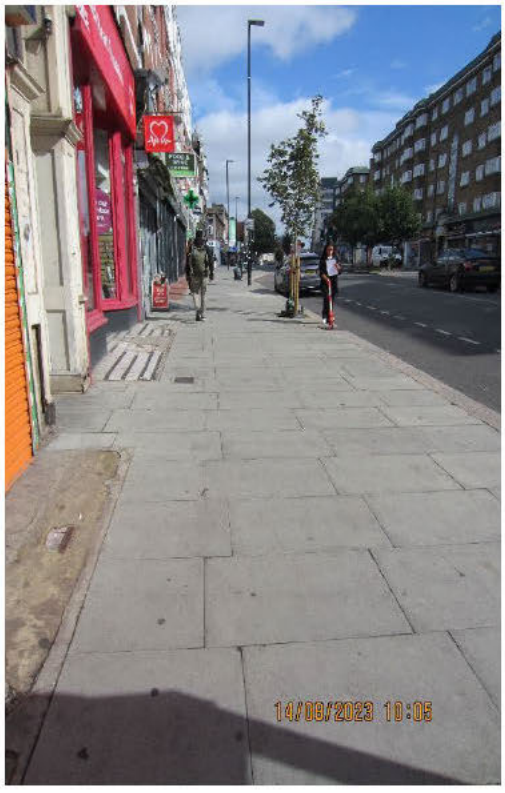


Photo of Restriction – Sign Face

Site Ref: Lam I 69

Site Location Information

Location	Outside Victoria House South Lambeth Road
Postal Code	SW8 IQX
Site Coordinates	530357.6728, 177351.243
Street View Link	https://goo.gl/maps/FaVT5kxuwDgpI3ELA
Measurements	Width of Footway: 3.3m Width of Bay: 2.3m Total length of Bay: 33.3m
Maximum Number of Proposed Charging Bays	2

Location Plan

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream-Footway

View Looking Downstream – Footway

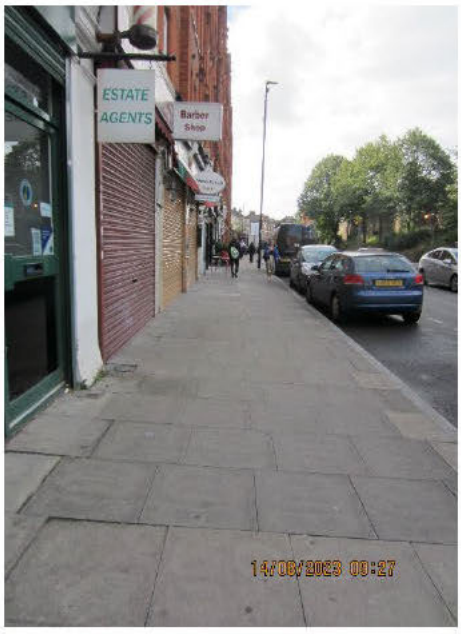


Photo of Restriction – Sign Face

Site Ref: Lam 230

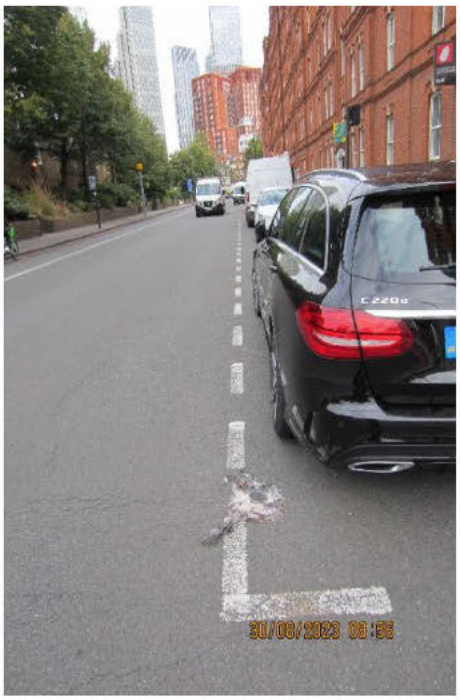
Site Location Information

Location	Outside 94-105 Victoria Mansions South Lambeth Road
Postal Code	SW8 1QX
Site Coordinates	530385.335, 177290.9403
Street View Link	https://goo.gl/maps/vq4rPsKD7AkPnPpq8
Measurements	Width of Footway: 3.3m Width of Bay: 2.2m Total length of Bay: 24.5m
Maximum Number of Proposed Charging Bays	2

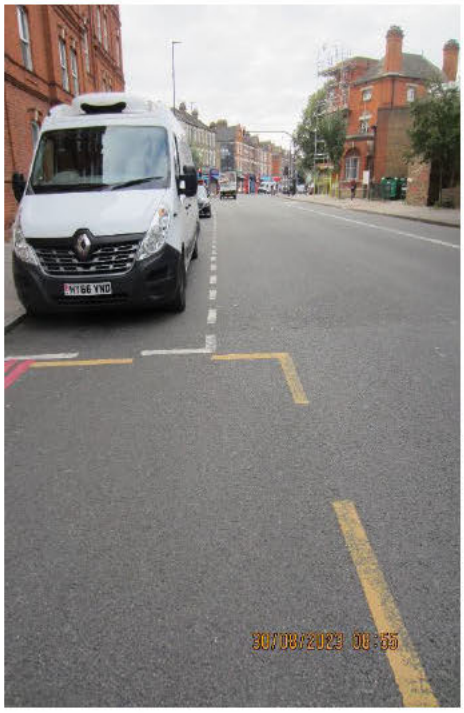
Location Plan

Site Photos

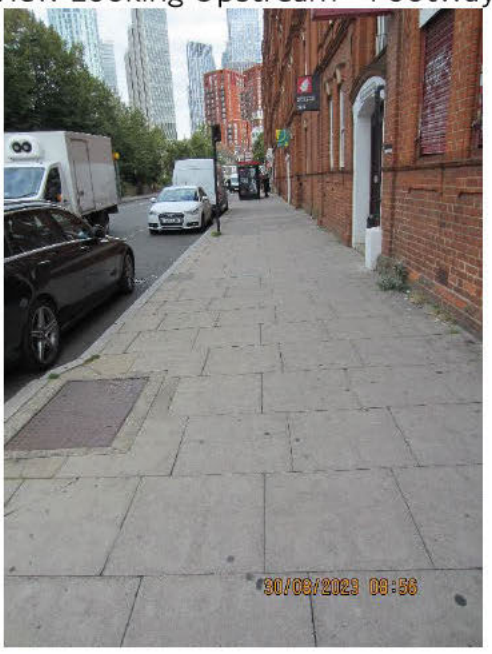
View Looking Upstream



View Looking Downstream



View Looking Upstream – Footway



View Looking Downstream – Footway

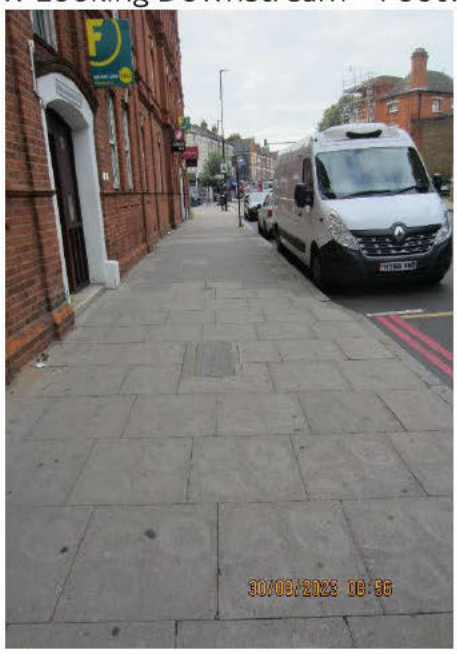


Photo of Restriction – Sign Face

Site Ref: Lew1 09

Site Location Information

Location	O/S 523-529 BROMLEY ROAD BRI
Postal Code	BRI 4JX
Site Coordinates	538978.6123, 171174.8647
Street View Link	https://goo.gl/maps/tRcUheshxSXHvsWP9
Measurements	Width of Footway: 3.6m Width of Bay: 2.2m Total length of Bay: 30.7
Maximum Number of Proposed Charging Bays	1

Location Plan

Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

View Looking Downstream – Footway

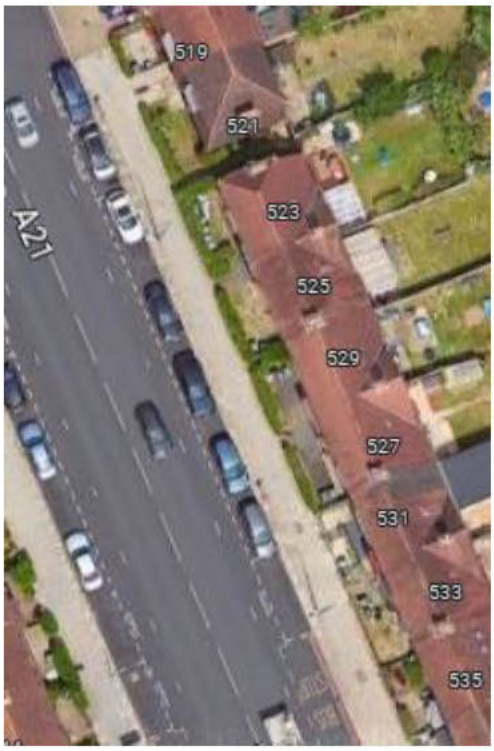


Photo of Restriction – Sign Face

Site Ref: Lew I 30

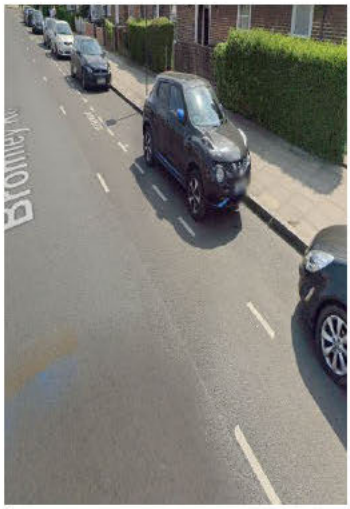
Site Location Information

Location	526-538 BROMLEY ROAD BRI.
Postal Code	BRI 4JX
Site Coordinates	538952.4262, 171188.3253
Street View Link	https://goo.gl/maps/pyAbgKPZmK363FFLA
Measurements	Width of Footway: 3.5m Width of Bay: 2.2m Total length of Bay: 20m
Maximum Number of Proposed Charging Bays	1

Location Plan

Site Photos

View Looking Upstream



View Looking Downstream

View Looking Upstream – Footway

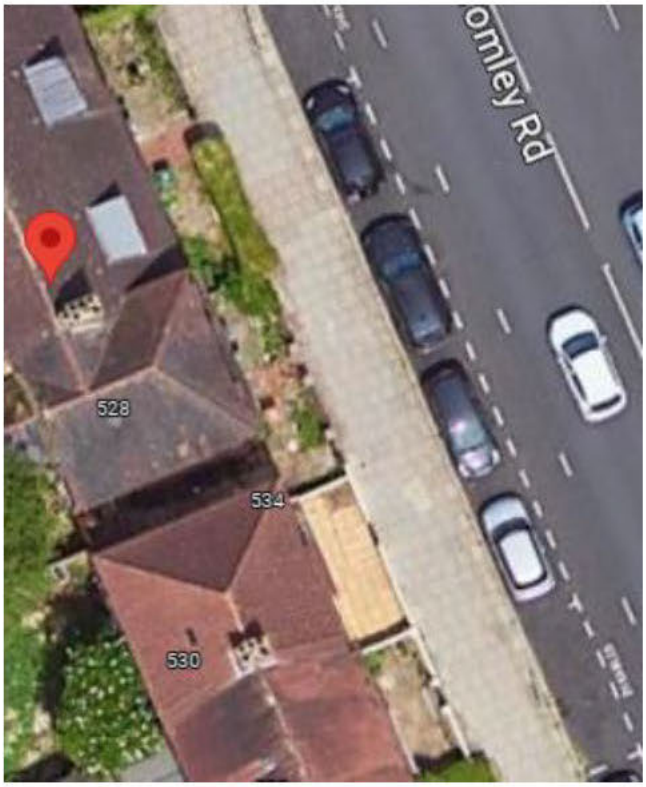


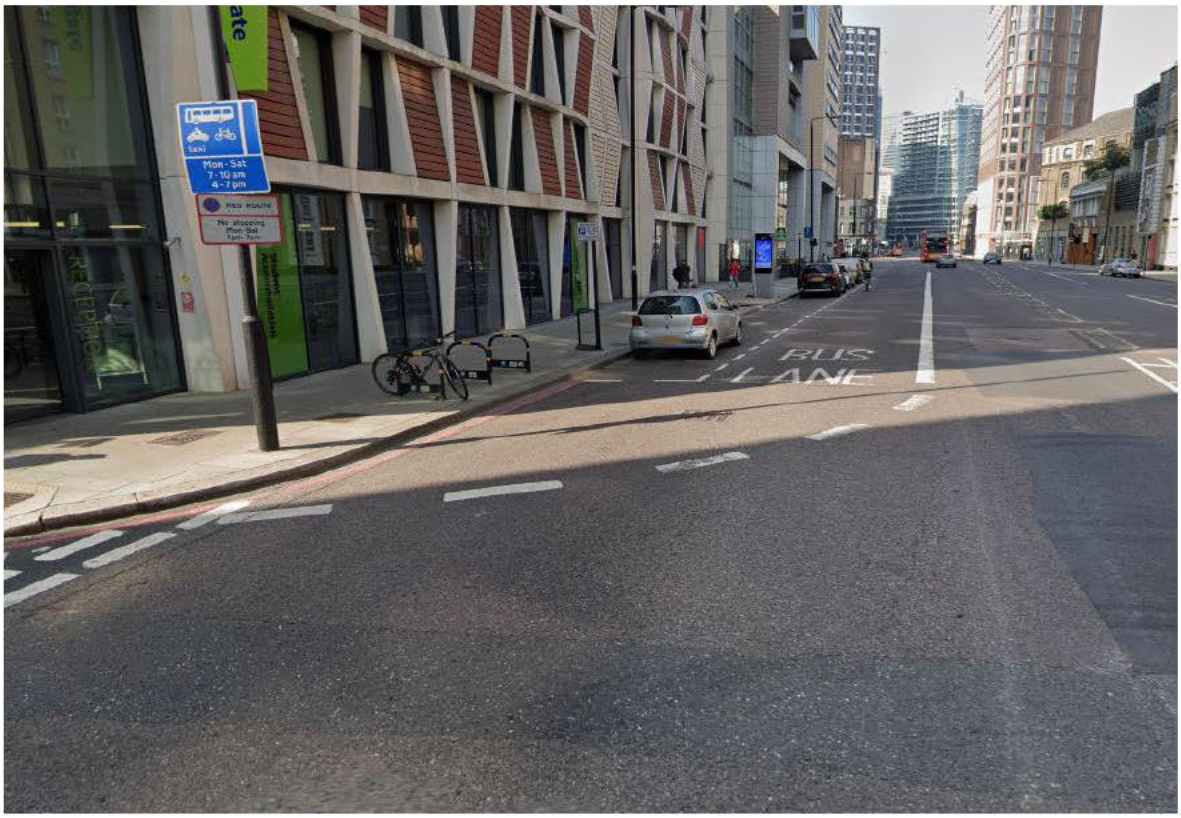
Photo of Restriction – Sign Face

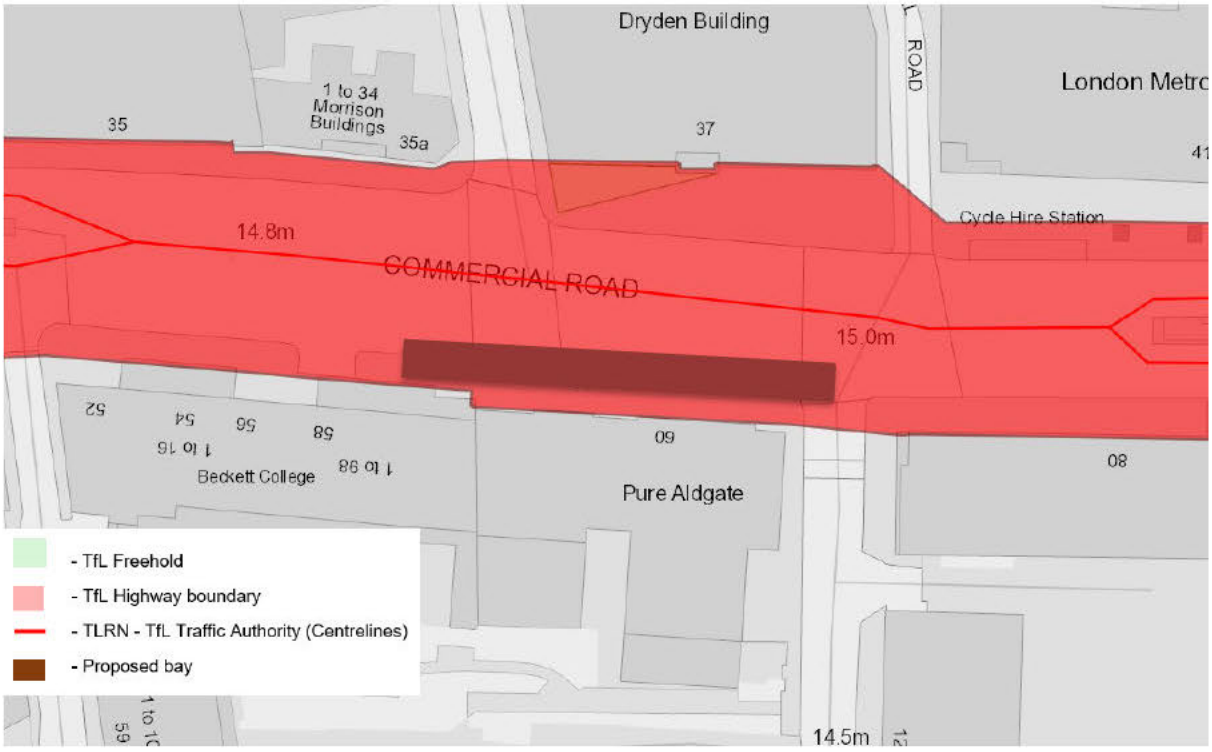
Site Ref: Tow 66

Site Location Information

Location	O/S 58-60 COMMERCIAL ROAD E1
Postal Code	E1 1LP
Site Coordinates	534222.226, 181311.8436
Street View Link	https://maps.app.goo.gl/dLHtCsVEfzjTmYKb7
Measurements	Width of Footway: 3.3m Width of Bay: 2.2m Total length of Bay: 46.1m
Maximum Number of Proposed Charging Bays	1

Location Plan





Site Photos

View Looking Upstream

View Looking Downstream

View Looking Upstream – Footway

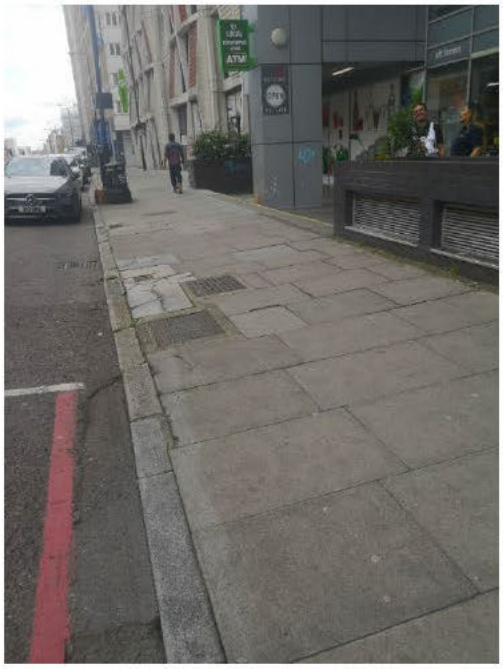
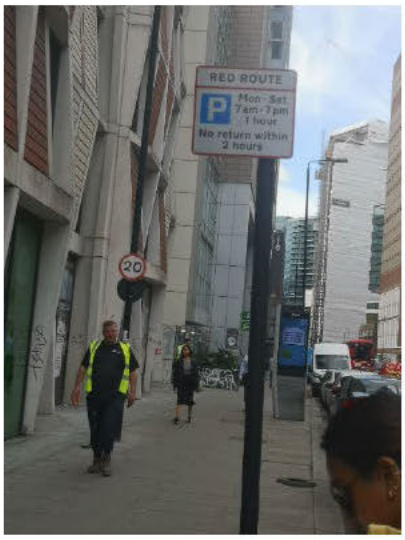


Photo of Restriction – Sign Face



EVERY JOURNEY MATTERS

Joint Schedule 1 (Definitions)

1.1 In each Contract, unless the context otherwise requires, capitalised expressions shall have the meanings set out in this Joint Schedule 1 (Definitions) or the relevant Schedule in which that capitalised expression appears.

1.2 If a capitalised expression does not have an interpretation in this Schedule or any other Schedule, it shall, in the first instance, be interpreted in accordance with the common interpretation within the relevant market sector/industry where appropriate. Otherwise, it shall be interpreted in accordance with the dictionary meaning.

1.3 In each Contract, unless the context otherwise requires:

1.3.1 the singular includes the plural and vice versa;

1.3.2 reference to a gender includes the other gender and the neuter;

1.3.3 references to a person include an individual, company, body corporate, corporation, unincorporated association, firm, partnership or other legal entity or Crown Body;

1.3.4 a reference to any Law includes a reference to that Law as amended, extended, consolidated or re-enacted from time to time;

1.3.5 the words "**including**", "**other**", "**in particular**", "**for example**" and similar words shall not limit the generality of the preceding words and shall be construed as if they were immediately followed by the words "**without limitation**";

1.3.6 references to "**writing**" include typing, printing, lithography, photography, display on a screen, electronic and facsimile transmission and other modes of representing or reproducing words in a visible form, and expressions referring to writing shall be construed accordingly;

1.3.7 references to "**representations**" shall be construed as references to present facts, to "**warranties**" as references to present and future facts and to "**undertakings"** as references to obligations under the Contract;

1.3.8 references to **"Clauses"** and **"Schedules"** are, unless otherwise provided, references to the clauses and schedules of the Core Terms and references in any Schedule to parts, paragraphs, annexes and tables are, unless otherwise provided, references to the parts, paragraphs, annexes and tables of the Schedule in which these references appear;

1.3.9 references to **"Paragraphs"** are, unless otherwise provided, references to the paragraph of the appropriate Schedules unless otherwise provided;

1.3.10 references to a series of Clauses or Paragraphs shall be inclusive of the clause numbers specified;

1.3.11 the headings in each Contract are for ease of reference only and shall not affect the interpretation or construction of a Contract; and

1.3.12 where the Buyer is a Crown Body the Supplier shall be treated as contracting with the Crown as a whole.

1.4 In each Contract, unless the context otherwise requires, the following words shall have the following meanings:

"Achieve"	in respect of a Test, to successfully pass such Test without any Test Issues and in respect of a Milestone, the issue of a Satisfaction Certificate in respect of that Milestone and "**Achieved**", "**Achieving**" and "**Achievement**" shall be construed accordingly;
"Additional Insurances"	insurance requirements relating to an Order Contract specified in the Order Form additional to those outlined in Joint Schedule 3 (Insurance Requirements);
"Admin Fee"	means the costs incurred by CCS in dealing with MI Failures calculated in accordance with the tariff of administration charges published by the CCS on: http://CCS.cabinetoffice.gov.uk/i-am-supplier/management-information/admin-fees;
"Affected Party"	the party seeking to claim relief in respect of a Force Majeure Event;
"Affiliates"	in relation to a body corporate, any other entity which directly or indirectly Controls, is Controlled by, or is under direct or indirect common Control of that body corporate from time to time;
"Annex"	extra information which supports a Schedule;
"Approval"	the prior written consent of the Buyer and "**Approve**" and "**Approved**" shall be construed accordingly;
"Audit"	the Relevant Authority's right to: a) verify the accuracy of the Charges and any other amounts payable by a Buyer under an Order Contract (including proposed or actual variations to them in accordance with the Contract); b) verify the costs of the Supplier (including the costs of all Subcontractors and any third party suppliers) in connection with the provision of the Services; c) verify the Open Book Data; d) verify the Supplier's and each Subcontractor's compliance with the applicable Law; e) identify or investigate actual or suspected breach of Clauses 27 to 33 and/or Joint Schedule 5 (Corporate Social Responsibility), impropriety or accounting mistakes or any breach or threatened breach of security and in these circumstances the Relevant Authority shall have no obligation to inform the Supplier of the purpose or objective of its investigations;

	f) identify or investigate any circumstances which may impact upon the financial stability of the Supplier, any Guarantor, and/or any Subcontractors or their ability to provide the Deliverables; g) obtain such information as is necessary to fulfil the Relevant Authority's obligations to supply information for parliamentary, ministerial, judicial or administrative purposes including the supply of information to the Comptroller and Auditor General; h) review any books of account and the internal contract management accounts kept by the Supplier in connection with each Contract; i) carry out the Relevant Authority's internal and statutory audits and to prepare, examine and/or certify the Relevant Authority's annual and interim reports and accounts; j) enable the National Audit Office to carry out an examination pursuant to Section 6(1) of the National Audit Act 1983 of the economy, efficiency and effectiveness with which the Relevant Authority has used its resources; k) verify the accuracy and completeness of any Management Information delivered or required by the DPS Contract;
"Auditor"	a) the Buyer's internal and external auditors; b) the Buyer's statutory or regulatory auditors; c) the Comptroller and Auditor General, their staff and/or any appointed representatives of the National Audit Office; d) HM Treasury or the Cabinet Office; e) any party formally appointed by the Buyer to carry out audit or similar review functions; and f) successors or assigns of any of the above;
"Authority"	CCS and each Buyer;
"Authority Cause"	any breach of the obligations of the Relevant Authority or any other default, act, omission, negligence or statement of the Relevant Authority, of its employees, servants, agents in connection with or in relation to the subject-matter of the Contract and in respect of which the Relevant Authority is liable to the Supplier;
"BACS"	the Bankers' Automated Clearing Services, which is a scheme for the electronic processing of financial transactions within the United Kingdom;
"Beneficiary"	a Party having (or claiming to have) the benefit of an indemnity under this Contract;
"Buyer"	the relevant public sector purchaser identified as such in the Order Form;

"Buyer Assets"	the Buyer's infrastructure, data, software, materials, assets, equipment or other property owned by and/or licensed or leased to the Buyer and which is or may be used in connection with the provision of the Deliverables which remain the property of the Buyer throughout the term of the Contract;
"Buyer Authorised Representative"	the representative appointed by the Buyer from time to time in relation to the Order Contract initially identified in the Order Form;
"Buyer Premises"	premises owned, controlled or occupied by the Buyer which are made available for use by the Supplier or its Subcontractors for the provision of the Deliverables (or any of them);
"CCS"	the Minister for the Cabinet Office as represented by Crown Commercial Service, which is an executive agency and operates as a trading fund of the Cabinet Office, whose offices are located at 9th Floor, The Capital, Old Hall Street, Liverpool L3 9PP;
"CCS Authorised Representative"	the representative appointed by CCS from time to time in relation to the DPS Contract initially identified in the DPS Appointment Form and subsequently on the Platform;
"Central Government Body"	a body listed in one of the following sub-categories of the Central Government classification of the Public Sector Classification Guide, as published and amended from time to time by the Office for National Statistics: a) Government Department; b) Non-Departmental Public Body or Assembly Sponsored Public Body (advisory, executive, or tribunal); c) Non-Ministerial Department; or d) Executive Agency;
"Change in Law"	any change in Law which impacts on the supply of the Deliverables and performance of the Contract which comes into force after the Start Date;
"Change of Control"	a change of control within the meaning of Section 450 of the Corporation Tax Act 2010;
"Charges"	the prices (exclusive of any applicable VAT), payable to the Supplier by the Buyer under the Order Contract, as set out in the Order Form, for the full and proper performance by the Supplier of its obligations under the Order Contract less any Deductions;
"Claim"	any claim which it appears that a Beneficiary is, or may become, entitled to indemnification under this Contract;
"Commercially Sensitive Information"	the Confidential Information listed in the DPS Appointment Form or Order Form (if any) comprising of commercially sensitive information relating to the Supplier, its IPR or its business or which the Supplier has indicated to the Authority that, if disclosed by the Authority,

	would cause the Supplier significant commercial disadvantage or material financial loss;
"Comparable Supply"	the supply of Deliverables to another Buyer of the Supplier that are the same or similar to the Deliverables;
"Compliance Officer"	the person(s) appointed by the Supplier who is responsible for ensuring that the Supplier complies with its legal obligations;
"Confidential Information"	means any information, however it is conveyed, that relates to the business, affairs, developments, trade secrets, Know-How, personnel and suppliers of CCS, the Buyer or the Supplier, including IPRs, together with information derived from the above, and any other information clearly designated as being confidential (whether or not it is marked as **"confidential"**) or which ought reasonably to be considered to be confidential;
"Conflict of Interest"	a conflict between the financial or personal duties of the Supplier or the Supplier Staff and the duties owed to CCS or any Buyer under a Contract, in the reasonable opinion of the Buyer or CCS;
"Contract"	either the DPS Contract or the Order Contract, as the context requires;
"Contracts Finder"	the Government's publishing portal for public sector procurement opportunities;
"Contract Period"	the term of either a DPS Contract or Order Contract from the earlier of the: a) applicable Start Date; or b) the Effective Date until the applicable End Date;
"Contract Value"	the higher of the actual or expected total Charges paid or payable under a Contract where all obligations are met by the Supplier;
"Contract Year"	a consecutive period of twelve (12) Months commencing on the Start Date or each anniversary thereof;
"Control"	control in either of the senses defined in sections 450 and 1124 of the Corporation Tax Act 2010 and "**Controlled**" shall be construed accordingly;
"Controller"	has the meaning given to it in the GDPR;
"Core Terms"	CCS' standard terms and conditions for common goods and services which govern how Supplier must interact with CCS and Buyers under DPS Contracts and Order Contracts;
"Costs"	the following costs (without double recovery) to the extent that they are reasonably and properly incurred by the Supplier in providing the Deliverables: a) the cost to the Supplier or the Key Subcontractor (as the context requires), calculated per Man Day, of engaging the Supplier Staff, including:

	i) base salary paid to the Supplier Staff; ii) employer's National Insurance contributions; iii) pension contributions; iv) car allowances; v) any other contractual employment benefits; vi) staff training; vii) work place accommodation; viii) work place IT equipment and tools reasonably necessary to provide the Deliverables (but not including items included within limb (b) below); and ix) reasonable recruitment costs, as agreed with the Buyer; b) costs incurred in respect of Supplier Assets which would be treated as capital costs according to generally accepted accounting principles within the UK, which shall include the cost to be charged in respect of Supplier Assets by the Supplier to the Buyer or (to the extent that risk and title in any Supplier Asset is not held by the Supplier) any cost actually incurred by the Supplier in respect of those Supplier Assets; c) operational costs which are not included within (a) or (b) above, to the extent that such costs are necessary and properly incurred by the Supplier in the provision of the Deliverables; d) Reimbursable Expenses to the extent these have been specified as allowable in the Order Form and are incurred in delivering any Deliverables; but excluding: a) Overhead; b) financing or similar costs; c) maintenance and support costs to the extent that these relate to maintenance and/or support Deliverables provided beyond the Order Contract Period whether in relation to Supplier Assets or otherwise; d) taxation; e) fines and penalties; f) amounts payable under Order Schedule 16 (Benchmarking) where such Schedule is used; and g) non-cash items (including depreciation, amortisation, impairments and movements in provisions);
"Crown Body"	the government of the United Kingdom (including the Northern Ireland Assembly and Executive Committee, the Scottish Government and the National Assembly for Wales), including, but not limited to, government ministers and government departments

	and particular bodies, persons, commissions or agencies from time to time carrying out functions on its behalf;
"CRTPA"	the Contract Rights of Third Parties Act 1999;
"Data Protection Impact Assessment"	an assessment by the Controller of the impact of the envisaged Processing on the protection of Personal Data;
"Data Protection Legislation"	(i) the GDPR, the LED and any applicable national implementing Laws as amended from time to time (ii) the DPA 2018 to the extent that it relates to Processing of personal data and privacy; (iii) all applicable Law about the Processing of personal data and privacy;
"Data Protection Officer"	has the meaning given to it in the GDPR;
"Data Subject"	has the meaning given to it in the GDPR;
"Data Subject Access Request"	a request made by, or on behalf of, a Data Subject in accordance with rights granted pursuant to the Data Protection Legislation to access their Personal Data;
"Deductions"	all Service Credits, Delay Payments (if applicable), or any other deduction which the Buyer is paid or is payable to the Buyer under an Order Contract;
"Default"	any breach of the obligations of the Supplier (including abandonment of a Contract in breach of its terms) or any other default (including material default), act, omission, negligence or statement of the Supplier, of its Subcontractors or any Supplier Staff howsoever arising in connection with or in relation to the subject-matter of a Contract and in respect of which the Supplier is liable to the Relevant Authority;
"Default Management Levy"	has the meaning given to it in Paragraph 8.1.1 of DPS Schedule 5 (Management Levy and Information);
"Delay Payments"	the amounts (if any) payable by the Supplier to the Buyer in respect of a delay in respect of a Milestone as specified in the Mobilisation Plan;
"Deliverables"	Goods and/or Services that may be ordered under the Contract including the Documentation;
"Delivery"	delivery of the relevant Deliverable or Milestone in accordance with the terms of an Order Contract as confirmed and accepted by the Buyer by either (a) confirmation in writing to the Supplier; or (b) where Order Schedule 13 (Implementation Plan and Testing) is used, issue by the Buyer of a Satisfaction Certificate. "**Deliver**" and "**Delivered**" shall be construed accordingly;
"Disaster"	the occurrence of one or more events which, either separately or cumulatively, mean that the Deliverables, or a material part thereof

	will be unavailable (or could reasonably be anticipated to be unavailable) for the period specified in the Order Form (for the purposes of this definition the **"Disaster Period**");
"Disclosing Party"	the Party directly or indirectly providing Confidential Information to the other Party in accordance with Clause 15 (What you must keep confidential);
"Dispute"	any claim, dispute or difference arises out of or in connection with the Contract or in connection with the negotiation, existence, legal validity, enforceability or termination of the Contract, whether the alleged liability shall arise under English law or under the law of some other country and regardless of whether a particular cause of action may successfully be brought in the English courts;
"Dispute Resolution Procedure"	the dispute resolution procedure set out in Clause 34 (Resolving disputes);
"Documentation"	descriptions of the Services and Service Levels, technical specifications, user manuals, training manuals, operating manuals, process definitions and procedures, system environment descriptions and all such other documentation (whether in hardcopy or electronic form) is required to be supplied by the Supplier to the Buyer under a Contract as: a) would reasonably be required by a competent third party capable of Good Industry Practice contracted by the Buyer to develop, configure, build, deploy, run, maintain, upgrade and test the individual systems that provide the Deliverables; b) is required by the Supplier in order to provide the Deliverables; and/or has been or shall be generated for the purpose of providing the Deliverables;
"DOTAS"	the Disclosure of Tax Avoidance Schemes rules which require a promoter of tax schemes to tell HMRC of any specified notifiable arrangements or proposals and to provide prescribed information on those arrangements or proposals within set time limits as contained in Part 7 of the Finance Act 2004 and in secondary legislation made under vires contained in Part 7 of the Finance Act 2004 and as extended to National Insurance Contributions;
"DPA 2018"	a) the Data Protection Act 2018;
"DPS"	the dynamic purchasing system operated by CCS in accordance with Regulation 34 that this DPS Contract governs access to;
"DPS Application"	the application submitted by the Supplier to CCS and annexed to or referred to in DPS Schedule 2 (DPS Application);
"DPS Appointment Form"	the document outlining the DPS Incorporated Terms and crucial information required for the DPS Contract, to be executed by the Supplier and CCS and subsequently held on the Platform;

"DPS Contract"	the dynamic purchasing system access agreement established between CCS and the Supplier in accordance with Regulation 34 by the DPS Appointment Form for the provision of the Deliverables to Buyers by the Supplier pursuant to the OJEU Notice;
"DPS Contract Period"	the period from the DPS Start Date until the End Date or earlier termination of the DPS Contract;
"DPS Expiry Date"	the date of the end of the DPS Contract as stated in the DPS Appointment Form;
"DPS Incorporated Terms"	the contractual terms applicable to the DPS Contract specified in the DPS Appointment Form;
"DPS Initial Period"	the initial term of the DPS Contract as specified in the DPS Appointment Form;
"DPS Optional Extension Period"	such period or periods beyond which the DPS Initial Period may be extended up to a maximum of the number of years in total specified in the DPS Appointment Form;
"DPS Pricing"	the maximum price(s) applicable to the provision of the Deliverables set out in DPS Schedule 3 (DPS Pricing);
"DPS Registration"	the registration process a Supplier undertakes when submitting its details onto the Platform;
"DPS SQ Submission"	the Supplier's selection questionnaire response;
"DPS Special Terms"	any additional terms and conditions specified in the DPS Appointment Form incorporated into the DPS Contract;
"DPS Start Date"	the date of start of the DPS Contract as stated in the DPS Appointment Form;
"Due Diligence Information"	any information supplied to the Supplier by or on behalf of the Authority prior to the Start Date;
"Effective Date"	the date on which the final Party has signed the Contract;
"EIR"	the Environmental Information Regulations 2004;
"Employment Regulations"	the Transfer of Undertakings (Protection of Employment) Regulations 2006 (SI 2006/246) as amended or replaced or any other Regulations implementing the European Council Directive 77/187/EEC;
"End Date"	the earlier of: a) the Expiry Date (as extended by any Extension Period exercised by the Authority under Clause 10.2); or if a Contract is terminated before the date specified in (a) above, the date of termination of the Contract;
"Environmental Policy"	to conserve energy, water, wood, paper and other resources, reduce waste and phase out the use of ozone depleting substances and

	minimise the release of greenhouse gases, volatile organic compounds and other substances damaging to health and the environment, including any written environmental policy of the Buyer;
"Estimated Year 1 Contract Charges"	the anticipated total charges payable by the Supplier in the first Contract Year specified in the Order Form; a)
"Estimated Yearly Charges"	means for the purposes of calculating each Party's annual liability under clause 11.2 : i) in the first Contract Year, the Estimated Year 1 Contract Charges; or ii) in any subsequent Contract Years, the Charges paid or payable in the previous Contract Year; or iii) after the end of the Contract, the Charges paid or payable in the last Contract Year during the Contract Period;
"Equality and Human Rights Commission"	the UK Government body named as such as may be renamed or replaced by an equivalent body from time to time;
"Existing IPR"	any and all IPR that are owned by or licensed to either Party and which are or have been developed independently of the Contract (whether prior to the Start Date or otherwise);
"Expiry Date"	the DPS Expiry Date or the Order Expiry Date (as the context dictates);
"Extension Period"	the DPS Optional Extension Period or the Order Optional Extension Period as the context dictates;
"Filter Categories"	the number of categories specified in DPS Schedule 1 (Specification), if applicable;
"FOIA"	the Freedom of Information Act 2000 and any subordinate legislation made under that Act from time to time together with any guidance and/or codes of practice issued by the Information Commissioner or relevant Government department in relation to such legislation;
"Force Majeure Event"	any event, occurrence, circumstance, matter or cause affecting the performance by either the Relevant Authority or the Supplier of its obligations arising from: a) acts, events, omissions, happenings or non-happenings beyond the reasonable control of the Affected Party which prevent or materially delay the Affected Party from performing its obligations under a Contract; b) riots, civil commotion, war or armed conflict, acts of terrorism, nuclear, biological or chemical warfare;

	c) acts of a Crown Body, local government or regulatory bodies; d) fire, flood or any disaster; or e) an industrial dispute affecting a third party for which a substitute third party is not reasonably available but excluding: i) any industrial dispute relating to the Supplier, the Supplier Staff (including any subsets of them) or any other failure in the Supplier or the Subcontractor's supply chain; ii) any event, occurrence, circumstance, matter or cause which is attributable to the wilful act, neglect or failure to take reasonable precautions against it by the Party concerned; and any failure of delay caused by a lack of funds;
"Force Majeure Notice"	a written notice served by the Affected Party on the other Party stating that the Affected Party believes that there is a Force Majeure Event;
"GDPR"	i) the General Data Protection Regulation (Regulation (EU) 2016/679);
"General Anti-Abuse Rule"	b) the legislation in Part 5 of the Finance Act 2013; and any future legislation introduced into parliament to counteract tax advantages arising from abusive arrangements to avoid National Insurance contributions;
"General Change in Law"	a Change in Law where the change is of a general legislative nature (including taxation or duties of any sort affecting the Supplier) or which affects or relates to a Comparable Supply;
"Goods"	a) goods made available by the Supplier as specified in DPS Schedule 1 (Specification) and in relation to an Order Contract as specified in the Order Form;
"Good Industry Practice"	standards, practices, methods and procedures conforming to the Law and the exercise of the degree of skill and care, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced person or body engaged within the relevant industry or business sector;
"Government"	the government of the United Kingdom (including the Northern Ireland Assembly and Executive Committee, the Scottish Government and the National Assembly for Wales), including government ministers and government departments and other bodies, persons, commissions or agencies from time to time carrying out functions on its behalf;
"Government Data"	the data, text, drawings, diagrams, images or sounds (together with any database made up of any of these) which are embodied in any electronic, magnetic, optical or tangible media, including any of the Authority's Confidential Information, and which: i) are supplied to the Supplier by or on behalf of the Authority; or

	the Supplier is required to generate, process, store or transmit pursuant to a Contract;
"Government Procurement Card"	the Government's preferred method of purchasing and payment for low value goods or services https://www.gov.uk/government/publications/government-procurement-card--2;
"Guarantor"	i) the person (if any) who has entered into a guarantee in the form set out in Joint Schedule 8 (Guarantee) in relation to this Contract;
"Halifax Abuse Principle"	the principle explained in the CJEU Case C-255/02 Halifax and others;
"HMRC"	Her Majesty's Revenue and Customs;
"ICT Policy"	the Buyer's policy in respect of information and communications technology, referred to in the Order Form, which is in force as at the Order Start Date (a copy of which has been supplied to the Supplier), as updated from time to time in accordance with the Variation Procedure;
"Impact Assessment"	an assessment of the impact of a Variation request by the Relevant Authority completed in good faith, including: a) details of the impact of the proposed Variation on the Deliverables and the Supplier's ability to meet its other obligations under the Contract; b) details of the cost of implementing the proposed Variation; c) details of the ongoing costs required by the proposed Variation when implemented, including any increase or decrease in the DPS Pricing/Charges (as applicable), any alteration in the resources and/or expenditure required by either Party and any alteration to the working practices of either Party; d) a timetable for the implementation, together with any proposals for the testing of the Variation; and such other information as the Relevant Authority may reasonably request in (or in response to) the Variation request;
"Implementation Plan"	the plan for provision of the Deliverables set out in Order Schedule 13 (Implementation Plan and Testing) where that Schedule is used or otherwise as agreed between the Supplier and the Buyer;
"Indemnifier"	a) a Party from whom an indemnity is sought under this Contract;
"Independent Control"	where a Controller has provided Personal Data to another Party which is not a Processor or a Joint Controller because the recipient itself determines the purposes and means of Processing but does so separately from the Controller providing it with Personal Data and "**Independent Controller**" shall be construed accordingly;
"Indexation"	the adjustment of an amount or sum in accordance with DPS Schedule 3 (DPS Pricing) and the relevant Order Form;

"Information"	has the meaning given under section 84 of the Freedom of Information Act 2000;
"Information Commissioner"	the UK's independent authority which deals with ensuring information relating to rights in the public interest and data privacy for individuals is met, whilst promoting openness by public bodies;
"Initial Period"	the initial term of a Contract specified on the Platform or the Order Form, as the context requires;
"Insolvency Event"	a) in respect of a person: b) a proposal is made for a voluntary arrangement within Part I of the Insolvency Act 1986 or of any other composition scheme or arrangement with, or assignment for the benefit of, its creditors; or c) a shareholders' meeting is convened for the purpose of considering a resolution that it be wound up or a resolution for its winding-up is passed (other than as part of, and exclusively for the purpose of, a bona fide reconstruction or amalgamation); or d) a petition is presented for its winding up (which is not dismissed within fourteen (14) Working Days of its service) or an application is made for the appointment of a provisional liquidator or a creditors' meeting is convened pursuant to section 98 of the Insolvency Act 1986; or e) a receiver, administrative receiver or similar officer is appointed over the whole or any part of its business or assets; or f) an application is made either for the appointment of an administrator or for an administration order, an administrator is appointed, or notice of intention to appoint an administrator is given; or g) it is or becomes insolvent within the meaning of section 123 of the Insolvency Act 1986; or h) being a "small company" within the meaning of section 382(3) of the Companies Act 2006, a moratorium comes into force pursuant to Schedule A1 of the Insolvency Act 1986; or i) where the person is an individual or partnership, any event analogous to those listed in limbs (a) to (g) (inclusive) occurs in relation to that individual or partnership; or any event analogous to those listed in limbs (a) to (h) (inclusive) occurs under the law of any other jurisdiction;
"Installation Works"	all works which the Supplier is to carry out at the beginning of the Order Contract Period to install the Goods in accordance with the Order Contract;
"Intellectual Property Rights" or "IPR"	a) copyright, rights related to or affording protection similar to copyright, rights in databases, patents and rights in inventions, semi-conductor topography rights, trade marks, rights in internet domain names and website addresses and other rights in trade or

	business names, goodwill, designs, Know-How, trade secrets and other rights in Confidential Information; b) applications for registration, and the right to apply for registration, for any of the rights listed at (a) that are capable of being registered in any country or jurisdiction; and c) all other rights having equivalent or similar effect in any country or jurisdiction;
"Invoicing Address"	the address to which the Supplier shall Invoice the Buyer as specified in the Order Form;
"IPR Claim"	a) any claim of infringement or alleged infringement (including the defence of such infringement or alleged infringement) of any IPR, used to provide the Deliverables or otherwise provided and/or licensed by the Supplier (or to which the Supplier has provided access) to the Relevant Authority in the fulfilment of its obligations under a Contract;
"IR35"	the off-payroll rules requiring individuals who work through their company pay the same tax and National Insurance contributions as an employee which can be found online at: https://www.gov.uk/guidance/ir35-find-out-if-it-applies;
"Joint Controller Agreement"	the agreement (if any) entered into between the Relevant Authority and the Supplier substantially in the form set out in Annex 2 of Joint Schedule 11 (*Processing Data*);
"Joint Controllers"	where two or more Controllers jointly determine the purposes and means of Processing;
"Key Personnel"	the individuals (if any) identified as such in the Order Form;
"Key Sub-Contract"	each Sub-Contract with a Key Subcontractor;
"Key Subcontractor"	any Subcontractor: a) which is relied upon to deliver any work package within the Deliverables in their entirety; and/or b) which, in the opinion of CCS or the Buyer performs (or would perform if appointed) a critical role in the provision of all or any part of the Deliverables; and/or c) with a Sub-Contract with a contract value which at the time of appointment exceeds (or would exceed if appointed) 10% of the aggregate Charges forecast to be payable under the Order Contract, and the Supplier shall list all such Key Subcontractors on the Platform and in the Key Subcontractor Section in the Order Form;
"Know-How"	all ideas, concepts, schemes, information, knowledge, techniques, methodology, and anything else in the nature of know-how relating to the Deliverables but excluding know-how already in the other Party's possession before the applicable Start Date;

"Law"	any law, subordinate legislation within the meaning of Section 21(1) of the Interpretation Act 1978, bye-law, enforceable right within the meaning of Section 2 of the European Communities Act 1972, regulation, order, regulatory policy, mandatory guidance or code of practice, judgment of a relevant court of law, or directives or requirements with which the relevant Party is bound to comply;
"LED"	Law Enforcement Directive (Directive (EU) 2016/680);
"Losses"	all losses, liabilities, damages, costs, expenses (including legal fees), disbursements, costs of investigation, litigation, settlement, judgment, interest and penalties whether arising in contract, tort (including negligence), breach of statutory duty, misrepresentation or otherwise and "**Loss**" shall be interpreted accordingly;
"Man Day"	7.5 Man Hours, whether or not such hours are worked consecutively and whether or not they are worked on the same day;
"Man Hours"	the hours spent by the Supplier Staff properly working on the provision of the Deliverables including time spent travelling (other than to and from the Supplier's offices, or to and from the Sites) but excluding lunch breaks;
"Management Information"	the management information specified in DPS Schedule 5 (Management Levy and Information);
"Management Levy"	the sum specified on the Platform payable by the Supplier to CCS in accordance with DPS Schedule 5 (Management Levy and Information);
"Marketing Contact"	shall be the person identified in the DPS Appointment Form;
"MI Default"	means when two (2) MI Reports are not provided in any rolling six (6) month period;
"MI Failure"	means when an MI report: a) contains any material errors or material omissions or a missing mandatory field; or b) is submitted using an incorrect MI reporting Template; or is not submitted by the reporting date (including where a declaration of no business should have been filed);
"MI Report"	means a report containing Management Information submitted to the Authority in accordance with DPS Schedule 5 (Management Levy and Information);
"MI Reporting Template"	a) means the form of report set out in the Annex to DPS Schedule 5 (Management Levy and Information) setting out the information the Supplier is required to supply to the Authority;
"Milestone"	an event or task described in the Mobilisation Plan;
"Milestone Date"	the target date set out against the relevant Milestone in the Mobilisation Plan by which the Milestone must be Achieved;

"Month"	a calendar month and "**Monthly**" shall be interpreted accordingly;
"National Insurance"	contributions required by the National Insurance Contributions Regulations 2012 (SI 2012/1868) made under section 132A of the Social Security Administration Act 1992;
"New IPR"	a) IPR in items created by the Supplier (or by a third party on behalf of the Supplier) specifically for the purposes of a Contract and updates and amendments of these items including (but not limited to) database schema; and/or b) IPR in or arising as a result of the performance of the Supplier's obligations under a Contract and all updates and amendments to the same; but shall not include the Supplier's Existing IPR;
"Occasion of Tax Non – Compliance"	where: a) any tax return of the Supplier submitted to a Relevant Tax Authority on or after 1 October 2012 which is found on or after 1 April 2013 to be incorrect as a result of: i) a Relevant Tax Authority successfully challenging the Supplier under the General Anti-Abuse Rule or the Halifax Abuse Principle or under any tax rules or legislation in any jurisdiction that have an effect equivalent or similar to the General Anti-Abuse Rule or the Halifax Abuse Principle; ii) the failure of an avoidance scheme which the Supplier was involved in, and which was, or should have been, notified to a Relevant Tax Authority under the DOTAS or any equivalent or similar regime in any jurisdiction; and/or any tax return of the Supplier submitted to a Relevant Tax Authority on or after 1 October 2012 which gives rise, on or after 1 April 2013, to a criminal conviction in any jurisdiction for tax related offences which is not spent at the Start Date or to a civil penalty for fraud or evasion;
"Open Book Data"	complete and accurate financial and non-financial information which is sufficient to enable the Buyer to verify the Charges already paid or payable and Charges forecast to be paid during the remainder of the Order Contract, including details and all assumptions relating to: a) the Supplier's Costs broken down against each Good and/or Service and/or Deliverable, including actual capital expenditure (including capital replacement costs) and the unit cost and total actual costs of all Deliverables; b) operating expenditure relating to the provision of the Deliverables including an analysis showing: i) the unit costs and quantity of Goods and any other consumables and bought-in Deliverables; ii) manpower resources broken down into the number and grade/role of all Supplier Staff (free of any contingency)

	together with a list of agreed rates against each manpower grade; iii) a list of Costs underpinning those rates for each manpower grade, being the agreed rate less the Supplier Profit Margin; and iv) Reimbursable Expenses, if allowed under the Order Form; c) Overheads; d) all interest, expenses and any other third party financing costs incurred in relation to the provision of the Deliverables; e) the Supplier Profit achieved over the DPS Contract Period and on an annual basis; f) confirmation that all methods of Cost apportionment and Overhead allocation are consistent with and not more onerous than such methods applied generally by the Supplier; g) an explanation of the type and value of risk and contingencies associated with the provision of the Deliverables, including the amount of money attributed to each risk and/or contingency; and the actual Costs profile for each Service Period;
"Order"	a) means an order for the provision of the Deliverables placed by a Buyer with the Supplier under a Contract;
"Order Contract"	b) the contract between the Buyer and the Supplier (entered into pursuant to the provisions of the DPS Contract), which consists of the terms set out and referred to in the Order Form;
"Order Contract Period"	the Contract Period in respect of the Order Contract;
"Order Expiry Date"	the date of the end of an Order Contract as stated in the Order Form;
"Order Form"	a completed Order Form Template (or equivalent information issued by the Buyer) used to create an Order Contract;
"Order Form Template"	the template in DPS Schedule 6 (Order Form Template and Order Schedules);
"Order Incorporated Terms"	the contractual terms applicable to the Order Contract specified under the relevant heading in the Order Form;
"Order Initial Period"	the Initial Period of an Order Contract specified in the Order Form;
"Order Optional Extension Period"	such period or periods beyond which the Order Initial Period may be extended up to a maximum of the number of years in total specified in the Order Form;
"Order Procedure"	the process for awarding an Order Contract pursuant to Clause 2 (How the contract works) and DPS Schedule 7 (Order Procedure);

"Order Special Terms"	any additional terms and conditions specified in the Order Form incorporated into the applicable Order Contract;
"Order Start Date"	the date of start of an Order Contract as stated in the Order Form;
"Order Tender"	the tender submitted by the Supplier in response to the Buyer's Statement of Requirements following an Order Procedure and set out at Order Schedule 4 (Order Tender);
"Other Contracting Authority"	any actual or potential Buyer under the DPS Contract;
"Overhead"	those amounts which are intended to recover a proportion of the Supplier's or the Key Subcontractor's (as the context requires) indirect corporate costs (including financing, marketing, advertising, research and development and insurance costs and any fines or penalties) but excluding allowable indirect costs apportioned to facilities and administration in the provision of Supplier Staff and accordingly included within limb (a) of the definition of "Costs";
"Parliament"	takes its natural meaning as interpreted by Law;
"Party"	in the context of the DPS Contract, CCS or the Supplier, and in the in the context of an Order Contract the Buyer or the Supplier. "**Parties**" shall mean both of them where the context permits;
"Performance Indicators" or "PIs"	the performance measurements and targets in respect of the Supplier's performance of the DPS Contract set out in DPS Schedule 4 (DPS Management);
"Personal Data"	has the meaning given to it in the GDPR;
"Personal Data Breach"	has the meaning given to it in the GDPR;
"Personnel"	all directors, officers, employees, agents, consultants and suppliers of a Party and/or of any Subcontractor and/or Subprocessor engaged in the performance of its obligations under a Contract;
"Platform"	the online application operated on behalf of CCS to facilitate the technical operation of the DPS;
"Prescribed Person"	a legal adviser, an MP or an appropriate body which a whistle-blower may make a disclosure to as detailed in 'Whistleblowing: list of prescribed people and bodies', 24 November 2016, available online at: https://www.gov.uk/government/publications/blowing-the-whistle-list-of-prescribed-people-and-bodies--2/whistleblowing-list-of-prescribed-people-and-bodies;
"Processing"	has the meaning given to it in the GDPR;
"Processor"	has the meaning given to it in the GDPR;

"Processor Personnel"	all directors, officers, employees, agents, consultants and suppliers of the Processor and/or of any Subprocessor engaged in the performance of its obligations under a Contract;
"Progress Meeting"	a meeting between the Buyer Authorised Representative and the Supplier Authorised Representative;
"Progress Meeting Frequency"	the frequency at which the Supplier shall conduct a Progress Meeting in accordance with Clause 6.1 as specified in the Order Form;
"Progress Report"	a report provided by the Supplier indicating the steps taken to achieve Milestones or delivery dates;
"Progress Report Frequency"	the frequency at which the Supplier shall deliver Progress Reports in accordance with Clause 6.1 as specified in the Order Form;
"Prohibited Acts"	a) to directly or indirectly offer, promise or give any person working for or engaged by a Buyer or any other public body a financial or other advantage to: i) induce that person to perform improperly a relevant function or activity; or ii) reward that person for improper performance of a relevant function or activity; b) to directly or indirectly request, agree to receive or accept any financial or other advantage as an inducement or a reward for improper performance of a relevant function or activity in connection with each Contract; or c) committing any offence: i) under the Bribery Act 2010 (or any legislation repealed or revoked by such Act); or ii) under legislation or common law concerning fraudulent acts; or iii) defrauding, attempting to defraud or conspiring to defraud a Buyer or other public body; or any activity, practice or conduct which would constitute one of the offences listed under (c) above if such activity, practice or conduct had been carried out in the UK;
"Protective Measures"	appropriate technical and organisational measures which may include pseudonymising and encrypting Personal Data, ensuring confidentiality, integrity, availability and resilience of systems and services, ensuring that availability of and access to Personal Data can be restored in a timely manner after an incident, and regularly assessing and evaluating the effectiveness of the such measures adopted by it including those outlined in DPS Schedule 9 (Cyber Essentials), if applicable, in the case of the DPS Contract or Order Schedule 9 (Security), if applicable, in the case of an Order Contract;

"Recall"	a) a request by the Supplier to return Goods to the Supplier or the manufacturer after the discovery of safety issues or defects (including defects in the right IPR rights) that might endanger health or hinder performance;
"Recipient Party"	the Party which receives or obtains directly or indirectly Confidential Information;
"Rectification Plan"	the Supplier's plan (or revised plan) to rectify its breach using the template in Joint Schedule 10 (Rectification Plan Template)which shall include: a) full details of the Default that has occurred, including a root cause analysis; b) the actual or anticipated effect of the Default; and the steps which the Supplier proposes to take to rectify the Default (if applicable) and to prevent such Default from recurring, including timescales for such steps and for the rectification of the Default (where applicable);
"Rectification Plan Process"	the process set out in Clause 10.4.3 to 10.4.5 (Rectification Plan Process);
"Regulations"	a) the Public Contracts Regulations 2015 and/or the Public Contracts (Scotland) Regulations 2015 (as the context requires);
"Reimbursable Expenses"	the reasonable out of pocket travel and subsistence (for example, hotel and food) expenses, properly and necessarily incurred in the performance of the Services, calculated at the rates and in accordance with the Buyer's expenses policy current from time to time, but not including: a) travel expenses incurred as a result of Supplier Staff travelling to and from their usual place of work, or to and from the premises at which the Services are principally to be performed, unless the Buyer otherwise agrees in advance in writing; and subsistence expenses incurred by Supplier Staff whilst performing the Services at their usual place of work, or to and from the premises at which the Services are principally to be performed;
"Relevant Authority"	the Authority which is party to the Contract to which a right or obligation is owed, as the context requires;
"Relevant Authority's Confidential Information"	a) all Personal Data and any information, however it is conveyed, that relates to the business, affairs, developments, property rights, trade secrets, Know-How and IPR of the Relevant Authority (including all Relevant Authority Existing IPR and New IPR); b) any other information clearly designated as being confidential (whether or not it is marked "confidential") or which ought reasonably be considered confidential which comes (or has come) to the Relevant Authority's attention or into the Relevant Authority's possession in connection with a Contract; and

	c) information derived from any of the above;
"Relevant Requirements"	all applicable Law relating to bribery, corruption and fraud, including the Bribery Act 2010 and any guidance issued by the Secretary of State pursuant to section 9 of the Bribery Act 2010;
"Relevant Tax Authority"	HMRC, or, if applicable, the tax authority in the jurisdiction in which the Supplier is established;
"Reminder Notice"	a notice sent in accordance with Clause 10.6 given by the Supplier to the Buyer providing notification that payment has not been received on time;
"Replacement Deliverables"	any deliverables which are substantially similar to any of the Deliverables and which the Buyer receives in substitution for any of the Deliverables following the Order Expiry Date, whether those goods are provided by the Buyer internally and/or by any third party;
"Replacement Subcontractor"	a Subcontractor of the Replacement Supplier to whom Transferring Supplier Employees will transfer on a Service Transfer Date (or any Subcontractor of any such Subcontractor);
"Replacement Supplier"	any third party provider of Replacement Deliverables appointed by or at the direction of the Buyer from time to time or where the Buyer is providing Replacement Deliverables for its own account, shall also include the Buyer;
"Request For Information"	a request for information or an apparent request relating to a Contract for the provision of the Deliverables or an apparent request for such information under the FOIA or the EIRs;
"Required Insurances"	the insurances required by Joint Schedule 3 (Insurance Requirements) or any additional insurances specified in the Order Form;
"Satisfaction Certificate"	the certificate (materially in the form of the document contained in Part B of Order Schedule 13 (Implementation Plan and Testing) or as agreed by the Parties where Order Schedule 13 is not used in this Contract) granted by the Buyer when the Supplier has met all of the requirements of an Order, Achieved a Milestone or a Test;
"Schedules"	any attachment to a DPS or Order Contract which contains important information specific to each aspect of buying and selling;
"Security Management Plan"	the Supplier's security management plan prepared pursuant to Order Schedule 9 (Security) (if applicable);
"Security Policy"	the Buyer's security policy, referred to in the Order Form, in force as at the Order Start Date (a copy of which has been supplied to the Supplier), as updated from time to time and notified to the Supplier;
"Self Audit Certificate"	means the certificate in the form as set out in DPS Schedule 8 (Self Audit Certificate);

"Serious Fraud Office"	the UK Government body named as such as may be renamed or replaced by an equivalent body from time to time;
"Service Levels"	any service levels applicable to the provision of the Deliverables under the Order Contract (which, where Order Schedule 14 (Service Credits) is used in this Contract, are specified in the Annex to Part A of such Schedule);
"Service Period"	has the meaning given to it in the Order Form;
"Services"	services made available by the Supplier as specified in DPS Schedule 1 (Specification) and in relation to an Order Contract as specified in the Order Form;
"Service Transfer"	any transfer of the Deliverables (or any part of the Deliverables), for whatever reason, from the Supplier or any Subcontractor to a Replacement Supplier or a Replacement Subcontractor;
"Service Transfer Date"	the date of a Service Transfer;
"Sites"	any premises (including the Buyer Premises, the Supplier's premises or third party premises) from, to or at which: a) the Deliverables are (or are to be) provided; or the Supplier manages, organises or otherwise directs the provision or the use of the Deliverables;
"SME"	an enterprise falling within the category of micro, small and medium sized enterprises defined by the Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium enterprises;
"Special Terms"	a) any additional Clauses set out in the DPS Appointment Form or Order Form which shall form part of the respective Contract;
"Specific Change in Law"	a Change in Law that relates specifically to the business of the Buyer and which would not affect a Comparable Supply where the effect of that Specific Change in Law on the Deliverables is not reasonably foreseeable at the Start Date;
"Specification"	the specification set out in DPS Schedule 1 (Specification), as may, in relation to an Order Contract, be supplemented by the Order Form;
"Standards"	any: a) standards published by BSI British Standards, the National Standards Body of the United Kingdom, the International Organisation for Standardisation or other reputable or equivalent bodies (and their successor bodies) that a skilled and experienced operator in the same type of industry or business sector as the Supplier would reasonably and ordinarily be expected to comply with; b) standards detailed in the specification in DPS Schedule 1 (Specification);

	c) standards detailed by the Buyer in the Order Form or agreed between the Parties from time to time; relevant Government codes of practice and guidance applicable from time to time;
"Start Date"	in the case of the DPS Contract, the date specified on the DPS Appointment Form, and in the case of an Order Contract, the date specified in the Order Form;
"Statement of Requirements"	a) a statement issued by the Buyer detailing its requirements in respect of Deliverables issued in accordance with the Order Procedure;
"Storage Media"	the part of any device that is capable of storing and retrieving data;
"Sub-Contract"	any contract or agreement (or proposed contract or agreement), other than an Order Contract or the DPS Contract, pursuant to which a third party: a) provides the Deliverables (or any part of them); b) provides facilities or services necessary for the provision of the Deliverables (or any part of them); and/or is responsible for the management, direction or control of the provision of the Deliverables (or any part of them);
"Subcontractor"	any person other than the Supplier, who is a party to a Sub-Contract and the servants or agents of that person;
"Subprocessor"	a) any third party appointed to process Personal Data on behalf of that Processor related to a Contract;
"Supplier"	the person, firm or company identified in the DPS Appointment Form;
"Supplier Assets"	all assets and rights used by the Supplier to provide the Deliverables in accordance with the Order Contract but excluding the Buyer Assets;
"Supplier Authorised Representative"	the representative appointed by the Supplier named in the DPS Appointment Form, or later defined in an Order Contract;
"Supplier's Confidential Information"	a) any information, however it is conveyed, that relates to the business, affairs, developments, IPR of the Supplier (including the Supplier Existing IPR) trade secrets, Know-How, and/or personnel of the Supplier; b) any other information clearly designated as being confidential (whether or not it is marked as "confidential") or which ought reasonably to be considered to be confidential and which comes (or has come) to the Supplier's attention or into the Supplier's possession in connection with a Contract; Information derived from any of (a) and (b) above;

"Supplier's Contract Manager"	the person identified in the Order Form appointed by the Supplier to oversee the operation of the Order Contract and any alternative person whom the Supplier intends to appoint to the role, provided that the Supplier informs the Buyer prior to the appointment;
"Supplier Equipment"	a) the Supplier's hardware, computer and telecoms devices, equipment, plant, materials and such other items supplied and used by the Supplier (but not hired, leased or loaned from the Buyer) in the performance of its obligations under this Order Contract;
"Supplier Non-Performance"	where the Supplier has failed to: a) Achieve a Milestone by its Milestone Date; b) provide the Goods and/or Services in accordance with the Service Levels ; and/or comply with an obligation under a Contract;
"Supplier Profit"	in relation to a period, the difference between the total Charges (in nominal cash flow terms but excluding any Deductions and total Costs (in nominal cash flow terms) in respect of an Order Contract for the relevant period;
"Supplier Profit Margin"	a) in relation to a period or a Milestone (as the context requires), the Supplier Profit for the relevant period or in relation to the relevant Milestone divided by the total Charges over the same period or in relation to the relevant Milestone and expressed as a percentage;
"Supplier Staff"	all directors, officers, employees, agents, consultants and contractors of the Supplier and/or of any Subcontractor engaged in the performance of the Supplier's obligations under a Contract;
"Supply Chain Information Report Template"	the document at Annex 1 of Joint Schedule 12 (Supply Chain Visibility);
"Supporting Documentation"	sufficient information in writing to enable the Buyer to reasonably assess whether the Charges, Reimbursable Expenses and other sums due from the Buyer under the Order Contract detailed in the information are properly payable;
"Termination Notice"	a written notice of termination given by one Party to the other, notifying the Party receiving the notice of the intention of the Party giving the notice to terminate a Contract on a specified date and setting out the grounds for termination;
"Test Issue"	any variance or non-conformity of the Deliverables or Deliverables from their requirements as set out in an Order Contract;
"Test Plan"	a plan: a) for the Testing of the Deliverables; and setting out other agreed criteria related to the achievement of Milestones;

"Tests and Testing"	any tests required to be carried out pursuant to an Order Contract as set out in the Test Plan or elsewhere in an Order Contract and "**Tested**" shall be construed accordingly;
"Third Party IPR"	a) Intellectual Property Rights owned by a third party which is or will be used by the Supplier for the purpose of providing the Deliverables;
"Transferring Supplier Employees"	those employees of the Supplier and/or the Supplier's Subcontractors to whom the Employment Regulations will apply on the Service Transfer Date;
"Transparency Information"	the Transparency Reports and the content of a Contract, including any changes to this Contract agreed from time to time, except for – (i) any information which is exempt from disclosure in accordance with the provisions of the FOIA, which shall be determined by the Relevant Authority; and (ii) Commercially Sensitive Information;
"Transparency Reports"	the information relating to the Deliverables and performance of the Contracts which the Supplier is required to provide to the Buyer in accordance with the reporting requirements in Order Schedule 1 (Transparency Reports);
"Variation"	has the meaning given to it in Clause 24 (Changing the contract);
"Variation Form"	the form set out in Joint Schedule 2 (Variation Form);
"Variation Procedure"	the procedure set out in Clause 24 (Changing the contract);
"VAT"	value added tax in accordance with the provisions of the Value Added Tax Act 1994;
"VCSE"	a non-governmental organisation that is value-driven and which principally reinvests its surpluses to further social, environmental or cultural objectives;
"Worker"	any one of the Supplier Staff which the Buyer, in its reasonable opinion, considers is an individual to which Procurement Policy Note 08/15 (Tax Arrangements of Public Appointees) (https://www.gov.uk/government/publications/procurement-policy-note-0815-tax-arrangements-of-appointees) applies in respect of the Deliverables; and
"Working Day"	any day other than a Saturday or Sunday or public holiday in England and Wales unless specified otherwise by the Parties in the Order Form.

Joint Schedule 2 (Variation Form)

This form is to be used in order to change a contract in accordance with Clause 24 (Changing the Contract)

Contract Details		
This variation is between:	**[delete** as applicable: CCS / Buyer**]** ("**CCS" "the Buyer"**) And **[insert** name of Supplier**]** (**"the Supplier"**)	
Contract name:	**[insert** name of contract to be changed] **("the Contract")**	
Contract reference number:	**[insert** contract reference number]	
Details of Proposed Variation		
Variation initiated by:	**[delete** as applicable: CCS/Buyer/Supplier]	
Variation number:	**[insert** variation number]	
Date variation is raised:	**[insert** date]	
Proposed variation		
Reason for the variation:	**[insert** reason]	
An Impact Assessment shall be provided within:	**[insert** number] days	
Impact of Variation		
Likely impact of the proposed variation:	**[Supplier to insert** assessment of impact]	
Outcome of Variation		
Contract variation:	This Contract detailed above is varied as follows: • **[CCS/Buyer to insert** original Clauses or Paragraphs to be varied and the changed clause]	
Financial variation:	Original Contract Value:	£ **[insert** amount]
	Additional cost due to variation:	£ **[insert** amount]
	New Contract value:	£ **[insert** amount]

1. This Variation must be agreed and signed by both Parties to the Contract and shall only be effective from the date it is signed by **[delete** as applicable: CCS / Buyer**]**

2. Words and expressions in this Variation shall have the meanings given to them in the Contract.

3. The Contract, including any previous Variations, shall remain effective and unaltered except as amended by this Variation.

Signed by an authorised signatory for and on behalf of the **[delete** as applicable: CCS / Buyer**]**

Signature .....

Date .....

Name (in Capitals) .....

Address .....

.....

Signed by an authorised signatory to sign for and on behalf of the Supplier

Signature .....

Date .....

Name (in Capitals) .....

Address .....

Joint Schedule 3 (Insurance Requirements)

1. The insurance you need to have

1.1 The Supplier shall take out and maintain, or procure the taking out and maintenance of the insurances as set out in the Annex to this Schedule, any additional insurances required under an Order Contract (specified in the applicable Order Form) ("**Additional Insurances**") and any other insurances as may be required by applicable Law (together the "**Insurances**"). The Supplier shall ensure that each of the Insurances is effective no later than:

1.1.1 the DPS Start Date in respect of those Insurances set out in the Annex to this Schedule and those required by applicable Law; and

1.1.2 the Order Contract Effective Date in respect of the Additional Insurances.

1.2 The Insurances shall be:

1.2.1 maintained in accordance with Good Industry Practice;

1.2.2 (so far as is reasonably practicable) on terms no less favourable than those generally available to a prudent contractor in respect of risks insured in the international insurance market from time to time;

1.2.3 taken out and maintained with insurers of good financial standing and good repute in the international insurance market; and

1.2.4 maintained for at least six (6) years after the End Date.

1.3 The Supplier shall ensure that the public and products liability policy contain an indemnity to principals clause under which the Relevant Authority shall be indemnified in respect of claims made against the Relevant Authority in respect of death or bodily injury or third party property damage arising out of or in connection with the Deliverables and for which the Supplier is legally liable.

2. How to manage the insurance

2.1 Without limiting the other provisions of this Contract, the Supplier shall:

2.1.1 take or procure the taking of all reasonable risk management and risk control measures in relation to Deliverables as it would be reasonable to expect of a prudent contractor acting in accordance with Good Industry Practice, including the investigation and reports of relevant claims to insurers;

2.1.2 promptly notify the insurers in writing of any relevant material fact under any Insurances of which the Supplier is or becomes aware; and

2.1.3 hold all policies in respect of the Insurances and cause any insurance broker effecting the Insurances to hold any insurance slips and other evidence of placing cover representing any of the Insurances to which it is a party.

3. What happens if you aren't insured

3.1 The Supplier shall not take any action or fail to take any action or (insofar as is reasonably within its power) permit anything to occur in relation to it which would entitle any insurer to refuse to pay any claim under any of the Insurances.

3.2 Where the Supplier has failed to purchase or maintain any of the Insurances in full force and effect, the Relevant Authority may elect (but shall not be obliged) following written notice to the Supplier to purchase the relevant Insurances and recover the reasonable premium and other reasonable costs incurred in connection therewith as a debt due from the Supplier.

4. Evidence of insurance you must provide

4.1 The Supplier shall upon the Start Date and within 15 Working Days after the renewal of each of the Insurances, provide evidence, in a form satisfactory to the Relevant Authority, that the Insurances are in force and effect and meet in full the requirements of this Schedule.

5. Making sure you are insured to the required amount

5.1 The Supplier shall ensure that any Insurances which are stated to have a minimum limit "in the aggregate" are maintained at all times for the minimum limit of indemnity specified in this Contract and if any claims are made which do not relate to this Contract then the Supplier shall notify the Relevant Authority and provide details of its proposed solution for maintaining the minimum limit of indemnity.

6. Cancelled Insurance

6.1 The Supplier shall notify the Relevant Authority in writing at least five (5) Working Days prior to the cancellation, suspension, termination or non-renewal of any of the Insurances.

6.2 The Supplier shall ensure that nothing is done which would entitle the relevant insurer to cancel, rescind or suspend any insurance or cover, or to treat any insurance, cover or claim as voided in whole or part. The Supplier shall use all reasonable endeavours to notify the Relevant Authority (subject to third party confidentiality obligations) as soon as practicable when it becomes aware of any relevant fact, circumstance or matter which has caused, or is reasonably likely to provide grounds to, the relevant insurer to give notice to cancel, rescind, suspend or void any insurance, or any cover or claim under any insurance in whole or in part.

7. Insurance claims

7.1 The Supplier shall promptly notify to insurers any matter arising from, or in relation to, the Deliverables, or each Contract for which it may be entitled to claim under any of the Insurances. In the event that the Relevant Authority receives a claim relating to or arising out of a Contract or the Deliverables, the Supplier shall co-operate with the Relevant Authority and assist it in dealing with such claims including without limitation providing information and documentation in a timely manner.

7.2 Except where the Relevant Authority is the claimant party, the Supplier shall give the Relevant Authority notice within twenty (20) Working Days after any insurance claim in excess of 10% of the sum required to be insured pursuant to Paragraph 5.1 relating to or arising out of the provision of the Deliverables or this Contract on any of the Insurances or which, but for the application of the applicable policy excess, would be made on any of the Insurances and (if required by the Relevant Authority) full details of the incident giving rise to the claim.

7.3 Where any Insurance requires payment of a premium, the Supplier shall be liable for and shall promptly pay such premium.

7.4 Where any Insurance is subject to an excess or deductible below which the indemnity from insurers is excluded, the Supplier shall be liable for such excess or deductible. The Supplier shall not be entitled to recover from the Relevant Authority any sum paid by way of excess or deductible under the Insurances whether under the terms of this Contract or otherwise.

ANNEX: REQUIRED INSURANCES

1. The Supplier shall hold the following standard insurance cover from the DPS Start Date in accordance with this Schedule:

1.1 Professional indemnity insurance with cover of not less than one million pounds (£1,000,000). Applicable to Construction and Feasibility, Groundworks (Civil Engineering and Construction) and End to End Services;

1.2 Public liability insurance with cover of not less than one million pounds (£1,000,000);

1.3 Product liability insurance with cover of not less than one million pounds (£1,000,000). Applicable to Hardware and Accessories and End to End services;

1.4 Employers' (compulsory) liability insurance with cover of not less than five million pounds (£5,000,000).

Joint Schedule 4 (Commercially Sensitive Information)

1. What is the Commercially Sensitive Information?

1.1 In this Schedule the Parties have sought to identify the Supplier's Confidential Information that is genuinely commercially sensitive and the disclosure of which would be the subject of an exemption under the FOIA and the EIRs.

1.2 Where possible, the Parties have sought to identify when any relevant Information will cease to fall into the category of Information to which this Schedule applies in the table below and in the Order Form (which shall be deemed incorporated into the table below).

1.3 Without prejudice to the Relevant Authority's obligation to disclose Information in accordance with FOIA or Clause 16 (When you can share information), the Relevant Authority will, in its sole discretion, acting reasonably, seek to apply the relevant exemption set out in the FOIA to the following Information:

No.	Date	Item(s)			Duration of Confidentiality
		Information Class/Title	Reasons for Exemption	Additional and Supporting Information	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Joint Schedule 5 (Corporate Social Responsibility)

1. What we expect from our Suppliers

1.1 In September 2017, HM Government published a Supplier Code of Conduct setting out the standards and behaviours expected of suppliers who work with government. (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/646497/2017-09-13_Official_Sensitive_Supplier_Code_of_Conduct_September_2017.pdf)

1.2 CCS expects its suppliers and subcontractors to meet the standards set out in that Code. In addition, CCS expects its suppliers and subcontractors to comply with the standards set out in this Schedule.

1.3 The Supplier acknowledges that the Buyer may have additional requirements in relation to corporate social responsibility. The Buyer expects that the Supplier and its Subcontractors will comply with such corporate social responsibility requirements as the Buyer may notify to the Supplier from time to time.

2. Equality and Accessibility

2.1 In addition to legal obligations, the Supplier shall support CCS and the Buyer in fulfilling its Public Sector Equality duty under S149 of the Equality Act 2010 by ensuring that it fulfils its obligations under each Contract in a way that seeks to:

2.1.1 eliminate discrimination, harassment or victimisation of any kind; and

2.1.2 advance equality of opportunity and good relations between those with a protected characteristic (age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex, sexual orientation, and marriage and civil partnership) and those who do not share it.

3. Modern Slavery, Child Labour and Inhumane Treatment

"Modern Slavery Helpline" means the mechanism for reporting suspicion, seeking help or advice and information on the subject of modern slavery available online at https://www.modernslaveryhelpline.org/report or by telephone on 08000 121 700.

3.1 The Supplier:

3.1.1 shall not use, nor allow its Subcontractors to use forced, bonded or involuntary prison labour;

3.1.2 shall not require any Supplier Staff or Subcontractor Staff to lodge deposits or identify papers with the Employer and shall be free to leave their employer after reasonable notice;

3.1.3 warrants and represents that it has not been convicted of any slavery or human trafficking offences anywhere around the world.

3.1.4 warrants that to the best of its knowledge it is not currently under investigation, inquiry or enforcement proceedings in relation to any allegation of slavery or human trafficking offences anywhere around the world.

3.1.5 shall make reasonable enquires to ensure that its officers, employees and Subcontractors have not been convicted of slavery or human trafficking offences anywhere around the world.

3.1.6 shall have and maintain throughout the term of each Contract its own policies and procedures to ensure its compliance with the Modern Slavery Act and include in its contracts with its Subcontractors anti-slavery and human trafficking provisions;

3.1.7 shall implement due diligence procedures to ensure that there is no slavery or human trafficking in any part of its supply chain performing obligations under a Contract;

3.1.8 shall prepare and deliver to CCS, an annual slavery and human trafficking report setting out the steps it has taken to ensure that slavery and human trafficking is not taking place in any of its supply chains or in any part of its business with its annual certification of compliance with Paragraph 3;

3.1.9 shall not use, nor allow its employees or Subcontractors to use physical abuse or discipline, the threat of physical abuse, sexual or other harassment and verbal abuse or other forms of intimidation of its employees or Subcontractors;

3.1.10 shall not use or allow child or slave labour to be used by its Subcontractors;

3.1.11 shall report the discovery or suspicion of any slavery or trafficking by it or its Subcontractors to CCS, the Buyer and Modern Slavery Helpline.

4. Income Security

4.1 The Supplier shall:

4.1.1 ensure that all wages and benefits paid for a standard working week meet, at a minimum, national legal standards in the country of employment;

4.1.2 ensure that all Supplier Staff are provided with written and understandable Information about their employment conditions in respect of wages before they enter;

4.1.3 ensure that all workers are provided with written and understandable Information about their employment conditions in respect of wages before they enter employment and about the particulars of their wages for the pay period concerned each time that they are paid;

4.1.4 not make deductions from wages:

(a) as a disciplinary measure

(b) except where permitted by law; or

(c) without expressed permission of the worker concerned;

4.1.5 record all disciplinary measures taken against Supplier Staff; and

4.1.6 ensure that Supplier Staff are engaged under a recognised employment relationship established through national law and practice.

5. Working Hours

5.1 The Supplier shall:

5.1.1 ensure that the working hours of Supplier Staff comply with national laws, and any collective agreements;

5.1.2 ensure that the working hours of Supplier Staff, excluding overtime, shall be defined by contract, and shall not exceed 48 hours per week unless the individual has agreed in writing;

5.1.3 ensure that use of overtime is used responsibly, taking into account:

(a) the extent;

(b) frequency; and

(c) hours worked;

by individuals and by the Supplier Staff as a whole;

5.2 The total hours worked in any seven day period shall not exceed 60 hours, except where covered by Paragraph 5.3 below.

5.3 Working hours may exceed 60 hours in any seven day period only in exceptional circumstances where all of the following are met:

5.3.1 this is allowed by national law;

5.3.2 this is allowed by a collective agreement freely negotiated with a workers' organisation representing a significant portion of the workforce;

5.3.3 appropriate safeguards are taken to protect the workers' health and safety; and

5.3.4 the employer can demonstrate that exceptional circumstances apply such as unexpected production peaks, accidents or emergencies.

5.4 All Supplier Staff shall be provided with at least one (1) day off in every seven (7) day period or, where allowed by national law, two (2) days off in every fourteen (14) day period.

6. Sustainability

6.1 The supplier shall meet the applicable Government Buying Standards applicable to Deliverables which can be found online at:

https://www.gov.uk/government/collections/sustainable-procurement-the-government-buying-standards-gbs

Joint Schedule 6 (Key Subcontractors)

1. Restrictions on certain subcontractors

1.1 The Supplier is entitled to sub-contract its obligations under the DPS Contract to the Key Subcontractors identified on the Platform.

1.2 The Supplier is entitled to sub-contract its obligations under an Order Contract to Key Subcontractors listed on the Platform who are specifically nominated in the Order Form.

1.3 Where during the Contract Period the Supplier wishes to enter into a new Key Sub-contract or replace a Key Subcontractor, it must obtain the prior written consent of CCS and the Buyer and the Supplier shall, at the time of requesting such consent, provide CCS and the Buyer with the information detailed in Paragraph 1.4. The decision of CCS and the Buyer to consent or not will not be unreasonably withheld or delayed. Where CCS consents to the appointment of a new Key Subcontractor then they will be added to the Platform. Where the Buyer consents to the appointment of a new Key Subcontractor then they will be added to the Key Subcontractor section of the Order Form. CCS and the Buyer may reasonably withhold their consent to the appointment of a Key Subcontractor if it considers that:

1.3.1 the appointment of a proposed Key Subcontractor may prejudice the provision of the Deliverables or may be contrary to its interests;

1.3.2 the proposed Key Subcontractor is unreliable and/or has not provided reliable goods and or reasonable services to its other customers; and/or

1.3.3 the proposed Key Subcontractor employs unfit persons.

1.4 The Supplier shall provide CCS and the Buyer with the following information in respect of the proposed Key Subcontractor:

1.4.1 the proposed Key Subcontractor's name, registered office and company registration number;

1.4.2 the scope/description of any Deliverables to be provided by the proposed Key Subcontractor;

1.4.3 where the proposed Key Subcontractor is an Affiliate of the Supplier, evidence that demonstrates to the reasonable satisfaction of the CCS and the Buyer that the proposed Key Sub-Contract has been agreed on "arm's-length" terms;

1.4.4 for CCS, the Key Sub-Contract price expressed as a percentage of the total projected DPS Price over the DPS Contract Period;

1.4.5 for the Buyer, the Key Sub-Contract price expressed as a percentage of the total projected Charges over the Order Contract Period; and

1.4.6 (where applicable) Credit Rating Threshold (as defined in Joint Schedule 7 (Financial Distress)) of the Key Subcontractor.

1.5 If requested by CCS and/or the Buyer, within ten (10) Working Days of receipt of the information provided by the Supplier pursuant to Paragraph 1.4, the Supplier shall also provide:

1.5.1 a copy of the proposed Key Sub-Contract; and

1.5.2 any further information reasonably requested by CCS and/or the Buyer.

1.6 The Supplier shall ensure that each new or replacement Key Sub-Contract shall include:

1.6.1 provisions which will enable the Supplier to discharge its obligations under the Contracts;

1.6.2 a right under CRTPA for CCS and the Buyer to enforce any provisions under the Key Sub-Contract which confer a benefit upon CCS and the Buyer respectively;

1.6.3 a provision enabling CCS and the Buyer to enforce the Key Sub-Contract as if it were the Supplier;

1.6.4 a provision enabling the Supplier to assign, novate or otherwise transfer any of its rights and/or obligations under the Key Sub-Contract to CCS and/or the Buyer;

1.6.5 obligations no less onerous on the Key Subcontractor than those imposed on the Supplier under the DPS Contract in respect of:

(a) the data protection requirements set out in Clause 14 (Data protection);

(b) the FOIA and other access request requirements set out in Clause 16 (When you can share information);

(c) the obligation not to embarrass CCS or the Buyer or otherwise bring CCS or the Buyer into disrepute;

(d) the keeping of records in respect of the goods and/or services being provided under the Key Sub-Contract, including the maintenance of Open Book Data; and

(e) the conduct of audits set out in Clause 6 (Record keeping and reporting);

1.6.6 provisions enabling the Supplier to terminate the Key Sub-Contract on notice on terms no more onerous on the Supplier than those imposed on CCS and the Buyer under Clauses 10.4 (When CCS or the Buyer can end this contract) and 10.5 (What happens if the contract ends) of this Contract; and

1.6.7 a provision restricting the ability of the Key Subcontractor to sub-contract all or any part of the provision of the Deliverables provided to the Supplier under the Key Sub-Contract without first seeking the written consent of CCS and the Buyer.

Joint Schedule 7 (Financial Difficulties)

1. Definitions

1.1 In this Schedule, the following words shall have the following meanings and they shall supplement Joint Schedule 1 (Definitions):

"Credit Rating Threshold"	the minimum credit rating level for the Monitored Company as set out in Annex 2;
"Financial Distress Event"	the occurrence of one or more of the following events: a) the credit rating of the Monitored Company dropping below the applicable Credit Rating Threshold; b) the Monitored Company issuing a profits warning to a stock exchange or making any other public announcement about a material deterioration in its financial position or prospects; c) there being a public investigation into improper financial accounting and reporting, suspected fraud or any other impropriety of the Monitored Company; d) Monitored Company committing a material breach of covenant to its lenders; e) a Key Subcontractor (where applicable) notifying CCS that the Supplier has not satisfied any sums properly due under a specified invoice and not subject to a genuine dispute; or f) any of the following: i) commencement of any litigation against the Monitored Company with respect to financial indebtedness or obligations under a contract; ii) non-payment by the Monitored Company of any financial indebtedness; iii) any financial indebtedness of the Monitored Company becoming due as a result of an event of default; or

	iv) the cancellation or suspension of any financial indebtedness in respect of the Monitored Company in each case which CCS reasonably believes (or would be likely reasonably to believe) could directly impact on the continued performance of any Contract and delivery of the Deliverables in accordance with any Order Contract;
"Financial Distress Service Continuity Plan"	a plan setting out how the Supplier will ensure the continued performance and delivery of the Deliverables in accordance with [each Order] Contract in the event that a Financial Distress Event occurs;
"Monitored Company"	Supplier and Order Guarantor or any Key Subcontractor]
"Rating Agencies"	the rating agencies listed in Annex 1.

2. When this Schedule applies

2.1 The Parties shall comply with the provisions of this Schedule in relation to the assessment of the financial standing of the Monitored Companies and the consequences of a change to that financial standing.

2.2 The terms of this Schedule shall survive termination or expiry of this Contract:

2.2.1 under the DPS Contract until the later of (a) the termination or expiry of the DPS Contract or (b) the latest date of termination or expiry of any Order Contract entered into under the DPS Contract (which might be after the date of termination or expiry of the DPS Contract); and

2.2.2 under the Order Contract until the termination or expiry of the Order Contract.

3. What happens when your credit rating changes

3.1 The Supplier warrants and represents to CCS that as at the Start Date the long term credit ratings issued for the Monitored Companies by each of the Rating Agencies are as set out in Annex 2.

3.2 The Supplier shall promptly (and in any event within five (5) Working Days) notify CCS in writing if there is any downgrade in the credit rating issued by any Rating Agency for a Monitored Company.

3.3 The Supplier shall:

3.3.1 regularly monitor the credit ratings of each Monitored Company with the Rating Agencies; and

3.3.2 promptly notify (or shall procure that its auditors promptly notify) CCS in writing following the occurrence of a Financial Distress Event or any fact, circumstance or matter which could cause a Financial Distress Event and in any event, ensure that such notification is made within 10 Working Days of the date on which the Supplier first becomes aware of the Financial Distress Event or the fact, circumstance or matter which could cause a Financial Distress Event.

3.4 For the purposes of determining whether a Financial Distress Event has occurred the credit rating of the Monitored Company shall be deemed to have dropped below the applicable Credit Rating Threshold if any of the Rating Agencies have rated the Monitored Company at or below the applicable Credit Rating Threshold.

4. What happens if there is a financial distress event

4.1 In the event of a Financial Distress Event then, immediately upon notification of the Financial Distress Event (or if CCS becomes aware of the Financial Distress Event without notification and brings the event to the attention of the Supplier), the Supplier shall have the obligations and CCS shall have the rights and remedies as set out in Paragraphs 4.3 to 4.6.

4.2 In the event that a Financial Distress Event arises due to a Key Subcontractor notifying CCS that the Supplier has not satisfied any sums properly due under a specified invoice and not subject to a genuine dispute then, CCS shall not exercise any of its rights or remedies under Paragraph 4.3 without first giving the Supplier ten (10) Working Days to:

4.2.1 rectify such late or non-payment; or

4.2.2 demonstrate to CCS's reasonable satisfaction that there is a valid reason for late or non-payment.

4.3 The Supplier shall and shall procure that the other Monitored Companies shall:

4.3.1 at the request of CCS meet CCS as soon as reasonably practicable (and in any event within three (3) Working Days of the initial notification (or awareness) of the Financial Distress Event) to review the effect of the Financial Distress Event on the continued performance of each Contract and delivery of the Deliverables in accordance each Order Contract; and

4.3.2 where CCS reasonably believes (taking into account the discussions and any representations made under Paragraph 4.3.1) that the Financial Distress Event could impact on the continued performance of each Contract and delivery of the Deliverables in accordance with each Order Contract:

(a) submit to CCS for its Approval, a draft Financial Distress Service Continuity Plan as soon as reasonably practicable (and in any event, within ten (10) Working Days of the initial notification (or awareness) of the Financial Distress Event); and

(b) provide such financial information relating to the Monitored Company as CCS may reasonably require.

4.4 If CCS does not (acting reasonably) approve the draft Financial Distress Service Continuity Plan, it shall inform the Supplier of its reasons and the Supplier shall take those reasons into account in the preparation of a further draft Financial Distress Service Continuity Plan, which shall be resubmitted to CCS within five (5) Working Days of the rejection of the first or subsequent (as the case may be) drafts. This process shall be repeated until the Financial Distress Service Continuity Plan is Approved by CCS or referred to the Dispute Resolution Procedure.

4.5 If CCS considers that the draft Financial Distress Service Continuity Plan is insufficiently detailed to be properly evaluated, will take too long to complete or will not remedy the relevant Financial Distress Event, then it may either agree a further time period for the development and agreement of the Financial Distress Service Continuity Plan or escalate any issues with the draft Financial Distress Service Continuity Plan using the Dispute Resolution Procedure.

4.6 Following Approval of the Financial Distress Service Continuity Plan by CCS, the Supplier shall:

4.6.1 on a regular basis (which shall not be less than Monthly), review the Financial Distress Service Continuity Plan and assess whether it remains adequate and up to date to ensure the continued performance of each Contract and delivery of the Deliverables in accordance with each Order Contract;

4.6.2 where the Financial Distress Service Continuity Plan is not adequate or up to date in accordance with Paragraph 4.6.1, submit an updated Financial Distress Service Continuity Plan to CCS for its Approval, and the provisions of Paragraphs 4.5 and 4.6 shall apply to the review and Approval process for the updated Financial Distress Service Continuity Plan; and

4.6.3 comply with the Financial Distress Service Continuity Plan (including any updated Financial Distress Service Continuity Plan).

4.7 Where the Supplier reasonably believes that the relevant Financial Distress Event (or the circumstance or matter which has caused or otherwise led to it) no longer exists, it shall notify CCS and subject to the agreement of the Parties, the Supplier may be relieved of its obligations under Paragraph 4.6.

4.8 CCS shall be able to share any information it receives from the Buyer in accordance with this Paragraph with any Buyer who has entered into an Order Contract with the Supplier.

5. When CCS or the Buyer can terminate for financial distress

5.1 CCS shall be entitled to terminate this Contract and Buyers shall be entitled to terminate their Order Contracts for material Default if:

5.1.1 the Supplier fails to notify CCS of a Financial Distress Event in accordance with Paragraph 3.3;

5.1.2 CCS and the Supplier fail to agree a Financial Distress Service Continuity Plan (or any updated Financial Distress Service Continuity Plan) in accordance with Paragraphs 4.3 to 4.5; and/or

5.1.3 the Supplier fails to comply with the terms of the Financial Distress Service Continuity Plan (or any updated Financial Distress Service Continuity Plan) in accordance with Paragraph 4.6.3.

6. What happens If your credit rating is still good

6.1 Without prejudice to the Supplier's obligations and CCS' and the Buyer's rights and remedies under Paragraph 5, if, following the occurrence of a Financial Distress Event, the Rating Agencies review and report subsequently that the credit ratings do not drop below the relevant Credit Rating Threshold, then:

6.1.1 the Supplier shall be relieved automatically of its obligations under Paragraphs 4.3 to 4.6; and

6.1.2 CCS shall not be entitled to require the Supplier to provide financial information in accordance with Paragraph 4.3.2(b).

ANNEX 1: RATING AGENCIES

Dun and Bradstreet

ANNEX 2: CREDIT RATINGS & CREDIT RATING THRESHOLDS

Part 1: Current Rating

Entity	Credit rating (long term)
Supplier	[redacted]
Order Guarantor TotalEnergies UK Finance Limited	[redacted]
Key Subcontractor Alpitronic Srl	[redacted]
Key Subcontractor Envevo Limited	[redacted]
Key Subcontractor Konecta Holding France	[redacted]
Key Subcontractor TotalEnergies Charging Services	[redacted]

Joint Schedule 10 (Rectification Plan)

Request for [Revised] Rectification Plan			
Details of the Default:	[**Guidance:** Explain the Default, with clear schedule and clause references as appropriate]		
Deadline for receiving the [Revised] Rectification Plan:	[**add** date (minimum 10 days from request)]		
Signed by [CCS/Buyer] :		Date:	
Supplier [Revised] Rectification Plan			
Cause of the Default	[**add** cause]		
Anticipated impact assessment:	[**add** impact]		
Actual effect of Default:	[**add** effect]		
Steps to be taken to rectification:	**Steps**	**Timescale**	
	1.	[date]	
	2.	[date]	
	3.	[date]	
	4.	[date]	
	[…]	[date]	
Timescale for complete Rectification of Default	[X] Working Days		
Steps taken to prevent recurrence of Default	**Steps**	**Timescale**	
	1.	[date]	
	2.	[date]	
	3.	[date]	
	4.	[date]	
	[…]	[date]	

Signed by the Supplier:		Date:	
Review of Rectification Plan [CCS/Buyer]			
Outcome of review	[Plan Accepted] [Plan Rejected] [Revised Plan Requested]		
Reasons for Rejection (if applicable)	[**add** reasons]		
Signed by [CCS/Buyer]		Date:	

Joint Schedule 11 (Processing Data)

Status of the Controller

1. The Parties acknowledge that for the purposes of the Data Protection Legislation, the nature of the activity carried out by each of them in relation to their respective obligations under a Contract dictates the status of each party under the DPA. A Party may act as:

(a) "Controller" in respect of the other Party who is "Processor";

(b) "Processor" in respect of the other Party who is "Controller";

(c) "Joint Controller" with the other Party;

(d) "Independent Controller" of the Personal Data where the other Party is also a sole, separate "Controller";

in respect of certain Personal Data under a Contract and shall specify in Annex 1 *(Processing Personal Data)* which scenario they think shall apply in each situation.

Where one Party is Controller and the other Party its Processor

2. Where a Party is a Processor, the only Processing that it is authorised to do is listed in Annex 1 *(Processing Personal Data*) by the Controller.

3. The Processor shall notify the Controller immediately if it considers that any of the Controller's instructions infringe the Data Protection Legislation.

4. The Processor shall provide all reasonable assistance to the Controller in the preparation of any Data Protection Impact Assessment prior to commencing any Processing. Such assistance may, at the discretion of the Controller, include:

(a) a systematic description of the envisaged Processing and the purpose of the Processing;

(b) an assessment of the necessity and proportionality of the Processing in relation to the Services;

(c) an assessment of the risks to the rights and freedoms of Data Subjects; and

(d) the measures envisaged to address the risks, including safeguards, security measures and mechanisms to ensure the protection of Personal Data.

5. The Processor shall, in relation to any Personal Data Processed in connection with its obligations under the Contract:

(a) Process that Personal Data only in accordance with Annex 1 *(Processing Personal Data*), unless the Processor is required to do otherwise by Law. If it

is so required the Processor shall notify the Controller before Processing the Personal Data unless prohibited by Law;

(b) ensure that it has in place Protective Measures, including in the case of the Supplier the measures set out in Clause 14.3 of the Core Terms, which the Controller may reasonably reject (but failure to reject shall not amount to approval by the Controller of the adequacy of the Protective Measures) having taken account of the:

(i) nature of the data to be protected;

(ii) harm that might result from a Personal Data Breach;

(iii) state of technological development; and

(iv) cost of implementing any measures;

(c) ensure that :

(i) the Processor Personnel do not Process Personal Data except in accordance with the Contract (and in particular Annex 1 *(Processing Personal Data*));

(ii) it takes all reasonable steps to ensure the reliability and integrity of any Processor Personnel who have access to the Personal Data and ensure that they:

(A) are aware of and comply with the Processor's duties under this Joint Schedule 11, Clauses 14 (*Data protection*), 15 (*What you must keep confidential*) and 16 (*When you can share information*);

(B) are subject to appropriate confidentiality undertakings with the Processor or any Subprocessor;

(C) are informed of the confidential nature of the Personal Data and do not publish, disclose or divulge any of the Personal Data to any third party unless directed in writing to do so by the Controller or as otherwise permitted by the Contract; and

(D) have undergone adequate training in the use, care, protection and handling of Personal Data;

(d) not transfer Personal Data outside of the United Kingdom unless the prior written consent of the Controller has been obtained and the following conditions are fulfilled:

(i) the Processing of the Personal Data is undertaken in a country subject to an adequacy decision made pursuant to Section 17a DPA 2018;

(ii) the Controller or the Processor has provided appropriate safeguards in relation to the transfer (whether in accordance with Article 46 of the UK GDPR or Section 75 DPA 2018) as determined by the Controller;

(iii) the Data Subject has enforceable rights and effective legal remedies;

(iv) the Processor complies with its obligations under the Data Protection Legislation by providing an adequate level of protection to any Personal Data that is transferred (or, if it is not so bound, uses its best endeavours to assist the Controller in meeting its obligations); and

(v) the Processor complies with any reasonable instructions notified to it in advance by the Controller with respect to the Processing of the Personal Data; and

(e) at the written direction of the Controller, delete or return Personal Data (and any copies of it) to the Controller on termination of the Contract unless the Processor is required by Law to retain the Personal Data.

6. Subject to paragraph 7 of this Joint Schedule 11, the Processor shall notify the Controller immediately if in relation to it Processing Personal Data under or in connection with the Contract it:

(a) receives a Data Subject Access Request (or purported Data Subject Access Request);

(b) receives a request to rectify, block or erase any Personal Data;

(c) receives any other request, complaint or communication relating to either Party's obligations under the Data Protection Legislation;

(d) receives any communication from the Information Commissioner or any other regulatory authority in connection with Personal Data Processed under the Contract;

(e) receives a request from any third Party for disclosure of Personal Data where compliance with such request is required or purported to be required by Law; or

(f) becomes aware of a Personal Data Breach.

7. The Processor's obligation to notify under paragraph 6 of this Joint Schedule 11 shall include the provision of further information to the Controller, as details become available.

8. Taking into account the nature of the Processing, the Processor shall provide the Controller with assistance in relation to either Party's obligations under Data Protection Legislation and any complaint, communication or request made under paragraph 6 of this Joint Schedule 11 (and insofar as possible within the timescales reasonably required by the Controller) including by immediately providing:

(a) the Controller with full details and copies of the complaint, communication or request;

(b) such assistance as is reasonably requested by the Controller to enable it to comply with a Data Subject Access Request within the relevant timescales set out in the Data Protection Legislation;

(c) the Controller, at its request, with any Personal Data it holds in relation to a Data Subject;

(d) assistance as requested by the Controller following any Personal Data Breach; and/or

(e) assistance as requested by the Controller with respect to any request from the Information Commissioner's Office, or any consultation by the Controller with the Information Commissioner's Office.

9. The Processor shall maintain complete and accurate records and information to demonstrate its compliance with this Joint Schedule 11. This requirement does not apply where the Processor employs fewer than 250 staff, unless:

(a) the Controller determines that the Processing is not occasional;

(b) the Controller determines the Processing includes special categories of data as referred to in Article 9(1) of the UK GDPR / Section 35 DPA 2018 or Personal Data relating to criminal convictions and offences referred to in Article 10 of the UK GDPR or processed in accordance with Section 31 DPA 2018;

(c) the Controller determines that the Processing is likely to result in a risk to the rights and freedoms of Data Subjects.

10. The Processor shall allow for audits of its Data Processing activity by the Controller or the Controller's designated auditor.

11. The Parties shall designate a Data Protection Officer if required by the Data Protection Legislation.

12. Before allowing any Subprocessor to Process any Personal Data related to the Contract, the Processor must:

(a) notify the Controller in writing of the intended Subprocessor and Processing;

(b) obtain the written consent of the Controller;

(c) enter into a written agreement with the Subprocessor which gives effect to the terms set out in this Joint Schedule 11 such that they apply to the Subprocessor; and

(d) provide the Controller with such information regarding the Subprocessor as the Controller may reasonably require.

13. The Processor shall remain fully liable for all acts or omissions of any of its Subprocessors.

14. The Relevant Authority may, at any time on not less than 30 Working Days' notice, revise this Joint Schedule 11 by replacing it with any applicable controller to processor standard clauses or similar terms forming part of an applicable certification scheme (which shall apply when incorporated by attachment to the Contract).

15. The Parties agree to take account of any guidance issued by the Information Commissioner's Office. The Relevant Authority may on not less than 30 Working Days' notice to the Supplier amend the Contract to ensure that it complies with any guidance issued by the Information Commissioner's Office.

Where the Parties are Joint Controllers of Personal Data

16. In the event that the Parties are Joint Controllers in respect of Personal Data under the Contract, the Parties shall implement paragraphs that are necessary to comply with UK GDPR Article 26 and/or Section 58 DPA 2018 based on the terms set out in Annex 2 to this Joint Schedule 11 (*Processing Data*).

Independent Controllers of Personal Data

17. With respect to Personal Data provided by one Party to another Party for which each Party acts as Controller but which is not under the Joint Control of the Parties, each Party undertakes to comply with the applicable Data Protection Legislation in respect of their Processing of such Personal Data as Controller.

18. Each Party shall Process the Personal Data in compliance with its obligations under the Data Protection Legislation and not do anything to cause the other Party to be in breach of it.

19. Where a Party has provided Personal Data to the other Party in accordance with paragraph 7 of this Joint Schedule 11 above, the recipient of the Personal Data will provide all such relevant documents and information relating to its data protection policies and procedures as the other Party may reasonably require.

20. The Parties shall be responsible for their own compliance with Articles 13 and 14 UK GDPR and/or Section 44 DPA 2018;

21. in respect of the Processing of Personal Data for the purposes of the Contract.

22. The Parties shall only provide Personal Data to each other:

(a) to the extent necessary to perform their respective obligations under the Contract;

(b) in compliance with the Data Protection Legislation (including by ensuring all required data privacy information has been given to affected Data Subjects to meet the requirements of Articles 13 and 14 of the GDPR) and/or Section 44 DPA 2018; and

(c) where it has recorded it in Annex 1 *(Processing Personal Data).*

23. Taking into account the state of the art, the costs of implementation and the nature, scope, context and purposes of Processing as well as the risk of varying likelihood and severity for the rights and freedoms of natural persons, each Party shall, with respect to its Processing of Personal Data as Independent Controller, implement and maintain appropriate technical and organisational measures to ensure a level of security appropriate to that risk, including, as appropriate, the measures referred to in Article 32(1)(a), (b), (c) and (d) of the UK GDPR, and the measures shall, at a minimum, comply with the

requirements of the Data Protection Legislation, including Article 32 of the UK GDPR and/or Section 40 DPA 2018.

24. A Party Processing Personal Data for the purposes of the Contract shall maintain a record of its Processing activities in accordance with Article 30 of the UK GDPR and shall make the record available to the other Party upon reasonable request.

25. Where a Party receives a request by any Data Subject to exercise any of their rights under the Data Protection Legislation in relation to the Personal Data provided to it by the other Party pursuant to the Contract **("Request Recipient")**:

(a) the other Party shall provide any information and/or assistance as reasonably requested by the Request Recipient to help it respond to the request or correspondence, at the cost of the Request Recipient; or

(b) where the request or correspondence is directed to the other Party and/or relates to that other Party's Processing of the Personal Data, the Request Recipient will:

(i) promptly, and in any event within five (5) Working Days of receipt of the request or correspondence, inform the other Party that it has received the same and shall forward such request or correspondence to the other Party; and

(ii) provide any information and/or assistance as reasonably requested by the other Party to help it respond to the request or correspondence in the timeframes specified by Data Protection Legislation.

26. Each Party shall promptly notify the other Party upon it becoming aware of any Personal Data Breach relating to Personal Data provided by the other Party pursuant to the Contract and shall:

(a) do all such things as reasonably necessary to assist the other Party in mitigating the effects of the Personal Data Breach;

(b) implement any measures necessary to restore the security of any compromised Personal Data;

(c) work with the other Party to make any required notifications to the Information Commissioner's Office and affected Data Subjects in accordance with the Data Protection Legislation (including the timeframes set out therein); and

(d) not do anything which may damage the reputation of the other Party or that Party's relationship with the relevant Data Subjects, save as required by Law.

27. Personal Data provided by one Party to the other Party may be used exclusively to exercise rights and obligations under the Contract as specified in Annex 1 *(Processing Personal Data).*

28. Personal Data shall not be retained or processed for longer than is necessary to perform each Party's respective obligations under the Contract which is specified in Annex 1 *(Processing Personal Data)*.

29. Notwithstanding the general application of paragraphs 2 to 15 of this Joint Schedule 11 to Personal Data, where the Supplier is required to exercise its regulatory and/or legal obligations in respect of Personal Data, it shall act as an Independent Controller of Personal Data in accordance with paragraphs 17 to 27 of this Joint Schedule 11.

Annex 1 - Processing Personal Data

This Annex shall be completed by the Relevant Authority, acting in agreement with the Supplier.

1.1 The contact details of the Relevant Authority's Data Protection Officer are:

[redacted]

1.2 The contact details of the Supplier's Data Protection Officer are:

[redacted]

Description	Details
Identity of Controller for each Category of Personal Data	The Parties acknowledge that they are each Independent Controllers for the purposes of the Data Protection Legislation in respect of any personal data processed by them in accordance with this Order Contract, including: • Business contact details of Supplier Personnel engaged in the performance of the Supplier duties under the Order Contract; • Business contact details of any directors, officers, employees, agents, consultants and contractors of Relevant Authority (excluding the Supplier Personnel) engaged in the performance of the Relevant Authority's duties under the Order Contract); and • Information about the users of the Electric Vehicle (EV) Charge Points, including: User registration details, name, address, vehicle registration data, dates, times and locations of the user's usage of the EV charge Points.
Duration of the Processing	The term of the Order Contract between the Relevant Authority and the Supplier, and each party's subsequent applicable retention periods, as set out in their respective privacy notices.

Nature and purposes of the Processing	The nature of the Processing means any operation such as collection, recording, organisation, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction of data (whether or not by automated means) etc undertaken by: The Supplier in the course of the provision of the EV ChargePoint services to users, and to comply with their statutory obligations; and to allow them to operate their business. The Personal data set out below is shared by the Supplier with the Relevant Authority (and processed by the Relevant Authority) under: Article 6(1)(e) of the UK GDPR (i.e. the processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller). In order to allow the Relevant Authority to undertake ongoing statistical analysis to allow it to comply with its legal obligations to obtain, and evidence best value, in accordance with the obligation set out in the Local Government Act 1999 and the Best Value and Performance Improvement Circular (ODPM Circular 03/2003); or Article 6(1)(f) (i.e. the processing is necessary for the purposes of the legitimate interests pursued by the controller or by a third party, except where such interests are overridden by the interests or fundamental rights and freedoms of the data subject which require protection of personal data, in particular where the data subject is a child) on the basis that the processing undertaken by the relevant authority will not be used to make any decisions directly impacting on the data subject.
Type of Personal Data shared	*The following personal data provided in a pseudonymised format: User registration details (user ID) dates, times and locations of the user's usage of a EV Charge Points managed by the Supplier.*
Categories of Data Subject whose personal data is shared	*Users of EV Charge Points, including:-* *Vehicle owners;* *Owners of the payment cards used.*

Plan for return and destruction of the data once the Processing is complete UNLESS requirement under Union or Member State law to preserve that type of data	*The Relevant Authority shall retain (and subsequently securely and irretrievably destroy) the shared personal data in accordance with its retention policy.*

Order Schedule 1 (Transparency Reports)

1.1 The Supplier recognises that the Buyer is subject to PPN 01/17 (Updates to transparency principles v1.1 (https://www.gov.uk/government/publications/procurement-policy-note-0117-update-to-transparency-principles). The Supplier shall comply with the provisions of this Schedule in order to assist the Buyer with its compliance with its obligations under that PPN.

1.2 Without prejudice to the Supplier's reporting requirements set out in the DPS Contract, within three (3) Months of the Start Date the Supplier shall submit to the Buyer for Approval (such Approval not to be unreasonably withheld or delayed) draft Transparency Reports consistent with the content requirements and format set out in the Annex of this Schedule.

1.3 If the Buyer rejects any proposed Transparency Report submitted by the Supplier, the Supplier shall submit a revised version of the relevant report for further Approval within five (5) days of receipt of any notice of rejection, taking account of any recommendations for revision and improvement to the report provided by the Buyer. If the Parties fail to agree on a draft Transparency Report the Buyer shall determine what should be included. Any other disagreement in connection with Transparency Reports shall be treated as a Dispute.

1.4 The Supplier shall provide accurate and up-to-date versions of each Transparency Report to the Buyer at the frequency referred to in the Annex of this Schedule.

Annex A: List of Transparency Reports

Title	Content	Format	Frequency
[Performance]	[ ]	[ ]	[ ]
[Order Contract Charges]	[ ]	[ ]	[ ]
[Key Subcontractors]	[ ]	[ ]	[ ]
[Technical]	[ ]	[ ]	[ ]
[Performance management]	[ ]	[ ]	[ ]

[TfL (the Buyer) will reserve the right to require any reasonable Transparency Reports over the Order Contract term so the table may be updated accordingly post Order Contract award.]

Order Schedule 3 (Continuous Improvement)

1. Buyer's Rights

1.1 The Buyer and the Supplier recognise that, where specified in DPS Schedule 4 (DPS Management), the Buyer may give CCS the right to enforce the Buyer's rights under this Schedule.

2. Supplier's Obligations

2.1 The Supplier must, throughout the Contract Period, identify new or potential improvements to the provision of the Deliverables with a view to reducing the Buyer's costs (including the Charges) and/or improving the quality and efficiency of the Deliverables and their supply to the Buyer.

2.2 The Supplier must adopt a policy of continuous improvement in relation to the Deliverables, which must include regular reviews with the Buyer of the Deliverables and the way it provides them, with a view to reducing the Buyer's costs (including the Charges) and/or improving the quality and efficiency of the Deliverables. The Supplier and the Buyer must provide each other with any information relevant to meeting this objective.

2.3 In addition to Paragraph 2.1, the Supplier shall produce at the start of each Contract Year a plan for improving the provision of Deliverables and/or reducing the Charges (without adversely affecting the performance of this Contract) during that Contract Year (**"Continuous Improvement Plan"**) for the Buyer's Approval. The Continuous Improvement Plan must include, as a minimum, proposals:

2.3.1 identifying the emergence of relevant new and evolving technologies;

2.3.2 changes in business processes of the Supplier or the Buyer and ways of working that would provide cost savings and/or enhanced benefits to the Buyer (such as methods of interaction, supply chain efficiencies, reduction in energy consumption and methods of sale);

2.3.3 new or potential improvements to the provision of the Deliverables including the quality, responsiveness, procedures, benchmarking methods, likely performance mechanisms and customer support services in relation to the Deliverables; and

2.3.4 measuring and reducing the sustainability impacts of the Supplier's operations and supply-chains relating to the Deliverables, and identifying opportunities to assist the Buyer in meeting their sustainability objectives.

2.4 The initial Continuous Improvement Plan for the first (1st) Contract Year shall be submitted by the Supplier to the Buyer for Approval within one hundred (100) Working Days of the first Order or six (6) Months following the Start Date, whichever is earlier.

2.5 The Buyer shall notify the Supplier of its Approval or rejection of the proposed Continuous Improvement Plan or any updates to it within twenty (20) Working Days of receipt. If it is rejected then the Supplier shall, within ten (10) Working Days of receipt of notice of rejection, submit a revised Continuous Improvement Plan reflecting the changes required. Once Approved, it becomes the Continuous Improvement Plan for the purposes of this Contract.

2.6 The Supplier must provide sufficient information with each suggested improvement to enable a decision on whether to implement it. The Supplier shall provide any further information as requested.

2.7 If the Buyer wishes to incorporate any improvement into this Contract, it must request a Variation in accordance with the Variation Procedure and the Supplier must implement such Variation at no additional cost to the Buyer or CCS.

2.8 Once the first Continuous Improvement Plan has been Approved in accordance with Paragraph 2.5:

2.8.1 the Supplier shall use all reasonable endeavours to implement any agreed deliverables in accordance with the Continuous Improvement Plan; and

2.8.2 the Parties agree to meet as soon as reasonably possible following the start of each quarter (or as otherwise agreed between the Parties) to review the Supplier's progress against the Continuous Improvement Plan.

2.9 The Supplier shall update the Continuous Improvement Plan as and when required but at least once every Contract Year (after the first (1st) Contract Year) in accordance with the procedure and timescales set out in Paragraph 2.3.

2.10 All costs relating to the compilation or updating of the Continuous Improvement Plan and the costs arising from any improvement made pursuant to it and the costs of implementing any improvement, shall have no effect on and are included in the Charges.

2.11 Should the Supplier's costs in providing the Deliverables to the Buyer be reduced as a result of any changes implemented, all of the cost savings shall be passed on to the Buyer by way of a consequential and immediate reduction in the Charges for the Deliverables.

2.12 At any time during the Contract Period of the Order Contract, the Supplier may make a proposal for gainshare. If the Buyer deems gainshare to be applicable then the Supplier shall update the Continuous Improvement Plan so as to include details of the way in which the proposal shall be implemented in accordance with an agreed gainshare ratio.

Order Schedule 7 (Key Supplier Staff)

1.1 The Annex 1 to this Schedule lists the key roles ("**Key Roles**") and names of the persons who the Supplier shall appoint to fill those Key Roles at the Start Date.

1.2 The Supplier shall ensure that the Key Staff fulfil the Key Roles at all times during the Contract Period.

1.3 The Buyer may identify any further roles as being Key Roles and, following agreement to the same by the Supplier, the relevant person selected to fill those Key Roles shall be included on the list of Key Staff.

1.4 The Supplier shall not and shall procure that any Subcontractor shall not remove or replace any Key Staff unless:

1.4.1 requested to do so by the Buyer or the Buyer Approves such removal or replacement (not to be unreasonably withheld or delayed);

1.4.2 the person concerned resigns, retires or dies or is on maternity or long-term sick leave; or

1.4.3 the person's employment or contractual arrangement with the Supplier or Subcontractor is terminated for material breach of contract by the employee.

1.5 The Supplier shall:

1.5.1 notify the Buyer promptly of the absence of any Key Staff (other than for short-term sickness or holidays of two (2) weeks or less, in which case the Supplier shall ensure appropriate temporary cover for that Key Role);

1.5.2 ensure that any Key Role is not vacant for any longer than ten (10) Working Days;

1.5.3 give as much notice as is reasonably practicable of its intention to remove or replace any member of Key Staff and, except in the cases of death, unexpected ill health or a material breach of the Key Staff's employment contract, this will mean at least three (3) Months' notice;

1.5.4 ensure that all arrangements for planned changes in Key Staff provide adequate periods during which incoming and outgoing staff work together to transfer responsibilities and ensure that such change does not have an adverse impact on the provision of the Deliverables; and

1.5.5 ensure that any replacement for a Key Role has a level of qualifications and experience appropriate to the relevant Key Role and is fully competent to carry out the tasks assigned to the Key Staff whom he or she has replaced.

1.6 The Buyer may require the Supplier to remove or procure that any Subcontractor shall remove any Key Staff that the Buyer considers in any respect unsatisfactory. The Buyer shall not be liable for the cost of replacing any Key Staff.

Annex 1- Key Roles

Key Role	Key Staff	Contract Details
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

DATED 20[ ]

---

(1) [TRANSPORT FOR LONDON]

and

(2) [ ]

LICENCE[1]

for the placing, maintenance and operation of electrical vehicle charging apparatus on highways maintained by Transport for London

---

[1] **Customisation Note (to be deleted prior to finalising the draft Licence):** This form of licence is intended to only apply in respect of a single "Site" for the purposes of the Order Contract. Accordingly, where an Order Contract relates to multiple Sites, each such Site will be subject to a separate Site Agreement in substantially the form of this licence.

THIS LICENCE is made the day of 20[ ]

BETWEEN:

(1) **TRANSPORT FOR LONDON** of 9th Floor 5 Endeavour Square London E20 1JN ("**TfL**"); and

(2) [**xxxxx**] (Company Registration Number;) whose registered office is at [ ] (the "**Licensee**")

RECITALS:

(A) TfL is the street authority and the highway authority for those streets/parts of the highway listed in **Annex 1** of this Licence and shown on the Plan (the "**Highway**").

(B) TfL has the power under section 50(1) of the New Roads and Street Works Act 1991 and sections 177, 178 and 278 of the Highways Act 1980, section 16 of the London Local Authorities and Transport for London Act 2013 and all other enabling powers to grant this Licence for the placing, maintenance and operation of apparatus on or over the Highway.

(C) TfL is satisfied that this Licence will be of benefit to the public.

OPERATIVE PROVISIONS:

1. Definitions and Interpretation

1.1 In this Licence, the following expressions will have the following meanings assigned to them unless otherwise stated:

(a) "Apparatus" means the equipment and materials of whatsoever nature used by the Licensee including without limitation the Charge Point, Ducting, Feeder Pillar and cabling and any further apparatus described in **Annex 1** of this Licence, which the Licensee will install and also finance, operate and maintain as part of the Works in order to provide the Deliverables, provided that:

(i) the Apparatus will include any other variation, change, replacement addition or omission approved in writing by TfL;

(ii) a variation, change, replacement, addition or omission will (without prejudice to the generality of same) include

changes in size, colour, height, thickness, shape and position of the Apparatus; and

(iii) Apparatus includes (without limitation) foundations and fixings of a description, type, design, specification, material, size, dimensions, height, external colour and external coating as approved by TfL;

(b) "Approved Signage" means directional signs and road markings details of which are to be provided by the Licensee for review and comment by TfL;

(c) "Charge Point" means the charging points, sockets and all links and related infrastructure for the charging of electric vehicles to be financed, installed, operated and maintained by the Licensee in accordance with this Licence;

(d) "Deliverables" means the installation, operation and maintenance of the Apparatus and related services and activities to be undertaken by the Licensee pursuant to the terms of the Order Contract together with any services, functions or responsibilities which may be reasonably regarded as incidental to the foregoing services or activities and which may be reasonably inferred from the terms of the Order Contract;

(e) "DPS" means the Dynamic Purchasing System (Vehicle Charging Infrastructure Solutions) established by the Crown Commercial Service with reference "RM6213" and in respect of which the Licensee is a listed supplier;

(f) "DPS Core Terms" has the meaning given to it in the Order Special Terms

(g) "Drawings" means the drawings referred to in **Annex 1** and **Annex 2** of this Licence or any variation as approved in writing by TfL;

(h) "EV" means a rechargeable vehicle that is powered entirely or partially by electricity;

(i) "EV Users" means members of the public paying for the use of the Apparatus;

(j) "Feeder Pillar" means the cabinet used to house electrical equipment required for the Works and which is to be located separately to the Charge Point;

(k) "Go-Live Date" has the same meaning as Go-Live Date in the Order Contract;

(l) "Licensee" means the Licensee or such person or persons as is entitled by this Licence to do anything permitted by this Licence;

(m) "Licence Fee" means the sum of £[tbc][2] referred to in the Order Contract as the Site Charge payable in respect of the location shown on the Plan and described in **Annex 2** and in accordance with **clause 18** of this Licence;

(n) "Licence Period" means fifteen (15) years;

(o) "Licensed Use" means the purpose of discharging the obligations that the Licensee has under the Order Contract;

(p) "Losses" means all costs (including legal costs and costs of enforcement), expenses, liabilities (including any tax liability), injuries, direct, indirect and/or consequential loss (all three of which terms include pure economic loss, loss of profits, loss of business, depletion of goodwill and like loss), damages, claims, demands, proceedings and judgements;

(q) "Order Contract" means the agreement dated [ ][3] made between (1) TfL and (2) the Licensee pursuant to the DPS;

(r) "Order Special Terms" means the order special terms set out at Appendix 1 to the Order Contract;

(s) "Plan" means the plan attached to this Licence at **Annex 1** and **Annex 2**;

(t) "Provisions" means the TfL EVID Highways Access and Works Provisions most recently issued by TfL from to time, the version in effect on the

---

2 **Customisation Note (to be deleted prior to finalising the draft Licence):** The applicable "Site Charge" specified in the Order Contract will be reflected here.

3 **Customisation Note (to be deleted prior to finalising the draft Licence):** Insert the date of the associated Order Contract here.

date of this Licence being that of July 2023, a copy of which is provided at **Appendix 1;**

(u) "Service Media" means any existing or future media for the passage of substances energy or information and any ancillary equipment or structures that has been approved by TfL;

(v) "TfL" means Transport for London and its successors as street authority or highway authority for the Highway;

(w) "Traffic Regulation Orders" means the traffic regulations orders required pursuant to this Licence, made by TfL and confirmed in writing to the Licensee;

(x) "Works" means the works which are to be carried out and completed in accordance with the Order Contract to install the Apparatus on the Highway.

2. **Licence**

2.1 In consideration of the agreements and conditions contained in this Licence and payment of the Licence Fee, TfL grants permission to the Licensee to install and retain at the location shown on the Plan and described in **Annex 1** of this Licence on and over the Highway those elements of the Apparatus required for the installation and operation of the Apparatus from the date of this Licence for the Licence Period subject to the conditions in this Licence unless terminated in accordance with the provisions of Schedule 3 of the New Roads and Street Works Act 1991 as permitted by the provisions of **clause 4.2** below.

2.2 TfL further grants to the Licensee permission to inspect maintain repair renew or remove the Apparatus and to execute any works required for or incidental to the Works under this Licence provided that the Works (and any such works which are required for or incidental to the Works) continue to comply with this Licence.

2.3 The Licensee will:

(a) assume all responsibility for the operation, maintenance and repair of the Apparatus for the Licence Period;

(b) not use the Apparatus otherwise than for the Licensed Use;

(c) ensure that the Apparatus is available to provide the Deliverables to EV Users at all times.

2.4 The Licensee may charge for the use of the Apparatus by any EV Users but no charges may be levied in respect of parking on the Highway.

2.5 TfL will not be liable to the Licensee or, unless statute provides otherwise, to any EV User for any damage or loss incurred in using the Apparatus except where such damage or loss arises as a result of TfL's negligence or wilful default.

2.6 With the exception of:

2.6.1 the Approved Signage; and

2.6.2 any notice attached to the Apparatus to inform users it is out of use and/or undergoing repairs

the Licensee is not permitted to install any signage or other notices on the Highway.

2.7 This Licence must be read in conjunction with the Order Contract where relevant.

2.8 TfL may amend the Provisions from time to time and will provide the Licensee with a copy of any amended Provisions as soon as is reasonably practicable.

2.9 Where there is any conflict between the terms of the Licence and the Provisions, the terms of the Licence will prevail.

3. **Works**

3.1 The Licensee will:

(d) upon completion of this Licence carry out the Works at its own expense and using only such contractors approved by TfL in a good and workmanlike manner to the reasonable satisfaction of TfL and in accordance with its obligations under the Order Contract and in accordance with the Provisions;

(e) undertake the Works in compliance with all necessary planning and other permissions conditions and requirements;

(f) carry out the Works in accordance with the Construction (Design and Management) Regulations 2015;

(g) install those elements of the Apparatus set out in the Order Contract following agreement with TfL and in accordance with the precise design method and detail of erection and fixing as approved by TfL;

(h) take reasonable account of any comments provided by TfL in relation to the Approved Signage;

(i) ensure that while any Works are being carried out the Highway is kept free from mud soil and litter arising from the Works;

(j) ensure that the Apparatus is labelled for identification purposes throughout the term of the Licence and that the labelling complies at all times with TfL's requirements;

(k) give TfL adequate notice in accordance with Provisions of the date and time of the Works and will comply with any requirements laid down by TfL for the purpose of preventing danger or minimising interference to traffic on the Highway;

(l) inform TfL that the Works have been completed so that TfL can carry out an inspection of the Works to ensure they comply with the requirements of this Licence;

(m) not carry out any work to or otherwise interfere with the Apparatus within the boundary of the Highway unless TfL has given prior approval in writing and any such work must be carried out to the reasonable satisfaction of TfL;

(n) provide TfL with an electronic copy of as-built Drawings of the Works upon completion of the Works (including upon completion of any maintenance or repair works where such maintenance or repair results in a change to what is shown on the as-built Drawings);

(o) install the Apparatus in such a location so as to cause minimal interference and disturbance to the Highway;

(p) record the location of the Apparatus and keep the records up to date and make such records available for inspection by TfL;

unless and to the extent TfL notifies the Licensee not to do so, upon termination of this Licence, to comply with all relevant provisions in the Order Contract regarding removal of Apparatus and at its own cost, to remove the Apparatus and

re-instate the Highway to the satisfaction of TfL ensuring that that all separate supplies of electricity have been removed, properly capped off and made safe.

4. **Provisions relating to the Licence**

4.1 This Licence:

(a) is given without prejudice to the provisions of Part III of the New Roads and Street Works Act 1991 to the requirements of any relevant authority or owner of any apparatus affected by the Works or settlement of a plan and section and the execution of Works in accordance with them; and

(b) does not dispense the Licensee from obtaining any other consent, licence or permission which may be required; and

(c) in the event of any conflict between the New Roads and Street Works Act 1991 and the Licence and/or the Provisions the terms of the New Roads and Street Works Act 1991 will prevail.

4.2 The Licensee acknowledges that the provisions of Schedule 3 to the New Roads and Street Works Act 1991 (Street Works Licences) apply to this licence including, for the avoidance of doubt, paragraph 6 'Withdrawal of Licence' as set out at **clause 12.2** below.

5. **Indemnity**

5.1 The Licensee will indemnify, keep indemnified and hold harmless TfL and the other members of the TfL group (including their respective employees, sub-contractors and agents) ("Indemnified Party") against all Losses which the Indemnified Party incurs or suffers as a consequence of any breach (whether caused by the Licensee or any of its employees, agents or sub-contractor) or any negligent performance of this Licence by the Licensee (or any of its employees, agents or sub-contractors) (including in each case any non-performance or delay in performance of this Licence) but, subject to **clause 5.2**, the maximum aggregate liability of the Licensee under this indemnity is limited to £400,000.

5.2 Nothing in this Licence will operate to exclude or restrict the Licensee's liability to TfL:

(a) for death or personal injury resulting from its negligence or the negligence of a person for whom it is vicariously liable (negligence being as defined in Section 1(1) Unfair Contract Terms Act 1977);

(b) for its fraud or fraudulent misrepresentation or fraud or fraudulent misrepresentation by a person for whom it is vicariously liable;

(c) for any matter for which it is not permitted by law to exclude or limit, to attempt to exclude or limit, its liability;

(d) for any losses which are recoverable from the insurance policies maintained in accordance with **clause 8** (or any losses which would have been recoverable from such insurance policies had those policies been maintained in accordance with **clause 8**); or

(e) loss of customers;

(f) reimbursing TfL for the price of any third party equipment purchased; or

(g) loss of reputation.

6. **Maintenance of the Apparatus**

6.1 The Licensee will:

(a) maintain the Apparatus in good repair and condition to the satisfaction of TfL and in accordance with the Provisions;

(b) renew the Apparatus where necessary;

(c) use all commercially reasonable efforts to protect the Apparatus from vandalism and/or damage and be responsible for the repair or replacement of any damaged or vandalised Apparatus;

(d) use reasonable endeavours to keep the Apparatus clean, tidy and free from graffiti and fly-posting;

(e) ensure that the Apparatus is safely and securely fixed, installed, erected, adjusted, maintained in position and regularly serviced in accordance with the manufacturer's recommendations to ensure continued unimpaired functioning of the Apparatus;

(f) use all reasonable endeavours to ensure there is a constant uninterrupted supply of electricity to the Apparatus and in the event of any interruption to the electricity supply, and in the event of any negligence, act or omission by the Licensee, the Licensee will take all necessary steps to restore the supply as soon as reasonably practicable;

(g) ensure that the Apparatus or any part of it does not cause or become a nuisance to the owners or occupiers of any premises in the vicinity or to any member of the public on or passing along the Highway and that if any nuisance arises the Apparatus or the relevant part is removed as soon as reasonably practicable from the Highway or the nuisance is immediately abated save in an emergency or where there is a danger to persons when it must be immediately;

(h) remove and or dismantle the Apparatus at the end of the Licence (whether by surrender or effluxion of time) in accordance with methods approved by TfL;

(i) so far as possible carry out all inspections, maintenance, repair and other works under this Licence without disturbance to the Highway so that the Highway remains unobstructed for use by traffic at all times;

(j) Where the Highway cannot remain unobstructed or undisturbed at all times during the carrying out of inspections, maintenance, repair or other works the Licensee must:

(i) not obstruct the Highway or cause disturbance to it without first:

(a) obtaining written consent from TfL in accordance with the Provisions, including obtaining any permits which TfL confirms are required and paying any lane rental charges that may be applicable;

(b) paying TfL's costs in giving its consent or issuing any permits pursuant to **(i)(a)** above; and

(c) only carry out works which require obstruction of or disturbance to the Highway under the supervision and direction of a traffic manager who has been appointed or approved by TfL in writing;

(k) make good any damage arising out of the placing or presence on the Highway of the Apparatus or the execution of any Works authorised by the Licence at the Licensee's own expense;

(l) take all reasonable precautions for preventing contact between the Apparatus and any building structure or apparatus in close proximity to the Apparatus and comply with all reasonable requirements of TfL in that regard.

6.2 Should TfL as the Highway Authority consider that the Apparatus is deteriorating the Licensee will make good the Apparatus within 28 days of being put on notice by TfL.

6.3 If at any time the Apparatus or any part of it are in the reasonable opinion of TfL in a condition and/or position to make the Highway or any part of it obstructed or rendered dangerous so that urgent work is required to remove the obstruction or danger which TfL considers necessary as a matter of urgency (regardless of whether or not the Licensee is in the opinion of TfL in breach of any provision of this Licence) TfL may without giving any advance notice remove the obstacle or danger and the reasonable costs incurred by TfL in undertaking such works will be paid to TfL by the Licensee on demand.

7. **Inspection of the Works and Apparatus**

7.1 The Licensee will:

(a) inspect the Apparatus in compliance with the Licensee's security and maintenance obligations in the Order Contract throughout the Licence Period;

(b) record details of the inspections in logbooks which will be readily available for TfL to inspect stating the date, time, piece of Apparatus and status of the Apparatus at the time of inspection;

(c) report to TfL immediately the particulars of any defect or lack of repair in or affecting the Apparatus and/or its installation which is apparent or suspected as a result of the inspection and which poses a danger to users of the Highway or which would require traffic management in order to repair;

(d) afford TfL the facilities it may require to inspect the Apparatus and any Works and to ensure compliance with this Licence; and

(e) comply immediately with any reasonable requirements stipulated by TfL to remedy any defects or lack of repair.

8. **Insurance**

8.1 The Licensee will hold and retain public liability insurance to cover:

(a) all Losses against which the Licensee is obliged to indemnify TfL in accordance with this Licence and paragraph 8 of Schedule 3 of the New Roads and Street Works Act 1991 Act; and

(b) all Losses to third parties in respect of injury damage or loss arising out of any of the matters referred to in this Licence or paragraph 8 referred to in **clause 8.1(a)** above.

8.2 The Licensee will also hold and retain:

8.2.1 a fully comprehensive product liability insurance policy for the Apparatus

8.2.2 employer's liability insurance; and

8.2.3 professional indemnity insurance.

8.3 The insurance set out in this **clause 8** will be in the sum of:

8.3.1 £2,000,000 (two million pounds) per claim in respect of the public liability insurance referred to at **clause 8.1;**

8.3.2 £2,000,000 (two million pounds) per individual claim or series of claims arising from the same incident and in the annual aggregate in respect of the product liability insurance policy referred to at **clause 8.2.1;**

8.3.3 £5,000,000 (five million pounds) per claim in respect of the employer's liability insurance policy referred to at **clause 8.2.2;** and

8.3.4 £1,000,000 (one million pounds) per individual claim or series of claims arising from the same incident and in the annual aggregate in respect of the professional indemnity insurance referred at **clause 8.2.3.**

in each case in respect of any individual incident arising out of:

(a) the use of the Apparatus;

(b) the provision by the Licensee (and/or by any permitted sub-contractor) of the Deliverables; and

(c) the inspection, maintenance, repair, adjustment, renewal or removal of the Apparatus or any other works required for or incidental to Works under this Licence,

or any other sum as TfL may from time to time stipulate acting reasonably.

8.4 The insurance will be effected with an insurance office or underwriters of good financial standing and good repute in the international insurance market.

8.5 It will be a term and condition of all insurance that the insurer will not cancel the policy or allow the policy to lapse unless the insurer gives TfL at least 5 (five) days' written notice.

8.6 The Licensee will upon request by TfL produce satisfactory documentary evidence that the insurance set out in this **clause 8** has been properly effected.

8.7 If the Licensee at any time fails to insure or pay the insurance premium in accordance with these requirements, TfL may elect to insure instead and to pay the premiums payable from time to time, and the amount of such payments and any related costs incurred must be repaid by the Licensee to TfL on demand.

8.8 If the Licensee becomes entitled to any insurance money in respect of public liability risks of the Apparatus, then the Licensee will apply to the Losses in relation to which it will have been received and in respect of any indemnity for such risks given by the Licensee to TfL under this Licence.

8.9 The Licensee is to observe and perform the conditions of the insurance policy and not without TfL's written consent and sanction of the insurers (such sanction to be produced to TfL) to do or suffer to be done to or in respect of the Apparatus anything which would be likely to increase the risks to be insured against.

8.10 In the event of any conflict between paragraphs 1 to 7 (inclusive) of Joint Schedule 3 (*Insurance Requirements*) to the Order Contract and this **clause 8**, the terms of this **clause 8** will prevail.

9. **Licensee's Rights**

This Licence grants to the Licensee:

9.1 the right with or without workmen, plant and machinery to carry out the Works and to operate and maintain the Apparatus and to remain on so much of the Highway under TfL's control as TfL will agree is reasonably required for the purpose of carrying out and completing the Works in accordance with its obligations under the Order Contract PROVIDED THAT in the exercise of this right the Licensee must make good immediately any physical damage caused to the Highway or the Apparatus by the carrying out of the Works to the satisfaction of TfL;

9.2 the right to use the Apparatus for the Licensed Use;

9.3 subject to the prior written approval of TfL the right to connect into any other Service Media as may be required to enable the Licensee to use the Apparatus as permitted under this Licence; and

9.4 subject to giving reasonable prior notice to TfL (as determined by TfL) and obtaining TfL's prior written approval and provision of a new specification, additional information (including information in relation to mitigation in respect of the impact to the Highway) where required, the right to enter onto such other parts of Highway with or without workmen and equipment so far as is reasonably necessary to inspect, repair, maintain, install or replace the Apparatus or to carry out any works to the Apparatus required or permitted by this Licence.

10. **TfL's Rights**

This Licence grants to TfL:

10.1 the right upon reasonable prior notice to the Licensee (and without notice in emergency to be determined in TfL's absolute discretion) with or without workmen, tools, appliances and materials to remedy any breach of the Licensee's obligations under this Licence provided that the person entering causes as little interference, damage and inconvenience as reasonably possible and makes good at its expense any damage caused by such entry; and

10.2 the right upon reasonable prior notice to the Licensee (and without notice in an emergency to be determined in TfL's absolute discretion) the right to temporarily suspend the use of the Highway in such a manner as to prevent the operation of the Apparatus SAVE THAT TfL is not liable to the Licensee for any loss suffered by the Licensee in relation to the suspension of the Highway.

11. **Partial termination of the Order Contract**

11.1 Without prejudice to **clauses 12.2** and **16**, TfL and the Licensee acknowledge:

11.1.1 clauses 10.8.3 and 10.8.4 (*Partially ending and suspending the contract*) of the DPS Core Terms which entitle TfL to partially terminate the Order Contract in circumstances where:

(a) TfL has the right to otherwise terminate the Order Contract as a whole; and

(b) the remaining parts of the Order Contract can still be used to effectively deliver the intended purpose; and

that in practice a partial termination of the Order Contract in accordance with clauses 10.8.3 and 10.8.4 (*Partially ending and suspending the contract*) of the DPS Core Terms may involve TfL requiring the termination of this Licence in accordance with **clause 12.2** (and in such circumstances the provisions of paragraph 3.2.2 of the Order Special Terms shall apply).

12. **Breach of the Licence**

12.1 If in the reasonable opinion of TfL the Licensee is in breach of any provision of this Licence, TfL may undertake such works as appear expedient to ensure compliance with that provision, and the reasonable costs incurred by TfL in undertaking the works will be paid to TfL by the Licensee on demand.

12.2 If the Licence is breached or TfL otherwise requires the termination of the Licence, TfL, at its absolute discretion, may terminate it in accordance with the Order Contract or paragraph 6 Schedule 3 of the New Roads and Street Works Act 1991.

13. **Compliance with Laws**

13.1 The Licensee must comply with all laws including those which may come into force during the operation of this Licence (including regulations and other statutory instruments) relating to the installation, provision and operation of the Apparatus including (without limitation):

(a) the use and operation of the electricity supply to the Apparatus;

(b) the use of the Apparatus by the EV Users;

(c) Approved Signage;

(d) any Traffic Regulation Orders; and

(e) Sections 17 & 18 of the London Local Authorities and Transport for London Act 2013.

14. **Co-operation**

14.1 The Licensee will fully and promptly co-operate with TfL, and any other relevant third party in relation to the Apparatus and any points of integration or interface between the Apparatus and any data collection system that TfL may have or operate or any such requirements set out in the Order Contract. The Licensee acknowledges that TfL will upon reasonable prior notice inspect the operation and maintenance of the Apparatus and monitor compliance by the Licensee of its obligations under both this Licence, the Order Contract and the Provisions.

15. **Surrender of the Licence**

15.1 The Licensee will not surrender this Licence except in accordance with the terms of the Order Contract.

15.2 If the Order Contract is terminated or brought to an end for any reason then TfL has the right to terminate this Licence.

15.3 If the Licensee is wound up or enters into liquidation other than for the purpose of a reconstruction or amalgamation or makes any arrangement with its creditors or if a receiver is appointed in respect of the whole or any part of the Licensee's assets then the Licence will cease to operate immediately.

15.4 Any surrender, withdrawal or other determination of this Licence will be without prejudice to any rights of the Licensee or TfL arising from anything done or omitted to be done before the date of surrender, withdrawal or other determination.

16. **Service of Notices**

16.1 Subject to **clause 16.3**, any notice or other document served under this Licence will be sufficiently served on the following conditions:

(a) prior to the Go-Live Date, upon TfL if emailed to EVIDProject@TfL.gov.uk with the Licensee's name in the subject and the subject heading 'EV CHARGING APPARATUS LICENCE';

(b) after the Go-Live Date, upon TfL if emailed to EVIDOPS@TfL.gov.uk with the Licensee's name in the subject and the subject heading 'EV CHARGING APPARATUS LICENCE';

(c) in respect of as-built Drawings only, to be uploaded to the dedicated TfL SharePoint site pursuant to the invitation from TfL to the Licensee;

(d) on the Licensee if delivered at or posted to the Secretary of the Licensee at its registered office or to such email address as nominated by the Licensee.

16.2 Service by post will be effected by addressing, prepaying and sending the notice or other document by registered post or by recorded delivery and will be deemed to have been sent at the time the letter is delivered in the ordinary course of the post. An email is effective when sent unless an error message is received.

16.3 Submission of applications and notices relating to Permits (as defined in the Provisions)

(a) TfL and the Licensee acknowledge and agree that clause 3.3.2 of the Provisions applies in respect of the submission by the Licensee of:

(i) applications (or variations to applications) relating to any Permit (as defined in the Provisions);

(ii) any notice in respect of a Permit (as defined in the Provisions) which is required to be provided under section 74 or section 70(4A) of the New Roads and Street Works Act 1991; and

(iii) unless TfL otherwise specifies from time to time all other information, comments and/or details relating to or in connection with transactions commonly associated with any Permit (as defined in the Provisions).

17. **Non-novation of Licence**

The Licence may only be novated with the prior written consent of TfL.

18. **Cost of Licence**

18.1 The Licensee will pay to TfL on execution of this Licence and on the anniversary each year of this date thereafter the Licence Fee.

18.2 The provisions of this **clause 18** will remain in effect notwithstanding termination or expiry of the Licence and Order Contract until the settlement of all subsisting claims by the Licensee.

19. **Counterparts**

The Licensee may be executed in one or more counterparts each of which will constitute one and the same document.

Annex 1

Detailed Description of Apparatus

[please insert detailed description of Apparatus by reference to Drawings, photographs, and description]

Annex 2

Site Location Plan

SIGNED on behalf of

TRANSPORT FOR LONDON by

SIGNED on behalf of

[ ]

APPENDIX 1

Provisions

TfL EVID Highways Access and Works Provisions (July 2023)

Contents

Clause **Page**

1 DEFINITIONS AND INTERPRETATION 1
2 INTRODUCTION 2
2.1 Purpose of this document 2
2.2 Licensee's responsibility in respect of licence and statutory obligations 2
3 THE REQUIREMENTS 2
3.1 Works requiring a Permit 2
3.2 Non Permit Works 4
3.3 Before starting Permit Works 4
3.4 Carrying out the Permit Works 5
3.5 Future maintenance works 8
3.6 Fees 8

Appendices

1 Typical Permit information required 10
2 Typical NRSWA actual start notice required 13
3 Typical NRSWA works closed notice required 14
4 Typical NRSWA Section 70 registration required 15

1. **DEFINITIONS AND INTERPRETATION**

1.1 In these Provisions the following words and expressions have the following meanings:

"Inspections Code of Practice"	Inspections Code of Practice, Department for Transport, March 2023
"Highways Act"	Highways Act 1980
"Lane Rental Scheme"	a TfL scheme designed to limit the carrying out of works at specified locations by applying a daily charge for any part(s) of the day that the street is occupied by the works during chargeable hours. The daily charge will not apply if the works take place outside of the specified times
"Licence"	a licence granted by TfL to a Licensee to carry out Works pursuant to section 50 of NRSWA and sections 177, 178 and 278 of the Highways Act and all other enabling powers
"Licensee"	an entity to which TfL has granted a Licence
"Maintain"	the carrying out of such works as are necessary to keep the apparatus in efficient working condition (including periodic renewal where appropriate); and includes works rendered necessary by other works in the street, other than major highway, bridge or transport works
"Non Permit Works"	has the meaning given in **clause 3.1** (Works requiring a permit)
"NRSWA"	New Roads and Street Works Act 1991 (as may be amended from time to time)
"Permit"	means a permit to be issued by TfL authorising Permit Works
"Permit Works"	has the meaning given in **clause 3.1** (Works requiring a permit)
"Street"	has the meaning given in NRSWA, namely the whole or any part of any of the following, irrespective of whether it is a thoroughfare: (a) any highway, road, lane, footway, alley or passage; (b) any square or court; and (c) any land laid out as a way whether it is for the time being formed as a way or not "Street" also includes streets which pass over a bridge or through a tunnel
"TfL"	Transport for London. In this case, the relevant street authority
"working day"	has the same meaning as specified in section 98(2) of the NRSWA

"Works"	the works which are to be carried out and completed in accordance with the Order Contract to install the Apparatus on the Highway, as defined in the Licence.

1.2 Words and phrases in bold have the same meaning throughout these Provisions.

1.3 The relevant statutory reference has been included in brackets where applicable.

2. INTRODUCTION

2.1 Purpose of this document

2.1.1 TfL, as street authority and highway authority for the relevant highway, has pursuant to section 50 of NRSWA and sections 177, 178 and 278 of the Highways Act and all other enabling powers granted Licences to Licensees for Works relating to the use, retention, maintenance and operation of apparatus for electric vehicle charging points on highways maintained by TfL, in each case under the terms of the Licence.

2.1.2 The Licence refers to this document, entitled "TfL EVID Highways Access and Works Provisions", as the "Provisions". These Provisions, which will be updated from time to time by TfL, are intended to provide Licensees with a helpful overview of key obligations in existing statute, standards, requirements, codes of practice and guidelines with which Licensees must comply where specified in the Licence.

2.2 Licensee's responsibility in respect of licence and statutory obligations

2.2.1 The Licence is a street works licence for the purposes of section 50 of NRSWA, which obligates the Licensee to comply with provisions of NRSWA applicable to the Works. These Provisions seek to assist Licensees by drawing their attention to key provisions of NRSWA which may apply. Licensees should be mindful of the general duty incumbent upon them by virtue of section 60 of NRSWA to use their best endeavours co-operate with TfL and with other undertakers as regards the execution of street works.

2.2.2 Nothing in these Provisions excuses the Licensee from the due performance of any of its obligations under the Licence or any applicable statute. The Provisions do not constitute legal advice and Licensees must rely on their own. It is each Licensee's responsibility to ensure that it has the most up-to-date Provisions, remains abreast of any changes to applicable statute from time to time and continues to comply with the Licence and such applicable statute.

2.2.3 Where there is any conflict from time to time between these Provisions and the Licence or any applicable statute then the Licence and applicable statute (as relevant) will take precedence.

3. THE REQUIREMENTS

3.1 Works requiring a Permit

3.1.1 The following Works (and such other works as TfL may specify from time to time) require a Permit, and these Provisions will refer to them as Permit Works:

3.1.1.1 involve the breaking up or resurfacing any street (including tunnelling and boring under the street);

3.1.1.2 involve opening the carriageway or cycleway of traffic-sensitive streets at traffic-sensitive times;

3.1.1.3 reduce the lanes available on a carriageway of three or more lanes;

3.1.1.4 require a temporary traffic regulation order or notice, or the suspension of pedestrian facilities; and

3.1.1.5 require a reduction in the width of the existing carriageway of a traffic-sensitive street at a traffic-sensitive time

and, in each case, are activities which are ancillary to such Works.

3.1.2 Licensees must provide such supplementary information as is known by them as part of their application for a Permit and keep TfL notified of changes for the duration of the Permit. Supplementary information should cover activities which the Licensee is aware of and which are ancillary to the Works to which the Permit application relates, and which it would be helpful for TfL to be aware of for network management and coordination purposes. Examples of the types of activities that should be included as supplementary information are:

3.1.2.1 placement of portable traffic signals or other traffic control;

3.1.2.2 placement of site welfare facilities;

3.1.2.3 placement of site compound or material storage; and

3.1.2.4 placement of spoil compound for the works.

3.1.3 **Clause 3.3** (Before starting Permit Works) to **clause 3.6** apply to Permit Works.

3.1.4 **Clause 3.2** (Non Permit Works) applies to Works which are not Permit Works, and these Provisions will refer to them as Non Permit Works. For the avoidance of doubt, the following are Non Permit Works and do not require a Permit:

3.1.4.1 installation of traffic count apparatus involving breaking the surface of the highway;

3.1.4.2 pole testing involving excavation or core holes not exceeding 150mm in diameter, unless one or more of the rules in **clause 3.1.1** apply;

3.1.4.3 applying road markings that are not part of a larger set of works and do not reduce the width of the carriageway, as they do not involve breaking up of the highway;

3.1.4.4 other activities occupying the highway that involve active traffic management;

3.1.4.5 activities carried out on their own and not in connection with an activity to which one or more of the rules in **clause 3.1.1** apply and which will not have an impact on the network and therefore do not require coordination. The following list of examples of such Non Permit Works is not exhaustive and where Licensees would like clarification on what activities count as such Non Permit Works they should seek written clarification from TfL:

(a) meter reading;

(b) gully cleansing;

(c) cable surveys;

(d) sign cleaning;

(e) soft landscape;

(f) traffic signal maintenance; and

(g) street lighting maintenance.

3.2 **Non Permit Works**

3.2.1 Before accessing highway for the purposes of Non Permit Works the Licensee must give TfL no less than 14 days' written notice that it proposes to do so accompanied by a detailed written description of the activities it proposes carrying out, their proposed start date and duration and why they are considered to be Non Permit Works.

3.2.2 The Licensee must not access any highway for the purposes of carrying out Non Permit Works prior to written consent from TfL that it may do so.

3.2.3 The Licensee must at all times comply with any requirements specified by TfL (in the written consent to which **clause 3.2.1** above refers or otherwise) prior to or during the Licensee accessing highway for the purposes of carrying out the Non Permit Works.

3.2.4 The Licensee must pay TfL's costs in giving the consent to which **clause 3.2.1** above refers and specifying the requirements to which **clause 3.2.3** above refers.

3.3 **Before starting Permit Works**

3.3.1 **Applying for a Permit to carry out Permit Works**

3.3.1.1 A Licensee must apply to TfL for a Permit to carry out Permit Works:

(a) that require a traffic order;

(b) are 11 days or more in duration; or

(c) where the traffic management for the works will impact the carriageway,

at least three months in advance of the proposed start date for such Permit Works but for other Permit Works one month in advance.

3.3.1.2 Where the proposed Permit Works will or might impact the carriageway, the Licensee may be required to submit additional information to TfL to allow it to require or provide mitigation in respect of their impact in accordance with TfL's statutory duties.

3.3.1.3 In urgent or emergency situations, a shorter period of notice may be agreed.

3.3.2 **Submission of proposed Permit Works information to TfL**

The following will be managed by the Licensee or on its behalf by TfL through the Street Manager interface as may be directed by TfL:

(a) all Permit applications;

(b) variations to Permit applications;

(c) notices relating to Permit applications required to be provided under section 74 or section 70(4A) of the NRSWA once the works have started; and

(d) unless TfL otherwise specifies from time to time all other information, comments and/or details relating to or in connection with transactions commonly associated with any Permit.

A Licensee must submit to TfL via the Street Manager interface details of all proposed Permit Works as required by the Street Manager interface (it being acknowledged that **Appendix 1** provides details of the typical (but not exhaustive) Permit information which will be required) and the following documents as may be requested by TfL from time to time external to the Street Manager interface (in addition to any additional information submitted pursuant to clause 3.3.1.2):

3.3.2.1 two copies of a scale location plan at 1:1250 showing the proposed location and depth of the relevant apparatus marked by a red broken line;

3.3.2.2 a copy of a Traffic Management Drawing;

3.3.2.3 confirmation that the Licensee has written to all statutory undertakers who may have apparatus in the Street which may be affected;

3.3.2.4 copies of any street works qualifications (badges/certificates) obtained by operatives and supervisors who will carry out the Permit Works on behalf of the Licensee; and

3.3.2.5 Permit Works involving the use of portable light signals and/or a traffic order to prohibit traffic will require separate approvals. Copies of these applications/approvals must be submitted along with the Permit application.

3.3.3 Changes to proposed Permit Works

Any requirement proposed by a Licensee that changes the scope or the duration of the Permit Works originally specified within the application will require TfL to process and reassess the proposals for impact to the road network and check for any conflicts with other works where any changes to dates are requested. These requests must be submitted at least two working days before the originally proposed end date of the Permit Works.

3.3.4 Costs

The Licensee must pay TfL's costs in granting any Permit.

3.4 Carrying out the Permit Works

3.4.1 Notices to TfL once Permit Works have started

3.4.1.1 The Licensee must provide the following types of notice to TfL as set out in the table below:

Type of notice	What does the notice do?	What form will the notice typically be required to be provided in?	When should the notice be received by TfL?
Actual Start Notice (Section 74 NRSWA)	Informs TfL that Permit Works have begun.	**Appendix 2** (Typical NRSWA Actual Start Notice required)	Before 10:00 the day after the Permit Works have started.

Works Closed Notice (Section 74 NRSWA)	Informs TfL that the Street has been permanently reinstated and all spoil, materials, signing, lighting and guarding has been removed from site.	**Appendix 3** (Typical NRSWA Works Closed Notice required)	By the end of the next working day following the day on which the Permit Works activity was closed.
Registration of Reinstatement Notice (Section 70(4A) NRSWA)	Informs TfL that the Licensee has completed permanent reinstatement works.	**Appendix 4** (Typical NRSWA Section 70 Registration required)	Within ten working days of completing the reinstatement.

3.4.1.2 An as-built drawing must be supplied to TfL with the Reinstatement Registration Notice.

3.4.2 **Traffic Regulation Orders**

The Licensee will be required to apply to TfL and pay a fee for any traffic regulation orders or suspensions (under the Road Traffic Regulation Act 1984) which are required to facilitate any part of its Permit Works.

3.4.3 **Safety measures**

3.4.3.1 The Licensee must ensure that it is familiar with the relevant and most recent statutory code of practices and guidance, including, but not limited to, the Safety at Street Works and Road Works A Code of Practice, Department for Transport, October 2013 (issued pursuant to Section 65 NRSWA).

3.4.3.2 The Licensee must also ensure that it is familiar with TfL documents regarding how works, more widely, are undertaken to the TfL network, including but not limited to:

(a) Temporary Traffic Management Handbook, TfL, December 2018; and

(b) Safer provisions for pedestrians at roadworks - A risk prioritisation framework, TfL.

3.4.3.3 Failure to comply with the safety measures to which this **clause 3.4.3** (Safety measures) relates may result in TfL taking enforcement action against the Licensee.

3.4.4 **Lane Rental Charges (Section 74A NRSWA)**

3.4.4.1 The Licensee must ensure that it is familiar with, and complies with, TfL's Lane Rental Scheme to avoid incurring a lane rental charge if the Permit Works are taking place at a lane rental location.

3.4.4.2 Further information relating to the scheme can be found on:

(a) www.tfl.gov.uk/lanerental; and

(b) for the Lane Rental Map click here.

3.4.5 **Overrunning works charges (Section 74 NRSWA)**

3.4.5.1 The Licensee must ensure that they are familiar with the rules, regulations and fees associated with overrunning works.

3.4.5.2 For any Permit Works that take longer than previously agreed, TfL may charge the Licensee a daily charge for each working day that the works exceed the longer of the prescribed or reasonable periods. The daily charge varies according to the road category, whether the street is traffic sensitive, and whether or not the works affect the carriageway at any time during the period of overrun.

3.4.5.3 Further information can be found in Chapter 10 of the 'Code of Practice for the Co-ordination of Street and Road works (April 2023)'

3.4.6 **Licensee's reinstatement duties (Section 70-73 NRSWA)**

3.4.6.1 The Licensee must reinstate the Street to a standard which:

(a) includes the reinstatement of features designed to assist people with a disability;

(b) complies with any standards of workmanship or specification of materials to be used;

(c) complies with any applicable regulations made by the Secretary of State relating to NRSWA, different classes of excavation and different types of highways; and

(d) complies with any applicable codes of practice, and standards (including utilities companies' reinstatement standards).

3.4.6.2 Where a Licensee does not comply with its duties of reinstatement, the Licensee will be liable for a fine in accordance with Section 70(7), Section 71(5), of the NRSWA

3.4.6.3 Where a Licensee fails to comply with its duties in relation to reinstatement as set out in Part of the NRSWA, TfL may carry out the necessary works without giving notice and may recover from the Licensee the costs reasonably incurred in doing so in accordance with Section 72 of the NRSWA.

3.4.7 **Licensee's duty to record location of apparatus (Sections S79 - S80 NRSWA)**

The Licensee must record the location of all of its apparatus after:

3.4.7.1 placing it in the Street or altering its position;

3.4.7.2 locating it in the Street whilst carrying out the Permit Works; and

3.4.7.3 discovering apparatus which does not belong to the Licensee and being unable to find out to whom the apparatus belongs.

3.4.8 **Licensee's duty to Maintain apparatus (Section 81 NRSWA)**

The Licensee who has apparatus in the Street must Maintain the apparatus to the satisfaction of:

3.4.8.1 TfL – in terms of safety and convenience of persons using the Street, the structure of the street and the integrity of the apparatus; and

3.4.8.2 any other relevant authority – in terms of any land, structure or apparatus of theirs.

3.4.9 **Failure to Maintain apparatus (Section 82 NRSWA)**

3.4.9.1 Failure to Maintain the apparatus to the reasonable satisfaction of TfL (or the relevant authority) may result in TfL (or any relevant authority) executing any emergency works needed.

3.4.9.2 The Licensee must compensate TfL (or the relevant authority) for any damage or loss caused by its apparatus to TfL (or the relevant authority), including other people with apparatus in the Street.

3.5 **Future maintenance works**

Any:

3.5.1 future Maintenance works required to the apparatus placed as part of the granted License; or

3.5.2 any remedial measures to the reinstatement of the Street that qualify as registerable works under NRSWA

will need to be processed and evaluated by TfL. Permit Works of this nature will require the Licensee to seek a separate Permit from TfL and comply with the works assessment process.

3.6 **Fees**

3.6.1 **Additional inspection fees (Section 75 NRSWA)**

3.6.1.1 Under NRSWA, TFL is permitted to recover the costs of inspections undertaken, as set-out in the Inspections Code of Practice.

3.6.1.2 The Licence application fee includes a payment for undertaking a minimum of three inspections. Further Information can be found at https://www.gov.uk/government/publications/street-works-inspections.

3.6.2 **Fees to compensate TfL where it undertakes remedial works (Section 72 NRSWA)**

3.6.2.1 Where the Licensee has failed to comply with their reinstatement duties and is causing danger to street users, TfL may carry out the necessary remedial works (in responding to defect notifications issued by the authority) and charge their reasonable costs to the Licensee.

3.6.2.2 Further Information can be found within section 4.2 of the Inspections Code of Practice.

3.6.3 **Fixed Penalty Notice (Section 70 and Section 74 NRSWA)**

TfL may choose to give a fixed penalty notice (FPN) to a Licensee failing to comply with NRSWA. An FPN offers the Licensee the opportunity to discharge any liability to conviction (see **clause 3.6.4** below) for a fixed penalty offence, by payment of a penalty. TfL retains the right to take an alleged offender to the Magistrates Courts instead of issuing a FPN.

3.6.4 **Criminal Liability**

3.6.4.1 Where a Licensee fails to comply with the statutory details outlined in these Provisions or detailed in Part 3 of NRSWA, the Licensee may be liable for a criminal offence and/or fine.

3.6.4.2 TfL has the power prosecute a Licensee in the Magistrates Court for an alleged failure to comply with NRSWA.

APPENDIX 1

Typical Permit information required

Please ensure all fields are completed to avoid incurring a delay with processing your application

1. Applicant & Promoter Contact Details					
Date of Application:					
Applicant Name (Owner of Apparatus):					
Company Registration Number:					
Contact Email Address:			Contact Telephone No:		
Full Postal Address:					
Site Supervisor Contact Name & number /Contractor Name:					
Contact Email Address:			Contact Telephone No:		
2. Work Details					
Installation of New Apparatus: ☐			Maintenance of Existing Apparatus: ☐		
Description of Apparatus being placed/maintained, including materials and size of apparatus (e.g. Install and lay 8m of 100mm diameter polyethylene gas pipe from the boundary of the domestic dwelling to the existing 24inch low pressure gas mains located in the main carriageway)					
Description of Works:					
Works Category	Major ☐	Standard ☐	Minor ☐	Urgent ☐	Emergency ☐
Estimated Works Start Date:			Estimated Works End Date:		
Proposed Working Times on Site:			Proposed Times Traffic Management will Impact the Carriageway:		
Highway Restrictions:	Lane Closure ☐		Stop/Go Boards ☐	Contra-Flow ☐	
	Road Closure ☐		Portable Light Signals ☐	Footway Closure ☐	
Is a Temporary Traffic Regulation Order/Notice (TTRO/N) Required?				Yes ☐ **Provide Details**	No ☐

Is the suspension of bus lane(s), parking bay(s) and/or loading bay(s) required?	Yes ☐ **Provide Details**	No ☐
Traffic Management Plan(s) Provided ☐	Surface: C/W ☐ Cycle ☐ F/W ☐ Verge ☐	
If working in more than one surface, please provide estimated measurements for each ie C/W 2m, F/W 4m	Estimated Site Length:	Estimated Site Width:
Specify proposed measures to mitigate potential disruption on road users:		

3. Vehicle Parking and Access Requirements

Vehicle Parking within Works Site ☐	Vehicle Parking Dispensation Required ☐
Construction Traffic Access ☐	Maintain Property/Frontage Access ☐
Any Other Access Requirements (please specify):	

4. Works Location(s)

NSG USRN	Street Name	Street Location (E.g. O/S 71, Opp 27, J/W Cross Road)	London Borough	Asset Location*			
				C/W	F/W With C/W Incursion	F/W No C/W Incursion	V
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐

***Asset Location Key:** C/W – Carriageway; F/W – Footway; V – Verge

Spatial Location of Works	Easting (X) Coordinates:	Northing (Y) Coordinates:

5. Stakeholder Notification			
Stakeholder	**Agreement, Objections, Conditions, Comments**	**Date**	**Evidence Enclosed**
Statutory Undertakers with Apparatus in Street			☐
Police			☐
Adjoining Authority(s)			☐
Transport Operators			☐
Frontages / Property Owners			☐
Other Parties			☐

6. Supplementary Information Checklist		
Location Plan (1:1250) ☐	Traffic Management Plan ☐	Evidence of Stakeholder Engagement ☐
Details of TTRO/N Application ☐	Details of Suspension Request ☐	Deposit Payment ☐
Copies of Operatives and Supervisors Qualification ID ☐	Copy of Public Liability Insurance Policy ☐	BACS or Credit Card payment for the sum of £1099.00 ☐
Completed forms should be returned to: Section50@TfL.gov.uk		

APPENDIX 2

Typical NRSWA actual start notice required

1. Section 50 Applicant Contact Details	
Date of Notice:	Time of Notice:
s50 Application Reference:	Activity Works Reference: YG104
Contractor (Supervisor on site):	
Contact Email Address:	Contact Telephone No:

2. Work Details	
Description of Works:	
Estimated Works Start Date:	Estimated Works End Date:
Actual Works Start Date:	**Actual Works Start Time:**

3. Works Location(s)

NSG USRN	**Street Name**	**Street Location** (E.g. O/S 71, Opp 27, J/W Cross Road)	**London Borough**	**Asset Location***			
				C/W	**F/W** With C/W Incursion	**F/W** No C/W Incursion	**V**
				☐	☐	☐	☐

***Asset Location Key:** C/W – Carriageway; F/W – Footway; V – Verge

Spatial Location of Works	Easting (X) Coordinates:	Northing (Y) Coordinates:

4. Declaration

I confirm that the foregoing details are correct.

Name:	**Signature:**	**Date:**

Completed forms should be returned to: Section50@TfL.gov.uk

APPENDIX 3

Typical NRSWA works closed notice required

Note: One works closed notice is required for **each** works location

1. Section 50 Applicant Contact Details	
Date of Notice:	Time of Notice:
s50 Application Reference:	Activity Works Reference: YG104
Contractor Name (Supervisor on Site):	
Contact Email Address:	Contact Telephone No:

2. Work Details	
Description of Works:	
Estimated Works Start Date:	Estimated Works End Date:
Actual Works Start Date:	**Actual Works End Date:**

3. Works Location(s)

NSG USRN	**Street Name**	**Street Location** (E.g. O/S 71, Opp 27, J/W Cross Road)	**London Borough**	**Asset Location***			
				C/W	**F/W** With C/W Incursion	**F/W** No C/W Incursion	**V**
				☐	☐	☐	☐

***Asset Location Key:** C/W – Carriageway; F/W – Footway; V – Verge

Spatial Location of Works	Easting (X) Coordinates:	Northing (Y) Coordinates:

4. Declaration		
I confirm that the foregoing details are correct.		
Name:	**Signature:**	**Date:**
Completed forms should be returned to: Section50@TfL.gov.uk		

APPENDIX 4

Typical NRSWA Section 70 registration required

Note: One registration notice is required for **each** works location

1. Section 50 Applicant Contact Details	
Date of Notice:	Time of Notice:
s50 Application Reference:	Activity Works Reference: YG104
Applicant Name (Owner of Apparatus):	
Contact Email Address:	Contact Telephone No:
Full Postal Address:	
Works Promoter/Contractor Name:	
Contact Email Address:	Contact Telephone No:
Full Postal Address:	

2. Work Details	
Description of Works:	
Estimated Works Start Date:	Estimated Works End Date:
Actual Works Start Date:	Actual Works End Date:

3. Works Location(s)

NSG USRN	**Street Name**	**Street Location** (E.g. O/S 71, Opp 27, J/W Cross Road)	**London Borough**	**Asset Location***			
				C/W	**F/W**	**V**	**D**
				☐	☐	☐	☐

***Asset Location Key:** C/W – Carriageway; F/W – Footway; V – Verge; D – Deep Excavation (greater than 1.5m)

Spatial Location of Works	Easting (X) Coordinates:	Northing (Y) Coordinates:

4. Reinstatement Details

Site No	Location Code*				Location Description	Reinstatement Type (Interim/Perm)	Reinstatement Date	Length	Width	Deep Exc >1.5m
	F/W	C/W	V	Cy/W						
	☐	☐	☐	☐						☐
Spatial Location of Works					Easting (X) Coordinates:		Northing (Y) Coordinates:			

Site No	Location Code*				Location Description	Reinstatement Type (Interim/Perm)	Reinstatement Date	Length	Width	Deep Exc >1.5m
	F/W	C/W	V	Cy/W						
	☐	☐	☐	☐						☐
Spatial Location of Works					Easting (X) Coordinates:		Northing (Y) Coordinates:			

Site No	Location Code*				Location Description	Reinstatement Type (Interim/Perm)	Reinstatement Date	Length	Width	Deep Exc >1.5m
	F/W	C/W	V	Cy/W						
	☐	☐	☐	☐						☐
Spatial Location of Works					Easting (X) Coordinates:		Northing (Y) Coordinates:			

Site No	Location Code*				Location Description	Reinstatement Type (Interim/Perm)	Reinstatement Date	Length	Width	Deep Exc >1.5m
	F/W	C/W	V	Cy/W						
	☐	☐	☐	☐						☐
Spatial Location of Works					Easting (X) Coordinates:		Northing (Y) Coordinates:			

Site No	Location Code*				Location Description	Reinstatement Type (Interim/Perm)	Reinstatement Date	Length	Width	Deep Exc >1.5m
	F/W	C/W	V	Cy/W						
	☐	☐	☐	☐						☐
Spatial Location of Works					Easting (X) Coordinates:		Northing (Y) Coordinates:			

Site No	Location Code*				Location Description	Reinstatement Type (Interim/Perm)	Reinstatement Date	Length	Width	Deep Exc >1.5m
	F/W	C/W	V	Cy/W						
	☐	☐	☐	☐						☐

Spatial Location of Works	Easting (X) Coordinates:	Northing (Y) Coordinates:

5. Declaration

I confirm that the foregoing details are correct.

Name:	Signature:	Date:

Completed forms should be returned to: Section50@TfL.gov.uk

Crown
Commercial
Service

Core Terms – DPS

Addendum to Core Terms

The following Core Terms are modified in respect of the Order Contract (but are not modified in respect of the DPS Contract).

A. For Lot 1

Clause	Amendment
3.1.2	Warranty period is amended to 36 months.
3.2.2	Amended to "All manufacturer warranties covering the Goods must either be assignable to the Buyer on request and for free, or the Supplier must make claims under the warranties for the Buyer whenever asked to do so for free."
3.2.3	Amended to "The Supplier transfers risk of the Goods on Delivery and ownership or possession of the Goods on payment for those Goods, whichever is earlier."
3.2.11	Amended to "The Buyer can cancel any order or part order of Goods which has not been Delivered. The Buyer will pay the Supplier's reasonable and proven costs already incurred on the cancelled order as long as the Supplier takes all reasonable steps to minimise these costs."
10.3.2	Amended to Each Buyer has the right to terminate their Order Contract at any time without reason or liability by giving the Supplier not less than 90 days written notice, unless specified in the Order Contract. If the Order Contract is terminated clauses 10.5.2 to 10.5.7 will apply.
11.2	Amended to "Each Party's total aggregate liability in each Contract Year under each Order Contract (whether in tort, contract or otherwise) is no more than the greater of £1 million or 150% of the Estimated Yearly Charges unless otherwise specified in the Order Form."
11.5	Clause 11.5 of the CCS Core Terms is varied with deletions marked as strikeout and insertions underlined as follows: "11.5 In spite of Clauses 11.1 and 11.2, the Supplier does not limit or exclude its liability for any indemnity given under Clauses 7.5, 8.3, 9.5, <u>or</u> 12.2 ~~or 14.8~~ or Call-Off Schedule 2 (Staff Transfer) of a Contract."
11.5	In spite of Clauses 11.1, 11.2 but subject to Clauses 11.3 and 11.4, the Supplier's aggregate liability in each and any Contract Year under each Contract under Clause 14.8 shall in no event exceed £10 million.

16.1	Amended to "The Supplier must tell the Relevant Authority within two (2) working days if it receives a Request For Information."

1. Definitions used in the contract

1.1 Interpret this Contract using Joint Schedule 1 (Definitions).

2. How the contract works

2.1 The Supplier is eligible for the award of Order Contracts during the DPS Contract Period.

2.2 CCS doesn't guarantee the Supplier any exclusivity, quantity or value of work under the DPS Contract.

2.3 CCS has paid one penny to the Supplier legally to form the DPS Contract. The Supplier acknowledges this payment.

2.4 If the Buyer decides to buy Deliverables under the DPS Contract it must use DPS Schedule 7 (Order Procedure) and must state its requirements using DPS Schedule 6 (Order Form Template and Order Schedules). If allowed by the Regulations, the Buyer can:

- make changes to DPS Schedule 6 (Order Form Template and Order Schedules)
- create new Order Schedules
- exclude optional template Order Schedules
- use Special Terms in the Order Form to add or change terms

2.5 Each Order Contract:

- is a separate Contract from the DPS Contract
- is between a Supplier and a Buyer
- includes Core Terms, Schedules and any other changes or items in the completed Order Form
- survives the termination of the DPS Contract

2.6 Where the Supplier is approached by an eligible buyer requesting Deliverables or substantially similar goods or services, the Supplier must tell them about this DPS Contract before accepting their order. The Supplier will promptly notify CCS if the eligible buyer won't use this DPS Contract.

2.7 The Supplier acknowledges it has all the information required to perform its obligations under each Contract before entering into a Contract. When information is provided by a Relevant Authority no warranty of its accuracy is given to the Supplier.

2.8 The Supplier won't be excused from any obligation, or be entitled to additional Costs or Charges because it failed to either:

- verify the accuracy of the Due Diligence Information
- properly perform its own adequate checks

2.9 CCS and the Buyer won't be liable for errors, omissions or misrepresentation of any information.

2.10 The Supplier warrants and represents that all statements made and documents submitted as part of the procurement of Deliverables are and remain true and accurate.

2.11 An Order Contract can only be created using the electronic procedures described in the OJEU Notice as required by the Regulations.

2.12 A Supplier can only receive Orders under the DPS Contract while it meets the basic access requirements for the DPS stated in the OJEU Notice. CCS can audit whether a Supplier meets the basic access requirements at any point during the DPS Contract Period.

3. What needs to be delivered

3.1 All deliverables

3.1.1 The Supplier must provide Deliverables:

- that comply with the Specification, the DPS Application and, in relation to an Order Contract, the Order Tender
- to a professional standard
- using reasonable skill and care
- using Good Industry Practice
- using its own policies, processes and internal quality control measures as long as they don't conflict with the Contract
- on the dates agreed
- that comply with Law

3.1.2 The Supplier must provide Deliverables with a warranty of at least 90 days from Delivery against all obvious defects.[1]

3.2 Goods clauses

3.2.1 All Goods delivered must be new, or as new if recycled, unused and of recent origin.

3.2.2 All manufacturer warranties covering the Goods must be assignable to the Buyer on request and for free.[2]

[1] Clause amended – see Addendum to Core Terms

[2] Clause amended – see Addendum to Core Terms

3.2.3 The Supplier transfers ownership or possession of the Goods on Delivery or payment for those Goods, whichever is earlier.[3]

3.2.4 Risk in the Goods transfers to the Buyer on Delivery of the Goods, but remains with the Supplier if the Buyer notices damage following Delivery and lets the Supplier know within 3 Working Days of Delivery.

3.2.5 The Supplier warrants that it has full and unrestricted ownership of the Goods at the time of transfer of ownership or possession.

3.2.6 The Supplier must deliver the Goods on the date and to the specified location during the Buyer's working hours.

3.2.7 The Supplier must provide sufficient packaging for the Goods to reach the point of Delivery safely and undamaged.

3.2.8 All deliveries must have a delivery note attached that specifies the order number, type and quantity of Goods.

3.2.9 The Supplier must provide all tools, information and instructions the Buyer needs to make use of the Goods.

3.2.10 The Supplier must indemnify the Buyer against the costs of any Recall of the Goods and give notice of actual or anticipated action about the Recall of the Goods.

3.2.11 The Buyer can cancel any order or part order of Goods which has not been Delivered. If the Buyer gives less than 14 days notice then it will pay the Supplier's reasonable and proven costs already incurred on the cancelled order as long as the Supplier takes all reasonable steps to minimise these costs.[4]

3.2.12 The Supplier must at its own cost repair, replace, refund or substitute (at the Buyer's option and request) any Goods that the Buyer rejects because they don't conform with Clause 3. If the Supplier doesn't do this it will pay the Buyer's costs including repair or re-supply by a third party.

3.3 Services clauses

3.3.1 Late Delivery of the Services will be a Default of an Order Contract.

3.3.2 The Supplier must co-operate with the Buyer and third party suppliers on all aspects

[3] Clause amended – see Addendum to Core Terms

[4] Clause amended – see Addendum to Core Terms

connected with the Delivery of the Services and ensure that Supplier Staff comply with any reasonable instructions.

3.3.3 The Supplier must at its own risk and expense provide all Supplier Equipment required to Deliver the Services.

3.3.4 The Supplier must allocate sufficient resources and appropriate expertise to each Contract.

3.3.5 The Supplier must take all reasonable care to ensure performance does not disrupt the Buyer's operations, employees or other contractors.

3.3.6 The Supplier must ensure all Services, and anything used to Deliver the Services, are of good quality and free from defects.

3.3.7 The Buyer is entitled to withhold payment for partially or undelivered Services, but doing so does not stop it from using its other rights under the Order Contract.

4 Pricing and payments

4.1 In exchange for the Deliverables, the Supplier must invoice the Buyer for the Charges in the Order Form.

4.2 CCS must invoice the Supplier for the Management Levy and the Supplier must pay it using the process in DPS Schedule 5 (Management Levy and Information).

4.3 All Charges and the Management Levy:

- exclude VAT, which is payable on provision of a valid VAT invoice
- include all costs connected with the Supply of Deliverables

4.4 The Buyer must pay the Supplier the Charges within 30 days of receipt by the Buyer of a valid, undisputed invoice, in cleared funds using the payment method and details stated in the Order Form.

4.5 A Supplier invoice is only valid if it:

- includes all appropriate references including the Order Contract reference number and other details reasonably requested by the Buyer
- includes a detailed breakdown of Delivered Deliverables and Milestone(s) (if any)
- doesn't include any Management Levy (the Supplier must not charge the Buyer in any way for the Management Levy)

4.6 The Buyer may retain or set-off payment of any amount owed to it by the Supplier if notice and reasons are provided.

4.7 The Supplier must ensure that all Subcontractors are paid, in full, within 30 days of receipt of a valid, undisputed invoice. If this doesn't happen, CCS or the Buyer can publish the details of the late payment or non-payment.

4.8 If CCS or the Buyer can get more favourable commercial terms for the supply at cost of any materials, goods or services used by the Supplier to provide the Deliverables and that cost is reimbursable by the Buyer, then CCS or the Buyer may either:

- require the Supplier to replace its existing commercial terms with the more favourable terms offered for the relevant items
- enter into a direct agreement with the Subcontractor or third party for the relevant item

4.9 If CCS or the Buyer uses Clause 4.8 then the Charges must be reduced by an agreed amount by using the Variation Procedure.

4.10 CCS and the Buyer's right to enter into a direct agreement for the supply of the relevant items is subject to both:

- the relevant item being made available to the Supplier if required to provide the Deliverables
- any reduction in the Charges excluding any unavoidable costs that must be paid by the Supplier for the substituted item, including any licence fees or early termination charges

4.11 The Supplier has no right of set-off, counterclaim, discount or abatement unless they're ordered to do so by a court.

5. The Buyer's obligations to the supplier

5.1 If Supplier Non-Performance arises from an Authority Cause:

- neither CCS or the Buyer can terminate a Contract under Clause 10.4.1
- the Supplier is entitled to reasonable and proven additional expenses and to relief from Delay Payments, liability and Deduction under this Contract
- the Supplier is entitled to additional time needed to make the Delivery
- the Supplier cannot suspend the ongoing supply of Deliverables

5.2 Clause 5.1 only applies if the Supplier:

- gives notice to the Party responsible for the Authority Cause within 10 Working Days of becoming aware
- demonstrates that the Supplier Non-Performance only happened because of the Authority Cause
- mitigated the impact of the Authority Cause

6. Record keeping and reporting

6.1 The Supplier must attend Progress Meetings with the Buyer and provide Progress Reports when specified in the Order Form.

6.2 The Supplier must keep and maintain full and accurate records and accounts on everything to do with the Contract for 7 years after the End Date.

6.3 The Supplier must allow any Auditor access to their premises to verify all contract accounts and records of everything to do with the Contract and provide copies for an Audit.

6.4 The Supplier must provide information to the Auditor and reasonable co-operation at their request.

6.5 If the Supplier is not providing any of the Deliverables, or is unable to provide them, it must immediately:

- tell the Relevant Authority and give reasons
- propose corrective action
- provide a deadline for completing the corrective action

6.6 The Supplier must provide CCS with a Self Audit Certificate supported by an audit report at the end of each Contract Year. The report must contain:

- the methodology of the review
- the sampling techniques applied
- details of any issues
- any remedial action taken

6.7 The Self Audit Certificate must be completed and signed by an auditor or senior member of the Supplier's management team that is qualified in either a relevant audit or financial discipline.

7. Supplier staff

7.1 The Supplier Staff involved in the performance of each Contract must:

- be appropriately trained and qualified
- be vetted using Good Industry Practice and the Security Policy
- comply with all conduct requirements when on the Buyer's Premises

7.2 Where a Buyer decides one of the Supplier's Staff isn't suitable to work on a contract, the Supplier must replace them with a suitably qualified alternative.

7.3 If requested, the Supplier must replace any person whose acts or omissions have caused the Supplier to breach Clause 27.

7.4 The Supplier must provide a list of Supplier Staff needing to access the Buyer's Premises and say why access is required.

7.5 The Supplier indemnifies CCS and the Buyer against all claims brought by any person employed by the Supplier caused by an act or omission of the Supplier or any Supplier Staff.

8. Rights and protection

8.1 The Supplier warrants and represents that:

- it has full capacity and authority to enter into and to perform each Contract
- each Contract is executed by its authorised representative
- it is a legally valid and existing organisation incorporated in the place it was formed
- there are no known legal or regulatory actions or investigations before any court, administrative body or arbitration tribunal pending or threatened against it or its Affiliates that might affect its ability to perform each Contract
- it maintains all necessary rights, authorisations, licences and consents to perform its obligations under each Contract
- it doesn't have any contractual obligations which are likely to have a material adverse effect on its ability to perform each Contract
- it is not impacted by an Insolvency Event
- it will comply with each Order Contract

8.2 The warranties and representations in Clauses 2.10 and 8.1 are repeated each time the Supplier provides Deliverables under the Contract.

8.3 The Supplier indemnifies both CCS and every Buyer against each of the following:

- wilful misconduct of the Supplier, Subcontractor and Supplier Staff that impacts the Contract
- non-payment by the Supplier of any tax or National Insurance

8.4 All claims indemnified under this Contract must use Clause 26.

8.5 CCS or a Buyer can terminate the Contract for breach of any warranty or indemnity where they are entitled to do so.

8.6 If the Supplier becomes aware of a representation or warranty that becomes untrue or misleading, it must immediately notify CCS and every Buyer.

8.7 All third party warranties and indemnities covering the Deliverables must be assigned for the Buyer's benefit by the Supplier.

9. Intellectual Property Rights (IPRs)

9.1 Each Party keeps ownership of its own Existing IPRs. The Supplier gives the Buyer a non-exclusive, perpetual, royalty-free, irrevocable, transferable worldwide licence to use, change and sub-license the Supplier's Existing IPR to enable it to both:

- receive and use the Deliverables
- make use of the deliverables provided by a Replacement Supplier

9.2 Any New IPR created under a Contract is owned by the Buyer. The Buyer gives the Supplier a licence to use any Existing IPRs and New IPRs for the purpose of fulfilling its obligations during the Contract Period.

9.3 Where a Party acquires ownership of IPRs incorrectly under this Contract it must do everything reasonably necessary to complete a transfer assigning them in writing to the other Party on request and at its own cost.

9.4 Neither Party has the right to use the other Party's IPRs, including any use of the other Party's names, logos or trademarks, except as provided in Clause 9 or otherwise agreed in writing.

9.5 If there is an IPR Claim, the Supplier indemnifies CCS and each Buyer against all losses, damages, costs or expenses (including professional fees and fines) incurred as a result.

9.6 If an IPR Claim is made or anticipated the Supplier must at its own expense and the Buyer's sole option, either:

- obtain for CCS and the Buyer the rights in Clause 9.1 and 9.2 without infringing any third party IPR
- replace or modify the relevant item with substitutes that don't infringe IPR without adversely affecting the functionality or performance of the Deliverables

10. Ending the contract

10.1 The Contract takes effect on the Start Date and ends on the End Date or earlier if required by Law.

10.2 The Relevant Authority can extend the Contract for the Extension Period by giving the Supplier no less than 3 Months' written notice before the Contract expires.

10.3 Ending the contract without a reason

10.3.1 CCS has the right to terminate the DPS Contract at any time without reason or liability by giving the Supplier at least 30 days' notice and if it's terminated Clause 10.5.2 to 10.5.7 applies.

10.3.2 Each Buyer has the right to terminate their Order Contract at any time without reason or liability by giving the Supplier not less than 90 days' written notice and if it's terminated Clause 10.5.2 to 10.5.7 applies.[5]

10.4 When CCS or the Buyer can end a contract

10.4.1 If any of the following events happen, the Relevant Authority has the right to immediately terminate its Contract by issuing a Termination Notice to the Supplier:

- there's a Supplier Insolvency Event
- there's a Contract Default that is not corrected in line with an accepted Rectification Plan
- the Relevant Authority rejects a Rectification Plan or the Supplier does not provide it within 10 days of the request
- there's any material Default of the Contract
- there's any material Default of any Joint Controller Agreement relating to any Contract
- there's a Default of Clauses 2.10, 9, 14, 15, 27, 32 or DPS Schedule 9 (Cyber Essentials) (where applicable) relating to any Contract
- there's a consistent repeated failure to meet the Performance Indicators in DPS Schedule 4 (DPS Management)
- there's a Change of Control of the Supplier which isn't pre-approved by the Relevant Authority in writing
- there's a Variation to a Contract which cannot be agreed using Clause 24 (Changing the contract) or resolved using Clause 34 (Resolving disputes)
- if the Relevant Authority discovers that the Supplier was in one of the situations in 57 (1) or 57(2) of the Regulations at the time the Contract was awarded

[5] Clause amended – see Addendum to Core Terms

- the Court of Justice of the European Union uses Article 258 of the Treaty on the Functioning of the European Union (TFEU) to declare that the Contract should not have been awarded to the Supplier because of a serious breach of the TFEU or the Regulations
- the Supplier or its Affiliates embarrass or bring CCS or the Buyer into disrepute or diminish the public trust in them

10.4.2 CCS may terminate the DPS Contract if a Buyer terminates an Order Contract for any of the reasons listed in Clause 10.4.1.

10.4.3 If there is a Default, the Relevant Authority can, without limiting its other rights, request that the Supplier provide a Rectification Plan.

10.4.4 When the Relevant Authority receives a requested Rectification Plan it can either:

- reject the Rectification Plan or revised Rectification Plan, giving reasons
- accept the Rectification Plan or revised Rectification Plan (without limiting its rights) and the Supplier must immediately start work on the actions in the Rectification Plan at its own cost, unless agreed otherwise by the Parties

10.4.5 Where the Rectification Plan or revised Rectification Plan is rejected, the Relevant Authority:

- must give reasonable grounds for its decision
- may request that the Supplier provides a revised Rectification Plan within 5 Working Days

10.4.6 If any of the events in 73 (1) (a) to (c) of the Regulations happen, the Relevant Authority has the right to immediately terminate the Contract and Clause 10.5.2 to 10.5.7 applies.

10.5 What happens if the contract ends

Where the Relevant Authority terminates a Contract under Clause 10.4.1 all of the following apply:

10.5.1 The Supplier is responsible for the Relevant Authority's reasonable costs of procuring Replacement Deliverables for the rest of the Contract Period.

10.5.2 The Buyer's payment obligations under the terminated Order Contract stop immediately.

10.5.3 Accumulated rights of the Parties are not affected.

10.5.4 The Supplier must promptly delete or return the Government Data except where required to retain copies by law.

10.5.5 The Supplier must promptly return any of CCS or the Buyer's property provided under the terminated Contract.

10.5.6 The Supplier must, at no cost to CCS or the Buyer, co-operate fully in the handover and re-procurement (including to a Replacement Supplier).

10.5.7 The following Clauses survive the termination of each Contract: 3.2.10, 6, 7.2, 9, 11, 14, 15, 16, 17, 18, 34, 35 and any Clauses and Schedules which are expressly or by implication intended to continue.

10.6 When the supplier can end the contract

10.6.1 The Supplier can issue a Reminder Notice if the Buyer does not pay an undisputed invoice on time. The Supplier can terminate an Order Contract if the Buyer fails to pay an undisputed invoiced sum due and worth over 10% of the annual Contract Value within 30 days of the date of the Reminder Notice.

10.6.2 If a Supplier terminates an Order Contract under Clause 10.6.1:

- the Buyer must promptly pay all outstanding Charges incurred to the Supplier
- the Buyer must pay the Supplier reasonable committed and unavoidable Losses as long as the Supplier provides a fully itemised and costed schedule with evidence - the maximum value of this payment is limited to the total sum payable to the Supplier if the Contract had not been terminated
- Clauses 10.5.4 to 10.5.7 apply

10.7 When subcontracts can be ended

At the Buyer's request, the Supplier must terminate any Subcontracts in any of the following events:

- there is a Change of Control of a Subcontractor which isn't pre-approved by the Relevant Authority in writing
- the acts or omissions of the Subcontractor have caused or materially contributed to a right of termination under Clause 10.4
- a Subcontractor or its Affiliates embarrasses or brings into disrepute or diminishes the public trust in the Relevant Authority

10.8 Partially ending and suspending the contract

10.8.1 Where CCS has the right to terminate the DPS Contract it can suspend the Supplier's ability to accept Orders (for any period) and the Supplier cannot enter into any new Order Contracts during this period. If this happens, the Supplier must still meet its obligations under any existing Order Contracts that have already been signed.

10.8.2 Where CCS has the right to terminate a DPS Contract it is entitled to terminate all or

part of it.

10.8.3 Where the Buyer has the right to terminate an Order Contract it can terminate or suspend (for any period), all or part of it. If the Buyer suspends an Order Contract it can provide the Deliverables itself or buy them from a third party.

10.8.4 The Relevant Authority can only partially terminate or suspend a Contract if the remaining parts of that Contract can still be used to effectively deliver the intended purpose.

10.8.5 The Parties must agree any necessary Variation required by Clause 10.8 using the Variation Procedure, but the Supplier may not either:

- reject the Variation
- increase the Charges, except where the right to partial termination is under Clause 10.3

10.8.6 The Buyer can still use other rights available, or subsequently available to it if it acts on its rights under Clause 10.8.

11. How much you can be held responsible for

11.1 Each Party's total aggregate liability in each Contract Year under this DPS Contract (whether in tort, contract or otherwise) is no more than £100,000.

11.2 Each Party's total aggregate liability in each Contract Year under each Order Contract (whether in tort, contract or otherwise) is no more than the greater of £5 million or 150% of the Estimated Yearly Charges unless specified in the Order Form[6]

11.3 No Party is liable to the other for:

- any indirect Losses
- Loss of profits, turnover, savings, business opportunities or damage to goodwill (in each case whether direct or indirect)

11.4 In spite of Clause 11.1 and 11.2, neither Party limits or excludes any of the following:

- its liability for death or personal injury caused by its negligence, or that of its employees, agents or Subcontractors
- its liability for bribery or fraud or fraudulent misrepresentation by it or its employees
- any liability that cannot be excluded or limited by Law

[6] Clause amended – see Addendum to Core Terms

- its obligation to pay the required Management Levy

11.5 In spite of Clauses 11.1 and 11.2, the Supplier does not limit or exclude its liability for any indemnity given under Clauses 7.5, 8.3, 9.5, 12.2 or 14.9 or Order Schedule 2 (Staff Transfer) of a Contract. [7]

11.6 Each Party must use all reasonable endeavours to mitigate any Loss or damage which it suffers under or in connection with each Contract, including any indemnities.

11.7 When calculating the Supplier's liability under Clause 11.1 or 11.2 the following items will not be taken into consideration:

- Deductions
- any items specified in Clause 11.5

11.8 If more than one Supplier is party to a Contract, each Supplier Party is fully responsible for both their own liabilities and the liabilities of the other Suppliers.

12. Obeying the law

12.1 The Supplier must use reasonable endeavours to comply with the provisions of Joint Schedule 5 (Corporate Social Responsibility).

12.2 The Supplier indemnifies CCS and every Buyer against any costs resulting from any Default by the Supplier relating to any applicable Law to do with a Contract.

12.3 The Supplier must appoint a Compliance Officer who must be responsible for ensuring that the Supplier complies with Law, Clause 12.1 and Clauses 27 to 32.

13. Insurance

The Supplier must, at its own cost, obtain and maintain the Required Insurances in Joint Schedule 3 (Insurance Requirements) and any Additional Insurances in the Order Form.

14. Data protection

14.1 The Supplier must process Personal Data and ensure that Supplier Staff process Personal Data only in accordance with Joint Schedule 11 (Processing Data).

14.2 The Supplier must not remove any ownership or security notices in or relating to the Government Data.

[7] Clause amended – see Addendum to Core Terms

14.3 The Supplier must make accessible back-ups of all Government Data, stored in an agreed off-site location and send the Buyer copies every 6 Months.

14.4 The Supplier must ensure that any Supplier system holding any Government Data, including back-up data, is a secure system that complies with the Security Policy and any applicable Security Management Plan.

14.5 If at any time the Supplier suspects or has reason to believe that the Government Data provided under a Contract is corrupted, lost or sufficiently degraded, then the Supplier must notify the Relevant Authority and immediately suggest remedial action.

14.6 If the Government Data is corrupted, lost or sufficiently degraded so as to be unusable the Relevant Authority may either or both:

- tell the Supplier to restore or get restored Government Data as soon as practical but no later than 5 Working Days from the date that the Relevant Authority receives notice, or the Supplier finds out about the issue, whichever is earlier
- restore the Government Data itself or using a third party

14.7 The Supplier must pay each Party's reasonable costs of complying with Clause 14.7 unless CCS or the Buyer is at fault.

14.8 The Supplier:

- must provide the Relevant Authority with all Government Data in an agreed open format within 10 Working Days of a written request
- must have documented processes to guarantee prompt availability of Government Data if the Supplier stops trading
- must securely destroy all Storage Media that has held Government Data at the end of life of that media using Good Industry Practice
- securely erase all Government Data and any copies it holds when asked to do so by CCS or the Buyer unless required by Law to retain it
- indemnifies CCS and each Buyer against any and all Losses incurred if the Supplier breaches Clause 14 and any Data Protection Legislation.

15. What you must keep confidential

15.1 Each Party must:

- keep all Confidential Information it receives confidential and secure
- not disclose, use or exploit the Disclosing Party's Confidential Information

without the Disclosing Party's prior written consent, except for the purposes anticipated under the Contract

- immediately notify the Disclosing Party if it suspects unauthorised access, copying, use or disclosure of the Confidential Information

15.2 In spite of Clause 15.1, a Party may disclose Confidential Information which it receives from the Disclosing Party in any of the following instances:

- where disclosure is required by applicable Law or by a court with the relevant jurisdiction if the Recipient Party notifies the Disclosing Party of the full circumstances, the affected Confidential Information and extent of the disclosure
- if the Recipient Party already had the information without obligation of confidentiality before it was disclosed by the Disclosing Party
- if the information was given to it by a third party without obligation of confidentiality
- if the information was in the public domain at the time of the disclosure
- if the information was independently developed without access to the Disclosing Party's Confidential Information
- to its auditors or for the purposes of regulatory requirements
- on a confidential basis, to its professional advisers on a need-to-know basis
- to the Serious Fraud Office where the Recipient Party has reasonable grounds to believe that the Disclosing Party is involved in activity that may be a criminal offence under the Bribery Act 2010

15.3 The Supplier may disclose Confidential Information on a confidential basis to Supplier Staff on a need-to-know basis to allow the Supplier to meet its obligations under the Contract. The Supplier Staff must enter into a direct confidentiality agreement with the Relevant Authority at its request.

15.4 CCS or the Buyer may disclose Confidential Information in any of the following cases:

- on a confidential basis to the employees, agents, consultants and contractors of CCS or the Buyer
- on a confidential basis to any other Central Government Body, any successor body to a Central Government Body or any company that CCS or the Buyer transfers or proposes to transfer all or any part of its business to
- if CCS or the Buyer (acting reasonably) considers disclosure necessary or appropriate to carry out its public functions
- where requested by Parliament
- under Clauses 4.7 and 16

15.5 For the purposes of Clauses 15.2 to 15.4 references to disclosure on a confidential basis means disclosure under a confidentiality agreement or arrangement including terms as strict as those required in Clause 15.

15.6 Transparency Information is not Confidential Information.

15.7 The Supplier must not make any press announcement or publicise the Contracts or any part of them in any way, without the prior written consent of the Relevant Authority and must take all reasonable steps to ensure that Supplier Staff do not either.

16. When you can share information

16.1 The Supplier must tell the Relevant Authority within 48 hours if it receives a Request For Information.[8]

16.2 Within the required timescales the Supplier must give CCS and each Buyer full co-operation and information needed so the Buyer can:

- publish the Transparency Information
- comply with any Freedom of Information Act (FOIA) request
- comply with any Environmental Information Regulations (EIR) request

16.3 The Relevant Authority may talk to the Supplier to help it decide whether to publish information under Clause 16. However, the extent, content and format of the disclosure is the Relevant Authority's decision, which does not need to be reasonable.

17. Invalid parts of the contract

If any part of a Contract is prohibited by Law or judged by a court to be unlawful, void or unenforceable, it must be read as if it was removed from that Contract as much as required and rendered ineffective as far as possible without affecting the rest of the Contract, whether it's valid or enforceable.

18. No other terms apply

The provisions incorporated into each Contract are the entire agreement between the Parties. The Contract replaces all previous statements and agreements whether written or oral. No other provisions apply.

19. Other people's rights in a contract

No third parties may use the Contracts (Rights of Third Parties) Act (CRTPA) to enforce any term of the Contract unless stated (referring to CRTPA) in the Contract. This does not affect third

[8] Clause amended – see Addendum to Core Terms

party rights and remedies that exist independently from CRTPA.

20. Circumstances beyond your control

20.1 Any Party affected by a Force Majeure Event is excused from performing its obligations under a Contract while the inability to perform continues, if it both:

- provides a Force Majeure Notice to the other Party
- uses all reasonable measures practical to reduce the impact of the Force Majeure Event

20.2 Either party can partially or fully terminate the affected Contract if the provision of the Deliverables is materially affected by a Force Majeure Event which lasts for 90 days continuously.

20.3 Where a Party terminates under Clause 20.2:

- each party must cover its own Losses
- Clause 10.5.2 to 10.5.7 applies

21. Relationships created by the contract

No Contract creates a partnership, joint venture or employment relationship. The Supplier must represent themselves accordingly and ensure others do so.

22. Giving up contract rights

A partial or full waiver or relaxation of the terms of a Contract is only valid if it is stated to be a waiver in writing to the other Party.

23. Transferring responsibilities

23.1 The Supplier can not assign a Contract without the Relevant Authority's written consent.

23.2 The Relevant Authority can assign, novate or transfer its Contract or any part of it to any Crown Body, public or private sector body which performs the functions of the Relevant Authority.

23.3 When CCS or the Buyer uses its rights under Clause 23.2 the Supplier must enter into a novation agreement in the form that CCS or the Buyer specifies.

23.4 The Supplier can terminate a Contract novated under Clause 23.2 to a private sector body that is experiencing an Insolvency Event.

23.5 The Supplier remains responsible for all acts and omissions of the Supplier Staff as if they were its own.

23.6 If CCS or the Buyer asks the Supplier for details about Subcontractors, the Supplier must provide details of Subcontractors at all levels of the supply chain including:

- their name
- the scope of their appointment
- the duration of their appointment

24. Changing the contract

24.1 Either Party can request a Variation to a Contract which is only effective if agreed in writing and signed by both Parties.

24.2 The Supplier must provide an Impact Assessment either:

- with the Variation Form, where the Supplier requests the Variation
- within the time limits included in a Variation Form requested by CCS or the Buyer

24.3 If the Variation to a Contract cannot be agreed or resolved by the Parties, CCS or the Buyer can either:

- agree that the Contract continues without the Variation
- terminate the affected Contract, unless in the case of an Order Contract, the Supplier has already provided part or all of the provision of the Deliverables, or where the Supplier can show evidence of substantial work being carried out to provide them
- refer the Dispute to be resolved using Clause 34 (Resolving Disputes)

24.4 CCS and the Buyer are not required to accept a Variation request made by the Supplier.

24.5 If there is a General Change in Law, the Supplier must bear the risk of the change and is not entitled to ask for an increase to the DPS Pricing or the Charges.

24.6 If there is a Specific Change in Law or one is likely to happen during the Contract Period the Supplier must give CCS and the Buyer notice of the likely effects of the changes as soon as reasonably practical. They must also say if they think any Variation is needed either to the Deliverables, DPS Pricing or a Contract and provide evidence:

- that the Supplier has kept costs as low as possible, including in Subcontractor costs

- of how it has affected the Supplier's costs

24.7 Any change in the DPS Pricing or relief from the Supplier's obligations because of a Specific Change in Law must be implemented using Clauses 24.1 to 24.4.

25. How to communicate about the contract

25.1 All notices under the Contract must be in writing and are considered effective on the Working Day of delivery as long as they're delivered before 5:00pm on a Working Day. Otherwise the notice is effective on the next Working Day. An email is effective when sent unless an error message is received.

25.2 Notices to CCS must be sent to the CCS Authorised Representative's address or email address indicated on the Platform.

25.3 Notices to the Buyer must be sent to the Buyer Authorised Representative's address or email address in the Order Form.

25.4 This Clause does not apply to the service of legal proceedings or any documents in any legal action, arbitration or dispute resolution.

26. Dealing with claims

26.1 If a Beneficiary is notified of a Claim then it must notify the Indemnifier as soon as reasonably practical and no later than 10 Working Days.

26.2 At the Indemnifier's cost the Beneficiary must both:

- allow the Indemnifier to conduct all negotiations and proceedings to do with a Claim
- give the Indemnifier reasonable assistance with the claim if requested

26.3 The Beneficiary must not make admissions about the Claim without the prior written consent of the Indemnifier which can not be unreasonably withheld or delayed.

26.4 The Indemnifier must consider and defend the Claim diligently using competent legal advisors and in a way that doesn't damage the Beneficiary's reputation.

26.5 The Indemnifier must not settle or compromise any Claim without the Beneficiary's prior written consent which it must not unreasonably withhold or delay.

26.6 Each Beneficiary must take all reasonable steps to minimise and mitigate any losses that it suffers because of the Claim.

26.7 If the Indemnifier pays the Beneficiary money under an indemnity and the Beneficiary later recovers money which is directly related to the Claim, the Beneficiary must immediately repay the Indemnifier the lesser of either:

- the sum recovered minus any legitimate amount spent by the Beneficiary when recovering this money
- the amount the Indemnifier paid the Beneficiary for the Claim

27. Preventing fraud, bribery and corruption

27.1 The Supplier must not during any Contract Period:

- commit a Prohibited Act or any other criminal offence in the Regulations 57(1) and 57(2)
- do or allow anything which would cause CCS or the Buyer, including any of their employees, consultants, contractors, Subcontractors or agents to breach any of the Relevant Requirements or incur any liability under them

27.2 The Supplier must during the Contract Period:

- create, maintain and enforce adequate policies and procedures to ensure it complies with the Relevant Requirements to prevent a Prohibited Act and require its Subcontractors to do the same
- keep full records to show it has complied with its obligations under Clause 27 and give copies to CCS or the Buyer on request
- if required by the Relevant Authority, within 20 Working Days of the Start Date of the relevant Contract, and then annually, certify in writing to the Relevant Authority, that they have complied with Clause 27, including compliance of Supplier Staff, and provide reasonable supporting evidence of this on request, including its policies and procedures

27.3 The Supplier must immediately notify CCS and the Buyer if it becomes aware of any breach of Clauses 27.1 or 27.2 or has any reason to think that it, or any of the Supplier Staff, has either:

- been investigated or prosecuted for an alleged Prohibited Act
- been debarred, suspended, proposed for suspension or debarment, or is otherwise ineligible to take part in procurement programmes or contracts because of a Prohibited Act by any government department or agency
- received a request or demand for any undue financial or other advantage of any kind related to a Contract
- suspected that any person or Party directly or indirectly related to a Contract has

committed or attempted to commit a Prohibited Act

27.4 If the Supplier notifies CCS or the Buyer as required by Clause 27.3, the Supplier must respond promptly to their further enquiries, co-operate with any investigation and allow the Audit of any books, records and relevant documentation.

27.5 In any notice the Supplier gives under Clause 27.4 it must specify the:

- Prohibited Act
- identity of the Party who it thinks has committed the Prohibited Act
- action it has decided to take

28. Equality, diversity and human rights

28.1 The Supplier must follow all applicable equality Law when they perform their obligations under the Contract, including:

- protections against discrimination on the grounds of race, sex, gender reassignment, religion or belief, disability, sexual orientation, pregnancy, maternity, age or otherwise
- any other requirements and instructions which CCS or the Buyer reasonably imposes related to equality Law

28.2 The Supplier must take all necessary steps, and inform CCS or the Buyer of the steps taken, to prevent anything that is considered to be unlawful discrimination by any court or tribunal, or the Equality and Human Rights Commission (or any successor organisation) when working on a Contract.

29. Health and safety

29.1 The Supplier must perform its obligations meeting the requirements of:

- all applicable Law regarding health and safety
- the Buyer's current health and safety policy while at the Buyer's Premises, as provided to the Supplier

29.2 The Supplier and the Buyer must as soon as possible notify the other of any health and safety incidents or material hazards they're aware of at the Buyer Premises that relate to the performance of a Contract.

30. Environment

30.1 When working on Site the Supplier must perform its obligations under the Buyer's current Environmental Policy, which the Buyer must provide.

30.2 The Supplier must ensure that Supplier Staff are aware of the Buyer's Environmental Policy.

31. Tax

31.1 The Supplier must not breach any tax or social security obligations and must enter into a binding agreement to pay any late contributions due, including where applicable, any interest or any fines. CCS and the Buyer cannot terminate a Contract where the Supplier has not paid a minor tax or social security contribution.

31.2 Where the Charges payable under a Contract with the Buyer are or are likely to exceed £5 million at any point during the relevant Contract Period, and an Occasion of Tax Non-Compliance occurs, the Supplier must notify CCS and the Buyer of it within 5 Working Days including:

- the steps that the Supplier is taking to address the Occasion of Tax Non-Compliance and any mitigating factors that it considers relevant
- other information relating to the Occasion of Tax Non-Compliance that CCS and the Buyer may reasonably need

31.3 Where the Supplier or any Supplier Staff are liable to be taxed or to pay National Insurance contributions in the UK relating to payment received under an Order Contract, the Supplier must both:

- comply with the Income Tax (Earnings and Pensions) Act 2003 and all other statutes and regulations relating to income tax, the Social Security Contributions and Benefits Act 1992 (including IR35) and National Insurance contributions
- indemnify the Buyer against any Income Tax, National Insurance and social security contributions and any other liability, deduction, contribution, assessment or claim arising from or made during or after the Contract Period in connection with the provision of the Deliverables by the Supplier or any of the Supplier Staff

31.4 If any of the Supplier Staff are Workers who receive payment relating to the Deliverables, then the Supplier must ensure that its contract with the Worker contains the following requirements:

- the Buyer may, at any time during the Contract Period, request that the Worker provides information which demonstrates they comply with Clause 31.3, or why those requirements do not apply, the Buyer can specify the information the Worker must provide and the deadline for responding
- the Worker's contract may be terminated at the Buyer's request if the Worker

fails to provide the information requested by the Buyer within the time specified by the Buyer

- the Worker's contract may be terminated at the Buyer's request if the Worker provides information which the Buyer considers isn't good enough to demonstrate how it complies with Clause 31.3 or confirms that the Worker is not complying with those requirements
- the Buyer may supply any information they receive from the Worker to HMRC for revenue collection and management

32. Conflict of interest

32.1 The Supplier must take action to ensure that neither the Supplier nor the Supplier Staff are placed in the position of an actual or potential Conflict of Interest.

32.2 The Supplier must promptly notify and provide details to CCS and each Buyer if a Conflict of Interest happens or is expected to happen.

32.3 CCS and each Buyer can terminate its Contract immediately by giving notice in writing to the Supplier or take any steps it thinks are necessary where there is or may be an actual or potential Conflict of Interest.

33. Reporting a breach of the contract

33.1 As soon as it is aware of it the Supplier and Supplier Staff must report to CCS or the Buyer any actual or suspected breach of:

- Law
- Clause 12.1
- Clauses 27 to 32

33.2 The Supplier must not retaliate against any of the Supplier Staff who in good faith reports a breach listed in Clause 33.1 to the Buyer or a Prescribed Person.

34. Resolving disputes

34.1 If there is a Dispute, the senior representatives of the Parties who have authority to settle the Dispute will, within 28 days of a written request from the other Party, meet in good faith to resolve the Dispute.

34.2 If the Dispute is not resolved at that meeting, the Parties can attempt to settle it by mediation using the Centre for Effective Dispute Resolution (CEDR) Model Mediation Procedure current at the time of the Dispute. If the Parties cannot agree on a mediator, the mediator will be nominated by CEDR. If either Party does not wish to use, or continue to use mediation, or mediation does not resolve the Dispute, the Dispute must be resolved using Clauses 34.3 to

34.5.

34.3 Unless the Relevant Authority refers the Dispute to arbitration using Clause 34.4, the Parties irrevocably agree that the courts of England and Wales have the exclusive jurisdiction to:

- determine the Dispute
- grant interim remedies
- grant any other provisional or protective relief

34.4 The Supplier agrees that the Relevant Authority has the exclusive right to refer any Dispute to be finally resolved by arbitration under the London Court of International Arbitration Rules current at the time of the Dispute. There will be only one arbitrator. The seat or legal place of the arbitration will be London and the proceedings will be in English.

34.5 The Relevant Authority has the right to refer a Dispute to arbitration even if the Supplier has started or has attempted to start court proceedings under Clause 34.3, unless the Relevant Authority has agreed to the court proceedings or participated in them. Even if court proceedings have started, the Parties must do everything necessary to ensure that the court proceedings are stayed in favour of any arbitration proceedings if they are started under Clause 34.4.

34.6 The Supplier cannot suspend the performance of a Contract during any Dispute.

35. Which law applies

This Contract and any issues arising out of, or connected to it, are governed by English law.

Order Schedule 20 (Order Specification)

This Schedule sets out the characteristics of the Deliverables that the Supplier will be required to make to the Buyers under this Order Contract

Transport for London

Invitation to Quote

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 2, Batch 1

Volume 2

Order Specification

Contents

1. Purpose of this Document 4
2. Scope of this Document 5
3. Glossary, Abbreviations and Definitions 6
4. General Requirements 9
5. Civil Works and Charge Point Design 21
6. Charge Point Unit Specifications 32
7. Charge Point Installation, Testing and Commissioning 46
8. Charge Point Inspection, Maintenance and Monitoring 50
9. Project Management 53
10. Town Planning and Consents 55
11. Quality Management 59
12. Management Information and Reporting 61
13. Cyber Security 63
14. Crime and Disorder 65
15. Decommission and Exit Management 67
16. Document References 69

Appendix A - TfL Temporary Traffic Management Handbook
Appendix B – TfL Corporate Environment Plan 2021
Appendix C – Health and Safety Management Schedule
Appendix D – TfL Sustainability Report 2021
Appendix E – TfL Streetscape Guidance
Appendix F – London's Electric Vehicle Charge Point Installation Guidance
Appendix G – PR1504 A1 Highways Technical Assurance Process
Appendix H – SQA 0170 Road Safety Audit
Appendix I-1 – Example – Site Location plan – Warwick Avenue
Appendix I-2 – Example – Proposed Layout – Warwick Avenue
Appendix I-3 – Example – Existing layout – Warwick Avenue
Appendix I-4 – Example – Foundation Design Drawing
Appendix I-5 – Example – Charge Point Design Drawing
Appendix I-6 – Example – Feeder Pillar General Arrangement
Appendix J – Section 17 Notice Template
Appendix K-1 – S1771 Operational Technology Cyber Security – Project and Upgrades
Appendix K-2 – S1772 Operational Technology Cyber Security – Operations and Maintenance
Appendix K-3 – S1740 Cryptography
Appendix K-4 - Cyber Security Management Schedule – Payments
Appendix L - Reporting Template
Appendix M - Guide to Roadworks Assessments and Approvals

TfL RESTRICTED

Appendix N - Site Standards
Appendix O - Cleaner Air for London Ident Logo
Appendix P - Safe to Start Approvals List
Appendix Q - EVID Contractor's Guide Traffic Orders/ Notices and Suspensions
Appendix R - Safer Provisions For Pedestrians Act
Appendix S - Carbon Resource Plan (CRP)
Appendix T - Site Commissioning Checklist
Appendix U - Whole Life Carbon Assessment Requirements

TfL RESTRICTED

1. Purpose of this Document

The Buyer is seeking to appoint a Supplier who will be responsible for financing, designing, installing, operating, inspecting, maintaining and decommissioning Charge Point(s) that are at a minimum classified as Rapid Charge Points in respect of power output (see Glossary below for related power output for Rapid Charge Points) and related infrastructure for electric vehicle on identified sites in Greater London. The Charge Points shall be in operation 365 days a year and 24 hours a day where practical.

1.1.1 The Supplier shall deliver the Supplier Equipment and Services in accordance with the following requirements.

1.1.2 The Supplier shall own and/ or have responsibility (including financial responsibility) for all Supplier Equipment and be liable for maintenance, repair and replacement of these, regardless of cause.

1.1.3 The Supplier shall be responsible, where relevant, for the following activities related to the Supplier Equipment including:

- Design;
- Supply;
- Installation;
- Testing;
- Commissioning;
- Operating;
- Inspecting;
- Maintaining; and
- Decommissioning and disposal.

TfL RESTRICTED

2. Scope of this Document

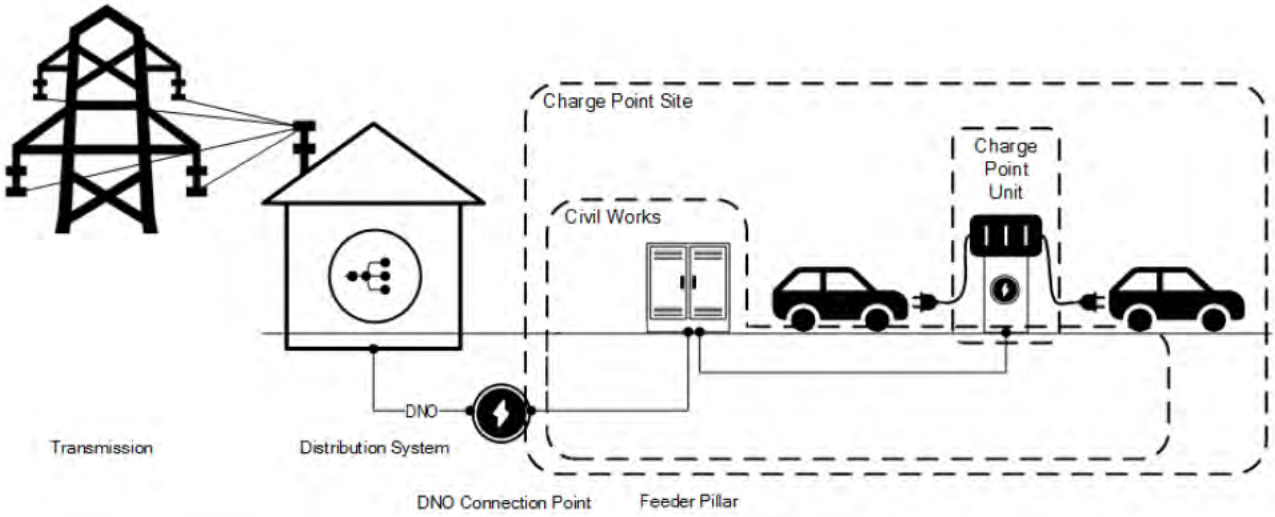
This document describes the technical and non-technical requirements which the Supplier shall comply with for all Charge Point Sites on the Transport for London Road Network (TLRN).

Sections 4-8 detail the technical requirements for the Charge Point Site. Section 4 states the requirements that apply to all stages of the entire Charge Point Site. Section 5 states the requirements for Civil Works concerning the work between the Distribution Network Operator (DNO) connection to Feeder Pillar and the design stage of Charge Point Site. Section 6 states requirements relating to the Charge Point Unit and the works required between the Feeder Pillar and the Charge Point Unit. Section 7 states the requirement for installation, testing and commissioning of the Charge Point Sites. Section 8 states the requirement for the inspection, maintenance, and monitoring of the Charge Point Sites.

Sections 9-15 detail the non-technical requirements for the Charge Point Site. Section 9 states the requirements for the Project Management for delivery of the Charge Point. Section 10 states the requirements for the Town Planning, Highway Consents for delivery of the Charge Point. Section 11 states the requirements for Quality Management for the Charge Point Site. Section 12 states the requirements for customer service and support functions related for the Charge Point. Section 13 states the requirements for Cyber Security in relation to the Charge Point. Section 14 states the requirements for Crime and Disorder management for the Charge Point. Section 15 status the decommission and exit management for the Charge Point.

TfL RESTRICTED

3. Glossary, Abbreviations and Definitions



3.1.1. Figure 1: Graphical illustrations for Civil Works, Feeder Pillar, Charge Point Unit and Charge Point Site.

Glossary	Definition
Charging Bay	A parking bay which has been marked and signed solely to charge one electrical vehicle.
Charge Point	The charge points and related infrastructure for electric vehicles to be financed, installed, operated, and maintained by the Supplier at the Site(s) in accordance with the Order Contract. In each case as devices intended for charging a vehicle that is capable of being propelled by electrical power derived from a storage battery (or for discharging electricity stored in such a vehicle).
Charge Point Sites	The entire constructure site, including DNO connection, Civil Works, Charge Point and electric vehicle charging bay(s).
Charge Point Unit (Figure 1)	The charging unit which the electric vehicle is connected to.
Charging (Slow, Fast, Rapid and Ultra-Rapid)	Slow Charging has power outputs generally ranging from 3 to 7 kW. Fast Charging has power outputs generally ranging from 7 to 22 kW. Rapid Charging has power outputs generally ranging from 50kW to 99kW and the Charge Points shall be no less than this.

TfL RESTRICTED

	Ultra-Rapid Charging generally has power outputs of 100kW or above.
Civil Works (Figure 1)	This includes DNO connection, Feeder Pillar civil works and ducting works from the DNO connection point to Charge Point Unit.
Customer(s)	A person or a company who pays for the Charge Point Services.
Data Protection Legislation	(i) the UK GDPR, (ii) the DPA 2018 to the extent that it relates to Processing of Personal Data and privacy; (iii) all other applicable Law about the Processing of personal data and privacy. In this definition, "Processing" has the meaning given to it in the UK GDPR or DPA 2018.
Distribution System (Figure 1)	The distribution system responsible for local power distribution.
Distribution Network Operator (DNO)	A company licensed to distribute electricity in the United Kingdom.
DNO Connection Point (Figure 1)	The connection point where power can be drawn from the DNO.
Feeder Pillar (Figure 1)	A cabinet used to house electrical equipment.
Management Information Data	Means data which shows the pattern and extent of usage of the Charge Points operated under the Order Special Terms (being this 'Order Specification' document)
Order Special Terms	The Order Special Terms set out at Appendix 1 to the Order Contract.
Order Specification	Has the meaning given to it in the Order Special Terms.
Severity One Incident	Severity One Incident requires emergency isolation to prevent risk to life, person, or property.
Severity Two Incident	Severity Two Incident requires action to make the Electric Vehicle Charging Point Site (EVCPS) operate (i.e. component failure).
Severity Three Incident	Severity Three Incident requires cosmetic action (i.e., graffiti, soiling etc).
Site Agreement	Has the meaning given to it in the Order Special Terms.
Sustainability	Meeting the needs of the present without compromising the ability of future generations to meet theirs. The three main pillars: Society, Environment, Economy – benefits which must be balanced to attain sustainable development.
Transmission (Figure 1)	The Transmission carries electricity from generator and distribute it throughout Britain.
UK GDPR	The General Data Protection Regulation (Regulation (EU) 2016/679) as it forms part of domestic law by virtue of section 3 of the European Union (Withdrawal) Act 2018.
Watts (W) or Kilowatt (kW)	The rate of electricity consumption. A kilowatt is 1,000 watts.
Kilowatt-hours (kWh)	Electricity consumption over time.

TfL RESTRICTED

Abbreviation	Definition
BSI	British Standards Institution
CRP	Carbon and Resource Plan
DPA 2018	The Data Protection Act 2018
EDS	Engineering Design Standard
EMC	Electromagnetic Compatibility
EVID	Electric Vehicle Infrastructure Delivery
EVSE	Electric Vehicle Supply Equipment
IET	Institute of Engineering and Technology
IET	The Institution of Engineering and Technology
ISO	International Organisation for Standardisation
PME	Protective Multiple Earthing
PTRO	Permanent Traffic Regulation Order
RAMS	Risk Assessment Method Statement
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
TLRN	Transport for London Road Network
TMAN	Traffic Management Act Notification
TPCPR 2023	The Public Charge Point Regulations 2023
TTRO	Temporary Traffic Regulation Order

TfL RESTRICTED

4. General Requirements

This section states the requirements which the Supplier shall comply with at any stage of the Electric Vehicle Infrastructure Delivery (EVID) project deliverables.

4.1 General Requirements

4.1.1. The Charge Point shall operate 24 hours a day and 7 days a week where practical.

4.1.2. The Charge Point Site shall comply with the sections referring to the recharging point in the Alternative Fuels Infrastructure Regulations 2017.

4.1.3. The Charge Point Site shall comply with the Automated and Electric Vehicle Act 2018 - Part 2.

4.1.4. The Supplier shall comply with the requirements of The Public Charge Point Regulations 2023 (TPCPR 2023).

4.1.5. The Supplier shall conform to the standards and working practices set out below, as such standards and editions may be amended or superseded by equivalent standards from time to time:

- BS 7671:2018 + A2:2022– The IET Wiring Regulations (18th Edition) Amendment 2 - 2022;
- IET Code of Practice for Electrical Vehicle Charging Equipment Installation 5th Edition;
- UKPN Engineering Design Standard EDS 08-5050 Electric Vehicle Connections
- BSI ISO 9001:2008 – Quality Management System;
- Construction, Design and Management Regulations 2015;
- Electricity Safety, Quality and Continuity Regulations 2002;
- EMC Regulations (2014/30/EU or as amended);
- Electrical Equipment Regulations (2014/25/EU or as amended);
- Radio Equipment Directive (2014/53/EU or as amended); and

4.1.6. Charging equipment must be either CA marked or CE marked in accordance with all relevant UK legislations.

TfL RESTRICTED

4.1.7. The Supplier shall comply with all relevant chapter(s) of the Institute of Engineering and Technology (IET): Guide to Highway Electrical Street Furniture 2018.

4.1.8. The Supplier shall detail their procedure for ensuring electrical safety is upheld in the design, installation, operation, inspection, maintenance and decommission of the Charge Point.

4.1.9. All works shall be carried out in accordance with all applicable processes, legislations and the relevant Local Government Highways departments and other relevant authorities. Temporary traffic management on TLRN to follow TfL Traffic Management Handbook standards included as (Appendix A – TfL Temporary Traffic Management Handbook).

4.1.10. The Supplier shall develop detailed designs and traffic management plans, to facilitate Permanent Traffic Regulation Orders (PTRO), Temporary Traffic Regulation Orders (TTRO), and shall ensure works Traffic Management Act Notifications (TMAN), Permits, Road Safety Audits are completed where required (refer to Appendix M Guide to Roadworks Assessments and Approvals and Contractors). The Supplier shall conform to the legislation and working practices as such standards and editions may be amended or superseded by equivalent standards from time to time. The Supplier must comply to latest regulations and standard regardless of what information is provided in Appendix M.

4.1.11. The Supplier shall ensure that the Safe to Start Approvals List is adhered to (refer to Appendix P - Safe to Start Approvals List).

4.1.12. The Supplier shall provide the Buyer with all the necessary design information, and documents to enable the Buyer to carry out all applicable processes and legislations for any mobilisation of planning permissions and consents.

4.1.13. The Supplier must ensure other requested information required, for planning permissions and consents are produced (refer to Section 10 Town Planning and Consents for further information).

4.1.14. The Supplier shall ensure all works completed, including those of their Subcontractors, follow the Considerate Contractor Code of Practice and shall carry out installation and construction works with utmost consideration to the local environment, residents and visitors to the area.

TfL RESTRICTED

4.1.15. The Supplier shall ensure that Charge Point Sites conform to regulations, legislations and standards that may exist at present or emerge in the future and that compliance will come at no cost to the Buyer.

4.1.16. The Supplier shall ensure the Charge Point uses accurate time clocks.

4.1.17. The Supplier shall, throughout the Contract Period, identify innovation opportunities and potential improvements to the provision of the Deliverables and/or improving the quality and efficiency of the Deliverables and the Supplier's offerings to the Customers.

4.2. The Supplier shall use all reasonable endeavours to implement any innovations and improvement opportunities identified in the Order Tender or during the Contract Period.

4.3. Health and Safety

4.3.1. The Supplier shall at all times ensure compliance with all relevant health and safety legislation including but not limited to the Principal Contractor and Principal Designer roles within the Construction Design and Management (CDM) 2015 Regulations.

4.3.2. The Supplier shall consider and align with TfL Vision Zero in all aspects of delivering the Services where possible.

4.3.3. The Supplier shall consider throughout the Contract Period, the Health, Safety and Environmental implication of all aspects of the Services and ensure continuous improvement. Health and Safety principles must be built into the design.

4.3.4. The Supplier shall be solely responsible for the recording, reporting and resolution of health, safety and environmental safety incidents, near misses and Supplier shall report to TfL's accident and incident reporting system.

4.3.5. The Buyer will conduct regular safety audits in line with TfL health and safety standards.

4.3.6. The Supplier shall report to the Buyer immediately full details of any accident, health, safety or environmental incidents, near misses, audits and health and safety concerns that have been directly reported to the Health and Safety Executive (HSE) or other agencies.

4.3.7. The Supplier and associated contractors shall report to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) system,

detailing any accident, incident and near misses according to subsequent Incident Reporting timescales. The Buyer will report to TfL's accident and incident reporting system according to the cases reported to the HSE by the Supplier.

4.3.8. The Supplier shall take all possible precaution to ensure the safety of the public and Customers. This includes informing Customers of all protected characteristics, how to use the Charge Point safely. The Equality Act 2010 recognises the following under protected characteristics: age, being or becoming a transsexual person, being married or in a civil partnership, being pregnant or expecting a baby, disability, gender (sex), race including colour, nationality, ethnic or natural origin, religion, belief or no religion/belief, and sexual orientation.

4.3.9. The Supplier shall ensure Charge Points and cables (which must be tethered) are clearly identifiable to those with visual impairment and/or those Customers of protected characteristics.

The Supplier shall ensure that all Personnel, including Subcontractor/s, are competent and equipped with appropriate personal protection equipment (PPE), (refer to Appendix N – 'Site Standards' for TfL's Site Standards for further information).

4.3.10. The Supplier shall ensure the site specific Risk Assessment and Method Statements (RAMS), as well as the Construction Phase Plan (CPP) for the on site works are carried out and documented and provided to the Buyer.

4.3.11. The Supplier shall take sufficient steps to ensure security arrangements are in place when necessary.

4.3.12. The Supplier shall ensure all works on the highway are undertaken in accordance with The New Roads and Street Works Act (NRSWA) 1991 and the Traffic Management Act 2004 and that all personnel are appropriately trained.

4.3.13. The Supplier shall cooperate with the Buyer in maintaining the highest possible health, safety and environmental standards in their delivery of the Services, and shall ensure that all Supplier Staff, Contractors and Subcontractors shall do likewise.

4.3.14. The Supplier shall conform to the regulations, standards and working practices set out below, as such standards and editions may be amended or superseded by equivalent standards from time to time:

- The Construction (Design and Management) Regulations 2015
- HSG47 Avoiding Danger from Underground Services;
- Health and Safety at Work Act 1974;
- Electricity at Work Regulations 1989;
- The Workplace (Health, Safety and Welfare) Regulations 1992;
- Management of Health and Safety at Work Regulations 1999;
- New Roads and Street Works Act 1991;
- Traffic Management Act 2004 ;
- TfL's Temporary Traffic Management Handbook (Appendix A); and

4.3.15. TfL's Safer provisions for pedestrians at roadworks - A risk prioritisation framework (Appendix R - Safer Provisions For Pedestrians Act Roadworks).

4.3.16. The Supplier shall provide a health, safety and environmental risk assessment for using the Charge Points, including risks to the general public, and design out or minimise (where completely designing out is impossible) any health, safety or environmental risk, including examples such as:

- Trip hazard;
- Electrocution;
- Burns (e.g. contact with exposed live parts); or
- Fire (e.g. short circuit failure).

4.3.17. The Supplier should consider using the risk assessment outlined in the IET Guide to Highway Electrical Street Furniture.

4.3.18. The Supplier shall comply with Appendix C – Health and Safety Management Requirements.

4.4. Accessibility

4.4.1. The Supplier shall ensure the design of the Charge Points comply as far as is reasonably practicable with the following, as such documents may be amended or superseded by equivalent legislation and/or standards from time to time:

- PAS 1899:2022 Electric Vehicles Accessible Charging Specification; Department for Transport (DfT) Inclusive Mobility – A guide to the best practice on access to pedestrian and transport infrastructure - December 2021; and

- BS 8300-12:2018 Design of an accessible and inclusive built environment - external environment code of practice.

4.4.2. The Supplier shall ensure the design of the Charge Point Site aligns with the UK Government National Disability Strategy 2021.

4.4.3. All Charge Points shall have tethered cables that enable the widest possible customer access to charge.

4.5. Environment

4.5.1. The Supplier shall operate an environmental management system to, as a minimum, ensure that the environmental impacts of the Deliverables are effectively managed and compliant with legislation, and that they assist in delivering the aims and aspirations within TfL's Corporate Environmental Plan 2021 (Appendix B).

4.5.2. The environmental management system shall conform to the BS ISO 14001:2015 Environmental Management Systems standard (or any subsequent versions of this standard) or to an equivalent standard (e.g. the Eco-Management and Audit Scheme (EMAS)). If the Supplier does not have an environmental management system at the Order Start Date the Supplier must implement one within the first nine (9) months of the Order Contract Period in accordance with the details provided in the Supplier's Order Tender.

4.5.3. The Supplier shall ensure compliance with all relevant environmental legislation and shall obtain and comply with all necessary environmental permits/ consents at their own cost.

4.5.4. The Supplier shall ensure all works completed at design, construction, installation, inspection, maintenance and operational stages demonstrate that sustainability is considered in line with Appendix D - TfL Sustainability Report.

4.5.5. The Supplier shall ensure that a suitably competent and experienced person is appointed to lead on environmental and sustainability matters. This person shall ensure that systems are in place for ensuring that environmental and sustainability matters are addressed throughout the delivery of the Services. The person must be able to demonstrate the attainment of suitable environmental qualifications (e.g., completion of the IEMA Foundation in Environmental Management, or a similar course).

TfL RESTRICTED

4.5.6. The Supplier shall ensure, and have processes in place which can demonstrate, that measures are taken to minimise any potential environmental impacts and to maximise any environmental opportunities – thereby helping to deliver the aims and aspirations within TfL's Corporate Environmental Plan (Appendix B).

4.5.7. The Supplier shall utilise processes which ensure the delivery of low carbon solutions and demonstrate, as far as practicable, that carbon has been designed out at all stages.

4.5.8. The Supplier shall ensure the design of the Charge Points will contribute to London's aim of becoming a zero-carbon city through the source of the electricity procured for the Charge Point Site and acquire electricity supply from renewable sources.

4.5.9. The Supplier shall take all reasonable steps to mitigate the impacts of EV charging demands on the electrical grid.

4.5.10. The Supplier shall ensure the effective management of the environmental issues associated with the delivery of the Services. The Supplier shall define their environmental management system (EMS) approach within their project-specific Environmental Management Plan (EMP).

4.5.11. The EMP shall align to the requirement of the latest BS EN 14001: 2004 Environmental Management systems standard. As a minimum, the EMP shall include/ define:

- An environmental risk and opportunity assessment – The assessment shall clearly detail the controls that will be put in place to mitigate the risks and deliver the benefits. It shall also highlight any risks which remain significant after the application of these controls. The frequency of review may be related to the level of risk, but it does not exceed more than six months;
- The project's environmental objectives and the Supplier's plans for achieving these – demonstrating how these directly support the achievement of the aims and targets specified within TfL's Corporate Environmental Plan (Appendix B);

TfL RESTRICTED

- The processes and roles & responsibilities for implementing, communicating and ensuring the effectiveness of the environmental management system; and
- The processes for preparing for, and responding to, environmental incidents and near misses, including the reporting and investigation of such occurrences.

4.5.12. The Supplier shall submit their EMP to the Buyer within 28 days of Order Start Date.

4.5.13. The Supplier shall ensure that all refuse, waste, damaged and obsolete Charge Points and equipment are segregated and disposed of in a responsible and environmentally friendly manner by recycling or the use of licensed contractors comply with all the relevant recycling and disposal regulations but not limited to all pertaining regulations and the Waste Electrical and Electronic Equipment (WEEE) regulations.

4.6. Reduction of Whole Life Carbon, Energy, Waste, Materials and Water Usage

4.6.1. This section is without prejudice to the Supplier's obligations under paragraph 13 of the Order Special Terms.

4.6.2. The Supplier shall minimise the asset's whole life carbon emissions, energy consumption, waste production, materials usage and water usage.

4.6.3. In designing and constructing the Charge Points and delivering the Deliverables the Supplier shall apply the Carbon Reduction Hierarchy:

- Build less – maximise the use of existing assets; optimise asset operation and management to reduce the extent of new construction required.
- Build clever – design in the use of low carbon materials; streamline delivery processes and minimise resource consumption.
- Build efficiently – embrace new construction technologies; eliminate waste.

4.6.4. In designing and constructing the Charge Points and delivering the Deliverables the Supplier shall apply the Energy Hierarchy:

- Remove fossil fuel consumption
- Improve energy efficiency
- Maximise local renewables
- Procure renewable energy

4.6.5. In designing and constructing the Charge Points and delivering the Deliverables the Supplier shall apply the Waste Management Hierarchy:

TfL RESTRICTED

- Prevent
- Reduce
- Re-use within the *works*
- Re-use at other project sites
- Recycle
- Recover, e.g. energy from incineration
- Dispose.

4.6.6. The Supplier shall follow Circular Economy business models over traditional systems as far as reasonably practicable. These include, but are not limited to:

- Ordering products/procuring services on demand rather than just in case
- Using standardised and/or modular designs and approaches
- Refurbishing, repairing, remanufacturing, and reconditioning assets, products and materials
- Using incentivised return
- Products as services
- Sharing economy or sharing platforms/resources.

4.6.7. The Supplier shall implement the Carbon Reduction, Energy and Waste Management Hierarchies, and Circular Economy business models and continues to do so whilst delivering the Deliverables. Where possible, the Supplier shall implement measures that facilitate the delivery of these hierarchies and business models during design, construction and operation of the assets.

4.6.8. The Supplier shall follow and deliver the process in TfL's Carbon and Resource Plan (CRP). The Buyer has provided a template to the Supplier to use for the CRP (Appendix S). The Supplier shall detail how the CRP process is executed within either their Environmental Management Plan or a Carbon Management Plan.

4.6.9. The Supplier shall implement and pursue the reduction opportunities identified in the CRP, and shall endeavour to identify and implement additional opportunities to further improve the Deliverables' environmental performance. The Supplier shall obtain approval from the Buyer when an opportunity affects the programme.

4.6.10. The Supplier shall maintain the CRP throughout the design and at key stages in the design development as agreed with the Buyer and shall provide the Buyer with information or data extracted from the CRP to demonstrate that they are on course to meet the preceding requirements (and any associated targets).

4.6.11. The Supplier shall conduct CRP workshops and subsequently submits updated versions of the CRP at key stages in the design development as agreed with the Buyer. The Workshop attendees shall include representatives from both the

TfL RESTRICTED

Supplier and Buyer, including: the designer(s), environmental representatives, construction manager, and maintenance or operations representatives.

4.6.12. The Supplier shall submit the final CRP a minimum of 28 days before the Go-Live Date. The Supplier shall confirm in the submissions to the Buyer how the process has been executed and shall outlines opportunities for further improvement. The Supplier shall respond accordingly to comments raised by the Buyer until the CRP is accepted by the Buyer. The Buyer may not accept the CRP if the CRP does not conform to the requirements set out in this Order Specification.

4.6.13. The Supplier shall commit to and demonstrates compliance with requirements in PAS 2080:2023 Carbon Management in Infrastructure in providing the Deliverables.

4.6.14. The Supplier shall appoint:

a) a senior member from its team who provides leadership on carbon reduction for the Deliverables, and
b) carbon reduction specialist.

4.6.15. The carbon reduction specialist shall be a qualified professional with the responsibility to influence the design and construction process.

Note: Parties may hold numerous 'value chain' roles as per PAS2080 and comply with all relevant requirements for each role.

4.6.16. The Supplier shall detail within the EMP on how they and their Subcontractors (and Indirect Subcontractors) will meet the requirements of PAS2080:2023.

Note: Formal PAS2080 accreditation with the British Standards Institute (BSI) is not required.

Whole Life Carbon Assessments

4.6.17. The Supplier shall create Whole Life Carbon Assessments for the works. The assessment is created by a competent person(s) refer to Appendix U - Whole Life Carbon Assessment.

4.6.18. Appendix U details the Whole Life Carbon Assessment requirements and covers the following:

- Quantification Methodology Standards
- Scope
- Boundaries
- Assumptions

TfL RESTRICTED

- Tools
- Data Sources
- Categorisation Methods
- Uncertainties
- Document Management
- Monitoring
- Reporting.

4.6.19. The Supplier shall detail how the Supplier will deliver the Whole Life Carbon Assessments within their Environmental Management Plan and Carbon Management Plan (if applicable), including the items listed in 4.5.18.

4.6.20. All Whole Life Carbon Assessments will be owned by the Buyer for use in future contracts (including contracts outside of this Order Contract), internal and external TfL Group reporting. The Supplier shall submit all Whole Life Carbon Assessments to the Buyer in a transparent, accessible and editable format.

4.6.21. The Supplier shall submit the Whole Life Carbon Assessment and a Carbon Report to the Buyer for acceptance at the design development as agreed with the Buyer and on Completion of the works. CRP shall remain a live document after delivery, and the Supplier shall use the CRP to identify and track the implementation of new carbon reducing initiatives throughout the Order Contract duration.

4.6.22. A Carbon Report shall detail the following, as a minimum:

1) Details of who undertook the assessment;
2) Stage at which the assessment was undertaken;
3) Quantification methodology standards;
4) Works;
5) Boundaries;
6) Assumptions;
7) Tools;
8) Data sources;
9) Categorisation methods;
10) Uncertainties;
11) The approximate percentage of the *works'* material quantities covered;
12) Aggregated carbon results by categorisation system; and
13) % change against from baseline and last assessment (where applicable).

4.6.23. The Supplier shall respond accordingly to comments raised by the Buyer until the Whole Life Carbon Assessment and the Carbon Report are accepted by the Buyer. The Buyer may not accept the CRP if the CRP does not conform to the requirements set out in this Order Specification.

TfL RESTRICTED

Note: The Carbon Report lists all design changes that resulted in a change of more than 1% of the total whole life carbon emissions. The rationale for the change and carbon impact will be recorded.

4.6.24. CRP shall remain a live document after delivery, and the Supplier shall use it to identify and track the implementation of new carbon reducing initiatives throughout the Order Contract's duration.

TfL RESTRICTED

5. Civil Works and Charge Point Design

This section states the requirements for Civil Works, especially concerning the design stage of the Charge Point Sites, and the work between the Distribution Network Operator (DNO) connection to Feeder Pillar.

5.1. General

5.1.1. All Civil Works must not interfere with any existing statutory undertakers, or any other existing equipment commonly found in areas where Charge Points are installed.

5.1.2. The Supplier shall conform with PAS128:2022 Underground Utility Detection.

5.1.3. The Supplier shall ensure all personnel carrying out site surveys and handling electrical equipment must register with the Highway Electrical Registration Scheme (HERS) with an Electrotechnical Certification Card (ECS), which is affiliated to the Construction Skills Scheme (CSCS).

5.1.4. The Supplier shall ensure a desk-based study and site survey are completed for each Charge Point Site which shall include, but not limited to, the following:

a) Site condition
b) Site suitability and analysis
    i. Layout of the Charge Point Site;
    ii. Surrounding areas, including but not limited to nearby property (with basements), foundations, street lighting, traffic signal, traffic signal power supplies, existing earthing arrangements, and overhead and adjacent structures (bridge decks, overhead wires and tunnels);
    iii. Street infrastructure such as signage, lighting, bollards, and barriers;
    iv. Existing utilities above ground, underground and on the ground such as but not limited to gas, telecom, sewer, water and electricity supply;
    v. Hazards such as safety spills and slip, machinery, personal protective equipment and health and safety standards;
    vi. Existing drainage; and
    vii. Spot levels information where necessary.
c) Fire – risk assessment and mitigation plan
d) Flood – risk assessment and mitigation plan

TfL RESTRICTED

e) Electrical – Design and calculations to BS7671, risk assessment and mitigation plan
f) Environmental Management Plan (EMP) – risk assessment, opportunities log and mitigation plan
g) Tree – impact assessments
h) Location for Feeder Pillar and Charge Point
i) Geotechnical desk study such as identification of weak ground
j) Vehicle tracking swept path for access and egress of the proposed Charging Bay(s).

The Supplier shall ensure each risk is minimised and managed through the design, installation, maintenance, operations, and management of Charge Point Sites.

5.1.5. The Charge Point Site shall be designed in accordance with Appendix E – TfL Streetscape Guidance 2022.

5.1.6. The Charge Point Unit shall be located at least 2.5 metres from other electrical and non-electrical structure (including lamp posts, metal fences, bike stands, post boxes etc).

5.1.7. The Charge Point Site shall allow a minimum of 2 metres effective footway width retained for pedestrians.

5.1.8. Each car parking space shall have a minimum length of 5.5mand a minimum bay width of 1.8m (otherwise match existing width).

5.1.9. The Charge Point Site shall be safe as far as is reasonably practicable for Customer(s) of all protected characteristics to access the Charge Point Unit at all times of day, without introducing risks to road safety or personal safety to road and footway users.

5.1.10. The Charge Point Unit and Feeder Pillar shall not be placed close to junctions and crossings to risk obstructing the inter-visibility sightlines between motorists and pedestrians.

5.1.11. The Charge Point Site shall not create potential hiding places or locations for anti-social behaviour.

5.1.12. The Charge Point Site shall not clutter the local environment either physically or visually.

TfL RESTRICTED

5.1.13. The Charge Point Unit and Feeder Pillar shall not be located close to trees to prevent risk of damage to the canopy and tree roots.

5.1.14. The Charge Point Unit and Feeder Pillar shall have sufficient room for maintenance with no litter traps.

5.1.15. The Charge Point Unit and Feeder Pillar shall avoid creating pinch points and restricting pedestrian movement.

5.1.16. The carriageway width shall be sufficient to allow safe manoeuvring into and out of the bay with a "buffer zone" to protect drivers accessing their vehicles and Charge Point Units, while other traffic can pass by safely. The buffer zone should be at least 1m depth for space of a standard body width (based on PCG standard body ellipse of 600mm) moving around the vehicle, with some accessible for wheelchair customers. For more details, please refer to Design Principles specific to on-street charge points in Appendix F – London's electric vehicle charge point installation guidance.

5.1.17. The Supplier shall not install a solar panel(s) on Charge Point Sites.

5.1.18. All Charge Point Sites' components shall be fixed securely into the ground with tamper-proof fixings.

5.1.19. The Supplier shall produce a document which indicates the regulations and/or standards the Charge Point's components/furniture complies, to inform the Buyer.

5.2. Highways Works and Road Safety Audits

5.2.1. The Charge Point Site shall be designed in accordance with the following latest series of the Manual of Contract Documents for Highway Works (MCHW), as such manual may be amended or superseded by equivalent standards from time to time:

- Series 0000 – General Arrangement
- Series 0100 – Preliminaries and Traffic Management
- Series 0200 – Site Clearance
- Series 0500 – Drainage and Ducting, Utilities Designs
- Series 0600 – Earthworks
- Series 0700 – Road Pavements General
- Series 0800 – Road Pavement: Unbound, Cement and Other Hydraulically Bound Mixtures (where applicable)

- Series 0900 – Road Pavements: Bituminous Bound Materials (where applicable)
- Series 1000 – Road Pavements: Concrete Materials (where applicable)
- Series 1100 – Kerbs, Footways, Cycleways and Paved Areas
- Series 1200 – Traffic Signs and Road Markings
- Series 1400 – Electrical Work for Road Lighting and Traffic Signs (where applicable)

Note the designs for each series can be combined into one or more drawings as long as the design information can be clearly interpreted.

5.2.2. The Supplier shall be responsible for the completion of Road Safety Audits Stages 1 and 2 in accordance with Appendix H – SQA 0170 Road Safety Audit and be submitted to the Buyer for assurance.

5.2.3. In the event that Road Safety Audits are completed by a Subcontractor, the Supplier shall provide the Buyer with the Subcontractor's CV, for review and assurance prior to commencement of Road Safety Audit reviews.

5.2.4. Upon the completion of Road Safety Audits, the Supplier shall provide the Buyer with the Audit reports and Detailed Design of the Charge Point Site for review and assurance as per Appendix G – PR1504 Highways Technical Assurance Process.

5.2.5. The Supplier shall complete and provide the Buyer with PAS 1899:2022 Electric Vehicle Accessible Charging Specification Checklists with the Detailed Design submission to the Buyer;

- E.1 Checklist: Core standard for minimum requirements for accessibility for all public chargepoints; and
- E.2 Checklist: Supplementary good practice accessibility guidance for all public chargepoints.

5.3. **Electrical**

5.3.1. The Supplier shall ensure the Charge Point complies with the Electricity Safety, Quality and Continuity Regulations 2002.

5.3.2. The Supplier shall be responsible for any communications and costs with the Distribution Network Operator (DNO) for any provision of mains power supply.

TfL RESTRICTED

5.3.3. All works shall comply with BS 7671:2018 + A2:2022– The IET Wiring Regulations Amendment 2 – 2022, as such standards may be amended or superseded by equivalent standards from time to time.

5.3.4. The electrical design submission shall be provided for each charging site and shall include as a minimum:

- Site Submission Cover Sheet

  Site Information

  Site Name, Address, Postcode, Borough. Latitude, Longitude. Eastings and Northings.

  Site Overview
  Number of Charging Bays, Charging Bay lengths, Charging Bay width
  Type of Charger, Charger Size (kW)
  DNO Supply Size, Earthing Type
  Feeder Pillar Size/Type
  Deployment Type

  Site Observations / design impacts (with risk criteria L/M/H)
  Type of Road, Speed Limit, Lamps post, Tree's, Other Electrified Street Furniture, Ground Services, Existing Parking restrictions, nearby other parking bays, impacted shops and Businesses, Bus stops, Cycle Routes.

  Detailed Site Description / Site Observations
  Site Observation Description, EVCP Placement Assessment, feeder Pillar Placement Assessment. PAS Accessibility Observation – design Consideration

- Utility Layout (Existing)
- Utility Layout (Proposed)
- Equipment Layout (Site General arrangement) – new cable lengths to be plotted

TfL RESTRICTED

- Feeder Pilar (internal Layout)
- Feeder Pilar (Schematic)
- Cable protection / calculations in accordance with BS7671 (eg. Amtech)
- IET Risk assessment and Checklist for on-street vehicle charging deployment
- Site Earthing Exclusion / separation Zone
- Earth mat installation ground works drawing
- EVCP ground works drawing / mounting and cable entry drawing
- Feeder Pilar mounting arrangement and cable entry drawing
- Electrical Network Diagram (detailing any interfaces DNO / IDNO)
- EV Charge Point General Arrangement / Dimensions
- Feeder Pilar General Arrangement / Dimensions
- Earthing modification design - street furniture (where required)
- EVCP installation / O&M manual

5.3.5. Associated manufacturer specifications and manuals related to all relevant material used (e.g. ELCB, MCB, Cables, OPEN device, enclosures, ducting etc).

5.3.6. Relevant on site surveys and intrusive inspections shall be completed prior to design submission to minimise design errors.

5.4. Fire

5.4.1. The Supplier shall adopt any recommendation for the design of Charge Point Site in the RC59: Recommendations for fire safety when charging electric vehicles.

5.4.2. The Supplier shall set out how the fire risk is minimised and managed through the design, installation, maintenance, inspection, operations and management of the Charge Point, with associated roles and responsibilities in relation to minimising this risk. This is in addition to the CDM requirements, due to the need to communicate with the public around fire safety.

5.4.3. The Supplier shall respond to queries within seven working days raised by the Buyer and immediately in a fire risk or emergency. Incidents shall be categorised, please refer to sections 8.1.14 to 8.1.16 for details.

5.5. Drainage

5.5.1. The Charge Point Site shall use an impermeable surface to ensure water is directed away from the Charge Point Site.

TfL RESTRICTED

5.5.2. The Charge Point shall be mounted at an appropriate height to prevent water ingress under site and expected climatic conditions.

5.5.3. The Charge Point Site shall ensure no ponding occurs as a result of site installation.

5.5.4. The Charge Point Site shall have sufficient drainage, especially near basements to mitigate flash flooding or fire-fighting measures.

5.6. Feeder Pillar

5.6.1. The Feeder Pillars shall be designed in accordance with section 12.7 of the Appendix E – TfL Streetscape Guidance.

5.6.2. The Feeder Pillar shall be located at least 2.5 metres from the Charge Point Unit.

5.6.3. Feeder Pillars shall be located in a position separate to the Charge Point Unit at a suitable distance, such that a vehicle collision with a Charge Point Unit will not in most instances also damage the Feeder Pillar, thus enabling safe isolation.

5.6.4. The planting depth of the Feeder Pillar shall be at least 400mm.

5.6.5. The Feeder Pillars shall be in black (RAL 9005) with a matt finish.

5.6.6. All doors on the Feeder Pillar shall be secured with a tamper-proof tri-key cam lock. All locks and hinges shall meet the requirement defined by Section 1418 of Series 1400 in the Specification for Highways Works.

5.6.7. The Feeder Pillar enclosure shall meet a rating of IP as defined by Section 1418 of Series 1400 in the Specification for Highways Works.

5.6.8. The Feeder Pillar shall meet the requirements as per Table 1 below. The size of the Feeder Pillar shall be agreed with the Buyer.

Type	Height (mm)	Width (mm)	Depth (mm)	Steel Thickness (mm)	Door
1	750	300	170	3	Single
2	750	520	230	3	Single
3	1200	650	300	3	Single
4	1500	1500	450	5	Double

Table 1: Nominal requirements for Feeder Pillar

5.6.9. Feeder Pillars shall be manufactured from either powder coated CR 304/ CR316 stainless steel or (for Type 3 and 4 only) Glass Reinforced Plastic (GRP) which

satisfies BS 476 Fire Tests Category 2. The appropriate material shall be agreed with the Buyer and relevant Highway Authority during the design stage.

5.6.10. Feeder Pillars shall be installed in accordance with the Appendix E – TfL Streetscape Guidance and Section 1418 of Series 1400 in the Specification for Highways Works.

5.6.11. Feeder Pillars shall be sealed by backfilling the area within the plinth with dry fine sand to a minimum depth of 50mm. The sand shall be firmly compacted and levelled with the bottom of the plinth. The case flange shall be cleared of sand or other debris and an approved sealing compound shall be mixed (as per manufacturer's instructions) and poured onto the sand. If the sealing compound does not cover the case retaining studs and nuts after pouring, the studs and nuts shall be sealed by pouring a small quantity of the compound over each of them.

5.6.12. A durable electricity warning sign shall be fixed to the front of the feeder pillar as defined by Section 1418 of Series 1400 in the Specification for Highways Works.

5.6.13. The Feeder Pillars shall include either a back board or equipment mounting system as defined by Section 1418 of Series 1400 in the Specification for Highways Works.

5.6.14. All internal switchgear (where applicable) within the Feeder Pillar shall comply with all relevant parts of BS EN 61439 Low-voltage switchgear and control gear assemblies from time to time.

5.6.15. All internal switchgear (where applicable) within the Feeder Pillar shall meet a rating of IP 4X as per BS EN 60529:1992+A2:2013 Degrees of protection provided by enclosures at minimum from time to time.

5.6.16. All distribution boards within the Feeder Pillar shall be provided with external earth, be phase barriered and be colour coded. They shall be fitted with the same number of live and neutral bus bar terminals as there are outgoing circuits.

5.6.17. All distribution miniature circuit breakers (MCBs) or fuse boards shall have enough spare capacity as defined by Section 1418 of Series 1400 in the Specification for Highways Works.

5.6.18. At the point of installation, there shall be spare space on the back board as defined by Section 1418 of Series 1400 in Specification for Highways Works. For the

TfL RESTRICTED

avoidance of doubt, this usable spare space is intended to be used for future upgrades and maintenance.

5.6.19. The relevant design standards for LV Feeder Pillar connections from the relevant DNO shall be obtained before commencing works.

5.6.20. The Feeder Pillar shall be fitted with a suitably approved cut-out and meter.

5.6.21. All circuit details and labelling within the Feeder Pillar shall be provided in accordance with BS 7671:2018 + A2:2022– The IET Wiring Regulations Amendment 2 - 2022.

5.6.22. The Incoming circuit protective conductor (CPC) to each Feeder Pillar, switchgear arrangement, independent fuse switch or distribution board shall be installed such that it can be easily disconnected for test purposes.

5.6.23. Any cables larger than 6mm^2 shall be double cleated to the backing board.

5.6.24. Labels shall be fitted within the Feeder Pillar to identify the origin of supply.

5.6.25. All Feeder Pillar earthing systems shall comply with the DNO specification ENA EREC G12 Issue 4 + Amendment 2 2022.

5.6.26. A Protective Multiple Earthing 'PME' system shall not be provided for a supply direct to Charge Points installed in the highway, unless the DNO specifies otherwise and in accordance with ENA EREC G12 Issue 4 + Amendment 2 2022.

5.6.27. PME fault detection devices in accordance with ENA EREC G12 Issue 4 + Amendment 2 2022 and non-TT supplies shall be accepted by the Buyer before use.

5.7. Retention Socket Systems

5.7.1. The Retention Socket System consists of retention sockets, adapter plates, access chambers, manhole covers and cable protection systems.

5.7.2. The retention sockets and adapter plates shall be installed for each Charge Point. Access chambers and manhole covers shall be installed between the Feeder Pillar and Charge Point Units. The Cable Protection shall be installed to prevent direct contact with soil.

5.7.3. Retention Socket System and fully ducted systems shall be used at the Charge Point Sites. The Retention sockets shall consist of a foundation and socket set flush with the ground, into which the Charge Point Unit is securely installed, and associated ducting.

5.7.4. The access chamber shall have pre-drilled holes on all sides. Duct caps shall be kept on when the holes are not in use.

5.7.5. Any Retention Socket Systems which are installed beneath footways shall comply with BS EN 124:2015 Gully Tops and Manhole Tops for Vehicular and Pedestrian Areas, Class B125 (12.5 tonnes test load) without any fixing. Any Retention Socket Systems which are installed beneath carriageway shall comply with BS EN 124:2015 Gully Tops and Manhole Tops for Vehicular and Pedestrian Areas, Class D400 (40 tonnes test load) without any fixing.

5.7.6. The retention socket and adapter plates shall be made with GS240 cast steel or BS 2789 Casting 500-7 Ductile Iron.

5.7.7. The adapter plate shall be made in accordance with the size and shape of the Charge Point Unit. The retention socket shall accept the adapter plate.

5.8. Backfilling for Charge Point Site

5.8.1. Backfilling material shall be mass concrete or an acceptable material in accordance with Series 0600 in the Specification for Highways Works. Excavated material from the hold dug for the structure shall be reused where possible and the compacted procedure shall follow the foundation manufacturers requirements. Where the excavated hole is backfilled with concrete, the concrete shall extend from the base of the structure to ground level.

5.8.2. All backfilling material shall be placed in 150mm thick layers and well compacted.

5.8.3. The corrosion protection system for the structure shall not be damaged during compaction.

5.8.4. Where the pacing or bituminous surfacing is to be applied around the structure, the top level of the concrete may be reduced by the thickness of the surfacing.

5.8.5. The planted structure shall incorporate a mechanism which prevents rotation of the structure in the ground under wind loading to resist the torsional effects of the loading.

5.8.6. Settlement due to ground movement shall be reflected in the design of the Retention Socket Systems.

5.9. Road Signage and Road Markings

5.9.1. The Supplier shall design the road signage and road markings in accordance with the Traffic Signs Regulations and General Directions 2016 or any successor.

TfL RESTRICTED

5.9.2. The Supplier shall provide the design of the Road Signage and Road Markings as part of the detail design for the Buyer's assurance. The Buyer will assure the design of the Road Signage and Road Markings as part of the detail design assurance process.

5.10. Site Construction

5.10.1. The Supplier shall be responsible for arranging suspensions as part of traffic management where required and the related costs, including but not limited to:

- Parking or loading bay suspensions;
- Bus stop suspensions; and
- Lane rental charges.

5.10.2. The Supplier shall submit detailed design proposals for Charge Point Sites to the Buyer for assurance.

5.10.3. The Supplier shall be responsible for constructing, installing, testing, inspecting, and commissioning all utility assets and equipment, including the supply of utilities and services that are required for the operation of Charge Point Sites, and associated cost.

TfL RESTRICTED

6. Charge Point Unit Specifications

This section states requirements relating to the Charge Point and the works required between the Feeder Pillar and the Charge Point Unit.

6.1. General Requirements

6.1.1. All Charge Point Units shall be compliant with such standards, regulations and guidance as may be amended or superseded by equivalent standards from time to time.

- BS EN IEC 61851 Electric Vehicle Conductive Charging System (where applicable);
- Electromagnetic Compatibility Regulation 2016;
- Electrical Equipment (Safety) Regulations 2016 (as amended);
- PAS 1899:2022 Electric Vehicles Accessible Charging; and
- The Public Charge Point Regulations 2023.

6.1.2. All Charge Point Units must have smart functionality and comply with the powers set out by the Automated & Electric Vehicles (AEV) Act 2018 and Alternative Fuel Infrastructure Regulations 2017.

6.1.3. The Charge Point Unit shall comply with the Metering Instruments Directive (2014/32/EU or as amended).

6.1.4. Meters must have smart functionality as set out in the Electric Vehicles (Smart Charge Points) Regulations 2021. Each outlet shall provide the measurement of energy supplied, to be output to both a display (where fitted).

6.1.5. The Charge Point Unit shall identify and implement circular economy principles at each stage of the Deliverables.

6.1.6. The Charge Point Unit shall be designed in a manner where future upgrade and compatibility aspects are considered.

6.1.7. The Supplier shall ensure the Charge Point Unit's display, by a means which is resistant to weather and vandalism, customer helpline telephone number(s), email (or other means of correspondence agreed by all parties) and a unique asset identifier which may be up to ten (10) alphanumeric digits long.

TfL RESTRICTED

6.1.8. The Supplier shall ensure the total price for charging an electric vehicle to be clearly displayed in pence per KwH either: (i) on the Charge Point; or (ii) through a separate device which does not require a person to have entered in a pre-existing contract with the charge point supplier.

6.1.9. The Supplier shall ensure that the customer helpline telephone number and email (or other means of correspondence agreed by the parties), are prominently displayed on the Charge Point Unit is available for the duration of the Order Contract. The Supplier shall ensure the helpline will be staffed, free of charge, for 24 hours for each day of the year.

6.1.10. The Charge Point Unit shall be certified with either UK marked or CE marked in accordance with all relevant UK legislation.

6.1.11. All components of the Charge Point Unit including any cabling within the housing works without interference to, or susceptibility to interference to, any other CA marked equipment in accordance with UK legislation.

6.1.12. The Supplier shall ensure that the Charge Point Unit conforms to all relevant British requirements for Electromagnetic Compatibility (EMC) and the Low Voltage Directive. This may either be by:

- Production of self-certification documentation to demonstrate overall compliance with the EMC requirements; or
- Testing the Charge Points to prove compliance against Radio Equipment Directive (2014/53/EU or as amended).

6.1.13. The Charge Point Unit shall facilitate DC charging.

6.1.14. DC Charging Equipment shall be compliant with BS EN 61851-23 Electrical Vehicle Conductive Charging System.

6.1.15. Each DC Charge Point Unit output shall supply each Charging Bay a minimum of 50kW.

6.1.16. The electrical components of the Charge Point Site shall be compatible with 50Hz electricity supply frequency.

6.1.17. The overcurrent protection for all outlets shall be built inside the Charge Point Unit.

6.1.18. The Charge Point Unit shall not exceed the dimensions allowed for the installation as stated in the development permit.

TfL RESTRICTED

6.1.19. For Charge Point Units intended to charge two (2) electrical vehicles simultaneously, the Charge Point Unit shall be rated for all outlets to operate at full rated output capacity.

6.1.20. The Charge Point Unit shall be able to carry out any software upgrades, reboots and restarts remotely.

6.1.21. The Supplier shall use commercially reasonable effort to upgrade the Charge Point hardware equipment to support new technologies and Deliverables during the Contract Period consistent with the upgrades provided under other broadly comparable contracts.

6.1.22. The Charge Point Unit shall allow full servicing and replacement without disturbance of the pavement or hardstanding surface. No Civil Work should be required.

6.1.23. The Charge Point Unit shall be modular in design. In case of equipment failure, the design shall allow modular or sectional replacement.

6.1.24. The appearance of the Charge Point Unit shall satisfy the design principles described in Part E – TfL Streetscape Guidance and assured by the Buyer.

6.1.25. The Supplier shall ensure that all Charge Point Units conform to all applicable legislative standards at the time of installation and during the Order Contract Period, at its sole expense, the Supplier shall make necessary adjustments to the Charge Point Units to comply with any changes in the applicable legislative standards.

6.1.26. The Supplier shall install all parts according to manufacturer's instructions/ guideline.

6.1.27. The Supplier shall undertake their own Data Protection Legislation training and account for individuals for each of the appointed Principal Contractors.

6.1.28. The Supplier shall make clear that any Penalty Charge Notices (PCN) resulting from exceeding Charge Point Site time restrictions, will be separate from the Supplier's overstay fee.

6.1.29. The Charge Point status shall be indicated to customers using lights such as LEDs or display.

TfL RESTRICTED

6.1.30. In accordance with regulation 7 of TPCPR 2023, the Supplier shall ensure the Charge Point should be capable of indicating an electric vehicle supply equipment (EVSE) object status to be updated within 30 seconds of any change in status.

6.1.31. The Supplier shall include the 'Cleaner Air for London' ident logo on the Charge Point as per Appendix O – Cleaner Air for London Ident Logo. The dimensions and placement location of the ident logo to be advised by the Buyer post Order Contract award.

6.2. Environmental Testing

6.2.1. The Charge Point shall comply with all relevant requirements of the TOPAS 2130B Environmental Tests for Road Traffic Control Equipment unless otherwise specified in this document.

6.2.2. The Supplier shall ensure all Charge Point equipment is able to withstand the bumps, drop and topple during the delivery of the equipment to the Charge Point Site.

6.2.3. The Charge Point Unit shall be fully corrosion protected for at least the same timeframe as the Order Contract Period.

6.2.4. The Ingress Protection of the Charge Point Unit housing shall be IP55 at a minimum.

6.2.5. The Impact Resistance of the Charge Point Unit housing shall be IK10 which is equivalent to EN62262 and withstand vandal resistant up to 20 Joules of impact energy.

6.2.6. The Supplier shall consider installing bollards for additional protective perimeter. When designing bollards, the PAS 1899:2022 Electric Vehicle Accessible Charging Specification shall be considered and bollards should not be located in ways which restrict access for some customers.

6.3. Communication/ Software

6.3.1. The Supplier shall be responsible for providing, installing, and commissioning of any communications infrastructure if required, at their own cost.

6.3.2. The Charge Point Unit shall comply with BS EN ISO 15118 Vehicle to Grid Communication Interface.

TfL RESTRICTED

6.3.3. The Charge Point Unit shall comply with Open Charge Point Protocol (OCPP) 2.0.1, Open Smart Charging Protocol (OSCP) and Open Charge Point Interface (OCPI) and any successor.

6.3.4. The Supplier shall have a direct communication link with all Charge Point Units.

6.3.5. The Supplier shall provide the Buyer with a communication diagram detailing how the communications link is set up between Charge Point Units and back office.

6.4. Data Sharing with the Buyer

6.4.1. The Supplier shall ensure that any reports or other reporting specified within the Order Specification as being required to be provided by the Supplier, are provided electronically to the Buyer and are uploaded to a dedicated SharePoint site. The Buyer will continue to consider potential options for the implementation of a longer-term solution for ongoing reporting.

6.4.2. The Supplier shall submit the Charge Point location file (see section 6.4.5), the Charge Point Events file (see section 6.4.6) and the Outage Events file (see section 6.4.7).

6.4.3. The file shall be in UTF8 character encoded CSV files.

6.4.4. The file shall adopt the following naming convention of the file:

ev_suppliername_dataset_filesubmissiontimestamp, where the timestamp is in format yyyymmddTHHMMSS. For example:

- ev_tfl_locations_20211012T151529.csv
- ev_tfl_chargingevents_20211117T132444.csv
- ev_tfl_outageevents_20211117T132503.csv

6.4.5. Charge Point Location file

#	Attribute name	Description	Format/Values
L1	Charge Point ID*	Charge Point Unit identification name or number, prefixed with the Supplier's name to ensure uniqueness of references	String
L2	Operator*	Name of Supplier	String
L3	Connector format	The format of the connector, tethered cable	Tethered Cable

L4	Number of connectors*	Number of connectors (sockets or cables) that can be used at any one time	Number, no decimal points
L5	Connector ID*	Charge Point socket or cable identification name or number	String
L6	Connector Type	Connector Type	CCS
L7	Street number and name	Street name and number if available	Building Name (if applicable) Street Number Street Name
L8	Postcode	Postal code of the location	Full postcode
L9	Borough	Borough where Charge Point is located	City of London Barking and Dagenham Barnet Bexley Brent Bromley Camden Croydon Ealing Enfield Greenwich Hackney Hammersmith and Fulham Haringey Harrow Havering Hillingdon Hounslow Islington Kensington and Chelsea Kingston upon Thames Lambeth Lewisham Merton Newham Redbridge Richmond upon Thames Southwark Sutton Tower Hamlets Waltham Forest Wandsworth Westminster

TfL RESTRICTED

L10	Latitude*	Latitude of the point in decimal degree. Example: 51.55743	WGS84 GPS Coordinate (to 1m accuracy/5 decimal points)
L11	Longitude*	Longitude of the point in decimal degree. Example: 0.00006	WGS84 GPS Coordinate (to 1m accuracy/5 decimal points)
L12	What3words	using https://what3words.com/ the site ref	format.hurry.ocean
L13	Location description	any relevant description of location and access	String
L14	Power output (kW)*	Maximum power output	Integer
L15	Operating hours	Times when the charge point can be accessed for charging Please use format *HH:MM – HH:MM on Weekday*, and comma separation between values	String
L16	Parking enforcement arrangements (and physical access restrictions)	Restrictions to parking spot: "EV only" – Reserved parking spot for electric vehicles "Plugged" – Parking only allowed while plugged in (charging) "Disabled" – Reserved parking spot for disabled people with valid ID "Motorcycles only" – Parking spot only suitable for (electric) motorcycles "Taxi only" - Parking spot only suitable for (electric) taxis	EV only Plugged Disabled Motorcycles only Taxi only
L17	Payment methods	Methods of payment accepted at charge point e.g., RFID card, contactless and smartphone app	String
L18	Asset status	Active – charging point is supposed to be usable Decommissioned – historic asset	Active Decommissioned
L19	Operational status	For Active assets only: Online - operational	Online Offline

TfL RESTRICTED

		Offline - malfunctioning	
L20	Commission date	Date Charge Point commissioned for use	DD/MM/YYYY
L21	Decommission date	Date Charge Point decommissioned and no longer available for use	DD/MM/YYYY
L22	Subscription required	Indication if subscription is required for customer to use the charging station	Yes No
L23	Parking/ Idling fees applicable	Parking fee, if applicable	String
L24	Access or physical restrictions if applicable	e.g. 8.00-16.00 only, 1.75m vehicle height	String
C2	Tariff	Details of pricing tariffs available	String
C3	Price at sale	Pence per kWh paid at plug	Integer
C4	Unit price	Price paid for kWh by Supplier	Integer
C5	Gross margin	Difference between C3 and C4	Integer
C6	Any other characteristics of the connectors that determine what vehicle is able to connect and what is not?		
C7	Device manufacturer and model		String
* Indicates a mandatory attribute			

6.4.6. Charge Point Events file

#	Attribute name	Description	Format
E1	Charge point ID*	Charge Point identification name or number as per charging point location file	String
E2	Connector ID*	Charge Point socket or cable identification name or number as per charging point location file	String

TfL RESTRICTED

E3	Charging event ID*	The unique ID that identifies the charging event in the Supplier platform.	String
E4	Plug in date and time*	The date and time the vehicle plugged into the Charge Point Unit Represent the date/time using Coordinated Universal Time in a format YYYY-MM-DDThh:mm:ssZ. For example, for an event on 6th of June 2022 which took place at 10:30 AM local time, we would expect the timestamp to show 2022-06-06T09:30:00Z. Please refer to midnight as 00:00	YYYY-MM-DDThh:mm:ssZ
E5	Unplug date and time*	The date and time the vehicle unplugged from the Charge Point Unit Represent the date/time using Coordinated Universal Time in a format YYYY-MM-DDThh:mm:ssZ. For example, for an event on 6th of June 2022 which took place at 10:30 AM local time, we would expect the timestamp to show 2022-06-06T09:30:00Z. Please refer to midnight as 00:00	YYYY-MM-DDThh:mm:ssZ
E6	Charge start date and time*	The date and time the charging event became active Represent the date/time using Coordinated Universal Time in a format YYYY-MM-DDThh:mm:ssZ. For example, for an event on 6th of June 2022 which took place at 10:30 AM local time, we would expect the timestamp to show 2022-06-06T09:30:00Z. Please refer to midnight as 00:00	YYYY-MM-DDThh:mm:ssZ
E7	Charge end date and time*	The date and time the charging event was completed/finished Represent the date/time using Coordinated Universal Time in a format YYYY-MM-DDThh:mm:ssZ. For example, for an event on 6th of June	YYYY-MM-DDThh:mm:ssZ

TfL RESTRICTED

		2022 which took place at 10:30 AM local time, we would expect the timestamp to show 2022-06-06T09:30:00Z. Please refer to midnight as 00:00	
E8	Total energy (kWh) supplied*	How many kWh were charged	Number, 4 decimal point accuracy
E9	Charging speed*	Average charge speed during charging event in kW	Number, decimal point accuracy X
E10	Payment type	Subscription or Pay as You Go user	String
E11	Customer Type	State if the customer is Commercial or a Private customer if known	String
* indicates a mandatory attribute			

6.4.7. Outage Events file

#	Attribute name	Description	Format
O1	Charge point ID*	Charge Point identification name or number as per charging point location file	String
O2	Connector ID*	Charge Point socket or cable identification name or number as per charging point location file	String
O3	Outage event ID*	The unique ID that identifies the outage event in the Supplier platform.	String
O4	Outage start date and time*	The date and time the outage began. Represent the date/time using Coordinated Universal Time in a format YYYY-MM-DDThh:mm:ssZ. For example, for an event on 6th of June 2022 which took place at 10:30 AM local time, we would expect the timestamp to show 2022-06-06T09:30:00Z. Please refer to midnight as 00:00	YYYY-MM-DDThh:mm:ssZ
O5	Outage end date and time*	The date and time the outage ended. Represent the date/time using Coordinated Universal Time in a format YYYY-MM-	YYYY-MM-DDThh:mm:ssZ

TfL RESTRICTED

		DDThh:mm:ssZ. For example, for an event on 6th of June 2022 which took place at 10:30 AM local time, we would expect the timestamp to show 2022-06-06T09:30:00Z. Please refer to midnight as 00:00	

6.5. Payment

6.5.1. The Supplier shall ensure that all financial data is recorded in the functional currency of the Buyer, which as at the Order Contract Start Date is British Pound Sterling (GBP).

6.5.2. All digital and software services and apps must comply with the Network and Information Systems Regulations 2018, or equivalent to ensure data is stored, transmitted and received securely. The Supplier shall comply with any successors of these regulations, certificates, and standards.

6.5.3. The Charge Point Unit shall be fitted with a payment/access control mechanism and instructions for payment and operation.

6.5.4. The Supplier shall ensure contactless payment option must be available.

6.5.5. The Supplier shall ensure provisions for RFID, or payment via an app. The RFID System shall comply with ISO 14443 Cards and security devices for personal identification — Contactless proximity objects from time to time.

6.5.6. The Supplier must comply with the payment roaming requirements in accordance with regulation 6 of TPCPR 2023.

6.5.7. The Supplier shall provide Customer a receipt upon request in line with current legislation.

6.5.8. The Supplier shall ensure that the Customer account is suitable for all types of customers including the public and car clubs.

6.5.9. The Supplier shall ensure that when the vehicle battery is full, all charging ceases and no further electricity costs can be incurred.

6.5.10. The Supplier shall ensure the total price for charging an EV is clearly displayed in pence per kWh either on the Charge Point or through a separate device which does not require a person to have entered a pre-existing contract with the Supplier - and that such total price does not increase once charging of the EV has commenced in accordance with regulation 11 of TPCPR 2023.

TfL RESTRICTED

6.5.11. The Supplier shall ensure accurate Customer billing.

6.5.12. The Supplier shall have a Back-end System (BES) to manage all Charge Point activities, including but not limited to:

6.5.12.1. The BES shall be compatible with the most updated version of OCPP and OSCP.

6.5.12.2. The BES shall record all Charge Point activities (sections 6.4.5 to 6.4.7 at a minimal) and the receipt of payments against a Customer record.

6.5.12.3. The BES shall ensure that Customers are able to access data for each transaction including but not limited to:

- Charge Point reference number;
- Charge Point Unit location;
- Charge cost;
- Date and start time of the Charge;
- Date and end time of the Charge;
- Total and billable duration of the Charge;
- kW-hours provided; and
- Payment methods at Charge Point.
- Connector type available at the Charge Point;
- Price in pence per KwH for charging; and
- hours of the day where the Charge Point is not available during the day.

6.5.12.4. The BES shall calculate the usage and process the completion of the transaction when a customer terminates their charging event in near real-time.

6.5.12.5. The BES shall process and record all Customer financial transaction types in near real time.

6.5.12.6. The BES shall alert the Customer via email, text, or push notification via an app confirming the completion of the transaction in near real time and if electricity cuts off and restarts.

6.5.12.7. The Supplier shall ensure that each charging event is linked to a customer record and/or customer account.

6.5.12.8. The BES shall provide customer with a receipt and/or VAT receipt upon request for any financial transaction in line with current legislation.

6.5.12.9. The Supplier shall enable Customer to download a history of all their financial transactions and to keep an account of their transactions.

TfL RESTRICTED

6.5.12.10. The Supplier shall enable the Customer to view any outstanding balance at any time.

4.1.1 The BES shall ensure that customer data can be deleted at customers' requests.

4.1.1 The Supplier shall ensure their BES comply with all applicable OZEV Charge Point Usage Data Requirements.

6.6. Tethered Cable

6.6.1. The Charge Point Unit's tethered cable shall not be run in such a way to cause an obstruction. More specifically, it shall not create a trip hazard. Any cable obstruction will have negative implications for road safety.

6.6.2. The Supplier shall ensure that all Charge Point plugs conform to the international standard IEC 62196.

6.6.3. The Supplier shall only operate publicly accessible high-power direct current recharging point with connection type: Combo 2 CCS connector (BS EN 62196-3:2014) standards.

6.6.4. The Charge Point must provide tethered cables which comply with BS EN 61851-1:2019 Charging Mode 4.

6.7. User Interface

6.7.1. The Charge Point shall have a colour touch-screen display for Charge Point customers (including any customers with disabilities) to interact with the Charge Point system.

6.7.2. The Supplier shall comply with the BS EN 62368 Audio/video Audio/video, information, and communication technology equipment Safety requirements standard, in addition to BS EN 60073 Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators, as may be amended, or superseded by equivalent legislation from time to time.

6.7.3. The Supplier shall ensure that the Charge Point Unit has a means of indicating when a vehicle is fully charged and ceased charging.

6.7.4. The Charge Point Unit shall display a message to Customer confirming the completion of the transaction in near real time.

TfL RESTRICTED

6.7.5. The Charge Point shall comply with ISO/ IEC DIS 22121-2 Virtual Keyboards User Interface – Part 2: On-screen keyboards with direct touch interface, where a virtual on-screen keyboard is included.

6.7.6. The Charge Point shall be conducted in English.

6.7.7. The Supplier shall make the following information available to Customers at each Charge Point prior the use of Charge Point:

- How to operate the Charge Point;
- How to make payment;
- Total price for charging an EV is clearly displayed in pence per kWh;
- Terms and conditions of use;
- Incident and assistance Helpline telephone number; and
- Email (or any other means of correspondence agreed by the parties).

TfL RESTRICTED

7. Charge Point Installation, Testing and Commissioning

This section states the requirement for installation, testing and commissioning of the Charge Point Site.

7.1. General Requirements

7.1.1. The Supplier shall ensure all installation personnel and any personnel from third parties are competent, as a minimum must hold:

- Relevant New Roads and Street Works Act (NRSWA) 1991 training certification;
- National Highways Sector Scheme 8 (NHSS 8);
- Highways and Electrical Registration Scheme (HERS) and in possession of New Roads and Street Works Act (NRSWA) 1991, Section 50 licence; and
- Electrotechnical Certification Card (ECS).

7.1.2. Installation personnel shall be competent to complete the activities being completed on a particular EVCP and where necessary approved by the manufacturer.

7.1.3. The Supplier shall install the Charge Point site in accordance with the IET Code of Practice for Electrical Vehicle Charging Equipment (ISBN:184919839X)

7.1.4. The electrical supply of the Charge Point installation shall allow the Charge Point equipment to operate at full rated capacity. Where local supply constraints prevent operation at full rated capacity, the Charge Point shall be classified according to actual output capacity.

7.1.5. The Supplier shall ensure that installation poses no risk with restriction of footway or hazards associated with trailing leads.

7.1.6. The Supplier shall clearly display who to contact in the event of a fault. A process for the reporting of faulty Charge Points shall be in place, addressing any faults within a timely fashion and Customers shall be notified, if possible, with advice of alternative nearby Charge Points.

TfL RESTRICTED

7.1.7. The Supplier shall be responsible for the completion of Road Safety Audits Stages 3 in accordance with Appendix H – SQA 0170 Road Safety Audit and be submitted to the Buyer for assurance.

7.2. Retention Socket System

7.2.1. The Retention Socket System shall enable the Charge Point to be removed more easily, as they are not set directly into the ground.

7.2.2. The damaged Charge Point Unit can be quickly replaced, and the Charge Point Unit can be removed as a planned measure to enable abnormal loads to pass, or for special events.

7.2.3. The Retention Sockets and fully ducted systems shall allow for all Civil Works to be completed before the installation of cables and Charge Points.

7.3. Charge Point Installation

7.3.1. The Supplier shall conform to the standards and working practices set out below, as such standards may be amended or superseded by equivalent standards from time to time:

a) Energy Network Association – Engineering Recommendation G12 Issue 4 + Amendment 2 2021; and

b) BS 7430:2011+A1:2015 - Code of practice for protective earthing of electrical installations.

7.3.2. The Supplier shall ensure the installation of the Charge Point complies with the BS EN 61851-21-1:2017 Electric vehicle conductive charging system and BS EN 61140:2016 Protection against Electric Shock.

7.3.3. The Supplier shall install all utility assets and equipment in accordance with the approved design and any planning consents for the Charge Point Site.

7.3.4. The Supplier shall be responsible for obtaining all relevant permits for installation of on-street Supplier Equipment.

7.3.5. The Supplier shall ensure direct communications with relevant officers to manage all preparatory work required to carry out the work.

7.3.6. The Supplier shall be responsible for arranging suspensions as part of traffic management where required and is responsible for the related costs, including but not limited to:

- Parking or loading bay suspensions;

TfL RESTRICTED

- Bus stop suspensions; and
- Lane rental charges.

7.3.7. The Supplier shall be responsible for the installation, testing and certification of all electrical equipment and infrastructure within the Charge Point Site and associated costs.

7.3.8. Without prejudice to any specific requirements set out in the Order Special Terms, the Supplier shall ensure that adequate arrangements are in place for engaging and managing supply chain partners. All Personnel delivering the Services are competent to industry standards and best practice. This shall include any staff employed by any Subcontractors or under short-term contracts to the Supplier or any Subcontractors.

7.3.9. For any thermoplastic line markings that require removal, hydroblasting with a maximum pressure of 20,000 psi should be used to remove to its full depth. Any residual marking, abrasion, or damage to the surface shall be obscured/repaired using suitable inlaid crack sealing system to HAPAS Grade Classification or equivalent.

7.4. Charge Point Commissioning

7.4.1. The Supplier shall be responsible for organising the commissioning of the Charge Point Site ensuring all relevant parties are involved.

7.4.2. The Supplier shall notify the Buyer 10 Working Days prior to the date of the Supplier intends site commissioning.

7.4.3. The Supplier must complete the Site Commissioning Checklist Appendix T for each Charge Point Site. The Supplier is solely responsible to ensure safe commissioning of the Charge Point Site. The Supplier shall submit the Site Commissioning Checklist on the basis that it deems the Charge Point Site as safe and operational to the Buyer's Representative email address on commission completion. The Supplier must sign and date the Site Commissioning Checklist and the date of signing of the Site Commissioning Checklist will be deemed as the Site Commissioning Date. The Buyer can review the Site Commissioning Checklist as necessary and in an event, if any remedials are highlighted by the Buyer, the Supplier shall rectify and as appropriate, amend the Site Commissioning Checklist to the Buyer's satisfaction. Should this occur, the Supplier shall provide the

TfL RESTRICTED

updated Site Commissioning Checklist and will be required to be signed and dated by the Supplier on any subsequent submission(s). If the Buyer requires the Checklist to be amended and resigned, which would ultimately amend the Site Commissioning Date.

7.4.4. The Supplier must complete the EV charger manufacture commissioning procedures prior to submission of the completed Site Commissioning Checklist.

7.4.5. The Buyer shall have the right to inspect any part of the Supplier Equipment, or the works and confirm their conformity with the Supplier's proposed design and/or relevant standards.

7.4.6. The Supplier shall, at its own expense, rectify all defects identified in the commissioning stage by the Supplier, and / or rectify all defects identified by the Buyer at the Supplier's cost.

7.4.7. The Supplier shall provide any updated redline and as-built drawings of the Charge Point Site, Charge Point equipment and site acceptance test for each Charge Point following completion of the commissioning stage.

7.4.8. The Supplier Shall ensure Open Data Protocol is recorded before the Charge Point is used by a member of the public for the first time.

7.5. Charge Point Testing

7.5.1. The Supplier shall complete the electrical testing in accordance with BS 7671, and an Electrical Inspection Certification shall be provided for each Charge Point installation.

7.5.2. The Supplier shall provide the electrical testing report to the Buyer for information.

TfL RESTRICTED

8. Charge Point Inspection, Maintenance and Monitoring

This section states the requirements for the inspection, maintenance, and monitoring of the Charge Point Sites.

8.1. Charge Point Inspection and Maintenance

8.1.1. The Supplier shall ensure all installation personnel and any personnel from third parties are competent, as a minimum must hold:

- Relevant NRSWA training certification;
- National Highways Sector Scheme 8 (NHSS 8);
- Highways and Electrical Registration Scheme (HERS) and in possession of New Roads and Street Works Act 1991, Section 50 license; and

Electrotechnical Certification Card (ECS). For inspection, maintenance, monitoring and decommission of the Charge Points.

8.1.2. The Supplier shall complete visual inspections and associated reporting for each Charge Point Site to the Buyer for the preceding 3-monthly period. Visual inspections must include but are not limited to:

- Status of the operational Charge Point Sites;
- Inspect and report on the safety (e.g. electrical cables exposed) and non-safety critical defects (e.g. graffiti) of the charge point.

8.1.3. The Supplier shall complete Electrical Inspections and Testing in accordance with BS 7671 for each Charge Point Site every six (6) months period.

8.1.4. The Supplier shall inform the Buyer on any / all identified faults and repair on the Charge Point Sites, within the Supplier's Maintenance Plan.

8.1.5. The Supplier shall be responsible for any maintenance work on an ongoing basis at no cost to the Buyer.

8.1.6. The Supplier shall provide the Buyer the Supplier's Maintenance Plan for the preceding 4-weekly reporting period.

TfL RESTRICTED

8.1.7. The Supplier shall be responsible for arranging suspensions as part of traffic management where required and is responsible for the related costs, including, but not limited to:

- Parking or loading bay suspensions;
- Bus stop suspensions; and
- Lane rental charges.

8.1.8. The Supplier shall ensure that it obtains and keeps up to date all necessary permissions, permits and authorities to allow operational and maintenance activities to be undertaken at the Charge Point Sites.

8.1.9. The Supplier shall ensure that all operation and maintenance works undertaken on Supplier Equipment are in accordance with the relevant Site Agreement(s) and any planning consents in place for the Charge Point Sites.

8.1.10. The Supplier shall be responsible for conducting all maintenance and repair work in accordance with the Health and Safety at Work Act 1974 and with all due regard for the safety of Personnel, customers, the Buyer and members of the public.

8.1.11. The Supplier shall be responsible for maintaining the equipment clean and serviceable at all times.

8.1.12. The Supplier shall ensure that where individual Charge Points have been suspended, the Supplier shall ensure the following:

- Messages to advise the suspension of Charge Point(s) is/are clearly articulated and visible to the Customer; and
- Customers are prevented from using the Charge Point(s)

8.1.13. The Supplier shall provide any updated as built drawings within the agreed timeframe.

8.1.14. In case of Severity One incident being identified, the Supplier's emergency service shall be called. The emergency service team shall investigate, make safe and carry out emergency isolation and rectification work within two (2) hours from notification. Once isolated and made safe, the incident shall be moved down to Severity Two incident.

8.1.15. In case of Severity Two incident being identified, the Supplier's service team shall be notified. The service team shall investigate, carry out operational rectification works within twenty-four (24) hours from notification. Any works outside the Order

TfL RESTRICTED

Contract must be defined and agreed by the Buyer prior to implementation. The only exemption is where a delay would render the severity incident escalated to a Severity One incident.

8.1.16. In case of Severity Three incident being identified, the Supplier's service team shall be notified. The service team shall carry out cosmetic rectification works within five (5) calendar days from notification.

8.1.17. As part of the Service and Maintenance, activities such as monitoring, patching and planned upgrades shall keep the Charge Point operational. The Supplier shall give notice to the Buyer with a minimum of 48 hours of such activities. The Buyer will monitor through internal systems to ensure the Charge Point is operational following any maintenance activities undertaken by the Supplier.

8.1.18. The Supplier shall ensure that the Charge Point site shall not constitute a safety or other hazard when the Charge Point is temporarily removed. Electricity supply access shall be capped, and all surfaces shall be flushed to the ground.

8.1.19. The Supplier shall maintain the Charging Bays signage, signage post, bay line markings, and bollards.

8.2. Charge Point Monitoring

8.2.1. The remote monitoring service for identification of faults shall be linked with ticketing systems for equipment faults and error reporting at all times. The Supplier shall ensure publication by the Supplier of the reliability requirement information is compliant in accordance with regulation 7(6) of TPCPR 2023.

8.2.2. A maintenance plan shared with the Buyer shall include regular checks and an agreement for timely necessary repairs by the Supplier's maintenance crews. Please refer to section 8.1.4.

TfL RESTRICTED

9. Project Management

This section states the project management requirements for delivery of the Charge Point Sites.

9.1.1. The Supplier shall provide an overall Project Plan detailing the tasks and activities required by the Supplier and any third party, to design, seek highway and planning consents, install, test, and commission the Charge Points.

9.1.2. The Project Plan must ensure milestones are identified, the schedule is fully logically linked, with critical path, all project delivery deliverables scope shown, and minimum constraints.

9.1.3. The Project Plan should be submitted in Microsoft Project format and accompanying PDF version.

9.1.4. The Supplier must submit Project Plan updates to the Buyer against the Project Plan submitted at the Order Tender submission on the last working week of each month.

9.1.5. Any activities experiencing any delays on the Project Plan to be accompanied with a narrative.

9.1.6. Without prejudice to the Buyer's rights under paragraph 2.2 (Project Plan and Go-Live Date) of the Order Special Terms, if the Supplier encounters delays to the specified programme which could affect the Go-Live Date, it will notify the Buyer within 20 Working Days of the first day it becomes aware of the delay and at the same time provide a mitigation plan to the Buyer in respect of such delay.

9.1.7. The Supplier shall inform the Buyer of progress at a minimum bi-weekly meeting throughout during the following stages for information.

- Site investigations
- Point of Connection Applications
- Detailed Design
- Planning and Consents
- Construction
- Commissioning

TfL RESTRICTED

9.1.8. The Supplier shall provide detailed documentation outlining the approach to stakeholder management and engagement to the Buyer for information.

9.1.9. The supplier shall provide to the Buyer a detailed approach to risk and issue management, for information, and shall also provide:

- Detailed risk and opportunity register, which includes risk owners, probability, potential impacts, and mitigations.

9.1.10. The Supplier shall provide to the Buyer a detailed approach to the training, qualifications, and development in place for staff to ensure a high standard of project management practice.

9.1.11. The Supplier shall provide to the Buyer the competencies and CVs of the key people who will be delivering the project.

9.1.12. The Supplier shall attend an inception meeting, arranged by the Buyer, to discuss planning, consents, approvals and design requirements, within 10 Working Days of the Order Start Date.

TfL RESTRICTED

10. Town Planning and Consents

This section states the town planning and consents requirements for delivery of the Charge Point Sites.

10.1. Town Planning

10.1.1. The Supplier shall provide all necessary documentation to the Buyer, for the Buyer to facilitate the review, internal processing, and submission of Planning Applications for the Charge Point Site. The documents required will include:

- *Appendix I-1 Site location plan at 1:1250 with the site outlined in red and land owned or under the control of the Buyer in blue.
- *Existing and proposed drawings must include:
  - Appendix [I-2] Proposed layout without feeder pillar details
  - Appendix I-3 Existing layout
  - Appendix I-4 Charge Points foundation design drawing
  - Appendix I-5 Charge Points design drawing
  - Appendix I-6 Feeder Pillar design
  - A recognised scale, with a north arrow and a clear descriptive title
  - Any specific Local Planning Authorities requirements (colour etc.)

*Per the detailed design assurance, it is assumed the Buyer, will have assured the Supplier's detailed design (including but not limited to traffic management plans) prior to the Town Planning Applications and Consenting stage.

10.1.2. The planning application fee, invalid fee (if applicable), discharge of planning condition fee (if necessary), subsequent changes, (i.e. non material amendment applications) or resubmissions if required, will be at the Supplier's cost.

10.1.3. Where omissions/corrections or alterations are identified by the Buyer or the Local Planning Authority (pre-application to post-decision), the Supplier shall make amendments to the relevant drawings. The Buyer will liaise directly with the Boroughs on all matters relating to Planning Applications. Site visits may be required by the Buyer.

TfL RESTRICTED

10.1.4. The Buyer estimates Town Planning and Consents to complete within a 5-month timescale, subject to ongoing collaboration with the Supplier. Timescales are subject to change.

10.1.5. The Supplier shall ensure that the Charge Point Site is built in full accordance with the approved planning drawings, as listed in the relevant decision notice in terms of its detailed design (including measurements, location etc.). If the proposal is not built in accordance with the approved plans, a resubmission to the local planning authority may be required which will cause significant delays.

10.1.6. The Supplier shall ensure that the Charge Point Site designs do not result in the loss of trees, green verges or any other biodiversity. The Buyer will review Supplier detailed design, to ensure that those proposals do not result in loss of trees, green verges or any other biodiversity. The Supplier would be liable for any biodiversity net gain requirements associated with the grant of any planning permission.

10.1.7. The feeder pillar does not require planning consent. If it is shown on drawings, the Supplier shall ensure that the following annotation is added to the relevant drawing – "The feeder pillar does not require planning consent and has been shown for informative purposes only" The charge point proposals submitted to the Buyer should be batched by Boroughs to enable efficient processing (e.g. site visits, planning policy appraisals).

10.1.8. The Supplier shall update the Buyer's Town Planning and Heritage team on the progress of Sites coming forward.

10.1.9. Other requirements – a minimum of 2m footway space must be retained for pedestrian movement (as specified in 5.1.7).

10.2. Highway and Traffic Consents

10.2.1. The Supplier shall prepare a notice under Section 17 of the London Local Authorities and TfL Act 2013 in accordance with the template provided in Appendix J – Section 17 Notice Template.

10.2.2. The Supplier shall post the section 17 notice on/near the proposed location of the Charge Point Unit and provide photographic evidence of the posted notice to the Buyer.

10.2.3. The section 17 notice must be posted by the Supplier 28 days prior to works starting on site.

TfL RESTRICTED

10.2.4. The Supplier shall agree to all terms specified within the Section 50 Street Works Licence (NRSWA 1991) provided by the Buyer, for the Charge Point Site as detailed in the relevant Site Agreement(s).

10.2.5. The Buyer will produce all Traffic Regulation Orders (TRO) on behalf of the Supplier and undertake the Stakeholder Engagement associated with TROs, for each proposed site and respond to any site-specific representations. The Supplier shall collaborate with this approach when necessary. For instance, the Supplier shall provide Concept Designs to the Buyer to facilitate the submission of TROs.

10.2.6. Fees associated with TROs will be at the Supplier's cost.

10.2.7. Further information on TRO can be found in Appendix Q - EVID Contractor's Guide Traffic Orders/ Notices and Suspensions.

10.2.8. The Supplier shall apply for permits, permit variations and all relevant notifications via Street Manager (digital service provided by the DfT). The Buyer will facilitate the Supplier's access to Street Manager and provide high level guidance on approval requirements as well as expected timelines.

10.2.9. The Supplier must comply with TfL's Lane Rental Scheme and is liable for any charges arising from the scheme.

10.2.10. Further information relating to the scheme can be found on www.tfl.gov.uk/lnerental.

10.2.11. The Supplier is responsible for applying for any lane rental waivers for applicable sites and associated costs when necessary. The Buyer shall provide guidance and information on the lane rental waiver process when necessary.

10.2.12. The Supplier is responsible for ensuring that any streetworks are managed in accordance with the requirements of NRSWA and is liable for any charges/fees/fines arising from non-compliance with the legislation and associated statutory codes of practice.

10.2.13. The Supplier shall be responsible for applying directly to relevant Local Authorities for any required Section 61 consents and associated costs, noting that this is in accordance with the Control of Pollution Act 1974. The Supplier shall ensure that the required Section 61 consents are in place prior to commencement of works.

10.2.14. The Supplier shall ensure, Works TMAN, Permits and Road Safety Audits are completed prior to any sites works (refer to Appendix M –Guide to Roadworks

TfL RESTRICTED

Assessments and Approvals for further information). The Supplier shall conform to the legislation and working practices, as such standards and editions may be amended or superseded by equivalent standards from time to time. The Supplier must comply with the latest regulations and standard regardless of what information is provided in Appendix M.

10.2.15. All advance warning signage to comply with Traffic Signs Manual Chapter 8, and appropriate signage to be provided for pedestrians and cyclists.

10.2.16. All Traffic management must adhere to the TfL Temporary Traffic Management Handbook (Appendix A).

10.2.17. Changes to the agreed methodology / traffic management to be discussed and agreed with TfL's Network Impact Specialist Team prior to any changes taking place on site.

10.2.18. Changes to the programme of works arising from adverse weather, overruns or other unforeseen circumstances should be discussed with stakeholders at the earliest opportunity.

10.2.19. Suspended bus stops, stands and any bus lanes affected by works and replacement temporary bus stop(s) must be agreed with London Buses. The Supplier shall ensure that the Safe to Start Approvals List is adhered to (refer to Appendix P - Safe to Start Approvals for further information).

10.2.20. The Supplier shall ensure that all works are undertaken in compliance with the Safety at Street Works and Road Works A Code of Practice, Department for Transport, October 2013 (Section 65 NRSWA) and the requirements set out in the Code of Practice for Street Works Inspection March 2023.

10.2.21. The Supplier is responsible for ensuring that any streetworks are managed in accordance with the requirements of NRSWA and is liable for any charges/fees/fines arising from non-compliance with the legislation and associated statutory codes of practice.

TfL RESTRICTED

11. Quality Management

This section states the requirements for quality management for delivery of the Charge Point sites.

11.1.1. Upon receipt of pre-construction information, the appointed CDM Principal Designer shall submit a detailed design for the Charge Point to the Buyer for assurance review. The detailed design for the Charge Point should include the 'Charge Point Specification'. In the event that the Buyer provides comments on the design, the Supplier shall provide responses and revised detailed design drawings.

11.1.2. Upon receipt of pre-construction information, the appointed CDM Principal Designer shall submit a detailed design for the Charge Point to the Buyer for assurance review. The detailed design for the Charge Point should include the 'Charge Point Specification'. In the event that the Buyer provides comments on the design, the Supplier shall provide responses and revised detailed design drawings.

11.1.3. The Supplier shall provide a C2 Utility Survey for site extents to the Buyer at the Suppliers cost.

11.1.4. The Supplier shall provide Traffic Management Plans to the Buyer for assurance review and to facilitate TMAN, in accordance with the Highways Act 1980 and the Road Traffic Regulation Act 1984. In the event that the Buyer provides comments on the Traffic management plans, the Supplier shall provide responses and revised plans.

11.1.5. The Supplier shall provide a Risk Assessment and Method Statement (RAMS) for the Charge Point Site for the Buyer for review. In the event that the Buyer provides comments, the Supplier shall provide a revised RAMS.

11.1.6. The Supplier shall provide a Construction Phase Plan for the Buyer to review prior to site works as per appendix C - Health and Safety Management.

11.1.7. During construction of the Charge Point Site, the Supplier shall facilitate site visits from the Buyer, to ensure that construction and traffic management is compliant with the approved detailed design and traffic management design respectively, as

TfL RESTRICTED

well as Health and Safety. The Supplier shall resolve any issues raised following the site visit, within the agreed timescales.

11.1.8. Post construction of the Charge Point Site, the Supplier shall facilitate a final inspection by the Buyer of the Charge Point site. The Supplier shall resolve any issues raised at the site visit.

11.1.9. The Supplier shall ensure that while any Civil Works are being carried out, the Highway is kept free from mud, soil and litter arising from the Civil Works.

11.1.10. Upon completion of the Civil Works, the Supplier shall provide Health and Safety information and As-Built drawings, as required by the Buyer. The Buyer will facilitate mapping information in the Buyer's asset management database.

TfL RESTRICTED

12. Management Information and Reporting

This section states the requirements for the management of information and reporting related to the Charge Point Sites.

12.1. Information Management

12.1.1. The Supplier shall maintain all information assets and allocate an appropriate retention policy and processes to ensure review and secure disposal.

12.1.2. The Supplier shall manage information and records in accordance with BS ISO 15489-1 2016 Records Management.

12.1.3. The Supplier shall comply with the provisions of the Data Protection Act 2018 or any other relevant legislation that may be amended or superseded from time to time.

12.1.4. The Supplier shall ensure that appropriate background security checks of all Personnel are performed before such Personnel are permitted to access or handle any personal data or financial/payment processing.

12.1.5. The Supplier and the Buyer will comply with all aspects of the provisions of the Privacy and Electronic Communications Regulations 2003 (PECR), as may be amended or replaced from time to time.

12.1.6. NOTE: PECR will apply to any website created for the purpose of delivering the Deliverables; it covers the rules on cookie usage as well as email communications and marketing rules/obligation.

12.2. Reporting

12.2.1. As a minimum the Supplier shall be required to provide information data stated in sections 6.4.5 to 6.4.7, as well as data relating to 'Charge Point Availability', 'Incident Management', 'Contact Centre Availability', 'Queuing Time' and 'Correspondence' to the Buyer, as stipulated in Annex 8 (Service Levels) of the Order Special Terms for the preceding Reporting Period (having the meaning given to it in the Order Special Terms).

12.2.2. The Supplier shall provide a report every three (3) months summarising the data in the reports referred to in section 12.2.1 for the period of 3 months immediately preceding the date of the report and with sufficient data as may be reasonably

TfL RESTRICTED

required by the Buyer to calculate any monies due in accordance with the terms of the Order Contract.

12.2.3. The Supplier shall use Appendix L Reporting Template for periodic reporting via a dedicated SharePoint site. Please note:

- Appendix L contains the reporting template for PI 2 'Incident Management', PI 3 'Contact Centre Availability', PI 4 'Queuing Time' and PI 5 'Correspondence'.
- A template tab for PI 1 'Charge Point Availability' is not included within the spreadsheet. However, PI 1 'Charge Point Availability' data should be reported as per paragraph 6.4.7 (Outage Events file) of the Order Specification.
- The reporting template may be subject to refinement in agreement with the Supplier prior to award of the Order Contract.
- As specified in paragraph 6.4 of the Order Specification, the reporting via a dedicated SharePoint site is a temporary arrangement. TfL shall seek to put in place a longer-term solution for ongoing reporting.

TfL RESTRICTED

13. Cyber Security

This section states the requirements for cyber security in relation to the Charge Point Sites.

13.1.1. In accordance with the Cyber Essentials Scheme, the Supplier shall provide a valid Cyber Essentials Certificate to the Buyer upon being appointed. Where the Supplier fails to provide a valid Cyber Essentials Certificate, it shall be prohibited from commencing the provision of Deliverables under any Contract until such time as the Supplier has evidenced to the Buyer its compliance.

13.1.2. Where the Supplier continues to process data during the Contract Period the Supplier shall deliver to the Buyer evidence of renewal of the Cyber Essentials Certificate on each anniversary of the first applicable certificate obtained by the Supplier under section

13.1.3. The Supplier and all relevant third parties shall ensure that the Supplier Equipment, and Deliverables comply with, as may be amended or superseded by equivalent legislation and relevant TfL Standards from time to time:

- BS ISO/IEC 27001:2022 (Specification for Information Security Management);
- BS ISO/IEC 27002:2022 (Code of Practice for Information Security Management);
- ISO27001:2013 – Information Security Management
- TfL Standard S1771 Operational Technology Cyber Security – Projects and Upgrades, that ensures that cyber security has been considered at every stage (see Appendix K-1);
- TfL Standard S1772 Operational Technology Cyber Security – Operations and Maintenance, including the expected standards supply chain operation and maintenance of the Charge Point from a cyber security perspective (see Appendix K-2);
- TfL Standard S1740 Cryptography - details the requirements for the management of TfL cryptography considerations utilising the associated

TfL RESTRICTED

information security controls which are within scope of TfL's IT Information Security Management System (ISMS) (see Appendix K-3); and

- Cyber Security Management Schedule – Payments – this Schedule defines the cyber security requirements for TfL Suppliers who deliver PCI DSS managed environments (see Appendix K-4).

13.1.4. Without prejudice to paragraph 21 of the Order Special Terms, the Supplier shall ensure all Supplier Equipment and Deliverables are compliant throughout the term with the latest version of the Payment Card Industry Data Security Standard (PCI DSS) as may be amended or superseded by equivalent legislation or guidance from time to time.

13.1.5. Software solutions (whether they are a mobile application or are Online), shall seek to comply with W3C accessibility standards to enable the widest possible access.

13.1.6. The Supplier shall ensure that a cyber security management plan is in place to manage and protect confidential information including personal data, service systems integration and availability. The plan shall also include the testing approach, and shall indicate activities where it is expected the customer or other third parties should be involved, including communication links from the service system(s) to third parties

13.1.7. The Supplier shall immediately notify the Buyer of any actual or threatened breach in connection with the security of the Supplier Equipment, or Deliverables.

13.1.8. The Supplier shall ensure that security measures are in place for the removal of any customer and third-party data and security and/or related configuration information in the event of disposal of equipment or surplus equipment being resold or donated to another party.

13.1.9. In the event of a Cyber Breach, whether it be accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to, personal data; the Supplier shall provide documentation stating their process in reporting Cyber Breaches to the ICO (Information Commissioners Office).

TfL RESTRICTED

14. Crime and Disorder

This section states the requirements for crime and disorder management of the Charge Point Sites.

14.1.1. The Supplier shall ensure that the Charge Point site is secure and protected at all times (including during construction of the Charge Point Site).

14.1.2. The Supplier shall ensure that security precautions (including Charge Point design and on-street payment methods) are employed to prevent misuse and theft at the Charge Point.

14.1.3. The Supplier shall ensure that a strategy is in place, in the event that crime occurs (including crime at on-street locations).

14.1.4. The Supplier shall monitor internal security matters, including but not limited to access control and reporting of incidents.

14.1.5. The Supplier shall ensure that the Charge Point and any accompanying components will be made of a robust material to withstand vandalism.

14.1.6. The Supplier shall ensure that all fixtures and fittings for the Charge Point are unique and that access cannot be made to any wiring whereby power can be diverted.

14.1.7. The Supplier shall ensure that the implementation of temporary solutions during the Civil Works should be given careful consideration. Where walking routes are altered by the Civil Works, additional way finding signage should be provided in line with Legible London standards to ensure that pedestrians are able to find their way through the works area easily.

14.1.8. The Supplier shall ensure that any materials of high value used on the Charge Points must be hidden (if possible) and secured with tamper proof screw fixings etc.

TfL RESTRICTED

14.1.9. The Supplier is responsible for ensuring that a site risk assessment is in place in the event of lone working, as well as take sufficient steps to ensure appropriate security arrangements are in place.

14.1.10. The Supplier is responsible for ensuring all relevant parties acknowledge and abide by The Buyer's legal obligations under Section 17 of the Crime & Disorder Act 1998.

14.1.11. Where possible during construction of the Charge Point Site, the Supplier shall ensure that good quality solid perimeter treatments of at least 1.8m in height are used (the use of 'Heras' fencing or similar should be avoided).

14.1.12. Where possible during construction of the Charge Point Site, the Supplier shall ensure appropriate good quality secure storage facilities.

TfL RESTRICTED

15. Decommission and Exit Management

This section states the requirements for decommission and exit management of the Charge Points.

15.1. Decommission Management

15.1.1. Upon expiry or termination of the Order Contract and/ or upon removal of a Site or Charging Bay (s) the Supplier shall at their own cost:

- The Supplier shall terminate and/or amend their contractual arrangements for the Site(s) with the relevant DNO(s) providing power;
- The Supplier shall vacate Buyer premises (only applicable in the event of expiry and/or Termination of the Order Contract and/or Site(s) removal);
- The Supplier shall remove Equipment together with any other materials used;
- The Supplier shall leave the Charge Point Sites in a clean, safe, and tidy condition;
- Each Charge Point Site final condition shall be subject to sign off by the Buyer to accept that the Charge Point Sites this includes but not limited to a clean, safe, and tidy condition and the Supplier is solely responsible for promptly making good any damage to the Charge Point Sites or any objects contained thereon, other than fair wear and tear, which is caused by the Supplier including rectifying any issues raised by the Buyer as part of the sign off process as agreed with the Buyer;
- The Supplier must ensure that the Charge Point Site shall not constitute a safety or other hazard when the Charge Point is removed. Electricity supply access shall be capped, and all surfaces shall be flush to the ground;
- The Supplier shall return the Site to the original layout. If the layout has changed surface finish materials should be re-instated and match the material specification to the satisfaction of the Buyer;
- The Supplier shall return the Site(s) and/or Charging Bay(s) within three (3) months of expiry of Order Contract, termination(s), and removal of Charge Point Site(s) and/or Charging Bay(s).

TfL RESTRICTED

15.2. Exit Plan

15.2.1. The Supplier shall, within three (3) Months after the Start Date, deliver to the Buyer an Exit Plan which complies with the requirements set out below and is otherwise reasonably satisfactory to the Buyer.

15.2.2. The Parties shall use reasonable endeavours to agree the contents of the Exit Plan. If the Parties are unable to agree the contents of the Exit Plan within twenty (20) Working Days of the latest date for its submission, then such Dispute shall be resolved in accordance with the Dispute Resolution Procedure.

15.2.3. The Exit Plan shall set out, as a minimum:

- A detailed description of the activities the Supplier will undertake upon exit of the Order Contract, including a timetable;
- Proposals for the disposal, recycling or re-use of the Supplier Equipment and material; and
- Any other information or assistance reasonably required by the Buyer.

15.2.4. The Supplier shall maintain and update the Exit Plan no less frequently than:

- Every twelve (12) months throughout the Contract Period;
- No later than twenty (20) Working Days after a request from the Buyer for an up-to-date copy of the Exit Plan; and
- As soon as reasonably possible following, and in any event no later than twenty (20) Working Days following, any material changes to the Deliverables (including all changes under the Variation Procedure).

15.2.5. The Supplier shall jointly review and verify the Exit Plan if required by the Buyer and promptly correct any identified failures. On if (by notification to the Supplier in writing) the Buyer agrees with a draft Exit Plan provided by the Supplier shall that draft become the Exit Plan for this Order Contract. A version of an Exit Plan agreed between the Parties shall not be superseded by any draft submitted by the Supplier.

TfL RESTRICTED

16. Document References

- Alternative Fuels Infrastructure Regulations 201
- Automated and Electric Vehicle Act 2018 - Part 2
- BS 2789 Casting 500-7 Ductile Iron
- BS 476 Fire Tests Category 2
- BS 7430:2011+A1:2015 - Code of practice for protective earthing of electrical installations
- BS 7671:2018 + A2:2022– The IET Wiring Regulations Amendment 2 - 2022
- BS 8300-1:2009+A1:20102018 & BS 8300-2:2018 Design of an accessible and inclusive built environment - external environment code of practice
- BS EN 124:2015 Gully Tops and Manhole Tops for Vehicular and Pedestrian Areas
- BS EN 60073 Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators
- BS EN 60529:1992+A2:2013 Degrees of protection provided by enclosures
- BS EN 61140:2016 Protection against Electric Shock
- BS EN 61439 Low-voltage switchgear and control gear
- BS EN 61851-21-1:2017 Electric vehicle conductive charging system
- BS EN 61851-23 Electrical Vehicle Conductive Charging System
- BS EN 62196 Plugs, socket-outlets, vehicle connectors and vehicle inlets
- BS EN 62368 Audio/video Audio/video, information, and communication technology equipment Safety requirements standard
- BS EN IEC 61851 Electric Vehicle Conductive Charging System (where applicable);
- BS EN ISO 15118 Vehicle to Grid Communication Interface
- BS IS0/IEC 27001:2013 Specification for Information Security Management
- BS ISO 14001:2004 – Environmental Management Systems standards
- BS ISO 15489-1 2016 Records Management
- BS ISO/IEC 27001:2022 (Specification for Information Security Management);
- BS ISO/IEC 27002:2022 (Code of Practice for Information Security Management);
- BSI ISO 9001:2008 – Quality Management System
- Considerate Contractor Code of Practice
- Construction, Design and Management Regulations 2015
- Control of Pollution Act 1974
- Crime & Disorder Act 1998
- Cyber Security Management Schedule – Payments (Appendix K-4)
- Cyber Security Management Schedule Payments (Appendix K-4)
- Data Protection Act 2018
- Department for Transport (DfT) Inclusive Mobility – A guide to the best practice on access to pedestrian and transport infrastructure - December 2021
- Electric Vehicles (Smart Charge Points) Regulations 2021
- Electrical Equipment (Safety) Regulations 2016
- Electrical Equipment Regulations
- Electricity at Work Regulations 1989
- Electricity Safety, Quality and Continuity Regulations 2002
- Electromagnetic Compatibility (EMC) and the Low Voltage Directive

TfL RESTRICTED

- Electromagnetic Compatibility Regulation 2016
- EMC Regulations (2014/30/EU)
- Energy Network Association – Engineering Recommendation G12 Issue 4 + Amendment 2 2021
- Equality Act 2010
- Example – Charge Point Design Drawing (Appendix I-5)
- Example – Existing Layout – Warwick Avenue (Appendix I-3)
- Example – Feeder Pillar General Arrangement (Appendix I-6)
- Example – Foundation Design Drawing (Appendix I-4)
- Example – Proposed Layout – Warwick Avenue (Appendix I-2)
- Example – Site Location Plan – Warwick Avenue (Appendix I-1)
- Guide to Roadworks Assessments and Approvals (Appendix M)Automated & Electric Vehicles (AEV) Act 2018
- Health and Safety at Work Act 1974
- Health and Safety Management Requirements (Appendix C)
- Highways Act 1980
- HSG47 Avoiding Danger from Underground Services
- IET Code of Practice for Electrical Vehicle Charging Equipment Installation 4th Edition
- IET Guide to Highway Electrical Street Furniture
- Institute of Engineering and Technology (IET): Guide to Highway Electrical Street Furniture 2018
- ISO 14443 Cards and security devices for personal identification — Contactless proximity objects
- ISO/ IEC DIS 22121-2 Virtual Keyboards User Interface – Part 2: On-screen keyboards with direct touch interface
- ISO27001:2013 – Information Security Management
- ISO27001:2013 – Information Security Management
- London Local Authorities and TfL Act 2013
- London Permit Scheme
- London's electric vehicle charge point installation guidance (Appendix F)
- Management of Health and Safety at Work Regulations 1999
- Manual of Contract Documents for Highway Works (MCHW)
- Metering Instruments Directive (2014/32/EU)
- National Disability Strategy 2021
- National Highways Sector Scheme 8 (NHSS 8)
- Network and Information Systems Regulations 2018
- New Roads and Street Works Act (NRSWA) 1991
- Open Charge Point Interface (OCPI)
- Open Charge Point Protocol (OCPP) 2.0.1
- Open Smart Charging Protocol (OSCP)
- PAS 1899:2022 Electric Vehicles Accessible Charging Specification
- PAS 2080:2023 Carbon Management in Infrastructure
- PAS128:2022 Underground Utility Detection
- Payment Card Industry Data Security Standard (PCI DSS)
- PR1504 Highways Technical Assurance Process (Appendix G)

TfL RESTRICTED

- Privacy and Electronic Communications Regulations 2003 (PECR)
- Radio Equipment Directive (2014/53/EU)
- RC59: Recommendations for fire safety when charging electric vehicles
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013
- Road Traffic Regulation Act 1984
- Roles and Responsibilities (Appendix A)
- Site Standards (Appendix N)
- SQA 0170 Road Safety Audit (Appendix H)
- TfL Standard S1740 Cryptography (Appendix K-3)
- TfL Standard S1771 Operational Technology Cyber Security – Projects and Upgrades (Appendix K-1)
- TfL Standard S1772 Operational Technology Cyber Security – Operations and Maintenance (Appendix K-2)
- TfL Streetscape Guidance (Appendix E)
- TfL Sustainability Report (Appendix D)
- TfL's Corporate Environmental Plan (CEP)
- TfL's Temporary Traffic Management Handbook (Appendix A)
- The Workplace (Health, Safety and Welfare) Regulations 1992
- TOPAS 2130B Environmental Tests for Road Traffic Control Equipment
- Traffic Signs Regulations and General Directions 2016
- The Public Charge Point Regulations 2023
- UK GDPR (as defined in Section 3)
- W3C accessibility standards

TfL RESTRICTED

Transport for London

Invitation to Quote

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 2, Batch 1

Volume 2

Appendix A

TfL Temporary Traffic Management Handbook

COMMERCIAL IN CONFIDENCE

TfL Restricted

Temporary Traffic Management handbook

Keeping people safe at roadworks

MAYOR OF LONDON

TRANSPORT FOR LONDON

EVERY JOURNEY MATTERS

About Transport for London (TfL)

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners'. We are committed to creating a fairer, greener, healthier and more prosperous city. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys to be made on foot, by cycle or using public transport by 2041. To make this a reality, we prioritise health and the quality of people's experience in everything we do.

We manage the city's red route strategic roads and, through collaboration with the London boroughs, can help shape the character of all London's streets. These are the places where Londoners travel, work, shop and socialise. Making them places for people to walk, cycle and spend time will reduce car dependency and improve air quality, revitalise town centres, boost businesses and connect communities.

We run most of London's public transport services, including the London Underground, London Buses, the Docklands Light Railway, London Overground, TfL Rail, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the Emirates Air Line. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding public transport, we can make people's lives easier and increase the appeal of sustainable travel over private car use.

We are moving ahead with many of London's most significant infrastructure projects, using transport to unlock growth. We are working with partners on major projects like Crossrail 2 and the Bakerloo line extension that will deliver the new homes and jobs London and the UK need. We are in the final phases of completing the Elizabeth line which, when it opens, will add 10 per cent to central London's rail capacity.

Supporting the delivery of high-density, mixed-use developments that are planned around active and sustainable travel will ensure that London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

We are committed to being an employer that is fully representative of the community we serve, where everyone can realise their potential. Our aim is to be a fully inclusive employer, valuing and celebrating the diversity of our workforce to improve services for all Londoners.

We are constantly working to improve the city for everyone. This means freezing TfL fares so everyone can afford to use public transport, using data and technology to make services intuitive and easy to use, and doing all we can to make streets and transport services accessible to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day.

None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services. We all need to pull together to deliver the Mayor's Transport Strategy; by doing so we can create a better city as London grows.

London's road network

The London road network is shared between TfL, Highways England, 32 London boroughs and the City of London. TfL manages the Transport for London Road Network (TLRN), more widely recognised as the red routes and is responsible for the maintenance, management and operation of London's 6,000+ sets of traffic signals. The TLRN consists of 580km of road network, which represents just five per cent of London's roads, but it carries around a third of all London's traffic.

The Strategic Road Network (SRN) is made up of roads of significant importance, for which the London boroughs have highway responsibility, but TfL has oversight responsibility in terms of planned schemes and works that are likely to have a detrimental impact on highway performance.

TfL works 24 hours a day, 365 days a year managing the TLRN to make sure journeys are safe and reliable for all our customers. We have access to over 5,000 CCTV cameras that help monitor road network conditions for all road users.

Contents

4 Foreword

8 Chapter 1 – About this guidance

16 Chapter 2 – Pedestrians at roadworks

40 Chapter 3 – Cyclists at roadworks

84 Chapter 4 – Other road users at roadworks

90 Chapter 5 – Guarding and segregation

108 Chapter 6 – Temporary traffic signs

118 Chapter 7 – Traffic signals

136 Chapter 8 – Working on dual carriageways

146 Chapter 9 – Look and feel of roadworks

158 Chapter 10 – Assessment, approval and monitoring

174 References

180 Contacts

Foreword

Will Norman

Walking and Cycling Commissioner

Roadworks are inevitable in a growing and prospering city like London. Utilities and highways infrastructure require maintaining and modernising; new housing and commercial developments need connections to services; and the Mayor is investing record levels to transform London's streets to make them easier and safer to walk and cycle.

Poorly planned and designed roadworks can be a barrier to people travelling, resulting in delays, inconvenient diversions and, in some cases, unsafe conditions. People cycling are too often asked to dismount or join narrow, congested traffic lanes, and people walking may be sent on extensive diversions, which are often unsuitable for those using a wheelchair or pushing a buggy.

Between 2005 and 2017, 99 people were killed or seriously injured in the vicinity of roadworks on the Transport for London Road Network (TLRN). While the works may not have been the direct cause of these tragedies, we know that unfamiliar road layouts, poorly signed diversions or a complete lack of cycling or footway provision heighten road risk.

No death or serious injury on London's roads is acceptable or inevitable, which is why the Mayor's Vision Zero action plan aims to eradicate all deaths and serious injuries from our streets by 2041. While there is existing regulation and legislation setting standards for temporary traffic management, we know more can be done to deliver safer provision.

This Temporary Traffic Management Handbook provides guidance for traffic management designers and work promoters on how to make roadworks safer. It will not only make our roads safer for vulnerable road users – people who walk, cycle and ride motorcycles – but will also help to unlock the barriers to active travel faced by people who are visually impaired, or who use wheelchairs and other mobility aids.

The handbook has been produced by a working group of industry specialists and the TfL roadworks professionals who have been planning high-quality temporary traffic management arrangements and finding solutions to address the increased road risk caused by roadworks. I am delighted that it has been welcomed by the industry.

These guidelines apply directly to the TLRN and TfL will expect anyone planning works on these roads to follow this good practice. I also encourage these standards to be applied on roads managed by boroughs and other authorities across London.

Well-designed, temporary traffic management plays a key part in making London's streets healthier, safer, and more attractive places to spend time, and contributes to putting London on the right path to becoming the world's most walkable city.

Walking Action Plan: Action 4
Launch the new Temporary Traffic Management Handbook in December 2018 to ensure that roadworks are no longer a barrier to people walking and accessing London's streets.

Road network conditions

27m
journeys are made across London every day, from local walks to deliveries, cycle trips and the daily commute (2016)

16.8m (62%)
trips are made by sustainable modes (walking, cycling and public transport) (2016)

6.6m
walking trips (2016)

600,000
cycling trips (2016)

80%
Sustainable mode share by 2041

Killed and seriously injured in the vicinity of roadworks (2005-2017)

336
Total Londonwide for all road users

99
Total on the TLRN for all road users

167 (50%)
Number of killed and seriously injured vulnerable road users in London

41 (41%)
Killed and seriously injured on the TLRN were vulnerable road users

28 (8%)
Total fatalities Londonwide for all road users

8 (8%)
Total fatalities on the TLRN for all road users

78%
of people killed and seriously injured on the TLRN were vulnerable road users in 2017

59 / 41%
Split between pedestrians and cyclists killed and seriously injured on the TLRN in 2017

Roadworks activity

355,000
roadworks in London – 2017/18

34,000
roadworks on the TLRN – 2017/18

70,000
applications for permits to undertake roadworks on the TLRN – 2017/18

20,000
roadworks reports on the TLRN from other TfL on-street staff – 2017/18

7,700
reports on the TLRN received from members of public – 2017/18

13,500
fixed penalty notices issued for contravening roadworks regulations on the TLRN since 2010

130
roadworks-related offences prosecuted through the magistrates' courts on the TLRN since 2010

40,000
roadworks inspections on the TLRN – 2017/18

19%
the average work promoter's non-compliance rate for works in progress on the TLRN*

* measured as an average over six preceding periods in Q2 2018

CS3
routes

Chapter 1 – About this guidance

10 1.1 – Introduction

12 1.2 – The general principle

15 1.3 – Designer's responsibilities

1.1 Introduction

This handbook is provided for all those involved with every aspect of the planning, implementation and inspection of temporary traffic management associated with roadworks and construction activities taking place on the Transport for London Road Network (TLRN). The purpose of this guidance is to ensure that temporary traffic management does not create inconvenient or unsafe conditions for people travelling in London. There is a specific focus on people walking or cycling around works sites, in order to ensure those who wish to walk and cycle are not deterred by poor temporary traffic management.

Safety is at the forefront of this guidance; even where temporary traffic management is designed and set up to be safe, if it causes extensive diversions or significant inconvenience, it may drive unsafe decision-making by people travelling around the works. This handbook supplements existing legislative requirements and guidance that industry professionals will be familiar with:

- The Safety at Street Works and Roadworks: A Code of Practice (the Safety Code)[1]
- Chapter 8 of the Traffic Signs Manual (Chapter 8)[2]
- The Traffic Signs Regulations and General Directions (TSRGD)[3]

For works on the TLRN, TfL expects this guidance to be followed. Designers and works promoters should check with other highway authorities elsewhere in London to see if they approve the use of this handbook as good practice.

Our aim is to provide those using our streets with a safe, comfortable, intuitive, and consistent passage around roadworks and other construction sites.

This means ensuring that temporary traffic management is of the highest standard. By doing so, it will ensure streets and public spaces attract people from all walks of life and remain places where people choose to walk, cycle or use public transport, even where less space is available than before. Where it is necessary for road users to temporarily deviate away from a more familiar daily landscape, it is important they clearly understand what is expected of them.

Our vision is for organisations working on the road network to accomplish a zero-risk standard for roadworks operations by 2025.

Roadworks should not deter people from walking or cycling

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321056/safety-at-streetworks.pdf

2 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/203669/traffic-signs-manual-chapter-08-part-01.pdf

3 http://www.legislation.gov.uk/uksi/2016/362/pdfs/uksi_20160362_en.pdf

1.2 The general principle

Anyone involved with roadworks must always ask themselves these two fundamental questions:

> 'Will someone using the road or footway from any direction understand exactly what is happening and what is expected of them?'
>
> 'Have I made the site safe to work in and for the general public?'

When works are necessary on the road network, we expect the commitment to Healthy Streets to be maintained. Walking and cycling should still be positive, attractive choices for people. It is our policy to prioritise walking, cycling and public transport. This handbook will help ensure this approach is incorporated into the traffic management design process, and provide a level of service that is as close as reasonably practicable to the permanent arrangement. This forms part of our commitment to Healthy Streets and our encouragement of active travel under all conditions.

To help meet Healthy Streets objectives, TfL expects traffic management on the TLRN to be:

- **Safe** - minimising collision risk with a sensible balance between practicality and risk mitigation, and feeling comfortable to use at all times of day
- **Inclusive** - allowing comfortable passage for people of all abilities and prioritising those for whom a barrier or diversion could compel them to take uncomfortable, risky or significantly more physically demanding alternatives
- **Practical** - providing realistic ways of enabling movement that minimise disruption for people
- **Legible** - being easily understood and unambiguous for all users

Designers and contractors should seek to re-provide facilities such as walkways or dedicated cycling facilities during roadworks to maintain routes with minimal disruption. They should also ensure those routes offer maximum comfort and comply with the Safety Code and Chapter 8.

It is essential that each proposal to undertake roadworks is given a specific assessment of risk by taking into account the existing road layout, and dedicated road user facilities and demand. Simply implementing a design that complies with the Safety Code is not always acceptable if the prevailing road network conditions are inappropriate for the selected solution.

For example, implementing a footway closure and a lengthy pedestrian diversion where there is a high footfall would not be desirable. This may result in pedestrians choosing to walk unrestricted in a live carriageway to navigate around the works, rather than follow an inconvenient and time-consuming diversion to cross the road.

Works promoters must be mindful they do not encourage unsafe road user behaviour such as pedestrians stepping into the carriageway, or cyclists accessing a works site by riding through cones, or deviating from a segregated cycle lane onto a busy footway.

The impact of works should primarily be mitigated through minimising the area of works while maintaining safety zones, and then seeking to provide the most convenient routes past or through the works areas. If a direct route cannot reasonably be maintained then robust measures should be put in place to segregate and guide road users as appropriate.

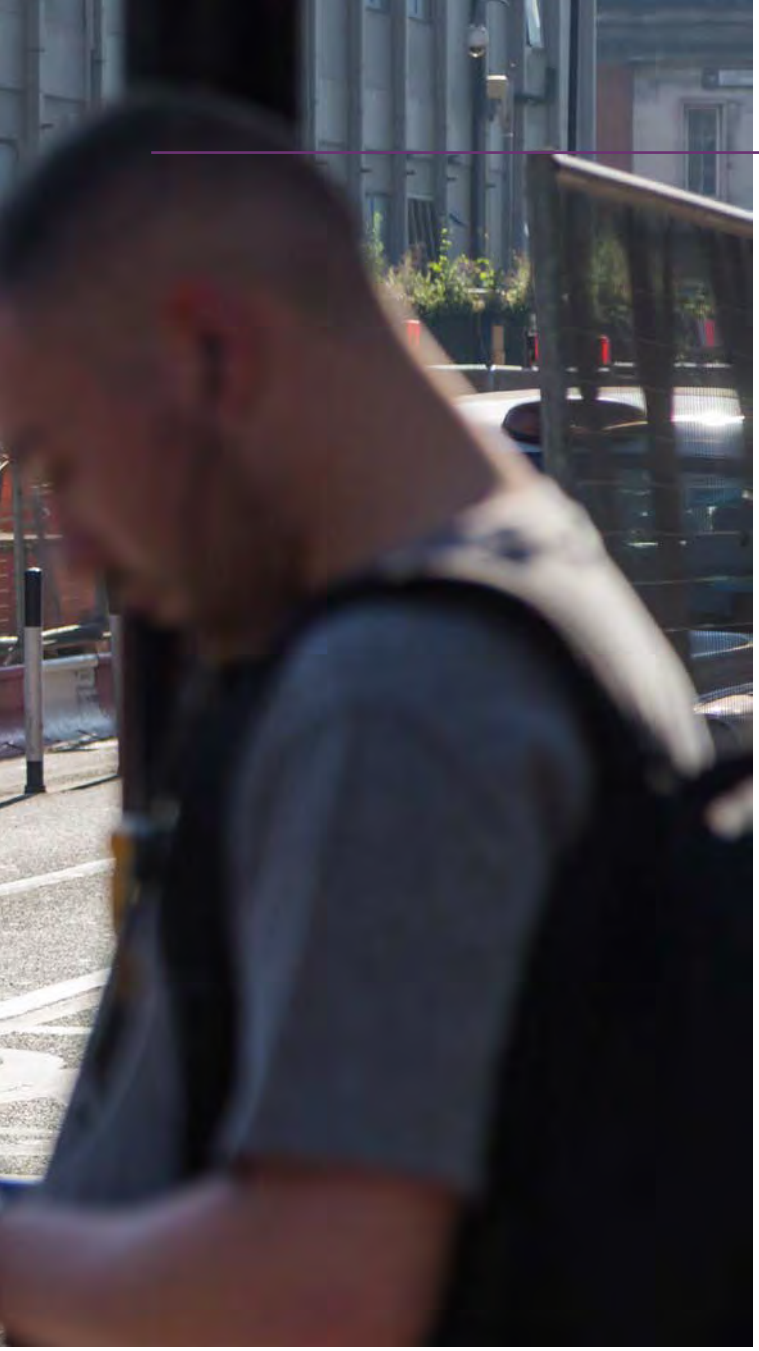
Routes past works sites must be suitable for all road users

Designers should be mindful that people may attempt to walk or cycle along routes with which they are familiar, even if their intended passage is made more difficult. This often applies when footways and crossing facilities are closed, but there remains a high demand from pedestrians; or when requiring cyclists to dismount when they could continue in the carriageway.

Signing should deliver information about the temporary conditions and should not solely be relied upon to direct behaviour. Consideration should be given to road users who are unable to read signs or comprehend English.

In addition to this handbook, stakeholders should also consider the following legislation:

4 https://www.legislation.gov.uk/ukpga/1974/37
5 http://www.hse.gov.uk/construction/cdm/2015/index.htm
6 http://www.legislation.gov.uk/uksi/1999/3242/contents/made
7 http://www.legislation.gov.uk/ukpga/1991/22/contents



- The Health and Safety at Work Act 1974, which ensures the safety of the public and employees at roadworks sites[4]
- Construction (Design and Management) Regulations 2015, which places legal duties on clients, principal designers and contractors to plan, co-ordinate and manage health and safety throughout all stages of a project[5]
- Management of Health and Safety at Work Regulations 1999, which establishes the need for work to be managed in a way that prevents accidents and ill health[6]

1.3 Designer's responsibilities

The recently released Chapter 8 (Part 3 U2.6) clarifies the roles, responsibilities and resulting risk-sharing of designers and authorities in planning works. It is for the designer to assess the site and produce designs to meet the requirements of Chapter 8 and the Safety Code, this guide and other nationally recognised industry publications.

TfL, under the New Roads and Street Works Act,[7] has a duty to co-ordinate and manage the impact of works on the TLRN and may request conditions relating to the works without taking on a designer's role before a permit is granted.

Each roadworks site will have variable characteristics to take into account, such as the geometry of the road network, hazards, and street furniture. It is essential that works promoters meticulously examine the nature of each site and do not just apply standard layouts that are not fit for purpose. Each option should be carefully considered and risk assessed.

Safe working methodologies and the design of the traffic management should, wherever possible, meet the needs of all road users, particularly the most vulnerable. If it is determined this is not viable, please contact the relevant TfL Assessor to look at alternative solutions.

BUS STOP
Westminster Stn
Westminster Pier
towards Waterloo
or Lambeth North
24 hour
148
211
UNDERGROUND

Chapter 2 – Pedestrians at roadworks

18 2.1 – Walking in London

18 2.2 – Design principles

20 2.3 – Inclusive access

24 2.4 – Footway ramps and boards

28 2.5 – Safe routing

30 2.6 – Footway closures

32 2.7 – Personal safety and security

34 2.8 – Pedestrian barrier selection

36 2.9 – Temporary pedestrian signing and information

38 2.10 – Working adjacent to or at permanent crossings

38 2.11 – Portable crossing facilities

2.1 Walking in London

A new Walking action plan[8] will encourage more Londoners to explore the city by foot. The plan, launched by London's Walking and Cycling Commissioner in July 2018, sets out how London will become a city where walking, for those that can, is the most obvious, enjoyable and attractive means of travel for all short trips. This forms parts of the Mayor's Transport Strategy, which applies a Heathy Streets Approach to the whole of London for the first time.

Research shows many people are put off walking due to concerns about road danger. The purpose of this guidance is to ensure that roadworks are not considered as one of the deterrents to walking. Roadworks, and the temporary access arrangements around them, must therefore be carefully managed and designed to ensure alternative routes are clear, safe, and convenient.

London has higher flows of pedestrians than would typically be found in many UK urban centres. Many pedestrians are visitors and tourists from overseas who are unfamiliar with UK highways, traffic behaviour and signing. Works promoters need to be mindful of the risks this can generate and develop a safe system of work through a robust risk assessment.

2.2 Design principles

TfL applies seven key principles when designing for pedestrians, which jointly promote improved road safety and support a more attractive and better quality walking experience. These principles can be equally applied to temporary situations, and traffic management designers should give each principle due consideration when formulating a pedestrian strategy at works sites.

8 http://content.tfl.gov.uk/mts-walking-action-plan.pdf

Seven key principles when designing for pedestrians

Principle	Indicator	How it applies to traffic management
Safety	Walking environments should be safe to use and feel safe to spend time in	Ensuring routes are clearly communicated by design or signing; appropriate for wheelchair users and people who are visually impaired; safe from works and traffic hazards
Comfort	Walking environments should allow unhindered movement for all pedestrians and meet demand	Ensuring routes have good surfaces; are well-lit and 'open' to avoid ambush points and a fear of personal security
Inclusivity	Walking environments should support all types of pedestrians to improve accessibility by creating inclusive streets and places	Ensuring barriers meet chapter 8 requirements: correctly erected; free from trip hazards; ramps should be stable and with shallow gradients; where crossings are closed alternative controlled crossings are supplied to enable pedestrians to cross safely with adequate time
Directness	Walking environments should not be obstructive, allowing easy and convenient routes to create accessible and connected places for all pedestrians	Diversion routes should be convenient and as close to desire lines as possible. Designers should design to expected behaviours, not intended behaviours
Legibility	Walking environments should be legible for all pedestrians to know intuitively what places are for and who has priority at any given time	Pedestrians using the road should be able to understand exactly what is happening and what is expected of them. Signs should be carefully selected to avoid clutter but benefit the road user. Navigation should be initiated by the design layout as far as possible and supplemented by signs where needed
Attractiveness	Walking environments should be inviting for pedestrians to go through or spend time in	Segregation of traffic from pedestrian routes, reducing vehicle speeds, keeping the site and its surrounds clean and tidy. Plant and materials should be stored safely and in an organised fashion. Barriers, signs and cones should be well maintained and kept orderly. Barriers should be continuous and consistent and all equipment washed and repaired or replaced if damaged
Connectivity	Walking environments should support key walking routes to meet pedestrian desire lines. Street quality should be consistent to ensure attractiveness is not in isolated areas to support the permeability of places	Ensuring routes and signing cater for expected pedestrian traffic including commuters, tourists and surges in demand from nearby special events

2.3 Inclusive access

The Safety Code states:
'You must take into account the needs of children, older people and disabled people, having particular regard for visually impaired people'

and you must provide:
'a safe route suitable for people using wheelchairs, mobility scooters, prams or pushchairs'

Temporary situations without proper planning and robust risk assessments can result in reduced comfort to the public and place people at risk. Disabled pedestrians and blind or partially sighted people are particularly vulnerable.

Unlike drivers of motorised vehicles who are trained and tested to use a vehicle on the highway, in many cases pedestrians will not have the same knowledge of traffic signs. They are also permitted to use all areas of a highway. Their unawareness must be considered to ensure design proposals are as naturally intuitive as possible.

In circumstances where pedestrian flows are high or space is constrained, sign placement needs very careful consideration to avoid creating footway pinch-points or obstacles.

It is also important to ensure that signs are not obscured by the volume of pedestrians using the highway, and that traffic management proposals clearly demonstrate how this will be achieved.

In practice, this means that an inclusive design approach must be used for temporary arrangements and that reasonable adjustments must be made to help disabled pedestrians travel easily.

Every pedestrian should be able to use the street independently and with confidence at any time of day. Reference is made again to the two fundamental statements from the Safety Code that must always be kept in mind:

'Will someone using the road or footway from any direction understand exactly what is happening and what is expected of them?'

'Have I made the site safe to work in and for the general public?'

Chapter 8 (Part 3 UI.4.2) also states:
'Underlying the design of temporary traffic management arrangements should be the aim to achieve a level of safety and road user comprehension no worse than the rate for non-works conditions…'

Site-specific risk assessments must also consider the needs of visually impaired and disabled people

High pedestrian flows need careful consideration when planning signing strategies

Pedestrian comfort should be maintained in relation to predicted flows. TfL's Pedestrian Comfort Guidance[9] highlights the need to devise suitable space and recommends a two-metre-wide footway to allow two wheelchairs to pass each other if space permits. The Pedestrian Comfort Guidance ideal minimum width in low-use areas is 1.5 metres. However, this will depend on the length of the works. With longer work areas, provision for a waiting space may be required.

To assist designers in allocating space for walking, the Pedestrian Comfort Guidance defines a scale ranging from A-E (comfortable to uncomfortable) for footway comfort levels. Where it is achievable the benchmark for comfort is ideally class B+, but no less than B-.

As the Safety Code clarifies, traffic management must take into account the needs of children, older people and people with disabilities, particularly those with sight impairments. It must provide a safe route that is also suitable for people with small children, pushchairs, wheelchairs and mobility scooters. These issues must also be considered in the context of the Equality Act 2010,[10] which places a legal obligation on public bodies to have due regard to the need to advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it.

9 http://content.tfl.gov.uk/pedestrian-comfort-guidance-technical-guide.pdf

10 https://www.gov.uk/guidance/equality-act-2010-guidance

Pedestrian comfort levels (PCL) for different localities

Scale	High street		Office and retail		Residential		Tourist attraction		Transport interchange	
	Peak	Ave of max	Peak	Ave of max	Peak	Ave of max	Peak	Ave of max	Peak	Ave of max
A	Comfortable		Comfortable		Comfortable		Comfortable		Comfortable	
B+										
B	Acceptable				Acceptable		Acceptable			
B-	At risk		Acceptable				At risk		Acceptable	
C+	Unacceptable / Uncomfortable				At risk		Unacceptable / Uncomfortable			
C-			At risk						At risk	
D					Unacceptable / Uncomfortable					
E										
	Peak and Average of maximum activity levels have similar guidance as people visiting retail areas stated they were particularly sensitive to crowding		The 'at risk' level is set at a lower PCL during the Average of maximum activity than peak flows. This is because of the greater number of single travellers and the short duration of maximum activity		The 'at risk' level is set at a lower PCL than peak flows in Residential Areas to reflect the short time this is likely to occur. A site visit to Residential sites is particularly important to check if there is school activity or a bus stand in the area		Peak and Average of maximum activity levels have similar guidance as people visiting tourist areas are likely to be particularly sensitive to crowding		The 'at risk' level is set at a lower PCL during the Average of maximum activity than peak flows. This because of the greater number of single travellers and the short duration of maximum activity	

2.4 Footway ramps and boards

The Safety Code gives advice on footway ramps and boards, however, in February 2018 the Highway Authority and Utilities Committee produced Advice Note (No. 2018/01), Specification and Operational Requirements for Footway Boards, Driveway Boards, Footway Ramps and Road Plates.[11]

This is a standard that facilitates wheelchairs and mobility scooters to transition over a kerb from footway to carriageway in temporary situations. The advice note gives supplementary guidance to the Safety Code, although it is acknowledged there are some variations when compared to the advice contained within the Safety Code. For clarity, TfL recognises and accepts the Highway Authority and Utilities Committee advice note (2018/01). Contractors are expected to demonstrate they are operating to this latest advice and the changes in standards to support site-based risk assessments by being less prescriptive to enable better design. They should not be seen as a lowering of standards.

Under the Equality Act 2010, works promoters are required to provide auxiliary aids or services to enable disabled people to continue to use a service or route, and to overcome physical features. It is not only people who are disabled who can find temporary situations more difficult to navigate - children, older people or those with injuries or luggage will also benefit.

When installing footway ramps to make kerbs accessible, special attention should be paid to ensuring the gradient is not too steep for wheelchair users to safely use. The gradient will be greatly influenced by the kerb height and it cannot be assumed that standard off-the-shelf products will meet the specification in all circumstances. Standard kerb heights range from 100mm to 140mm and specialised bus stop kerbs can be 220mm high.

The Department for Transport's (DfT) advice note on Inclusive Mobility[12] advises that ramps should ideally be 1:20 with a maximum length of 10 metres. Steeper ramps with a 1:12 gradient are acceptable at lengths less than two metres, and at 1:10 if no longer than 600mm.

11 http://hauc-uk.org.uk/publication/69/

12 https://www.gov.uk/government/publications/inclusive-mobility

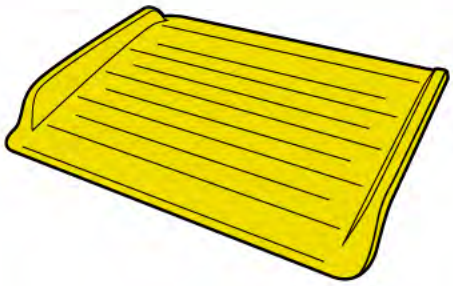
Temporary tarmac footway

Temporary plastic footway ramp

Designers will need to assess the height of the obstacle and therefore length of ramp to ascend/descend and the resulting carriageway intrusion/impact with turning space when required. Where a ramp protrudes into a live traffic lane, it is paramount the hazard to cyclists and motorists is clearly signed and guarded.

Duration of works and site attendance will also be fundamental to the design solution. For off-peak working and fully attended sites, a steeper ramp may be tolerable. However, for unattended works sites of extended duration, designers should ensure ramps are feasibly shallow.

Typical footway ramp



Kerb ramps help maintain accessibility for people who are disabled, or pushchair users

2.5 Safe routing

The Safety Code has a hierarchy for providing safe routes for pedestrians when works obstruct a footway, either in part or wholly, and makes it clear that a temporary walkway should only be provided in the carriageway if it is not possible to provide a safe pedestrian access on the footway.

However, when this process is applied to footways with high or very high pedestrian flows, which is typical of many central urban areas, designers will need to risk assess the impact of a total closure (or substantially restrictive partial closure) and the suitability of rerouting the pedestrian demand.

If crossings become overly congested, or the detour is significantly different to the pedestrian desire line, it is probable that a number of pedestrians may opt to ignore the signed instructions and walk outside barriers into the live carriageway adjacent to the closed footway. Mitigation will be required, by advanced planning (checking schedules of music/sporting events), modifying the traffic management at peak flows or supplying marshals.

It is a requirement of the Safety Code that someone on a footway approaching from any direction will understand exactly what is happening and what is expected of them. A pedestrian route should be intuitive through design and layout and not be confusing. Signing, which could include non-traffic signs, may assist with destination routing and reduce confusion.

A robust traffic management design should cater for expected public behaviour and not expect road users to behave as desired in a theoretical circumstance. Therefore it will frequently be the case in these situations that the safest solution to manage pedestrians is to provide a walkway of sufficient width in the carriageway. This will often retain pedestrians closest to their original desire line.

At temporary works, where there is a risk of pedestrians not understanding or disregarding signing to cross the road at the designated crossing points, pedestrian barriers should be considered to prevent crossing at less safe locations.

Some locations are subject to crowding, such as outside stadiums, concert venues and major transport hubs. The type of barrier used in these situations should be suitable for crowd management and safe for emergency evacuations of adjacent premises and facilities.

Supplementary non-traffic destination signs

Poor sign usage and clutter

2.6 Footway closures

In the majority of cases, a legal notice under the Highways Act is not required to formally close a footway if an adjacent pedestrian route is maintained, or an alternative pedestrian route is provided for the same section of highway. However, a legal notice will be required for that section of footway if:

- A pedestrian route cannot be maintained
- A subway is to be closed
- A footbridge is to be closed

This Highways Act notice is separate to any permit approvals that may be required for the works. In all situations, an alternative diversion route needs to be identified. The route must be as close to the original desire line as possible, accessible and considered reasonable for pedestrians with mobility impairments. By reasonable, it means the route has been successfully scrutinised with due regard to the footway surface condition and that it is free from slip and trip hazards.

Where the route is over a verge then it should be surfaced with a temporary covering or compacted granular material so that it is suitable for all pedestrians with special consideration for wheelchair users, visually impaired people and those with restricted mobility. Access to all affected properties must be maintained and assistance provided, where necessary, for pedestrians who may require it.

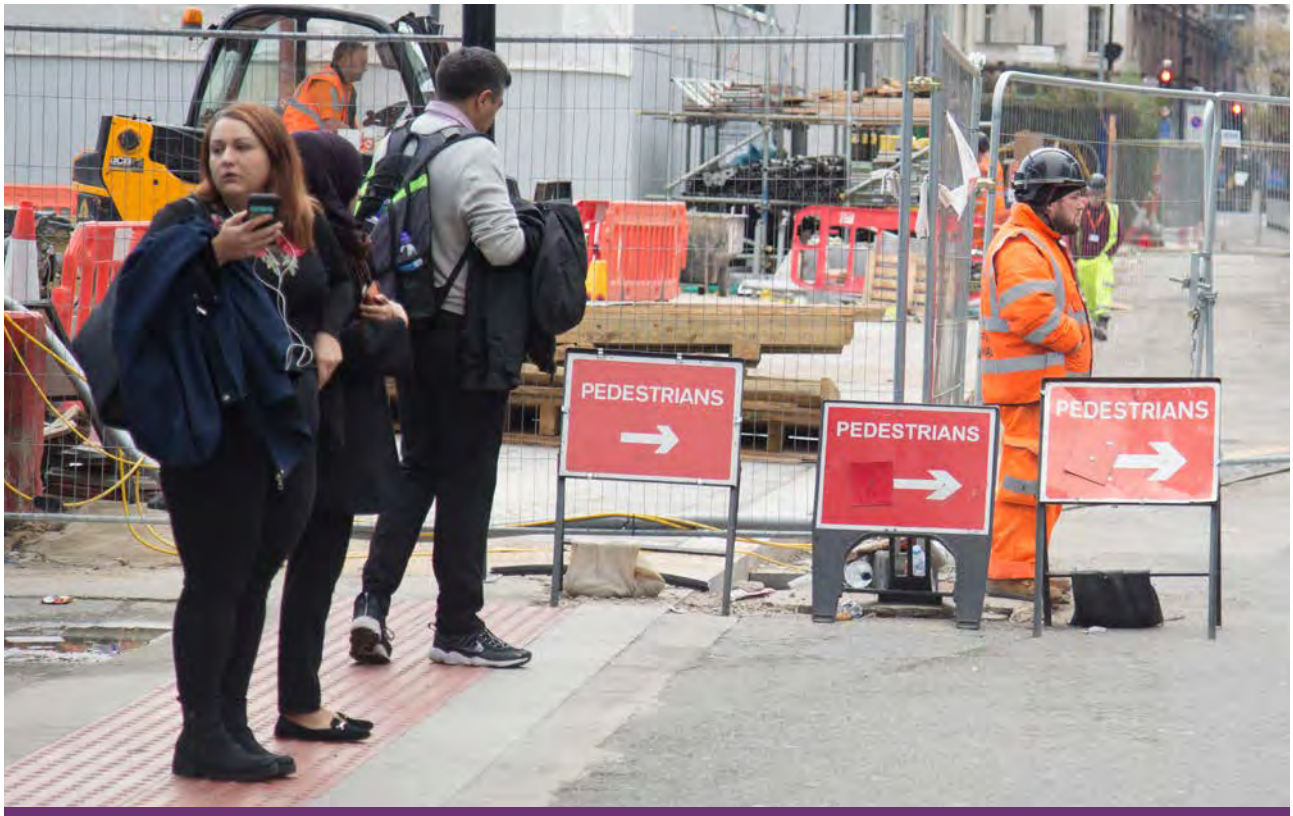
If a footway closure is necessary despite the likelihood of causing significant impact, marshals should be available in key locations to guide and assist pedestrians. Significant impact could be determined by a number of factors, including:

- High pedestrian flows
- Lengthy diversions likely to cause hardship to pedestrians with restricted mobility
- More complex diversions likely to cause confusion to visually impaired people

Further mitigation measures should be considered to lessen the impact of footway closures. Temporary pedestrian crossing systems such as portable traffic signals can avoid lengthy diversions and provide a significant local benefit, particularly in areas frequented by shoppers, commuters, tourists and schoolchildren.

When pedestrians are diverted in close proximity to cycle tracks and lanes, extra steps may need to be taken to avoid conflict between cyclists and pedestrians. Examples include longitudinal barriers which can prevent pedestrians walking in to the carriageway, signs warning pedestrians to look in the correct direction, and monitoring pedestrian activity once the site has been installed to see if expected behaviour matches actual behaviour.

Closed footway with temporary walkway in carriageway



Marshals can help maintain a safe system of work and assist pedestrians

2.7 Personal safety and security

Section 17 of the Crime and Disorder Act 1998[13] places an obligation on local authorities and the Mayor to do all they reasonably can to prevent crime, disorder and behaviour affecting the local environment.

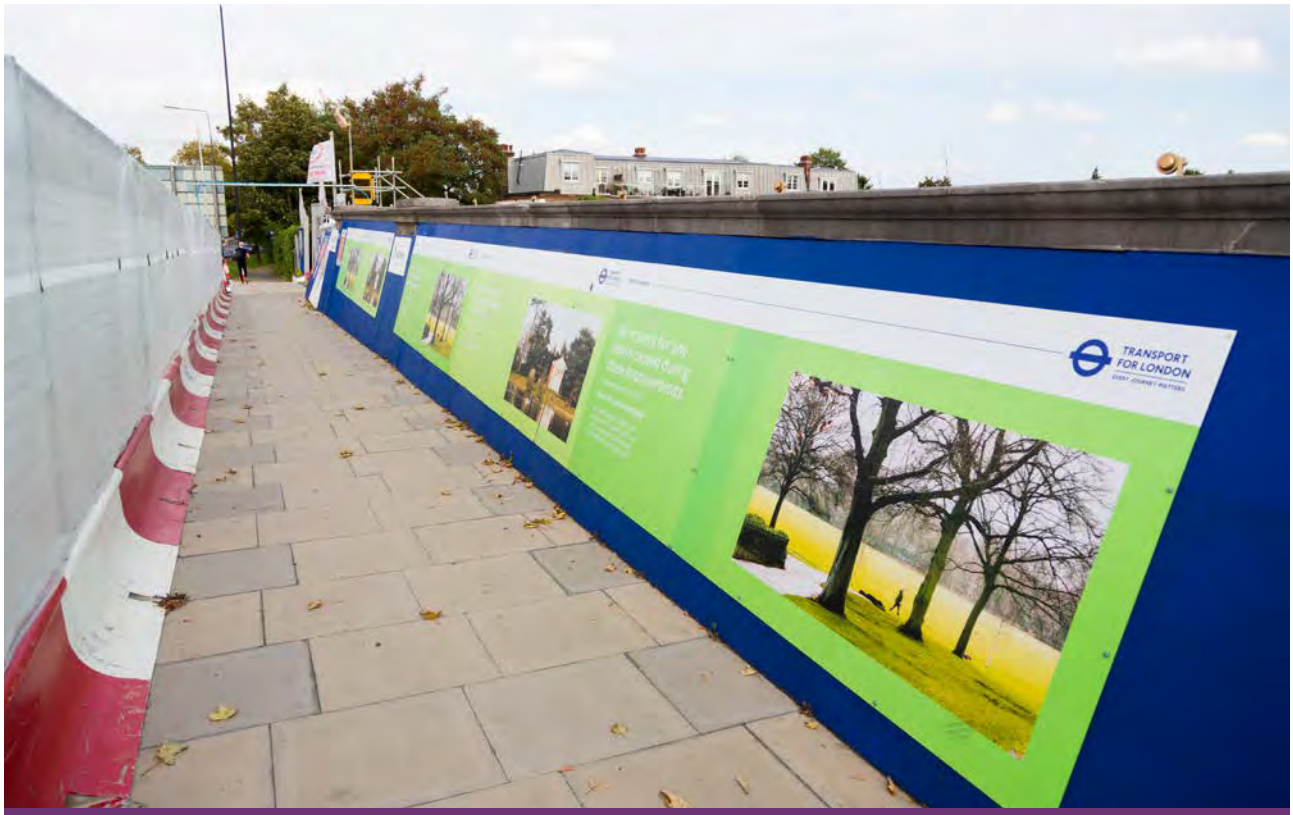
Pedestrian provision should feel safe and avoid creating environments that could lead to crime or antisocial behaviour. TfL has a duty to give due regard to crime and disorder and be satisfied that traffic management proposals have been assessed for security and personal safety, as well as the basic amenity required by the Safety Code. Consequently, designers should consider potential ambush points caused by hoarding, fencing, hidden corners or where a diversion route is implemented away from the public highway.

When rerouting pedestrians with high barriers or hoarding, street lighting needs to be sufficient to illuminate the footway surface to prevent slips and trips and, critically, to avoid casting shadows and dark ambush points which may facilitate crime. Barriers and hoarding should be chamfered, splayed and/or angled where necessary to prevent hiding places, which may encourage antisocial conduct.

Regular site inspections for general traffic management maintenance should also include inspecting areas where suspect packages could be concealed. All contractors and members of the public are reminded to remain alert to the danger of terrorism and report any suspicious activity to the police immediately on 999 or the anti-terrorist hotline: 0800 789 321.

Standard maintenance of works sites should also include regular inspections to ensure tidiness, with any accumulating litter properly disposed of within the confines. Public-facing boundaries of the site barriers in situ for prolonged periods can often trap litter, which is both unsightly and potentially an obstacle to pedestrians.

13 https://www.legislation.gov.uk/ukpga/1998/37/contents



Good example of site hoarding

Poor hoarding creating dark and foreboding footway

2.8 Pedestrian barrier selection

All pedestrian barrier systems should comply with the following standards:

- BS 8442:2015
  Miscellaneous road traffic signs and devices
- BSENI2899-I:2007
  Fixed, vertical road traffic signs
- The Safety Code
- Chapter 8
- TSRGD

Deviations from the above standards should only be in exceptional circumstances following a site-specific risk assessment that identifies there is a safer and appropriate alternative. Works promoters, designers and contractors must be aware that metal crowd control barriers or similar products are unlikely to be suitable as they do not comply with the national standards above.

Works promoters should be mindful of the differences between traffic and pedestrian barriers as the products often appear very similar.

Where footways are subject to high pedestrian flows/crowding, or where high winds could be prevalent, barrier systems should be reinforced with ballast in accordance with manufacturers' guidelines.

Alternatively, more suitably robust and heavy duty barriers should be provided to ensure stability under extraordinary conditions.

In exceptional or special circumstances a viable pedestrian route may be necessary on a dual carriageway or high-speed road. In these circumstances, consideration should be given to providing protection with a tested and approved vehicle restraint system. For all times of the day the design of the walkway must consider disabled pedestrians, particularly those with visual impairments.

It is not acceptable to use tape such as barrier or hazard warning tape, at the perimeter of a works site, or a rope/chain in place of an approved barrier system as it does not comply with the national standard.

Low-trip hazard barrier feet are recommended to better facilitate pedestrians with disabilities as they remove trip hazards and give greater visual awareness of potential trip hazards and add more space for comfort.

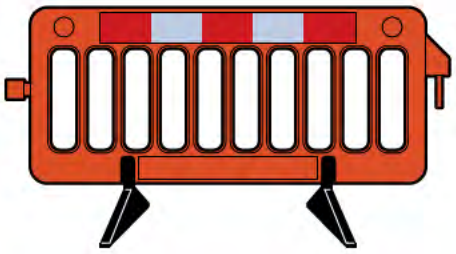
A designer must consider the site from a child's perspective. Children do not perceive danger in the same way as adults and they can often see works sites as fun places to enter out of curiosity. Where children can be reasonably expected to use the footway, it is unlikely that modular post- and plank-style barriers, as shown in the image on the right, will offer a sufficient barrier to children who could easily climb through the large gaps.

This is especially important for works near schools, parks, residential estates and similar environments where children may be unsupervised by adults.

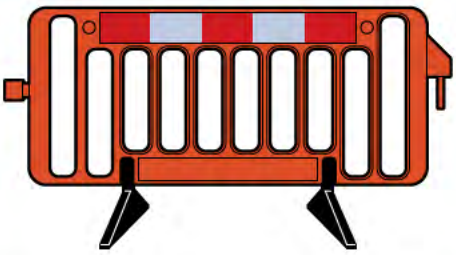
Unless a site-specific risk assessment shows otherwise, typical mesh site fencing, which is not compliant with the standards, should not ordinarily be used to secure site boundaries on the footway in place of pedestrian barrier systems compliant with Chapter 8 and the Safety Code. There are proprietary barriers systems on the market that afford the security of these fencing systems and that also comply with the requirements defined above.

Barrier systems with large gaps can easily be breached by children

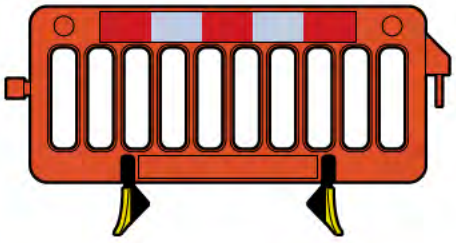
Traffic and pedestrian barriers



Pedestrian barrier has a tapping rail at its base for visually impaired people to follow with a walking cane



Traffic barrier without a tapping rail can be deployed in areas away from pedestrian routes



Pedestrian barrier with low-profile feet can reduce obstructive widths and tripping hazards

Example of supplementary information signs for pedestrians

2.9 Temporary pedestrian signing and information

Temporary pedestrian traffic signs that are not already prescribed should be white on red in accordance with the specifications detailed in Schedule 13 Part 9 of the TSRGD.

Where pedestrians are required to be redirected and diverted around the works area, the alternative route should be sensibly apparent to all pedestrians, especially those who are visually impaired – this means providing a continuous tapping rail. Therefore, signs alone must not be relied upon.

However, if a pedestrian route is visually less obvious, temporary pedestrian traffic signs can help provide an improved understanding of where to go. These traffic signs can be complemented by others such as Legible London wayfinding and map-based signs, which help pedestrians orientate themselves to their intended route or destination. Throughout, pedestrian behaviour should be regularly monitored by those undertaking the works, with assistance offered to people who need it.

If the shortest and most direct route is not always accessible to visually impaired pedestrians, an alternative route should also be provided. The constraints of the shorter route should be made clear to pedestrians: for example, if it is not suitable for wheelchair users.

Bad practice: confusing and non-compliant signs, with non-standard wording and sign clutter

Good practice: pedestrian sign communicating access to businesses is maintained

2.10 Working adjacent to or at permanent crossings

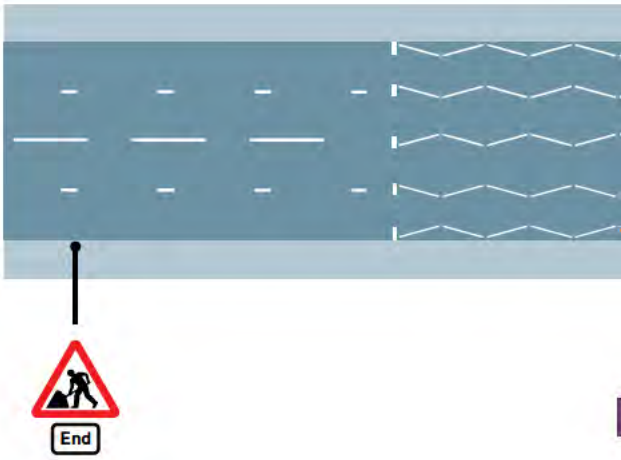
Where works encroach onto a crossing area or restrict a crossing point on the footway, but the crossing has space to remain open, barriers must be used to guide pedestrians and prevent the overall route length from being increased to more than the permanent arrangement. This will ensure traffic signal timings remain unaffected. If the overall crossing distance at a signalised crossing changes, TfL must be informed in order to alter signal timings to ensure they are safe.

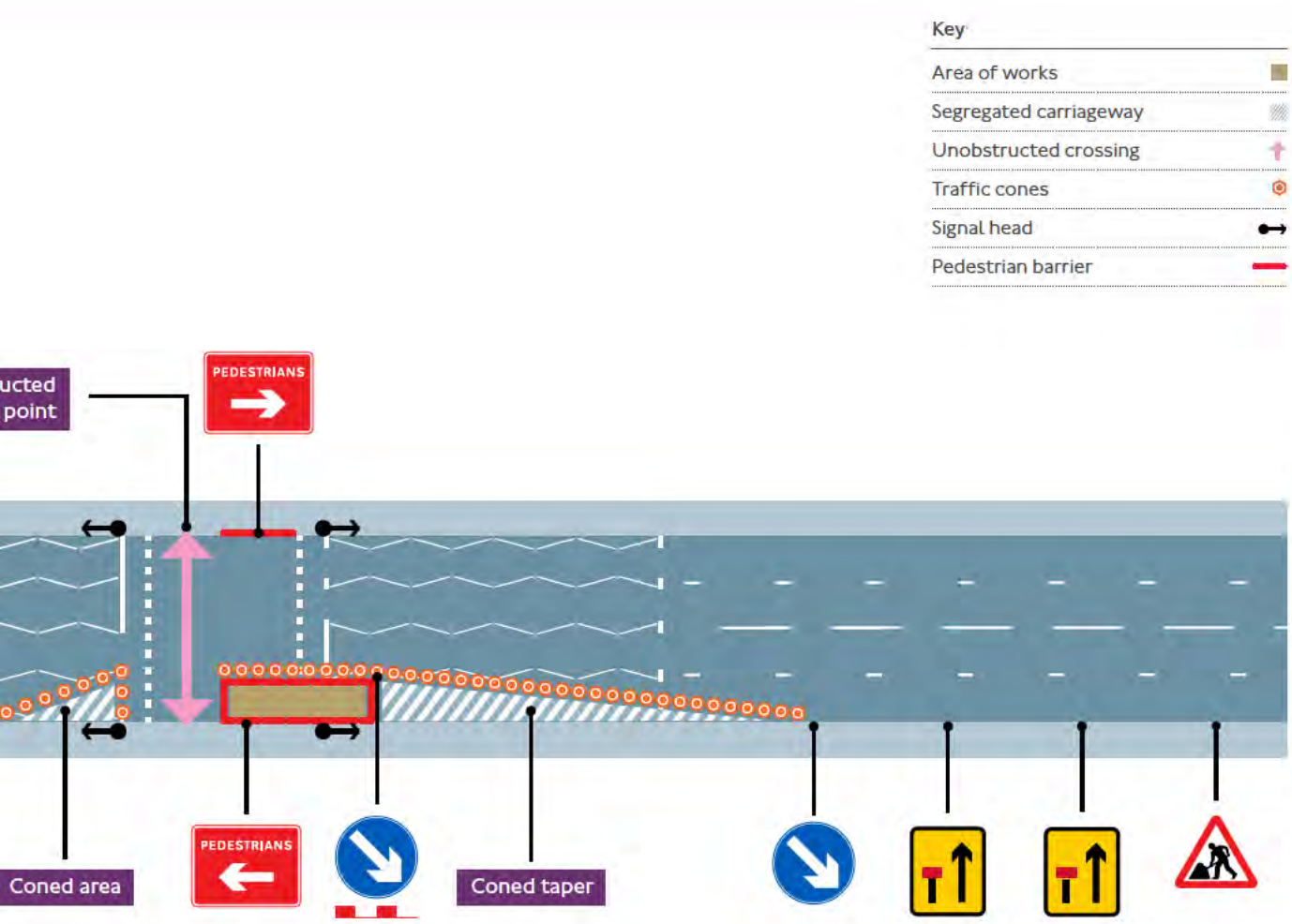
2.11 Portable crossing facilities

To minimise congestion and pollution from traffic, the setting for pedestrian crossing phases should be carefully considered and subsequently monitored. Manual control by operatives may be required for an 'all red' phase for vehicles when there are high numbers of pedestrians at peak times or on event days if the site is near an entertainment or sporting venue.

Where permanent signalised crossing facilities are required to be switched out to facilitate works, the designer should provide a safe temporary crossing for pedestrians. TfL expects temporary crossing facilities to meet pedestrian desire lines. If this is not practical, a risk assessment needs to identify alternative provision.

Partially obscured crossing




Key
Area of works
Segregated carriageway
Unobstructed crossing
Traffic cones
Signal head
Pedestrian barrier
ucted point
PEDESTRIANS
PEDESTRIANS
Coned area
Coned taper

CYCLE SUPERHIGHWAY CS3
Westminster 9 mins
Blackfriars CS6 1 min
SLOW
SLOW

Chapter 3 – Cyclists at roadworks

42 3.1 – Designing for cyclists at roadworks

43 3.2 – General principles

46 3.3 – Maintaining access for cycling

54 3.4 – Temporary signing for cyclists

58 3.5 – Shared-use footways

62 3.6 – Road closures and the impact on cycling

68 3.7 – Lane widths and temporary speed limit reduction

73 3.8 – Barriers and cyclists

73 3.9 – Surface quality

74 3.10 – Cycle track ramps and boards

77 3.11 – Temporary traffic signals

78 3.12 – Works on the carriageway without cycle lanes

80 3.13 – Works on the carriageway with cycle lanes

80 3.14 – Cycle lane closure

82 3.15 – Works on cycle tracks

3.1 Designing for cyclists at roadworks

London's road network landscape is changing, with the introduction of more dedicated facilities to serve the increased number of cyclists. This has resulted in different types of cycles using the network, including those used as mobility aids and those for transporting goods or people. Current national guidance does not sufficiently cover recent developments in road user provisions such as segregated cycle lanes. This chapter expands on the currently published national guidance by setting out other considerations that should also be given to the needs of cyclists.

The Safety Code highlights the requirement for traffic management to take into account the needs of disabled and older people in the planning and execution of works. Not all cyclists can easily dismount, particularly when the cycle is used as a mobility aid. Some types of cycle are wider and longer than others (such as cargo/child-carrying cycles and tricycles), and some users are particularly sensitive to poor surface conditions.

In addition to national standards, this chapter should also be read in conjunction with the following documents to provide a framework for considering temporary traffic management for cyclists during street works and roadworks.

- Traffic Advisory Leaflet 15/99 Cyclists at Roadworks[14]
- The London Cycle Design Standards[15]

The London Cycle Design Standards provides useful information such as defining flow categories for cyclists.

Peak hour flow categories for cyclists

Peak hour flow category	One-way lane/track	Two-way track
Very low	<100	<100
Low	100-200	100-300
Medium	200-800	300-1,000
High	800-1,200	1,000-1,500
Very high	1,200+	1,500+

14 http://www.ukroads.org/webfiles/tal 15-99 cyclists at roadworks.pdf

15 https://tfl.gov.uk/corporate/publications-and-reports/streets-toolkit#on-this-page-2

3.2 General principles

The Safety Code states 'You should consider whether access on the carriageway can be preserved for cyclists, even if it needs to be closed to motor vehicles'.

Traffic management designs should retain or re-provide cycle facilities unless there are insurmountable barriers to doing so. This includes:

- Looking to preserve cycle access, even when the carriageway is closed to motor vehicles
- Preserving or introducing exemptions, contraflows and cycle gaps to maintain cycle accessibility during works
- Creating temporary dedicated cycle facilities where necessary

For designated cycle routes or streets with high cycle flows, a level of service reasonably equivalent to the permanent arrangement should be maintained. Where all or part of the highway is closed on such streets, alternative suitable quality provision should be found for cyclists.

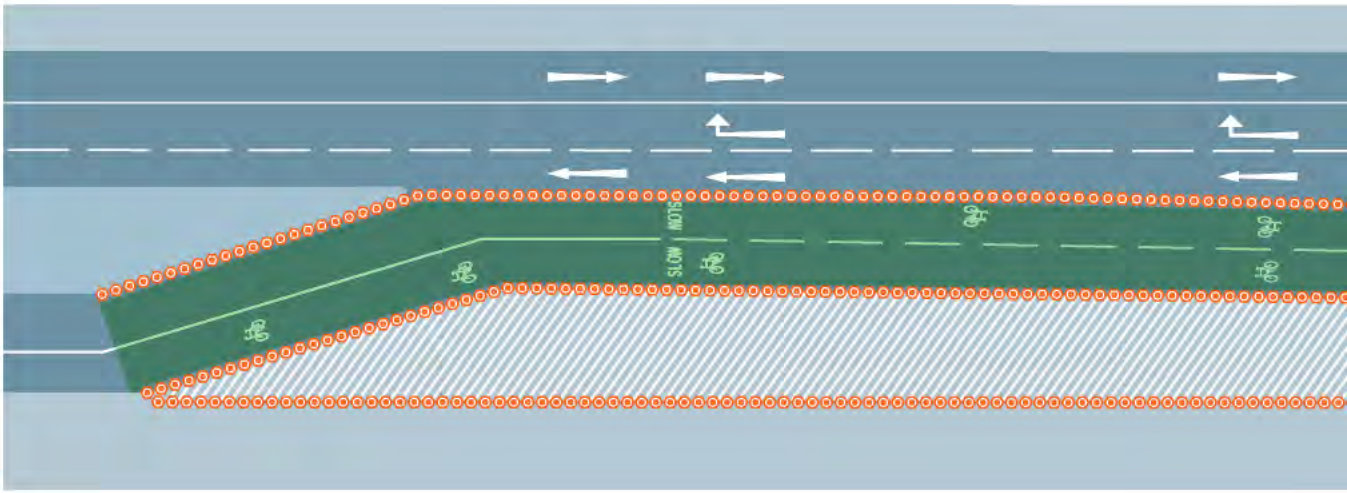
Where shared cycle facilities are temporarily closed, re-providing a similar standard facility may be challenging, but temporary facilities should be designed to work for all road users. Alternative cyclist provisions may be re-established by sharing general traffic lanes as part of temporary traffic management, but only where suitable lane widths exist, and only where speeds are appropriate for the purposes of sharing.

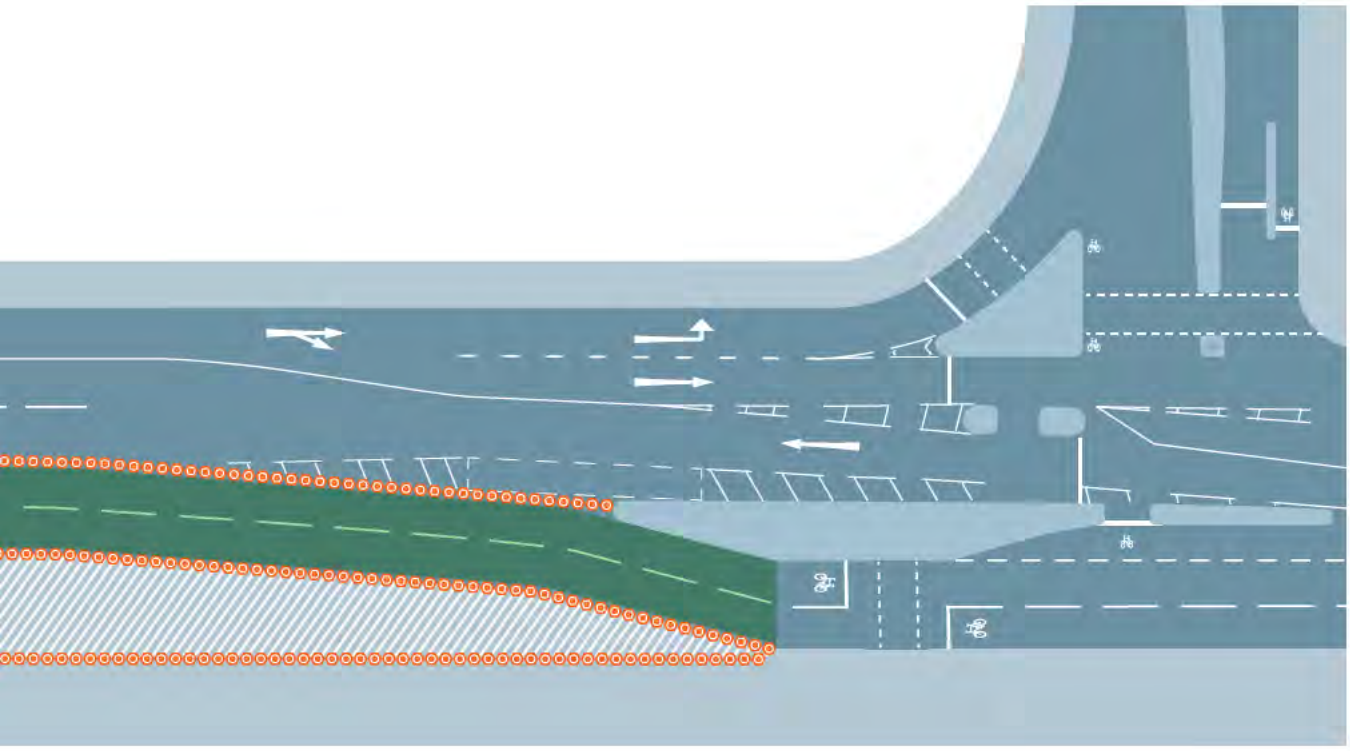
Footways may only reasonably be shared between pedestrians and cyclists if sufficient width is available and if traffic management has been designed to encourage courteous and responsible behaviour towards more vulnerable pedestrians.

Road closures impacting cyclists need careful consideration. Diverting cyclists onto other roads should only be necessary where it is not reasonably practicable to preserve cycle access. Diversions, if required, must not be unnecessarily long and should avoid mixing cyclists with heavy goods vehicles.

Rerouting segregated cycle lane to maintain a dedicated cycle facility

Key	
Temporarily rerouted cycle lane	
Works area	
Traffic cones	





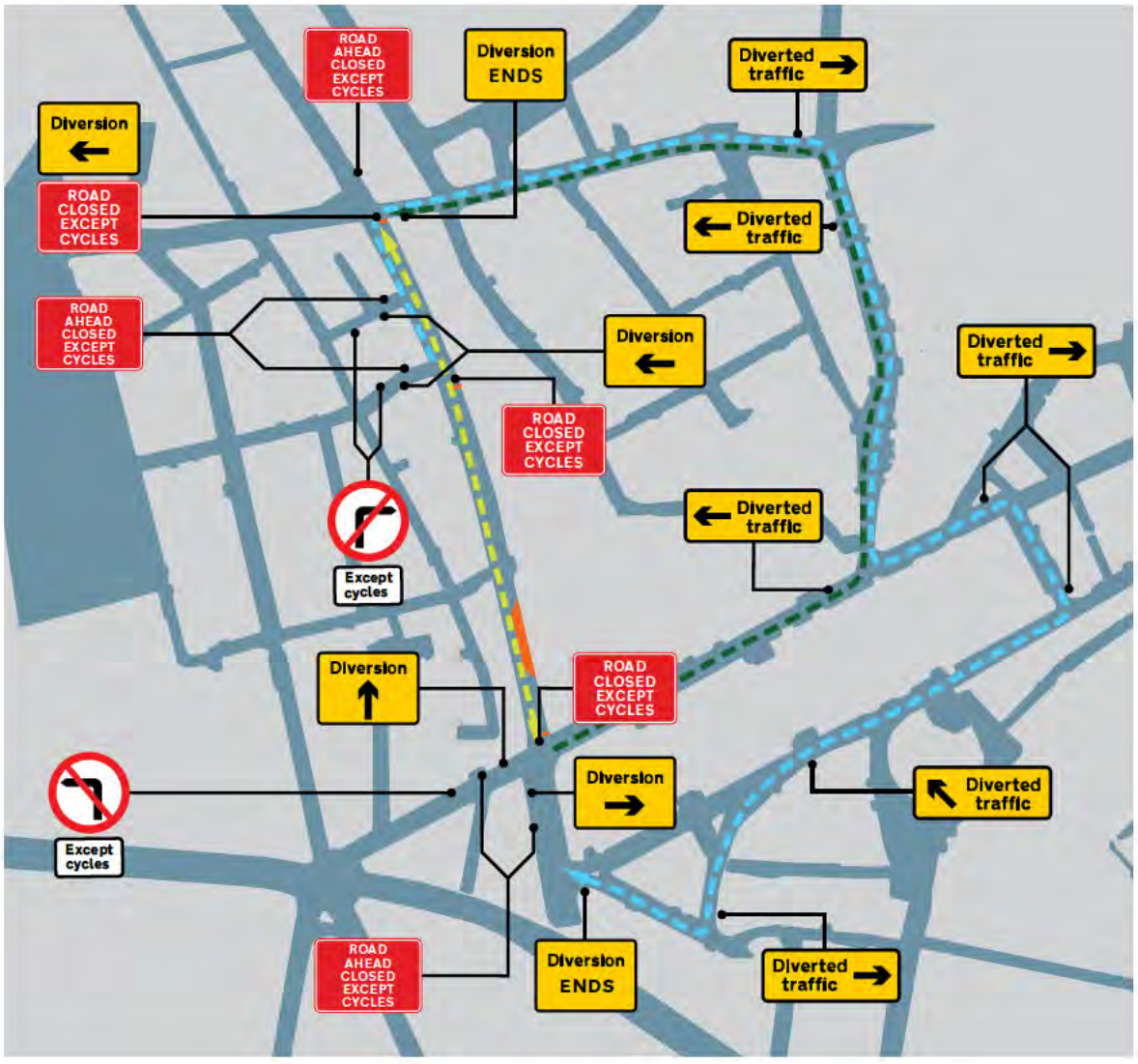
3.3 Maintaining access for cycling

Construction activities and temporary works impact all road users, but it is vital the needs of cyclists should be given appropriate consideration, particularly when considering lane widths and diversion routes.

Where it may be necessary to close the road for motor vehicles, wherever possible diversions should be avoided and access maintained for cyclists in both directions throughout the period of roadworks. Cyclists are unlikely to accept lengthy detours or long delays. In such conditions, some cyclists may attempt to access a road lane used by traffic travelling in the opposite direction or mount footways.

Asking cyclists to dismount should be avoided if access can be maintained

Maintaining cycle provisions through a road closed to motor vehicles



Key

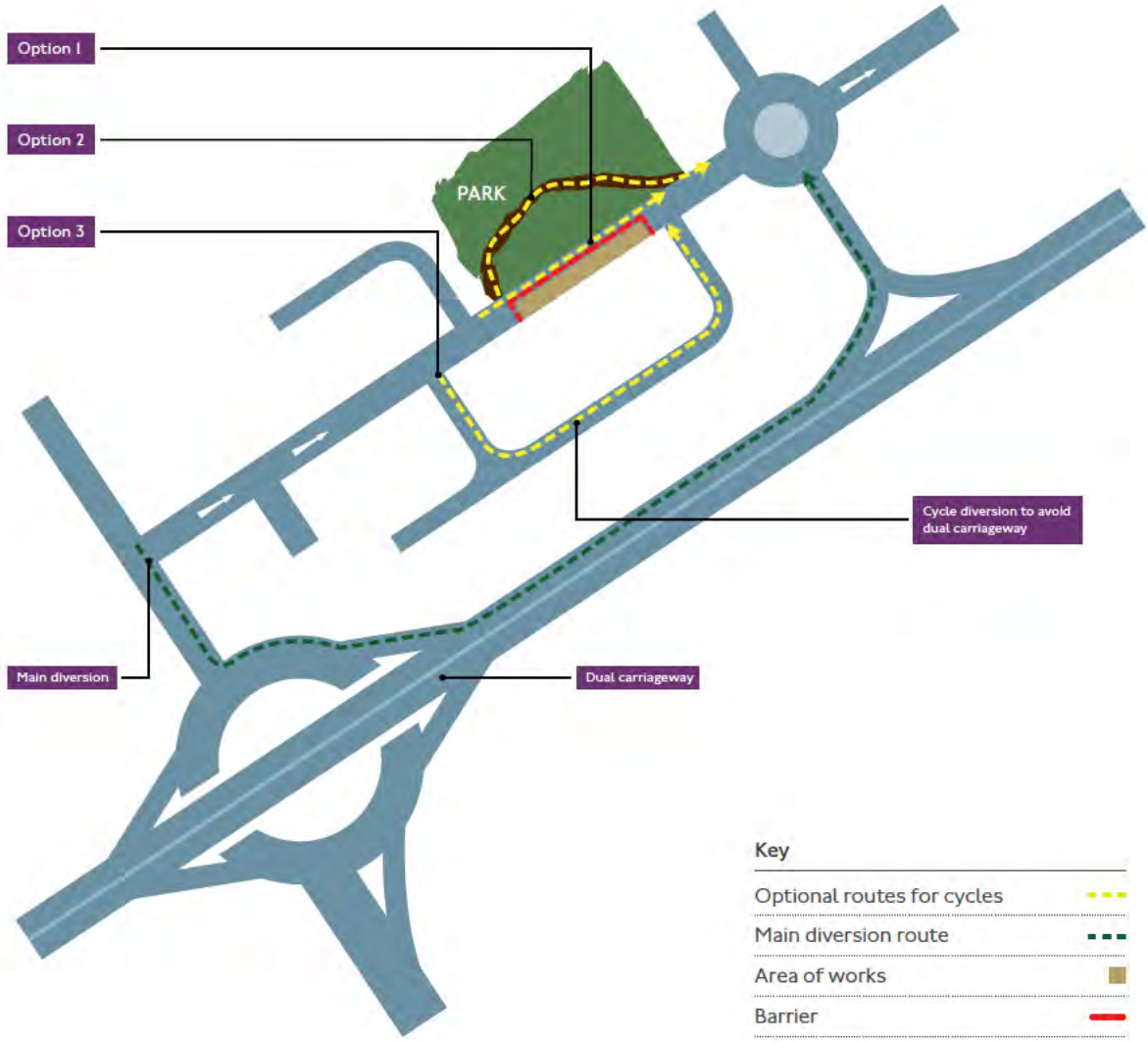
Area of works	
Cycle route	
Car route	

Options for maintaining cycling provision

Alternatively, closures can be avoided by providing a temporary segregated contraflow cycle lane, shared path or route away from the carriageway. This kind of provision will be particularly desirable to avoid sending cycles onto a diversion that includes dual carriageways. Please see page 62 (3.6 Road closures and the impact on cycling) for further guidance.

Cyclists are generally more at risk through roadworks because of risks associated with obscured sight lines, merging with mainstream traffic, and pinch-points. In such scenarios, limiting the length of the site should be considered. For example, if a scheme is to be constructed over a length of 100 metres and a dedicated cycle facility or traffic lanes wider than 4 metres cannot be provided, then the traffic management should be restricted to shorter sections to reduce the exposure of cyclists travelling through more vulnerable road conditions over a greater distance. Where there is significant cycle demand and the length of the works site cannot be adapted, alternative measures should be considered, such as provision of an off-road cycling facility, or a general vehicular traffic diversion while retaining dedicated cycle facilities through the works site.

Possible cycle routing options to avoid dual carriageway diversions



Key

- Optional routes for cycles
- Main diversion route
- Area of works
- Barrier

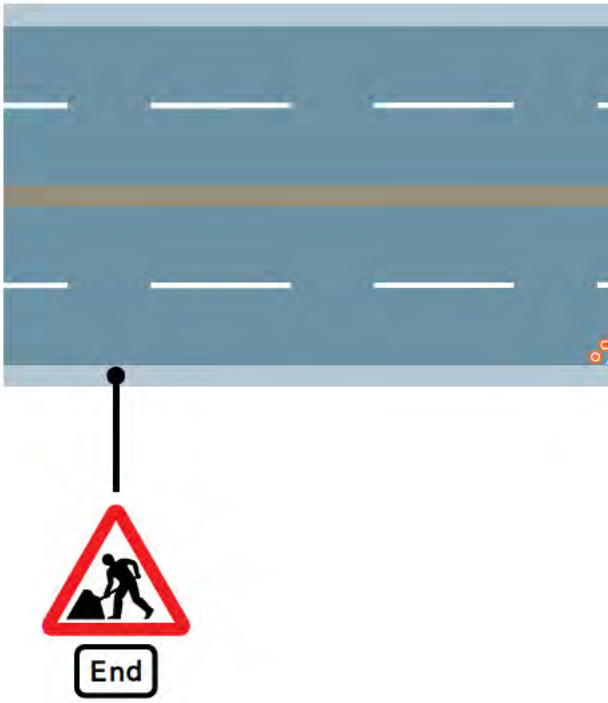
Option 1:
Via segregated lane / except cycles road closure

Option 2
Via route away from carriageway

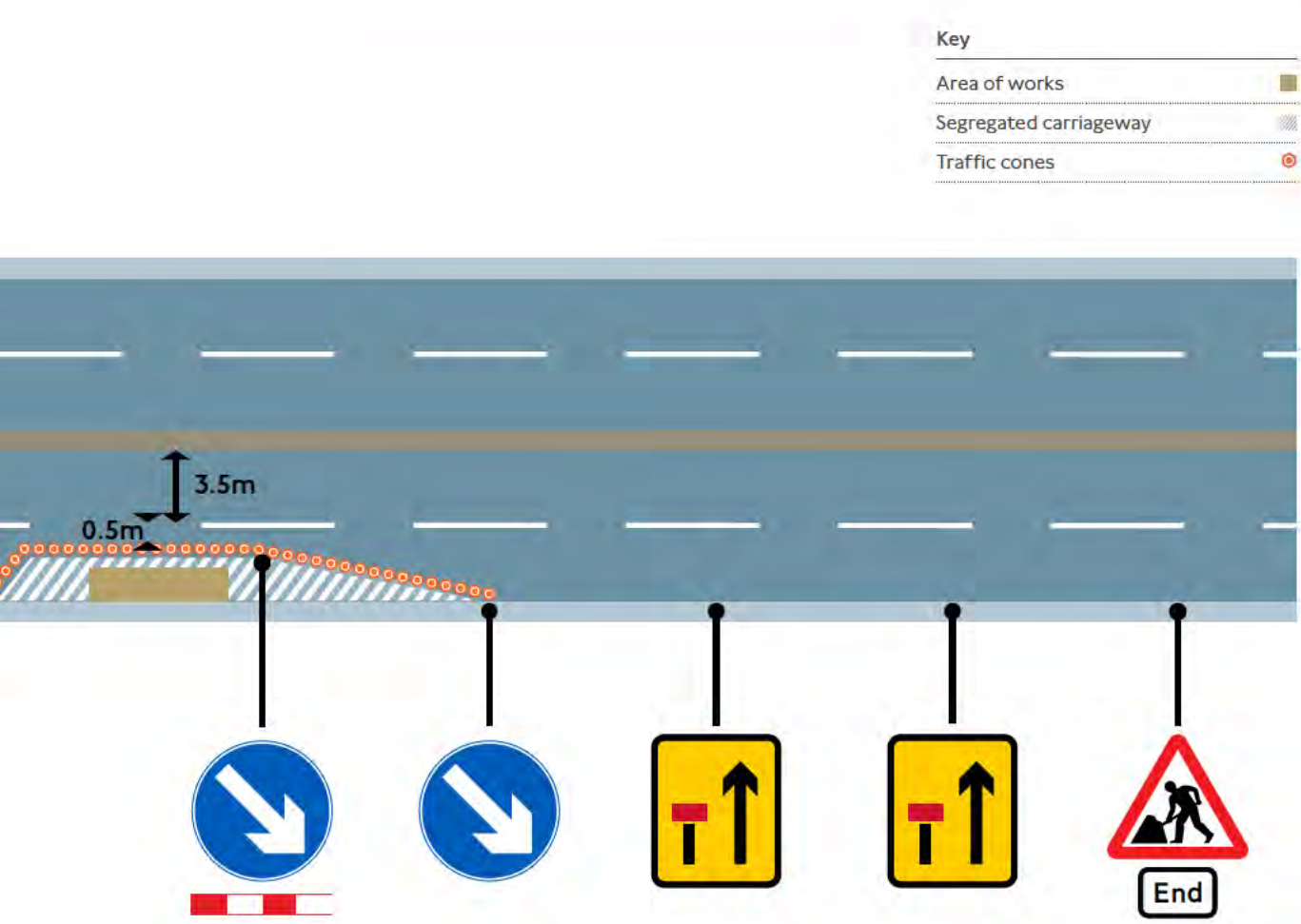
Option 3
Via local road diversion

Where site conditions allow, the cone line or outer edge of a full lane closure can often be narrowed/pulled back from the carriageway lane markings to create the preferred width to accommodate cycling. This approach is especially important for sites immediately on the approach to signalised junctions, where cyclists often filter through queuing vehicles in order to reach the stop/give way line.

Minimising the width of a full lane closure to



o allow space for cyclists



There are a number of potential hazards or impacts that must be considered when designing 'cycle friendly' temporary traffic management on the carriageway, including:

Impact

How will the traffic be managed where a cycle lane is removed or rerouted?

Can cycles enter the works site through widely spaced cones or other permeable traffic management segregation measures?

Can a cycle contraflow be maintained where a directional closure without cyclist exemption is proposed?

Has consideration been given to cycle-specific diversion routes separate to the motor vehicle diversion routes?

Is the traffic management for a full road closure without cyclist exemption robust enough to prevent cyclists breaching the blockade?

Will a cycling dismount area be safe and clear of flowing traffic?

How will cyclists who are less able to walk manage on foot if required to dismount?

Signing and guarding

Is it necessary to use 'cyclists dismount' signs if an alternative route is available, eg in the carriageway?

What measures have been considered to avoid conflicts between cyclists and pedestrians (including short, temporary route alterations or sharing space)?

Are existing and temporary cycle lanes free from obstructions, including roadworks signing?

Geometry

Will the traffic management proposals obstruct cyclist sight lines?

Have pinch-points been identified that may 'squeeze' cyclists?

Where there is a single lane, will a challenging steep incline of the road cause cyclists to unreasonably compromise vehicle movement?

Surface condition

Has the condition of the road surface been assessed to address any imperfections such as raised ironwork, potholes and surface debris that might cause skidding?

Are all proposed temporary measures safe for cyclists, including raised cable protectors, hoses or road plates?

3.4 Temporary signing for cyclists

All temporary signs at roadworks must meet the requirements of the TSRGD. Further guidance is supplied in the DfT Traffic Advisory Leaflet 01/14[16] (Temporary white on red signs at roadworks).

Designers must use prescribed signs where they exist before they design other temporary signs that are covered in Schedule 13 Part 9 of the TSRGD 2016. Where designers need to create temporary signs for cyclists under this provision they must be white text on a red background. If the sign contains a more general message then it will be black text on a yellow background.

As Schedule 13 Part 9 provision of the TSRGD allows designers a more flexible approach to producing signs, there is scope to use different terminology to describe a cycle facility, ie, cycle lane, cycle track, cycle route and cycle path. These terms do not mean the same thing, and are frequently misused. This inconsistent messaging creates road user confusion, especially when passing through multiple works areas.

In order to promote consistency in terminology when designing signing the following table should be used to define cycle provisions:

Cycle lane	Part of a carriageway marked with a formal lane marking and allocated for use by cyclists. Cycle lanes can either be advisory ('dashed') or mandatory ('solid')
Cycle track	A right of way for pedal cycles with or without right of way on foot. It can either be: • Part of a public highway adjacent to a carriageway, or • A separate highway in its own right Pedestrians and cyclists may be separated by physical barriers, by level, or by markings only
Cycle route	A continuous, linear series of links and junctions, signed and/or branded as a coherent facility from A to B; usually planned and delivered as a single facility or in identified phases. For roadworks that are local in nature, signing should make reference to cycle lanes or tracks as appropriate. Only when a substantial section of a defined route is diverted on to an alternative road would reference be made to a route
Cycle path	A non-specific term and should not be used on road traffic signs

16 https://www.gov.uk/government/publications/temporary-white-on-red-signs-at-road-works

Bad practice: designers must ensure they use the right signs and choose the right colours to ensure traffic management is compliant and consistent

Good practice: when signs are correct and appropriately used road users are more likely to comply with the instructions

Temporary routes and other facilities for the exclusive use of cyclists should be clearly signed well in advance of the roadworks.

Only when all other reasonable possibilities have been exhausted is it acceptable for a works promoter to utilise 'Cyclists dismount and use footway' signs. In the vast majority of cases, the network can be reconfigured to retain space for cycling and the use of this sign is very much a last resort option.

Where the 'dismount' signs are unavoidable, works promoters should consider the impact of cyclists who wilfully ignore the signed instruction and potentially compromise pedestrian safety. They should equally be mindful that not all cyclists can easily dismount and proceed on foot, especially those using cycles as mobility aids.

Forcing people with disabilities to proceed on foot or assisting them to dismount could cause accidental injury to either party. In these scenarios, the provision of marshals on site can assist disabled cyclists to find the best possible solution to navigate around the works without having to dismount. It is recommended marshals receive disability equality training to assist in these situations.

Alternative sign mounting reduces trip hazard and sign maintenance

Where a cycle lane is closed within the carriageway and cycles are directed to join the traffic by blue and white arrows and cone tapers, there is no requirement for additional 'cycle lane closed' or 'cycle lane closed ahead' signs. However, if the works necessitate the closure of a cycle lane and motor vehicles are necessarily directed to use the lane, then the signs would be expected to notify all road users that motor vehicles will need to enter the cycle lane. When signing is required to give instructions or information to cyclists (eg 'Cycle lane closed'), designers must consider the need for advance signing (eg 'Cycle land ahead closed'), so that cyclists may alter their road position in good time. This is especially important on declines and sections of road with high cycle demand.

Where cyclists are required to merge back in with motor vehicle traffic because a cycle lane or cycle track is closed ahead, it would not be necessary to sign a cyclist diversion route. It should be clear to cyclists approaching from either direction where the facility is closed, where they can safely join the carriageway and where the facility is re-opened. Excessive signing contributes to clutter and creates potential obstructions and maintenance issues.

For longer duration works, semi-permanent sign installation may be preferable to conventional temporary A frame signs. These reduce trip hazards and maintenance and ensure the signs remain visible and effective at all times.

Cycle lane closure signs

3.5 Shared-use footways

Providing a temporary shared footway between cycles and pedestrians is not generally desirable when determining traffic management solutions for roadworks. Efforts should be made to accommodate cycles safely on the track or carriageway. Where it is deemed necessary, an assessment of the cycle and pedestrian flows will need to be made to ensure the design is robust and viable for the anticipated demand. Local Transport Note LTN 1/12[17] 'Shared use routes for pedestrians and cyclists' is a useful reference guide, as is the London Cycling Design Standards,[18] which gives indicative pedestrian and cycle flow ranges for shared facilities.

The characteristics of shared-use footways can vary significantly and will influence the optimum traffic management design solution. A local risk assessment must therefore be undertaken to understand:

- The locality of street furniture
- Access to properties
- Flows of cycles and pedestrians when the works are taking place
- Whether the route has any form of segregation
- The length of works
- The nature of the adjacent carriageway and available space

On partially separated (ie where the separation is not continuous along the route) and shared routes, cycle flow must be considered relative to pedestrian flow – the categories in the table at the bottom are specified in the London Cycle Design Standards.

A width of 3 metres is the desirable minimum for a shared path with two-way cycling, but this is dependent on user flows. On low-usage footways with a short works length and duration this may be reduced to an absolute minimum of 2.2 metres. On shared-use routes with single-direction cycle routes, the desirable minimum width is 2.5 metres. However, with low-usage footways, this may be reduced to an absolute minimum of 1.5 metres if the works are of a short length and duration.

Designers proposing shared-use facilities will need to also factor in the requirement for a Temporary Suspension Request to authorise the shared use and a detailed traffic management assessment.

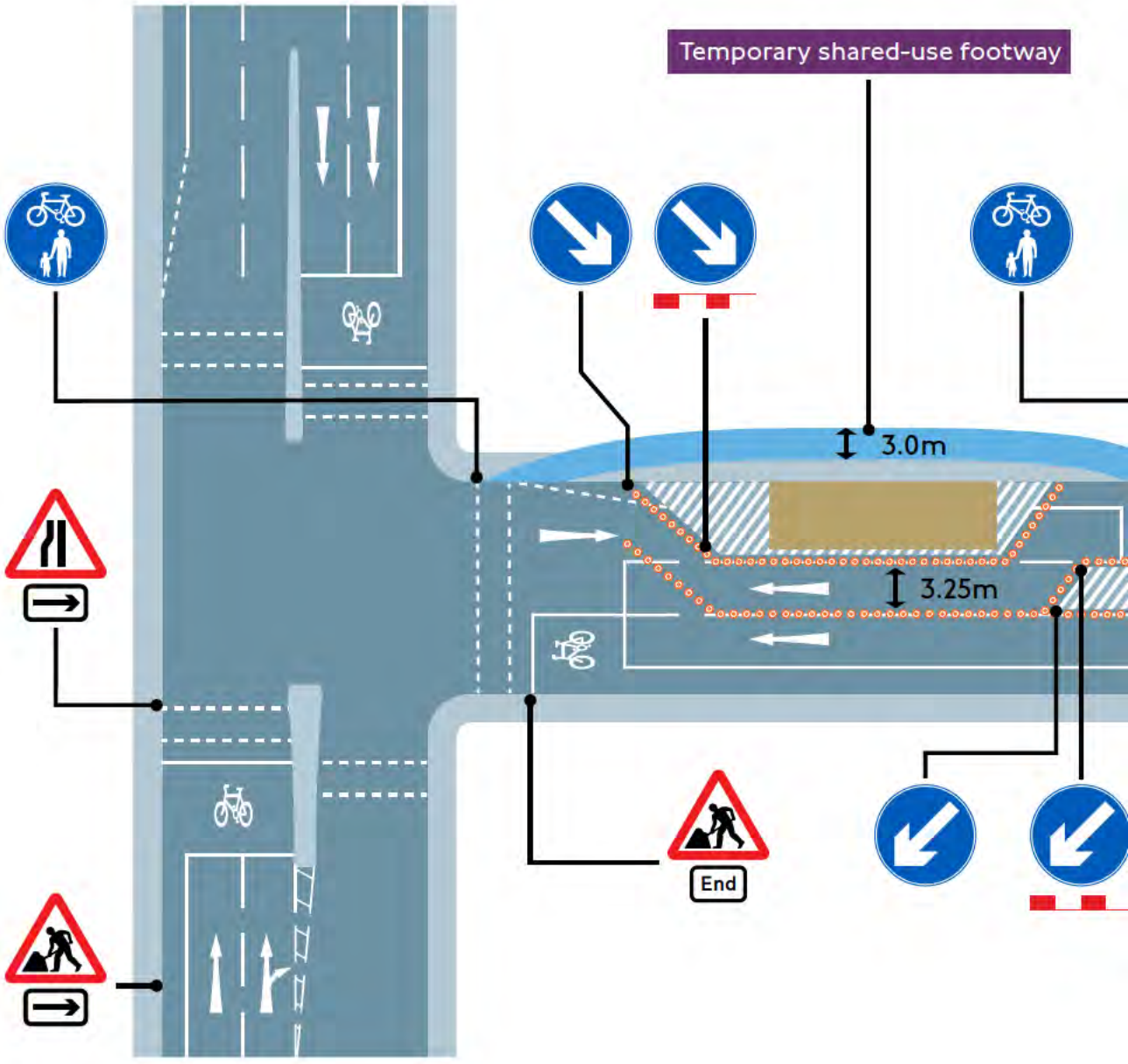
17 https://www.gov.uk/government/publications/shared-use

18 https://tfl.gov.uk/corporate/publications-and-reports/streets-toolkit#on-this-page-2

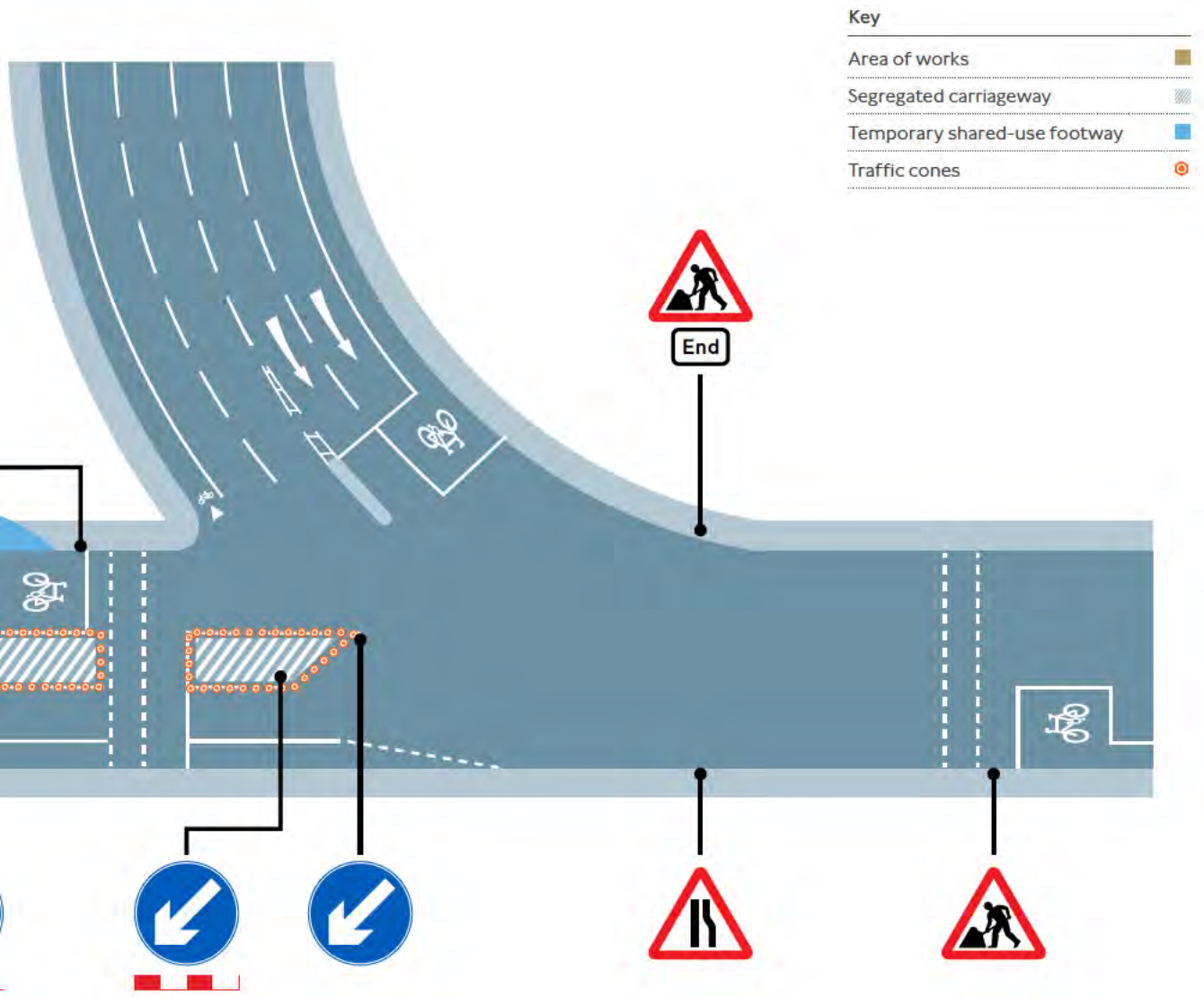
Flow categories for partially separated and shared routes

Peak hour flow category	Pedestrians per hour	Cyclists per hour
Very low	0-120	0-60
Low	120-200	60-150
Medium	200-450	150-300
High	450-900	300-450
Very high	900+	450+

Example road layout of a temporary shared-use footway to enable cycles to safely transition pa



st a works site segregated from traffic



3.6 Road closures and the impact on cycling

Full road closures can present unique issues for cyclists, which may be particularly important on routes with high cycle flows.

This will be especially necessary where a diversion route fulfils one or more of these conditions:

- Involves significantly greater effort to the diverted cyclists owing to new, unreasonably extensive distances and gradients
- If it is a heavily used cycle commuter route and the intention is to close the road during peak hours
- Put cyclists at greater risk due to the road layout and traffic conditions on the diversion route
- The temporary works will be required for a prolonged period

Diversion routes must be assessed for their suitability for cycling as well as motor vehicles because, from a cyclist's perspective, they may appear to be overly long or arduous. If some cyclists find an apparently shorter route more

Bad practice: designers should avoid the need to request cyclists to dismount if they can safely continue in the carriageway

attractive, this may result in unsafe movements through junctions and prohibited or illegal footway riding.

In the first instance, the site should be assessed with the aim of maintaining a safe route for cyclists past the works. While a closure to motor traffic may be necessary, exceptions can often be made for cycles, which can use relatively narrow widths (but ideally no less than 1.5 metres). The London Cycle Design Standards gives useful guidance on defining effective widths.

Where a road is fully closed to motor vehicles in both directions, yet a route is retained for cycles, signing stating 'Road closed except cycles' or 'Road closed except for access and cycles' should be used. Where a road is partially closed ie closed in a given direction to motor vehicles only, with cycles permitted through a closure point, then it may be preferable to use a 'No entry' sign with an 'Except cycles' sub-plate.

Care must be taken to ensure the design makes it clear to all road users, especially pedestrians, that cycles are permitted through a closure point. Where cycles pass through a closure point that prohibits motor traffic or in contraflow situations, it should be clear to pedestrians to expect cycles, particularly at crossings. Barriers and other methods of separation may well be required to mitigate any risk and designers should consider sight lines.

Cycle signs used at road closures

No entry sign except cycles

Diverted cyclists sign

Contraflow cycle lanes or tracks should be a recommended minimum of 1.5 metres, or an absolute minimum of 1.2 metres wide where providing the desirable width would compromise facilities for other road users. A site-based risk assessment may identify that physical segregation from opposing traffic may be required. Opposing traffic must have sufficient lane width not to encroach in this facility.

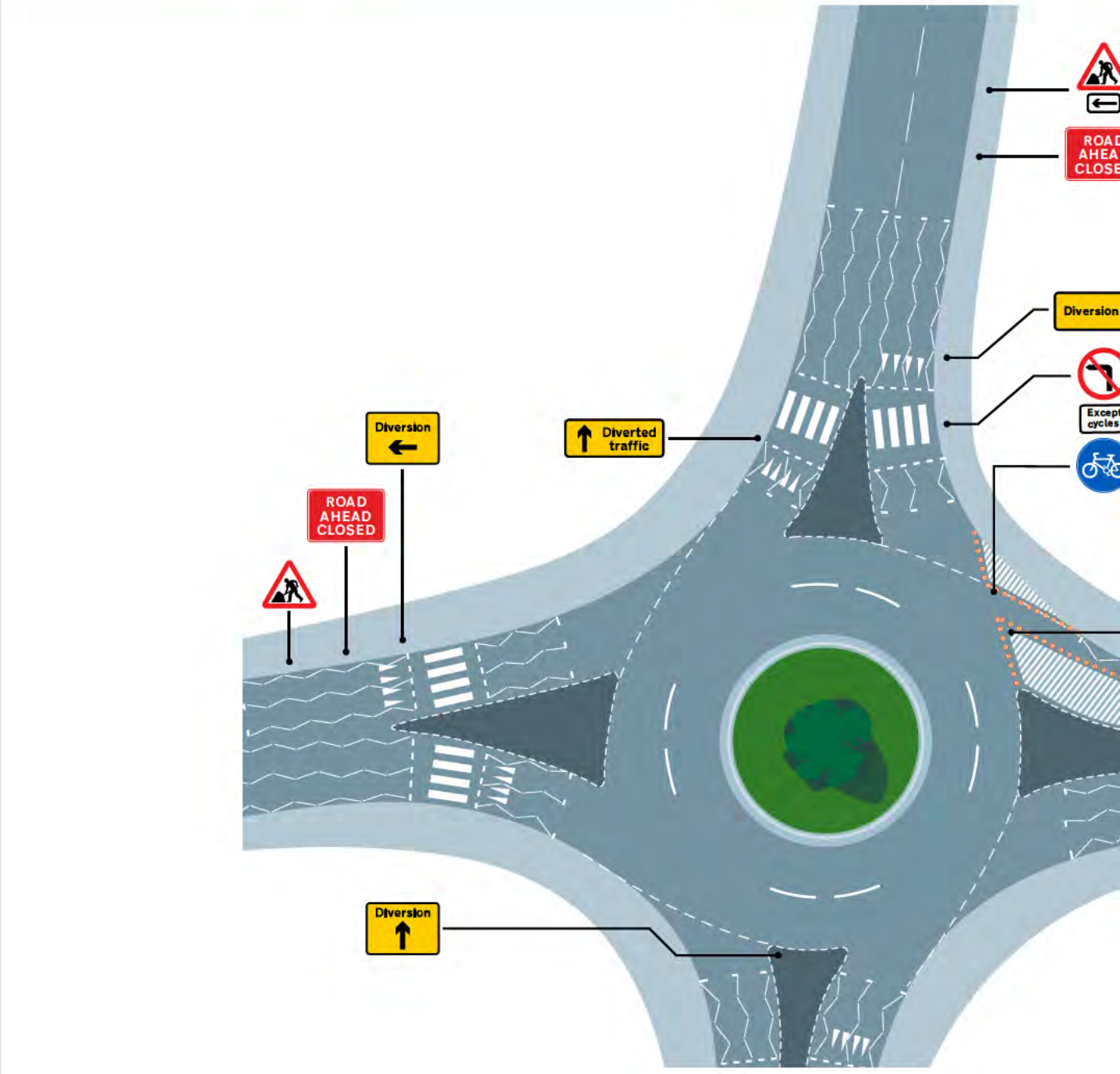
Contraflows of any vehicles can be confusing to pedestrians who may instinctively not notice approaching traffic if they are not expecting it. Pedestrian barriers should be considered along the length of the contraflow to prevent pedestrian encroachment other than at crossing points. Further mitigation measures should be considered to warn people crossing the contraflow cycle lane to look out for cycles in both directions and also cycles approaching in the temporary contraflow lane. Designers should acknowledge that some cyclists may decide to remain on the carriageway if the diversion is too long.

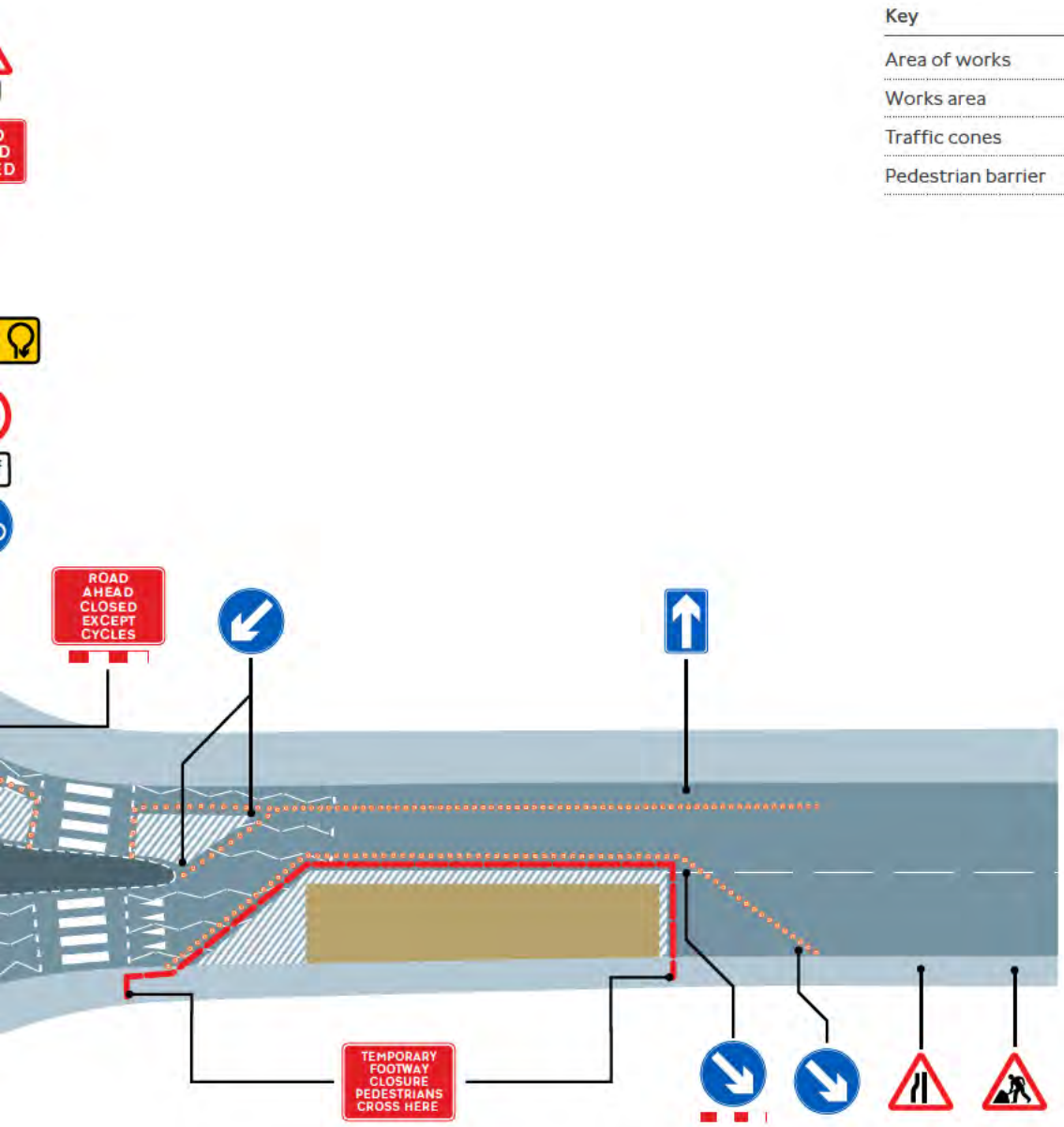
If it is not possible to retain space for cycling on a road closed to motor vehicles and the primary diversion route is likely to be too arduous or hazardous for cyclists to use, a cycle-specific alternative route should be considered, which could be shorter, on quieter roads and signed accordingly.

Where cycle diversion routes are necessary they must be as short as practicable to desire lines and clearly signed, preferably using routes with light traffic flows. Often cycles can legally pass through routes prohibited to motor vehicles such as roads with filtered permeability, eg bollard-protected cul-de-sacs.

Cycle diversion routes should make use of roads with filtered permeability

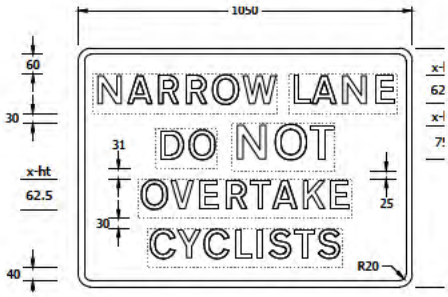
Cycle contraflow system




Key
Area of works
Works area
Traffic cones
Pedestrian barrier
ROAD AHEAD CLOSED EXCEPT CYCLES
TEMPORARY FOOTWAY CLOSURE PEDESTRIANS CROSS HERE

Cycle safety at roadworks

Sign warning of narrow lanes affecting cyclist safety



Sign face dimensions

3.7 Lane widths and temporary speed limit reduction

The TLRN comprises London's major roads and carries around a third of all the city's traffic. Therefore, it is used by large goods vehicles, buses and cars, along with large numbers of pedestrians and cyclists.

The first priority of any traffic management designer is to design out risk and remove the hazard and consequential need for additional signing. Retaining or re-providing facilities for cycles that are equivalent to the pre-existing level of service are the preferred options. However, it is acknowledged that maintaining the same level of service may not always be feasible due to the physical constraints of the highway. This is especially the case where cycles are accommodated on-carriageway. Where cycles are required to share space with motor vehicles as they pass the works site, it is essential to ensure adequate lane widths can be provided.

Warning sign should not be black and yellow

Correct warning sign

Running lane widths must be suitable to cater for all vehicle types likely to be using the lane, which could mean that certain widths are hazardous to cycles sharing space with motor vehicles. In these circumstances, TfL expects the risk to be mitigated with signing if the hazard cannot reasonably be designed out.

To minimise the risk arising from cyclists being overtaken too closely in a narrow lane and to promote increased comfort levels for cyclists, the 'Narrow lane do not overtake cyclists' sign should be used.

The sign must be manufactured in accordance with the specification above.

Straightforward narrow lanes may not be the only reason why a sign to instruct drivers not to overtake cyclists might be required. Greater risk at bends, pinch-points and corners may also justify a 'do not overtake' sign.

The sign should be placed on all approaches to the narrow lane, normally after the road narrows sign or lane closure (wicket board) signs and prior to the first cone, and only be used where all of the conditions apply:

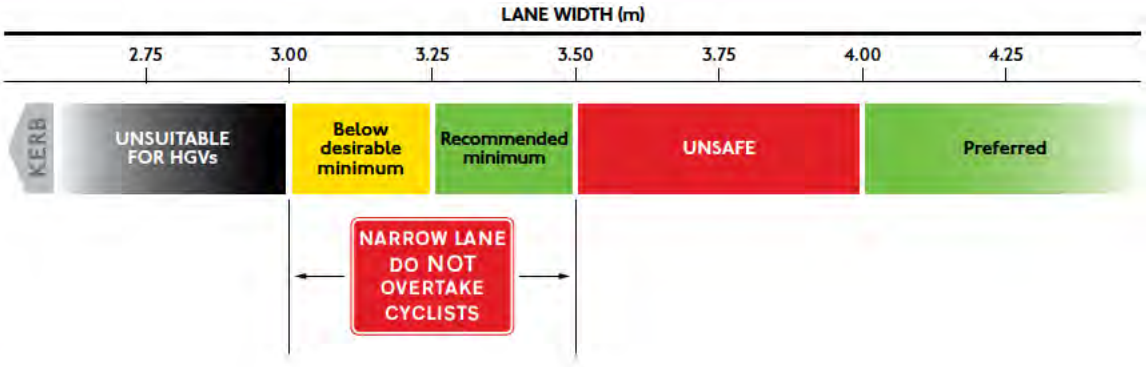
- Where cycles are required to share a lane with motor vehicles as no suitable alternative facility is achievable
- Where the carriageway is either a single carriageway of any speed limit or a dual carriageway where the permanent road speed limit is 30mph or less
- Where there is only a single lane available for traffic in the given direction
- Where the available lane width is 3 metres to 3.5 metres

The sign should not be deployed in other situations as inappropriate use dilutes the message and its effectiveness in scenarios where it would be appropriate and required.

Lane widths of four metres or more enable cars and wider vehicles to overtake cyclists safely. Therefore, where possible, designers should look to maintain or create lane widths of at least 4 metres on carriageways where high cycle flows exist.

If a 4-metre-wide lane is not achievable, then the straight narrow lanes design objective must be to deter overtaking cyclists because it cannot be achieved with safe clearance. Therefore, the lane width should be reduced to a maximum of 3.5 metres because lane widths greater than 3.5 metres and less than 4 metres must be avoided to discourage wider vehicles attempting to overtake cyclists when there is insufficient space to do so.

Lane width guidance for cycles in carriageway



Widths between 3.25 metres and 3.5 metres will allow buses and HGVs to use the lane but it will not be possible for them to overtake cycles.

The desirable minimum lane width in temporary situations for buses and HGVs is 3.25 metres, but in exceptional circumstances the lane width may be reduced to an absolute minimum of 3 metres as per the Safety Code. If this narrow lane is on a bus route you will need to liaise with the TfL Bus Operations team to discuss the restrictions and possible impact on the bus services.

The lane widths specified above are based on straight or near-straight traffic management layouts. For traffic management layouts incorporating bends or geometry that are not linear in nature, the designer should consider undertaking swept path analysis to establish if vehicle tracking is viable to pass the works and alter the lane widths as necessary.

Where HGVs and buses are on diversion, lane widths can be reduced to an absolute minimum of 2.5 metres.

However, research shows that traffic lane widths between 3.2 and 3.9 metres where there is no dedicated cycle lane are an inherent risk to cyclists as they can lead to uncomfortably close passes of cyclists because drivers are left uncertain about whether it is safe to overtake.

Reducing speed limits must be considered in situations where lane widths are less than 3.5 metres and motor vehicles are unable to pass cyclists safely. These reductions can be either in an advisory form or regulatory depending on the circumstances, such as the duration of the traffic management phase. Speed camera enforcement should also be considered where deemed appropriate, which should be discussed with the traffic management assessment team.

Where possible, the available lane width will encompass the normal running lane but it may also include hatched areas where traffic is permitted to enter for short duration works. For longer duration works or where the road layout may lead to road user confusion, it may be necessary to modify the existing markings.

Two-way working on single carriageways with available remaining carriageway width of 6.75 metres or above will not necessarily require physical segregation between opposing lanes.

Site-specific risk assessments will determine the need for segregation and will be based on factors such as the duration of works, traffic flows – particularly the number of cycles and HGVs – and road geometry and features.

3.8 Barriers and cyclists

When selecting barrier products for longitudinal runs along which cyclists may pass, designers must ensure the feet or bases of the barrier do not introduce a hazard to pedals of the bicycles.

3.9 Surface quality

Designers should be mindful of the particular vulnerabilities that cyclists encounter such as uneven, slippery or excessively rough surfaces. Risk assessments should be undertaken to ensure that cyclists are not being guided into hazardous surfaces and raised ironwork.

If cyclists are to be signed via a diversion route, then the surfacing on this alternative alignment should be assessed and made safe if necessary before the diversion is deemed adequate.

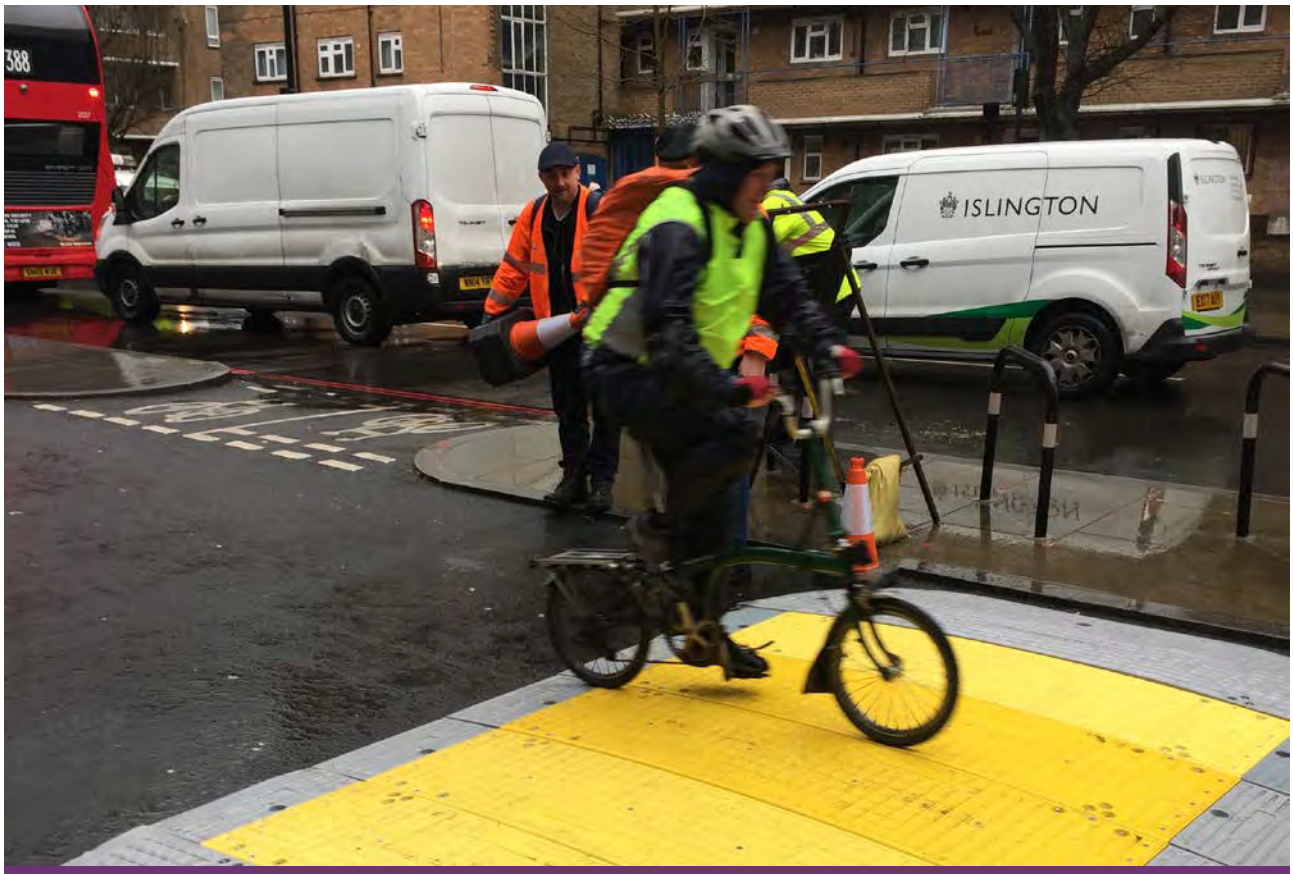
Barriers are often the best product to guide cyclists

3.10 Cycle track ramps and boards

London has a variety of cycle tracks with different characteristics that require assessing before deciding on the correct type of temporary ramps or boards to install. In most circumstances where cycle tracks are on footways, either shared-use or segregated, conventional footway boards will be sufficient.

Segregated cycle tracks, however, do have vehicular crossings and transitions. In these locations, a higher-specification road plate may be required. Emergency vehicles sometimes access segregated tracks so works promoters should ensure any temporary covers are adequately signed and visibly stand out.

Boards, humps or ramp approaches that are greater than 50mm high should be sinusoidal in profile to minimise rider vibration and avoid deterring cyclists from using the route (see Road hump profiles diagram on page 75). If a sinusoidal ramp is not achievable, leading edges of ramps should be clearly highlighted or clearly marked so they can more easily be anticipated by cyclists.



Cycle track road plating system

The London Cycling Design Standards advise that maximum linear ramp gradients should normally be between 1:10 and 1:20. It is recommended that the new surface of the hump is continued 500mm beyond the ramp into the existing carriageway surface to produce a smoother profile.

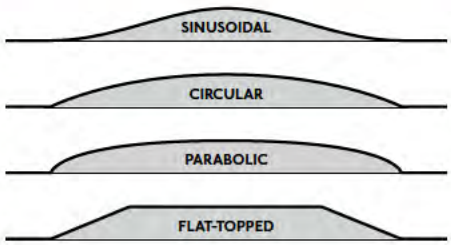
In instances where extended or multiple ramps are needed, they should preferably avoid 'L' and 'T' shape configurations, or run parallel with the general direction of cycle travel. Turning circles of larger cycles and of mobility scooters should also be taken into account when considering the use of ramps and landing areas.

Leading or tail edges of ramps should be installed avoiding acute angles so that the edges are as far as practicable to be perpendicular to the approach/exit route of cycles.

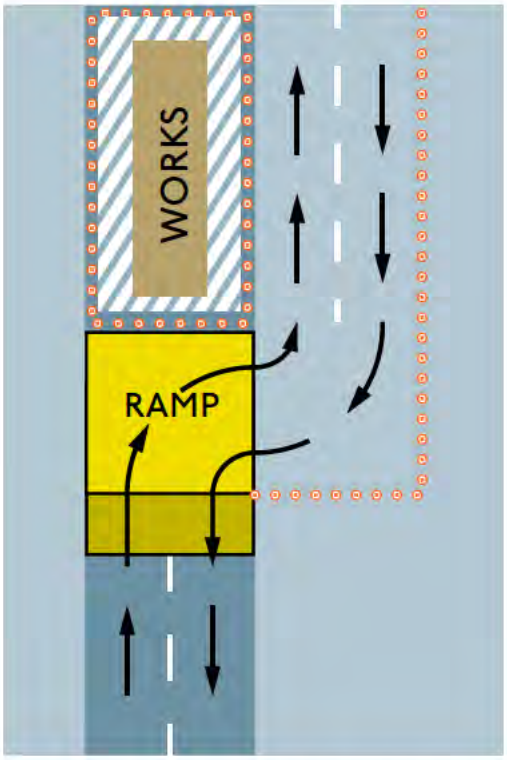
Temporary ramps should have high friction surfaces and should avoid adverse cambers as certain cycles are more prone to tipping over, such as disability cycles, tricycles and cargo cycles.

All temporary ramps should be signed with 'Ramp' signs to highlight the hazard. Where advanced visibility is fully or partially obscured or it could reasonably be expected to be obscured during high cycle flows, a supplementary 'Ramp ahead' sign is advisable.

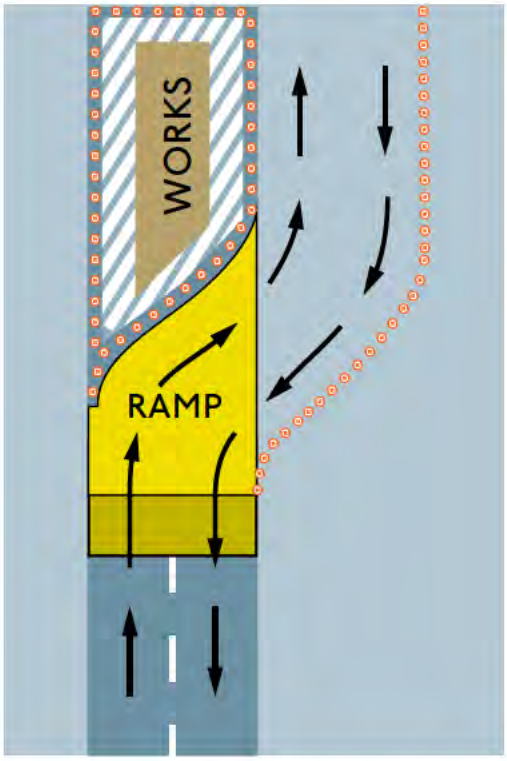
Road hump profiles



Cycle ramps must take into account turning circles of various types of cycles



Ramp with 90° bend



Ramp without 90° bend

3.11 Temporary traffic signals

Temporary traffic signals should give cyclists sufficient opportunity to pass safely through roadworks with the appropriate intergreen times used to prevent collisions or unsafe passing with oncoming motor vehicles in a shuttle lane. When specifying the most appropriate arrangements, consideration should be given to clearance times for cyclists, particularly on steep hills.

When a traffic management drawing is submitted with portable traffic signals, the drawing and location will be assessed and signal timings may be supplied by TfL to the designer for implementation. Otherwise, the contractor will be expected to operate them as agreed or in line with the recommendations of the DfT 'An Introduction to the use of Portable Vehicular Signals'[19] booklet, which is also known as the 'Pink Book'.

19 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/509198/introduction-use-portable-vehicular-signals.pdf

3.12 Works on the carriageway without cycle lanes

Where works occupy an area in the carriageway where there is no permanent provision for cycles (this may include bus lanes), either at the location or in close proximity to the approaches to the site, it is not normally expected that a temporary cycle lane would be required for the works. This is unless the road layout and/or workspace requirements place cyclists into a significantly more vulnerable position as identified in a risk assessment.

Where there is an identifiable increased risk to cyclists, consideration should be given to providing a facility through temporary carriageway markings or physical segregation. Risks may include heavy traffic flows, poor surface quality, construction traffic movements, or just the high volume of cyclists. A key consideration in addition to the risk will be the available space on the carriageway and the resulting lane widths available. For further information please see 3.7 regarding lane widths.

This scenario is more likely to be identified in outer London boroughs, where the mix of cycles in relation to motor traffic is lower when compared to inner London. However, sections of the road network exist in many locations where no extra provision is required provided lane widths are generous and hazards are low.

In these circumstances the traffic management may look typically generic with no extra measures for cyclists, except for signing to warn of narrow lanes when the width is 3.5 metres or less.

The works site length should be kept to a minimum to reduce the impact on general traffic and discomfort for cyclists. Long stretches of traffic management can become intimidating for cyclists and frustrating for motorists. When considering the length of traffic management arrangements, designers will also need to be mindful of the likely speeds of cyclists passing through the works as their speed may be adversely affected by gradients. Consideration should be given to phasing the works for reduced lengths of road space occupation, and storing materials and plant away from cycle routes with a high demand.

Cycling in works without cycle lanes

3.13 Works on the carriageway with cycle lanes

Where there is a cycle lane within the carriageway that will become obstructed by the safety zones or working area, then it will be expected that the facility will be re-provided past the temporary works, unless the risk to cyclists has been deemed acceptably low.

Where the temporary segregation terminates, care needs to be taken to ensure cyclists re-join the carriageway in a safe manner and location. Both drivers and cyclists need good visibility of each other and the alignment of their respective approaches so as to ensure a smooth transition.

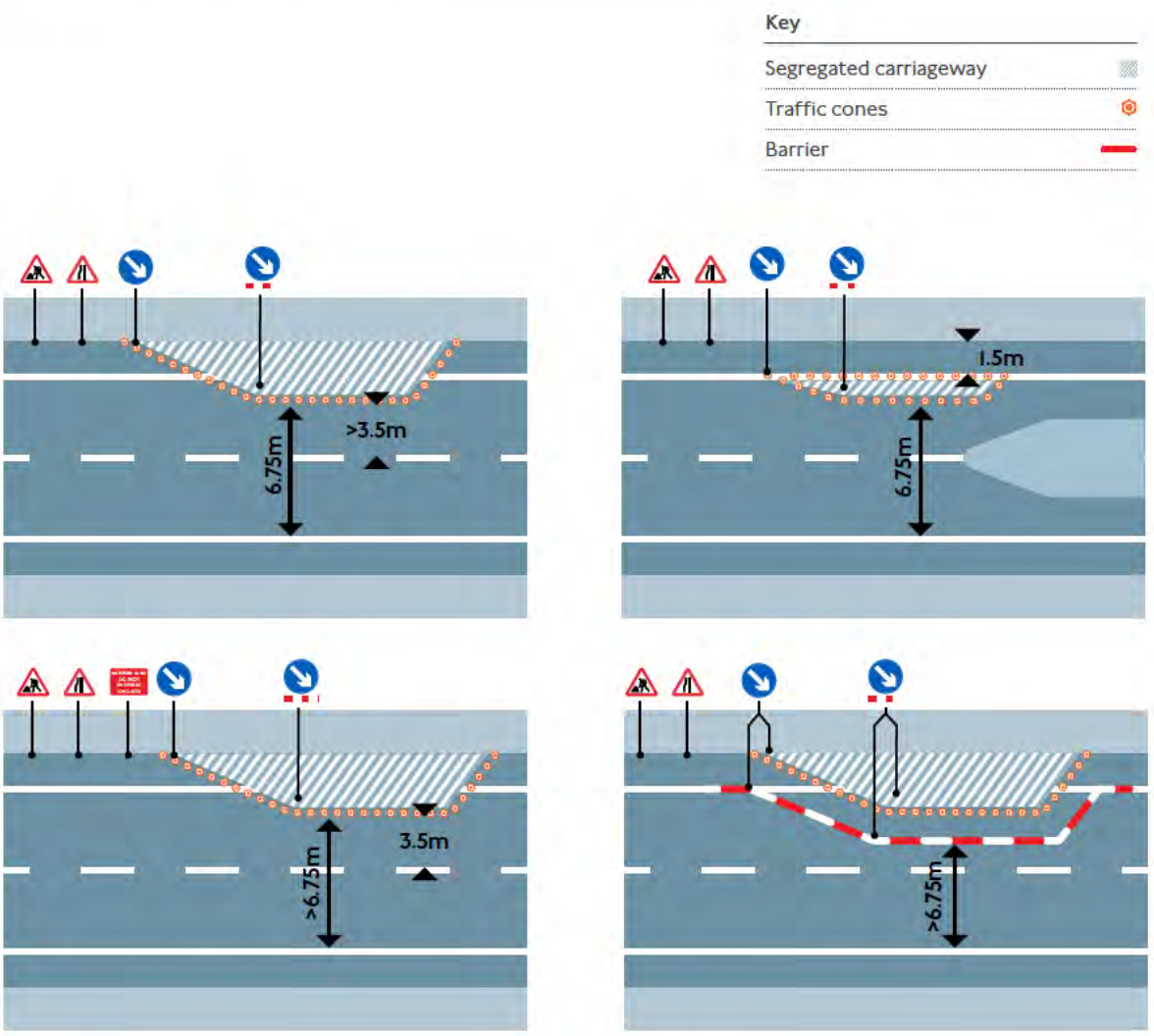
If it is not viable to provide delineation or segregation, it would be expected designers consider risk mitigation using other measures, such as using hazard warning signing, separation of road users by diverting motor vehicles, or cyclists via different routes, or speed reduction.

Designers need to be mindful of cyclist behaviours and the possibility of cyclists entering and exiting the facility between cylinders. Where it is desirable to retain cyclists in a lane or prevent access/egress along the lane, then continuous barriers are advised.

3.14 Cycle lane closure

Cycle lanes are classed as being in the carriageway and therefore subject to Lane Rental charges in accordance with the charges for the adjacent running lanes. Cycle tracks are specifically covered by Lane Rental charges but shared-use paths may not be chargeable if an alternative route is provided. TfL's Assessment team should be contacted if clarification is required.

Alternative examples for works in or adjacent to cycle lanes



3.15 Works on cycle tracks

Segregated cycle facilities feature on many sections of the TLRN and provide a vital network for cyclists on key routes.

Segregated cycle tracks, particularly bi-directional tracks, present challenging issues for traffic management designers as considerations need to be given to managing the passage of pedestrians, cycles and motor vehicles, all with separate facilities that will frequently intersect. Signalised junctions will need detailed consideration, and consultation with TfL will be required to ensure traffic management designs can be operable and safe in conjunction with the phasing of the lights.

Where partial obstruction of the segregated cycle tracks is required for works, the same sign sequence and signing principles apply to cycle traffic in the track as to general vehicular traffic in the carriageway.

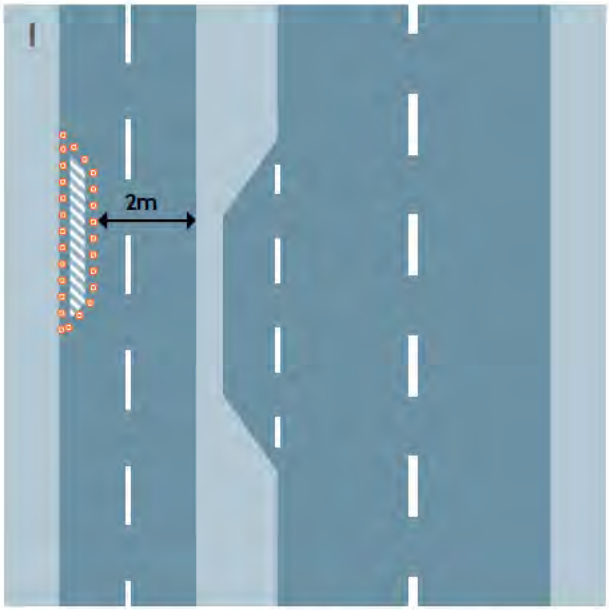
The necessary space remaining open to cycling will be dependent on several factors, including the predicted cycle flows, the day and time of works, and the duration of works. TfL expect track widths to adhere to the following:

- Bi-directional tracks: 2 metres desirable minimum total track width
- Single direction tracks: 1.5 metres desirable minimum total track width

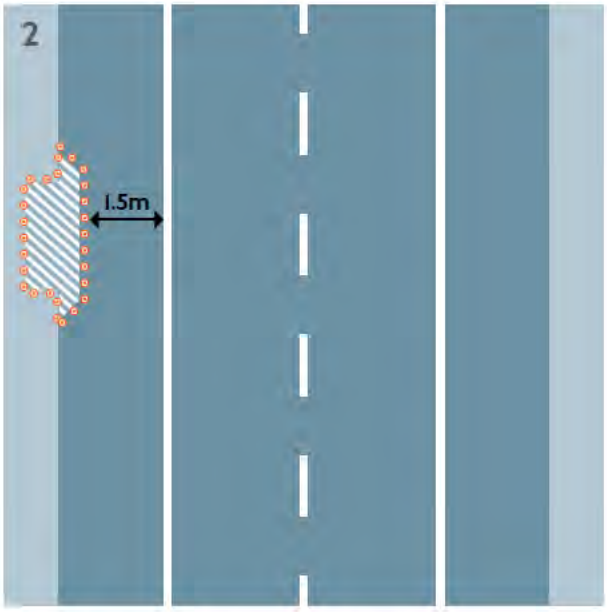
It is paramount that cones or barriers marking the segregation boundary are in good order and well maintained. Barriers with protruding feet should be avoided as there is an increased risk to cycilists, who may snag pedals.

Where works require the total obstruction of the cycle facility, it will be incumbent upon the designer to seek, in the first instance, to re-provide a segregated facility of similar level of service past the works. This will most likely require routing the cycle track into the carriageway, but if this is not possible, cycles could potentially be directed onto the footway by the creation of a shared-use footway to enable cycles to continue without dismounting. If neither of these options is possible, cyclists should be redirected to join the carriageway at a safe location.

Desirable minimum cycle track and cycle lane widths



Bi-directional cycle track



Single direction cycle track

133
HA37
ENVIRO400 CITY
EY03 VYP
6 HBE

Chapter 4 – Other road users at roadworks

86 4.1 – Introduction

87 4.2 – Powered two-wheelers and mobility scooters

87 4.3 – Bus passengers

88 4.4 – Timescales for bus service changes

88 4.5 – Freight

89 4.6 – Working near TfL tram infrastructure

4.1 Introduction

Although safety at roadworks is a top priority, it is also important that we continue to deliver a good transport experience for all of our customers.

London buses transport more people than any other public transport mode. They can move 70 people in the same amount of road space occupied by three cars. People using public transport typically do between eight and 15 minutes of active travel per day, which supports the Mayor's Healthy Streets Approach.

In 2018, lorries and vans account for around one fifth of road traffic in London. As London grows the volume of freight and servicing trips is forecast to grow – delivering economic and commercial benefits to London.

Therefore, it is important that disruption caused by roadworks to motorised vehicles is minimised, and that these road users have confidence in the reliability of their journey choice.

Advising powered two-wheelers of uneven road surface

4.2 Powered two-wheelers and mobility scooters

The safety of motorcycle and mobility scooter users also needs to be considered when designing traffic management. Maintaining clear sight-lines and smooth road and footway surfaces to minimise incidents is paramount. On-site wheel cleaning and road sweepers should be available to restrict muck transferring to the road space outside the site area.

4.3 Bus passengers

Sustaining bus services while roadworks are being undertaken is a key priority for TfL, given the high number of passengers that can be transported by this service. Therefore, every effort must be made to ensure services remain unaffected. Where that is not possible, temporary measures should be considered, including:

- Planning traffic management phases to avoid bus stop closures. Temporary bus stop facilities should be provided where this is not possible
- Continuation of a dedicated bus lane. Where there are a high number of bus services, consideration should be given to retaining a dedicated facility for buses only and placing other motorised vehicles on diversion.
- Keeping diversion routes to an absolute minimum
- Supplying an alternative shuttle bus service. This may be using a smaller-sized mini-bus that is able to navigate around the roadworks site, or a smaller bus on a short local diversion away from the works

Developers and contractors will need to understand the impacts to both journey times and the cost implications to the operators when designing proposals. TfL assessors are able to provide information on the predicted number of bus passengers who may be impacted by restricting bus journeys. Access to the site during construction may also be a cause of delay to London's bus passengers, whether along the route or by suspending bus stops and bus lanes.

Separate approvals are required for suspending bus stops and bus lanes. Bus lanes can be suspended by a temporary suspension request – see Chapter 2 (page 16). Requests for bus stop suspensions are made through the Bus Operations (see 4.4 Timescales for bus service changes).

All vehicle types should be able to negotiate a site layout. TfL may require swept paths to prove this is possible, especially where long wheel-based rigid and articulated vehicles are involved. As with cycles, there are minimum widths set in place so buses can negotiate traffic management layouts. A minimum width of 3.5 metres is required.

4.4 Timescales for bus service changes

The table below sets out typical notice periods where changes to bus services are required:

Service	Notice period
Bus stop suspensions	2-3 weeks
Bus diversions	6-8 weeks
Temporary stops	7-10 days
Publicity / communications	4-6 weeks
Countdown / iBus (changes to routes)	2 weeks
Bus shelter relocation	16-18 weeks

Contact details for Buses can be found at the end of this document.

4.5 Freight

TfL is committed to improving road safety. London's continued growth and associated construction activity means that vulnerable road users, such as pedestrians and cyclists, together with construction traffic, are sharing roads more than ever, and therefore increasing the risk of collisions.

Between 2008 and 2013, HGVs were involved in 55 per cent of all cycling fatalities in London. Analysis of these figures found that construction-related HGVs, such as tippers, were overrepresented within these figures. In 2011, seven of the nine HGVs involved in cyclist fatalities were construction-related vehicles.

Developers and construction clients have a responsibility to manage the impact of their activities on road users and the wider community. The construction industry can take positive steps to take ownership of road safety and reduce the risk of collisions in their supply chain.

The Construction Logistics and Cyclist Safety (CLOCS) programme is a construction industry-led initiative which aims to achieve a visionary change in the way the construction industry manages work-related road safety.

As part of CLOCS, a document has been developed called CLOCS Standard for construction logistics: managing work related road risk.[20] This is a common national standard for use by the construction logistics industry. Implemented by construction clients through contracts and adhered to by vehicle operators, it contains 16 requirements around the safety of fleet operations, vehicles, drivers and the management of construction sites.

Each requirement has been developed with the aim of reducing the risk of a collision between HGVs and vulnerable road users such as cyclists and pedestrians. Responsibility for application of the standard lies with both clients and vehicle operators.

TfL encourages developers and construction companies who have not already done so to implement and ensure compliance with the CLOCS standard.

4.6 Working near TfL tram infrastructure

When works are in the vicinity of trams or other guided transit systems, the designer will need to consult with operators in the planning phase. This is to ensure their requirements are fully met and ensure risks are as low as reasonably practicable to the operation of trams or road users. Any agreed requirements must be effectively communicated to the designers, the commercial team and the contractors or principal contractors who will be delivering these works.

Further information on TfL trams can be found here.[21]

20 https://www.clocs.org.uk/page/clocs-standard

21 https://tfl.gov.uk/modes/trams/

Chapter 5 – Guarding and segregation

92 5.1 – Introduction

95 5.2 – Choosing the correct type of works site guarding

100 5.3 – Barrier stability

103 5.4 – Security and protection

104 5.5 – Pedestrian barriers

106 5.6 – Carriageway barriers

5.1 Introduction

This chapter of the handbook is intended to provide assistance to those who are designing, planning or preparing a works site on the TLRN where there is a potential risk to the safety of those undertaking the works activity, road users navigating past it, or adjacent properties or infrastructure. It should also help those either assessing traffic management proposals or those responsible for checking compliance on site.

To support the Mayor's objectives and the Healthy Streets Approach to encourage active travel, there is renewed focus on ensuring pedestrian routes are well signed and guarded, and that works sites in London are safe, look tidy, and are consistent across London. This will help road user familiarity where roadworks are taking place.

Appropriate, well-maintained, correctly installed barriers will not only ensure increased safety of the workforce and public, but as barrier equipment will invariably form a boundary to which the public have access, the appearance of barriers plays a significant part in how the works site and contractor are portrayed to the public.

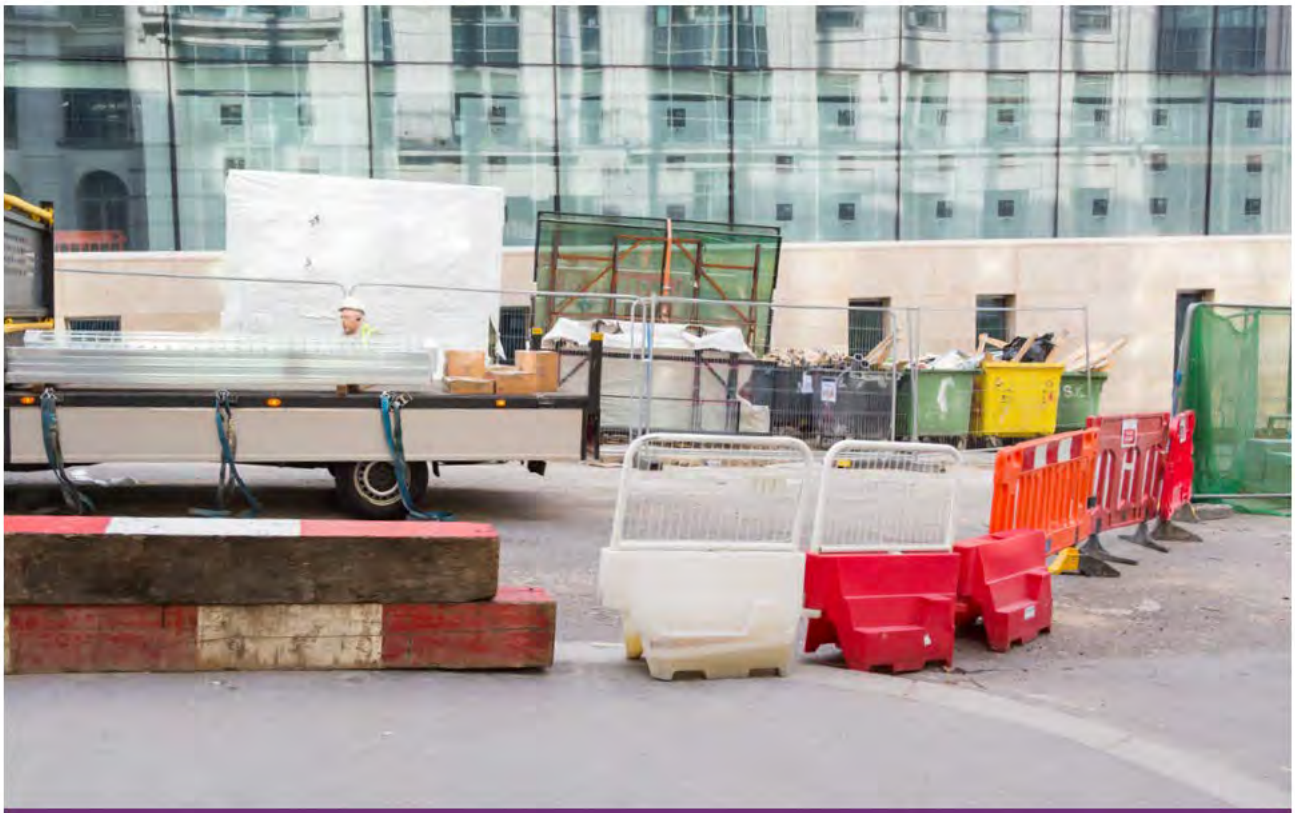
The minimum standards required for segregation of vehicles and pedestrians from work areas are described in the Safety Code, although it does not cover dual carriageways with a speed limit of 50mph or more. Further guidance on segregation for these higher-speed carriageways should be sought from Chapter 8 and Highway England's Interim Advice Note 142/11 (Temporary Barrier Decision Tool).[22]

The need, type and nature of works site segregation and guarding will be determined from the designer's risk assessment. This will establish the nature and magnitude of the risks associated with the location and work activities being carried out, before they can be mitigated and controlled. The designer will need to make an assessment on how and where to segregate and guard road users from hazards and, if necessary, consider barriers to a crash-tested specification to restrain errant vehicles in the event of an accident.

A significant determining factor in barrier product selection will be whether a barrier is required to provide lightweight, physical and visual segregation; or whether, due to an increased risk from crowds or vehicles, a crowd or vehicle restraint barrier is necessary.

22 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian142.pdf

Good practice: tidy, correctly assembled and well-maintained barrier



Bad practice: multitude of mixed barrier types, which are not assembled into a continuous barrier

Works promoters are expected to deliver a high level of service to road users, particularly the most vulnerable, ensuring works sites are set out in accordance with the Safety Code. A robust risk assessment providing full justification must be provided where compliance with the Safety Code is not achievable and an alternative product or design is being considered.

Innovation is welcomed where it improves road user experience and enhances the temporary works environment so that road users are not deterred from making their usual journeys. Any new approaches should be discussed with the relevant TfL traffic management assessment team before works begin.

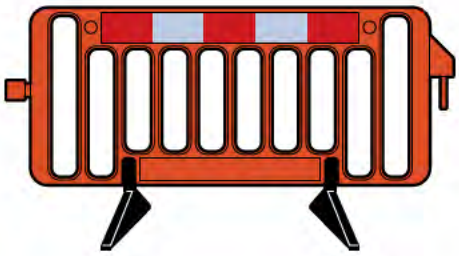
Well-maintained and appropriate barrier

5.2 Choosing the correct type of works site guarding

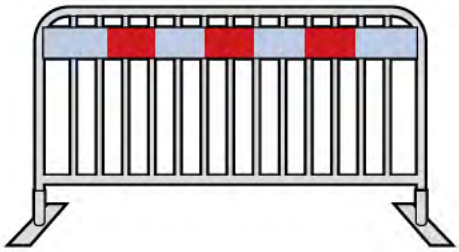
Traffic barriers segregate the works site from traffic by providing an advance warning though their retroreflective design, whereas pedestrian barriers provide a separation from the works site solely for pedestrians. Each barrier system serves a very specific purpose, but can sometimes be confused as they are similar in appearance. Traffic barriers do not have a 150mm deep tapping rail across the base of the product, which is used by visually impaired and blind people who rely on the use of a stick to navigate around works site obstructions. Traffic barriers must not be used where pedestrians are likely to interact with them.

Pedestrian barriers in their most simplistic form consist of a post and board-style product that is usually assembled on-site (see image).

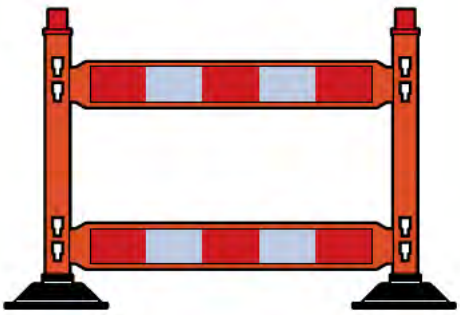
Typical barrier products



Plastic traffic barrier



Metal traffic barrier

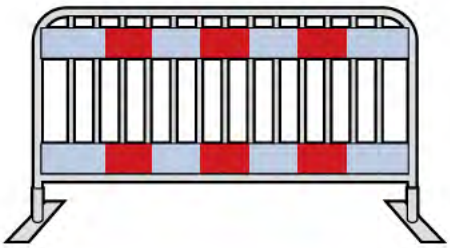


Basic pedestrian barrier system

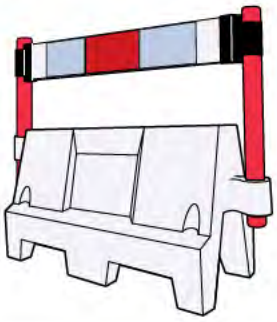
While the basic post and barrier system (see previous graphic) meets the minimum requirements, it may not always be suitable for all locations because of the large opening between barrier boards and posts. Barriers with smaller gaps and greater protection to mitigate the risk of unauthorised access (see figure to the right) should be considered, especially where high numbers of small children are expected.

More robust pedestrian barrier systems should be used where increased footfalls are predicted or known (such as busy high streets, near event venues, stadiums, etc). They should be able to withstand more physical pressure and are less likely to be dislodged.

Barrier systems offering increased protectio



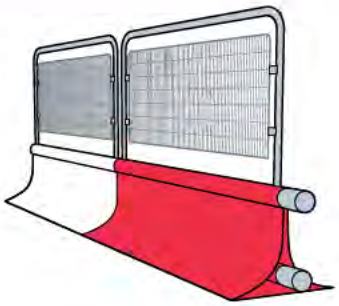
Metal pedestrian barrier



Water-filled barrier system

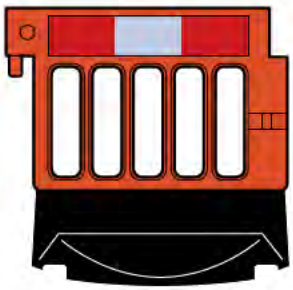
Ballasted pedestrian barrier

n from works

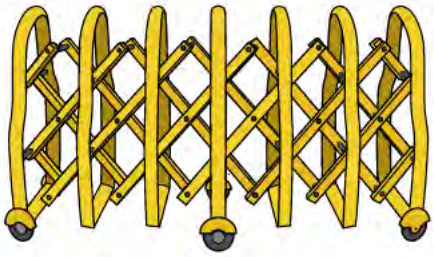


Crash-tested pedestrian barrier

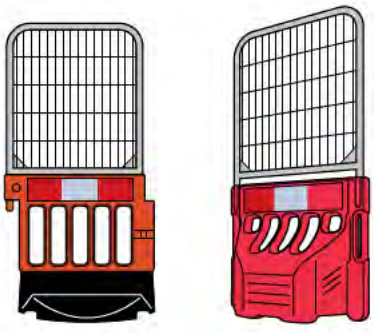
High barrier system



Self-weighted barrier systems



Retractable barrier



Weighted high barrier systems

Weighted high barrier system with vertical support

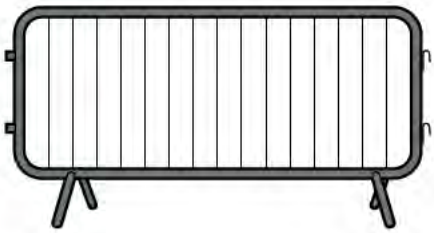
Where there is further risk of individuals climbing over the barrier and to improve the security of the site, it may be necessary to increase the height of the barrier (see examples in previous graphic on page 97), particularly where deep excavations (more than 1.5 metres deep) are required.

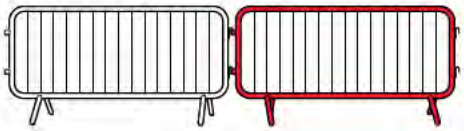
The non-compliant barrier systems shown on page 99 are not favoured for protecting or guarding works sites as they do not fully meet the requirements of the Safety Code or Chapter 8.

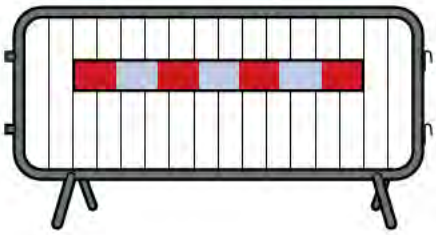
The use of retractable barriers (see page 97) is only acceptable where the barrier is fully marshalled and only used for short durations for temporary footway closures to allow works vehicles access/egress to construction sites or similar situations. When marshals are not present, the barrier system must be locked in its closed position.

All barriers should be in a conspicuous colour and signed if required so that road users are clear about what is expected of them as they approach the barrier.

Non compliant barrier systems







5.3 Barrier stability

Barriers must be installed correctly to suit the prevailing conditions otherwise they are likely to become defective and present a hazard or obstruction to road users, with the potential to cause injury.

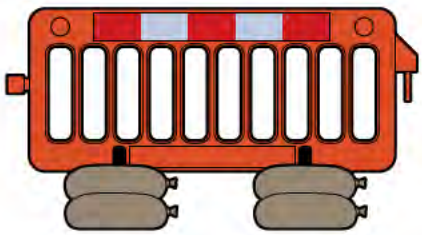
The first duty of the contractor is to ensure the location is safe to install the barriers and that their placement does not become an intrinsic hazard when installed. The ground must be clear of debris, stable and suitably level so that the barrier is secure to the ground. Certain barrier systems do not readily adapt to sudden changes in gradient. This can be a particular issue when running along the edge of a footway where there are dropped kerbs.

Contractors must be aware of the limitations of some barrier systems. Barriers can vary in specification and the degree of wind loading they can tolerate. Where higher winds are forecast or when barriers are in place for longer-duration works when higher winds could reasonably be expected, the barrier system should be upgraded to a weighted variety with a vertical supporting mechanism accordingly.

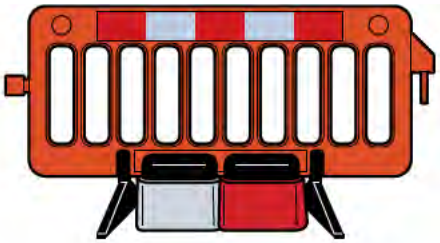
Traffic/pedestrian barrier products must meet standard BS 8442:2015 (Miscellaneous road traffic signs and devices. Requirements and test methods) which, among other requirements, defines categories of wind speed for barriers to withstand.

Class of wind speed / barrier	Effective wind speed
Class A: Tested to withstand wind speed to a maximum 26.3m/s (58mph) – excludes highly exposed sites	Designed to meet a wind speed likely to be experienced on any one day across the whole year. Best suited for longer-term works
Class B: Tested to withstand wind speed to a maximum 17.6 m/s (39mph)	Designed to meet a wind speed likely to be experienced on any one day in the months of May, June and July. Best suited for unattended sites at less windy times of the year
Class C: Tested to withstand wind speed to a maximum 8.7 m/s (19mph)	Best suited for short-term works where operatives are present, or for emergency situations that would not require Class A or B.

Approved methods of ballasting pedestrian and traffic barriers

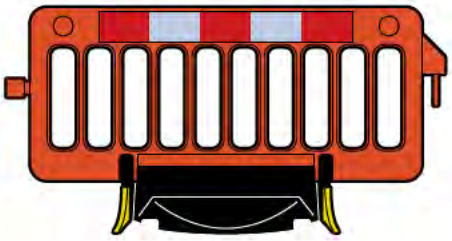


Sandbags placed on barrier feet

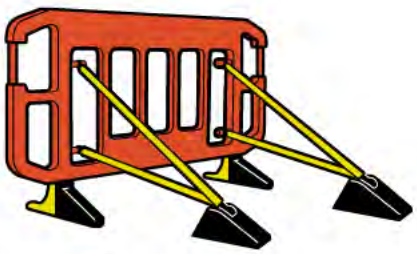


Weighted barrier base

Clip-on ballast trays



Weighted barrier base



Barrier with vertical support system

A secure and well maintained site

5.4 Security and protection

The minimum standard of guarding for works undertaken on or adjacent to a footway is a continuous pedestrian barrier system. This may be required to be supplemented with pedestrian signs. Beyond the basic need for minimum guarding requirements, it may be necessary to provide enhanced protection for members of the public from hazards, or to increase protection for the workforce from vehicles.

Example situations that would necessitate enhanced barrier systems include:

- Deep excavations
- Unattended excavations within 2 metres of a pedestrian route, depending on risk assessment
- Sites situated in high pedestrian footfall areas
- High volumes of traffic flow adjacent to the works site
- Width restriction across the highway at the works site that increases the risk profile to a level where additional protection is required
- Longer-duration static work
- Plant operational activities adjacent to the highway or walkway
- Protection of sites involving vulnerable excavations or structures

Separate to the requirements relating to protection is the need to guard against the threat of intentional intrusion with menace. The site-specific risk assessment may indicate that a higher level of security is required supplementary to the protection requirements.

Example situations that would necessitate a higher level of security include:

- Sites situated in areas known for antisocial behaviour. These may include areas frequented by protesters, near venues selling alcohol, stadiums and public events
- Works located near high-risk or high-security locations such as government buildings, military facilities, or railway lines
- Works with exceptionally high risks to members of the public if they were to access the works area, such as exposed utility services
- Sites where plant and materials are left on site and are vulnerable to theft

There should be suitable access points through the barrier system and into the workplace to allow personnel and vehicles to enter the works site safely and without affecting the security of the site, or the passage of road users.

All site access points should be closed and secured as soon as possible after the need for their use has ended.

When barriers are left open for contractors to enter and exit without further controls, the integrity of the barrier system and the safety and security of the site is compromised.

It is unacceptable to have barriers that are not secured into a continuous interlocking system. Correctly installed barriers not only increase site security, but also stabilise each panel.

Where an excavation is to be left open for a long period of time, consideration shall be made to cover the excavation with a 'road plate' or other proprietary plating system. Plates must be secured from inadvertent movement.

When deploying barriers to protect trees and other sensitive structures, ensure the placement of the barrier does not itself become a hazard to the tree or root system.

5.5 Pedestrian barriers

Further guidance on pedestrian barriers and the management of pedestrians is covered in Chapter 3 of the handbook.

Retractable barrier system marshalled to allow site access

5.6 Carriageway barriers

When deciding on the need for barriers at a works site, designers must assess their intended purpose. Barriers should comply with BS EN1317 (Road Restraint Systems) if they are required for containment or restraint to protect the workforce, vulnerable structures, or to ensure the public are not placed in grave danger. A list of compliant road restraint systems approved for use on the TLRN can be found here.[23]

Subject to a site-specific risk assessment, it may be acceptable to use non-approved proprietary barrier systems where they are required to segregate traffic or provide delineation on single carriageway streets that are well lit and have speeds of 40mph or below, or on dual carriageways of 30mph or below.

Barrier units should be installed in an alternate red and white sequence and installed in accordance with the manufacturer's instructions, making sure end sections and connectors are not left exposed in a hazardous way to road users. If the barriers are water filled, care must be taken when considering discharging the water onto the highway to ensure road users are not placed at risk.

Care must be taken when installing higher barrier systems with top panels to ensure safety-critical sight lines for road users are not obstructed, particularly in the proximity of traffic signals, pedestrian crossings, junctions or on bends.

Prior to any barrier installation, the designer should consider the impact on lighting and avoid inadvertently creating locations that could become ambush points or introduce antisocial behaviour.

Barrier systems are intended to make works areas inaccessible, but where barriers are placed to segregate vehicles in areas where there are high numbers of pedestrians (who could previously freely cross the road) they may now be prevented from doing so, which could lead to footway congestion. Supplementary measures or barriers may consequently be needed to ensure pedestrians are kept safe. Examples of where this may occur are near stadiums and parks where a large number of pedestrians may pass in a short space of time.

23 http://www.standardsforhighways.co.uk/ha/standards/tech_info/en_1317_compliance.htm

Barriers providing good delineation

Diversion

Chapter 6 – Temporary traffic signs

110 6.1 – Introduction

110 6.2 – Temporary traffic sign face colours

112 6.3 – Duplication of prescribed signs

113 6.4 – Traffic signs with the TfL logo

114 6.5 – Business names on traffic signs

115 6.6 – Other general temporary signing principles

116 6.7 – Portable Variable Message Signs

6.1 Introduction

Traffic signs must be clear, concise, legible and consistent. With so many works on the road network delivered by hundreds of different contractors, a significant amount of inconsistency has evolved over the years when implementing traffic signs for temporary works and events.

Where a journey passes through multiple works locations undertaken by different contractors, it is important that signing is consistent and to a high standard. This will reduce confusion by enabling road users to understand messages more readily, and make decisions in good time.

It is essential that signs are not used excessively and only where required to ensure unnecessary risk is not introduced for road users. Their placement must be considered carefully to prevent a site becoming non-compliant by reducing road user widths below the minimum required standards.

6.2 Temporary traffic sign face colours

Where a designer requires a temporary sign for a situation that is not an already prescribed sign in the TSRGD, Schedule 13 Part 9 of the regulations allows designers to create temporary signs within certain parameters. Traffic management designers should familiarise themselves with these regulations, especially to avoid using unlawful signs.

Incorrect use of colour on signs is a common issue. Chapter 8 gives guidance on the use of colour coding temporary signs.

White characters or symbols on a red background must be used for any signs that are:

- Hazard warning signs
- Information signs for pedestrians, cyclists (or horse riders)
- Works access/exit signs

Traffic Advisory Leaflet 01/14[24] (Quick guide to temporary white on red signs at road and street works), serves as a very useful guide to designers creating temporary signs, although some of the references to the TSRGD are now outdated.

Black characters or symbols on yellow signs should be used for any signs conveying temporary information relating to roadworks, or information about checkpoints.

Temporary traffic signing for special events should also comply with the TSRGD, and the Traffic Advisory Leaflet 04/11[25] (Temporary Traffic Signs for Special Events) serves as a useful guide. It allows for four variations of traffic sign face colour, but references to the TSRGD are now outdated.

Sign face colours

Hazard warning signs

Roadwork information signs

Example event signs

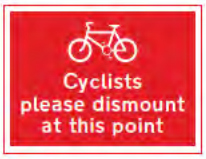
24 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/305857/tal-temporary-white-on-red-signs.pdf

25 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/4393/4-11.pdf

6.3 Duplication of prescribed signs

Sign designers are not permitted to create a temporary sign that is already provided for by the TSRGD. The examples shown below illustrate commonly seen signs on the road network and are shown alongside images of the correct signs prescribed by the TSRGD.

Duplication of prescribed signs

	Incorrect signs	Correct signs
Slippery road signs		
Signing for works access points		
Signing for cyclist dismount situations		

6.4 Traffic signs with the TfL logo

The TSRGD permits the use of traffic authority logos on certain traffic signs, but no sign may contain the logo without the permission of the highway authority. If a traffic management designer intends to place the TfL logo on traffic signs for a scheme or works, they should ensure they have the approval to do so from the relevant TfL Assessment team (see Contacts chapter on page 180). There are a range of design standards available for use by staff, suppliers and design agencies involved in graphic design and layout.

Although some guidelines apply across different modes and business areas, key differences between them mean it is essential that the correct set of standards is applied.

The correct logo to use for TfL for traffic signs is the 'mark', which consists of the TfL roundel with the TfL logo type. To ensure clarity and impact when producing the mark, no other graphic elements should be placed within the minimum margins around the logo.

No other TfL roundels should be used that represent different modes of transport, or marks containing the 'Every Journey Matters' strapline on traffic signs.

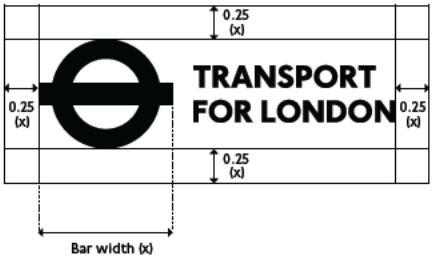
Further information on TfL design standards can be found here.[26]

26 https://tfl.gov.uk/info-for/suppliers-and-contractors/design-standards-and-licensing

Examples for using the TfL logo on traffic signs

End of works sign

Logo used in a top panel



TfL logo design standard

Signing for local businesses

Typical sign that can be used to highlight access is maintained for businesses.

6.5 Business names on traffic signs

TfL does not permit the inclusion of business names on temporary traffic signs.

Where works have the potential to disrupt normal traffic flows and it may not be clear to the public that access to local businesses is maintained, signs may be placed with the legend 'Businesses open as usual'. This ensures TfL is not seen to promote a particular business.

6.6 Other general temporary signing principles

The following guidance is provided to tackle the most common errors TfL has encountered with the use of traffic signs.

- Static signs should have no more than 12 units of information with a unit defined as a word, name, date or symbol
- Messages should be concise and clear and be appropriate to the speed of traffic to enable drivers to understand the message and minimise distraction
- Days of the week may be abbreviated as appropriate and times of the day must always be in the 12-hour format – the 24-hour clock must not be used
- Web addresses must not be used on traffic signs
- Diversion route signing may use sign Ref: 2703 in advance of junctions and/or sign Ref: 2704 at junctions, but there is no expectation that designs must always use both in the vicinity of all junctions. Surplus signs contribute to sign clutter and have the potential to restrict footways
- Map-based diversion signs are not required for works where the directed route can be clearly signed using sign Ref: 2703. If the road network or roundabout is more complex, then their use can be justified

Different types of diverted traffic sign

Sign used in advance of a junction to indicate the direction diverted traffic should take at the junction ahead (Ref: 2703)

Sign used to indicate the direction diverted traffic should take at a junction (Ref: 2704)

6.7 Portable Variable Message Signs

Variable Message Signs (VMS) are used widely across the TLRN, particularly where major or long-duration works are taking place. They are an effective advance warning mechanism to road users about potential disruption upstream.

They are usually trailer-mounted and towed or craned into position.

Where there is adequate width to place VMS units on the footway, they should be sufficiently guarded with pedestrian barriers to Chapter 8 standards to protect pedestrians from colliding with them, particularly blind or partially sighted pedestrians.

Care should be taken to ensure VMS do not present a hazard at head height, and where necessary barriers should be extended to prevent people walking underneath the signs if they cannot be raised to a safe head room height for pedestrians and/or cyclists.

VMS should be positioned where tow hitches point downstream where possible or are secured in the upright position where allowed, which will minimise the hazard in the event of a vehicle collision.

Wherever possible, VMS units should be located behind any existing or temporary crash barriers.

VMS units should be clearly referenced to the connected works site to enable the highway authority or the police to identify the organisation responsible for its placement.

Messages for planned works should conform to the following format:

- Time/Date
- Where
- What
- Advice

Where signs are utilised for emergency situations, the following format should be applied:

- Location
- Direction
- Cause

Messages should not normally contain more than eight words or six units of information.

VMS units must be compliant with TOPAS 2516C[27] (Performance Specification for Discontinuous Variable Message Signs). Chapter 8 Part 3 Section U5.16 gives further information on the use of temporary VMS.

27 http://www.topasgroup.org.uk/MyFiles/Files/specifications/2516C v3 draft uploaded.pdf

Variable message sign

4-WAY CONTROL
WAIT HERE
UNTIL GREEN
LIGHT SHOWS

Chapter 7 – Traffic signals

120 7.1 – Introduction

121 7.2 – Equipment standards and specification

123 7.3 – Standard and UTC PTS systems

124 7.4 – When to use UTC PTC systems

125 7.5 – UTC PTS systems assessment and commissioning

125 7.6 – PTS signal timings

125 7.7 – Portable crossing systems at zebra crossings

128 7.8 – Portable pedestrian crossing facilities

129 7.9 – PTS and cycle facilities

132 7.10 – PTS Cable Protection

132 7.11 – Maintenance of PTS

133 7.12 – Changes to permanent traffic signals

134 7.13 – Modelling and traffic infrastructure timescales

135 7.14 – Existing traffic signal switchouts

7.1 Introduction

TfL is responsible for the maintenance, management and operation of London's 6,000+ permanent sets of traffic lights and processes more than 2,000 sets of portable and temporary signal applications a year.

Keeping London moving is a key TfL responsibility. Due to the large volume of road users in central London and the sensitivity of the TLRN to delays, managing the large volumes of temporary works in London is complex. The use of portable traffic signals helps to control road user movement at works and they are a vital tool in making sure the network remains safe.

Portable traffic signals (PTS, or sometimes referred to as Portable Light Signals (PLS)) are distinct from temporary traffic signals, which are permanent signals mounted in a temporary fashion. They are connected to power and a central traffic signal control system, and were conventionally mounted into barrels, although lately have a more sophisticated base.

Portable signals typically have their own power source, usually battery powered, and are manoeuvrable in nature. The decision on what type of facility to provide rests with TfL as the traffic authority.

Works promoters should consult with TfL's traffic management assessment teams (see Contacts chapter on page 180) when planning works that propose the use of portable signals before seeking formal permission to install them on the TLRN.

7.2 Equipment standards and specification

Portable traffic signal control equipment must comply with the Traffic Open Products and Specifications (TOPAS), most notably:

- TOPAS 2502B[28] (Performance Specification for Portable Traffic Signal Control Equipment for use at Roadworks)
- TOPAS 2504A[29] (Performance Specification for Vehicle Detection Equipment for Vehicle Actuated Portable Traffic Signals)
- TOPAS 2537A[30] (Performance Specification for Portable Traffic Signal Control Equipment with Pedestrian Facilities for use at Roadworks)
- TOPAS 2538A[31] (Performance Specification for Portable Traffic Signal Control Equipment for a Standalone Pedestrian Facility)

Traffic signal equipment not meeting the required TOPAS specifications is not authorised for use on the TLRN.

Traffic management contractors should check with their traffic signal suppliers that the equipment meets the required standard.

Contractors should ensure their staff are suitably trained and readily available to adjust timings or introduce manual control (stop and go board in case of failure) where necessary. Operators and designers require specialist training, particularly with pedestrian-controlled facilities. Contractors working on behalf of TfL are required to operate to the National Highway Sector Scheme 12D.[32] It is strongly recommended this standard be adopted by all works promoters using multiphase signals and pedestrian crossing systems.

Manual control of traffic signals refers to the continual presence of a suitably qualified operative actively controlling the phasing of the signals in real time. This method enables the controller to manage demand and respond to traffic flows to help mitigate delays and disruption on the road network. TfL will need to consent or may impose conditions for the use of manual control.

28 http://www.topasgroup.org.uk/MyFiles/Files/specifications/2502B v4 170415.pdf

29 http://www.topasgroup.org.uk/MyFiles/Files/Specifications 2016/TOPAS 2504A 11316.pdf

30 http://www.topasgroup.org.uk/shop/topas-2537a-performance-specification-for-portable-traffic-signal-control-equipment-with-pedestrian-facilities-for-use-at-roadworks/

31 http://www.topasgroup.org.uk/MyFiles/Files/Specifications 2016/TOPAS 2538A 11316.pdf

32 https://www.ukas.com/download/publications/publications_relating_to_certification_bodies/NHSS 12D 9001 2008 - Issue 10 November 2016.pdf

Manual control should be a method of last resort in controlling traffic signals. In some locations and situations, pre-set or pre-agreed timings may not be deemed responsive enough to sensitive locations or in instances when a sudden surge of traffic can be predicted, such as when people are leaving large events. Manual control can have the capability to flush traffic through an area to prevent sections of the road network becoming gridlocked. Furthermore, it is likely to be required in locations near emergency service stations and Accident and Emergency departments, or security sensitive parts of the road network.

Traffic management proposals with portable traffic signals will be required to show:

- Proposed method of control – manual, fixed, vehicle actuation, Urban Traffic Control (UTC)
- Stage diagram including pedestrian phases with green, vehicular and pedestrian red and blackout duration
- Distance between ‘Wait Here’ signs or ‘Wait Here’ and the datum point
- Traffic signal manufacturer and model with confirmation traffic signal equipment is TOPAS approved

7.3 Standard and UTC PTS systems

Temporary works with traffic signals, if not carefully managed, can disrupt London-wide operations. Therefore, standard portable signals, which are widely used throughout the country, are not suited to all locations within London.

TfL has developed the technology to control PTS through London's UTC system, which centrally controls the traffic signals in London. PTS can now be operated using the following methods:

- Full UTC: This is achieved by commissioning the PTS onto a UTC system and operating the site with plans and a timetable, allowing the PTS to be coordinated with the surrounding network. TfL is able to control these signals remotely and override deployed plans when required. A communication line is required for the Full UTC and downloadable software plan to connect with the on-street equipment. It should be noted that not all available systems in the UK are able to interface with TfL systems so the contractor will need to ensure they source compatible products
- Indirect control: Downloadable plans, signal timing plans and timetables are sent to and operated by the PTS controller. This is in isolation of UTC so the timings will not be coordinated to the surrounding signalled sites, but will be operating the required green times as per the signal timing plans. This can either be delivered by TfL or by the traffic management contractor. It must be possible for these systems to respond to updated signal timings within 15 minutes of a request from TfL
- Standalone: PTS can be operated independently by the traffic management contractor. TfL will provide suggested green timings but the operation/timings are the sole responsibility of the works promoter. In London, these systems are more suited for use in non traffic-sensitive and non-complex locations without UTC

7.4 When to use UTC PTC systems

During the design phase, the works promoter will assess the site and the traffic management/traffic control arrangements and submit a design proposal to TfL. This will include details of the chosen system and method of communicating with the signals.

The proposed traffic management will be assessed and will look at the following considerations in determining whether the implementation of a UTC system is appropriate:

- Planning and notification: Unless special circumstances dictate, TfL requires the decision to use UTC (with all the necessary documentation complete and in place) 10 working days in advance of the works start date
- Works duration: Due to cost and complexity of operations in the mobilisation and demobilisation of the systems, it is recognised they are generally not suited to works that are less than two days in operation except in extraordinary circumstances
- Peak time operations: UTC systems are well suited to heavy demand situations. Off-peak setups and low flow periods during school holidays and Christmas Day/New Year's Day are less likely to warrant UTC systems
- Road layout type: Certain types of road layout such as a roundabout or a gyratory will require rigorous and careful planning and implementation
- Location: If the works are in a sensitive/strategic location or if they could contribute to secondary congestion into sensitive/strategic areas
- Traffic flows: If traffic flows are considered moderate/high, or where abnormal queues are predicted that cause congestion above acceptable levels either in the local area, or cause secondary congestion at other adjacent sensitive/strategic locations
- Modal usage: Minimising disruption to sustainable modes such as buses is an influential factor, particularly if there are more than 30 buses per hour over all arms of an intersection in the vicinity of a works area

7.5 UTC PTS systems assessment and commissioning

When assessing traffic signal applications, the traffic management proposals are assessed to determine the requirement for UTC systems in the following steps:

1. Works promoter (or their traffic management designer) submits a traffic management proposal to TfL for assessment

2. TfL will respond to the works promoter with their traffic management assessment decision including if UTC is required, which must be included in their permit application

3. Works promoter completes a UTC portable request form

4. The method of control and communication to the signals is agreed, bearing in mind resilience in problematic locations

5. UTC portable request form is updated to enable UTC commissioning

6. Several tasks by TfL and the works promoter are required before the UTC PTS is ready for use, which is generally within 10 working days of an order being placed

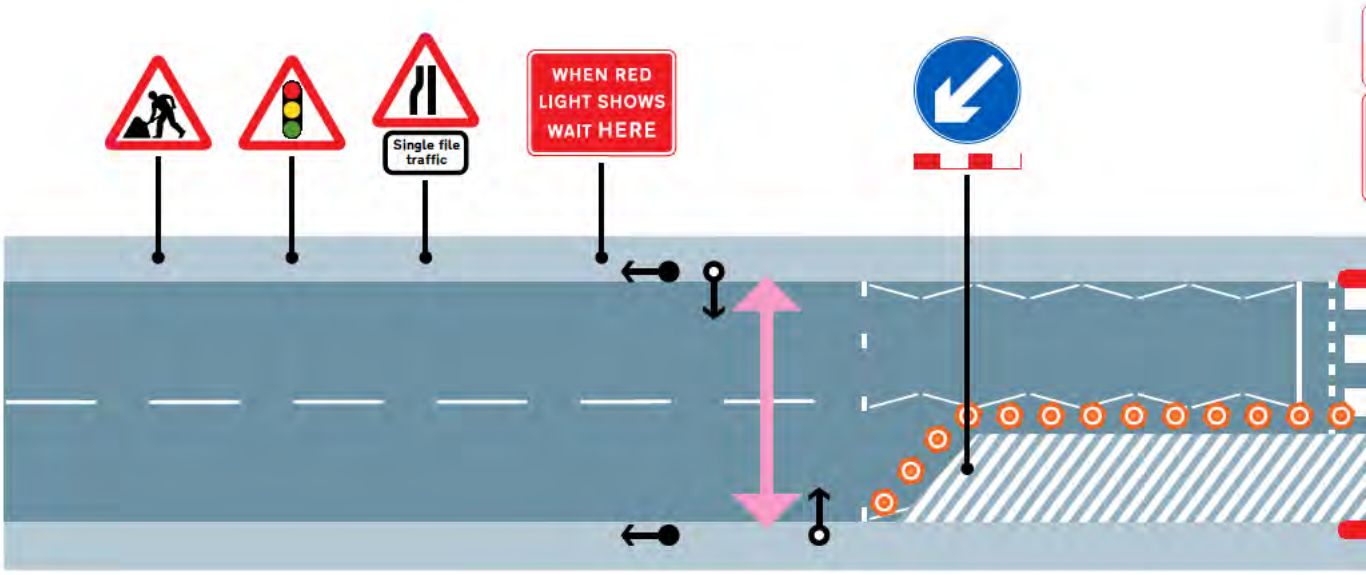
7.6 PTS signal timings

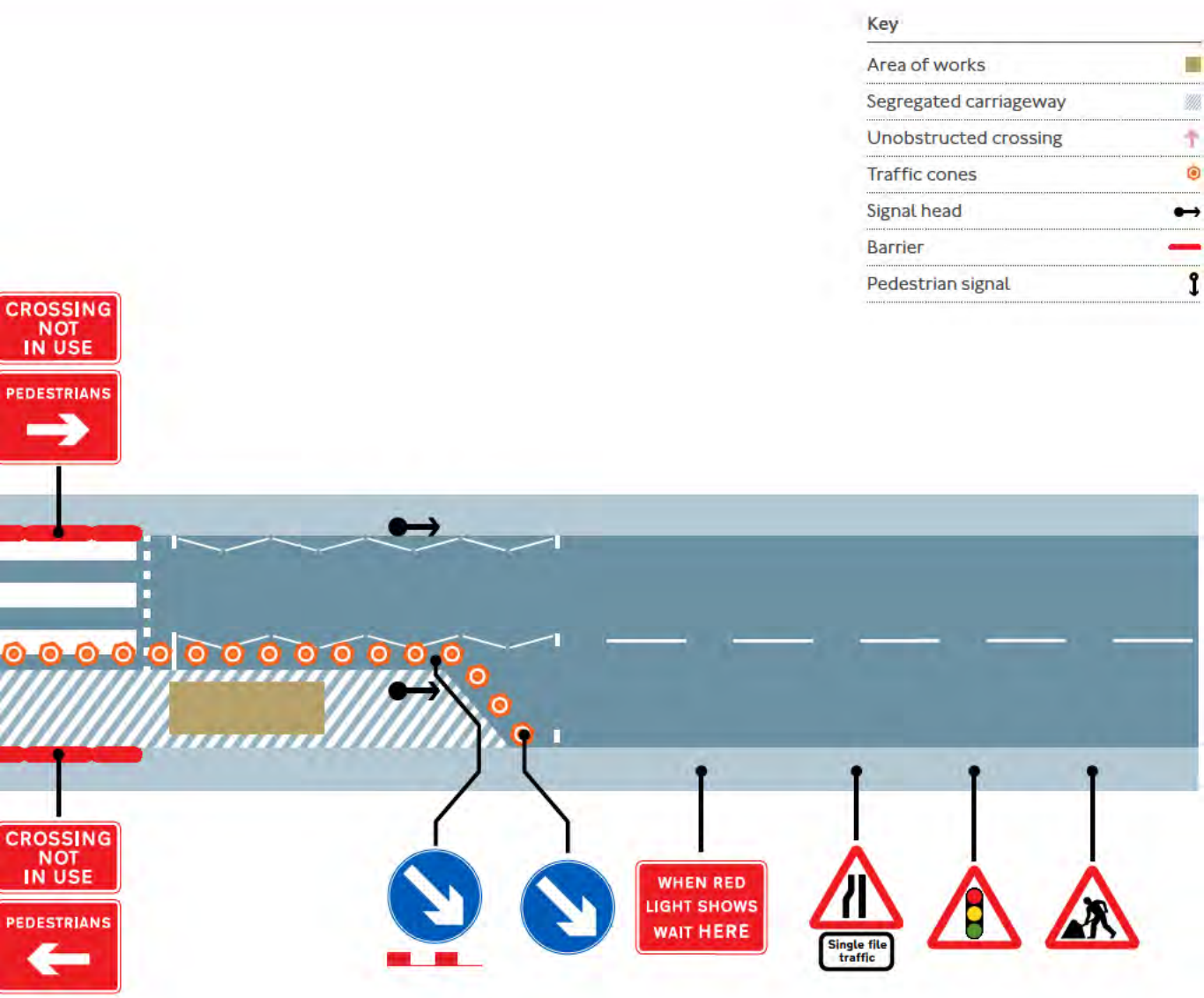
TfL may provide signal timings to contractors, but when they are not supplied, the contractors will need to propose their own timings. It is important that the designer ensures the cycle times are reasonable and not excessive. Long cycle times lead to significant frustration from all road users due to the long wait times for each movement. Research shows that pedestrians are less likely to wait for the green man after 30 seconds, so shorter cycle times are preferable.

7.7 Portable crossing systems at zebra crossings

Where traffic management with a shuttle lane is required to span a zebra crossing, it will be necessary to provide a controlled crossing facility to replace the zebra crossing so that it may operate in sync with the signals. However, it should not be placed in exactly the same location as the zebra crossing as this may lead to road user confusion in terms of who has right of way. The zebra crossing should be closed with pedestrian barriers and the signalised crossing located in a nearby convenient location between the main signal heads.

Closed zebra crossing at roadworks




Key
Area of works
Segregated carriageway
Unobstructed crossing
Traffic cones
Signal head
Barrier
Pedestrian signal
CROSSING NOT IN USE
PEDESTRIANS
CROSSING NOT IN USE
PEDESTRIANS
WHEN RED LIGHT SHOWS WAIT HERE
Single file traffic

7.8 Portable pedestrian crossing facilities

If it is necessary to close a pedestrian crossing facility, it will be expected that an alternative route using an existing crossing point be available via a short diversion route or a replacement facility provided. Reasonable facilities to provide accessible routes to all pedestrians must be maintained, including those in wheelchairs, mobility scooters, pushchair users, or those less able to walk. The aim should be to ensure no one is disadvantaged by achieving a similar standard of safety as at a permanent site.

The Traffic Advisory Leaflet (TAL) 3/II[33] (Signal-controlled Pedestrian Facilities at Portable Traffic Signals) gives advice to designers for temporary pedestrian crossing facilities. It states 'audible and/or tactile signals can be used. Ramps from the footway to the carriageway should be provided, which are also expected to be provided if existing drop kerbs or a carriageway level location are not available – this requirement shall be established as part of the permit conditions on NCT06a'. Chapter 3 (on page 40) of the handbook has further information on the requirements for footway ramps.

TAL 3/II also gives advice on how to manage uncontrolled side road and driveways in shuttle lanes when a pedestrian crossing facility is present. It indicates a supplementary signal and a 'Wait here' sign should be placed within the shuttle lane in order to capture traffic approaching the crossing when the green man is showing. Not all proprietary PTS systems may conform to this design functionality as standard. Designers must therefore design out this situation wherever possible.

33 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/482503/3-II.pdf

7.9 PTS and cycle facilities

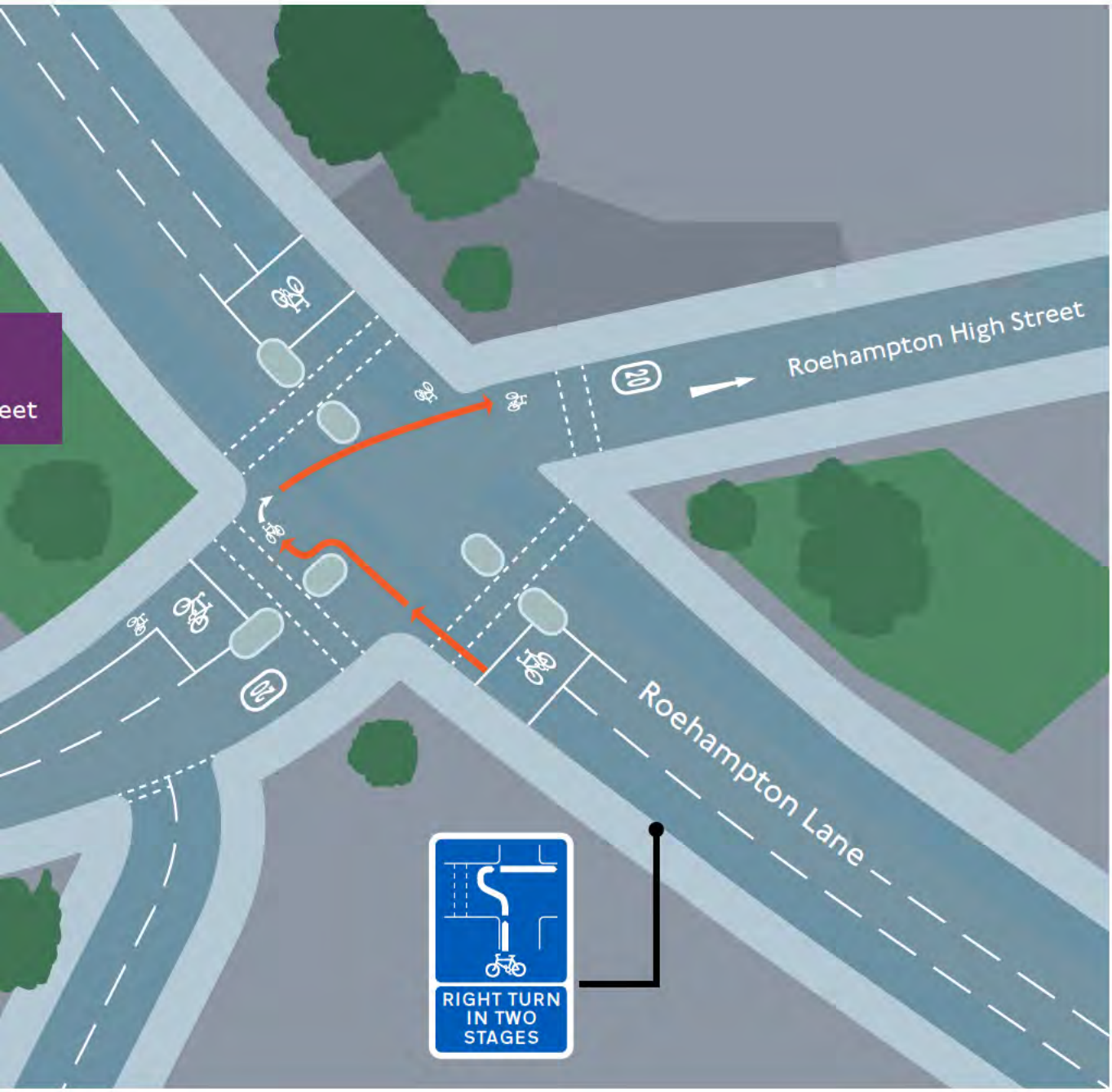
When placing signal heads at junctions with advanced stop lines, care must be taken not to obstruct dedicated facilities for cyclists. Traffic signal heads should be placed after the advanced stop lines line with the 'When red light shows, wait here' or 3/4 control variant located at the advanced stop lines.

Ensure signal heads and 'Wait here' signs do not prevent cyclists using advanced stop lines

When using portable signals at traffic light-controlled junctions with segregated cycle tracks, designers will need to plan very carefully how all approaches are managed, including the cyclists. Many junctions will have two stage right turns (as shown below). Phasing can be complex and the stages must be managed to ensure traffic is not enabled to pass through pedestrian crossings that have a green man. Uncontrolled approaches are unacceptable.

Example of a road layout with a two-stage ri

ght turn for cycles



7.10 PTS Cable Protection

Most PTS systems are self-contained units, however for systems that have external cables at ground level, the signals should be set up in a way so the cables are free from interference and do not present a trip hazard. Cable shrouds offer a tidy and safe method to hide and protect cables. If shrouds cannot be used, the temporary signals should be behind barriers to avoid trip hazards. Push buttons to call the pedestrian green phase must be accessible at all times.

7.11 Maintenance of PTS

In accordance with TAL 3/11, daily inspections of traffic signals are required as a minimum. TfL's network carries large volumes of traffic and is sensitive to network impacts, so TfL would expect more frequent inspection regimes and in the most sensitive locations a constant presence on site during sensitive times. When traffic signals stop working or have inappropriate timings set, unnecessary congestion and delay can occur.

PTS units should be secured and locked to prevent controls being tampered with, and to deter battery theft.

PTS cables should not be easily accessible

7.12 Changes to permanent traffic signals

Where the developer requires changes to be made to the existing highway layout, including the traffic signals, or where new traffic signals are proposed, modelling will be required to understand the combined effects of both the traffic management and construction traffic on the road network.

If proposals significantly impact the network, it may be possible to mitigate any disruption caused through revised traffic signal timings, revisions to the road layout or a new signal installation. In these instances, the developer should seek to optimise proposals through the use of traffic modelling. Traffic models enable proposals to be designed to achieve the right balance for all road users at a particular location.

Where modelling is required, developers or contractors will need to liaise through TfL Assessors (see Contacts chapter) to have the modelling checked and validated by specialists. The timescale for validating traffic signal modelling depends on the size, complexity and ultimately the quality of the model. Guidance on modelling can be found here.[34]

To alter existing traffic signals, a new programmable read-only memory chip, known as a PROM (which goes into the controller box located near to the traffic signals) may be required. This is arranged with TfL's Engineering Services via the TfL assessor.

It is important that the developer makes contact with TfL as soon as possible to enable the above tasks to fit in with their desired delivery programme, as these processes can take up to three months.

34 http://content.tfl.gov.uk/traffic-modelling-guidelines.pdf

7.13 Modelling and traffic infrastructure timescales

Before a traffic management proposal is submitted for assessment, the developer should make contact with the TfL Assessment team to share the proposals. This enables collective agreement to be made on what work will need to be undertaken to understand the impact of the proposal, which will subsequently inform the timescales for design.

Below is an indication of typical timescales for each of the processes that may be required.

Requirement	Time
Base model assessment and audit of proposed layout	4 weeks for each iteration
Proposed model (including inter-greens)	4 weeks for each iteration
Scheme impact report	4 weeks
Manufacturing a new PROM	Up to 3 months
Provision of a new controller (if required)	6 weeks advance notice

7.14 Existing traffic signal switchouts

Where permanent traffic signals need to be switched out, contractors will initially need to get agreement from TfL's traffic management assessment teams before submitting a request to the TfL Fault Control Centre:

Call: 0845 606 1005
Email: atsswitch@tfl.gov.uk

The standard notice period is three days, although more urgent requests can be completed for a higher charge.

Any developer-promoted scheme that includes new, or changes to existing, traffic signals on the TLRN will require the developer to progress the scheme as part of a Section 278 agreement under the Highways Act.

Email: S278SufaceDP@tfl,gov.uk

Chapter 8 – Working on dual carriageways

138 8.1 – Introduction

140 8.2 – Highways England Interim Advice Notes

142 8.3 – Dual-vehicle working

142 8.4 – Short-duration works and inspection stops

143 8.5 – Works site encroachment

145 8.6 – Gantry and fixed signing for temporary works

8.1 Introduction

A total of 295km (51 per cent) of the TLRN comprises dual carriageways, of which 122km are classified as high-speed roads (50mph +), and 16km have the national speed limit. Much of the network is considerably complex with many constraints and hazards imposed on the traffic management design. Large sections of the network have a high density of flyovers, underpasses, traffic signals, guardrail and barriers, off and on slip roads, cycle tracks, footways, access roads and driveways. As a result, signing strategies and taper positions for lane closures need to be very carefully considered to ensure minimal risk for the workforce and public during works. This means that site-specific risk assessments are needed for operating the traffic management.

This section of the guidance aims to bring clarity around some of the issues in designing and operating on the dual carriageway and high-speed sections of the network.

TLRN dual carriageways

8.2 Highways England Interim Advice Notes

Guidance is issued by Highways England (HE) on a range of topics relating to its motorway and trunk road network in the form of Interim Advice Notes (IANs), although other highway authorities may also adopt their use. Several of these cover traffic management design and operational techniques permitting innovative ways of operating to improve road safety and network performance. Detailed here are selected IANs that predominantly apply to the high-speed dual carriageway network, and have been reviewed by TfL and authorised for contractors to use on the TLRN subject to a site-specific risk assessment.

Interim advice notes (IANs) authorised by TfL for use on the TLRN

IAN publication title	TfL comments
I15/08:[35] Guidance for works on the hard shoulder and roadside verges on high-speed dual carriageways	Application of the method and techniques are authorised and approved for use on the TLRN
I37-10:[36] The use of stepped speed limits at roadworks	
I50/16:[37] Guidance on alternative temporary traffic management techniques for relaxation works on dual carriageways	
I63/12:[38] Alternative entry taper at relaxation scheme temporary traffic management on high speed roads	
I79/14:[39] Guidance on the use of vehicle-mounted, high-level VMS to provide advance warning of lane closures for relaxation works on dual carriageways with a hard shoulder	
I81/14:[40] Guidance on the use of impact protection vehicles for temporary traffic management	Application of the method and techniques contained with the IAN and the HTMA guidance are authorised and approved for use on the TLRN
Read in conjunction with: Highways Term Maintenance Association (HTMA)[41] guidance on temporary traffic management vehicle selection and operation	
I87/15:[42] Use of a convoy vehicle for controlling traffic through guide islands at relaxation works on dual carriageways	Application of the method and techniques are authorised and approved for use on the TLRN
I88/16:[43] Guidance on omission or warning lights (road danger lamps) for relaxation works on dual carriageways	

8.3 Dual-vehicle working

In recent years, there have been significant advances in the methodology of works operations to prevent harm occurring to the public and road workers. In 2014, the Health and Safety Executive (HSE) gave clear support to the IAN 181/14 and the HTMA guidance temporary traffic management vehicle selection and operation.

> 'HSE will expect vehicles carrying operatives in an unsecured position should be "protected" by a second vehicle, a dedicated impact protection vehicle, positioned 75 (+ or – 25) metres upstream of the works vehicle. In effect, combined traffic management vehicles, with operatives working on the rear, could not be used on their own whilst in a live lane.'

It is recognised that installing traffic management in some restricted locations with dual vehicles may not provide the safest method of working. This should be identified in the robust risk assessment. Routine operations should allow for a dedicated impact protection vehicle, separate to the vehicle from which operatives are working, during the installation and removal phases of works.

TfL strongly recommends that the above techniques are considered for dual carriageways below 50mph where the 85th percentile speed exceeds the signed speed limit.

8.4 Short-duration works and inspection stops

Contractors wishing to undertake short-duration works or inspection stops on the TLRN should ensure the method of operation is in accordance with Chapter 8. If an operator wishes to use alternative techniques, the method should be discussed with TfL prior to work starting.

TfL will require notification of the works through the appropriate channels for network management purposes in the usual way.

8.5 Works site encroachment

There is a persistent risk of members of the public entering the safety and works zones at works sites, which creates an inherent risk to the workforce as well as to themselves. There are three circumstances where this occurs and each requires a different approach to risk mitigation:

Unintentional encroachment: will occur where either the information given to motorists is unclear or where the boundary of the vehicular route is not clearly defined. The resulting road user confusion can lead to pedestrians, cyclists or motor vehicles unwittingly entering the perimeter of the traffic management and potentially into working areas. At the design stage, designers should ask themselves the first of the key questions in the Safety Code – 'Will someone using the road or footway from any direction understand exactly what is happening and what is expected of them?' Advance and information signs should be clear, the correct size and well positioned to be effective. The edge of the vehicular route must also be clear from all approaches and the whole site should be regularly maintained and inspected. Physical and visual barriers can be used to help communicate what is expected of the road user.

Designers should not rely on marshals or gatemen as an effective method of communicating with moving traffic.

The placement of personnel needs to be carefully considered as the sight of a workforce near a road closure point or in close proximity to moving traffic can act as a magnet for vehicles to stop in dangerous locations to engage in conversations.

Intentional encroachment: is the wilful decision of a road user to ignore signs and barriers to enter a prohibited section of carriageway or works site. This could be the result of intoxication, frustration or criminal intent. Contractors should consider the security of their works sites and the danger they pose to the public and have procedures in place to manage incidents as and when they occur. Barriers and physical obstructions should be considered appropriate to the assessed risk on a site-specific basis. Lone working risk assessments should be reviewed, particularly in areas where disruption can be expected in town centres, close to events and night clubs.

Incident encroachment: occurs as the result of road accidents, or during emergency or major incidents. Working to the required safety zone margins and risk should be assessed on a site-specific basis. Designers will need to assess emergency access arrangements for emergency vehicles and ensure escape routes to adjacent properties are maintained and managed. The following stages in the table on page 144 should be observed to safeguard the risks posed by works sites.

Five key stages to ensuring works sites and closures are effective and risks minimised

Stage	Actions
1	**Giving advance notice to road users** For road closure and other disruptive or major works, consider installing advance warning signs deployed several days in advance of the works along with communications via press releases or media outlets. This will allow motorists to plan ahead and alter journey plans. Encountering unexpected delays or having a journey hindered is a frequent source of frustration to road users. The installation of these signs can reduce motorist frustration and consequently the desire to breach a closure point.
2	**Approach zone signing** On the approach to the lane closure or road closure, ensure signing informs the motorist of what is happening and what is expected of them, so that they can process the information in good time and make better decisions on how to reroute past the works. Notification of the works upstream of the site at key junctions allows people to take alternative routes. Without this time to digest, some motorists are likely to panic or get frustrated more easily and again try to breach a closure point.
3	**Maintenance of signs** Most inadvertent breaches of closures occur when the signs, barriers or traffic cones have been displaced or knocked over. Regular inspections and maintenance will ensure the integrity of the works site is retained and prevent road user confusion.
4	**Barriers and visual deterrents** Despite clearly signed approach zones and well maintained traffic management, the risk remains that some people will still attempt to encroach into safety and working zones, particularly when the works area is not visible from the closure point. Reliance on traffic cones may not be sufficient and in problematic locations it is recommended supplementary traffic barriers be deployed across the full width of the potential access route. Gatemen or traffic marshals may also be considered to allow controlled access, although designers must be aware of the risk of vehicles stopping to verbally engage with marshals which could cause an obstruction to the flow of traffic.
5	**Restraint systems** For works with higher risk, such as excavations, works near railway lines, major works or where security must be tighter, then more robust barriers should be considered or traffic management vehicles parked broadside to physically block routes.

8.6 Gantry and fixed signing for temporary works

Certain sections of the TLRN have gantry and permanently fixed signs for use in temporary situations and closures, particularly on approaches to tunnels and underpasses. Works promoters should seek to use these where possible and ensure the gantry signing does not conflict with the temporary traffic management arrangements.

If there is the potential for a conflict, the traffic management should be discussed with TfL for resolution.

Diverted
Traffic
VIC
EMB
WESTM
BDG
L'BETH

Chapter 9 – Look and feel of roadworks

148 9.1 – Public perception

149 9.2 – Maintenance

150 9.3 – Tidiness: safety, security, aesthetics

152 9.4 – Workforce

154 9.5 – Targeting information

156 9.6 – Branding

9.1 Public perception

While roadworks are an inevitable part of everyday life, well-designed and maintained temporary traffic management and work sites will help retain healthy and pleasant street environments where Londoners feel safe and relaxed. The site boundary is invariably the perimeter of the traffic management and plays a critical role in communicating the professionalism and integrity of the company and its contractors.

Creating clear and consistent information for people living and working near roadworks sites will keep road users better informed, with traffic signs integral to this – see Chapter 6. Good information helps to reduce public confusion and complaints.

Well-planned works outside peak usage hours or returning the road to its users at peak hours all help keep London moving.

Well-maintained traffic cones keep a site safe and routes clearly defined

Straight and tidy barriers maximise safety and give a good impression on site

9.2 Maintenance

National guidance for site maintenance is provided in Chapter 8. Site maintenance regimes should be planned in advance of works and proportionate to the risk of disruption expected. Any maintenance regime should be monitored and reviewed on a regular basis to ensure roadworks do not deteriorate to unsafe levels for extended periods of time.

Maintenance frequency will be determined on a site-by-site basis following a risk assessment. As much of the TLRN has high traffic volumes, including pedestrians and cyclists, two-hourly inspections would be appropriate in most locations.

It is recommended that diversion routes are inspected frequently, particularly when signs are located on footways and other areas where signs are prone to being disturbed. Where a Roadworks Inspector identifies that a site has become non-compliant with the Safety Code, the site is classified as follows:

- **High risk:** The site needs rectification without delay and within two hours of notification of the failing
- **Low risk:** The site requires making good within four hours of notification of the failing

One of the most critical parts of improving the appearance of roadworks is to ensure the guarding and barrier systems are correctly installed and straight and the cones are tidy, correctly aligned and clean.

Barriers and other traffic management equipment should not be utilised to support tools, plant or building materials.

It is incumbent upon works promoters to keep works sites compact and as minimally disruptive as possible although this should not compromise compliance with the Safety Code. As works progress, surplus traffic management should be removed and the site reduced if reasonably practicable without detriment to safety zones.

9.3 Tidiness: safety, security, aesthetics

Sites should be kept orderly, with materials safely stored in an organised manner and contractors should make provision to promptly remove waste and litter from sites. Construction debris is a potential trip hazard to the workforce, or could be used as a missile or weapon during public disorder, and it has a detrimental impact on the appearance of the local street scene.

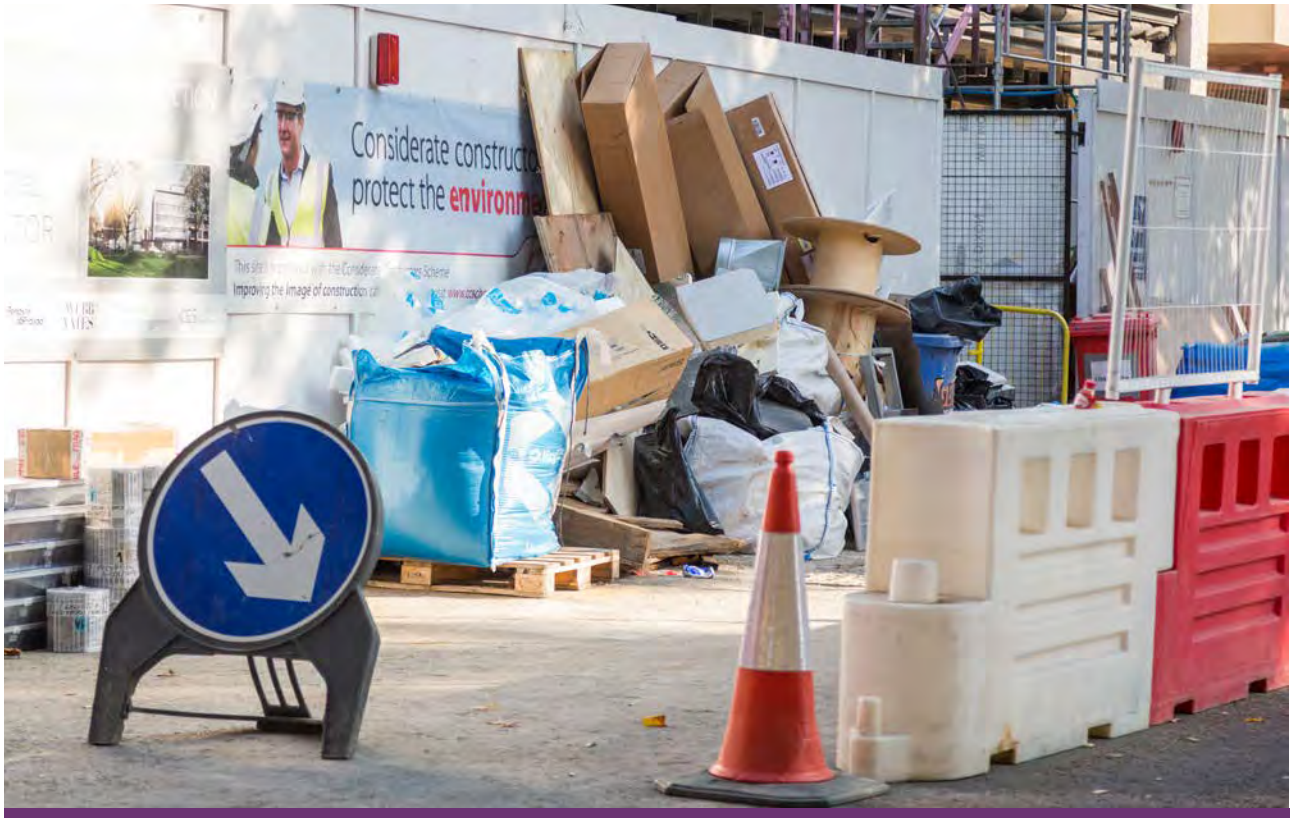
Where there are high numbers of road users and the storage of materials, tools, plant or welfare facilities is occupying too much road space, consideration should be given to creating storage facilities within less busy nearby side streets, with the agreement of the relevant highway authority.

The corporate image and professionalism of a works promoter, contractor and TfL as the highway authority can be severely called into question when sites are untidy.

Street litter collecting within a site and along its boundaries, particularly within walkways and cycle lanes, should be removed. Not only is it unsightly but litter can present a hazard to more vulnerable road users. This is particularly pertinent in the case of longer-duration works, where traffic barrier and hoarding has a solid edge at floor level, as it can trap wind-blown litter alongside it.

Cluttered, untidy sites have the potential to be vulnerable to the hiding and disguising of suspect packages. A tidy site, with well maintained barriers, can help reduce this risk.

Developers and TfL aspire to make local areas more attractive to walking and cycling to help meet the Mayor's transport strategy and promote active travel. A temporary streetscape environment should minimally impact the area and not lower the visual amenity and attractiveness of an area. Traffic management equipment should be kept clean of grime, dirt and dust often emitted through undertaking roadwork operations.



Untidy sites are potentially unsafe and several reduce the attractiveness of an area

Barriers can create litter traps that can make sites appear unsightly

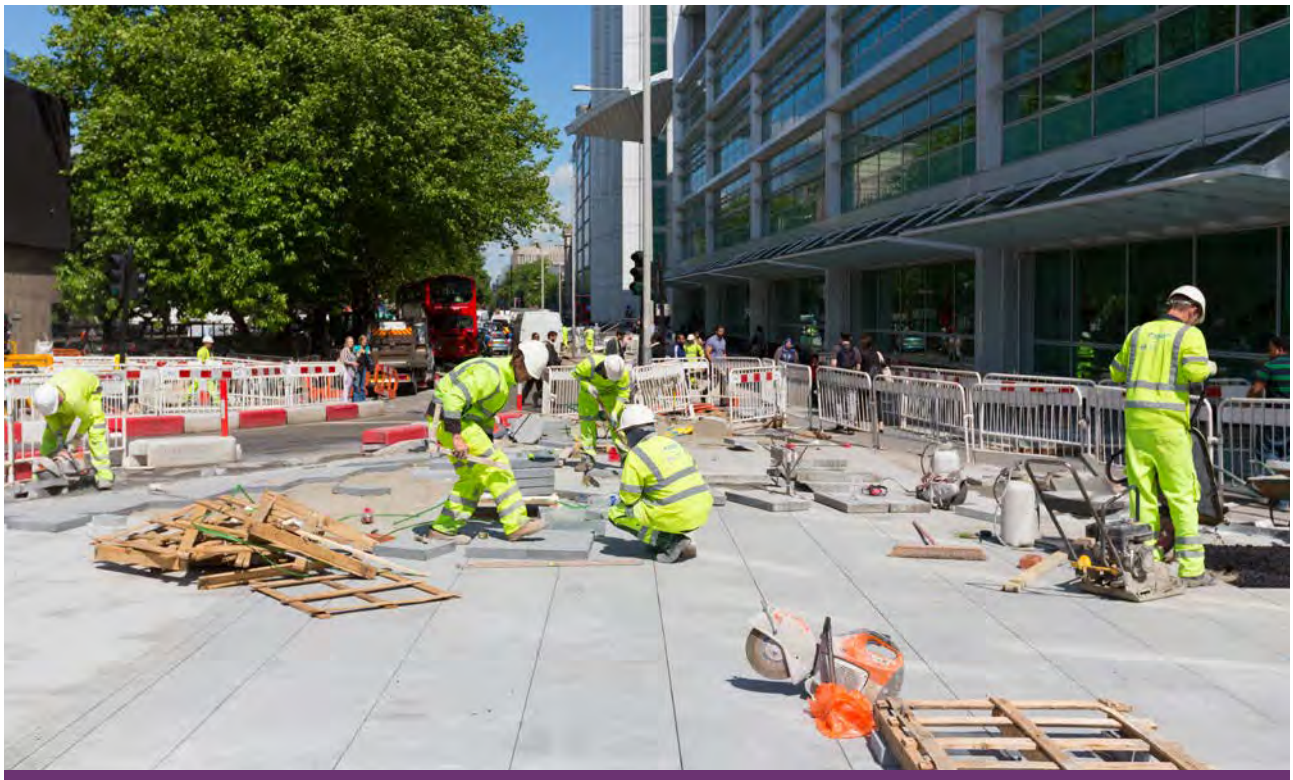
9.4 Workforce

Contractors and visitors to sites should be qualified for the roles they are undertaking and suitably dressed in Personal Protective Equipment as required by the demands of their role. However, the cleanliness and appearance of the Personal Protective Equipment not only affects the safety performance of the product but it can demonstrate publicly the company policy towards maintaining high safety standards throughout all its operations.

All site personnel should also carry a form of identification.

Historically, one of the biggest frustrations of road users has been the appearance of inactivity within roadworks. Works promoters are encouraged to ensure works are planned to keep periods of inactivity to the absolute minimum where possible. Where inactivity is unavoidable, explain why with signing - for example, concrete drying.

Site personnel should be suitably dressed



Clean and consistent Personal Protective Equipment for all site staff helps to demonstrate high safety standards

9.5 Targeting information

The perception and experience of roadworks can be significantly improved with a well-considered communications strategy, which can significantly reduce disruption on the road network, and road user confusion and frustration.

Designers must also be mindful to avoid information overload or message clutter, which can inadvertently contribute to confusion. The key types are:

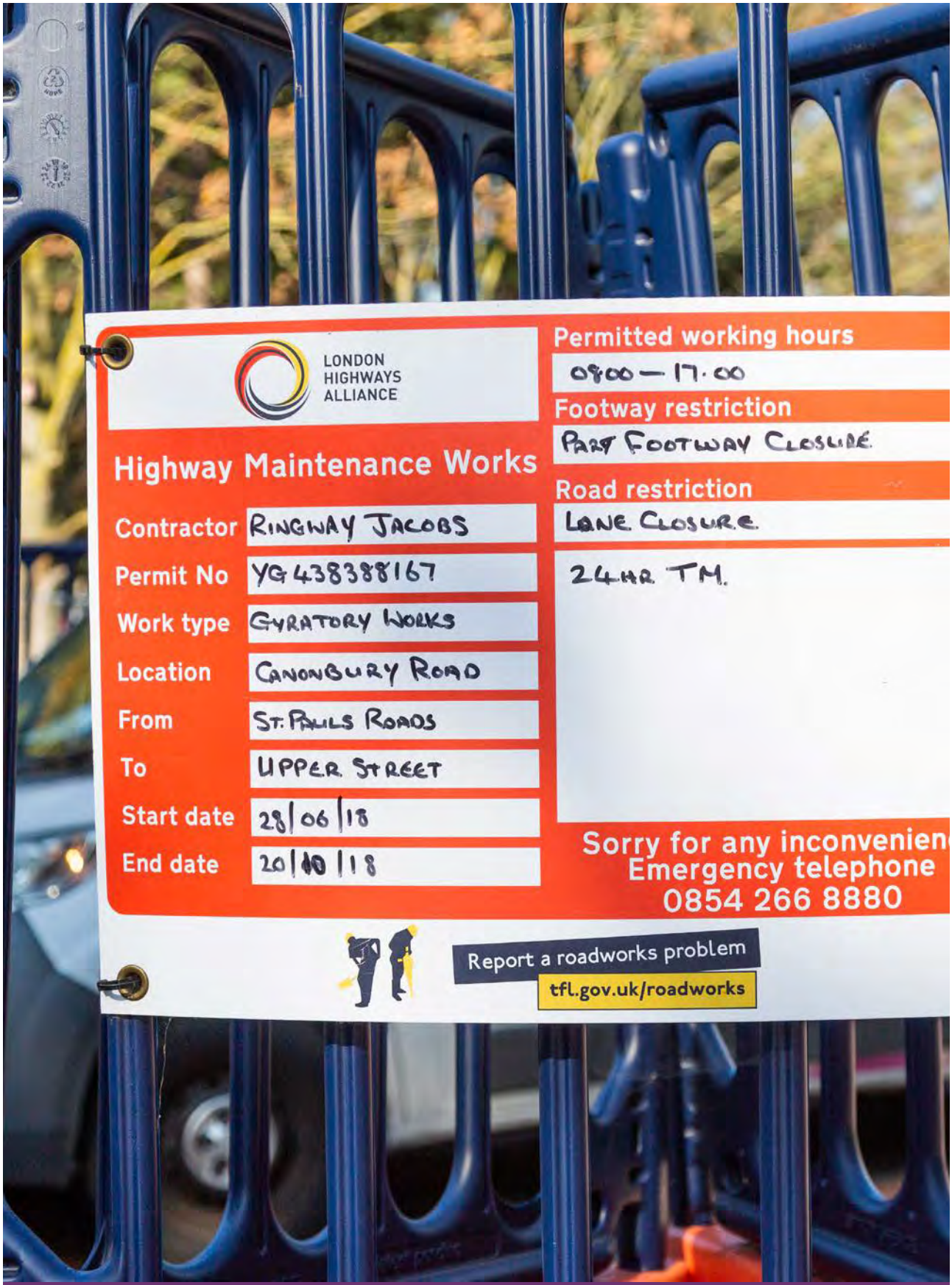
Advance remote communication:
Consultations or letter drops for major or disruptive works are the first tool to engage with the public and communicate why, what and when work is taking place. When the local community feels engaged with the planning and advance notice of the works, complaints are reduced and it affords them the opportunity to consider alternative means of reaching their destination.

Advance roadside communication:
Designers assessing the impact of works should propose the necessary mitigation measures with their traffic management submissions. TfL can then assess the proposals and make further recommendations. Messaging strategies will be heavily influenced by other works in the area. Reflective and variable message traffic signs are not the only tool in roadside communication. Hoardings and some barrier systems can often be utilised to display pedestrian-facing local information in advance of works or before a new phase of works is about to commence. These are especially effective at passenger transport interchanges such as train stations and bus stops.

In accordance with the Safety Code, it is a statutory requirement to ensure all approaches to a works site must sufficiently inform a road user what is happening and what is expected of them. Therefore, it is important to consider all pedestrian and cycle approaches such as footpaths from housing estates and the cycle tracks from parks, and not only the main carriageway.

When providing targeted information on larger schemes, consider completion dates and benefits of the works as well as the nature of the works and who will be most affected by and/or interested in the works, including:

- People living and working near works sites
- People travelling through the area
- Community groups and centres – including schools and colleges, places of worship, leisure centres, and hospitals and other health service providers
- Political representatives
- London boroughs



Communicating with road users

9.6 Branding

With major works, sites may be branded to help members of the public identify who is carrying out the works alongside explaining the nature of the works and when they will be delivered. The branding should not interfere with the performance of the traffic management installation, mask or obscure any traffic signs or be detrimental to personal security, eg by inadvertently creating ambush points or blocking lights and visibility.

Branding should not feature on any traffic sign or equipment.

Branding site hoarding is aesthetically pleasing to passing road users

TRANSPORT
FOR LONDON
EVERY JOURNEY MATTERS

Chapter 10 – Assessment, approval and monitoring

160 10.1 – Purpose of this section

161 10.2 – Background

163 10.3 – Proposals to undertake works

165 10.4 – Road safety audits

166 10.5 – Street and roadworks permits

167 10.6 – Highway licence approval

168 10.7 – Temporary traffic regulation orders and suspensions

170 10.8 – Lane rental

170 10.9 – Stakeholder communications

172 10.10 – Works monitoring

173 10.11 – Works enforcement

173 10.12 – Roadworks patrols

10.1 Purpose of this section

Both roadworks and building construction activities can cause traffic disruption in London, but timely and effective planning can keep that disruption to a minimum. The purpose of this chapter is to provide organisations, especially those that are not familiar with working on the TLRN or SRN, with the information required to execute works. This includes outlining the relevant processes and procedures required to assess work proposals and obtain the necessary approvals.

This chapter will help those proposing to undertake works to understand:

- The relevant TfL processes required to undertake works that impact the TLRN
- Some of the challenges that could arise
- The value to all parties of early engagement
- How TfL monitors works for compliance

10.2 Background

Roadworks are primarily governed under two Acts of Parliament – the New Roads and Street Works Act 1991, and the Traffic Management Act 2004 (TMA).[44] TfL, as a street authority, and those that operate on our network, are bound by this legislation.

The TMA tackles congestion and disruption on the road network. It places a duty on local traffic authorities to ensure the that traffic moves freely on their road network and those networks of surrounding authorities. The TMA gives authorities additional tools to better manage parking policies, moving traffic enforcement and the management of street works.

Those undertaking roadwork play a key role in this regard and must consider the effects on all road users, the community and businesses when undertaking construction works. Each proposal must be subject to careful planning, assessment, and coordination before consent is given to proceed.

44 https://www.legislation.gov.uk/ukpga/2004/18/contents

Works assessment process

Works type	Work promoter	Work promoter	Assessment team	Assessment system	Work type examples
Major schemes	Highway Authority Developer	TLRN / SRN	Network Impact Specialist	Londonworks TMAN	• Major scheme • Cycle Superhighways • S278 schemes • Structures & tunnels investment programme
Standalone works	Highway Authority Utility	TLRN / SRN TLRN	Coordination & Permitting	Londonworks TMAN Slip number Management system	• Drainage • Resurfacing • Traffic signal modernisation • Highways England • Lighting • Scoot • Structural maintenance • Block closures • Crane operations • Utility renewals, upgrades, connections • New Roads and Street Works Act s50

10.3 Proposals to undertake works

Any organisation undertaking particularly disruptive works will be required to submit its traffic management proposals to TfL for assessment. This process ensures that all mitigation measures have been considered to deliver the works in the least disruptive way, the relevant stakeholders are engaged, and the works are adequately communicated to the relevant parties that may be impacted by the works.

The TfL Assessment team will vary depending on the type of work being proposed, as will the assessment system used to process proposals.

The table to the left sets out areas of responsibility for each assessment team.

A major scheme generally involves a permanent change to the road network layout or long-term temporary traffic management arrangements more than six months in duration that will have a significant impact on highway capacity. Any other standalone works that are proposed within the immediate vicinity will also be determined as part of the major scheme assessment.

Standalone works do not realign the permanent nature of the road network, are independent from a scheme, and have a duration of less than six months.

Each traffic management assessment process is slightly different, depending on the type of works being undertaken and the team processing the proposal. TMAN applications are generally determined within one calendar month of receipt, and SNMS applications require 10 days' advance notice. Both assume the application is complete, with all the correct documentation provided.

The table on 164 provides an overview of the information required and the areas a traffic management application should address (where relevant).

Works assessment information

Application type	Information required	Impact of proposal on:
Major scheme	• Existing and proposed layout drawings • Accident data • Traffic surveys/data • Traffic/transport modeling • Scheme impact report where traffic signals are impacted • Multi-modal traffic impact assessment or summary • Road safety audit • Construction Logistics Plan (CLP) • Lorry loading, holding and consolidation areas • Long Goods Vehicle flow data • Supporting information, including stakeholder comments	• Road safety • Accessibility • Pedestrians/cyclists/ buses • Motorised traffic/taxis/ interchanges • Road network capacity • Parking • Adjoining roads/wider area impacts • Environmental and streetscape • Surrounding network and adjacent activities
Standalone works	• Existing and proposed layout drawings with dimensions • Traffic management plan with dimensions • Timing/programme of work; • Accident/survey data • Traffic/transport modelling • Traffic impact assessment or summary • Highway asset impact • Road Safety Audit • Construction Logistics Plan (CLP); • Lorry loading, holding and consolidation areas • Long Goods Vehicle flow data • Mitigation strategy covering all affected modes • Supporting information including stakeholder comments	• Road safety • Accessibility • Pedestrians/cyclists/ buses • Motorised traffic, including motorcyclists and taxis • Interchanges • Capacity/traffic impact • Parking • Adjoining roads/wider area impacts • Environmental and streetscape • Surrounding network and adjacent activities

Further information on the traffic management assessment process can be found by contacting the relevant TfL Assessment team, whose contact details can be found in the Contacts chapter.

The TMAN Assessment component forms part of an overarching system known as Londonworks, which also houses other modules that help to minimise congestion caused by roadworks and construction activity.

There is a Forward Planning portal to enable works promoters to share long-term plans, and a Central Register providing visibility of all works across London that are either proposed or in progress. Both modules are useful as they can help to establish collaborative working opportunities, while the Central Register is a helpful reference to identify potential timeframes when there are no other works being carried out.

TfL's City Planning team is responsible for submitting TMANs on behalf of a developer wishing to work on the TLRN. Contact: **Section278Team@tfl.gov.uk**.

10.4 Road safety audits

In many situations, the guidance contained within the national codes of practice is insufficient to guide designers to cover the complex scenarios likely to be encountered in London. A Road Safety Audit (RSA) may be required for temporary traffic management schemes, even if the arrangements remain in operation for less than six months. This is particularly the case where significant impact on the highway network is anticipated.

TfL's project sponsors will initiate the RSA for TfL-promoted works, and external works promoters should liaise with TfL's traffic management assessors to determine if an RSA is required.

Further information on TfL's RSA procedure (SQA-0170) can be found here.[45] TfL's RSA team can be contacted at: **TfLSafetyAudit@tfl.gov.uk**.

45 http://content.tfl.gov.uk/tfl-road-safety-audit-procedure-may-2014-sqa-0170.pdf

10.5 Street and roadworks permits

In addition to the traffic management assessment process, consent to undertake street and roadworks activity on the TLRN from TfL's Coordination and Permitting team is a mandatory requirement.

The London Permit Scheme came into effect in January 2010 to assist in the coordination of street works and roadworks on the TLRN. All planned, non-planned and emergency works will require a permit.

Under the scheme, works promoters are required to obtain permission from TfL to work on the TLRN. This allows TfL to determine the best time for the works to be carried out when there is the least disruption to traffic and also identify any collaborative working opportunities.

Permit conditions regarding the way the works are to be carried out are also agreed as part of the approval process.

Below are the minimum advance notice periods for applying for a permit to work.

Further information on TfL's permit scheme can be found here.[46]

Works type	Application period			Response period		
	Provisional advance authorisation	Permit	Variation	Provisional advance authorisation	Permit	Variation
Major	3 months	10 days	2 days or 20 per cent of original duration	1 month	5 days	2 days
Standard		10 days			5 days	
Minor		3 days			2 days	
Immediate		2 hours after			2 days	

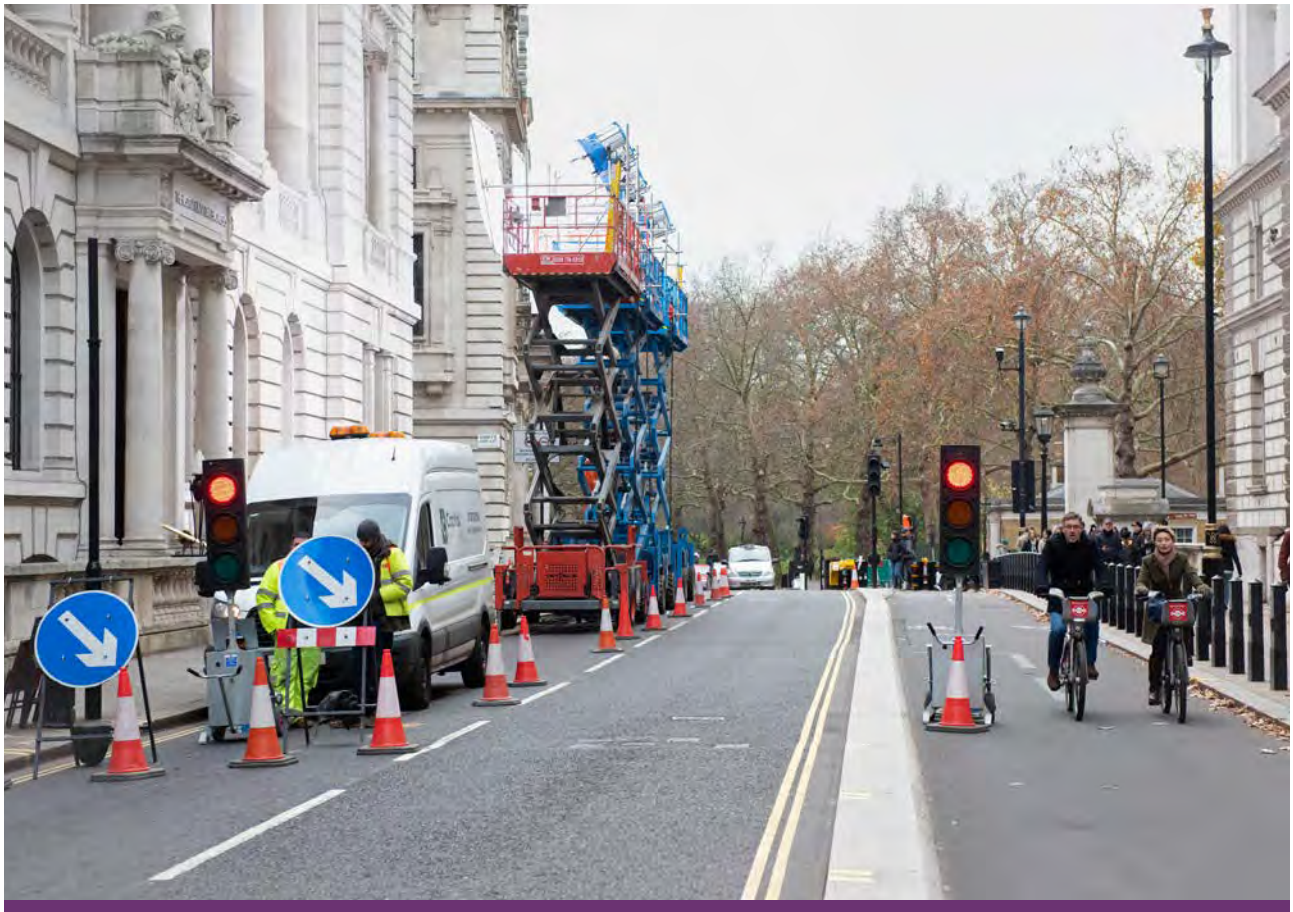
46 https://tfl.gov.uk/info-for/urban-planning-and-construction/roadworks-and-street-faults#on-this-page-4

10.6 Highway licence approval

A separate approval process is required for activities that require licensing under the Highways Act. These activities include:

- Crane operations
- Mobile elevated platforms
- Hoardings
- Scaffolding
- Building materials
- Skips

Application forms for highway licensed activities can be found here.[47]



Licensed activity

47 https://tfl.gov.uk/info-for/urban-planning-and-construction/highway-licences

10.7 Temporary traffic regulation orders and suspensions

A regulatory order or notice is required when it becomes necessary to prohibit, regulate or restrict traffic on a road on part of the road network as a consequence of the work. This includes scenarios such as temporary road closures, banned turns, changes in kerb line controls and loading/parking suspensions. Under the Road Traffic Regulation Act 1984,[48] such changes to the way the permanent road network normally operates requires either a Temporary Traffic Regulation Order/ Notice (TTRO/N) or a Temporary Suspension Request (TSR). Advance notice periods for legally making the relevant TTRO/N or TSR are as follows:

Temporary order type	RTRA reference	Description	Advance notice
Regulation Order	Section 14(1)	Planned traffic prohibitions or restrictions	12 Weeks
Regulation Notice	Section 14(2)	Traffic prohibitions or restrictions required without delay	Not required
Temporary suspension request	Section 6	Suspension of bus lanes, parking controls, such as parking, loading, disabled or motorcycle bays	3 weeks

48 https://www.legislation.gov.uk/ukpga/1984/27/contents

Any new permanent arrangements introduced on the highway, such as new loading/parking facilities, banned turns and kerb line control changes, will require amendments to existing traffic orders.

For scheme-related work, these will commonly be as follows:

Order type	RTRA reference	Description	Advance notice
Experimental Order	Section 9	Temporary road layout for experimental purposes	8 Weeks
Permanent Order	Section 6	Changes to permanent traffic prohibitions or restrictions	12 weeks

Further information can be found by contacting TfL's traffic order team: **TrafficOrderSection@tfl.gov.uk**

10.8 Lane rental

The Transport for London Lane Rental Scheme was introduced on 11 June 2012 and updated on 1 July 2014. The Lane Rental Scheme applies to 56 per cent of the TLRN and is designed to minimise disruption due to roadworks and street works in specified traffic-sensitive locations by applying a daily charge for each day that the street is occupied by the works.

Lane Rental Scheme charges can be either low (£800) or high (£2,500) and are applied for each day of impact. Works promoters must establish if charges apply to their proposals before commencing works. Further details on TfL's Lane Rental Scheme can be found here.[49]

10.9 Stakeholder communications

Engaging stakeholders is fundamental to the success of well-executed roadworks. All relevant stakeholders affected by work proposals must be consulted for awareness and to ensure any adverse effects are mitigated. This should include, where applicable:

- Vulnerable road users (cyclists, powered two-wheelers, those with mobility impairments and pedestrians)
- Other members of the public
- Freight industry
- Local boroughs
- Local businesses
- Residents groups
- Public transport sectors (buses, Tube and overground rail)
- Emergency services
- Taxis
- Established development related working groups

49 https://tfl.gov.uk/info-for/urban-planning-and-construction/lane-rental-scheme

There are a variety of ways to provide awareness of roadworks to help customers avoid delays by making pre-planned changes to their journeys. Communication conventionally involves notifying residents and businesses by sending letters in the near vicinity of works, as well as the installation of variable message signs.

Depending upon the scale of the activity and the anticipated operational impacts for road users, the following enhanced communication tools should also be considered:

- Transport planning and analysis – to understand the specific locations' users; their make-up, frequency of journeys, origins and destinations, and to predict how individual journeys will be affected and the disruption that will be experienced by time of day and day of week
- Analysis-based travel advice content – captured in a single factsheet which is then used as a single source of truth to inform all communications and engagement including:
    - Dedicated travel advice webpage including interactive mapping of works and associated diversions / other travel advice
    - Targeted emails to registered road users
    - Targeted emails to registered regular bus users
    - Tailored letters across immediate residential area, any wider area(s) anticipated to be impacted by works, and other key stakeholders
    - Other tailored printed information including advice for businesses in the locality, cyclists and pedestrians
    - Industry standard road closure data for satnav and other road network information providers
    - Communication of timings to ensure optimal customer and road user response based on frequency of travel through the specific location

TfL Assessment teams are able to provide contact details for stakeholders that should be contacted, which will be dependent on the type and locality of the works.

10.10 Works monitoring

Legislation empowers TfL, as a street authority for the TLRN, to undertake inspections of roadworks to ascertain if a statutory undertaker has complied with its duties.

These inspections include checking if roadworks in progress are compliant with the technical standards prescribed within the Safety Code. Works are also inspected to assess if they are being undertaken in accordance with the approved permit conditions, if they are incurring Lane Rental charges or are overrunning their estimated end date.

Inspections are also carried out once the works are complete to assess whether the reinstated highway is compliant with the performance standards specified within the DfT's Specification for the Reinstatement of Openings in Highways.[50]

More than 40,000 inspections a year are carried out on roadworks. Video analytic technology is sometimes deployed to monitor activity on longer-duration works, such as schemes, s278 development works and utility mains replacement works. These mobile CCTV cameras auto-detect whether activity is taking place on-site when expected – providing alerts containing still images to a back-office system for validation. This ensures finite roadspace is being actively occupied when expected.

Partnerships are also in place with other TfL business areas that have an on-street contingent, who supply observations on roadworks they encounter. In total, more than 20,000 reports on roadworks per year are received from in excess of 380 officers who frequently patrol the network. The reports are submitted through mobile software and transmitted to a back-office system where they are validated by specialist roadworks inspectors.

Alongside this, a further 7,700 reports per year are received from members of the public reporting roadworks problems through TfL's website, which are also validated for compliance.

With access to more than 5,000 CCTV cameras, our Network Management Control Centre also monitors the road network 24 hours a day, regularly identifying concerns it has observed with roadworks.

It is essential that construction organisations provide TfL with a 24/7 contact point empowered to rectify any non-compliant defects within two hours of being notified of a high-risk failure, or within four hours for lower-risk issues.

50 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/11042/sroh.pdf

10.11 Works enforcement

Any breaches of safety standards are taken seriously, with the appropriate remedial interventions implemented against the parties concerned, with prosecution considered if this is deemed the most appropriate course of action. The interventions at our disposal include:

- Operation of a Fixed Penalty Notice system - this provides TfL with the option of dealing with specified streetworks offences through the payment of a fine in lieu of prosecution

- Prosecution in the magistrates' courts where the use of Fixed Penalty Notices are not considered appropriate or available, for example safety offences or where they have failed to discharge liability through the Fixed Penalty Notice scheme, and

- Action plans to address specific areas of under performance, which are then closely monitored with the works promoter through enhanced reporting, regular progress review meetings and toolbox talks

Charges are also imposed where works are found to be overrunning, or are being undertaken during Lane Rental operational hours.

10.12 Roadworks patrols

TfL undertakes regular roadworks patrols with the delivery team, road users, campaign groups, and developers to cycle and walk through traffic management on the TLRN both before and during roadworks. This active traffic management experience provides first-hand intelligence to road users encountering temporary road network conditions, and realising the constraints arising.

Issues are discussed along the route with observations collated into a report for dissemination to the group, site managers and other stakeholders. The emphasis is on ensuring high-quality provision for vulnerable road users at works sites.

The patrol methodology has been a catalyst for change, especially in the way TfL approaches roadworks design and conflict mitigation as part of the traffic management assessment process. This includes interventions such as mandatory and advisory cycling facilities around roadworks and the provision of loading areas.

Further information relating to cycle patrols can be requested from: **TMWorkinggroup@tfl.gov.uk**.

References

Service	Notice period
Mayor's Transport Strategy[51]	Greater London Authority
Healthy Streets for London[52]	Transport for London
Vision Zero action plan[53]	Transport for London
Safety at Street Works and Roadworks: A Code of Practice[54] (the Safety Code)	Department for Transport
Chapter 8 of the Traffic Signs Manual[55] (Chapter 8)	Department for Transport
Traffic Signs Regulations and General Directions[56] (TSRGD)	Her Majesty's Stationery Office
Health and Safety at Work Act 1974[57]	Her Majesty's Stationery Office
Construction (Design and Management) Regulations 2015[58]	Health and Safety Executive
Management of Health and Safety at Work Regulations 1999[59]	Her Majesty's Stationery Office
New Roads and Street Works Act[60]	Department for Transport
Walking action plan[61]	Transport for London
Pedestrian Comfort Guidance[62]	Transport for London
Equality Act 2010[63]	Government Equalities Office
Inclusive Mobility[64]	Department for Transport
Crime and Disorder Act 1998[65]	Her Majesty's Stationery Office
BS 8442:2015: Miscellaneous road traffic signs and devices	British Standards

Service	Notice period
BS EN12899-1: 2007 Fixed, vertical road traffic signs	British Standards
Traffic Advisory Leaflet 01/14[66] (Temporary white on red signs at roadworks)	Department for Transport
Traffic Advisory Leaflet 15/99 Cyclists at Roadworks[67]	Department for Transport
Local Transport Note LTN 01/12[68] (Shared use routes for pedestrians and cyclists)	Department for Transport
Local Transport Note LTN 02/08[69] (Cycle infrastructure design)	Department for Transport
An Introduction to the use of Portable Vehicular Signals[70]	Department for Transport
CLOCS Standard for construction logistics: managing work related road risk[71]	Construction Logistics and Community Safety
Interim Advice Note 142/11 (Temporary Barrier Decision Tool)[72]	Highways England
BS 8442:2015 Miscellaneous road traffic signs and devices. (Requirements and test methods)	British Standards
BS EN1317 (Road Restraint Systems)	British Standards
List of compliant road restraint systems[73]	Highways England
TOPAS 2516C[74] (Performance Specification for Discontinuous Variable Message Signs)	Highways England
TOPAS 2502B[75] (Performance Specification for Portable Traffic Signal Control Equipment for use at Roadworks)	Highways England

Service	Notice period
TOPAS 2504A[76] (Performance Specification for Vehicle Detection Equipment for Vehicle Actuated Portable Traffic Signals)	Highways England
TOPAS 2537A[77] (Performance Specification for Portable Traffic Signal Control Equipment with Pedestrian Facilities for use at Roadworks)	Highways England
TOPAS 2538A[78] (Performance Specification for Portable Traffic Signal Control Equipment for a Standalone Pedestrian Facility)	Highways England
National Highway Sector Scheme 12D[79]	Highways England
Traffic Advisory Leaflet (TAL) 03/11[80] (Signal-controlled Pedestrian Facilities at Portable Traffic Signals)	Highways England
IAN 115/08:[81] Guidance for works on the hard shoulder and roadside verges on high speed dual carriageways	Highways England
IAN 137-10:[82] The use of stepped speed limits at roadworks	Highways England
IAN 150/16:[83] Guidance on alternative temporary traffic management techniques for relax works on dual carriageways	Highways England
IAN 163/12:[84] Alternative entry taper at relaxation scheme temporary traffic management on high speed roads	Highways England
IAN 179/14:[85] Guidance on the use of vehicle mounted high level VMS to provide advance warning of lane closures for relaxation works on dual carriageways with a hard shoulder	Highways England
IAN 181/14:[86] Guidance on the use of impact protection vehicles for temporary traffic management. Read in conjunction with: Highways Term Maintenance Association (HTMA)[87] Guidance on temporary traffic management vehicle selection and operation	Highways England
IAN 187/15:[88] Use of a convoy vehicle for controlling traffic through guide islands at relaxation works on dual carriageways	Highways England
IAN 188/16:[89] Guidance on omission or warning lights (road danger lamps) for relaxation works on dual carriageways	Highways England

Service	Notice period
Traffic Management Act 2004 (TMA)[90]	Her Majesty's Stationery Office
Highways Act 1980[91]	Her Majesty's Stationery Office
Road Safety Audit procedure[92]	Transport for London
Highway Licence Application Forms[93]	Transport for London
Road Traffic Regulation Act 1984[94]	Her Majesty's Stationery Office
Lane Rental Scheme[95]	Transport for London
Specification for the Reinstatement of Openings in Highways[96]	Department for Transport
Transport for London website[97]	Transport for London

51 https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf

52 http://content.tfl.gov.uk/healthy-streets-for-london.pdf

53 http://content.tfl.gov.uk/vision-zero-action-plan.pdf

54 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321056/safety-at-streetworks.pdf

55 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/203669/traffic-signs-manual-chapter-08-part-01.pdf

56 http://www.legislation.gov.uk/uksi/2016/362/pdfs/uksi_20160362_en.pdf

57 https://www.legislation.gov.uk/ukpga/1974/37

58 http://www.hse.gov.uk/construction/cdm/2015/index.htm

59 http://www.legislation.gov.uk/uksi/1999/3242/contents/made

60 http://www.legislation.gov.uk/ukpga/1991/22/contents

61 http://content.tfl.gov.uk/mts-walking-action-plan.pdf

62 http://content.tfl.gov.uk/pedestrian-comfort-guidance-technical-guide.pdf

63 https://www.gov.uk/guidance/equality-act-2010-guidance

64 https://www.gov.uk/government/publications/inclusive-mobility

65 https://www.legislation.gov.uk/ukpga/1998/37/contents

66 https://www.gov.uk/government/publications/temporary-white-on-red-signs-at-road-works

67 http://www.ukroads.org/webfiles/tal 15-99 cyclists at roadworks.pdf

68 https://www.gov.uk/government/publications/shared-use

69 https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-208

70 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/509198/introduction-use-portable-vehicular-signals.pdf

71 https://www.clocs.org.uk/page/clocs-standard

72 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian142.pdf

73 http://www.standardsforhighways.co.uk/ha/standards/tech_info/files/List_of_EN1317_Compliant_RRS_March_2016.pdf

74 http://www.topasgroup.org.uk/MyFiles/Files/specifications/2516C v3 draft uploaded.pdf

75 http://www.topasgroup.org.uk/MyFiles/Files/specifications/2502B v4 170415.pdf

76 http://www.topasgroup.org.uk/MyFiles/Files/Specifications 2016/TOPAS 2504A 11316.pdf

77 http://www.topasgroup.org.uk/shop/topas-2537a-performance-specification-for-portable-traffic-signal-control-equipment-with-pedestrian-facilities-for-use-at-roadworks/

78 http://www.topasgroup.org.uk/MyFiles/Files/Specifications 2016/TOPAS 2538A 11316.pdf

79 https://www.ukas.com/download/publications/publications_relating_to_certification_bodies/NHSS 12D 9001 2008 - Issue 10 November 2016.pdf

80 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/482503/3-11.pdf

81 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian115r2.pdf

82 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian137.pdf

83 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian150_16.pdf

84 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian163.pdf

85 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian179.pdf

86 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian181.pdf

87 https://www.tmca.org.uk/sites/default/files/downloads/htma_guidance_ttm_vehicle_selection_and_operation.pdf

88 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian187.pdf

89 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian188.pdf

90 https://www.legislation.gov.uk/ukpga/2004/18/contents

91 https://www.legislation.gov.uk/ukpga/1980/66

92 http://content.tfl.gov.uk/tfl-road-safety-audit-procedure-may-2014-sqa-0170.pdf

93 https://tfl.gov.uk/info-for/urban-planning-and-construction/highway-licences

94 https://www.legislation.gov.uk/ukpga/1984/27/contents

95 https://tfl.gov.uk/info-for/urban-planning-and-construction/lane-rental-scheme

96 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/11042/sroh.pdf

97 http://www.tfl.gov.uk/

Contacts

TfL Assessment Teams

Contact Type	Area	Boroughs	Email
Network Impact Specialist Team	North	Barking & Dagenham, Barnet, Brent, Enfield, Hackney, Hammersmith & Fulham, Haringey, Harrow, Havering, Hillingdon, Hounslow, Redbridge Waltham Forest	NPDNetworkImpactSpecialist@tfl.gov.uk
	Central	Camden, City of London, Islington, Kensington & Chelsea, Tower Hamlets, Westminster	
	South	Bexley, Bromley, Croydon, Ealing, Greenwich, Lambeth, Lewisham, Kingston, Merton, Newham, Richmond, Southwark, Sutton, Wandsworth	
Coordination & Permitting	East	Barking & Dagenham, Bexley, Enfield, Greenwich, Hackney, Haringey, Havering, Newham, Redbridge, Tower Hamlets, Waltham Forest	CaPEast@tfl.gov.uk
	West	Barnet; Brent, Ealing, Harrow, Hillingdon, Hounslow, Kingston-upon-Thames, Richmond-upon-Thames, Wandsworth	CaPWest@tfl.gov.uk
	Central	Camden, City of London, Hammersmith & Fulham, Islington, Kensington & Chelsea, Westminster	CaPCentral@tfl.gov.uk
	South	Bromley, Croydon, Lambeth, Lewisham, Southwark, Sutton	CaPSouth@tfl.gov.uk
Londonworks System Access			Londonworks@tfl.gov.uk
Slip Number Management System Access			SNMS@tfl.gov.uk

Service	Contact
TfL Bus Operations Team	020 3054 0195
TfL bus suspensions	North London: north.rsm@tfl.gov.uk
	Central London: central.rsm@tfl.gov.uk
	South London: south.rsm@tfl.gov.uk
TfL traffic signal switchouts	0845 606 1005 atsswitch@tfl.gov.uk
TfL's City Planning Team	Section278Team@tfl.gov.uk
TfL's Traffic Order Team	TrafficOrderSection@tfl.gov.uk
Police anti-terrorist hotline	0800 789 321

Any queries relating to this document should be emailed to **TMWorkingGroup@TfL.gov.uk**

© Transport for London

December 2018

Transport for London

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 1, Batch 2
Volume 2
Order Specification
Appendix C

Health and Safety Management Requirements

Table of Contents

1. **General** 3
2 ***Contractor's* Health and Safety Management Arrangements** 5
3 **Health and Safety Advice** 5
4 **Procurement and Supply Chain Management** 5
5 **Health and Safety Training** 5
6 **Construction Skills Certification Scheme (CSCS)** 6
7 **Management of Site Hazards** 6
8 **The Construction (Design and Management) Regulations 2015** 7
9 **Incident Reporting, Investigation, Performance Monitoring** 8
10 **Non English Speaking Workers** 10
11 **Personal Protective Equipment (PPE)** 10
12 **First Aid, Occupational Health, Drugs and Alcohol** 11
13 **Welfare Arrangements** 13
14 **Equipment, Materials or Substances Hazardous to Health** 13
15 **Asbestos** 14
16 **Emergency Plan and Fire Safety** 15
17 **Behavioural Safety** 16
18 **Health and Safety Innovation, Best Practice and Campaigns** 17
19 **Site Mobilisation and Start of Works** 17
20 **Site Security Arrangements** 18
21 **Information** 18
22 **Site Supervision** 19
23 **Confined Spaces** 19
24 **Working at Height** 20
25 **Lifting Operations** 21
26 **Excavation and Dredging** 21
27 **Overhead Power Lines** 22
28 **Hot Works** 22
29 **Construction Plant and Equipment** 23
30 **River Traffic Management and Pedestrian Segregation** 23
31 **Site Inspections and Assurance** 23
32 **Senior Management Tours** 24
33 **Works in the Vicinity of the Tidal Thames** 25

TfL Health and Safety Management Requirements

The Buyer is the *Client* for the purposes of the Construction (Design and Management) Regulations 2015 (the CDM regulations).

The Supplier is the *Contractor* for the purposes of the Construction (Design and Management) Regulations 2015.

In addition to all other health and safety requirements the Contractor shall implement the requirements described in this Appendix to protect the workforce, members of the public and persons visiting the site from risks arising from the hazards defined therein.

In addition to all other information required the Contractor shall provide copies of CA marking information for all CA marked works, goods or materials used in the works for inclusion in the Health and Safety File. This information shall include, as appropriate, the Declaration of Conformity or Declaration of Performance and all safety information.

1. General

1.1. The *Client*'s vision for health and safety is of world class delivery with zero harm. The *Client*'s strategy for delivering this is to implement effective health and safety management systems and behaviours to get ***"Everyone home safe and healthy every day"***.

1.2. The *Contractor* complies with the spirit and intent of the *Client*'s Health, Safety and Environment Policy and Health and Safety strategy.

1.3. The *Contractor* and his supply chain implements measures to mitigate and manage the key risks to as low as reasonably practicable (ALARP) through:

a) robust design risk management;

b) effective processes for assessing risk and developing safe systems of work;

c) Construction Phase Plans and Emergency Preparedness Plans;

d) behavioural safety programme with full participation by all;

e) high levels of leadership commitment and supervision and engagement in monitoring and managing the *contract*, rectifying deficiencies and continuously improving;

f) personal competency, development and innovation;

g) exemplary standards of health and safety performance and management whether in design, construction or procurement to ensure that the *Client*'s

vision is delivered and compliance achieved with health and safety legislation;

h) comprehensive occupational health management scheme;

i) regular meetings to discuss health and safety performance;

j) *Contractor's* workers are work ready through inductions, toolbox talks and briefings;

k) "One Team" culture, honesty, openness and engagement; and

l) rewarding good performance and challenging poor performance.

1.4. The *Contractor* responds promptly if the *Client* requests a meeting with a senior representative from the *Contractor* (typically a Director) to discuss any reportable event, adverse trends or other evidence of a serious non-conformity with the legislation or health and safety requirements.

1.5. The *Contractor* shall take all necessary precautions to prevent danger, nuisance or inconvenience to the owners, tenants or occupiers of adjacent properties and to the public generally.

1.6. The *Contractor* shall inform the *Client* as soon as becoming aware of any visits from Enforcing Authorities (Health and Safety Executive (HSE), or Local Authority Environmental Health (EH) Department), Port of London Authority (PLA) prosecution or pending or likely prosecution of the *Contractor* for any offence pertaining to the health and safety of his employees or of other persons, or of any conviction on such prosecution, and shall provide the *Client* with such further information and documents as the *Client* may require.

1.7. The *Contractor* ensures that all employees and Subcontractors and suppliers of any tier are made aware of their responsibility for their own safety and the safety of Others and for ensuring that the activities they undertake are safe and do not place Others at risk.

1.8. The *Contractor* ensures that his employees participate in the health and safety initiatives that the *Contractor* and *Client* use to review and improve health and safety performance collectively with their supply chains. This includes the requirement to attend routine health and safety meetings, briefings and Subcontractor forums.

1.9. The *Contractor* produces, cascades, communicates and circulates health and safety alerts and communications to all levels of the workforce and shares these with the *Client*. The *Contractor* retains records of these being briefed.

2 *Contractor's* Health and Safety Management Arrangements

2.1 The *Contractor* has a health and safety management system that, as a minimum, meets the requirements contained in ISO 45001.

2.2 The *Contractor* shall produce an annual Health and Safety Action Plan at the start of each financial year. The Plan shall:

a) list and support a set of Health and Safety Objectives;

b) have realistic target dates assigned and be challenging but achievable;

c) be presented to, and agreed by, the *Client* during mobilisation to commence delivery from 1 April in Year 1, and then in subsequent years be presented to, and agreed by, the *Client* during March to commence delivery on 1 April each year;

d) be completed, evidenced and approved by the *Client* before the end of the financial year; and

e) consist of at least one action per financial year relating to collaborative working to deliver a pan-London health and safety benefit or initiative.

3 Health and Safety Advice

3.1. The *Contractor* employs at all times suitably competent health and safety resources to oversee and direct a sufficiently sized and competent team of health and safety professionals, to fully implement all the applicable health and safety requirements.

3.2. The *Client* shall be informed if the resources available to fulfil this change, and the measures that shall be taken to ensure health and safety are not compromised.

4 Procurement and Supply Chain Management

4.1. Prior to and after the appointment of Subcontractors, the *Contractor* is responsible for ensuring that Subcontractors are aware of and understand the health and safety requirements stated within the Contract. The *Contractor* coordinates and manages the interface between his Subcontractors to ensure compliance with the health and safety requirements and monitors and reports health and safety performance periodically to the *Client*.

5 Health and Safety Training

5.1. The *Contractor* ensures the delivery of health and safety training for all persons (including Sub*contractor*s and suppliers of any tier) engaged on the

contract. In particular, training is provided to raise awareness of how health and safety initiatives can be incorporated in to the work activities to maximise performance and assist with mitigating any associated impacts. The *Contractor* provides specific training to maintenance staff to ensure that they are aware of the required mitigation measures detailed in the risk assessments and method statements. The *Contractor* meets all training, assessment and associated costs.

5.2. The *Contractor* ensures that all employees, visitors, Subcontractors and suppliers of any tier and others working on Site attend an induction and any other training appropriate to the work taking place before the person starts work on the Site.

5.3. The *Contractor* puts in place systems to implement all inductions/training effectively. The persons providing inductions have received adequate training to do so. The *Contractor* ensures that these are carried out in a suitable place with appropriate visual aids.

5.4. The *Contractor* has a procedure in place that assists those personnel with learning, reading and language difficulties.

5.5. The *Contractor* maintains a written record of attendance for inductions and safety briefings. This record is available to the *Client* on request.

5.6. The contractor ensures that all employees carry induction cards / works identification cards at all times.

6 Construction Skills Certification Scheme (CSCS)

6.1. The *Contractor* ensures that all employees, Subcontractors and suppliers of any tier and other *Contractor*s entering construction sites are in possession of a valid CSCS card. The *Contractor* ensures that the CSCS card held by any individual is appropriate to their specific job task(s).

6.2. An exception to this requirement is granted where the individual holds a valid card from a CSCS affiliated or amalgamated scheme or other accepted scheme which has been assessed as meeting similar standards. Special dispensation shall be given by the *Contractor* to provide access to visitors when on an accompanied site visit.

7 Management of Site Hazards

7.1. The *Contractor* takes appropriate action with regards to the site hazards in association with the *works* contained in any Pre Construction Information. The *Contractor* also considers the hazards identified in the development of their detailed design using the Design Risk Management process of the Construction (Design and Management) Regulations 2015 (CDM Regulations). The *Contractor* ensures that they properly communicate the hazards on drawings or through risk registers, and controls the residual risks via risk assessments, method statements and activity plans as part of their safe system of work so that they are understood by the workforce. Any Pre Construction Information provided is treated as a live document and updated with any new site health and safety critical information.

7.2. The *Contractor* also considers the hazards that are normally associated with working on the Affected Property and on or around water. These include, but are not limited to, confined spaces, working at heights, asbestos containing materials, buried services, overhead utilities, hazardous materials, contaminated land, uneven surfaces, high and low voltage cables, vessels, boat operators, staff and passengers. The *Contractor* undertakes his own site hazard survey prior to starting works to verify and identify any other risks that may affect the *works*.

8 The Construction (Design and Management) Regulations 2015

8.1. The *Client* is the *Client* for the purposes of the Construction (Design and Management) Regulations 2015 (the CDM regulations).

8.2. To the extent that the CDM Regulations apply to this Contract, the Company appoints the *Contractor* to act as Principal Designer and Principal *Contractor* pursuant to Regulation 5 (1) of the CDM regulations, but reserves the right to appoint alternative suppliers to fulfil these roles.

8.3. The *Contractor* shall accept any such appointment made under clause 8.2 and agree to carry out all associated obligations imposed by the CDM Regulations. The *Contractor* and *Client* shall provide each other with all the necessary assistance which they may reasonably require in order to fulfil their respective obligations under the CDM regulations.

8.4. The *Contractor* warrants to the *Client* that it:

(a) is competent to perform such of the duties allocated to it under 8.3

(b) Shall allocate adequate resources to enable it to comply with its obligations under the CDM regulations

8.5. The information contained within this and other supporting documentation for the Contract shall be considered as generic Pre Construction Information applicable across all works, and shall be supplemented with additional site/project specific PCI where available.

8.6. The *Contractor* shall be responsible for developing and implementing a Construction Phase Plan and for providing information as is necessary to maintain and develop the Health and Safety File in accordance with the CDM regulations.

8.7. The *Contractor* shall be provided with access to, and user rights to enable the use and amendment of all information required for the *Client*'s Health & Safety File Management System.

8.8. The *Contractor* shall be responsible for coordination of health and safety on site and all works, including those by other *Contractor*s working under direct orders from the *Client,* under other statutory powers, or where no contractual agreement exists with the *Contractor*.

8.9. Where the contract requires design input by the *Contractor*, the *Contractor* shall undertake the duties and responsibilities of the Designer under the Regulations for that design function for which the *Contractor* is responsible. The *Contractor*, in exercising this role, shall liaise as necessary with other designers involved in the project and where appointed the Principal Designer provides such information as is necessary to maintain and develop the Health and Safety File.

8.10. Where applicable, the *Client* shall submit the F10 Notification informing the Health & Safety Executive (HSE)/Office of the Rail and Road (ORR) of planned construction works in accordance with the Regulations. The *Client* requests that the *Contractor* displays the F10 Notification on site or in its site office in accordance with Regulation 6(3)(b) of the CDM Regulations 2015.

9 Incident Reporting, Investigation, Performance Monitoring

The *Contractor* shall ensure that appropriate measures are taken to protect his employees, boat operators, passengers, *Client*'s staff and others from the risks that are associated with the site and activities undertaken thereupon. If, in the opinion of a member of the *Client*'s staff, possessing the necessary identification, the *Contractor* is causing danger to the public, that officer has the authority to require immediate remedial action. Upon compliance with the instruction, the *Contractor* shall then contact the *Client* to report the instructions given and the actions taken.

9.1. The *Contractor* reports all health, safety and environment incidents, accidents and near miss events which occur during the contract via the *Client*'s agreed electronic reporting mechanism.

9.2. Where fatal or serious accidents occur – Major injuries and Dangerous Occurrence (as defined in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations - RIDDOR) - these are reported by the *Contractor* to the *Client* immediately (by phone), entered on to the *Client*'s agreed electronic reporting system within 24 hours, and are subject to a thorough formal investigation.

9.3. The *Contractor* shall also provide the *Client* with a summary of all fatal and serious accidents every 3 months.

9.4. An injury is defined as fatal when death occurs in less than 30 days as a result of the accident. 'Fatal' does not include death from natural causes or suicide. A serious Injury is defined as an injury for which a person is detained in hospital as an in-patient, or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts, severe general shock requiring hospital treatment, injuries causing death 30 or more days after the accident.

9.5. The *Contractor* shall provide the *Client* with copies of RIDDOR returns and full details of all fatal and serious accidents. Such details shall include number of people involved, severity of injuries, date and time of the accident, precise location, nature of the accident (e.g. road traffic collision, failure of temporary works, fall from height), contributory factors, and weather conditions.

9.6. For incidents reportable under RIDDOR, Lost Time Injuries and Utility Strikes, the *Contractor*, within fourteen (14) days uploads a final written report (investigation) to the *Client*'s electronic reporting system detailing as a minimum the following:

a) description of the incident;

b) immediate actions taken;

c) immediate causes;

d) root causes;

e) actions taken to prevent a recurrence;

f) skills, knowledge and experience of those involved – supervisors and operatives; and

g) details of plant/equipment used including calibration and maintenance

h) for utility strikes - eastings/northings and depth of affected service

9.7. For all other incidents, the *Contractor*, within fourteen (14) days submits an initial written report (investigation) and after twenty-eight (28) days a final report detailing, as a minimum the same items listed above.

9.8. With the agreement of the *Client* a longer timescale to complete the final report may be agreed.

9.9. All investigation reports shall be completed to establish root causes and to a level of detail acceptable at the time to the *Client*. Any comments provided by the *Client* are addressed by the *Contractor* and an updated report submitted if required.

9.10. Nothing in this document supersedes the *Contractor*'s responsibility for statutory reporting of incidents/accidents.

9.11. To support the analysis of health and safety performance, the *Contractor* provides the *Client* with the details of the number of hours worked by the *Contractor* and his Subcontractors during the last reporting period and a corresponding list of personnel working during the period. This data is to be submitted within the periodic report using the agreed format, and includes all the *Contractor*'s staff and personnel employed to provide the Works since the last report. The *Contractor* also reports the cumulative number of hours worked since the *starting date,* categorised into management, site level supervision and operatives.

10 Non English Speaking Workers

10.1. The *Contractor* describes within the Construction Phase Plan his arrangements to ensure that health and safety information is effectively communicated and understood by all non-fluent English speaking staff and Subcontractors. This information includes but is not limited to:

a) Site emergency procedures;

b) First aid arrangements; and

c) Risk assessments/method statements.

11 Personal Protective Equipment (PPE)

11.1. The *Contractor* assesses and provides appropriate PPE for use of his employees and Subcontractors as follows:

a) Adopt a hierarchy of control reducing the need for protective equipment/clothing other than where such equipment/clothing is stipulated by legislation or other authoritative guidance

b) PPE provided is free of charge to all personnel, as required and appropriate, for the job task; and

c) PPE fits the individual and is cleaned, maintained and/or replaced to ensure that it remains effective at all time

11.2. The *Contractor* ensures that all personnel wear PPE appropriate to the risks of each task and demonstrate that risk control systems are in place. The *Contractor* shall ensure that protective clothing is effectively worn.

11.3. The *Client*'s minimum requirements are:

a) hard hat with company branding;

b) eye protection (safety glasses or other suitable eye protection);

c) hand protection (gloves) (subject to a task specific risk assessment agreed by the *Contractor*, gloves may be omitted);

d) safety boots with ankle protection/support;

e) high visibility jacket (Class 3 – EN 471) and trousers with reflective strips for all *works* undertaken on the river piers with company branding;

f) Life jacket.

11.4. Dependant on the job task function and site conditions, personnel are also to be provided with:

a) respiratory protection equipment;

b) hearing protection; and

c) hot, wet or inclement weather protection.

11.5. The *Contractor*'s PPE and clothing requirements are provided for use on Site to the *Client*, the *Client's* staff, visitors and other agents involved in the contract. The *Client* confirms to the *Contractor* what branding and logos are acceptable for all PPE.

12 First Aid, Occupational Health, Drugs and Alcohol

12.1. The *Contractor* makes suitable and sufficient arrangements for first aid based on the:

a) nature and size of the *works*;

b) size and distribution of the workforce;

c) needs of traveling, remote and lone workers;

d) hours of work; and

e) multi-occupied work sites.

12.2. The *Contractor* ensures access to an occupational health services provider. The occupational health service shall be active at all times when work is being undertaken.

12.3. The *Contractor* uses and consults specialist providers, where necessary, to promote health surveillance, health awareness and general occupational health arrangements.

12.4. The *Contractor* operates a drugs and alcohol policy and implements suitable arrangements to verify compliance with that policy including undertaking the necessary alcohol and drug testing. In addition the *Contractor* co-operates with the *Client* regarding the execution of random testing and/or for cause alcohol and drug tests where required. The *Contractor* provides records of testing if requested by the *Client*.

12.5. The following occupational health services shall be available for each individual engaged by the *Contractor* (including the employees of site-based Subcontractors and suppliers of any tier including labour only supply):

a) testing for drugs and alcohol in individuals in accordance with the *Contractor's* policy;

b) providing pre-employment medicals;

c) providing health questionnaires on commencement for all individuals including site and office-based staff;

d) providing specific health appraisals for those referred following evaluation of questionnaires;

e) providing specific health surveillance for those requiring it where identified under regulations and/or risk assessment;

f) providing occupational hygiene services to support and assess ill health prevention management;

g) contributing to the effectiveness of attendance management, rehabilitation and return-to-work programmes and support for ill health incidence investigation where necessary; and

h) providing health promotion programmes applicable to maintenance and construction operatives' workplace, lifestyle and wellbeing.

12.6. The *Contractor* shall implement occupational health protocols for the following health surveillance:

a) Hand Arm Vibration syndrome surveillance;

b) Fatigue management;

c) Stress management;

d) Respiratory health.

13 Welfare Arrangements

13.1. The *Contractor* provides welfare facilities to support the overall occupational health programme. Welfare facilities are established and maintained in working order. All toilet, washing, changing, personal storage and rest areas are easily accessible and have adequate heating, lighting and ventilation. Facilities may need to be provided at more than one location to ensure workers have easy access.

13.2. The *Contractor* ensures good hygiene standards are provided throughout the welfare and office facilities. As a minimum the *Contractor* ensures that welfare facilities for construction sites fulfil the requirements set out in Schedule 2 of the CDM regulations.

13.3. The *Contractor* shall provide an outline of their arrangements regarding provisions for transient work, including reactive and planned short term works.

14 Equipment, Materials or Substances Hazardous to Health

14.1. The *Contractor* shall ensure that the *Client* is notified of any substances hazardous to health which may be used in connection with the contract. Full information, including manufacturers' hazard data sheets and the *Contractor*'s own Control of Substances Hazardous to Health (COSHH) assessment, shall be provided by the *Contractor* to the *Client* for approval 28 calendar days prior to the use of any substance hazardous to health under the COSHH Regulations 2002.

14.2. The *Contractor* shall take all necessary steps to avoid creating a dust nuisance, and shall ensure the works are carried out in accordance with the GLA and London Councils publication "The Control of Dust and Emissions from Construction and Demolition; (2014) and any revisions. If, in the opinion of the *Client*, the *Contractor* is not dealing adequately with the control of

dust, the *Client* may instruct the *Contractor* to carry out such additional measures as the *Client* considers are necessary, at the *Contractor*'s expense.

14.3. Brows, pontoons and footways shall be protected from dust or spray arising from any works which might otherwise reduce visibility. The *Contractor* shall take measures to prevent debris, dust, spray or other materials from affecting any live brows, pontoons or footway.

14.4. The *Contractor* shall ensure that the protective measures stated in Highways Agency Advice Note SA 8/94 'Use of Substances Hazardous to Health in Highway Construction', incorporating subsequent amendments are enforced.

14.5. Storage of hazardous materials, including compressed gas cylinders, may be contained within commercial, retail, residential or public buildings adjacent to/or on the road networks that are not under the control of/or known to the *Client*. The *Contractor* shall remove all hazardous materials they are responsible for at the end of each working day and shall ensure that any used in conjunction with works are stored and secured appropriately when in use.

15 Asbestos

15.1. The *Client* supplies all information in his possession in respect of the presence of asbestos containing materials within the Site/structure. The information is included in the Pre-Construction Information/asbestos register. Based on this information, the *Contractor* liaises with the *Client* to determine where additional surveys are required and the type of survey to be undertaken.

15.2. Where no surveys exist the *Contractor* consults the *Client* on the requirement for, number and type of any asbestos survey before the start of the *works*.

15.3. The *Contractor* shall have in place a procedure for ensuring that, if asbestos is encountered or suspected, the 'Control of Asbestos Regulations' and all other mandatory Regulations are complied with. If asbestos is encountered or suspected, the *Contractor* shall stop all works in the immediate vicinity of the suspect material and isolate the area.

15.4. The *Contractor* shall notify the *Client* (or his site representative) who shall instruct the appropriate action to be taken. Such action may include testing of the suspect material (using a UKAS accredited laboratory) and

arrangements for the removal of the material, if necessary, using a licensed *Contractor*.

15.5. The *Contractor* shall also report a Near Miss via the agreed reporting process. The *Contractor* prepares a report of the incident and provides it to the *Client* in accordance with the requirements described under Incident Reporting, Performance Monitoring, and arranges for the location and condition of the asbestos containing material and all relevant information to be included in the Health and Safety File.

15.6. The *Contractor* shall liaise with the *Client* ensuring that all relevant information on the asbestos containing material, location, condition, type, remedial action, etc. is provided in order for the *Client's* asbestos register to be updated.

16 Emergency Plan and Fire Safety

16.1. The *Contractor*'s Emergency Preparedness Plan (EPP) is submitted to the *Client* for review prior to commencement of work. In addition to describing the emergency arrangements for the *works* and activities on Site i.e. entry to confined spaces, working at height, hot works, striking utilities during excavations, hazards working on or near water, damage to third party structures, the plan considers potential impacts beyond the *boundaries of the site*, especially where there are interfaces with operational assets and neighbours etc. Any existing site specific EPPs shall be provided as part of the Pre-Construction Information, and are incorporated into the *Contractor*'s EPP as appropriate. The emergency arrangements for the *works* may be included in the Construction Phase Plan if preferred by the *Contractor*.

16.2. The *Contractor* provides fire prevention and fire precautions training to all employees, particularly fire wardens/marshals and training for key emergency management personnel as required for the effective implementation of the procedures.

16.3. The *Contractor* in consultation with the *Client* arranges simulated emergency exercises at an agreed frequency following the commencement of the contract, and as appropriate for site and office locations.

16.4. Immediately following an emergency or following a simulated emergency exercise, the *Contractor* reviews the actions taken against the requirements set out in the EPP and revises the EPP accordingly. The output of these reviews are provided to the *Client*.

16.5. The *Contractor*'s EPP includes emergency pollution control measures compliant with Environment Agency (EA) guidelines including emergency phone numbers and the method of notifying local authorities and statutory authorities.

16.6. The *Contractor* ensures that all *works* are compliant with the relevant legislation, standards and guidance on fire safety.

16.7. Combustible materials shall not be inappropriately stored beneath or within any structure.

16.8. The *Contractor* ensures that regular site inspections include those of the *Contractor*'s fire safety arrangements, are recorded and the completed forms are maintained as appropriate.

16.9. In accordance with the Regulatory Reform (Fire Safety Order) and Fire Safety on Construction Sites (HSG168) published by the Health and Safety Executive, as appropriate, the *Contractor* produces fire risk assessments identifying the nature and level of risk for the scope of *works*.

16.10. In the event of a fire emergency the *Contractor* complies with the requirements of the EPP in order to ensure a timely evacuation of the Site and to account for all personnel.

16.11. The *Contractor* complies with the requirements of the LFEPA or other relevant fire authority for the provision of the Site access points. Where appropriate, the accesses are designed to the requirements of LFEPA Publication: Fire Safety Guidance Note Number 29 Access for Fire Appliances. The access points shall also be suitable for access for ambulances.

17 Behavioural Safety

17.1. The *Contractor* implements a behavioural based safety programme aiming to:

a) lead by example;

b) increase awareness of behaviours;

c) develop a no name/no blame culture with the workforce;

d) recognise safe behaviour, challenge and manage unsafe behaviour;

e) identify and remove hazards;

f) provide positive observations and feedback;

g) reduce at risk behaviours/conditions; and

h) increase immediate corrective action.

17.2. The *Contractor* appoints behavioural safety leaders from within their workforce. The behavioural safety leaders are required to:

a) attend behavioural safety briefings;

b) manage behavioural safety logs;

c) lead by example and embody the values of behavioural safety;

d) walk the Site and raise all safety concerns;

e) raise awareness and brief teams on behavioural safety and encourage all *Contractor* personnel to raise safety concerns, remove hazards as they find them and record and report them as required;

f) liaise with the *Client* and escalate any issues that may need resolving; and

g) attend behavioural safety leader meetings.

17.3. The *Contractor* undertakes a safety culture survey programme of the workforce and staff and includes the *Client*. The survey is based on an industry recognised survey tool. The *Contractor* reports on the progress towards a world class safety culture based upon the findings of the survey at appropriate forums.

18 Health and Safety Innovation, Best Practice and Campaigns

18.1. The *Contractor* identifies, trials and implements health and safety innovations in consultation with the *Client*.

18.2. During the contract it is anticipated that a number of industry best practices shall be developed and rolled out. Where identified the *Contractor* adopts such industry best practice to improve health and safety performance. Such industry best practice may comprise of health and safety standards and behavioural techniques and processes along with general site safety 'best practices' adopted from specific *Contractor*s.

19 Site Mobilisation and Start of Works

19.1. The *Contractor* does not start construction *works* until he has fulfilled all of his obligations under the CDM Regulations and the *Contractor* has received formal notification from the *Client* to proceed with the *works*.

19.2. A pre-commencement readiness assessment is undertaken by the *Client* to ensure that the *Contractor* has in place the documentation, consents, processes, permits, licences and controls to allow *works* to proceed. The *Contractor* supplies all necessary information and/or access to information that the *Client* requires to support this process.

19.3. Due to the nature of the works under the contract, the *Contractor* shall expect to engage with other specialist and/or *Client* nominated *Contractor*'s i.e. Port of London Authority (PLA), Environmental Agency (EA), Marine Office (MO), Local Authority (LA), Boat Operators and Utility Companies. The *Contractor* shall ensure that site boundaries are established to ensure construction sites between other *Contractor*s do not clash.

19.4. At times works shall be undertaken close to or affecting London Underground, London Rail, Network Rail sites, the River Thames, or other watercourses and third party structures,. Where such works take place, the *Contractor* shall liaise with the appropriate authorities ensuring that any specific works requirements are fully met.

20 Site Security Arrangements

20.1. All sites shall be secured so as to provide protection of the public and workforce during works and prevent unauthorised access, particularly during hours when the site is unoccupied.

20.2. Additional or enhanced security arrangements may be required in areas that pose a high security risk. The security arrangements shall be reviewed prior to works commencing on each site and the *Contractor* shall notify the *Client* representative of the specific arrangements being proposed.

20.3. Information on specific security risks, where known, shall be made available to the *Contractor* before works commence on site. The *Contractor* shall make security arrangements for protection of the works, workforce and equipment according to the particular risks posed by the location of each site.

21 Information

21.1. The *Contractor* ensures that:

a) Health and Safety records relevant to the *works*, including induction, training and equipment inspection and testing records, are available for inspection on request;

b) copies of all relevant health and safety information to particular site activities is held by the team carrying out the work including method statements, risk assessments, written briefings, permits to work and safety alerts/bulletins;

c) safety briefings are provided to all persons carrying out work tasks subject to method statement, risk assessments and permit controls and written records maintained of briefings signed by all persons carrying out the tasks (these briefings are completed when the task or condition changes);

d) the *works* are suitably supervised and that operatives are aware of the person supervising their work activities and their whereabouts at all times;

e) supervisors receive induction on the health and safety requirements and of their specific responsibilities for health and safety aspects.

22 Site Supervision

22.1. The *Contractor* ensures that competent persons supervise and manage the *works* and that there are arrangements in place to specifically address the supervision of new personnel and any others at particular risk. The arrangements also include those for addressing foreseeable emergencies. The supervisory arrangements are reviewed for adequacy and suitability in connection with any lone or isolated work.

22.2. Before commencement of works, the *Contractor* shall provide the *Client* with a written procedure setting out their monitoring arrangements, identifying the person(s) with responsibility for undertaking the monitoring. This may be incorporated or appended to the contract level Construction Phase Plan (CPP).

22.3. The *Contractor* ensures that persons appointed to supervisory and management positions have the necessary skills, knowledge and experience for the role, and are regularly assessed. Training and induction includes demonstration by example of good practice and the impact of poor practice.

23 Confined Spaces

23.1. The *Contractor* evaluates the workplace to determine which spaces (if any) are confined spaces and develops a written risk assessment and method statement identifying the controls required for the safe operation of a safe

system of work in accordance with the Confined Space Regulations and INDG258: Safe Work in Confined Spaces. The risk assessment and method statement include the confined space entry permit and the control systems required for working in confined spaces including communication, evacuation and rescue.

23.2. The *Contractor* eliminates the need to enter confined spaces wherever possible. Where entry to a confined space is necessary the *Contractor* ensures that a safe system of work is identified that documents all hazards, safety precautions and safe working practices associated with all confined space activities performed by employees.

23.3. The *Contractor* ensures his safe system of work includes:

a) checks that employees have the necessary skills, knowledge and experience to enter a confined space, are appropriately healthy (e.g. lung function for use of breathing apparatus) and have received adequate training;

b) an adequate communication system to enable clear communication between those inside and outside of the confined space;

c) testing and monitoring of the atmosphere within a confined space for hazardous gas, fume or vapour and checks on the concentration of oxygen prior to entry; and

d) a requirement for emergency arrangements to be in place before any person enters or works in a confined space and contingency plans appropriate to the nature of the confined space, the risks identified and consequently the likely nature of an emergency rescue.

24 Working at Height

24.1. The *Contractor* complies with the Working at Height Regulations and eliminates the need to work at height wherever possible. Where working at height is necessary the *Contractor* ensures that a safe system of work is identified that documents all hazards, safety precautions and safe working practices associated with all working at height activities performed by employees.

24.2. The *Contractor* ensures that the work is properly planned, appropriately supervised and that employees have the skills, knowledge and experience to work at height. The *Contractor* ensures that collective measures take

precedence over personal protective measures i.e. fall prevention equipment.

24.3. The *Contractor* implements an inspection and testing regime for all equipment identified as assisting in any working at height operation to ensure that it is compliant with statutory regulations, maintaining records of all inspections and tests.

25 Lifting Operations

25.1. The *Contractor* complies with the Lifting Operations and Lifting Equipment Regulations (LOLER), producing a risk assessment and lifting plan identifying the nature and level of risks associated with a proposed lifting operation. The *Contractor* briefs the content of the risk assessment and lifting plan to all employees involved in lifting operations.

25.2. The *Contractor* ensures that all employees involved in lifting operations have the required skills, knowledge and experience.

25.3. The *Contractor* implements or sources adequate training for employees who operate or test/examine lifting equipment. Training records are kept and where lifting operations are planned, copies of these records are available to the *Client*.

25.4. The *Contractor* ensures that any persons who operate lifting equipment or conduct inspections, examinations or tests have the required skills, knowledge and experience to ensure that the safe system of work is compliant with statutory regulations and the approved code of practice for safe use of lifting equipment published by the Health and Safety Executive.

25.5. The *Contractor* ensures that there are adequate competent persons to approve all lift plans on the worksite in accordance with LOLER. No lifts are carried out without this prior acceptance.

26 Excavation and Dredging

26.1. The *Contractor* ensures that all excavations / dredging are planned before construction works commence, taking reasonable steps to obtain and review up to date survey drawings, as-built drawings, utility records, ground penetrating radar, hydrographic surveys and other appropriate survey information when planning *works*.

26.2. In conjunction with suitable detection methods, sufficient trial holes are undertaken by the *Contractor* to confirm the location of all buried utilities.

The *Contractor* employs a permit to dig process and ensure that all employees undertaking excavations / dredging have the necessary skills, knowledge and experience.

26.3. The *Contractor* ensures that reference is made to the Health and Safety Executives Guidance Note HSG 47 Avoiding Danger from Underground Services.

26.4. Some sites shall be located close to a range of public transport infrastructures i.e. Underground, excavations required. The *Contractor* shall make all necessary preparations prior to commencing work including but not limited to, liaison with the Local Authority, the River Authority and infrastructure owners.

27 Overhead Power Lines

27.1. The *Contractor* shall become familiar with and follow the guidance contained in the HSE publication "Avoiding danger from overhead power lines" Guidance Note GS6.

27.2. The *Contractor* shall prepare a suitable and sufficient risk assessment before any works below overhead power lines are undertaken, particularly where the use of plant/equipment is required to perform the works.

28 Hot Works

28.1. All hot works (welding, soldering, flame cutting, disc cutting of metal, etc.) shall be subject to a written risk assessment, method statement and permit to work system. The *Contractor* shall maintain suitable first aid and fire fighting equipment on site whist hot works are taking place and staff shall be trained in its use. Members of the public shall be protected from all hot works operations and from UV rays generated from welding operations.

28.2. On transient sites, as a minimum a fire extinguisher of the suitable type shall be available on vehicles used to transport staff/materials. On fixed sites, arrangements for fire protection shall be detailed in the Construction Phase Plan (CPP) and shall include arrangements for protecting facilities on and adjacent to the site.

28.3. All compressed gas cylinders used during hot works shall be adequately secured and all regulators/hoses shall be subject to regular inspection. The *Contractor* shall maintain records of inspection and make these available to the *Client* upon request.

29 Construction Plant and Equipment

29.1. The *Contractor* ensures that all plant and equipment operators have the skills, knowledge and experience for the plant/equipment they are required to operate and that they have been assessed as competent.

29.2. The *Contractor* ensures that all plant and equipment, including hired plant/equipment, is maintained, inspected and tested in accordance with manufacturers instruction and/or requirements within legislation. The *Contractor* ensures that all plant/equipment is only maintained (including changing cutting blades) by personnel qualified to do so and that the results from all maintenance, inspection and testing are recorded.

30 River Traffic Management and Pedestrian Segregation

30.1. The *Contractor* ensures that they follow the guidance set out in Transport for London's Temporary Traffic Management Handbook when working on the TLRN, and that adequate provision is made for traffic management to either the Safety at Street Works and Road Works Code of Practice or Chapter 8 of the Traffic Signs Manual, which ever is the most appropriate for the risks and type of works. All Traffic Management are only installed and maintained by employees with the necessary skills, knowledge and experience and hold an appropriate valid competence scheme card.

30.2. The *Contractor* ensures that adequate pedestrian management/segregation is included within traffic management arrangements and consults with the *Client* before implementation.

30.3. Subject to the degree of risk and location, the *Contractor* implements such arrangements as are necessary employees to inspect and maintain pedestrian segregation arrangements.

31 Site Inspections and Assurance

31.1. The *Contractor* agrees with the *Client* a programme of active assurance activities including Site inspection and audits, and takes account of the nature of the work, previous results and any other relevant factors. The *Contractor* provides for information a copy of the completed audit/inspection report to the *Client* no later than five (5) business days after the audit inspection.

31.2. The *Contractor* shall accommodate the gathering of assurance and monitoring of health, safety and environmental performance by the *Client*

using the Supplier HSE Assessment Tool. The default frequency for assessment against the criteria is quarterly, though this may be varied by the *Client* in light of the level of activity or performance. The *Contractor* participates in the assessment through the provision of information and evidence requested by the *Client* in respect of the criteria. The results of the assessment shall be discussed with the *Contractor* upon completion. If required, the *Contractor* shall be asked to prepare an Action Plan in response; progress against which is monitored as part of subsequent assessments. The full assessment criteria in place at the time shall be shared with the *Contractor* ahead of the assessment.

31.3. Inspections and audits are undertaken by the *Contractor*'s health and safety support, supervisors and other management staff. Subcontractors carry out regular health and safety inspections of their own workforce and provide information to the *Contractor*.

31.4. The inspections are performed in coordination with the *Client*'s own inspection schedule to avoid duplication and to maximise the use of resources and effectiveness of the inspection system.

31.5. The *Contractor* addresses all actions and recommendations arising from inspections within the agreed timescales, regardless of who has undertaken the inspection.

31.6. The *Contractor* holds a regular Health and Safety Supplier Meeting. The *Contractor*, Subcontractors and members of the workforce attend the meetings. The *Client* is invited to attend.

31.7. The *Contractor* shall, where suitable, participate in the *Client*'s site recognition scheme. The site recognition initiative is about establishing a guiding light on what work sites should look and feel like from a health, safety and environmental perspective. To achieve the expected standard, a site team shall go beyond basic compliance with health, safety and environmental requirements and achieve industry recognised best practice. More detail about the site recognition scheme process and assessment is available in G1365 'Beacon site/team – achieving best practice guidance' and checklist F5389. Where suitable, the *Contractor* shall undertake a joint assessment with the *Client* and be formally assessed with the aim to achieve 'Beacon' status (team or site award) within an agreed timescale with the *Client*.

32 Senior Management Tours

32.1. Senior managers from the *Contractor* and the *Client* complete health, safety and environment (HSE) tours in accordance with the programme expectations. The frequency of HSE tours is agreed with the *Client* but is at least quarterly. The *Contractor*'s senior managers and those of his Subcontractors contribute actively in these tours as part of the joint commitment to deliver health and safety excellence.

32.2. Representatives from the workforce are engaged in tours to build relationships between management and the workforce in the drive to world class health and safety performance.

32.3. The basis of any tour is to engage with the workforce, address the criteria listed below, provide an opportunity for employees and the *Contractor* to raise any health, safety or environment concerns, and to seek assurance that health, safety and environment systems across the project are understood and followed.

32.4. The *Contractor* ensures that senior management tours focus on:

a) acknowledgement/engagement of all persons involved in an activity;

b) management of any particular issues, problems or risks;

c) identification and addressing of the health, safety and environment concerns found during the tour;

d) seeking assurance that health, safety and environment systems are understood and being followed by ensuring that standards and expectations for best practice are realised in all work areas and practices;

e) culture (safety culture and behaviours);

f) health, safety and environment performance data;

g) changes, either organisational or activity;

h) project activity;

i) incident or accident data; and

j) review of methods of work, quality of briefings, site documentation.

33 Works in the Vicinity of the Tidal Thames

General

33.1 When work has to be carried out on or in the vicinity of water several additional hazards are introduced and shall be carefully evaluated and controlled.

33.2 Consequently all aspects of the work shall need to be considered during the risk assessment process, including the hazards presented by working on or near water.

33.3 The Construction (Design and Management) Regulations 2015 require *Client*s engaged in construction work to take all reasonably practical measures to prevent persons falling into water; to minimise the risk of drowning in the event of a fall into water; and to provide suitable rescue equipment (rescue boat) and training in the use of it. Also, the transportation by water to or from work sites shall be done safely; and any vessels used shall be suitable, properly maintained, under the control of a competent person and not overcrowded or overloaded.

33.4 In addition to the above, the Merchant Shipping Acts, and related Regulations and Codes of Practice apply to passenger carrying crafts, workboats, pontoons, lifebuoys etc. Merchant Shipping Legislation is administered by the Maritime and Coastguard Agency (MCA).

Hazards when working on or near water

33.5 Any workplace over, on or near water presents a danger that persons might slip or fall into the water, be swept off their feet by wave action, tide action, strong currents or swell from passing water traffic. Adverse weather is also a factor that can increase the danger, and work conditions can change quickly. Whether or not a person is injured by falling in the water, there is an immediate risk of drowning and/or being carried away by water currents.

33.6 Precautions shall be taken, firstly to prevent persons entering the water and, secondly, to ensure that anyone who inadvertently enters the water shall float and are rescued in the shortest possible time. A standby rescue boat allows in water rescue in the shortest possible time. When working on or near water the *Contractor* shall establish safe systems of work based on a thorough risk assessment and that staff are properly trained in Riverside Personal Safety Training Course and instructed.

33.7 When working on or near water consideration shall also be given to the health implications of falls into the water. The water may be polluted, for example when working near sewage discharge points, and there is the ever-

present risk of contracting leptospirosis (or Weil's disease) from water contaminated by rat urine.

Causes of Entry into water

33.8 These include:

a. Falls from height

b. Trips, slips, stumbles from low level

c. Persons being knocked over by moving objects (e.g. crane loads, vehicles, etc.)

d. Loss of balance (e.g. by high winds, sudden boat movements, etc.)

e. Failure or absence of edge barriers

f. Failure or absence of fall prevention equipment, ropes, lines.

g. Floating platforms or vessels sinking.

h. Tide action, waves or swell from passing waterborne traffic.

Hazards of Falling into Water

33.9 The most immediate danger is of drowning. Factors that can contribute to this are:

a. Shock from sudden immersion in cold water

b. Weight of waterlogged clothing

c. Life jacket not being worn (or not inflating)

d. Incapacity following injury – caused by striking an object during a fall, or whilst in the water.

e. Fatigue or hypothermia where rescue is not immediate.

Precautions for working on or near water

33.10 Whenever reasonably practicable fixed edge protection shall be provided to prevent people falling into water.

33.11 Where edge barriers are not reasonably practicable at exposed edges, e.g. quay edges, appropriate warning signs and/or edge markings shall be displayed to highlight the danger.

Work Outside Of Edge Barriers

33.12 Safety boat required at all times. Safety Nets can provide good fall protection for those carrying out occasional work outside edge barriers though are not 100% fail proof. E.g. maintenance activities. An alternative is the use of a full body harness attached by lanyard to a suitable anchorage point or proprietary fall prevention anchorage system. Such equipment needs to be selected by a competent person to ensure it is suitable for the task, checked and maintained to ensure it is kept in good order and the users instructed and trained in its use. Emergency rescue arrangements also need to be in place. These shall include the provision of a safety boat as a safe means of recovering persons being lowered down after being suspended from a fall

Work from Mobile Elevating Work Platforms

33.13 Safety Boat Required. When working next to water, a harness shall not be worn due to the risk of drowning if the work platform falls into the water. Life jackets shall be worn.

Workplace Tidiness

33.14 This is of special importance when working on or near water. Tools, equipment, ropes and other materials not in use shall be stored away. Waste shall be cleared up promptly, and materials stacked or positioned with care.

33.15 Slippery surfaces increase the risk of people falling into water and shall be properly treated to ensure good grip. Water weed, slime, bird droppings etc. shall be cleaned off. Oily or greasy surfaces shall have absorbent granules or grit spread on them, and icy or frosty surfaces shall be treated with salt or grit.

Weather Conditions

33.16 The prevailing conditions and local weather forecast shall be taken into account at the beginning of each shift. Rain, rising winds, fog, mist, tidal conditions etc. are all potential dangers.

Protective Clothing and Equipment

33.17 Hard hats are part of the *Client*'s minimum requirement. The risk of people being struck on the head prior to falling into water is a significant risk.

Footwear with good, non-slip soles shall be worn when working on or near water. Rubber boots shall not be worn as, once filled, they act as a weight and could drag the wearer under water.

Life Jacket

33.18 This is a personal safety device which, when fully inflated (if inflatable), shall provide sufficient buoyancy to turn and support even an unconscious person face upwards. These shall be worn at all times whilst working on boats and where there is a foreseeable risk of drowning when working near to water. Those using life jackets need to be trained and instructed in their proper use and storage, and the equipment regularly inspected and maintained.

Rescue Equipment and Procedures

33.19 Planning of works shall include the need for rescue equipment, such as Maritime and Coastguard Agency (MCA) coded Standby rescue boat including SOLAS (Safety of life at sea) safety equipment. MCA approved lifebuoys or rescue lines shall be positioned at intervals along the work area. Daily checks shall be made to ensure that lifebuoys and lines are in their proper place.

33.20 It is important that:

a) Lone working is avoided to ensure there is always someone to raise the alarm.

b) Each person is trained in Riverside Personal Safety Training Course in what to do in the event of an emergency.

c) An emergency rescue plan is in place for the work activity. As a minimum, the elements of a rescue procedure consists of:

i. A routine for raising the alarm.

ii. A drill to provide the rescue boat facilities.

iii. A routine for getting the rescued person(s) appropriate medical assistance. i.e. all rescue boat skippers to hold HSE first aid at work.

33.21 Rescue procedures need to be practised at regular intervals involving all persons who would be required to participate in a rescue.

Work Boats and Vessels

33.22 These shall meet MCA requirements in terms of their construction, use, equipment, (including safety, communication and rescue equipment) and the competence of the operator. In most circumstances it will be necessary to provide a rescue boat standing by during work activities on or near water. For example work near tidal water or fast flowing rivers. Practice exercises in respect of rescuing people from the water shall need to be carried out.

Transport for London

Invitation to Quote

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 2, Batch 1

Volume 2

Appendix B

Corporate Environment Plan 2021

COMMERCIAL IN CONFIDENCE

TfL Restricted

At the heart of a greener London

Corporate Environment Plan 2021

MAYOR OF LONDON

TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS

Contents

03 Commissioner's foreword

04 Our role in London

05 What is our Corporate Environment Plan?

06 Why is this important to us?

07 How is our Corporate Environment Plan structured?

08 Our environmental framework and ambitions

09 Climate emergency
11 Scope and reach of our carbon emissions
12 Achieving zero-carbon operations
13 Our energy and carbon strategy

14 Energy efficiency across our operations and buildings
16 Case study: Managing lifecycle carbon emissions in our major projects
17 Reducing carbon from our infrastructure and supply chain
19 Adapting to the changing climate
21 Case study: Embedding climate change adaptation measures

22 Air quality
24 Improving air quality

26 Green infrastructure
29 Benefits of green infrastructure
30 Making the most of green infrastructure
33 Case study: Improved drainage systems on our network

34 Sustainable resources
36 Increased and more efficient use of sustainable resources
38 Case study: Reuse of materials in major projects

39 Best environmental practices
41 Managing our impact
43 Our roadmap of environmental improvements
44 Delivering our Corporate Environment Plan
45 How we will monitor and report on progress

46 Glossary

Commissioner's foreword

Environmental sustainability must be integral to our business and the way we work. It has to become a core part of our culture if we are to fulfil London's standing as a global city, while also addressing the great global challenges of our time. We need London's recovery from the pandemic to be green and sustainable, and such a recovery will have a substantial impact on the UK's sustainable development.

We face huge challenges, including the fact that a quarter of London's greenhouse gas emissions are from transport and that we are London's biggest user of electricity. However, there is also the opportunity to have a big influence, through our commercial development portfolio, our procurement activity and, not least, the management of the vast areas of land in London that we own.

This plan sets out our approach to supporting the Mayor's ambition of a carbon neutral London by 2030 and delivering our existing environmental commitments, as set out in the Mayor's Transport Strategy and London Environment Strategy. It also looks at how we will embed environmental sustainability into everything we do. This work is vital in managing risks to the transport network as the climate and ecological crisis continues, for attracting investment, and making sure that we attract and retain talent in our business.

Our activity is crucial to the development of the UK as we provide a multitude of jobs and services, and have significant influence. I want us all to be proud of the work we already do to deliver environmental improvements and be committed to doing more.

My vision is for Transport for London (TfL) to actively influence the regeneration of London's environment and be at the heart of delivering a sustainable city for all Londoners.

Andy Byford
London's Transport Commissioner

Environmental sustainability must be integral to our business and the way we work

Our role in London

Realising the Mayor's Transport Strategy

As London's strategic transport authority, we lead the development and implementation of the Mayor's Transport Strategy. This has a strong focus on the environment and is aligned with the London Environment Strategy. The strategy includes policies and proposals on air quality, carbon emissions, green infrastructure, climate change adaptation and noise. We work closely with other transport authorities and providers within London, from the boroughs to Network Rail and Highways England, to ensure that the strategic environmental priorities in the Mayor's Transport Strategy are met across the city. Examples include setting and operating road transport emission schemes, such as the Ultra Low Emission Zone (ULEZ), and supporting the boroughs to deliver a wide range of environmental outcomes through their Local Implementation Plans.

Promoting active travel

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for all Londoners' that is safer, fairer, greener, healthier and more prosperous. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys in London to be made by walking, cycling or using public transport by 2041. To complement the Mayor's Transport Strategy, we have published a Cycling action plan, Walking action plan and Vision Zero action plan which set out how the Mayor and TfL will promote safe and active travel across the city to meet the 2041 target. Boroughs manage 95 per cent of London's road network and are key partners in delivering improvements on their streets, from School Streets and Low Traffic Neighbourhoods to bus priority, cycling routes and local town centre improvements. This Corporate Environment Plan also sets out actions that will support the shift to active travel on our own networks.

Operating road transport emission schemes

We support urgent action to reduce harmful emissions from road transport and to meet legal limits for air pollution in London as soon as possible. We introduced tighter standards for the London-wide Low Emission Zone in March 2021 and will expand the ULEZ from central London to the North and South Circular Roads in October 2021. We are phasing out polluting diesel buses, retrofitting older buses and introducing all-electric buses so that our 9,000 strong bus fleet now meets or exceeds the cleanest Euro VI emission standards. We are also cleaning up London's taxi and private hire fleets, with zero emission capable licensing requirements. We operate the Congestion Charge in central London and are continuously reviewing the scheme to ensure it remains effective, having launched a consultation on new proposals on 28 July 2021. By ensuring the scheme remains effective at reducing traffic and congestion it will improve air quality and encourage more journeys to be made by walking, cycling and public transport.

Delivering electric vehicle charging infrastructure

We support the transition of London's road vehicles to zero emission technologies to improve air quality and meet the zero-carbon London ambition. We support the delivery of electric vehicle charging infrastructure across London by working with boroughs and the Office for Zero Emission Vehicles. Through the Mayor's Electric Vehicle Infrastructure Taskforce we work with stakeholders to plan for the Capital's future charging infrastructure requirements. Further information can be found in our EV Infrastructure Delivery Plan online.

Connecting Londoners to green spaces

The Mayor wants to ensure that Londoners have access to green space within 10 minutes of where they live. We have a key role in supporting this through our work to improve walking and cycling. We also work with boroughs to provide opportunities to create new green spaces as well as routes to new green spaces as part of our schemes.

Implementing the London Recovery Programme and Green New Deal Mission

We play a crucial part in supporting London's recovery from the coronavirus pandemic. As a member of the London Recovery Board, we will help deliver its nine recovery missions, including a Green New Deal. Achieving this requires large-scale transformation by 2030, and new approaches, greater coordination and faster action. Our actions, including those described in this plan, will help London tackle the ecological emergencies, improve air quality while supporting growth of London's Green Economy and reducing inequalities exacerbated by the pandemic. Recovery plan details for the Capital are available on the Greater London Authority's (GLA's) dedicated webpage.

Responsibility and opportunity as an employer

We are a large employer in London. By setting an example in the way we undertake our activities we hope to engage our people to lead more sustainable lifestyles. These changes will impact London more widely. We are fortunate to have in-house communications specialists who are leading our internal #Greenfuture communications campaign. In addition, our passionate Sustainability Staff Network Group provides inspiration and resources to engage and support people on their professional and personal environmental journeys.

What is our Corporate Environment Plan?

We are committed to protecting and improving the environment. As one of the world's largest and most high-profile transport operators and developers, we can lead and have a huge positive impact on people's quality of life and the environment. Our Corporate Environment Plan sets out our environmental ambition and how we will achieve this through our operations, maintenance and construction activities. It forms the environmental pillar of our approach to sustainable development, as described in our Sustainability Report.

We must demonstrate bold leadership on environmental sustainability. Through our contracts, stakeholder engagement and partnerships we will make very clear that we expect high environmental performance and ambition from everyone that we work with.

As London's strategic transport authority, we lead the realisation of the Mayor's Transport Strategy's environmental outcomes. Our wider role in London in this regard is described on the previous page. The Corporate Environment Plan, however, focuses on our own activities, procurement, products and services as a transport operator.

We have developed our plan so that we can:

- Drive continual improvement in our environmental performance
- Transparently communicate our environmental ambition and priorities to our stakeholders, including our colleagues
- Nurture an environmental culture which places environmental sustainability at the heart of our business decisions
- Develop the baseline against which to set targets for our environmental performance. Track and measure progress both effectively and accurately
- Help demonstrate the environmental benefits of what we do

Dedicated cycle infrastructure encourages more active travel

Why is this important to us?

Creating an environmentally sustainable transport network to support London meeting its air quality and carbon targets is a key priority for us. We are committed to playing our part to achieve the Mayor of London's goal of making London carbon neutral by 2030 and helping create a greener, biodiverse city that is resilient and well adapted to climate change. We aim to meet our zero-carbon target by progressively investing in the green recovery and reducing the level of carbon emissions across all our operations and supply chains.

We are committed to achieving the Mayor's goal of making London carbon neutral by 2030

More of our London Buses are now zero emission

How is our Corporate Environment Plan structured?

Tackling the climate emergency is our top environmental priority and is not simply about reducing carbon emissions. It's also about adapting to climate change, improving air quality, making London greener, using fewer materials and reducing waste, and following environmental best practice in everything we do. We have developed our Corporate Environment Plan around five key, complementary themes which will help us contribute to a zero-carbon London:

Climate emergency

Reduce carbon emissions from our activities and ensure we are ready for the impacts of climate change

Air quality

Reduce emissions of harmful air pollutants from our activities

Green infrastructure

Protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate

Sustainable resources

Support a low-carbon circular economy

Best environmental practices

Deliver our activities responsibly and be a good neighbour

We can help London become a zero-carbon city

Our environmental framework and ambitions

Sustainable resources

- We use resources and materials sustainably
- We think of a material's carbon cost across its lifecycle
- We support London's goal of being a zero-waste city

Best environmental practices

- We are a good neighbour
- We comply with our obligations and legal requirements
- We go beyond our minimum obligations to apply environmental and sustainability best practices

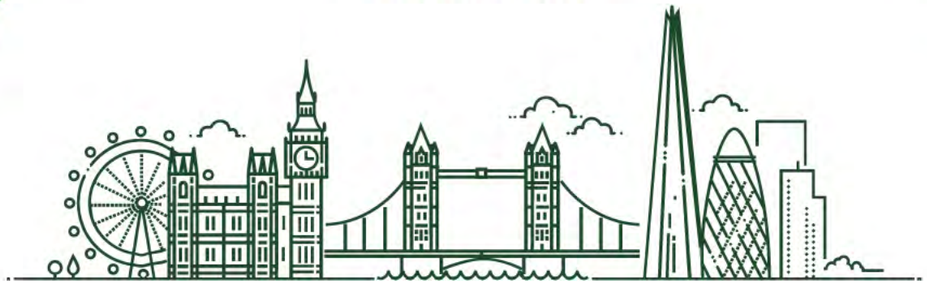
Climate emergency

- **Mitigation**: We reach zero carbon in all our activities
- We support London becoming a zero-carbon city
- **Adaptation**: We are ready for the impacts of climate change

Air quality

- We deliver and operate major air quality schemes
- We will bring vehicle fleets under our control to zero emission
- We manage emissions from our buildings and on the Tube

Zero-carbon London



Green infrastructure

- Protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate

Making it happen

- Make it a core part of TfL culture, advocated by leaders and championed in every team
- Incorporate into standards, specifications, contracts and management systems
- Deliver through business planning, asset management and procurement

Climate emergency

Reduce carbon emissions from our activities and ensure we are ready for the impacts of climate change

We need to be prepared for the impacts of climate change

Climate emergency

The years leading up to 2030 are crucial in the global fight to prevent devastating climate change. The UK must make significant reductions in its carbon emissions if it is to meet its legally binding goal of reaching net-zero carbon emissions by 2050. In London, the Mayor has set an ambitious goal for the Capital to become carbon neutral by 2030.

Transport is responsible for more than a quarter of London's carbon emissions, and this proportion is increasing as other sectors decarbonise more quickly. We play a vital role in providing low-carbon public transport to Londoners and supporting walking and cycling. As London recovers from the coronavirus pandemic, our actions are vital to avoid a car-led recovery and the higher carbon emissions which will result from this.

However, to truly support London in becoming carbon neutral, we must lead by example and reduce emissions across everything we do. As London's largest electricity user, we need to optimise energy saving and efficiency, and lead the transition to fully renewable electricity across our network, thereby stimulating the growth of renewable energy generation in London and the UK. Our ambition is to convert our bus fleet and the vehicles used to support maintenance and operation of our transport network to zero emission and ensure the energy supplying those fleets is zero carbon. Furthermore, this ambition means putting all our buildings – from offices to stations and from maintenance depots to property developments – on a clear path to zero carbon.

We must lead by example and reduce emissions in everything we do

Additionally, we need to work closely with our supply chain to reduce the carbon from the products and services that we buy. Our infrastructure is designed, built and operated to help our customers make the move away from private car use to more sustainable and active means of transport. It is our responsibility to account for the carbon emissions created during construction and operation, and to reduce these as much as possible. High level assessments suggest that carbon emissions from our supply chains could potentially be twice as much annually as our operational emissions. We are progressing more detailed assessment work to establish a baseline for our scope 3 emissions and identify areas where we can best focus our reduction efforts.

We are developing tools that will help us estimate and work out the carbon emissions produced across the whole life of our assets, from design, to construction, to operation and disposal. These tools will help us identify high-carbon areas and work to reduce these as much as possible.

However, no matter how successful we are in reducing carbon emissions in all that we do, we are already experiencing climate change and it will continue to affect and shape how we operate. The UK is already experiencing some of the impact of climate change, such as the frequency and intensity of severe weather events, and this is expected to increase in the future. We will adapt to reduce the impacts of this and increase our resilience to any climate change impacts that do occur.

Scope and reach of our carbon emissions

Infrastructure and supply chain

Approximately **2m** tonnes CO_2 per year

Scope 3
Indirect emissions

- Supply of plant and equipment
- Supplier vehicles, plant and equipment
- Raw materials
- Working from home (staff)
- Datacentres and IT Infrastructure
- Staff travel
- Supplier energy use
- Consumables

TfL Operations

Approximately **900,000** tonnes CO_2 per year

Scope 1
Direct emissions

- TfL buildings (gas)
- Operation of TfL plant and equipment
- Dial-a-Ride fleet
- Bus fleet
- TfL support fleet

Scope 2
Indirect emissions

- TfL buildings (purchased electricity)
- Tube and rail services
- Street lighting and traffic signals
- TfL electric vehicle charging

CO_2

Greenhouse gas emissions

London's transport network

Approximately **5m** tonnes CO_2 per year

Scope 3
Indirect emissions

- Road vehicles
- River vessels
- Taxis and private hire vehicles
- Electric vehicle charging
- National Rail services
- Aviation, take-off and landing within London

Upstream activities | **Transport for London** | **Downstream activities**

Achieving zero-carbon operations

Our ambitions

- Achieve zero-carbon emissions across our operations and head office buildings by 2030

How will this be reached?

Our operations

- Ensure our public transport services support low carbon travel in London by maintaining and renewing our existing assets
- Develop a plan for removing fossil fuels from our operations
- Convert our bus fleet to zero emission by no later than 2034, with government support we can do this by 2030
- Convert our other fleet vehicles to zero emission
- Reduce energy demand and improve energy efficiency across our organisation
- Support London reaching zero-carbon emissions by reusing waste heat from within our deep tube network and supply local buildings
- Increase the amount of renewable energy supplying our assets

Our buildings and property estate

- Create a carbon baseline of our entire property estate to understand the challenge ahead
- Adopt a zero-carbon plan for our head office buildings and develop decarbonisation plans for all our other buildings
- Encourage and empower all our employees to reduce carbon emissions at work and in their day-to-day life

Our scope 1 and 2 targets

- Aim for zero operational carbon emissions by 2030
- Zero-emission bus fleet by 2034, with an ambition to achieve this by 2030

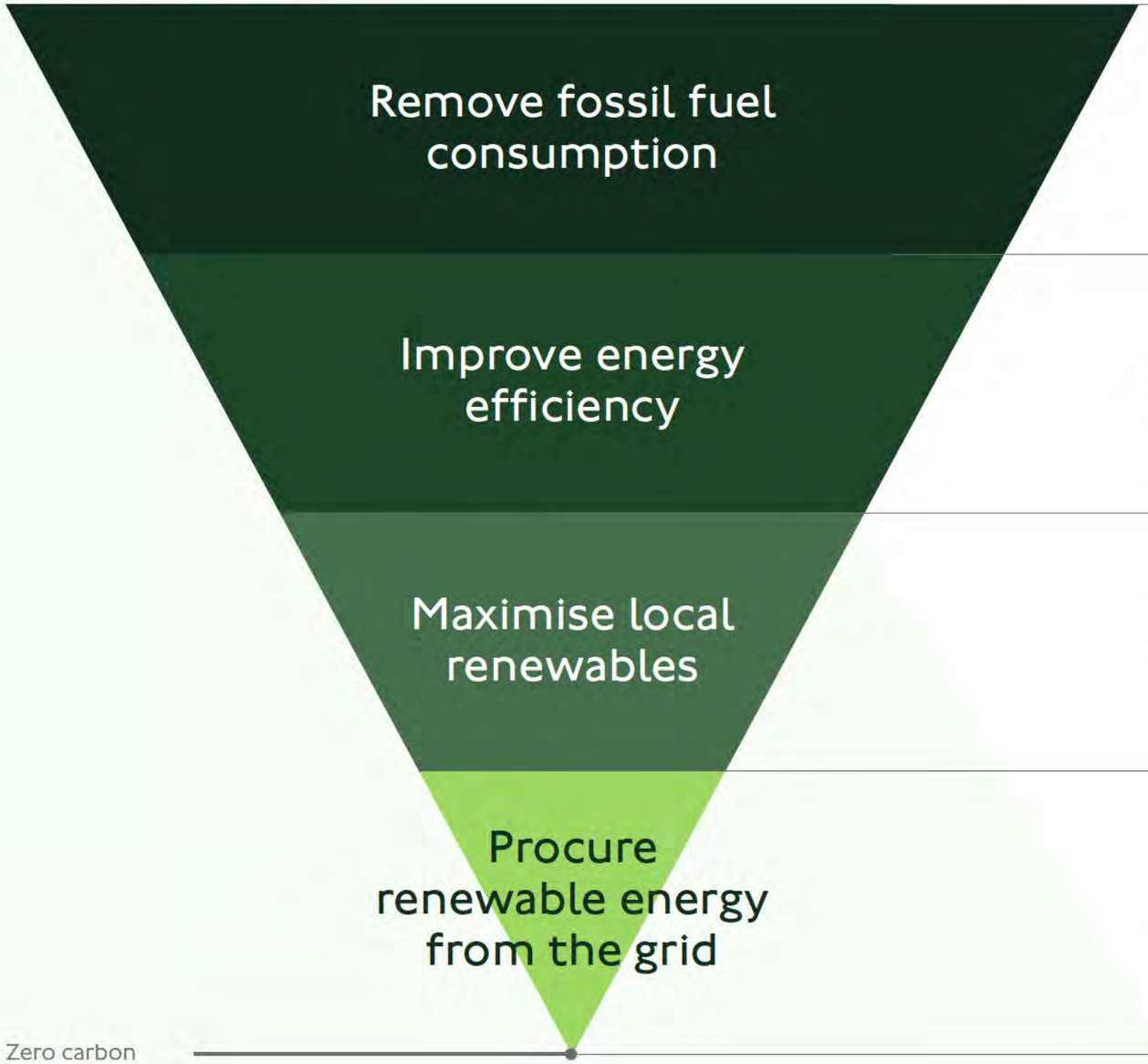
How will this be monitored?

- Measure and monitor our operational carbon emissions and report through our Scorecard and Annual Report
- Track and improve on our zero-carbon buildings progress indicators
- Instil carbon performance measurement and appraisal through contracts, proposals, projects, programmes, business cases, scheme designs and Pathway processes
- Work with suppliers to monitor, reduce and continually improve performance

Our energy and carbon strategy

We will adopt a hierarchy approach to reduce our operational carbon emissions to support our ambition of achieving zero carbon operations by 2030

Operational carbon hierarchy



How will we implement the strategy?

Remove fossil fuel consumption

- Transition our bus and vehicle fleet to electric and hydrogen
- Remove gas heating systems from our operations
- Transition to zero emission plant and equipment

Improve energy efficiency

- Improve the fabric* and energy performance of our buildings
- Develop a zero-carbon plan for our property estate
- Introduce measures to use less energy and use it more efficiently across our operations

Maximise local renewables

- Contract direct local solar power supply
- Embed renewables in new building development
- Exploit waste heat from the deep tube network

Procure renewable energy from the grid

- Transition to 100 per cent renewable energy supply by 2030, supporting our ambition for zero carbon across all activities

* A method of building design that involves maximising the efficiency of components and materials that make up a building's fabric, before considering the use of mechanical or electrical systems.

Energy efficiency across our operations and buildings

As one of London's largest landowners, we own and operate a wide variety of buildings. These include stations, depots, river piers, head offices, approximately 3,000 rental properties and housing developments. Each type of building requires specific plans to be developed to reduce carbon emissions and we are already progressing a range of measures across our estate.

We will continue to reduce energy demand with the installation of LED lighting across all our operational estate and further decarbonise our building stock through targeted activities to improve energy efficiency. We will continue to strive for efficiency when replacing assets, such as the new Piccadilly line trains that will begin service in the mid-2020s, which are more energy efficient than their predecessors.

One of our rail operators, Arriva Rail London, achieved a range of benefits recently replacing lighting under canopies and on platforms with more efficient LEDs. This resulted in significant savings, cutting the electricity supply for lighting by fifty per cent, whilst also improving the quality and reliability of lighting in these safety critical areas.

We've signed up to the Better Buildings Partnership's climate change commitment to work with our peers in the property industry, to improve our buildings and their energy supplies while being transparent on our progress.

We are launching our Sustainable Development Framework for our development estate that will ensure our new developments meet the highest standards in construction and building performance and deliver social value in the communities they serve.

One such example is the Southwark Over Station Development, which aims to provide office and community space around Southwark station and unlock neighbouring land for the council to build new affordable housing. The project is targeting the highest BREEAM rating of 'Outstanding', achieved by less than two per cent of of new buildings in the UK.

The building is able to achieve both net-zero carbon (in line with the UK Green Building Council and London Energy Transformation Initiative definitions) and a 42 per cent reduction in operational carbon emissions* due to its overall energy strategy consisting of an energy efficient fabric and building services approach. This includes using air source heat pumps, making provisions for a connection to an external heat network (when available at a future date) and generating renewable energy on-site through a photovoltaic (PV) panel array.

We will continue to reduce energy demand across our operational estate

We continue to strive for efficiency in our major development projects

* Compared to London Plan Part L Gas Boiler baseline

We are working to explore ways of procuring more renewable electricity

What we are already doing

Renewable energy procurement
We are the biggest consumer of electricity in London, using more than 1.5TWh annually, equivalent to around 400,000 homes, and have a strategy in place to procure 100 per cent renewable energy by 2030.

We are going to market for the first of our renewable power purchase agreements (PPAs) in 2021. Renewable PPAs are long-term contracts with renewable generators for the purchase of their electricity in agreed volumes and prices. These contracts provide generators with a guaranteed income, enabling them to develop new renewable energy generation projects in the UK.

We are working with our partners in the GLA to explore opportunities to jointly procure renewable electricity for the GLA Group, and thereby actively investing in new renewable generation assets. We will continue to increase the proportion of our electricity that comes from renewables through the decade to achieve our target of 100 per cent by 2030.

Solar power
We aim to install solar PV on all new buildings as they are constructed, most recently with completion of the Train Modification Unit in Acton which included more than 173kWp* of solar capacity. Our own land holdings, buildings and trackside areas have been assessed for their potential to host solar panels and while opportunities exist, there is a far greater potential on larger land holdings near to our network, which is the current focus.

Adopting a Solar PV Private Wire approach means connecting directly to new solar farms installed near the London Underground network. These solar arrays will be funded by the supplier and installed on local land, with us paying for electricity per unit produced. This guarantees that local, zero-carbon electricity will link directly to the London Underground network.

Initial feasibility work indicates up to 64MWp** of solar capacity could be possible, the equivalent of installing more than 10,000 standard residential solar installations, providing up to 5 per cent of our annual electricity demand.

Waste heat from the Tube
Waste heat from the London Underground network currently provides heating and hot water to more than 1,350 homes, a school and two leisure centres in Islington thanks to the pioneering project that developed into the Bunhill 2 Energy Centre.

We are exploring additional locations to make use of waste heat from the network, including London Underground ventilation shafts, with the potential to serve up to 15,000 homes.

Using the heat generated from these sources to replace gas heating in nearby buildings can save more than 1,000 tonnes of carbon at each site, every year. We are also exploring ways in which we can achieve benefits from water which is pumped from our tube network every day.

*, ** Standard measures of solar output peak power generation. There are 1,000 kilowatts (kW) in a Megawatt (MW)

Case study

Managing lifecycle carbon emissions in our major projects

The Major Projects Directorate has developed a three-year carbon strategy that will enable carbon reduction targets to be set and carbon practices to be embedded within TfL. The actions in the strategy fall under four themes: carbon footprint baseline assessment; establishing carbon reporting and assurance; creating a carbon culture and growing capability; and carbon reduction. The strategy's execution will be supported by a new team of programme carbon management leads who will provide a crucial common link between programmes to help early sharing of learning and best practice in carbon management.

The Major Projects Directorate carbon strategy has been developed based on learning gained from the Piccadilly line upgrade. Since December 2020, the Piccadilly line upgrade delivery team has been trialling carbon modelling processes, including: updates to works information to aid procurement and contracting; the development of an in-house carbon modelling tool; and carbon modelling training for project managers and engineers.

Trialling carbon modelling will help reduce lifecycle carbon emissions

Reducing carbon from our infrastructure and supply chain

Our ambitions

- Reduce carbon emissions across the lifecycle of our assets and infrastructure
- Work with our suppliers to reduce carbon across all products and services we procure

How will this be reached?

Infrastructure

- Evaluate the carbon footprint of our assets across their lifecycle, including construction, operation, maintenance and disposal
- Ensure that considerations for carbon use are embedded in our decision-making process and set targets for our capital programmes
- Manage whole lifecycle carbon emissions throughout our capital projects, evaluating sources of carbon as early as possible in designs and embedding carbon reduction in business cases, procurement and supplier management
- Collaborate closely with other infrastructure owners, suppliers and cross-industry bodies to develop and share best practice in infrastructure carbon management

Supply chain

- Measure and monitor the carbon impacts of our supply chain, focusing on the highest priority areas to reduce emissions
- Work in partnership with our suppliers to identify and further deliver emissions reductions
- Specify sustainable standards and ensure our supply contracts incentivise suppliers to reduce carbon from the products and services we procure

Our Scope 3 target

- Agree and set a reduction target for our scope 3 emissions by the end of 2022

How will this be monitored?

- Instil carbon performance and appraisal through contracts, proposals, projects, programmes, business cases, scheme designs and other processes
- Work with suppliers to monitor, reduce and continually improve performance

What we are already doing

Managing carbon in the Colindale station redevelopment

The redevelopment of Colindale Underground station in north London will deliver increased capacity and step-free access by 2024, and support new residential development on the current station site. We are integrating carbon management into all design work and decision making around the project, using the principles set out in the Publicly Available Specification for Carbon Management in Infrastructure, PAS 2080. Working closely with our suppliers Morgan Sindall, Atkins and Fourway, and using the Rail Safety and Standards Board's Rail Carbon Tool, we have continually developed the design for the new station building to reduce carbon use across the lifecycle of the new infrastructure. Improvements ranged from reducing the amount of materials we use to adapting the public lighting design to optimise energy consumption. TfL's project engineer for the scheme has been recognised as a Carbon Champion by the Institution of Civil Engineers.

Net Zero Infrastructure Industry Coalition

In 2019 we joined a coalition of prominent public and private infrastructure businesses and academic institutions that are committed to achieving net-zero carbon emissions. Our goal is to support the ambition of the UK to transform the way in which the infrastructure that forms the backbone of our economy contributes to good net-zero carbon, and makes the UK an international leader in net-zero carbon across the global infrastructure industry. The Net-Zero Infrastructure Industry Coalition will provide and demonstrate clear leadership as well as innovative thinking and know-how across the infrastructure industry to achieve our goal.

We are working to manage the carbon when redeveloping our stations

Adapting to the changing climate

Our ambitions

- Understand, prepare and adapt for climate change, now and in the future on our services, infrastructure, staff, contractors and customers

How will this be reached?

- Understand TfL's exposure to the impact of climate change through a dedicated research programme, developing case studies of weather-related impacts, and improving how we collect data on performance and incidents
- Embed climate change adaptation into our processes, long-term planning and decision making
- Work with teams across TfL to raise awareness of climate change impacts and improve the way we reduce those risks
- Work with other infrastructure owners and transport organisations to share knowledge, understanding of interdependencies and risks, develop best practice and work together to help reduce risks

Our targets

- Conduct a climate risk assessment of our assets by the end of 2021
- Develop a baseline understanding of severe weather impacts on our assets and performance by the end of 2022
- Use this baseline and the Met Office's climate projections to predict the likely impact of future climate change on our network by 2023
- Apply climate projections consistently across the business by 2023, including in TfL's standards

How will this be monitored?

- Through project and programme business cases, scheme designs and other project management tools
- Data on performance, costs and incidents
- Benchmarking TfL's progress on adaptation against other organisations in the transport sector and beyond
- Reporting through the Adaptation Reporting Power created as part of the Climate Change Act (2008)

What we are already doing

Collaboration to improve climate change adaptation and resilience

We established and continue to chair the quarterly Transport Adaptation Steering Group, which brings together stakeholders (such as Network Rail, Highways England and Thames Water) and experts (such as the London Climate Change Partnership and Environment Agency) to understand how we can proactively address the issue of climate change adaptation in the transport sector.

London Underground Comprehensive Review of Flood Risk

The London Underground Comprehensive Review of Flood Risk project systematically reviewed any significant sources of flood risk, both natural and non-natural, to all of London Underground's vulnerable assets. The aim was to quantify the safety and business residual risks, and identify those assets most at risk of flooding, so that operational mitigation measures can be implemented and financial resources allocated more effectively.

After burst water mains, the most significant flooding threats are surface water flooding and river or tidal flooding. The latest results suggest a total residual risk value of £4.2m per year.

Better managing flooding risk is key to adapting to climate change

Case study

Embedding climate change adaptation measures at West Ham Bus Garage

At seven acres, the award-winning West Ham bus garage is one of the largest bus garages in Europe. It is also one of the most environmentally sustainable bus garages in the UK.

The garage has approximately 7,400sqm of barrel-vaulted roof-covered space. The two outer arches of the laminated timber roof (more than half of the total roof area) have been planted with a mat of sedum species. This acts like a sponge for rainwater, releasing it more slowly into the drainage system and so helping to reduce the risk of surface water flooding. Rainwater collected from the rest of the roof is stored in underground tanks and used to flush on-site toilets, helping to reduce pressure on water supplies.

The garage minimises energy use through its design. Only some of the rooms such as computer server rooms and training rooms are air conditioned. Other rooms have a ventilation system that is designed to draw in colder air overnight ready for their day-time occupation. The building's exposed concrete absorbs heat during the day, while the biomass boiler and micro Combined Heat and Power (CHP) units help reduce reliance on fossil fuels. The completed facility achieved an 'A' rated Energy Performance Certificate.

It is not just the garage that integrates climate change adaptation into its design. To help reduce the impacts of summer heat, all double deck buses in the fleet (with the exception of classic Routemasters) have air cooling. In addition, all single and double decks have white roofs, roof and engine insulation, tinted windows and opening windows.

Bus parking areas either side of the central engineering facility are designed to absorb noise from the depot which is located next to residential areas.

Energy use can be minimised through sustainable design

Air quality

Reduce emissions of harmful air pollutants from our activities

Air quality

Toxic air pollution remains a huge risk to the health of all Londoners. Progress has been made in reducing air pollution from road traffic in London through the introduction of the ULEZ in 2019 and strengthening of the Low Emission Zone standards in March 2021. However, there is still much to do for London to comply with legal limits for nitrogen dioxide (NO_2) and to meet the London Environment Strategy's ambition of reaching the World Health Organisation's recommended limits on particulate matter (PM2.5)

We will continue to play our part in delivering the Mayor's air quality programme, starting with the expansion of the ULEZ in October 2021. We will also continue to work with London's boroughs to deliver local improvements in air quality, and with taxi and private hire operators to reduce emissions from their fleets.

Reducing emissions from our own operations is a vital part of improving London's air quality. All 9,000 buses in our fleet now meet or exceed the cleanest Euro VI emissions standards, the same strict standards as the Mayor's ULEZ. The buses which we have retrofitted to meet the Euro VI standard emit up to 95 per cent less nitrogen oxide (NO_x) emissions and 80 per cent less particulate matter than before.

We want to move to a zero-emission support fleet and are working with our suppliers to convert their vehicles. As we transition our buildings towards zero carbon, we aim to reduce emissions of air pollutants as well. We are working hard to reduce emissions from the plant and equipment that we and our suppliers use in construction and maintenance of the network.

Our responsibility to improve air quality extends to our staff and customers on London Underground. While the concentration of particulate matter in the Tube network is below legal limits, there are still some areas of the network with high levels of dust. We have committed to working with academic partners to research the potential health impacts of the particulates found in the Tube network and publish the results. In the meantime, we are continuing to ensure the Tube is cleaned where it is most needed and explore innovative solutions to managing dust.

We continue to work with London's boroughs to deliver local improvements in air quality

All

9,000

buses in our fleet now meet or exceed the cleanest Euro VI emissions standards

Increasing active travel and reducing motor vehicles improves air quality

Improving air quality

Our ambitions

- Help deliver London's air quality programme
- Transition the fleets under our control to zero-emission
- Reduce emissions of harmful air pollutants from our buildings and on the Tube network
- Lead the way in the use of low- and zero-emission plant and equipment

How will this be reached?

- We will no longer procure new diesel or hybrid buses and will only procure new zero-emission buses
- Continue to work with taxi and private hire operators to support their conversion to zero emission capable vehicles
- Use performance management measures in our contracts to incentivise our suppliers to convert their vehicle fleets to zero emission
- Undertake detailed analysis of the health impacts of particulate matter on the Tube
- Trial innovative techniques to reduce particulate levels on the Tube
- Work with our suppliers to move towards zero emission Non-Road Mobile Machinery (NRMM) across the network

Our targets

- Zero emission bus fleet by 2034 or earlier, with an ambition to achieve this by 2030
- All cars in our support fleet to be zero emission by 2025, and vans by 2030
- From 2025, new contracts will require freight and servicing vehicles under 3.5 tonnes travelling to TfL buildings to be zero emission
- Comply with the progressively tightening NRMM Low Emission Zone standards for TfL developments and business as usual activities. This will lead to all NRMM procured by us, or used by suppliers and subcontractors on our behalf, to be zero emission by 2040

How will this be monitored?

- Track and report the makeup of our vehicle fleets and their emissions and that of our subcontracted services and suppliers
- Regular monitoring of particulate matter concentrations on the Tube
- NRMM compliance is monitored by the GLA NRMM register and will also be monitored by a specialist app, currently in development

What we are already doing

Reducing emissions from our buses
We already operate the largest zero emission bus fleet in western Europe, with more than 500 electric buses currently in operation, increasing to 800 by the end of March 2022, and 22 hydrogen fuel cell buses. We are committed to converting our 9,000-strong bus fleet to zero emission, and aim to have transitioned 10 per cent of the fleet by 2023. We have recently brought forward our target for a fully zero-emission fleet to 2034, with an ambition to achieve this by 2030.

Working with the GLA to develop the non-road mobile machinery compliance monitoring app
Exhaust fumes from non-road mobile machinery such as excavators and generators are a significant contributor to London's air pollution. Progressively stricter emission standards have been set. The current GLA NRMM Register monitors compliance with NRMM standards for development sites which can be identified by specific postcode. We are working with the GLA to develop an online portal to monitor compliance with NRMM standards across the GLA group and pilot this on TfL's highways maintenance contracts.

We are committed to converting our 9,000 strong bus fleet to zero emission

Green infrastructure

Protect, connect and enhance our green infrastructure including the biodiversity, habitats and ecosystem services on our estate

Green infrastructure

Our climate is in crisis and so is nature. The pressures on our natural environment continue to increase with more competition for space caused by increased demand for consumer goods, agriculture and accelerated urbanisation. Globally, more than a million species are on the verge of extinction, with an average of 60 per cent decline in animal populations since 1970. The latest (2019) State of Nature Report from a coalition of environmental organisations estimated that 15 per cent of the species assessed in the UK are at risk of extinction. London's wildlife is in decline, in line with the trends across the country.

Our network is home to several notable and protected species such as bats, water voles, stag beetles, great crested newts and badgers to name a few. It also includes designated sites such as Epping Forest, which is nationally and internationally recognised for its biodiversity. Our networks also provide valuable green corridors for wildlife. We have 23,500 trees in our inventory with plane (Platanus) being the most dominant. These remove nearly 6.3 tonnes of airborne pollutants each year and store more than 6,700 tonnes of carbon. Beyond this, they divert an estimated 8,700 cubic metres of storm water run off away from the local sewer systems each year. Urban trees are vital to our city since they can help to improve air quality by reducing air temperature and by directly filtering pollutants. With 22.17 square kilometres of landholdings, including 1.65 square kilometres of roadside verges and 124 Sites of Importance for Nature Conservation (SINCs), covering 4.8 square kilometres (or 24 per cent) of our land*, we have a significant opportunity to protect and enhance the flora and fauna in the Capital.

We are committed to protecting our natural environment, connecting and enhancing green spaces across our estate. In the event of biodiversity loss, we provide new green infrastructure to deliver biodiversity net gain. We have a crucial role to play in ensuring that London's natural environment, habitats and species are protected. Improving green infrastructure on our networks makes these more attractive and has health benefits for our customers, particularly those walking, cycling and using public transport. It also increases resilience to extreme weather and climate change. Our investments, projects, and operations will protect, connect and enhance the biodiversity, habitats and ecosystem services in our estate. Our maintenance activities will balance the need to run safe services to the travelling public and delivering biodiversity benefits where possible.

97

species, with protected or priority status in London, recorded within 100m of the tramline, including four species of bats

* November 2018 data

Wildflowers are an important food source for pollinators like bees

Trees provide welcome shade for people walking on hot days

Our green infrastructure includes networks of green spaces, embankments, railway cuttings, grassland, woodland and sustainable drainage systems, and features street trees and green roofs.

Our work on green infrastructure contributes to a wide range of environmental and social benefits. By valuing our natural environment and prioritising green infrastructure as an asset and a solution, there are a number of opportunities for us as an organisation and London as a whole, including:

Climate resilience
Reducing the risk of flooding by slowing the rate and reducing the amount of rainwater entering the drainage system. Green infrastructure also provides shade and helps to cool the city as it radiates less heat back into the air compared to hard infrastructure, such as concrete and asphalt

Improving health and wellbeing
By helping to cool the city, reduce the risk of flooding, provide shade, and improve air quality we are making London more attractive to live in and visit. Green infrastructure can also help make walking and cycling a more attractive method of travel

Reducing exposure to poor air quality
In some locations, green infrastructure can act as an effective barrier to air pollutants, helping to reduce pedestrians' exposure to poor air quality

Providing social benefits
Help connect and improve communities, and enhance natural environments for people living locally and visitors to enjoy

Growing our economy
By making London a more liveable and climate-adapted city, green infrastructure can make London a more attractive place to live, work in and visit

Cultural heritage and built environment
From Victorian London plane trees to public parks, green infrastructure is an important part of London's cultural heritage and built environment. Our transport networks connect and provide access to this heritage

Connecting and enhancing habitats and biodiversity
As well as providing a range of benefits, green infrastructure provides valuable networks of habitats for wildlife and so can increase biodiversity, even in a changing climate

4,463
trees have been planted on our roads since 2016, including replacing those that had to be removed due to disease or for safety reasons

Green infrastructure can make walking and cycling a more attractive way to travel

Benefits of green infrastructure

Implementation of robust green infrastructure and biodiversity policy will lead to:

Customers

- More attractive, safe, reliable and comfortable transport networks
- Increased level of health and wellbeing, leading to improved quality of life

Boroughs

- Collaborative working
- Cleaner air, water and land
- Enhanced local character

All Londoners

- Cleaner air, water and land
- Increased biodiversity
- Provide access to green spaces
- Making London a more attractive place to live, work and visit

Benefits to TfL

- Improved relationship with all stakeholders
- Cost savings (for example, through energy efficiency, reduced mainenance, etc.)
- Energy efficiency
- Risk reduction
- Adaptation to climate change
- Staff engagement
- Enhanced reputation
- Improved reliability
- Increased customer footfall
- Meeting mayoral objectives and legal requirements

Neighbours

- Neighbours understand our need to maintain safety while working to improve biodiversity
- Enhanced local character, and improved views and surroundings

Contractors

- Improved understanding between contractors, leading to more efficient and innovative ways of working

Developers

- Increased certainty for developers, leading to improved relationships
- More marketable property developments

Making the most of green infrastructure

Our ambitions

- Protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate

How will this be reached?

- Use a natural capital approach* to maximise the benefits of green infrastructure in our investments, projects, maintenance activities and strategic decision-making
- Deliver a net gain in biodiversity across our estate through our maintenance activities, project delivery and commercial development
- Contribute to the London Environment Strategy goals of a 10 per cent increase in tree canopy cover and London being more than 50 per cent green
- We aim to avoid, or where this is not achievable, minimise our impacts on SINCs, and actively manage these to improve biodiversity and ecosystem services
- Reduce the incidence of existing, and risk of new, invasive non-native species, such as Japanese knotweed and oak processionary moth, on our networks
- Improve the way we monitor and report on green infrastructure and biodiversity
- Work with teams across TfL to raise awareness of the benefits and importance of green infrastructure and biodiversity, and improve the way we consider these topics, for example, in our Management System

* An approach to policy and decision making that considers and quantifies the value of the natural environment for people and the economy

** Schemes subject to the Town and Country Planning Act and Nationally Significant Infrastructure Projects

Our targets

- Develop a natural capital account for our estate by mid-2022 and regularly update it
- Meet, and where possible exceed, the London Plan's Urban Greening Factor requirements for relevant developments
- Develop a TfL Biodiversity Net Gain strategy to set out our approach towards biodiversity offsetting by end-2022 and aim to achieve 10 per cent biodiversity net gain on applicable schemes**
- Increase the number of trees on our roads by one per cent per year between 2016 and 2025
- Evaluate and expand (where possible) the use of alternative, herbicide-free methods of invasive species management
- Aim for a 10 per cent increase in TfL-wide tree canopy cover by 2050
- Identify and contribute to the Mayor's Transport Strategy target of 50,000 square metres draining through Sustainable Drainage System (SuDS) every year on London's roads
- Publish a green infrastructure technical strategy
- Expand and evaluate our wildflower verges trial by the end of 2022
- Evaluate the success of our green bus shelter roofs by the end-of 2021, to better understand their potential to support enhanced greening across London where it is most needed

How will this be monitored?

- By regularly updating our natural capital account and biodiversity baseline
- Reporting on the Mayor's Transport Strategy target progress to the Board
- Report on estate-wide biodiversity losses and gains every five years, through the biodiversity baseline

We are trialling a reduced mowing regime to encourage more diverse habitats

What we are already doing

Wildflower verge trials on our roads

We are trialling a reduced mowing regime on our roadside verges to encourage a more diverse habitat and increase wildlife. In 2019, we changed the maintenance regime in trial areas from up to eight annual cuts with clippings left behind, to annual cuts with the removal of all clippings. The regular removal of grass clippings reduces soil nutrients and results in a lower height and amount of grass, increasing the number and diversity of other wildflowers and plants. Left uncut, many of the verges produced flowers in the first year of the trial. We are continuing to cut and collect on all the sites we have been trialling so far, including in Redbridge and Hillingdon. Further new sites have been identified for an expanded trial. This new management method has the potential to save money for maintenance in the long run.

The regular removal of grass clippings reduces soil nutrients and increases wildflower diversity

Natural capital accounting

We are aiming to incorporate natural capital into asset strategy and project life cycle decision-making. The aim is to improve business performance, reduce business risk and deliver better environmental outcomes on schemes, for the benefit of Londoners and the UK as a whole. This aligns with existing commitments under the Mayor's Transport Strategy, London Environment Strategy. It will build on and support the work already under way to identify and reduce greenhouse gas emissions and tackle air pollution. We have identified that information on natural capital is relevant across our project development, maintenance activities and day-to-day operations, with some specific processes being identified as key entry points. We are one of only a few transport authorities globally to consider how to adopt a natural capital approach for its own operations at corporate level, not just in relation to site-based projects.

Biodiversity baseline

Working with nature and delivering ecological enhancements through relevant schemes has always been important to us. In 2017 we launched the TfL biodiversity baseline, a tool for tracking losses and gains in biodiversity delivered through the schemes we undertake. The biodiversity baseline is an innovative and effective GIS map of our operational networks that combines the Department for Environment, Food and Rural Affairs' (Defra's) biodiversity net gain metric with a variety of data sources to calculate the biodiversity value (units) of our land. These additional data sources include:

- Up-to-date ecology surveys
- Data from London's environmental records centre, Greenspace Information for Greater London (GiGL)
- Free Government data
- Aerial imagery

In 2019 we expanded the baseline to cover our entire estate, using high-resolution commercial imagery provided by the GLA. We have now used the baseline to identify opportunity areas for future biodiversity enhancements, for example, through offsetting our biodiversity impacts. Sitting alongside the baseline, we launched our biodiversity toolkit, a user-friendly tool to assess how different designs will affect biodiversity, supporting project leaders to make interventions earlier in the design process to benefit biodiversity at the end of the scheme. The data from the toolkit will be submitted to GiGL and used to help update the baseline every five years, enabling us to robustly report against progress towards our goal to deliver biodiversity net gain by 10 per cent on applicable schemes.

In 2017, we launched the TfL biodiversity baseline to track changes in biodiversity delivered through our schemes

By establising a biodiversity baseline, we can track changes more easily

Case study

Improved drainage systems on our network

Working closely with the Environment Agency, we have installed a SuDs on a case study site at Upminster Bridge, to assess how effective green infrastructure-based SuDS interventions could be in buffering the effects of extreme rainfall events on London Underground infrastructure.

In addition to this innovative approach, multifunctionality incorporated into the design of the system ensured that a range of additional ecosystem service benefits were supported through the initiative. These included protecting Environment Agency waterways, low-carbon construction through the use of recycled construction waste materials and supporting biodiversity through habitat features incorporated into the SuDS design.

The brownfield area has been transformed using the power substation demolition material and spare attenuation crates from works that were part of the 2012 London Summer Olympic and Paralympic Games.

SuDS can help London cope with future extreme rainfall events

Sustainable resources

Support a low-carbon circular economy

Sustainable resources

The Mayor has set an ambition for London to become a zero-waste city. We are committed to supporting this, developing and embedding circular economy principles in how we operate, maintain and improve our network. This means we will:

- Reduce waste at source, minimising the waste produced in the first place
- Extract value from materials by reuse and recycling
- Increase the purchase of products made from recycled materials

We aim to divert all waste from landfill and, where we are cannot reuse or recycle, it will be sent to modern incinerators which generate electricity from burning waste, capturing and reducing harmful pollutants during the process.

To reduce waste, action needs to be taken early on. We embed principles to reduce waste in projects' early planning and design stages. The largest generator of waste by weight and volume are our major construction projects, by far. We require all our major projects above a certain threshold to achieve sustainability awards levels such as CEEQUAL (Civil Engineering Environmental Quality Assessment and Awards Scheme) and BREEAM (Building Research Establishment Environmental Assessment Method) that require reducing waste through the design process and highly responsible waste management.

Excavated soil from major tunnelling projects can be put to beneficial use more easily than other waste, and we achieve very high reuse and recycling for these waste streams. Capturing the value in some other areas of wastes can be much more challenging.

TfL waste in 2020/21

Construction demolition and excavation waste

99%

reused and recycled

Commercial and industrial waste (stations, tenants and depots)

41%

reused and recycled

Recycling helps London to become a zero waste city faster

Increased and more efficient use of sustainable resources

Our ambitions

- Use resources and materials sustainably
- Consider materials' carbon cost throughout its life cycle
- Support London's goal of being a zero-waste city

How will this be reached?

- Deliver our ambitions within the GLA Group Responsible Procurement Implementation Plan 2021-24
- Collaborate with the ReLondon partnership to broker innovative solutions through engagement with Tier 1 suppliers and contractors, and SMEs including the development and delivery of trials
- Continue to deliver and build on initiatives such as our Safe & Sustainable by Design projects and engineering programme
- Embed circular economy guidance in procurement
- Identify opportunities in our standards and specifications to incorporate more recycled content of materials and recyclable materials
- Continue to implement customer waste recycling trials in stations
- Work with station tenants to reduce waste and implement food recycling trials
- Continue roll-out of food waste recycling from our staff canteens and establish a food waste baseline. Work with catering contractors to reduce food waste in line with the Mayor's targets to halve food waste by 2050
- Support reduction in plastic waste programmes, including continuing the roll-out of water refill points across the TfL network and reducing the use of single use plastics throughout our operations
- Develop new circular economy benchmarks and targets

Our targets

- Divert from landfill 100 per cent of non-hazardous construction, demolition and excavation waste by 2030
- Recycle 65 per cent of our commercial and industrial waste by 2030
- Ensure 100 per cent of our commercial staff complete the Circular Procurement eLearning Module by April 2023, 50 per cent by April 2022

How will this be monitored?

- Continue to collate and report on our waste and recycling performance
- Use the Management System to monitor the completion of the Responsible Procurement Checklist
- Monitor the implementation of circular procurement through the Responsible Procurement Implementation Plan progress reporting

What we are already doing

Recycled plastic railway sleepers

For the circular economy to be successful it is not enough to simply recycle waste, products must also be purchased that are made from recycled material. A practical example of us contributing to the circular economy is the use of plastic railway sleepers which are made from 99 per cent recycled materials. The sleepers replace timber sleepers in above-ground sections of the London Underground, and have been used successfully since 2019. The recycled plastic sleepers also have reliability and maintenance advantages, as well as being lighter and therefore easier to handle with the associated health and safety benefits for those installing them. In addition, the manufacturer will take back the sleepers at the end of their life for further onward recycling. The same material is also being used for depot and siding walkways.

We embed principles to reduce waste in projects' early planning and design stages

Recycled plastic railway sleepers can improve reliability on the network

Case study

Reuse of materials in major projects

The Northern Line Extension (NLE) is a major project that involved the construction of two new Underground stations, two ventilation shafts and two 3.2km-long tunnels extending the existing Northern Line to Battersea. In total, more than 845,000 tonnes of excavated material was transported from Battersea by barge. This material was taken down the River Thames to Goshems Farm, near Tilbury in Essex, where it was used to restore a Victorian landfill to useful arable land. With 701 barge movements in total, and one barge equivalent to 66 wagons, that equates to taking 46,965 wagons off the streets. As a result, the NLE has achieved CO_2 savings of 2,009 tonnes by using River Transport as opposed to road.

The CEEQUAL framework was used to drive sustainable design and construction. The CEEQUAL tool helped establish sustainability as a key objective to: deliver the civil engineering elements of the project; encourage local community engagement; improve relations with affected stakeholders; select energy-efficient machinery; set up a waste transfer station to ensure efficient material reuse; consider other transport users; and educate staff about sustainable construction methods.

The project being assessed through the CEEQUAL criteria led to innovative workshops that promoted sustainable design. This led the exploration of opportunities such as energy harvesting and PV technologies. The project also investigated what measures could be employed to reduce the energy consumption of the tunnel boring machine.

A carbon assessment was undertaken which identified decisions that were incorporated into the design of the project. These resulted in fewer or no carbon emissions, overall.

These design changes have led to significant savings through measures, including reducing the thickness of tunnel linings, reducing the length of launch tunnels and removing waste by barge rather than road. The project sought to maximise off-site manufacturing of components where possible, which helped minimise excess waste. The concrete platforms, columns, beams, ceiling slabs, stairs and tunnel segments were all manufactured off site, significantly reducing the concrete waste associated with in-situ concreting. The supply chain was challenged to reduce packaging where possible, with reusable stillages used and only high-quality pallets permitted, which were then collected for reuse.

Much of the temporary infrastructure required to construct the NLE was sold on to other construction projects, such as the nearby Thames Tideway project, or for other uses. Surplus materials were offered to local charities or returned to the supplier, where possible.

These measures enabled the NLE to achieve extremely high rates of reuse and recycling, with remaining waste going to incineration, enabling energy recovery, and less than one per cent going to landfill.

The project also sought to use local and recycled materials, where possible. Another construction project, less than one kilometre away from the Battersea site, needed to dispose of clean excavated material and the NLE site took advantage of this to use the material as backfill. Nearly 1,000 tonnes of this material were used to fill voids around the new Battersea Power Station structure, saving costs and avoiding the material being sent further afield as waste.

Sustainability assessment can drive sustainable design and construction

Best environmental practices

Deliver our activities responsibly and be a good neighbour

Best environmental practices

Managing our impact on the environment goes beyond specific projects, programmes and actions. It extends to every aspect of how we operate, maintain and upgrade London's transport network. It's about following best practice, being a good neighbour and doing the right things by Londoners, nature and the planet.

We are committed to:

- Ensuring legal compliance
- Adopting and implementing sustainable development best practice across our programmes
- Being transparent about our performance
- Being a good neighbour to all Londoners

Our activities have the potential to create nuisance and pollution if not managed appropriately, and we will continue to follow best practice in how we manage environmental challenges and ensure legal compliance.

We will report on our performance and disclose any information, for example reporting on energy use and carbon emissions in the Director's Report.

Noise and vibration

We consider our neighbours by continuing to work to reduce the number of Londoners exposed to excessive noise and vibration levels from road and rail sources. We use quieter noise surfaces where we can and our work to electrify our bus and support fleets all contribute to reducing noise across London's roads.

We monitor noise and vibration levels across our network and will carry out any practical action to alleviate known residents' concerns when it is possible to do so. We continue to invest significantly in track renewal and maintenance across the rail and Underground network, including a continuous programme of rail grinding to make tracks smoother and track modernisation.

Our projects

We assess our projects for sustainability outcomes and to identify environmental risks and opportunities.

Where appropriate, we recognise and apply sustainable development rating systems such as BREEAM and CEEQUAL to assess project sustainability issues leading to improved sustainable design principles. Our major construction projects follow the Considerate Constructors Scheme and their activities develop and align to a published Code of Construction Practice, where appropriate.

Our major projects will often be required to undertake an environmental impact assessment at planning stage, which involves the detailed consideration of potential environmental impacts and development of robust mitigation.

We will continue to go beyond our obligations and legal requirements by adopting and implementing sustainable development best practice across our programmes, including our Build to Rent portfolio, one of London's most significant programmes of urban development and housing delivery.

We aim to go beyond our minimum obligations and legal requirements

We aim to reduce noise and vibration from road and rail

Managing our impact

Our ambitions

- Be a good neighbour
- Comply with our obligations and legal requirements
- Go beyond our minimum obligations to apply environmental and sustainability best practice
- Benchmark our environmental performance with similar organisations, encourage innovation and share our learnings with others
- Be transparent about our performance

How will this be reached?

- Our projects and programmes self-assess their sustainability issues and environmental risks, and are independently verified, where appropriate, to improve their sustainable design principles
- Continually improve our management system, provide guidance and training to colleagues and suppliers, and undertake assurance activity to improve compliance.
- Ensure compliance with our carbon and energy disclosure requirements and regularly report on our performance
- We test and use improved technology and materials, including targeted trials for solutions relevant to reducing noise impact
- Apply Best Practicable Means to try to reduce the number of noise-related complaints from our operations and projects and ensure any complaints are promptly and fully addressed

Our targets

- Aim to meet 'no net increase in noise' in Defra 'noise important areas' for our schemes
- Projects where the estimated total cost exceeds £5m or the contractor's costs exceed £25m must achieve CEEQUAL certification award level of at least 'Very Good', ideally 'Excellent', and BREEAM rating level of at least 'Very Good' and ideally 'Excellent'. Ensure no significant environmental incidents attributable to our activities across the network

How will this be monitored?

- We already monitor our performance through incidents and complaints, and will continue to do so.
- Where sustainability rating systems are applied, these will be externally verified, and performance ratings made available to the public

What we are already doing

Our Sustainability Staff Network Group and Sustainability Champions

The TfL Sustainability Staff Network Group celebrated its first year of operation in June 2021. It is open to all colleagues who would like to help make TfL a more sustainable organisation and personally help combat the climate crisis and progress the UN Sustainable Development Goals more broadly. With a positive and constructive focus, the group aims to raise awareness of issues and opportunities, foster exploration of solutions and support to overcome challenges and grow from successes along the way.

The group has grown rapidly and continues to build membership, knowledge and capacity through its intranet activity, regular events and online discussion sessions. It also connects through quarterly and annual reporting activity. As this network matures and grows it will continue to positively impact on our environmental performance across the organisation.

Meanwhile, we also aim to have a sustainability champion in each team across the business. The sustainability champions encourage discussions of sustainability issues in day-to-day life at TfL and help empower staff to make improvements where they can.

The champions engage their teams in the best ways to suit their specific circumstances. The first tranche of 50 sustainability champions link with environmental champions in the Surface and Major Projects directorates as well as energy champions at London Underground stations.

Collaboration with suppliers on innovative materials

We are working with suppliers to pursue and implement circular economy solutions. Annually, 40 million waste tyres are generated in the UK. Tarmac has developed the technology to allow granulated rubbber use in asphalt and has recently received approval for use on the strategic road network. As a result, Tarmac, Kier, Metis Consultants and TfL have been assessing the viability of using such mixes on strategic roads in London.

The UltiPave R mix which incorporates one per cent rubber has recently been laid on a section of the TfL Road Network in south-east London – the A205 Stanstead Road between Stanstead Grove and St Dunstan's College access road, near Catford. Early assessments show this new asphalt mix is viable and could be considered as a default surfacing treatment across the TfL Road Network in the future. Approximately 750 waste tyres would be recycled for every kilometre of road surfaced.

We aim to have a sustainability champion in each team across the business

Innovative materials helps London be more sustainable

Our roadmap of environmental improvements*

2021

- Develop full natural capital account
- Stronger Low Emission Zone and expansion
- Launch procurement for directly connected renewable energy

2022

- First delivery of renewable energy through Power Purchase Agreement
- Complete baseline understanding of the impacts of extreme weather events
- Scope 3 carbon emissions assessment and reduction target
- Complete detailed asset climate risk assessment

2023

- Develop forecast of climate change impact on networks and update asset plans

2024

- First delivery of directly connected renewable energy

2025

- One per cent year on year increase in tree numbers on our road network
- All our fleet cars to be zero emission capable

2026

2027

2028

2029

2030

- **100 per cent renewable energy**
- **65 per cent of commercial and industrial waste recycled by 2030**
- **All cars and vans in our support fleet to be zero emission**
- **100 per cent of non-hazardous construction, demolition and excavation waste diverted from landfill by 2030**

2034

- Bus fleet zero emission

* We will add to and update our roadmap of environmental improvement as part of our regular public reporting on progress

Delivering our Corporate Environment Plan

We will ensure environmental sustainability is a core part of our culture. It is already a central theme of our new internal Vision and Values plan. The plan outlines the kind of organisation we want to be and was developed with extensive input from colleagues across the business, who told us that sustainability matters a great deal to them.

Our ambition and targets will be embedded in our plans for all business areas. We will use these to help drive and track improvements in environmental performance and outcomes.

We will go beyond our own activity and set high expectations on environmental performance and ambition from anyone that we work with.

How we will monitor and report on progress

We are committed to being transparent about our performance. While we already have extensive systems for monitoring our environmental performance, we recognise that improving our environmental data reporting capability is key to delivering a successful Corporate Environment Plan. We have developed an improvement programme to achieve this.

Progress against the roadmap milestones will be tracked and reported in both the Safety, Health and Environment annual reports and future Sustainability Reports. As our delivery plans develop, we will add to and update the roadmap as part of this regular reporting.

Internally, we will be reporting on our carbon emissions through the TfL Scorecard which is reported to our Board, and other environmental metrics are embedded in the relevant scorecards from 2021/22 onwards.

We want to improve our environmental data reporting and capability

We will report on our progress against this plan

Glossary

Biodiversity	Term used to describe the enormous variety of life on Earth, including plants, bacteria, animals, and humans. It can be used more specifically to refer to all the species in one region or ecosystem
Biodiversity net gain	An approach to development that leaves biodiversity in a better state than before
Biosecurity	Procedures or measures designed to protect the population against harmful biological or biochemical substances
Building Research Establishment Environmental Assessment Method (BREEAM)	The world's longest-established method of assessing, rating, and certifying the sustainability of buildings
Carbon	A shorthand term used to mean Carbon Dioxide (CO_2) and other greenhouse gases that contribute to climate change. These are increased by human activities
Carbon dioxide (CO_2)	Principal greenhouse gas related to climate change
Carbon footprint	The total greenhouse gas emissions caused by an individual, event, organisation, service, or product, expressed as carbon dioxide equivalent
Carbon offsetting	The reduction in, or extraction from the atmosphere of, emissions of carbon dioxide or other greenhouse gasses made in one place in order to compensate for emissions made elsewhere
Circular economy	System based on the principles of designing out waste and pollution, keeping products and materials in use and regenerating natural systems
Civil Engineering Environmental Quality Assessment and Awards Scheme (CEEQUAL)	Evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public spaces
Climate change adaptation	Improvements to the built environment, assets or processes that lead to a reduction in harm or risk of harm, or realisation of benefits associated with climate variability and climate change. Adaptation policies can lead to greater resilience of communities and ecosystems to climate change
Commercial and industrial waste (C&I waste)	Consists of a wide variety of office product packaging, including cardboard, wood, metal, glass, textiles, containers and aggregates. For TfL, this includes waste from stations, tenanted properties, depots and head offices
Construction, demolition and excavation waste (CDE waste)	The largest waste stream generated in London. It can contain bricks, slabs, concrete, plaster (gypsum), plasterboard, insulation, and excavation materials such as soil, sand and wood
Decarbonise	To remove or reduce the potential carbon dioxide emissions to the atmosphere from a process or structure
Department of Environment, Food and Rural Affairs (Defra)	Government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the UK
Downstream activities	The final processes in the production and sale of goods, where finished products are created, sold and used
Ecosystem services	The benefits provided by ecosystems that contribute to making human life both possible and worth living
Embodied carbon	The carbon footprint of a material. It considers how much carbon is released throughout the supply chain and is often measured from cradle to (factory) gate, or cradle to site (of use). In construction projetcs, this is also referred to as Capital Carbon or Infrastructure Carbon
Geographic Information System (GIS)	A system that creates, manages, analyses and maps data.
Greenhouse gas	Any gas that induces the greenhouse effect, trapping heat within the atmosphere that would normally be lost to space, resulting in an increase in average atmospheric temperatures, contributing to climate change. Examples include carbon dioxide, methane and nitrous oxides
Green infrastructure	The network of parks, green spaces, gardens, woodlands, rivers, green roofs, street planting, rail and road verges and wetlands that is planned, designed and managed to: promote healthier living; lessen the impacts of climate change; improve air quality and water quality; encourage walking and cycling; store carbon; and improve biodiversity and ecological resilience
Greenspace Information for Greater London (GiGL)	London's environmental records centre. GiGL provides a hub for collating and sharing data about London's wildlife, habitats, green space and related data
Low Emission Zone (LEZ)	Encourages the most polluting heavy diesel vehicles driving in London to become cleaner. The LEZ covers most of Greater London and is in operation 24 hours a day, every day of the year

Natural capital account	The set of environmental resources – including green space, air, water, wildlife – that provides services, such as flood protection or cleaner air, that benefit the wellbeing of Londoners and the city's economy. Like other forms of capital, such as human capital and goods and services, natural capital is a valuable asset that must be managed sustainably to maintain and improve these benefits
Net-zero carbon	Making the amount of carbon emitted into the atmosphere equal to the amount taken out of atmosphere. Reaching zero carbon on a net basis, where any residual greenhouse gas emissions are offset
Non-Road Mobile Machinery (NRMM)	A significant contributor to London's air pollution, especially in the construction sector, including generators, diggers, pumps, powerful hand tools and lighting rigs
Oxides of Nitrogen (NO_x) consisting of nitric oxide (NO) and nitrogen dioxide (NO_2)	Two gases whose molecules are made of nitrogen and oxygen atoms. These nitrogen oxides contribute to the problem of air pollution, impacting on human health and life expectancy and playing a role in the formation of both smog and acid rain
Particulate matter	Sum of all solid and liquid particles suspended in the air, many of which are hazardous. This complex mixture includes both organic and inorganic particles such as dust, pollen, soot, smoke and liquid droplets. These particles vary greatly in size, composition and origin. Sources include burning fuels in internal combustion engines and heating boilers, tyre and brake wear, chemical reactions in the atmosphere and dust blown in from outside areas
PM10	Inhalable Particulate Matter, with diameters that are generally 10 micrometres and smaller. PM10 does not penetrate as deeply into the body as PM2.5 but still has serious health implications, including compromised lung function and disease
PM2.5	Particles that have diameter less than 2.5 micrometres (more than 100 times thinner than a human hair). These particles can penetrate deep in the lungs and other organs, causing a wide range of health problems
Resilience	The ability of a system to recover from the effect of an extreme load that may have caused harm
Scope 1 emissions	All direct greenhouse gas emissions from owned or controlled sources such as company vehicles and gas boilers
Scope 2 emissions	Indirect greenhouse gas emissions from the consumption of purchased electricity, heat or steam
Scope 3 emissions	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in scope 2
Sites of Importance for Nature Conservation (SINCs)	Areas of land chosen to represent the best wildlife habitats in London and areas of land where people can experience nature close to where they live and work
Solar photovoltaics (PV)	Technology for generating electricity using energy from the sun
Supply chain	The entire process of making and selling commercial goods, including every stage from the supply of materials and the manufacture of the goods, products and services through to their distribution and sale
Sustainable drainage systems (SuDS)	Systems designed to efficiently manage the drainage of surface water in the urban environment. The use of SuDS in London helps reduce the impact on, and cost of upgrading, London's largely Victorian, insufficient drainage infrastructure
Ultra Low Emission Vehicles (ULEV)	Vehicles that emit extremely low levels of motor vehicle emissions compared to other vehicles
Ultra Low Emission Zone (ULEZ)	To improve air quality, the Ultra Low Emission Zone operates 24/7 in central London. Vehicles need to meet ULEZ emission standards or drivers have to pay a daily fee to drive into the zone
Upstream activities	Points in production that originate early in the processes
Urban Greening Factor	A tool that evaluates and quantifies the amount and quality of urban greening that a scheme provides, to inform decisions about appropriate levels of greening in new developments
Zero carbon	The state in which no greenhouse gases are released through an activity

About TfL

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners' and helping to create a safer, fairer, greener, healthier and more prosperous city. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys to be made by walking, cycling or using public transport by 2041. To make this a reality, we prioritise sustainability, health and the quality of people's experience in everything we do.

We run most of London's public transport services, including the London Underground, London Buses, the DLR, London Overground, TfL Rail, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the Emirates Air Line. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding public transport and making more stations step free, we can make people's lives easier and increase the appeal of sustainable travel over private car use.

We manage the city's red route strategic roads and, through collaboration with the London boroughs, we are helping to shape the character of all London's streets. These are the places where Londoners travel, work, shop and socialise. Making them places for people to walk, cycle and spend time will reduce car dependency, improve air quality, revitalise town centres, boost businesses and connect communities. As part of this, the Ultra Low Emission Zone scheme and more environmentally friendly bus fleets are helping to tackle London's toxic air.

During the coronavirus pandemic we have taken a huge range of measures to ensure the safety of the public. This includes enhanced cleaning using hospital-grade cleaning substances that kill viruses and bacteria on contact, alongside regular cleaning of touch points, such as poles and doors, and introducing more than 1,000 hand sanitiser points across the public transport network.

Working with London's boroughs we have also introduced Streetspace for London, a temporary infrastructure programme providing wider pavements and cycle lanes so people can walk and cycle safely and maintain social distancing.

At the same time, we are constructing many of London's most significant infrastructure projects, using transport to unlock much needed economic growth. We are working with partners on major projects like the extension of the Northern line to Battersea, Barking Riverside and the Bank station upgrade.

Working with Government, we are in the final phases of completing the Elizabeth line which, when open, will add 10 per cent to central London's rail capacity. Supporting the delivery of high-density, mixed-use developments that are planned around active and sustainable travel will ensure that London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

We are committed to being an employer that is fully representative of the community we serve, where everyone can realise their potential. Our aim is to be a fully inclusive employer, valuing and celebrating the diversity of our workforce to improve services for all Londoners.

We are constantly working to improve the city for everyone. This means using data and technology to make services intuitive and easy to use and doing all we can to make streets and transport services accessible to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day. None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services.

By working together, we can create a better city as London recovers from the pandemic and moves forward.

© Transport for London

September 2021

tfl.gov.uk

PUB21_025

Transport for London

Invitation to Quote

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 2, Batch 1

Volume 2

Appendix D

Sustainability Report 2021

COMMERCIAL IN CONFIDENCE

TfL Restricted

Doing the right thing locally and globally

Sustainability Report 2021

MAYOR OF LONDON

TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS

Contents

03 Commissioner's foreword

04 Our reporting

05 Why now?

06 Our scale and reach

07 TfL Sustainability Framework

10 TfL sustainability performance metrics

11 Society
12 Safe
15 Inclusive
19 Healthy
21 Thriving
22 Other notable activity

23 Environment
25 Our environmental framework and ambitions
26 Climate emergency
28 Air quality
30 Sustainable resources
31 Green infrastructure
32 Other notable activity

33 Economy
34 Economic impact
36 Case study one: New Piccadilly line trains
37 Case study two: Manufacture of London Overground and Crossrail trains by Bombardier Transportation
38 Responsible Procurement
39 Financial stability
40 Security risk management
41 Other notable activity

43 Driving sustainability through our TfL Vision and Values

44 References to other reports

45 Glossary

Commissioner's foreword

Transport for London (TfL) is one of the world's leading and most successful integrated transport authorities. TfL has gained global respect for its innovative and progressive approach to the delivery of a world-class service that shapes the lives of the citizens it serves.

The global coronavirus pandemic has had a devastating impact on our lives, society, the UK economy and our finances. We recognise the challenges we are faced with and we are passionate about playing our part in leading London and the wider UK economy out of the coronavirus pandemic to build a better, green, just and inclusive recovery.

We are doing this by leveraging our partnerships and our position to contribute to the national recovery. With one of the most mature low-carbon transport systems in Europe and a vast supply chain, 68 per cent of which is outside London, we are uniquely positioned to support the Government's national priorities to progress to a carbon-free future and create wealth and employment that will level up the national economy. Our capital expenditure is already biased towards the green recovery and, with the right capital investment, we can accelerate this to meet the 2030 ambition to decarbonise transport.

I'm proud to work for an organisation that cares deeply about helping to build a fair, prosperous and environmentally sustainable London and wider world. I see evidence of this every day in what we do.

We are a big organisation, and with that comes big responsibility. The long- term success of cities and organisations depends on them operating sustainably. Those that do not, will no longer be viable in the decade ahead. We intend to not only be viable in the coming decade, but to continue to serve London for generations to come. This is why we are thinking in broader terms – how we impact society and communities, health, the environment and the economy – not only for the reasons of corporate social responsibility, but to support our goal of becoming financially sustainable.

While we have come a long way, there is still a lot of progress to be made. I am determined to drive continual improvement at TfL to maximise our contributions towards the global Sustainable Development Goals, to get better at understanding the impact of our day to day and business planning decisions on our sustainability outcomes, and to create a fair and inclusive organisation that represents the city it serves.

A key step on this journey is the publication of our first TfL Sustainability Report. This report outlines the kind of organisation we want to be and underscores our commitment to continually challenge ourselves to provide an even better service for everyone.

'I'm proud to work for an organisation that cares deeply about helping to build a fair, prosperous and environmentally sustainable London'

Andy Byford
Commissioner

Our reporting

Sustainable development is core to our purpose

We are the integrated strategic transport authority for London and one of largest public transport operators in the world.

We regulate and contract for many vital transport services, renew and maintain an expansive and complex asset base, provide new infrastructure, are a landlord, and have a significant commercial portfolio, including property development and advertising. We directly employ around 27,000 people.

Sustainable development is core to our purpose. Our strategies, plans and regular reporting on sustainability performance are centred around the principles of:

- Social development
- Improvement of the environment
- Economic development

In delivering these principles we aim to play our part in achieving the United Nations Sustainable Development Goals, which are listed on page 8. These are a collection 17 interlinked global goals designed to be a 'blueprint to achieve a better and more sustainable future for all'. The Sustainable Development Goals were set up in 2015 by the United Nations General Assembly and are intended to be achieved by 2030.

To guide our approach to reporting, we are using the Global Reporting Initiative Sustainable Reporting Standards, and have structured this report around the 'three pillars of sustainability': Society, Environment and Economy.

This Sustainability Report is our first, and sets out our work in this area, highlighting where we want to improve. Page 44 provides a list of our reports and other sources where more detailed information can be found in relation to our sustainable development impact.

We aim to play our part in achieving the United Nations Sustainable Development Goals

We want to secure a green and inclusive recovery for London

This is the beginning of our journey to get better at telling a powerful and robust story on our sustainability agenda

Why now?

There is a widespread ambition that the legacy of the pandemic should be to deliver a better, greener future

We believe that we are well placed to help London build back better. This report aims to set out our work to date in this area and to provide a framework embedding sustainability into everything we do.

The desire to tackle issues of social inequality and improve social cohesion is stronger than it is has ever been. The United Nations recently published the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report on the physical science of climate change, which makes very clear that this is a critical decade for accelerating action on climate change. It is essential that governments deliver on the Paris Agreement with robust and tangible plans at the COP26 summit in Glasgow in November 2021.

With sufficient funding, TfL can play a leading role helping the UK address the climate emergency. We have witnessed increasingly serious and frequent weather events and tackling the climate and ecological crisis has become a central theme in almost all public policy and discourse. We must use our influence and position as one of the world's leading transport authorities to secure a green, just and inclusive recovery for London and the wider UK economy.

As well as our ambition to continue to operate more sustainably across our operations, we are leveraging our partnerships to contribute to the national recovery. We are a member of the London Recovery Board, a group of leaders committed to overseeing London's long-term recovery effort, and signatories of the Anchor Institutions Charter, aimed at maximising employment opportunities and helping young people to flourish through their procurement and recruitment power. We continue to put safe, reliable, clean and affordable walking, cycling and public transport at the heart of our decisions to encourage customers back to public transport and avoid a car-led recovery, thereby building on the environmental gains seen during the lockdowns.

We currently have a Safety, Sustainability and Human Resources panel (SSHRP) which considers our operating performance in relation to sustainability, among other things. We have now produced this TfL Sustainability Report, which brings together all of our existing actions and ambition into one place for the first time. It includes key aspects of our activities and performance metrics with much more detail than is available in our other reports (see page 44).

We will report progress against the plans and ambitions set out in this report annually to the SSHRP. Over time, we will evolve our approach to reporting using the Global Reporting Initiatives to guide us in terms of sustainability reporting. We will use our new Vision and Values plan to help drive sustainable development throughout the organisation as described further on page 43.

Our scale and reach*

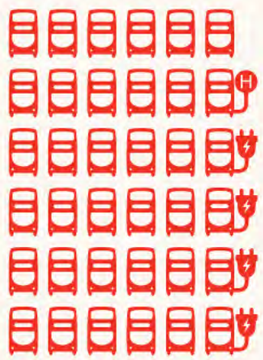
We are a large and diverse organisation

Our services at a glance

9,000 buses

22 Hydrogen buses

>500 electric buses



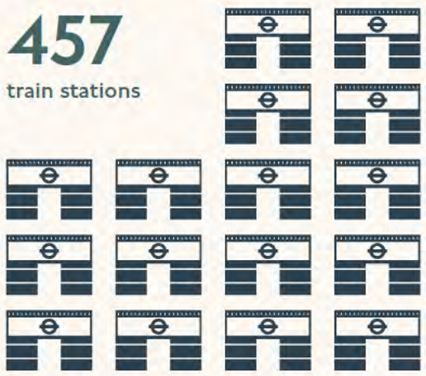
764km of track connecting

675 bus routes

15 train lines

734 trains active during peak times

457 train stations



Our wider portfolio

5,700 acre estate

we are a large land owner, landlord and commercial developer

1,580 of 10,000 planned homes underway

3,000 tenanted properties

Our people

We directly and indirectly employ a large number of people:

Around **27,000** directly employed colleagues

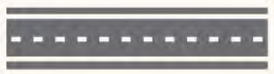
>100,000 indirectly employed colleagues

Regulator for Taxi and Private Hire:

13,884 London taxis

78,049 Private hire vehicles

Highway authority for the TfL Road Network:



580km of road

5% of London road network

30% of traffic carried on the TfL Road Network

During 2019/20, we spent in excess of

£6.7bn

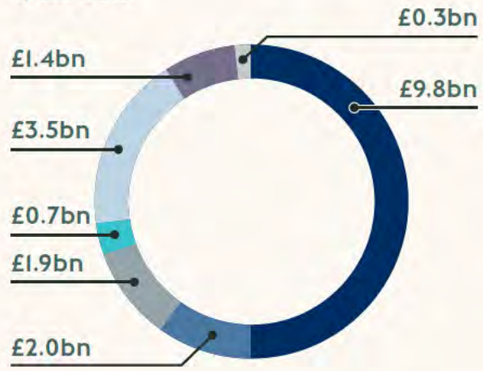
on goods, services and works required to deliver and upgrade services.

Our 65 key suppliers, across the UK, represent around £4.5bn of our spend

Our finances

We are adapting our organisation to meet the financial challenges we are facing

Spend Data:



We run most of London's public transport services.

9.7million

trips are completed each day via public transport, this accounts for 36 per cent of trips in London.

Underground, Elizabeth line, Buses, DLR, London Overground, London Trams, London Dial-a-Ride, London River Services, London Taxi and Private Hire, Santander Cycles, Victoria Coach Station and Emirates Air Line

* Data as at 31 March 2021

TfL Sustainability Framework

Doing the right thing locally and globally

We operate to deliver the Mayor's Transport Strategy which sets out the Mayor's plans to transform London's streets, improve public transport and help to create thriving communities across London's 32 boroughs and the City of London. We have developed action plans that detail how the Mayor and TfL will achieve the Mayor's Transport Strategy policies and proposals.

In addition to delivering the Mayor's Transport Strategy, we play a significant role in delivering other Mayoral strategies and plans. This includes the London Plan, Health Inequalities, Housing and Economic Strategies, and the London Environment Strategy, which is the first integrated strategy to bring together approaches to every aspect of London's environment. Our strategic reporting framework consists of our annual Budget, our five year Business Plan and our Long Term Capital Plan, which set out the key priorities through which we implement the Mayor's Transport Strategy and deliver the best value for London.

The TfL Sustainability Report sits within our strategic reporting framework. It sets out the sustainability benefits of everything we do across our organisation both internally and externally, but it does not cover all the London-wide efforts to deliver the Mayor's Transport Strategy, which can only be fully realised by the collective effort and partnership working with many organisations, such as government and London boroughs.

Our sustainability framework is underpinned by the three pillars of sustainability – society, environment and economy – and these form a triple bottom line across our entire operations. Our social sustainability demonstrates the social value of our transport services, beyond the economic benefits, in improving the lives of Londoners and creating thriving communities, while our financial sustainability and environmental sustainability are positively linked.

We will build our financial sustainability by focusing our capital investment on a green recovery and by making progress on considering the external environmental costs of our activities. This will accelerate our progress towards decarbonising transport by 2030 and increase our overall environmental sustainability. We must demonstrate bold leadership on sustainability and we expect the same from our suppliers, the stakeholders and partners we work with.

How TfL aligns with United Nations Sustainable Development Goals

Society

How we maximise social value and achieve 'Vision Zero' for safety, to improve the lives of one another locally and globally

Most relevant Sustainable Development Goals

3, 4, 5, 10

Environment

How we will protect and regenerate the environment through our activities, promoting environmental sustainability to help secure a greener, zero emission and more resilient recovery for London

Most relevant Sustainable Development Goals

7, 12, 13, 15

Economy

How we operate to keep the organisation financially sustainable, our wider contributions to the economy and how we are supporting London, and the UK economy, to emerge from the coronavirus pandemic stronger

Most relevant Sustainable Development Goals

1, 8, 9, 11

Society

Caring about our colleagues, customers and communities through safe, healthy and accessible transport services

- **Safe:** Safety is our top priority. Our Vision Zero ambition aims to eliminate deaths and serious injuries on our transport networks, construction and operational sites.
- **Inclusive:** We strive to have an accessible and inclusive workplace and transport network.
- **Healthy:** Enabling more cycling and walking will support a healthier, more inclusive London. We want a healthy and happy workforce.
- **Thriving:** We encourage the connectivity among people, trade and culture, celebrating London's unique identity.

Environment

Operating in a sustainable way, to protect and regenerate the natural world

- **Climate:** We will reduce carbon emissions from our activities and ensure we are ready for the impacts of climate change.
- **Air quality:** We will transform our vehicle fleets to zero emission and support broader efforts to clean London's air.
- **Sustainable resources:** We will design for the circular life-cycle of resources and materials, supporting London's goal of being a zero-waste city.
- **Green infrastructure:** We will increasingly protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystems services on our estate.

Economy

Being financially sustainable to provide a resilient and good quality of life for all

- **Economic impact:** We will deliver a transport system for London that supports economic development, and create more sustainable buildings and homes.
- **Responsible procurement:** We deliver social value and support our supply chain to become greener, fairer and more inclusive.
- **Financial stability:** Reduction on operational expenditure funding support from central government.
- **Security risk management:** We manage existing and emerging security risks and adopt a zero-tolerance approach to any fraud, bribery or corruption committed against us.

TfL sustainability performance metrics

Society

Theme	Measure	2018/19	2019/20	Change
Safe	Killed or seriously injured people on our streets**	3,905	3,070	-21%
	Customer and workforce injuries	10,058	9,729	-3%
Inclusive	Representative index	43%	47%	+4%
	Relative additional journey time using the step-free network	9.1 mins	8.3 mins	-48 secs
Healthy	Number of colleagues who feel there is adequate support in place to help them manage their health, safety and wellbeing	59%	60%	+1%
	Number of employees completing the MIND Mental Health Awareness training	___***	475	---
Thriving	Number of people progressing from pre-employment programmes to employment within 12 months	36%	29%	-7%
	TfL Apprentice intakes to be representative of London ****	56.07%	59.33%	+3.26%
	TfL Graduate intakes to be representative of London ****	48.26%	53.77%	+5.51%

Environment

Theme	Measure	2018/19	2019/20	Change
Climate	Operational carbon emissions (thousand tonnes per annum)	1,146	1,040	-9%
Air Quality	Percentage of bus fleet that are zero emission	1.7%	3.5%	+1.8%
	Percentage of support vehicles that are zero emission	3%	2.6%	-0.4%
Sustainable resources	Percentage of commercial and Industrial waste recycled	48%	41.6%	-6.4%
	Percentage of construction, demolition and excavation waste reused	98.8%	98.2%	-0.6%
Green infrastructure	Number of trees on our road network	23,059	24,234	+5.1%

Economy

Theme	Measure	2018/19	2019/20	Change
Economic impact	Number of new homes delivered	86	180	+109%
Responsible Procurement	Number of new supply chain apprenticeship starts each year: including BAME and Women	521 (53%, 23%*)	619 (62%,18%*)	+18.8%
	Number of job starts: including previously workless	911 (39%*)	1,027 (46%*)	+12.7%
Security Risk Management	Number of colleagues undertaking fraud awareness training	1,618 (6%)	1,828 (7%)	+1%

* of those who disclosed

** Data is for Calendar year 2019 and Calendar 2020 as per DfT reporting on Road Collision Statistics

*** Training started in 2019/20

**** Measure is a comparison of our apprentices and graduates to London's economically active population.

Society

Caring about our colleagues, communities and customers through safe, healthy and accessible transport services

Safe

Safety is our number one priority and is fundamental to everything we do. We are working to build a world where no colleague or customer is injured. We have set a 'Vision Zero' objective to eliminate all deaths and serious injuries on London's transport network and it aims to address safety through a comprehensive 'Safe System' approach.

Road safety
To ensure vehicles on our network are safe, our Direct Vision Standard, which was launched in October 2019 and came into force in March 2021, will progressively work to ban the most dangerous lorries from our roads. The Direct Vision Standard is a safety permit system for heavy goods vehicles which assigns a star rating based on how much the driver can see directly through the cab window, in order to reduce lethal blind spots. Measures such as this sit within a comprehensive approach that lowers speed limits, designs streets that are safer and welcoming for all, and works with partners to promote and enforce safe behaviours.

By the end of 2020, there had been a 52 per cent decline in the total number of people killed or seriously injured in traffic incidents on London's streets against the 2005-09 baseline. However, road safety progress has slowed in recent years, reflecting the trend also experienced by other European cities. There are still around 4,000 people killed or seriously injured in road collisions every year in London, the vast majority of which result from collisions with cars.

Public transport
Our public transport network has seen a continuing downward trend in incidents that injure our customers or colleagues. The number of fatal or serious injuries is much lower on public transport than in road collisions. We are committed to achieving Vision Zero on public transport and have a range of programmes designed to further increase safety – including our suicide prevention programme which has reduced the number of incidents on our network.

Work-related violence and aggression
We are also committed to the personal safety and security of all colleagues. We fund and work in partnership with the British Transport Police (BTP) and the Metropolitan Police Service (MPS) to tackle issues associated with work-related violence and aggression. Our strategy to eradicate work-related violence and aggression focuses on the prevention of incidents, providing support to colleagues when an incident does occur, and continuously improving in how we protect and support everyone working to keep London moving safely.

As part of our ongoing work-related violence and aggression strategy, we have introduced 4,500 body-worn video cameras for frontline colleagues in areas where they have the most frequent contact with the public.

4,500
body worn video cameras for frontline colleagues have been rolled out

We are committed to achieving 'Vision Zero' on our network

We are prioritising action to deal with high harm offences

Secure and low crime transport network
Everyone has the right to be safe – and feel safe – when travelling in London. If streets and public transport do not feel safe to use, then inevitably, people are more likely to take other options, including more car trips. We fund and work in partnership with the MPS and BTP to tackle crime, fear of crime and antisocial behaviour as well as non-compliance with rules and regulations that are in place to keep our people and customers safe. Our work to maintain a low-crime environment continues. During 2019/20, 9.7 million trips were made on our transport network daily, with very few customers experiencing or witnessing a crime. For every one million passenger journeys there were eleven reported crimes, the majority of these being theft offences.

We are responsible for the TfL Road Network, which makes up five per cent of London's roads and carries up to 30 per cent of the city's traffic. Our priority in managing the TfL Road Network is to keep traffic moving safely.

Contraventions on the TfL Road Network create safety risks, increase congestion and disrupt traffic for everyone including buses, deliveries and emergency services. To minimise contraventions we use fines called Penalty Charge Notices. The last time the penalty charge was increased was 10 years ago and we are concerned that it no longer provides an effective deterrent. As a result, we are proposing to increase the fine level from £130 to £160. This proposal is subject to the outcome of a public consultation which will ended on 19 September. We are now spending time considering all the responses we receive before seeking Mayor and Secretary of State approval.

We are prioritising action to deal with high harm offences such as sexual offences and harassment, hate crime, and serious violence. We are working hard to keep knives off our network. We are also working to safeguard vulnerable people using or seeking refuge on our network, including children and adults at risk.

Construction
We manage some of the largest capital delivery and maintenance works in the UK, so our approach to Safety, Health and Environment (SHE) is critical. We've made significant progress in SHE performance over the past five years and, to further this work, have launched a SHE Capital Delivery and Maintenance Strategy for all colleagues at TfL who work on construction activity, with the ultimate aim of zero harm across all activities. As an organisation, TfL has a unique opportunity to influence practices and standards across the construction industry. Whether directly through our own suppliers, local boroughs and partner organisations, or indirectly via the stakeholders they work with, we aim to set the benchmark for safety performance, improving standards and developing ways of working across the whole of the industry.

Our plans to improve

Driver fatigue is a risk to road safety. We are working across the organisation to conduct fatigue risk screening, enabling us to better break down, define and quantify the factors that contribute to fatigue. This gives us a better definition and understanding of specific fatigue risk factors to help us develop, target and prioritise interventions. We are developing interventions to reduce fatigue risk through staff training, including providing supportive guidance to their family and friends, while more technical interventions around rostering and scheduling are being investigated across a number of our transport services.

As part of this screening process, we have also started to establish baseline data to enable us to monitor and track progress and improvements in reducing fatigue risk, with key performance indicators being developed to support this. The fatigue programme also continues to work with our occupational health and wellbeing team to support people through initiatives such as online sleep clinics and sleep assessment surveys.

We know that slips, trips and falls on buses are a key cause of injury to our bus customers. A longer-term strategy is being developed and will consider vehicle improvements, such as to flooring and lighting, and outcomes from predictive technology being trialled that warns drivers of hazards to help give them more time to be able to brake smoothly. It will include a benchmarking review of best practices from other transport authorities. At the end of the financial year, we had 455 buses that met the first generation of the Bus Safety Standard. From late 2021, new vehicles will start meeting the second generation of this standard, which requires new buses to have camera monitoring systems in place of side mirrors, offering a wider field of view and clearer visibility in low light. It also includes toggling to help drivers identify the brake pedal and its relative position from their feet. There will be new safeguards to the brake system to prevent buses rolling away without a driver in the cab, and enhancements to bus interiors to help reduce the risk of customer injuries.

We want to establish ourselves as the UK's leading construction industry client, driving improved performance across our capital delivery and maintenance works and intervening before incidents occur. This relies on making better decisions based on meaningful data, building a positive learning culture and developing a more consistent approach to the way we operate. The SHE Capital Delivery and Maintenance Strategy adopts a Zero Harm approach, built on our Vision Zero ambition, to ensure that harm is consistently reduced across TfL's capital delivery and maintenance programmes year-on-year, until we reach zero. We aim to reduce harmful incidents by 50 per cent over the next five years. To do this we will work to improve our supplier management practices, increase the safety competence of our people, develop our data reporting and analysis, and design out harm from the start of the project lifecycle.

We aim to reduce harmful incidents by 50 per cent

Inclusive

Inclusive workforce
We are committed to creating a more inclusive and values-based culture and a workforce that is more diverse at all levels. Our Executive Committee has signed an Anti-Racism Leadership Charter, and we have held more than 100 Listening sessions across our organisation to understand the lived experience of one another to ensure we are taking the right actions to make our culture more inclusive.

There are several key ingredients to creating a more inclusive, values-based organisation, which include:

- Understanding and improving our culture
- Creating more inclusive leaders
- Developing more inclusive line managers
- Fostering more inclusive behaviours
- Supporting a more inclusive approach to career development
- Inclusive policies and practices

Closing the ethnicity and gender pay gaps are key to creating an inclusive organisation.

Our latest median pay gaps (2020 data) are:

Ethnicity
9.6%

Gender
18.8%

We achieved a
50/50
gender split in our London Underground Fleet Level 3 Engineering apprenticeship scheme

We're creating a more inclusive and values-based culture

We want everyone to have safe and convenient journeys

An accessible network for all
We are committed to enabling everyone to complete their journeys how and when they want, in a convenient, safe and dignified way. We seek to address the needs of everyone, including people with hidden impairments, from planning a journey to arriving at a chosen destination. In addition to Turn up and go at our stations and a fully accessible bus network, our services include Dial-A-Ride, Taxicard and other community transport.

We collaborate closely with diverse partners whose views we value and learn from. Increasingly, we are co-creating solutions to inclusive design questions to harness the skills, knowledge and expertise of our partners, suppliers, customers and stakeholders. Our relationship with groups such as the Independent Disability Advisory Group and the Valuing People Network help us better understand our customers' experiences so we can improve our approach to inclusive design and customer service. Our goal is to understand the impact of our policies, projects and programmes on disabled customers and all individuals who share protected characteristics under equality legislation.

Our investment in improving the physical accessibility of our built environment continues. All of our pedestrian crossings and pavements are accessible with tactile paving, audible signals and/or rotating cones on the pushbutton. Legible London maps located at station entrances and bus shelters make it quicker and easier for people to find their way when travelling around the Capital.

We also tackle other barriers to travel, including those faced by our customers who may be visually or hearing impaired or those with cognitive and sensory impairments. These include accessible bus stops, audio announcements, visual announcements, hearing loops and speech-to-text software, and seating and toilets for older and disabled customers, pregnant women and families with small children.

We continue to improve accessibility on the Tube and London Overground by making more stations step free. Currently 89 Tube stations, 60 London Overground stations and most of the 25 stations served by TfL Rail have step-free access. The entire London bus network, all DLR stations and tram stops are step free.

We have launched the TfL Go app to welcome customers back on the network and make it easier to plan their journeys. As well as providing real-time updates on bus arrivals and train times at every station through the use of a unique 'real-time' map feature, it enables our customers with accessibility needs to plan a journey with a step-free route by showing real-time station closures, platform access and lift status, as well as toilet availability at our stations.

We are raising awareness of accessible technology design by introducing accessibility standards, principles, tools and techniques that will enable the production of more accessible documents and more accessible application design among our developers.

We continue to improve accessibility on the Tube and London Overground by making more stations step-free

Connecting communities

An inclusive transport network is crucial to connect people to jobs, shops, schools, health services, friends and family, and all the other places they need to go. It is vital to support more Londoners to have healthy and active lives to reduce inequality, promote social integration and increase opportunities for employment while helping to tackle loneliness and improve mental wellbeing.

The bus network has the most coverage of our public transport modes. This ensures almost all Londoners are connected to their local area, wherever they live. In addition, our extensive Night Bus network supports night workers who are more likely to have lower incomes. Bus connections serve commuters, shopping and leisure demand in all parts of London, provide an affordable and accessible public transport choice for those who need it, bring children to school and key workers to hospitals, connect Londoners with their families, GPs and local shopping areas, and link people to the wider public transport network by connecting residential areas to stations.

Inclusive supply chain

In the recovery from the coronavirus pandemic, we recognise the specific impacts and challenges facing businesses and Small and Medium Enterprises (SMEs). We have identified some of the barriers that prevent small and diverse businesses gaining access to and winning TfL contracts. Our 'Small and Diverse Business Procurement Action Plan' sets out the interventions we will implement to ensure our procurement processes are more accessible and inclusive to London's diverse businesses.

Paying the invoices of our SME suppliers within ten working days supports their cash flow. We will go further than this and encourage our key suppliers to pay more than 95 per cent of their invoices within 60 days, in at least one of the previous two reporting periods, in line with the government's approach.

We are encouraging our suppliers to recruit a more diverse workforce. To support this aim we are participating on a cross-industry Diversity Data Benchmarking initiative, led by Highways England, along with Network Rail and HS2, benchmarking our key suppliers' workforce diversity data.

Some of our major projects delivered in partnership with our supply chain, demonstrate the social value of our work. On the Barking Riverside Extension project, the Morgan Sindall VolkerFitzpatrick joint venture worked closely with the local community on various outreach programmes.

These included learning initiatives with local schools to promote a healthy lifestyle, supporting an event at the London Transport Museum to encourage and inspire the next generation into construction, supporting fundraising events to provide learning experiences for a local school, providing training and volunteering opportunities for local people and donating to the Barking foodbank warehouse that supports more than 50 families locally. They also adopted sustainable development practices as part of these local initiatives by partnering up with a local community wood recycling trust which re-used some of the timber waste produced as a result of the project.

An inclusive transport network is crucial to connect people to jobs, shops, schools, health services and more

Our bus network provides an affordable choice for all

Our partnerships

We leverage our partnerships to contribute to a safer, healthier and thriving London. We work closely with London boroughs through the Healthy Streets programme to deliver walking, cycling and safety schemes that create greener, healthier and more attractive places in which to live, play and do business, within our diverse communities.

Our commercial and media partnerships help to shape the rich culture and vibrancy of London by giving businesses the unique opportunity to align campaigns, filming or photography work with our well-established TfL brand. The Santander Cycle Hire scheme is a bespoke partnership that has had a huge impact on the millions of customers who travel across our network every day.

As London's largest landowner, we provide a wide range of commercial rental properties that are close to transport hubs, putting businesses ranging from pop ups and small businesses to global brands, closer to their customers.

We work closely with London boroughs through the Healthy Streets programme to deliver walking, cycling and safety schemes

Our partnerships contribute to a more vibrant London

Healthy

Our colleagues' mental and physical health are paramount to having a healthy and happy workforce. We offer a series of preventative health and wellbeing initiatives, including those which promote physical activity, healthy diet and sleep hygiene as part of a healthy lifestyle. These include:

- Online portals. An internal site with guidance and resources for mental and physical health and maintaining a safe work environment; a wellbeing channel with recorded exercise; Pilates and wellbeing sessions, and free subscription to Kaido, a digital team-building experience that helps employees improve their health while having fun together
- Confidential support helplines. Our Employee Assistance Programme offers emotional support and advice for work-related or personal difficulties
- Physical and mental health interventions. To tackle obesity, fatigue and help identify early signs of medical health conditions, our employees have free access to Slimming World, sleep clinics and health assessments
- Occupational Health services. The Medical Advisory team undertake safety critical medicals to ensure that colleagues involved in safety critical roles are able to do their role safely. They provide advice to managers and colleagues on health conditions which are impacting on them at work. They undertake health surveillance for those who are exposed to noise, vibration and chemicals. Throughout the pandemic the team have provided in-depth advice about COVID-19 and undertaken nearly 3,000 individual risk assessments
- Peer Supporter Schemes. Health and Wellbeing Champions, the Supporting Colleagues Network, and Trauma Support Group encourage a positive and supportive environment

Our wider health impacts

Health is a central theme of the Mayor's Transport Strategy, which we are primarily responsible for delivering, in partnership with key stakeholders, such as London Boroughs. Schemes such as Healthy Streets deliver walking and cycling schemes which promote active travel, which has significant health benefits, such as reduction in heart disease and improving mental health. The improvement in London's air quality from a reduction in harmful road transport emissions has had transformative health benefits and is discussed more under the environment pillar of this report.

Health and wellbeing in numbers

1,228
joined Kaido to take part in the Around the World challenge

150
people have benefitted from our free access to Slimming World

We offer health and wellbeing initiatives to all our employees

Our plans to improve

We will continue to provide the opportunity for colleagues to improve their mental and physical health in line with Public Health England and National Institute for Health and Care guidelines.

The focus in the next year will be:

- Improving data collection on health so that we can better target our initiatives
- Preventing health problems by promotion of healthy habits through a number of initiatives
- Improving routine medicals to include health promotion

We aim to:

- Ensure all line managers across our organisation have appropriate training and resources to enable them to better support the health and wellbeing of our employees and ensure they understand the role they play in preventing work-related ill health and also understand the effect of health and wellbeing on improved organisational performance
- Improve how the business can effectively communicate what is on offer for our employees on health and wellbeing
- Ensure that health and wellbeing is seen as important as safety across the organisation

More than

2,100

colleagues accessed our online mental health awareness training

We want to ensure our employees can prioritise their wellbeing

We provide career opportunities for 18-24-year olds

Thriving

Creating access to the skills and training people need to enter the workplace helps address skills shortages in London and across our industry. We want to break down barriers to employment by ensuring that we are accessible to all Londoners, regardless of their background. Successful programmes we deliver include:

- Our flagship Steps into Work programme. A targeted 12-month employability scheme for individuals with learning disabilities and/or on the autistic spectrum, that incorporates a work skill qualification alongside work placement rotations supported by specialist trained job coaches
- Our Catalyst programme. This is a partnership between our Supplier Skills team and our supply chain. It's a four-week employability programme providing industry recognised qualifications, work experience and employability skills to underrepresented groups and those with barriers to employment, leading to interviews for roles with our suppliers. We also host an annual supply chain recruitment fair during National Apprenticeship Week
- Education to Work outreach. This helps young people raise their career and education aspirations and achievements through targeted engagement focusing on supporting those impacted by high deprivation. Activities include mentoring, volunteering programmes and experiences of the world of work. By working with young people, their educators and carers, we also aim to break down negative perceptions about careers in transport and help underrepresented groups overcome barriers to entering the industry
- Our Construction skills programme. Aimed at Londoners aged 16-plus who are not currently working in construction specifically women, those with a health condition/disability and those from Black, Asian and minority ethnic backgrounds
- Stuart Ross Communications Internship. A diversity initiative aimed at creating career opportunities in communications, public relations, public affairs and marketing for students of Black Asian and minority ethic backgrounds, who are under-represented in these sectors, regionally and nationally
- Armed Forces Covenant. An ongoing commitment to support former members back into full-time civilian employment
- Graduate and apprenticeship programmes. These support the Government's agenda of increasing job creation for 18-24-year olds and help build a diverse pipeline of talent to meet our future skills needs for 2023 and beyond

We want to break down barriers to employment by ensuring that we are accessible to all Londoners

Other notable activity

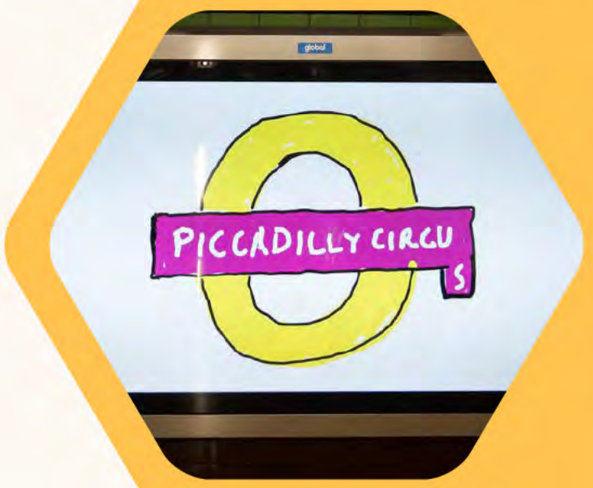
Culture and Heritage

London Transport Museum

London Transport Museum is a great place for all ages to enjoy and learn how transport shapes our city. Gallery activities and outreach programmes across London inspire young Londoners to be habitual public transport users and we actively support children and young people to be curious about STEM subjects (Science, Technology, Engineering and Mathematics). The Museum works with its Enjoyment to Employment coalition partners to promote careers in transport and engineering. In March 2021, London Transport Museum published the Rethinking Sustainable Cities report, which explores how we can change our cities for the better by protecting our planet and people, and launched its Green Journey to decarbonise our own operations by 2030. The Museum's Climate Crossroads programme is engaging its visitors with a green future vision for London and exploring the innovations, skills and jobs needed to build a sustainable future. The programme is supported by Mott MacDonald and Cubic Transportation Systems.

Public spaces and art

We have a long-standing history of art and design on our network, with many of our transport designs being design classics. Our long-running Art on the Underground programme aims to change the way people experience our city by inviting artists to create pieces of art for display across the network. Most recently, David Hockney, one of the UK's most influential living artists, has redesigned TfL's iconic roundel in a special artwork called 'Hockney Circus' as part of a takeover of Piccadilly Circus station.



Our long-running Art on the Underground programme aims to change the way people experience our city

Our cultural programmes aim to inspire young Londoners

Environment

Operating in a sustainable way, to protect and regenerate the natural world

Environment

Our approach to environmental sustainability is covered in detail in our Corporate Environment Plan. This sets out our environmental ambitions and how we will achieve this through our operations, maintenance and construction activities. It forms the detailed environmental pillar of our approach to sustainability. Key aspects of that plan are included in this report to help communicate our overall sustainability story.

The Corporate Environment Plan focuses on our own activities, however, it is also important to note that as London's strategic transport authority, we also help realise the environmental outcomes of the Mayor's Transport Strategy and the transport elements of the London Environmental Strategy. Examples include setting London-wide policy, operating road transport emissions schemes such as the Ultra Low Emission Zone (ULEZ) and achieving a wide range of environmental outcomes through the London borough Local Implementation Plans.

We support the Mayor's ambition to make London a carbon neutral city by 2030 by driving down carbon emissions, cleaning up London's air, protecting and regenerating the natural environment, and ensuring we are prepared for the impacts of climate change.

Our influence stretches beyond London, as our activities inspire transport operations across the UK and the world. Through our contracts, stakeholder engagement and partnerships we will make it clear that we expect high environmental performance and ambition.

Our central vision on environment is to be part of a zero carbon London. The diagram on page 25 is our Corporate Environment Plan Framework, which is based on five key themes, each of which will help us in delivering our contribution to a zero carbon London.

We support the Mayor's ambition to make London a carbon neutral city by 2030

We can help London become a zero-carbon city

Our environmental framework and ambitions

Sustainable resources

- We use resources and materials sustainably
- We think of a material's carbon cost across its lifecycle
- We support London's goal of being a zero-waste city

Best environmental practices

- We are a good neighbour
- We comply with our obligations and legal requirements
- We go beyond our minimum obligations to apply environmental and sustainability best practices

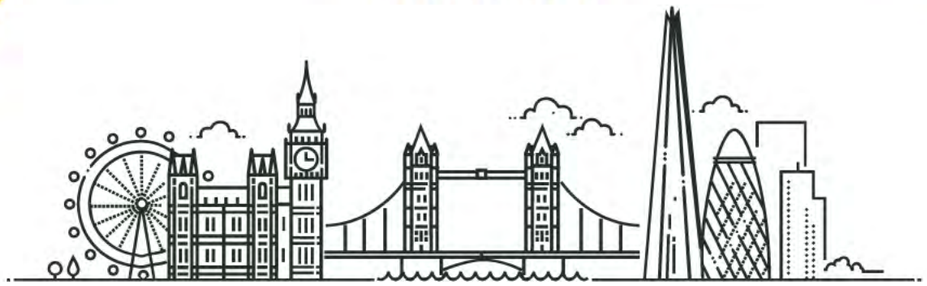
Climate emergency

- **Mitigation:** We reach zero carbon in all our activities
- We support London becoming a zero carbon city
- **Adaptation:** We are ready for the impacts of climate change

Air quality

- We deliver and operate major air quality schemes
- We will bring vehicle fleets under our control to zero emission
- We manage emissions from our buildings and on the Tube

Zero-carbon London



Green infrastructure

- We protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate

Making it happen

- Make it a core part of TfL culture, advocated by leaders and championed in every team
- Incorporate into standards, specifications, contracts and management systems
- Deliver through business planning, asset management and procurement

Climate emergency

Transport is responsible for a quarter of London's carbon emissions, with private car use the primary source of these. Therefore, we have a vital role in increasing the proportion of journeys that can be made by walking, cycling and public transport, which is why we have a target of 80 per cent of trips in London to be made by these methods by 2041. We must ensure that our Underground, bus and rail services lead by example in reaching net-zero carbon operations, and we must reduce emissions from our buildings and infrastructure. To do this, we focus on the following:

Removing fossil fuel consumption
We are committed to converting our 9,000-strong bus fleet to zero emission. We already operate the largest zero-emission bus fleet in western Europe, with more than 500 electric buses currently in operation (increasing to 800 by the end of March 2022) and 22 hydrogen fuel cell buses. We are committed to making the cars and vans in our support vehicle fleet zero emission by 2030.

We have the largest zero-emission bus fleet in western Europe, with more than 500 electric buses in operation

Energy efficiency
We continually seek opportunities to reduce energy demand and optimise energy efficiency across our organisation. This not only reduces carbon emissions, but often also saves money. Examples include regenerative breaking on the Underground, replacing lighting with LEDs, encouraging a culture of turning off equipment when not in use, procuring low energy assets and retrofitting our buildings.

Supplying renewable energy to TfL
We are the largest consumer of electricity in London, and within the top ten for the whole of the UK. This means what we do has a material impact on how quickly the UK market on renewables evolves. We are currently engaging with the market to unlock Solar Private Wire, which will enable us to directly receive zero-carbon electricity from local solar farms.

Renewable energy procurement
We have a strategy to move the more than 1.5 Tera Watt hours (TWh) of electricity we use annually to 100 per cent renewable energy. Procurement of power purchase agreements with renewable energy generators will begin in 2021/22, with the aim of securing up to 20 per cent of our consumption in this first step. We are working with the Greater London Authority (GLA), a strategic regional authority for London, with powers over transport, policing, economic development, and fire and emergency planning. We are exploring opportunities to jointly procure renewable electricity in this way for the entire GLA Group, alongside potentially creating a fund for public and private investors to invest directly into new renewable projects (which in turn supply energy to the GLA Group).

Our research programme assesses the impacts of flooding

Carbon in our infrastructure and supply chain
Initial research suggests that carbon emissions from our supply chains and projects ('scope 3' emissions) could be around double our operational emissions. We are developing a more detailed and accurate baseline for these emissions to identify areas to focus our reduction efforts. In parallel, we are developing the expertise and tools to improve calculation of life-cycle carbon during early optioneering and detailed design of projects and programmes, so we are equipped to make life-cycle carbon emissions part of our design decisions.

We have adopted a carbon strategy for the delivery of our major projects, which is based on driving four outcomes:

- Baselining the carbon footprint of our major projects
- Reducing the carbon impact of our projects by using the baseline to identify and actively manage our carbon risks and opportunities
- Reporting on the carbon impact of our capital programmes and monitoring through our assurance processes
- Establishing a carbon culture and improving carbon literacy within the organisation

Adapting to the changing climate
The number and intensity of severe weather events is increasing, with prolonged periods of hot weather, flash flooding and winter storms. We established and continue to chair the quarterly Transport Adaptation Steering Group, which brings together stakeholders, such as Network Rail and Highways England, and experts, including the London Climate Change Partnership, to understand how we can proactively address the issue of climate change adaptation in the transport sector.

In addition, we have established a research programme with a range of partners to determine how severe weather events affect our operations, from the impact of rainfall and flooding on our road network, to the impact of high temperatures on London Underground. We are also completing a climate risk assessment for our assets.

Climate change presents not only a significant and growing health and safety risk to our customers, colleagues and communities, but also a financial risk to TfL, as discussed further under the economy pillar of this report.

Our rail network will be powered by
100%
renewable electricity by 2030

Our plans to improve

We will continue to significantly reduce our operational carbon by transitioning from our national grid supply and obtaining electricity from renewable power purchase agreements. This means we can meet our targets to have our rail network powered by 100 per cent renewable electricity by 2030, our entire bus fleet to reach zero emissions by 2034 (with an ambition to achieve this by 2030), and all the cars and vans in our support fleet to be zero emission between 2030 and 2037 (depending on funding). As we replace our aging Tube fleet on some lines, we will take advantage of technology in both train design and signalling to reduce energy consumption. We will also ensure our long-term asset plans phase out the use of fossil fuels and are substituted by sustainable energy.

Alongside our bus fleet and rail services reaching net zero carbon, we will also develop clear plans to retrofit and tackle emission in our office buildings and across our network – ensuring optimum reach over our infrastructure's operational emissions.

Based on the results of our research programme and the asset climate risk assessment, we will look to better embed climate change adaption into our long-term planning and decision-making processes. We will also work with other infrastructure owners and transport organisations to share and develop best practice.

We are working to increase awareness of the importance of green infrastructure for climate change adaptation. We aim to protect and increase green infrastructure and sustainable drainage systems (SuDs), for example, to help mitigate surface water flood risk and provide shade and local cooling.

Air quality

Emissions from our fleets
We are creating one of the greenest bus fleets in the world. Our bus fleet meets the latest Euro VI emission standard across the entire city and we have introduced more than 500 zero emission buses at tailpipe (electric and hydrogen). Currently, one in 20 buses in London are zero emission and this will continue to increase as we transition the entire fleet. We also have a fleet of around 1,000 support vehicles that we use to operate and maintain a safe transport system – and we are working to switch these to zero emission as soon as possible.

Wider road transport emissions
We play a significant role in delivering the Mayor's air quality programme and enabling activities on the road network. We operate the ULEZ which has cut down the number of older, polluting vehicles on London's roads and contributed to a 44 per cent reduction in roadside nitrogen dioxide within its boundaries in 2020 compared to 2017. From 25 October 2021, the ULEZ will expand to create a single larger zone bounded by the North Circular Road (A406) and South Circular Road (A205) and cars, motorcycles, vans, other specialist vehicles and minibuses driving into and within the zone, will need to meet the required emission standards or pay a daily charge. We have supported Londoners though £56 million for scrappage schemes, which have encouraged the disposal of nearly 10,000 more polluting vehicles.

Road transport in London accounts for 40 per cent of NO_x pollution in London, so our management of road traffic and transport materially impacts London's air quality. Our Surface Intelligent Transport System programme enables us to make real-time network management decisions taking account of all strategies, policies and impacts. This means that we can manage traffic light sequencing to reduce areas of high air pollution.

As a result of our delivery of measures in the London Environment Strategy (including the introduction of the ULEZ and reducing emissions from TfL buses and support fleets):

- In 2016, two million Londoners, including 400,000 children, lived in areas that exceeded legal limits of air pollution. In 2019, this had reduced to 119,000 people – a reduction of 94 per cent
- The number of state primary and secondary schools in areas exceeding the legal limit for NO_2 fell from 455 in 2016 to 14 in 2019 – a reduction of 97 per cent
- In 2016, monitoring sites in London recorded more than 4,000 hours above the short-term legal limit for NO_2. In 2019, this reduced to just over 100, a reduction of 97 per cent

Taxi and private hire vehicles
Through our compliance and regulatory function, we are working with the taxi industry to ensure the greenest taxi fleet in the world. By continually tightening licensing requirements and taxi vehicle age limits, we will phase out diesel taxis and increase the number of zero emission capable vehicles in London. More than 4,200 already operate in the Capital.

Electric vehicle charging
Working with London Boroughs, we have helped deliver 311 rapid charging points and more than 3,000 slower chargers through the Go Ultra Low City Scheme.

Increasing active travel, including walking, cycling and public transport, is essential to improving the environment and the health of Londoners. This is why the Mayor's Transport Strategy has the central aim of 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041. As described in our Corporate Environment Plan, our partnership working with London boroughs is key to achieving this ambition. More detail can be found in the Mayor's Transport Strategy and the supporting walking and cycling action plans.

We are working to help create the greenest taxi fleet in the world

We are eager to make as many vehicles as possible zero emission

Our plans to improve

To further reduce our greenhouse gas emissions and improve London's air quality, we will explore ways of financing the acceleration of the transition of our 9,000 strong bus fleet to zero emission by 2034. With Government support we can do this by 2030. If we can secure a viable way of making this affordable, this will be seven years earlier than our original target. We will work with taxi and private hire operators to support their conversion to zero emission capable vehicles while updating our own support vehicles. In terms of our supply chains, from 2025, all new contracts will require freight and servicing vehicles under 3.5 tonnes delivering to TfL buildings to be zero emission.

Increasing compliance through enforcement
We could make a greater contribution to sustainability and the environment through our enforcement activity if it had the right tools. We will work with the Government and make the case for additional enforcement powers which are currently available to local authorities but not TfL. This includes powers to tackle engine idling or the dumping of illegal waste.

We will explore ways of financing the acceleration of the transition of our 9,000 strong bus fleet to zero emission

by 2030

subject to funding

From 2025, all new contracts will require with freight and servicing vehicles under 3.5 tonnes to TfL buildings to be

zero emission

We support London becoming a zero-waste city

Sustainable resources

We are working towards the Mayor's ambition of London being a zero-waste city and to support the transition to a low carbon circular economy. This includes:

Waste reduction
To reduce waste at source, we aim to eliminate it early in the planning and design stages of our projects and programmes. By far, the largest generator of waste by weight and volume are our major construction projects, where we recycle in excess of 98 per cent. We require all our major projects to achieve sustainability awards levels (CEEQUAL and BREEAM) that themselves require designing out waste and highly responsible waste management.

Recycling
We continue to pursue our objective of increasing recycling rates in stations, depots, offices, and construction activities (in addition to reusing waste items). We have begun to embed clear principles for the recovery and reuse of redundant equipment in our maintenance practices, by working with London Underground Materials Stores teams to store and redistribute key assets where possible.

We are also addressing litter left by passengers on our services – there are continued trials to increase segregation of recyclables. Waste that is not recycled is sent to incineration with energy-recovery.

Our plans to improve

We aim to support London's goal to become a 'zero waste city' by using all our materials sustainably and understanding their carbon costs throughout their lifecycle. We have set targets to divert 100 per cent of non-hazardous construction, demolition and excavation waste from landfill and recycle 65 per cent of commercial and industrial waste by 2030.

TfL is covered by the GLA Group Responsible Procurement Policy. The policy includes prioritising circular procurement options, maximising value and using sustainable materials. The GLA Group Central Responsible Procurement Team have developed Circular Procurement Guidance and an e-learning tool to support our aim to embed circular economy principles and culture across the business.

100%
of non-hazardous construction, demolition and excavation waste diverted from landfill by 2030

We're encouraging the growth of more diverse habitats

Green Infrastructure

We aim to protect, connect, and enhance green infrastructure, including the biodiversity, habitats, and ecosystem services across our estate. We do this by recognising and acknowledging the benefits of green infrastructure, and aiming to deliver biodiversity net gain through maintenance and project delivery.

Sustainable drainage systems

By incorporating green infrastructure into our projects, particularly where they act as SuDs at ground level or as green roofs, we are helping to make London more resilient to extreme weather and climate change, reducing the pressure on London's historic drainage network.

Tree planting on the TfL Road Network

We continue to be ahead of our target of increasing trees on the TfL Road Network by an average of one per cent per year. This is despite restrictions due to the coronavirus pandemic limiting the 2020/21 tree planting season to a single month from its usual six month window. A total of 717 new trees were planted in the shortened season, although this figure was lower than the number of trees removed for disease and safety reasons, as part of our annual inspections on tree health. Despite this year's challenges, we are ahead of our Mayor's Transport Strategy target due to tree planting efforts in previous years.

Natural capital

To protect the habitats and ecosystems across our estate, we need to ensure their value and importance is recognised at all levels across our business. Consequently, we are developing a natural capital account for our estate, which will quantify the value of the services provided by our green infrastructure.

Our plans to improve

Following the development of our natural capital account, we will embed it into our decision-making processes and regularly update the account. This will help us track changes over time and identify where we need to focus our efforts to maximise the benefits we obtain from our green infrastructure.

In addition to better understanding how biodiversity across our estate can make London a more attractive city and more resilient in the face of the climate crisis, we will explore how biodiversity offsetting (as part of a mitigation hierarchy) on our estate could help us deliver biodiversity net gain.

We will support the Mayor's manifesto commitment to rewild and improve access to the Green Belt, plant green roofs on bus stops and increase wild flowers on our road verges and embankments.

486 ha

of Sites of Importance of Nature Conservation on our estate, representing 1.6% of London's Sites of Importance of Nature Conservation (by area) on just 1.25% of London's land

Other notable activity

Enhancing and regenerating the environment is our ambition, and compliance with the law is our bare minimum. The TfL Management System incorporates our approach to environmental management and is supported by training, communication, and assurance activities.

Noise
We actively consider our neighbours by continuing to find ways to reduce the levels of noise on our transport networks to the best of our ability. We test and use improved technology and materials, including targeted trials for solutions relevant to reduce noise impact. The transition of our vehicle fleets to zero emission and our focus on shifting journeys to active travel also contributes to reducing road traffic noise. We are aiming to meet 'no net increase in noise' in DEFRA noise key areas for TfL schemes.

Property development
We continue to go beyond our obligations and legal requirements by adopting and implementing environmentally sustainable development best practice across our programmes. For example, the pilot launch of a Sustainable Development Framework for our property development portfolio will help us to achieve biodiversity net gain across our estate (see page 35 for more detail).

Compliance
We assess the sustainability issues of our projects and programmes and are independently verified where appropriate to improve their sustainable design, construction and maintenance principles. Larger TfL projects use the recognised sustainability rating systems BREEAM and CEEQUAL and our management system includes processes and tools to ensure we meet our environmental obligations and regularly undertake assurance and improvement activity.

We actively consider our neighbours by continuing to find ways to reduce the levels of noise

We strive for environmentally sustainable property development

Economy

Being financially sustainable to provide a resilient and good quality of life for all

Economic impact

Over the course of the last 20 years, investment in public transport in London has been focused on more sustainable travel, with the number of trips made by walking, cycling or public transport rising from 52 per cent in 2000 to 63 per cent just before the pandemic. This shift in travel behaviour has kept London liveable despite its rapid growth, and the continued shift towards more efficient modes of transport is essential if the city is to continue contributing to a productive UK economy.

London makes a critical economic contribution to the UK and if it recovers quickly and robustly, it will be a strong economic engine for both growth and 'levelling up' across the UK, particularly given its significant fiscal contribution to the UK historically. London represents about 13 per cent of UK population but it accounts for nearly 23 per cent of the UK's gross domestic product (GDP) and before the pandemic, it was a significant driver of jobs and growth across the UK.

The central activities zone, which is London's vibrant centre and one of the world's most attractive and competitive business locations compared to anywhere else in the UK or in the world, is uniquely dependent on our public transport. Despite covering only a tiny fraction of its landmass, it is home to 4.4 per cent of UK jobs, and contributes to 7.8 per cent of UK Gross Value Added (GVA). Being home to about 26 per cent of all employment in London and more than 260,000 of London's 1.2million retail and other service jobs in 2019, it is supported by accessible, frequent and sustainable public transport which, before the pandemic, brought 1.2 million people into the central area every weekday. It plays a crucial role in driving jobs and growth across London and the wider UK.

We have a crucial role to play in supporting London and the wider UK economy to come out of the coronavirus pandemic

Nearly 5 per cent of UK jobs are in London's central activities zone

London has one of the most mature low-carbon transport systems in Europe, and our capital expenditure is already biased towards the green recovery. Our Financial Sustainability Plan, published in January 2021, at the request of the Government as part of our funding agreement for the second half of 2020/21, showed how with the right level of capital investment we can support Government objectives to meet the 2030 ambition to decarbonise transport and secure a sustainable green recovery for London, including through the transition of London's bus fleet to zero emission and working towards a zero-carbon railway.

We are actively working to attract customers back to our public transport networks as we emerge from the pandemic, focusing on ensuring they are clean, safe, well-maintained and reliable. This is not only vital to avoiding a car-led recovery and increasing the sustainability of travel in London, it also generates fare revenue which we then invest back into improving walking, cycling and public transport. This 'virtuous circle' is essential to maximising sustainable travel in London.

The new Elizabeth line is an example of a truly transformational project in terms of both construction and operation. The project will protect and improve the environment, develop skills, create jobs, promote sustainable travel, support new homes and the success of London and the wider UK economy.

By accelerating investment in decarbonisation of our network and renewable energy solutions, we will create thousands more jobs, produce innovative solutions and attract international investment. For instance, we estimate that around 3,000 jobs could be secured through investment in our zero-emission bus fleet and enable manufacturers to create around 600 more.

Our major projects demonstrate the value that we create in the wider economy. These contribute to London's economy, boosting the UK economy and quality of life for millions of people, and supporting the redistribution of economic wealth by providing access to jobs and services in opportunity areas.

Our projects include asset renewals, line upgrades and major infrastructure projects that increase the reliability and capacity of our transport services and give people confidence to make sustainable travel choices. Network extensions like the Silvertown tunnel will reduce congestion, improve the reliability and resilience of the wider road network and provide improved cross-river transport links.

Crossrail is expected to add £42bn to UK GDP over the next 60 years and the Northern Line Extension will create £5bn of wider economic benefit over the same period.

As well as this, our organisation is key to unlocking new housing to tackle the existing housing crisis in a sustainable way. London needs 66,000 new homes each year for at least 20 years. The integration of land use and transport, and the provision of a robust and resilient public transport network, are essential in ensuring that different parts of the city are connected in a sustainable and efficient way.

We use our own land to directly support London's housing needs.

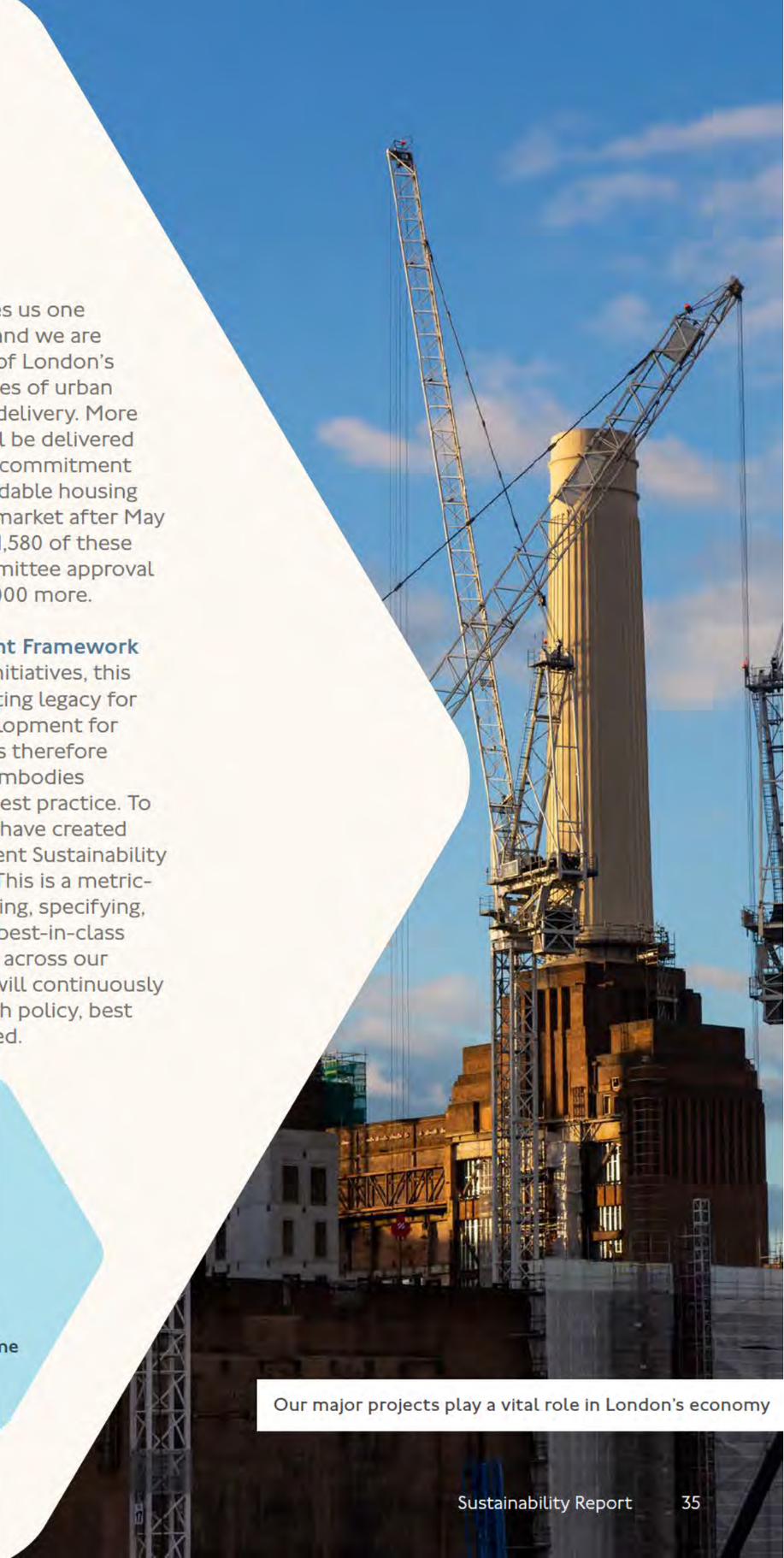
Our 5,700-acre estate makes us one of the largest landowners and we are currently undertaking one of London's most significant programmes of urban development and housing delivery. More than 10,000 new homes will be delivered across London, including a commitment to deliver 50 per cent affordable housing across all sites brought to market after May 2016. Work is underway on 1,580 of these homes, with planning committee approval or submission on nearly 8,000 more.

Sustainability Development Framework

As with many of our past initiatives, this programme will leave a lasting legacy for London and shape its development for many decades to come. It is therefore critical that it adopts and embodies sustainable development best practice. To ensure this is achieved, we have created our commercial development Sustainability Development framework. This is a metric-driven approach to optimising, specifying, delivering, and monitoring best-in-class sustainability performance across our development portfolio. It will continuously evolve over time in line with policy, best practice, and lessons learned.

1,580

Number of homes delivered/started on site by our Property Development programme since 2016/17



Our major projects play a vital role in London's economy

Case study one

New Piccadilly line trains

Fifty per cent of the new train fleet built by Siemens Mobility to replace the existing Piccadilly line fleet from 2025 will be built in Goole, East Yorkshire, employing up to 2,650 people: 700 people in engineering and manufacturing roles, 250 in the construction phase and 1,700 in the broader supply chain. Siemens Mobility has announced £50m of related contracts for UK suppliers, including a number for train components. These include almost £6m in contracts for Yorkshire-based LPA Lighting to provide the interior train lighting, Midlands-based suppliers Baker Bellfield to supply cab partition walls and I M Kelly for driver seats and footrests.

New Piccadilly line trains will require 20 per cent less energy

Up to 2,650

people to be employed to build new Piccadilly line trains

Case study two

Manufacture of London Overground and Crossrail trains by Bombardier Transportation

All current London Underground and Overground fleets were built by Bombardier Transportation, now taken over by Alstom. Alstom's Derby train factory is the largest in the UK, employing 2,000 people directly and many more in the supply chain. The fleets for the Circle, District, Hammersmith & City, Metropolitan and Victoria lines and the new AVENTRA trains for London Overground were designed and built there.

Alstom employs 330 staff to support the Northern line alone and in total supports 4,709 rail cars across London Underground, Overground, TfL Rail and London Trams. This sustains jobs and apprenticeships across London, and in Derby, Crewe, Widnes, and Mansfield.

2,000

people work for Alstom (formerly Bombardier) and many more in the supply chain

Train manufacturers directly employ thousands of people

We're committed to inclusive employment practices

Responsible Procurement

As part of the GLA Group, we have adopted a Responsible Procurement Policy. This high-level strategic policy sets out the GLA Group's plans, ambitions and commitments for ensuring continuous improvement in London. Our commitment is to ensure that our decisions on the procurement of goods, works or services are undertaken in line with the commitments set out in this document, under the following themes:

- Improving supply chain diversity
- Embedding fair and inclusive employment practices
- Enabling skills, training and employment opportunities
- Promoting ethical sourcing practices
- Improving environmental sustainability

These are applied, where relevant and proportionate, in commercial arrangements with partnering and contracting organisations.

By the end of Quarter 2 2021/22, the Responsible Procurement Implementation Plan for the Mayoral term 2021-24 will be published. The plan will set out the actions that we, along with the wider GLA Group, will prioritise to deliver on the commitments of the GLA Group Responsible Procurement Policy.

Our key Responsible Procurement achievements in 2020/21

- As part of National Apprenticeship Week in February 2021, we delivered a set of virtual events with 290 people interested in working for TfL and its supply chain attending the 12 supplier-led sessions
- There were 524 new apprenticeship starts in our supply chain, of which 51.2 per cent are from a Black and minority ethnic background and 27.8 per cent are women
- Of our 65 key suppliers who have issued a Modern Slavery Statement, 72.3 per cent scored 3/5 or above from Transparency in the Supply Chain analysis
- Thirteen TfL suppliers are accredited to the Mayor's Good Work Standard, the London benchmark for good employment practice, which encourages employers to adopt best practice in areas such as fair pay and conditions, diversity and inclusion, skills and progression and workplace wellbeing
- We paid 90.8 per cent of the invoices from SMEs within ten working days, to support their cash flow
- Of our Capital Delivery colleagues in construction and SHE roles, 170 took part in introductory Modern Slavery prevention training in March 2021. We also held a bespoke three-hour workshop as part of the development of the Modern Slavery Assurance Handbook, with representatives from each of our Purchasing and Commercial teams
- We have continued to upskill our Purchasing and Commercial teams through a number of Responsible Procurement half-day virtual training sessions, as well as our online Responsible Procurement eLearning module

Securing financial stability means we can invest in London's future

Financial stability

Before the pandemic, we were on track to achieve financial sustainability and deliver an operating surplus by 2022/23 having taken out around £1bn from our net cost of operations from 2015/16 to 2019/20. However, with the devastation to our passenger income as a result of the pandemic, we required Government support of over £3bn in 2020/21. We have secured £1.6bn in 2021/22, including £1.08bn in the 1 June Funding and Financing agreement to December 2021; the latter agreement includes a target to achieve financial sustainability by April 2023.

This means that we will cover our cost of operating, maintaining and financing, as well as capital renewals to ensure assets remain in a good state of repair, by April 2023.

While we work on our plans to achieve this, our ability to invest for sustainability rests on securing certainty of longer-term multi-year funding. Government has explicitly committed to continuing to work with us on reaching a longer-term financial settlement beyond our current agreement. We will continue to push hard for this so that we can plan effectively for London's future and continue to deliver value for money through our services, capital projects, contracts and supply chain.

Our plans to improve

We had already embedded £730m savings into our Financial Sustainability Plan to be achieved in the six years to 2024/25. At the end of financial year 2020/21, we had £390m left to deliver, which is largely related to considering options in London Underground such as our supply chain, maintenance delivery, embracing new technology, and being more agile on resource planning.

We are also exploring options in major operating contracts, reviewing our head office accommodation strategy and exploring efficiencies in back and middle office costs and other business areas. As part of the 1 June funding agreement with Government, we agreed to examine how the remaining £390m of the embedded £730m savings could be accelerated. The Government also asked us to make additional savings of £300m, which we have included in our Revised Budget that was approved by our Board on 28 July 2021.

The Government has asked us to conduct a review of our pension scheme, to identify reform options which would put our pension fund into a financially sustainable position and we have agreed the terms of reference for the review. We were also asked to freeze pay, in line with the public sector pay pause while we are in receipt of Government funding.

We have been asked to conduct a joint review of actual passenger demand levels as we recover from the pandemic and prepare a revised medium-term capital investment programme which takes into account future demand scenarios, post COVID-19. This programme includes measures to improve tracking of capital efficiencies and quantification of anticipated carbon reductions from future capital spend. We are working to confirm the programme with Government through the Spending Review.

Security risk management

The threat from deliberate, intentional acts to harm TfL and London's people, reputation and economy is constant, evolving and increasingly significant in an unstable world. Financial crime, cyber crime, organised crime and the hostile actions of nation states are becoming indistinguishable. TfL is an operator and owner of critical national infrastructure and a key player in the safety and security of London. We adopt an holistic and risk based approach to improve security and protect customers and colleagues from hostile and deliberate actions that cause harm.

We work to identify existing and emerging security risks and seek to reduce our vulnerability to terrorism, nation state hostile acts, extortion (through cyber attacks), organised financial crime such as fraud, blackmail, corruption, espionage, sabotage and industrial scale theft. Our systematic approach to protective security contributes to TfL and London's sustainability.

Everyone at TfL has a role to play in security and we actively work to increase awareness, understanding and competence through security training, briefings and acting on security communications.

Our tax strategy

We are committed to meeting all legal requirements. We are transparent about our approach to tax and discuss the interpretation of tax legislation with HMRC, particularly where the tax treatment is unclear. We have a zero-tolerance approach to all forms of tax evasion, fraud, corruption or bribery whether under UK law or under the law of any foreign country.

Fare evasion

The vast majority of our customers pay their fares. This fare income is reinvested in running and improving services for our customers. We take a robust approach to tackling fare evasion and ticket fraud and ensure fairness to all our customers. We do this through designing out opportunities for fare evasion, using technology to deter and detect fraud, and proactive enforcement and compliance activity across our public transport networks.

Financial crime, cyber crime, organised crime and the hostile actions of nation states are becoming indistinguishable

We use technology to deter and detect fraud on our network

Other notable activity

Financial risk of climate change

The financial risks of climate change are wide-ranging and have implications for matters such as financing and supply chain disruption. However, the direct impact on our network and operations in terms asset failure, service disruption and associated potential health and safety liabilities means that adapting to climate change is key to mitigating financial risk. We are actively working to report in line with the Taskforce on Climate Related Financial Disclosures and will be providing a submission to Defra under their Adaptation Reporting Power.

There has been an anecdotal increase in incidents across our network that have been linked to weather events. The potential of further severe weather events due to climate change could lead to many more incidents, such as extensive flooding, like we saw during July 2021, or failure of assets – including embankments, and flooding controls and defences – any of which could be catastrophic for London and its transport network.

We have a dedicated programme of research to understand current and future severe weather impacts. Part of the programme includes identifying improvements to data collection so we can better carry out comprehensive quantitative assessments of the impact of weather events on our assets and operations and how this might be exasperated by climate change. This is a medium-term programme over several years that, in the short-term, is being supplemented with a range of case studies that highlight the impacts of severe weather on our operations. This information is helping to make the case across the business that climate change adaptation is a priority for decision-making and provide guidance on how to best manage this risk. Adaptation is now a key environmental priority for London Underground's asset strategy.

Climate change adaptation is a priority for the business

Our plans to improve

To enable quantitative or comprehensive assessments of the impact of current weather events on our operations, we are:

- Planning a scoping study to investigate which teams across the business should be using the latest climate projections, and how that data could be made more accessible for use across diverse team functions
- We will also review our processes and governance to start collecting pan-TfL data in this area, so we can build a better forecast of the risks we face as an organisation

Modern slavery

More than 95 per cent of our key suppliers are registered in the UK but many of their operations and supply chains are global. We use a risk-based approach, prioritising steps to achieve greater supply chain visibility where our risks are highest, recognising that workers in the lowest tiers of supply chains are often the most vulnerable.

As an example, we are actively working to ensure that workers producing our uniforms are treated fairly wherever they may be in the world. Recently, following mobilisation on the Underground uniform contract, each factory is required to undergo an annual, independent, third-party social audit against the nine principles of the Ethical Trading Initiative Base Code.

We are actively working to ensure that workers producing our uniforms are treated fairly wherever they may be in the world

We ensure the workers producing our uniforms are treated fairly

Our plans to improve

We will continue to raise awareness of modern slavery to our people and will enhance how we address modern slavery and supply chain transparency through targeted learning.

We will risk assess our key suppliers, inviting them to share their approach to modern slavery through the UK Government's Modern Slavery Assessment Tool and work with them to act on key recommendations resulting from the assessment.

Driving sustainability through our TfL Vision and Values

We keep London moving safely, inclusively and sustainably

Our vision is to be the strong green heartbeat for London

Our TfL Vision and Values reinvigorates our purpose to move London forward by setting out a longer-term view, beyond our immediate recovery: a bold long-term vision for the next era of TfL. One that is stronger and capable of tackling the single, most pressing crisis of our time: climate change. And one that will contribute to a more inclusive, dynamic, democratic place to work, all for the good of London.

Because everything we do – our public transport services, our roads, our walking and cycling routes, our estate and infrastructure, and our role in regulation and enforcement – we can do more to improve people's lives and help our city navigate the future, than almost any transport body in the world. TfL's purpose is to move London forward safely, inclusively and sustainably.

Safely
- Preventing colleagues and customers from being killed or seriously injured
- Making customers feel safe and secure while travelling
- Being a workplace where every person feels safe

Inclusively
- Reflecting the diversity of our city to serve it better
- Keeping transport affordable for the greatest number of people
- Improving accessiblity so that everyone can make journeys with independence

Sustainably
- Balancing our income and our costs so London can keep moving long into the future
- Working to reduce carbon emissions, positively impact our environment and adapt to climate change
- Supporting a clean, healthy London that is not congested with traffic

Our vision is to be the strong green heartbeat for London. We have developed roadmaps to chart our next steps towards this future. They start with our colleagues and end with our customers, with safety and inclusion woven through both, in line with our purpose. They include plans to make our network more financially and environmentally sustainable, while we continue essential day-to-day operations and project delivery. These roadmaps will evolve as we continue to work with our colleagues and learn along the journey. They will be updated annually.

How we work is as important as what we do. Putting people at the heart of how we work starts with this: we treat every journey like it matters, both our customer's journeys around London, and our colleagues journey in the organisation. To achieve this, we have three core values: to be caring, open and adaptable. This starts with our employees and extends to everyone we work with, including the trade unions. This ambition extends to our contractors and supply chain partners as we will need every bit of their expertise, insight and support.

References to other reports

This section contains relevant reports that may be useful if you are interested in delving deeper into a topic. Reports listed might span one or more of the three pillars of sustainability and we have indicated which pillar(s) are most relevant.

Click on the publication for more information. This list is not exhaustive but attempts to summarise some of the more relevant publications. A full list can be found in the Publications and Reports section of our website.

Publication	Society	Environment	Economy
About TfL web landing page	●	●	●
TfL Business Plan and Budget	●	●	●
Commissioner's report	●	●	●
Annual Report and Statement of Accounts	●	●	●
Mayor's Transport Strategy Annual Update	●	●	●
Travel in London Report	●	●	●
TfL Pension Fund (On sustainable Investing)	●	●	●
Safety, health and environment Annual reports	●	●	
TfL Sustainable Timber Policy		●	
Bus Crime statistics (London boroughs)	●		

Publication	Society	Environment	Economy
Road danger reduction dashboard and data	●		
Annual Diversity and Inclusion impact report	●		
Employment Landing page	●		
Human Resources Quarterly Report	●	●	
TfL Modern Slavery and Human Trafficking Annual Statement	●		
Santander Cycles Performance report	●		●
Transparency landing page	●		●
Senior Pay	●		
GLA Group Responsible Procurement Progress Report	●	●	●
Vision Zero action plan	●		

Glossary

Accessibility	Considering the design of products, devices, services and environments to ensure everyone can use them
Anchor Institutions Charter	Charter launched in March 2021, to which TfL is a founding signatory. TfL has committed, along with some of the city's other biggest organisations, to working together by using their procurement and recruitment power to maximise employment opportunities and help young people to flourish
Biodiversity	Term used to describe the enormous variety of life on Earth, including plants, bacteria, animals and humans. It can be used more specifically to refer to all the species in one region or ecosystem
Biodiversity net gain	An approach to development that leaves biodiversity in a better state than before
British Transport Police (BTP)	National special police force that polices railways and light-rail systems in England, Wales and Scotland
Building Research Establishment Environmental Assessment Method (BREEAM)	The world's longest established method of assessing, rating and certifying the sustainability of buildings
CapEx	Funds used by a company to acquire, upgrade and maintain physical assets such as property, plants, buildings, technology or equipment
Capital delivery	Investment in construction projects that build, maintain and improve our network's infrastructure
Capital investment	The amount invested in a company to enhance its business objectives
Carbon dioxide (CO_2)	Principal greenhouse gas related to climate change
Circular economy	System based on the principles of designing out waste and pollution, keeping products and materials in use and regenerating natural systems
Circular procurement	Relates to any purchase required for an organisation to operate, as part of their transition towards a circular economy
Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL)	Evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public spaces
Climate change adaptation	Improvements to the built environment, assets or processes that lead to a reduction in harm or risk of harm, or realisation of benefits associated with climate variability and climate change. Adaptation policies can lead to greater resilience of communities and ecosystems to climate change
Commercial and industrial waste (C&I waste)	Consists of a wide variety of office product packaging, including cardboard, wood, metal, glass, textiles, containers and aggregates. For TfL, this includes waste from stations, tenanted properties, depots and head offices
Conference of the Parties (COP)	The supreme decision-making body of the UNFCCC (United Nations Framework Convention on Climate Change). All States that are Parties to the Convention are represented at the COP, at which they review the implementation of the Convention and any other legal instruments that the COP adopts, and take decisions necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements
Construction, demolition and excavation waste (CDE waste)	The largest waste stream generated in London. It can contain bricks, slabs, concrete, plaster (gypsum), plasterboard, insulation and excavation materials such as soil, sand and wood
DEFRA	Department for Environment, Food and Rural Affairs
Dial-a-Ride	TfL's free door-to-door service for those with permanent or long- term disabilities
Ecosystem services	The benefits provided by natural capital that contribute to making human life both possible and worth living
Ethical trading initiative base code	Viewed as a global reference standard as a code of good labour practice, widely used as a benchmark to conduct social audits and develop ethical trade action plans
Euro VI	The name given to a set of limits for harmful exhaust emissions produced by virtually any vehicle powered by petrol or diesel engines
GLA Responsible Procurement Plan	Greater London Authority Responsible Procurement Plan
Greenhouse gas	Any gas that induces the greenhouse effect, trapping heat within the atmosphere that would normally be lost to space, resulting in an increase in average atmospheric temperatures, contributing to climate change. Examples include carbon dioxide, methane and nitrous oxides
Green infrastructure	The network of parks, green spaces, gardens, woodlands, rivers and wetlands (as well as features such as street trees and green roofs) that is planned, designed, and managed to: promote healthier living; lessen the impacts of climate change; improve air quality and water quality; encourage walking and cycling; store carbon; and improve biodiversity and ecological resilience
Global Reporting Initiative (GRI)	An international independent standards organisation that helps businesses, governments and other organisations understand and communicate their impacts on issues such as climate change, human rights and corruption
Independent Disability Advisory Group (IDAG)	A panel that helps TfL better understand the impact of its policies, projects and programmes on disabled customers

Low Emission Zone (LEZ)	Encourages the most polluting heavy diesel vehicles driving in London to become cleaner. The LEZ covers most of Greater London and is in operation 24 hours a day, every day of the year
MPS	Metropolitan Police Service
Natural capital	The set of environmental resources (green space, air, water, wildlife) that provides services, such as flood protection or cleaner air, that benefit the wellbeing of Londoners and the city's economy.
Net-zero carbon	Making the amount of carbon emitted into the atmosphere equal to the amount taken out of the atmosphere. Reaching zero carbon on a net basis, where any residual greenhouse gas emissions are offset
Oxides of nitrogen (NO_x) consisting of nitric oxide (NO) and nitrogen dioxide (NO_2)	Two gases whose molecules are made of nitrogen and oxygen atoms. These nitrogen oxides contribute to the problem of air pollution, impacting on human health and life expectancy and playing a role in the formation of both smog and acid rain
Non-visible disability	A disability that is not immediately apparent, typically chronic illnesses and conditions that significantly impair normal activities of daily living
Optioneering	Evaluating different options to solve a specific problem
Pilates	A method of exercise that consists of low-impact flexibility, and muscular strength and endurance movements
Procurement	The process of finding and agreeing to terms and acquiring goods, services, or works from an external source, often via a tendering or competitive bidding process
Rewilding	The process of restoring ecosystems to the point where nature can take care of itself. It often involves reintroducing a few key species that act as a catalyst for wider nature and biodiversity restoration
Scope 3 emissions	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, and electricity-related activities not covered in scope 2
Scoping study	A preliminary study to define the scope of a project
SHE	Safety Health and Environment
Small and medium enterprise (SME)	Business with fewer than 250 employees, and a turnover of less than €50 million, or a balance sheet total of less than €43 million
Social cohesion	The extent of connectedness and solidarity among groups in society

Social development	Improving the wellbeing of every individual in society so they can reach their full potential. The success of society is linked to the wellbeing of each and every citizen
Social integration	Process during which newcomers or minorities are incorporated into the social structure of the host society
Solar private wire	Generating new solar power on land with a direct contention to TfL's network, thereby providing a renewable supply of energy to London Underground services
Step-free access	The use of lifts, ramps and level surfaces instead of stairs or escalators, and avoidance of gaps onto our trains, buses and boats
Supply chain	The activities and processes required by an organisation to deliver goods or services to the consumer
Sustainable drainage systems (SuDS)	Systems to slow and reduce the flow of rainwater before it reaches our drainage systems, helping to reduce the risk of surface water flooding
Tactile paving	Textured ground surface found on footpaths, stairs and station platforms to warn or direct pedestrians who are visually impaired
The London Recovery Board	London's recovery is led by the London Recovery Board, chaired jointly by the Mayor of London, Sadiq Khan, and the Chair of London Councils, Councillor Georgia Gould. It brings together leaders from across London's government, business and civil society, as well as the health and education sectors, trade unions and the police, to oversee the long-term recovery from the coronavirus pandemic
The Paris Agreement	A legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5, degrees Celsius, compared to pre-industrial levels
Three pillars of sustainability	Sustainability is most often defined as meeting the needs of the present without compromising the ability of future generations to meet theirs. It has three main pillars: Society, Environment, Economy. The factors of these must be balanced in equal harmony to achieve true sustainability
United Nations Sustainable Development Goals	A blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice
Vision Zero	An apporach for that aims to eliminate all deaths and serious injuries on London's transport system
Workplace champion	Employee that is dedicated to improving a certain area within the company

About TfL

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners' and helping to create a safer, fairer, greener, healthier and more prosperous city. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys to be made by walking, cycling or using public transport by 2041. To make this a reality, we prioritise sustainability, health and the quality of people's experience in everything we do.

We run most of London's public transport services, including the London Underground, London Buses, the DLR, London Overground, TfL Rail, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the Emirates Air Line. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding public transport and making more stations step free, we can make people's lives easier and increase the appeal of sustainable travel over private car use.

We manage the city's red route strategic roads and, through collaboration with the London boroughs, we are helping to shape the character of all London's streets. These are the places where Londoners travel, work, shop and socialise. Making them places for people to walk, cycle and spend time will reduce car dependency, improve air quality, revitalise town centres, boost businesses and connect communities. As part of this, the Ultra Low Emission Zone scheme and more environmentally friendly bus fleets are helping to tackle London's toxic air.

During the coronavirus pandemic we have taken a huge range of measures to ensure the safety of the public. This includes enhanced cleaning using hospital-grade cleaning substances that kill viruses and bacteria on contact, alongside regular cleaning of touch points, such as poles and doors, and introducing more than 1,000 hand sanitiser points across the public transport network.

Working with London's boroughs we have also introduced Streetspace for London, a temporary infrastructure programme providing wider pavements and cycle lanes so people can walk and cycle safely and maintain social distancing.

At the same time, we are constructing many of London's most significant infrastructure projects, using transport to unlock much needed economic growth. We are working with partners on major projects like the extension of the Northern line to Battersea, Barking Riverside and the Bank station upgrade.

Working with Government, we are in the final phases of completing the Elizabeth line which, when open, will add 10 per cent to central London's rail capacity. Supporting the delivery of high-density, mixed-use developments that are planned around active and sustainable travel will ensure that London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

We are committed to being an employer that is fully representative of the community we serve, where everyone can realise their potential. Our aim is to be a fully inclusive employer, valuing and celebrating the diversity of our workforce to improve services for all Londoners.

We are constantly working to improve the city for everyone. This means using data and technology to make services intuitive and easy to use and doing all we can to make streets and transport services accessible to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day. None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services.

By working together, we can create a better city as London recovers from the pandemic and moves forward.

© Transport for London

September 2021

tfl.gov.uk

PUB21_024

Transport for London

Invitation to Quote

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 2, Batch 1

Volume 2

Appendix F

LONDON'S ELECTRIC VEHICLE CHARGE POINT INSTALLATION GUIDANCE

COMMERCIAL IN CONFIDENCE

TfL Restricted

London's electric vehicle charge point installation guidance

December 2019

Transport for London

Introduction

This guidance provides information to support the installation of electric vehicle (EV) infrastructure in London. The focus of the guidance is on the implementation process and considerations specific to London's streetscape.

It supersedes the previous 'Guidance for implementation of electric vehicle charging infrastructure', published by Transport for London (TfL) in April 2010. The rationale for updating it at this time is in response to the findings of the Mayor's Electric Vehicle Infrastructure Taskforce and the associated London Electric Vehicle Infrastructure Delivery Plan (June 2019). In this, up-to-date official guidance for installing the infrastructure in London was considered key to enable the levels of infrastructure expected to be needed by 2025, to ensure infrastructure would no longer be a barrier to people switching to EVs.

The Delivery Plan also sets out a future focus on rapid charge points ('rapids') in particular to suit the needs of essential, high-mileage road users such as taxis, private hire and other light commercial vehicle drivers. It explains the rationale for a focus on rapid charging hubs, and sets out a vision for at least five to be put in place, one in each sub-region of London, by 2025. To improve overall coverage, additional rapid chargers should be prioritised to serve London's town centres. This could be in the form of hubs or single rapid chargers, to primarily serve commercial needs. For slower chargers, the focus is on increasing the numbers to meet the rising demand and to plan for this strategically as opposed to an ad hoc way. In addition, the importance of minimising streetscape impact is paramount, and this guidance will help to encourage this.

Similar to the 2010 edition, the primary audiences for this document are London borough officers and private landowners looking to install EV charge points. It will also be useful for urban and landscape designers, architects, product designers, manufacturers, suppliers, operators and energy distributors as well as authorities outside London with an interest in installing EV infrastructure.

The history of London's EV charging and how it has evolved is set out in further detail in the Delivery Plan. Numbers are constantly growing and as of September 2019, London has 4,292 publicly accessible charge points spread across 2,779 locations[1]. There has recently been a huge uplift in lamp column charge points across London on residential streets as a result of the Go Ultra Low City Scheme (GULCS).

London Councils will also be setting up a coordination function to help with EV infrastructure installation. This will aim to provide a central source through which boroughs can get information and support for installing new charge points across London. When live, this will be hosted on London Council's website.

In its Road to Zero strategy, the Government has set out that from 2040 it will end the sale of petrol and diesel cars and vans. The Mayor's ambition is to accelerate this target and work towards all new cars or vans registered in London to be zero emission by 2030, meeting the aspirations of the Committee on Climate Change. This highlights the need for growth of the public charging infrastructure network, which is to be achieved with the help of private and public sector input. The focus is on extending infrastructure for high-mileage users such as

[1] *Zap-Map: Guide to EV charging*: https://www.zap-map.com/charge-points/

taxis, private hire and light goods vehicles which are essential to keep London moving while supporting all Londoners. EV infrastructure in London should complement the Mayor's other aims around encouraging more people to walk, cycle and use public transport while seeking to reduce the number of cars on London's roads. Where people do need to drive a car it should be the cleanest possible vehicle. A good EV charge point network can support this switch to cleaner vehicles.

Due to the changing nature of EV technology, both in terms of vehicles and charge point infrastructure, we will keep this guidance under review and update when necessary to ensure it continues to reflect the current state of the EV market and the technology available.

Structure of this guidance

The guidance is divided into five sections:

- **Policy context** – provides the policy context for EV infrastructure to deliver zero emission transport in London
- **Selecting the type of EV charge point** – sets out the different options and user needs for different types of charge point infrastructure
- **Design of EV charge point facilities** – provides parameters for the design of charge point facilities and considerations for all users of the street
- **Planning and consents** – sets out the possible requirements for implementing charge points
- **Implementation, operations, safety and maintenance** – details the considerations for implementation and ongoing operation and maintenance of facilities

Scope of this guidance

Not all electric vehicle charging infrastructure is covered by this guidance document. This is because the focus here is on publicly accessible infrastructure as opposed to private infrastructure. Also the technology is constantly advancing, and options such as wireless charging are not considered viable to be widespread at this point in time.

The following infrastructure is covered in the guidance:

- **Location:** On-street and off-street charging infrastructure including single and double roadside charge points as well as hubs for six or more charge points
- **Access:** Publicly accessible charge points, both on-street and off-street. The guidance does not cover private or home charging infrastructure
- **Speed:** Static posts from lamp column charging through to rapid charging (not faster than 50KW), but not wireless charging or mobile charging infrastructure
- **Vehicle type:** Charging for cars and light goods vehicles, but not heavy goods vehicles, buses or electric bikes or scooters

Home charging

Home charging is not covered in this document. There are a number of potentially significant public safety issues that can arise where the user does not have their own off-street parking and where electric cables may be trailed across the pavement.

According to the Highways Act 1980, running an electric cable across the pavement to charge a vehicle from your home or business will find you liable for any injury to people or damage to property. This is set out below.

Highways Act 1980, Section 162 - Penalty for placing rope, etc. across highway. U.K.

A person who for any purpose places any rope, wire or other apparatus across a highway in such a manner as to be likely to cause danger to persons using the highway is, unless he proves that he had taken all necessary means to give adequate warning of the danger, guilty of an offence and liable to a fine not exceeding [F1level 3 on the standard scale].

F1 Words substituted by virtue of Criminal Justice Act 1982 (c. 48, SIF 39:1), ss. 38, 46

Policy context

This chapter sets out the background and policy context for the installation of EV charge points within the framework of the London Plan, the Mayor's Transport Strategy, the Government's Road to Zero vision and the Mayor's EV Infrastructure Delivery Plan.

Strategic context

The London Plan is the statutory Spatial Development Strategy for Greater London. Following the May 2016 Mayoral election, a new London Plan is under development which will set out key statutory policy and standards for parking in London which is of relevance to the installation of EV charging infrastructure. To help facilitate the switch to EVs, the Draft London Plan (July 2019) states, under policy T6 Car Parking, that 'where car parking is provided in new developments, provision should be made for infrastructure for electric or other Ultra-Low Emission vehicles in line with policies T6.1, T6.2, T6.3 and T6.4. All operational parking should make this provision, including offering rapid charging. New or re-provided petrol filling stations should provide rapid charging hubs and/or hydrogen refuelling facilities.' Policy T6 also states car-free development should be the starting point for all developments proposed in places that are already (or are planned to be) well-connected by public transport, with development elsewhere designed to be with limited car use and the minimum necessary parking.

Reducing greenhouse gas and harmful air pollution emissions is essential for London's future as a healthy, economically successful and sustainable city. The Mayor's London Environment Strategy[2] and the Mayor's Transport Strategy set out that by 2050 London will become a 'zero carbon city' and will have the best air quality of any major world city, going beyond the legal requirements to protect human health and minimise inequalities.

At the national level, the Government has set out its aims for zero emission transport in its Road to Zero vision, in which it calls for at least 50 per cent – and as high as 70 per cent – of new car sales and up to 40 per cent of new van sales to be ultra low emission by 2030. By 2040, no new conventional petrol or diesel cars or vans will be sold in the UK.

The Mayor's ambitions for a zero carbon London by 2050 can only be achieved if all vehicles are zero emission by that date, which refers to vehicles that produce zero harmful emissions at the exhaust. The Mayor's Transport Strategy sets out a roadmap to achieving zero emission transport and to encourage the switch to ultra low and zero emission technologies.

To deliver the Mayor's ambition of zero emission transport, an increase in trips undertaken by walking, cycling and public transport will be required, with all remaining vehicle trips fully zero emissions.

Specifically, the Mayor's Transport Strategy sets out the following aims to achieve zero emission road transport by 2050:

- 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041;
- Reduction in overall traffic levels by 10-15 per cent by 2041; and
- Remaining vehicles on London's roads to be zero emission by 2050, including:

[2] Mayor of London. London Environment Strategy. Greater London Authority. May 2018.

- All licensed taxis and private hire vehicles being zero emission capable by 2033 at the latest; and
- A zero emission bus fleet by 2037 at the latest.

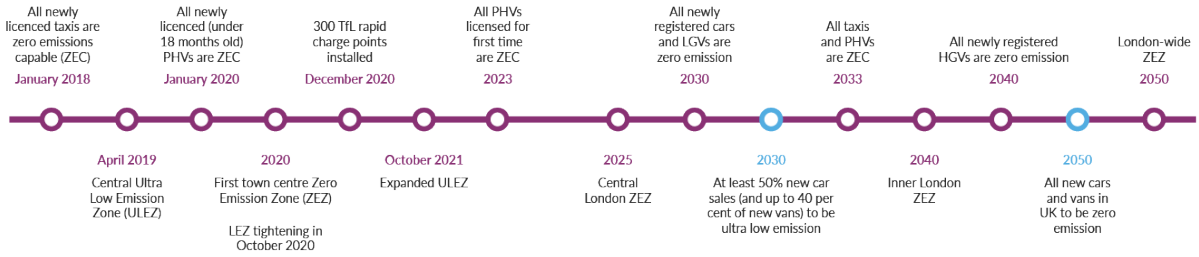
The Mayor's Transport Strategy also identifies electric vehicles as a key component to achieving zero emission transport and sets out the following proposal for EV charging infrastructure:

Proposal 34

The Mayor, through TfL and the boroughs, will work with Government to ensure that sufficient and appropriate charging and refuelling infrastructure is put in place to support the transition from diesel and petrol-powered vehicles to Ultra Low Emission Vehicles, including ensuring that London's energy-generating and supply system can accommodate and manage the increased demand associated with this transition.

The EV Infrastructure Delivery Plan summarises the timeline of policies which have recently been, or will be, enacted in London to move towards zero emissions.

Timeline of key related policies



Selecting the type of EV charge point

This section provides information on selecting the right type of EV charging infrastructure based on local needs and requirements.

Categories of charging infrastructure

It is recommended to undertake research into the different types of charging infrastructure before deciding on the most suitable for your needs.

The table below gives a brief overview on the types of charge points available. For the most recent solutions and more technical details on charging equipment see BEAMA's Guide to electric vehicle infrastructure.

Categories of charging infrastructure

Category **Power** kW **Type of connector**	**Typical formats**	**Points to note**
Rapid DC 50+ (CCS/CHAdeMO/Supercharger) AC43+ (Type 2)	• **Rapid charge hubs** • **Fuel stations** • **Taxi rest ranks**	• **Fast charge speeds (c.22kWh in 30mins providing – 120km of range for 50 kW rapid)** • **Higher capital cost (c.£50,000) and higher prices (20p-40p/kWh)*** o Most new Battery Electric Vehicles (BEVs) can use rapid DC chargers o Maximum DC charge for majority of new BEVs is 50kW o Some models allow 100kW+ o Maximum DC charge of some Plug-in Hybrid Electric Vehicles (PHEVs) is 22kW o No DC charging for many PHEVs/older BEVs
Destination	• **Retail/public car parks**	• **Slower speeds (c.22kWh/-120km of range in 3 hours**

Slow to fast AC 3-22 (Type 2)	• **Urban centre streets** • **Leisure centres** • **Hospitality**	**for a 7kW fast charger and 6 hours for a 3.6kW slow charger)** • **Lower capital cost - £4,000-£6,000 for a fast charger and as low as £1,000 for a slow charger** • **Lower prices (9-15p/kWh)*** • **Streetscape impact will limit on-street mass deployment** • **All EVs can use a form of AC charging. However:** o Maximum AC charge of many PHEVs is 3.6kW o Maximum AC charge of many BEVs is 11kW o Some exceptions allow 22kW
Residential **Slow to fast** AC 3-22 (Type 2)	• **Charge pillars** • **Lamp columns** • **Pop-up/kerb chargers**	
Private Varies	• **Home** • **Workplace** • **Depot**	

Publicly accessible

Private

***Indicative pay as you go price range**

Figure 2 shows examples of some of the most common types of charger, however there are a number of innovative variations that could also be considered now or in the future. Examples include models which features charge points that are flush with the pavement or 'armadillo' kerbside charge points which have been trialled in Southwark.

Examples of charging infrastructure

Residential slow to fast – lamp column charge point	Destination or residential slow to fast charging	Rapid charging

Different users and vehicles types will have different charging requirements. This will influence which type of charging infrastructure is most useful to them. The table below provides an overview of the different requirements by user type.

Requirements by user type

User category	Vehicle type	From or near home or at depot (Slow/standard charge)	While 'grazing' or at the workplace (Any charge speed)	'On-the go' or in-transit (Typically rapid charge)
Company fleet Light Goods Vehicles (LGVs)	**BEV**	**Regularly to nightly** (during working week)	**Rarely to occasionally (depending on mileage and access to depot charging)**	**Occasionally to daily** (depending on mileage)
	PHEV		**Rarely or never**	**Occasionally** (where vehicle supports)
Privately owned LGVs (including gig economy)	**BEV**	**Regularly to nightly** (during working week)	**Occasionally to regularly** (depending on nature and length of stop and access to	**Regularly** (depending on daily mileage and ability to charge from or near home)

	PHEV		home charging)	**Occasionally** (where vehicle supports)
Taxi	**Any**	**Nightly** (during working week)	**Rarely or never**	**Regularly to daily** (depending on daily mileage and ability to charge from or near home)
Private hire	**Any**	**Nightly** (during working week)	**Rarely or never**	**Regularly to daily** (depending on daily mileage and ability to charge from or near home)
Private cars	**BEV**	**Regularly**	**Occasionally** (depending on use of vehicle and ability to charge from or near home)	**Occasionally to regularly** (depending on use of vehicle and ability to charge from or near home)
	PHEV	**Regularly**	**Occasionally to regularly** (depending on use of vehicle and ability to charge from or near home)	**Occasionally** (where vehicle supports)
Shared vehicles (eg car clubs)	**BEV**	**Regularly to daily**	**Occasionally to regularly** (although dependent on business model)	**Regularly** (dependent on vehicle and business model)
	PHEV			**Regularly** (where vehicle supports)

Funding for charge points

A number of funding streams are available for the installation of charge points as shown in the table below. This is not an exhaustive list and there may be other funding sources available.

Public funding options for public EV infrastructure

Aimed at	Fund	Detail
Private/ Charge point manufacturers /Taxis & PHVs	Office for Low Emission Vehicles (OLEV) grant schemes	For the installation of electric vehicle charging infrastructure: guidance and application forms can be found on government-grants-for-low-emission-vehicles These include: • Application guidance for vehicle manufacturers • Authorised installers • Approved charge point model list • Vehicles eligible for the scheme • Minimum technical specifications • Guidance for manufacturers and installers • Guidance for customers • Grant claim forms
Residential / car clubs/ innovative local projects	London's Go Ultra Low City Scheme (GULCS)	£13.2m capital programme awarded to TfL, the Greater London Authority (GLA) and London Councils by OLEV aimed at driving the switch to ultra-low emission vehicles The programme has four main streams: residential charging, car clubs, increasing rapid chargers and Neighbourhoods of the Future (NoF) (local, innovative projects) https: //www.goultralow.com
	Local Implementation Plans (LIPs) – TfL funded	Boroughs can use LIP Corridor funding allocations for the installation of charge point infrastructure in their area.
	Mayor's Air Quality Fund (MAQF)	Funds from the MAQF can be used to support the switch to EVs, for example through funding EV parking spaces or facilities for EV delivery vehicles. MAQF funding requires boroughs to meet a number of bidding and assessment criteria, including the securing of match-funding for bids. Currently the MAQF is in its third and final round which will last for three years. Additional rounds may open in the future.
	Liveable Neighbourhoods - TfL funded	EV charge points could be included as part of a local Liveable Neighbourhoods scheme within a borough. Funding awarded as part of such a scheme could be allocated specifically for EV charge points.
Investors	EV Charging Infrastructure Investment Fund (CIIF)	This £400 million fund – up to half of which will come from the UK Government – is being privately operated and will catalyse the rollout of electric vehicle charging infrastructure. Note, this is effectively a loan rather than a grant fund.

Funding for the installation of charge points can also be obtained through Section 106 agreements (planning obligations under Section 106 of the Town and Country Planning Act

1990 focused on site specific mitigation of the impact of development) and the Community Infrastructure Levy (CIL).

New developments are required to provide charge points as set out in the GLA's Land for Industry and Transport supplementary planning guidance (SPG) and borough Development Planning Documents, masterplans and site development briefs should reflect this guidance. However, where additional site specific mitigation is required S106 funding and/or CIL may be obtained for the delivery of additional EV charge points.

Procurement options

There are a number of procurement options available for the installation of charge points. Awarding authorities should ensure charge point operators have been appointed via a competitive dialogue procurement process and that charge point operators meet certain requirements. These requirements should include, but are not limited to, the following:

- Health and safety
- Cyber security
- Finance (eg customer payments, financial reporting)
- Infrastructure (eg standards, design and functionality)
- Installation and commissioning back office and operations (eg customer service, national charge point registry, data sharing)
- Maintenance
- Accessibility for different user groups

Local authorities can access our Electric Vehicle Charging Infrastructure framework as an example for guidance and the UKEVSE Procurement Guidance.

Available frameworks

There are a number of procurement frameworks that are available, or could be useful, particularly for the public sector:

TfL's Electric Vehicle Charging Infrastructure Framework

Local authorities can access our Electric Vehicle Charging Infrastructure Framework for the supply, installation, maintenance and operation of slow – fast charge points that provide a power outage capacity of less than 22kWh. The framework can be adapted to meet local needs and can also link in with the maintenance agreement between the supplier and the borough. The framework includes seven providers and was awarded in July 2018, to run for an initial term of three years. The framework is successfully used as part of GULCS.

Rapids

For the delivery of rapid charge points local authorities can access our Rapid Charge Point Framework. As with the electric vehicle infrastructure framework, this can also be adapted to meet local needs. The framework includes five charge point providers and was awarded in May 2017, to run for up to four years.

Design of EV charge point locations

This section covers guidance on where to locate charge points and the basic design principles that should be considered when installing a charge point. It also sets out considerations relating to other users of the street space around charge point infrastructure.

Where to locate charge points

The EV Infrastructure Delivery Plan gives insights into the scale and location of charge points required.

There are four core themes that will ensure the best service for current and future EV users:

1. Identify current user demand
2. Provide for future switch
3. The right charge point in the right place
4. A good geographical spread

In 2017 we also issued a location guidance document giving an overarching view of the infrastructure and where in London it is required.

The process for installing charge points begins with site selection based on current and future demand and is often an iterative process with initial sites chosen, design solutions considered and then a series of assessments followed by planning permission, all of which can sometimes lead to a site being excluded as a suitable location.

When considering where to locate a charge point it is also important to think about the availability of the capacity in the local electrical network and whether it can support the new infrastructure. Also consider if the electricity supply installed is suitable for an upgrade as this is likely to cost more than the EV charge point installation itself. SSE and UKPN have advice on this on their respective websites: https://www.ssen.co.uk/Connections/EVconnections/ and https://www.ukpowernetworks.co.uk/electricity/electric-vehicle-charging-point

Product design considerations

When choosing the EV charge point it is worth considering how to futureproof the equipment to reduce waste and minimise the risk of stranded assets. For the charge point you should consider whether it is:

- Upgradeable
- Easy to replace
- Modular - a modular charge point design that would allow components to be easily replaced and upgraded while keeping the same charge point housing
- Multifunctional

Please note that any future material changes to design and material, even changes to colour, could make it necessary to re-apply for planning permission (see Section 5).

BEAMA are producing their own guidance which will give further useful details on product design considerations. Guidance is due to be published in the first half of 2020 and will be available through the BEAMA website: http://www.beama.org.uk.

Design principles

Consideration needs to be given to all those using the space around an EV charge point, whether on or off-street and whether or not the charge point is being used. When selecting sites for a charge point considerations will need to ensure that they will be easy to use and users will feel safe while using them. Thought also needs to be given to other users of the street to ensure they do not experience any inconvenience caused by charge point users or find space is constrained as a result of charge point provision. The following principles can help identify potential sites for charge point provision, but also to ensure the charge point type is site-suitable. The table below sets out key points around overall design principles.

Overall design principles

Safety	The location should be safe for a user to access the charge point at all times of day, without introducing risks to road safety or personal safety for themselves or other road and footway users. Key considerations include: - Adequate ambient street lighting and good lighting of the charge point - Chargers that are not placed close to junctions and crossings to risk obstructing the inter-visibility sightlines between motorists and pedestrians - There should be a sufficient amount of level surface around the charge point to allow easy access to the charge point by wheelchair users on the footway - Charge points should not create potential hiding places or locations for anti-social behaviour - Cables should not be run in such a way to cause an obstruction. More specifically, it would be unacceptable where this creates a trip hazard or is at body or vehicle height. Any cable obstruction will have negative implications for road safety - There should be sufficient drainage, especially near basements and in buildings to mitigate flash flooding or fire-fighting measures - Equipment installation should be in accordance with the Institution of Engineering and Technology's 'IET Code of Practice for Electric Vehicle Charging Equipment' ISBN:184919839X
Comfort	The site should have sufficient space for a user to access the charge point without negatively impacting any walking or movement around the charge point, especially for any disabled pedestrian. Footways should provide a clear zone of at least 2m width to allow two wheelchairs to pass each other comfortably, even when the charge point is in use. However, the Pedestrian Comfort Level (PCL) also plays a key role in site selection. The site need to be able to demonstrate a PCL of no less

	than B+ to avoid creating constrained space that could negatively impact pedestrian movement. Consider how usage may change throughout the day. For example: - Near bus/coach stops and taxi ranks where passengers may be boarding/alighting and mobility ramps may be deployed (unless installing rapid chargers for taxis) - AM and PM peaks in pedestrian flows, especially around bus termini, railway stations, Tube stations and other transport hubs where pedestrian flows can be particularly heavy - Forecourts that may be used for outdoor dining, displays and market stalls - Near event hosting locations such as stadiums where crowding occurs periodically
Inclusivity	The charge point should be easy to use for disabled users. This is especially so with regard to the provision of comfortable space for wheelchair users. A charge point that is orderly with well aligned equipment will be particularly beneficial for a visually impaired pedestrian to navigate around intuitively.
Coherence	The charge point should be easily identifiable so people can clearly see where they can access EV charging. Additionally, well aligned equipment that contrasts with the local environment will help increase the awareness of the existence of a charge point for pedestrians who may be visually or cognitively impaired.
Attractiveness	The charge point should not clutter the local environment either physically or visually. For example, fast and rapid charge points are unlikely to be suitable in some heritage or conservation areas. Hub locations could provide opportunities to create a new urban space with multi-functions. This could add to the location's attractiveness for users to wait while charging their vehicle. Seating in such locations would also be beneficial for disabled users of hubs and should be a consideration. It is important to avoid siting a charge point close to trees to prevent risk of damage to the canopy and tree roots. The location of the charge point should have sufficient room for maintenance with no litter traps.
Reliability	User satisfaction will depend on their confidence in charge point provision, which means charge points should have 24-hour access (Monday to Sunday), preferably with free or discounted parking charges. However, charging time limits will depend on individual boroughs as some may have local time restrictions. Maintenance is crucial for ensuring charge points are in good working order to build user trust in the facilities and also to encourage more future users. There should be a maintenance agreement between the charge point manufacturer and the borough or private customer; this will need to be agreed as part of the procurement process. A maintenance plan should include regular checks and an agreement for timely necessary repairs by maintenance crews.

Design principles specific to off-street charging hub facilities

Ideally, charge points are best in off-street hub locations. They offer greater flexibility and more space to have many charge points in a single location. The EV Infrastructure Delivery Plan defines a hub as having a minimum of six chargers enabling simultaneous charging of six or more vehicles.

Examples of hub locations could include:

- Petrol stations and motorway services
- Retail outlets such as supermarkets
- Park & Ride and station car parks
- Other publicly accessible car parks
- Private off-street spaces such as at workplaces (which are publicly accessible)

In these locations it will be important to assess entry and exit points to and from the hub to ensure safe and easy access. Specific consideration should be given to any additional needs that wheelchair users might have in relation to accessing hubs and charge points in these locations.

For rapid charging hubs in particular there are some additional points to consider in relation to where such a hub might be located. For example:

- The hub should ideally be in close proximity to roads with high traffic flow where the need for this type of hub will likely be greater
- The hub should avoid areas of conservation or listed buildings (they have a higher risk of rejection at planning)
- There should be sufficient space to accommodate an electricity sub-station, if one is not already located nearby, to feed all rapid chargers (minimum 50kW three phase each)
- For taxis, being close to major transport hubs, such as main line train stations and airports, will be beneficial

Additionally, when planning rapid charging hubs, consideration should be given to the inclusion of additional facilities for people to use while waiting for their vehicle to charge. For example:

- Protection from the weather (note that roof/weather protection will require additional planning permission)
- Toilet facilities (including accessible toilet facilities)
- Food/drink facilities
- Somewhere warm and dry to sit other than inside the vehicle
- Load balancing system to enable a better opportunity for a reliable and constant EV charge

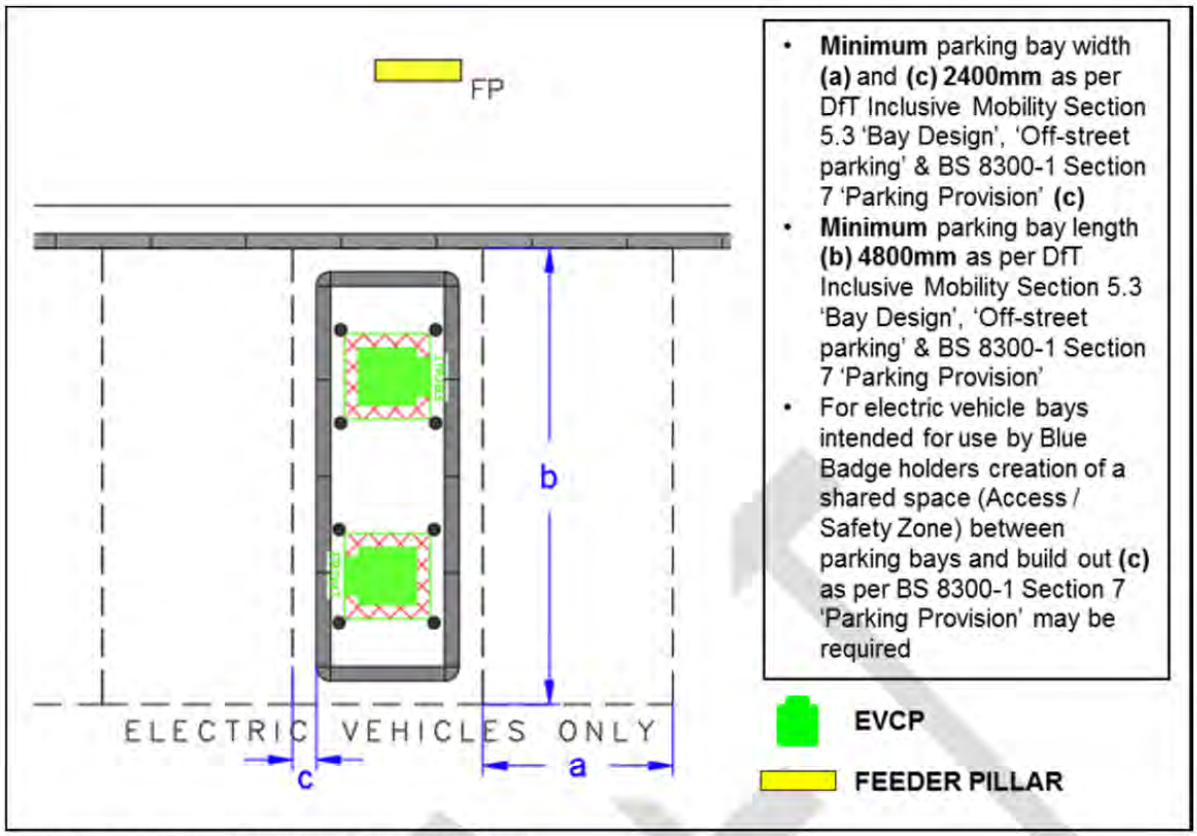
- Good quality WiFi connection

Example designs for off-street charge point infrastructure

The following technical diagrams provide examples of how specific off-street charge points might be designed, including requirements for disabled users.

Rapid electric vehicle charge point installation in an off-street car park

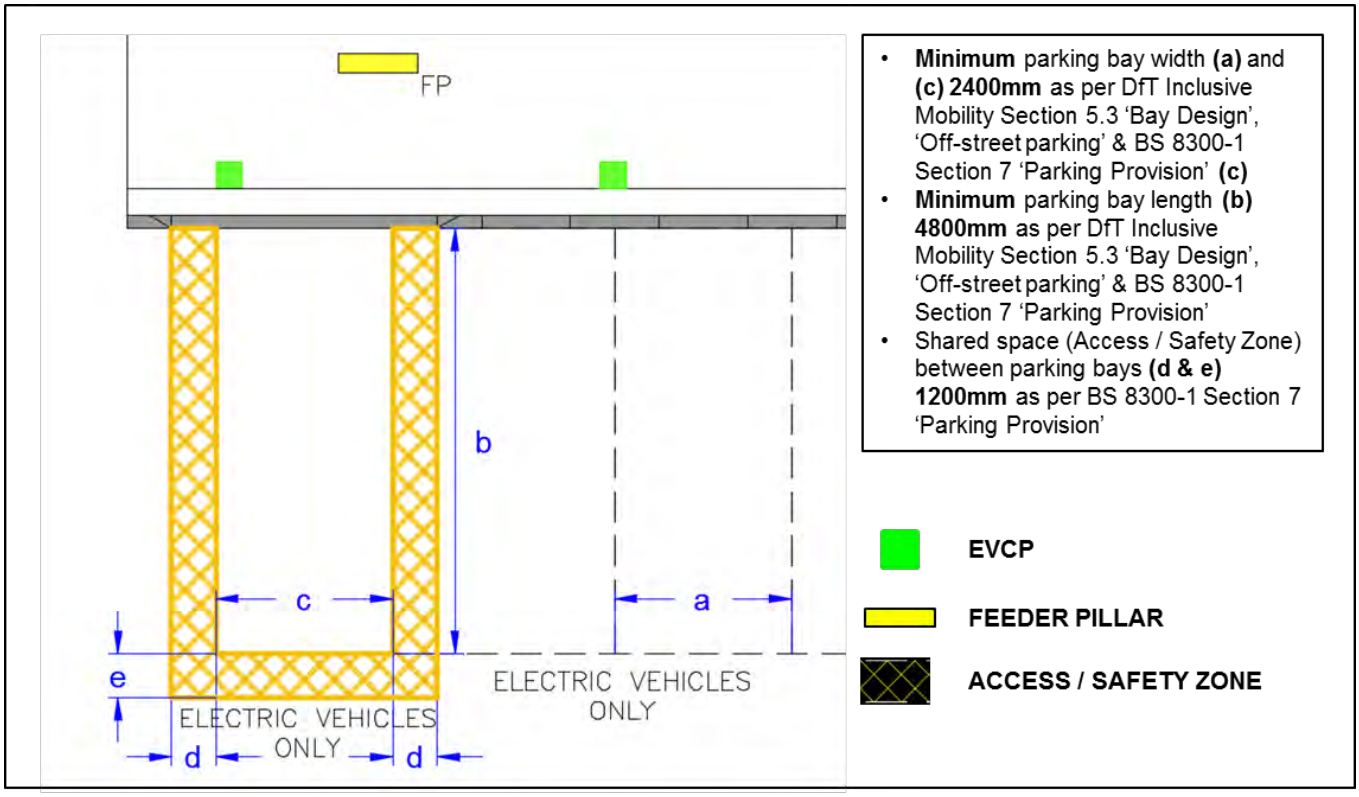
The diagram below shows a general perpendicular arrangement for two charge points on a perpendicular island in an off-street car park. The charge point should have a distance of at least 2.5m from each other and the feeder pillar.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Electric vehicle charge point installation in an off-street car park

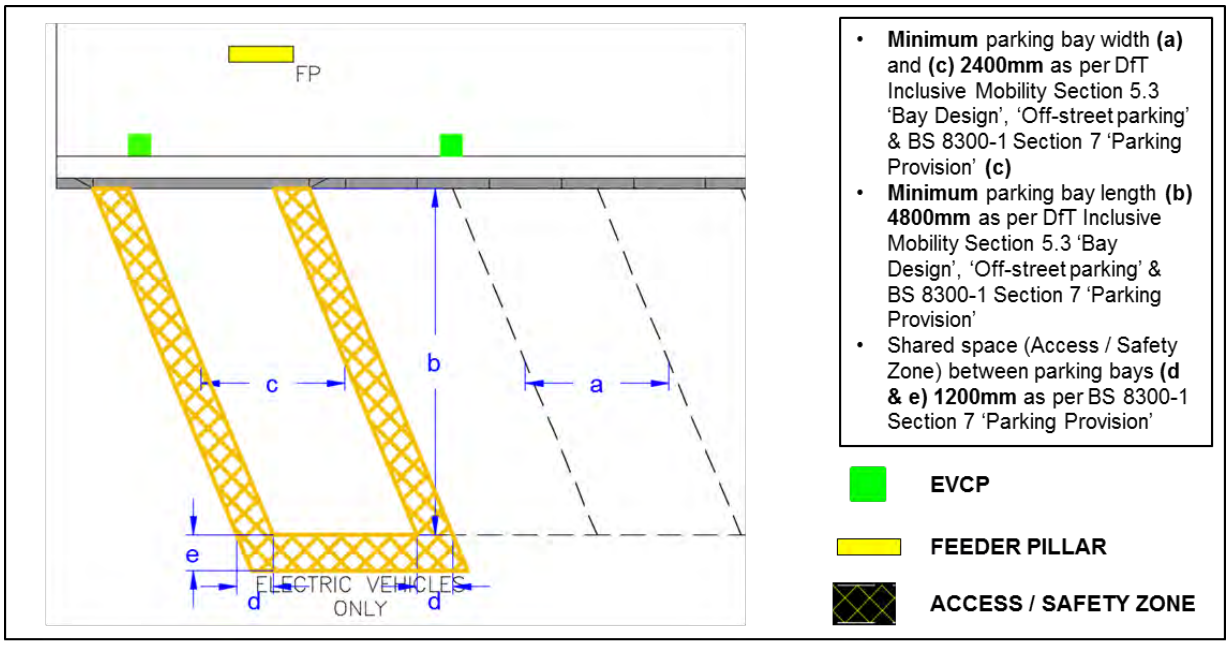
The diagram below shows the general arrangement for providing two charge points in an off-street environment for disabled users. The space width minimum (a) should be 2700mm, preferably 3600mm (c) to allow for access around the vehicle. The minimum vehicle length (b) is 6600mm. The charge points are set back at the standard of 450mm from the kerb edge, and should have a distance of at least 2.5m from each other and the feeder pillar.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Electric vehicle charge point installation in an off-street car park

The diagram below shows the general arrangement at an angle for providing two charge points in an off-street car park for disabled users. The space width minimum (a) should be 2700mm, preferably 3600mm (c) to allow for access around the vehicle. The minimum vehicle (perpendicular) length (b) is 4200mm. The charge points are set back at the standard of 450mm from the kerb edge, and should have a distance of at least 2.5m from each other and the feeder pillar.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Design principles specific to on-street charge points

Providing an on-street charge point requires additional considerations and it will largely depend on the type of street and space available to ensure the overall design principles are met.

Many of the design principles can be adhered to by following our Streetscape Guidance, which now includes a section on electric vehicle charge points. It is essential that any on-street charge point can provide a clear zone of at least 2m width for two wheelchair users to pass each other comfortably, even when the charge point is in use. It will be particularly important to ensure an outcome of no lower than a B+ pedestrian comfort level (PCL).

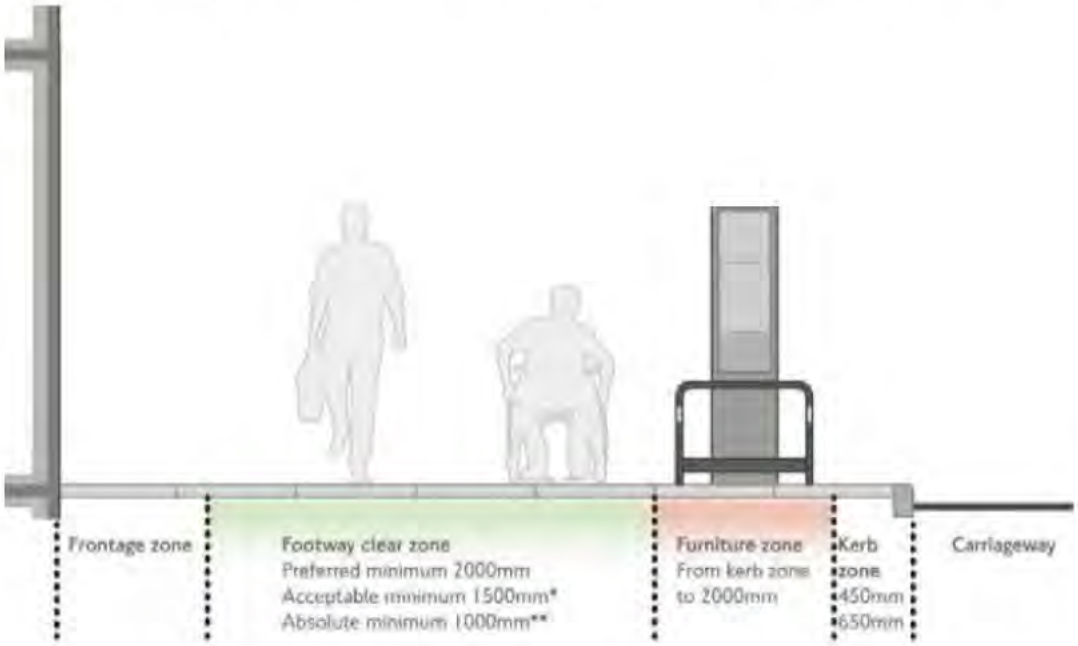
This means enough space for people walking and for choosing a route and to access buildings. Importantly, this allows space for two wheelchair users to pass each other. It also accommodates space for building frontages; this will depend on the street use but there should be at least 2000mm of clear footway (see the PCG for further detail). However, it may be acceptable to allow a C+ PCL where there is a transport interchange or office and retail provision.

To achieve this, the design of the facility should avoid creating pinch points and restricting pedestrian movement. The easiest way to achieve this is to provide the facility in the carriageway. Ideally, this should be on a footway build-out and designed with the following considerations:

- Carriageway width should be sufficient to allow safe manoeuvring into and out of the bay with a 'buffer zone' to protect drivers accessing their vehicles and charge points, while other traffic can pass by safely. The buffer zone should be at least 1m depth for space of a standard body width (based on PCG standard body ellipse of 600mm) moving around the vehicle, with some accessible for wheelchair users.
- Build-outs may encourage pedestrians to cross the road where it is unsafe due to restricted inter-visibility sightlines with motorists. Therefore, additional safety measures may be required
- A charge unit should ideally be provided on both sides of a build-out in order to retain more space for pedestrians on the footway where necessary
- Streets where traffic speed is low to medium will make it easier and safer for drivers to use the charge point
- Where charge points are located within existing parking bays (excluding 'Clearway' bays that need to be kept clear of parking at particular times of day) the following should be considered:
    - Loading bays should be retained and should incorporate chargers for commercial vehicles
    - Disabled bays should be retained and incorporate chargers
    - If designated bays, such as loading bays, are relocated they should only be moved to within a practical distance and not be removed from the immediate area without Traffic Authority approval
- EV charge point bays should not be introduced in locations where they will reduce kerbside access for essential servicing activity of nearby buildings

The EV charge point should only be located on the footway that can provide at least 2m width for a footway clear zone and no less than a B+ PCL. The charge point should be placed in the furniture zone at least 450mm from the kerb edge (shown in the illustration (below).

'Furniture zone design standards' – Streetscape Guidance (page 205)



The location of the electricity supply will need to be considered as it needs to be close enough to allow the feeder pillar to be connected. Always consult an electrical engineer when locating and specifying a feeder pillar unit. Where the nearest supply source is not accessible, additional isolating pillars may be necessary. Refer to our Streetscape Guidance (section 12.7) for further information.

Lastly, as recommended in our Electric Vehicle Infrastructure Delivery Plan, reducing the streetscape impact of chargers is of utmost importance. Consideration should be given to the surrounding environment and the physical dimensions of the charge point to make an assessment of whether it is a suitable choice for the area. This should take into account whether or not the location is a conservation area, or close to a heritage site. It should also consider whether the charge point is likely to detract from the look and feel of the surrounding streets. The photographs on page 9 set out some examples of the different types of charge that could be considered, including low-profile charge points that are incorporated into lamp columns or bollards, while at the same time ensuring they do not become trip hazards and are accessible for all.

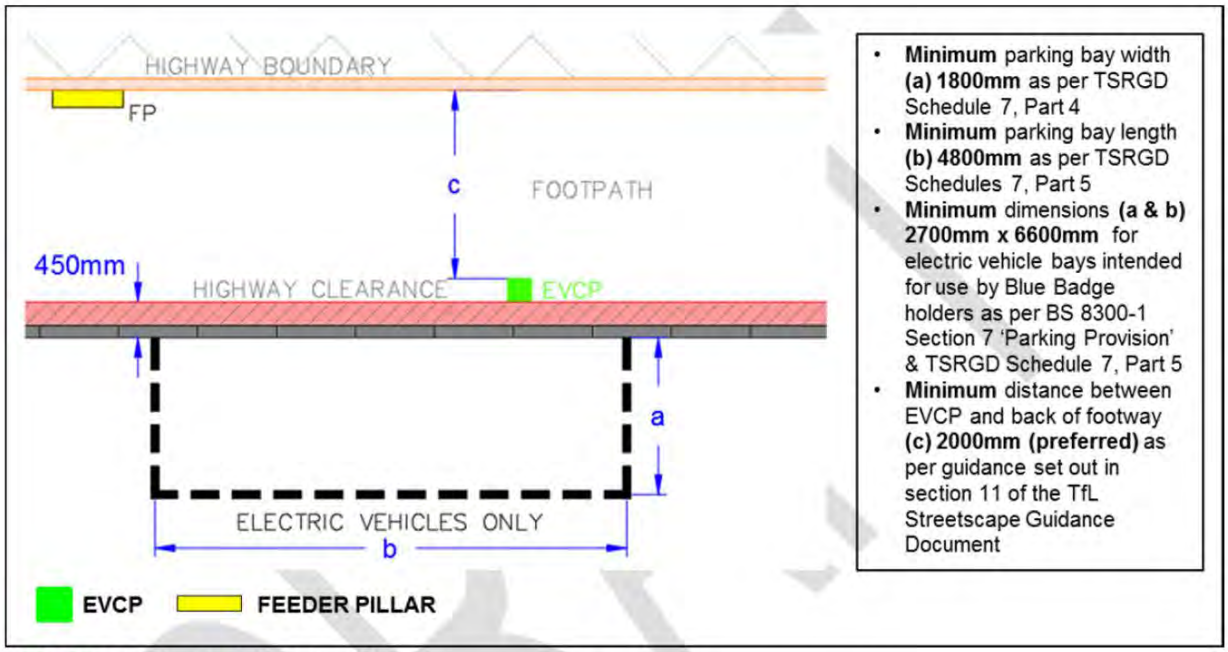
Examples of designs for on-street charge point infrastructure

The following examples show different designs for on-street facilities of all types of charge points (including Rapid Charge Points).

Electric vehicle charge point installation on the footway

The diagram below shows a general arrangement for providing charge points on the footway. The minimum footway width of 2m (c) should allow comfortable user access and

walking route. The charging bay - width (a) and length (b) - needs to be sufficient for a driver to have safe access around their vehicle. The 450mm space is the standard for vehicle overhang to protect on-street furniture.

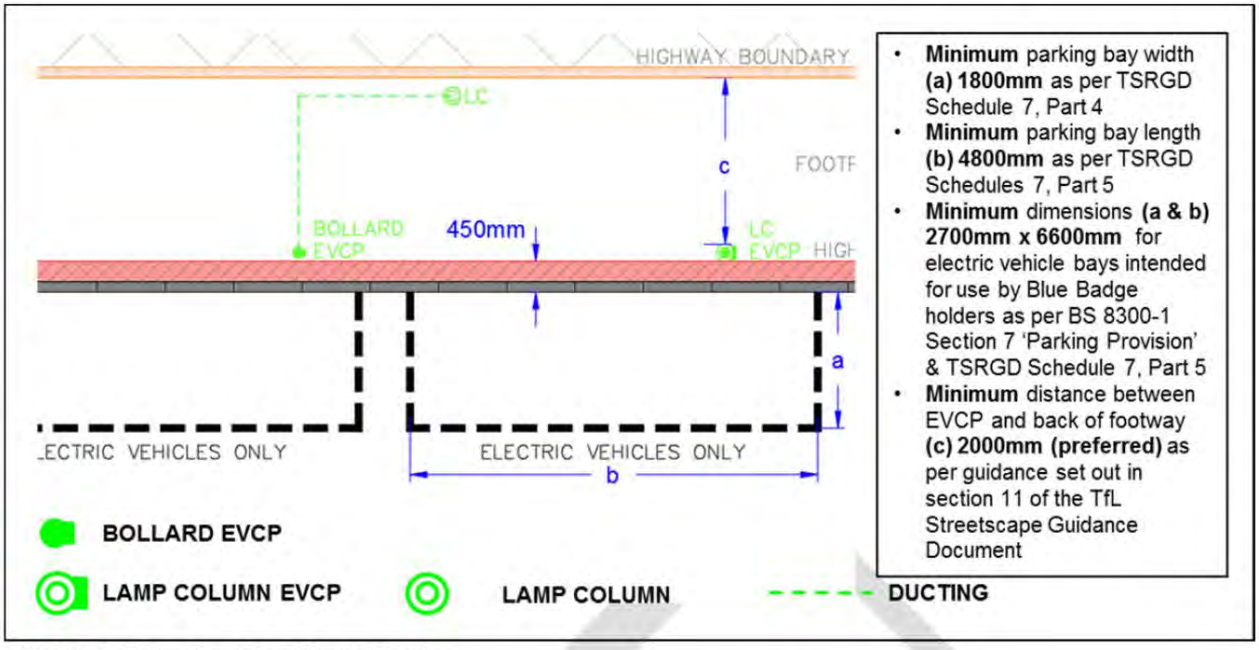


TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Lamp column electric vehicle charge point installation on the footway

The diagram below shows a general arrangement for providing two charge points on the footway with one for connection to a bollard and another to a lamp column. The minimum footway width of 2m (c) should allow comfortable user access and walking route. The charging bay - width (a) and length (b) - needs to be sufficient for a driver to have safe access around their vehicle.

The 450mm space is the standard for vehicle overhang to protect on-street furniture.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

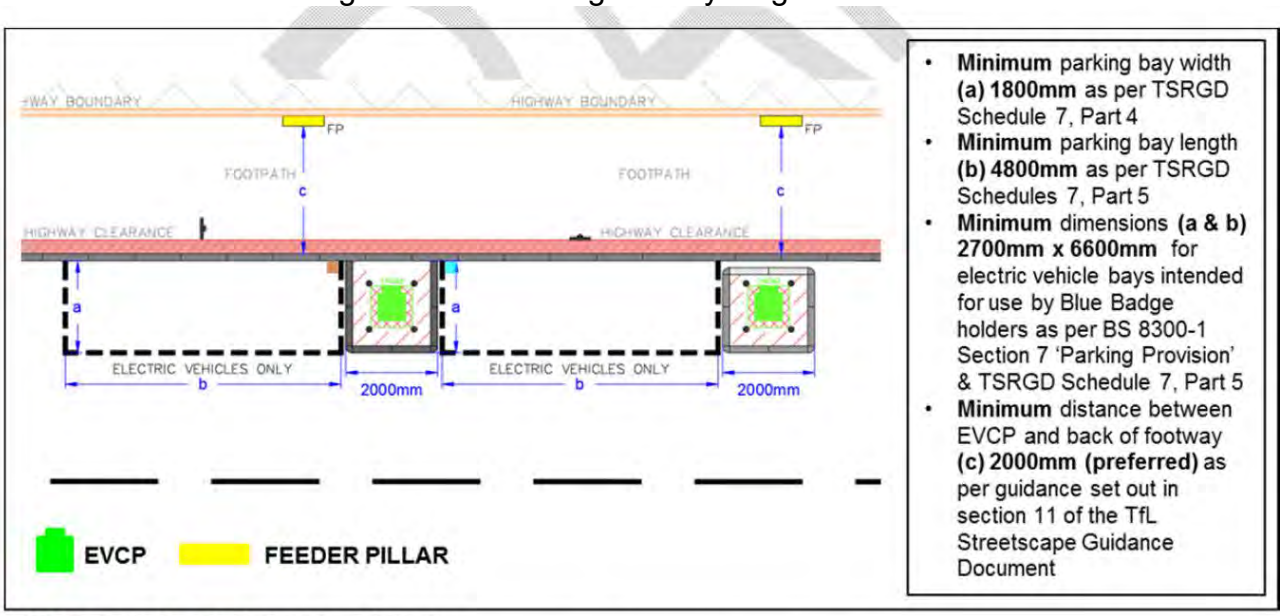
Given the increased size and energy provision for rapid chargers on-street, the following issues need to be considered:

- Review local planning policies with design standards
- Avoid locations resulting in many utilities around the proposed charging bay
- Avoid locations within the root protection zone of a tree, unless appropriate tree protection measures have been agreed by an arboriculture expert from the Highway Authority
- Ensure at least 2500mm clearance between feeder pillar, charge point unit, charge bay and any other powered street furniture eg lamp columns, existing electrical supply pillars, unless otherwise approved by the Highway Authority's electrical engineers
- Use polymer-based bollards and offset at least 120mm from the corners of the charge points adjacent to the kerb edge to protect the rapid charge point from vehicle impacts

The two following diagrams provide more detail on designing for a rapid charge point.

Rapid electric vehicle charge point installation in the carriageway - example 1

The diagram below shows the general arrangement for providing two rapid charge points on separate build-outs. The minimum footway width of 2.5m (c) should allow comfortable user access and walking route. The charging bay - width (a) and length (b) -needs to be sufficient for a driver to have safe access around their vehicle. Where a bay is between build-outs, consideration should be given to increasing the bay length.

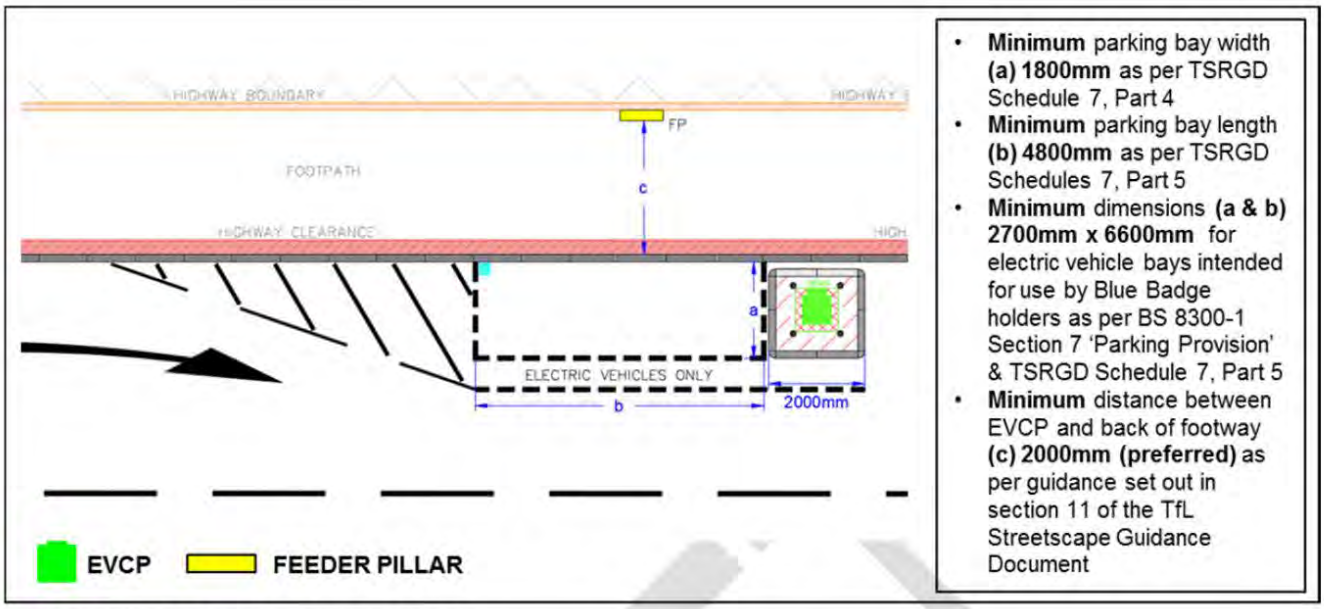


TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Impact on footway and carriageway draining must be considered when installing charge points on build-outs.

Rapid electric vehicle charge point installation in the carriageway - example 2

The diagram below shows the general arrangement for providing a rapid charge point on a build-out. The minimum footway width of 2.5m (c) should allow comfortable user access and walking route. The width includes the standard 450mm from the kerb for vehicle overhang to protect on-street furniture. The charging bay - width (a) and length (b) - needs to be sufficient for a driver to have safe access around their vehicle. The hatch marking helps deflect main route traffic away from the charge point bay with additional space for driver access. In heavily trafficked areas, hatching is to be provided to provide a 0.5m buffer zone between the bay and the running lane.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Impact on footway and carriageway draining must be considered when installing charge points on build-outs.

Exclusion zones between electrical street furniture

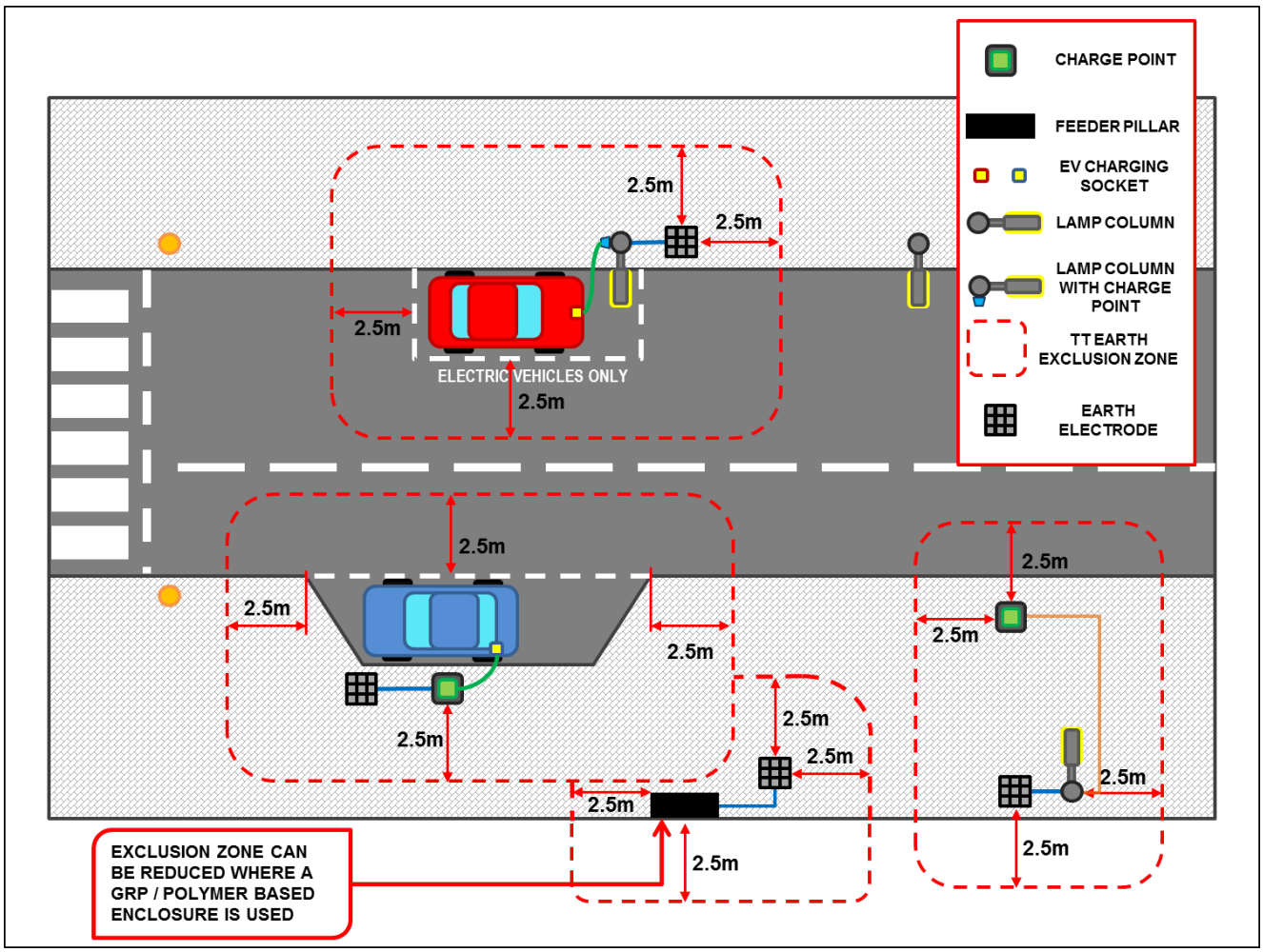
Charge points installed on the highway are required to have a TT earthing system in accordance with Energy Networks Association (ENA) Engineering Recommendation G12, Issue 4, Amendment 1 (2015) and UK Power Networks (UKPN) Engineering Design.

Standard EDS 06-0017 'Customer LV Installation Earthing Design'

This earthing system is different from that used on most other electrical street furniture (street lights, traffics signals, etc.). In line with the IET code of practice for electric vehicle charging equipment installations, any charge point installations (including earth electrode(s)) must be situated at least 2.5m, 'arms reach', away from any point of any other type of electrical earthing system. This is to prevent the risk of dangerous touch voltages between adjacent electrical street furniture on different earthing systems. This earthing exclusion zone must also consider the area where the electric vehicle will reside for the duration of a charging session. An illustration of this exclusion zone can be seen in the diagram below.

Electric vehicle charge point – TT earthing exclusion zone

The diagram below shows the general electrical earthing distance needed between adjacent electrical earthing equipment that may be on different electrical earthing systems.



Signs and road markings

For signs and road markings refer to Traffic Signs Regulations and Directions (TSRGD) for appropriate signing and carriageway markings.

For taxi charging bays, yellow lines are included and are marked as 'E- TAXIS'. For other vehicles, bays have white lines and are marked as 'ELECTRIC VEHICLES' or 'ELECTRIC VEHS'.

With regard to road signs, they should be of appropriate size, within the furniture zone, orientated as required by the Traffic Signs Manual (Chapters 3 and 5) and their poles should be consistent with the Highway Authority's streetscape palette.

Planning and Consents

This section sets out the considerations for installing charge point infrastructure in relation to the necessary planning and consents requirements.

Planning permission

Local authorities benefit from permitted development (PD) rights in relation to the installation of EV charge points. PD rights allow certain changes to be made without the need to apply for planning permission. (See the Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2011, Town and Country Planning (General Permitted Development) (England) Order 2015 and Town and Country Planning Regulations SI 2019 No 907 for further information).

For EV charge points being installed on the highway, Class A, (art 12, Schedule 2 is the relevant section of the General Permitted Development Order (GPDO). This allows local authorities to install charge points on the borough highway.

For charge points being installed on private land, Class D& E, Part 2, Schedule 2 of the GPDO applies.

Class D focuses on electrical outlets mounted on a wall for recharging electric vehicles. To benefit from permitted development rights the units have to be less than 0.2 cubic metres; over 2m from the highway and not within a designated scheduled monument or the curtilage of a listed building.

Class E deals with electrical upstands for charging vehicles in off-street parking locations. These can be up to 1.6m in height in residential grounds or 2.3m in height in all other cases. They must be over 2m from the highway and not within a designated scheduled monument or the curtilage of a listed building. In addition there can only be one upstand provided per parking space.

If these conditions cannot be met, planning permission will be required.

Third parties looking to install a charge point on the highway (eg anyone other than the local authority) may need to obtain planning permission. Early engagement with the relevant highway and planning authorities should be undertaken regarding any site being considered.

Submitting a planning application

All planning applications being submitted for a charge point will require:

- Location plan (1:1250)
- Existing and proposed site plans (to scale) showing street features such as street furniture, signage, trees, equipment, etc
- Justification for installing the charger in the proposed location
- Elevation drawings of the charger and feeder pillar
- Foundation drawings for charger

If the site is in a flood risk area, conservation area, near a listed building or close to a tree, these issues will need to be addressed and the application demonstrate that the charge point will not have a detrimental impact. Further advice on the level of information required can be obtained from the relevant planning authority.

Consents

The following highlights the typical consents required to deliver EV charge points. Relevant specialists within the local highway authority should be engaged as different sites require different consents.

Highway and traffic consent

For any construction works on the highway to be carried out, including on privately owned roadways and pavements, it may be necessary to acquire highways and traffic related powers, consents or agreements from the relevant borough(s) or third parties. The following is a high level summary of the main consents potentially required for the installation and operation of charge points:

Section 278 Agreement (Highways Act 1980)

A section 278 agreement is a legal agreement between the relevant highway authority and any person, for example a developer, for works which the highway authority believes will be of benefit to the public. This is usually on the terms that the person or developer pays the costs of the works as specified in the agreement. The agreement may also provide for making payments to the highway authority in respect of the maintenance of the works to which the agreement relates.

Section 8 Agreement (Highways Act 1980)

A Section 8 agreement allows a local authority or ourselves to construct, reconstruct, alter, improve or maintain the highways of another local authority and vice versa. Ideally detailed designs should be completed prior to entering into the agreement. However, the agreement can also be an ’in-principle‘ agreement based on concept design.

Permanent Traffic Management Orders - Section 6 (Road Traffic Regulation Act (RTRA) 1984)

A Permanent Traffic Management Order (PTMO) is the statutory instrument used to control moving or stationary traffic on the highway. We will draft, advertise and process the PTMOs if on the Transport for London Road Network (TLRN), and the relevant London borough will process it if it is on a borough road. If we are processing PTMOs on borough highways then a Section 101 agreement under the Local Government Act (LGA) 1972 with the borough will need to be completed (or vice versa).

Section 17 Notice (London Local Authorities and Transport for London Act 2013)

The Section 17 process refers to the public notification requirements stipulated by the London Local Authorities and Transport for London Act 2013. It dictates that a notice be posted on/near the site to inform the public of the authority’s intention to place a charge point in this location and that materially impacted property owners be notified. A notification period is to be no less than 28 days, during which public representations may be made. A London authority cannot exercise their powers to which the notice relates until they have considered all representations made to them in connection with the proposal within the period specified in the notice.

Section 50 Street Works Licence (NRSWA 1991)

This must be applied for in situations where a scheme promoter may wish to place or retain apparatus in the street and thereafter to inspect, maintain, adjust, repair, alter or renew the apparatus, change its position or remove it. The licence may be issued by the relevant highway authority with such conditions as it deems necessary.

London Permit Scheme (LoPS) – Traffic Management Act 2004, Traffic Management Permit Schemes (England) Regulations 2007

This scheme, designed to control the carrying out of specified works in specified streets in a specified area whereby utility companies inform highway authorities of their intentions to carry out works in their areas. Permits are required under the LoPS in respect of all registerable activities as referred to in the Code of Practice for Permits and Statutory Guidance, both dated March 2008.

In addition, a Road Safety Audit (RSA) may be required. RSAs are essential in assessing the operational road safety impact of a new street scheme where there is a physical change that will impact on road user behaviour.

Undertaken by a team of independent and specially trained auditors, RSAs consider the safety implications of design interventions, including the impact of the overall layout on the network under all anticipated operating conditions and the potential implications for all road users, especially the most vulnerable.

The process for completing RSAs on our road network is specified in TfL Procedure SQA-0170. Local authorities may have their own RSA procedure; if not, the use of our Procedure is commended, or the National Standard for Road Safety Audit (Design Manual for Roads and Bridges Standard GG-119) may be followed.

The highway authority can request the removal or relocation of third- party street furniture to accommodate the delivery of schemes. In some cases, planning or listed building consent may be required. The relocation of listed street furniture should be avoided if possible.

Communication and consultation

Communicating the benefits of EV charge points will be key for implementation as charge points are often installed in the public realm. All relevant stakeholders should be informed of the rationale for installing charge points, how they are likely to benefit the local community and the governance processes/when they can provide feedback.

Potential stakeholders, particularly for public and/or on-street charge points, include:

- Planning and highway authorities
- Disability groups
- Emergency services
- Energy providers
- Landlords
- Property developers
- Local politicians and/or Members of Parliament

- Local residents/Londoners and resident groups/community or conservation groups
- Transport for London
- Freight and small business stakeholders (eg the FTA, Federation of Small Businesses)
- Business Improvement Districts

Some of these will be formally consulted if planning permission is sought and early engagement will avoid abortive work and speed up the overall process.

Implementation, operations, safety and maintenance

This section covers the key aspects of installing an EV charge point and what should be considered in terms of operation, safety and ongoing maintenance.

Implementation

Electrical guidance

London Councils, the GLA and ourselves have produced Electrical Guidance to assist London boroughs in the delivery of residential EV charge points. The guidance includes clarification of roles and responsibilities between the charge point operators and London boroughs (or Private finance initiative contractors).

Electrical standards for installation

The Institution of Engineering and Technology (IET) published under their IET Standards a Code of Practice for Electric Vehicle Charging Equipment Installation (3rd edition). The scope of the document covers the installation of conductive electrical vehicle charging equipment in all locations, eg on-street, commercial and industrial (in or adjacent to business premises, single level or multi-storey public and private car parks and filling stations) and domestic installations (in or adjacent to houses and associated garages). The 3rd edition has been fully updated to BS 7671:2018.

Power supply

Energy connections can take time to deliver and may require an update to grid connections where sufficient power does not exist; this mainly applies to rapid chargers or hubs where energy requirements are greater. UK Power Networks (UKPN) has produced a constraints map available at the following link: https://innovation.ukpowernetworks.co.uk/2019/06/10/ev-network-impact/ . UKPN also have further relevant guidance on their website: https://www.ukpowernetworks.co.uk/electricity/electric-vehicle-charging-point and SSEN also have guidance available online: https://www.ssen.co.uk/Connections/EVconnections/

To help with requesting a power supply the Energy Networks Association has published combined Guidance on Heat Pump and Electric Vehicle Charging Infrastructure Installation. It details the process and forms to be completed for submission to the local Distribution Network Operator (DNO). Currently, installers need to complete a range of different forms and meet different requirements but a streamlined process with minimal paperwork is being established.

The UK electricity network is split into regions, each with a local distribution company. For London there are two:

UK Power Networks (UKPN) - 0800 029 4285; https://www.ukpowernetworks.co.uk/
Scottish and Southern Electricity Networks (SSEN) - 0800 048 3516; https://www.ssen.co.uk

Temporary traffic management handbook - keeping people safe at roadworks

Our temporary traffic management handbook sets out good practice to those involved with roadworks and other construction related activities on London's roads. London's road network has changed in recent years, with far more people choosing to travel on foot, by cycle or by bus, and this guidance specifically focuses on these travel choices. It supplements existing national standards, and it is expected that the guidance is followed by

all those involved with the design, planning, implementation and inspection of temporary traffic management on the TLRN.

Timescales

Timescales can vary between different projects due to many factors, for example, planning, consents and power connections. The planning application validation and determination by the planning authorities takes approximately 8-12 weeks. On the TLRN, for example, it has taken an average of 38 weeks to install rapid chargers on private land and where wayleaves are required this can take considerably longer. Charging points themselves can be installed within 6-8 weeks, but these other issues can mean deployment must be planned at least six months in advance.

Hubs can also take longer to install than single or double charge points, due to their added complexity and the number of charge points being installed. Gaining a connection to the power network also varies depending on the size and number of charge points. UKPN provide information on this on their EV charge point webpages (https://www.ukpowernetworks.co.uk/electricity/electric-vehicle-charging-point). Typically, for a smaller connection (1-3 fast charge points or one rapid) it will take 8-12 weeks for a connection. For a large connection (multiple fast/rapid charge points in, say, a hub) it can take six or more months. SSEN provide information on their webpages as well, which can be found here: https://www.ssen.co.uk/Connections/EVconnections/

Operations

From a user perspective, it would be ideal for charge points to be available to customers at all times. However, there are some cases where this is not operationally possible - for example, where the 'shared private infrastructure' model is adopted. This is discussed further in the EV Infrastructure Delivery Plan, but it broadly consists of a private entity opening up its charge points for public use at certain times of day.

Charge points should be open to all as much as possible (as set out in the EV Infrastructure Delivery Plan), but there are instances where specific user needs justify dedicating the charger to the user type. Examples of this include London taxis, particularly in central London. In the early phases of delivery for rapid charge points it was important to cater for taxis as new licensing requirements meant that they were likely to be early adopters of EVs with a significant need to charge in central London. Consideration should also be given to electric commercial/logistics vehicles, including small businesses, which may require/benefit from charge point access if they are undertaking local servicing and trades activities.

To facilitate ease of use, a 'pay as you go' model should be adopted where possible, with simple cost plans. Over the summer, the Government announced that it expects all newly installed rapid or higher-powered charge points to provide 'pay as you go' debit or credit card payment options by April 2020. They also signalled they expect industry to develop a roaming solution across the charging network, allowing electric vehicle drivers to use any public charge point through a single payment method without needing multiple smartphone apps or membership cards.

Some operators are considering differential charging for different users which may help with charger availability for those who have a higher operational need.

Booking systems could be considered in some instances. This would allow people to book a charge point for a certain time, providing greater reassurance that they will be able to secure parking at a charge point to recharge their vehicle. Some operators have implemented queuing systems to mitigate missed booking slots.

Interoperability

Interoperability among charging networks is a key enabler for use. Private service roaming platforms which act as a clearing house for charging transactions could be a future solution. Open Charge Point Protocol (OCPP) is another step toward interoperability of stations providing a common means of communication between themselves and among networks. A standards organisation, eMI3, is advancing OCCP to create the ability to roam among networks. BEAMA is working on a guide covering interoperability and we recommend checking their website for updates on progress.

Design life of charge point

At the end of the operational contract, all charging apparatus and cabling must be removed and any groundworks made good, returning it to the previous status unless the assets are taken over by another service provider. Consideration should also be given to how the charge point infrastructure might be disposed of if it is no longer required. Recycling options should be considered as much as possible. If the charge point is taken over by another provider then consideration needs to be given to this.

Safety

Consideration needs to be given to the safety of charging infrastructure, particularly in relation to the electrical elements of the charge point and what precautions need to be taken should the charge point be damaged or struck in an accident, for example. This is particularly important in relation to the feeder pillar infrastructure.

Parking controls and enforcement consideration

It is important to make sure that parking spaces next to charge points can be accessed easily by EV drivers, ensuring this could be done through local parking enforcement and providing dedicated EV bays where possible.

Controlled parking zones (CPZs) are in place in boroughs to reduce traffic congestion, improve road safety and promote other forms of transport as part of a London-wide transport strategy. The key objective of a CPZ is to reduce and control non-essential parking and assist residents, short-term visitors and local businesses. Within any CPZ, only those residents or businesses within the zone are entitled to permits. An incremental pricing structure for second and subsequent permits also assists in minimising the number of permits issued to individual residents and helps discourage multiple car ownership.

CPZs comprise various types of parking bay such as: permit holder bays (for use by resident or business permit holders and those with visitor permits); shared use bays (for permit holders and pay and display parking); and pay and display only bays (where permits are not valid). In a CPZ, hours and parking tariffs vary and signs indicate the hours of operation within the zone, during which time parking restrictions apply. Any parked vehicle that does not display a valid permit or voucher during operational hours may be issued with a Penalty Charge Notice (PCN). Local authorities are responsible for the enforcement of parking, usually carried out by Civil Enforcement Officers (CEOs) and through the use of CCTV cameras. CEOs adhere to two Codes of Practice which have been agreed with London Councils for on-street parking enforcement and the use of CCTV. More information is published on the London Councils' website.

New parking bays and changes to restrictions require a Traffic Regulation Order (TRO).

Boroughs may wish to consider introducing dedicated parking bays solely for the use of electric vehicles. A benefit of doing so means that local residents and businesses with electric vehicles will find it easier to secure parking next to a charge point. Non-dedicated bays located next to charge points may be used by all vehicle types, and this means non-EVs could take up parking spaces that could otherwise be used by an EV for charging.

Disabled parking

It will be important to provide designated charge points that are accessible spaces for disabled users, especially as there is already a lack of accessible parking in London. Alongside the general design principles, charge points for disabled users will require specific considerations to include users with reduced manual dexterity. Please refer to the DfT's Inclusive Mobility and British Standard BS 8300 to meet the needs of disabled people.The previous section titled 'Design of EV charge point locations' outlines in more detail some of these requirements, including diagrams of suggested designs.

Maintenance

Public trust in the availability of existing charging infrastructure is a large factor in realising the switch to EVs.

Fault reporting

Operators of charge points should clearly display who to contact in the event of a fault, and in many cases it will be the operator themselves who will be the main point of contact. A process for the reporting of faulty charge points should be in place, addressing any faults within a timely fashion and customers should be notified if possible with advice of alternative nearby charge points. Contracts could include penalties or fines to ensure charge points are fixed within an acceptable timeframe.

Crime and disorder

An agreement should be reached to address the following points:

- Agree approach to securing all charge points (including through production and delivery phases) and assets used in relation to the agreement
- Security precautions (including charge point design and on-street payment methods) employed to prevent misuse and theft of card details and other personal information
- Approach to data sharing with regard to data being stolen, for example through a cyber attack
- Strategy to be implemented when crime occurs, including at on-street locations
- Approach to monitoring internal security matters including but not limited to access control
- Reporting of incidents

Security

As part of the bidding process for procuring EV charge points, bid responses should outline how the provider will meet applicable UK security legislation including complying with the Data Protection Act 1998 and Counter-Terrorism Act 2008. A draft security policy should identify where responsibility for security lies for the services. The draft security policy should cover, as a minimum, the following:

- A security plan of how the operator will manage and protect confidential information including personal data, service systems integration and availability. The plan should indicate activities where it is expected the customer or other third parties should be involved
- Security measures for the services and service systems provided as well as the testing approach to demonstrate this
- Description of the approach for managing security breaches
- Communication links from the service system(s) to third parties
- Security measures for the removal of any customer and third-party data and security and/or related configuration information in the event of disposal of equipment or surplus equipment being resold or donated to another party

Data

Building up a picture of where charging infrastructure exists can be helpful for users to identify the location of available charge points, but also to help plan for the future and to identify gaps in the charging network across London. A final step in the process of installing a charge point should be to register it in the following ways:

Zap-Map

Zap-Map is a UK-wide map of EV charge points and aims to help EV drivers locate and navigate to available charge points. You can register new charge points through their website: https://www.zap-map.com/add-a-charge-point/

National Chargepoint Registry

The National Chargepoint Registry (NCR) was established by the UK government in 2011 to provide a public database of publicly-funded charge points across the UK. This was created in support of the government's objective to promote the use and sales of ultra- low emission vehicles. The government's Office for Low Emission Vehicles (OLEV) requires that all publicly funded charge points are registered on the NCR. OLEV is currently exploring options and engaging with industry on the best approach to making accurate data on all publicly accessible charge points freely available.

Collecting usage data

Where possible, usage data should be collected. This provides information on the level of use at charge points, how long they are being used for and for what types of vehicle. This can help to plan for the future expansion of charge points and detail where there is higher demand.

Appendix A - Glossary

BEAMA	British Electrotechnical and Allied Manufacturers – UK trade association for manufacturers and providers of energy infrastructure technologies and systems.
BEV	Battery Electric Vehicle. A vehicle powered by a battery, which can be plugged into an electricity source to recharge. Also know as 'pure' or '100 per cent' EVs, they have zero tailpipe emissions.
CEO	Civil Enforcement Officers. CEOs are responsible for enforcing parking, traffic and other restrictions and laws in England and Wales.
CIL	Community Infrastructure Levy. A planning charge introduced by the Planning Act 2008 as a tool for local authorities in England and Wales to help deliver infrastructure to support the development of their area.
CPZ	Controlled Parking Zone. An area where parking is restricted during certain hours of the day.
DNO	Distribution Network Operator. A company licensed to distribute electricity in the UK. They are responsible for distributing energy and maintaining the electrical supply system. In the London region there are two DNOs: UK Power Networks and Scottish & Southern Energy.
DPD	Development Plan Document**.** DPDs are planning policy documents which make up the Local Plan. They help to guide development within a local planning authority area by setting out the detailed planning policies, which planning officers use to make their decisions on planning applications.
Electricity supplier	Electricity company to whom the user pays their electricity bill. In the UK there are six companies which are the predominant electricity suppliers (British Gas, EDF, E.ON, npower, Scottish Power and SSE). There are also many smaller suppliers, some with a green energy focus such as Ecotricity and Octopus.
ENA	Energy Networks Association. The industry body funded by the UK gas and electricity transmission and distribution licence holders.
EV	Electric vehicle. A vehicle that uses an electric motor for propulsion, comprising ones that run solely on batteries, as well as plug-in hybrids (PHEVs) that have an attached petrol or diesel engine to power the battery engine.
EVCP	Electric vehicle charging point. This is the infrastructure provided to enable electric vehicles to recharge batteries. They come in a number of forms ranging from small charge points contained within existing infrastructure such as lamp columns, to larger rapid chargers which provide a quicker charge for vehicles such as taxis through hubs, which are locations with six or more charge points grouped together.
Feeder pillar	Controls electricity outputs to devices and buildings, including lighting, signalling and charge points. Charge points will need to be connected to a feeder pillar in order provide an electric charge.
Fast charge point	A charge point that provides power from 7kW to 22kW AC, and typically fully charges an EV with a 22 kWh battery in three to four hours. Common fast connectors are a tethered Type 1 or a Type 2 socket (via a connector cable supplied with the vehicle).
GULCS	Go Ultra Low City Scheme. A programme by the Office for Low Emission Vehicles within the Department for Transport. It aims to provide funding for local authorities in the UK that encourages people to consider switching to an electric car.
ICE	Internal combustion engine. An engine that generates motive power by burning petrol, diesel, oil, or other fuel with air inside the engine, the hot gases produced being used to drive a piston or do other work as they expand.
kW	Kilowatt. A measure of one thousand watts of electrical power.
LIP	Local Implementation Plan. A statutory transport plan produced by London boroughs which brings together transport proposals to implement the strategy at a local level.
LGV	Light Goods Vehicle. A motor vehicle (such as a van) with a gross vehicle weight of less than 3.5 tonnes.
MAQF	Mayor's Air Quality Fund. A £22 million fund over 10 years to support projects by London boroughs to improve air quality.

Mobile Charging Units	Charging unites that are either attached to another vehicle or moveable from charge position to the vehicle; often applied in roadside assistance to provide charge to an EV vehicle with a low battery.
Open access	Charging point which all users can access (ie not restricted access).
OLEV	Office of Low Emission Vehicles. OLEV works across government to support the early market for ultra-low emission vehicles. It is part of the Department for Transport and the Department for Business, Energy & Industrial Strategy.
PCN	Penalty Charge Notice. PCNs are mainly associated with parking and issued when a driver parks a vehicle in contravention of the regulations. A PCN can also be issued for breaking some traffic rules or for not paying the fee for the congestion charge or low emission zone on time.
PHEV	Plug-in hybrid electric vehicle. An EV that combines a small plug-in battery with an internal combustion engine (ICE). These typically use the battery to drive the wheels at low speeds, or for a limited range, with the petrol- or diesel-fuelled ICE used for greater speeds and longer distances.
Restricted access	Charging point usage restricted to subscribers.
RFID	Radio Frequency Identification. A system that transmits the identity (in the form of a unique serial number) of an object or person wirelessly by using radio waves.
SLA	Service Level Agreement. A SLA is a contract between a service provider and its internal or external customers that documents what services the provider will furnish and defines the service standards the provider is obligated to meet.
SSEN	Scottish and Southern Electricity Networks**.** A distribution network operator for electricity covering parts of Scotland as well as central southern England and parts of London.
TfL	Transport for London. One of the Greater London Authority functional bodies, accountable to the Mayor, with responsibility for delivering an integrated transport strategy for London.
TMO	Traffic Management Order. TMOs are legal documents drafted and made by the local highway authority, usually under the Road Traffic Regulation Act 1984. They regulate the use of highways for movement and parking and also off-street parking areas by drivers of vehicles and/or pedestrians within the local authority area.
UKPN	UK Power Networks**.** A distribution network operator for electricity covering South East England, East of England and London.

Transport for London

Invitation to Quote

Electric Vehicle Infrastructure Delivery (EVID)
Tranche 2, Batch 1

Volume 2

Appendix E

Streetscape Guidance

COMMERCIAL IN CONFIDENCE

TfL Restricted

STREETSCAPE GUIDANCE

Fourth Edition
2022 Revision 2

MAYOR OF LONDON

TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS

INTRODUCTION

1.1 Background 01
1.2 What is Streetscape Guidance? 02
1.3 Who is Streetscape Guidance for? 03
1.4 How should I use the document? 03
1.5 How is the document relevant to my work? 04
1.6 How do I collaborate? 05
1.7 Engagement and approvals 06
1.8 How and when should I engage with TfL? 06
1.9 What is the Streetscape Design Review Group? 07
1.10 Do I require approval? 08

PART A
A vision for London's streets

2.1 Planning for the future 10
2.2 The Mayor's Transport Strategy 10
2.3 Street Types for London 11
2.4 Street design principles 13
2.5 Healthy Streets for London 15
2.6 Delivering value 16

PART B
From strategy to delivery

3.1 Bringing it all together 18
3.2 A bold new approach 19
3.3 Enhancing a cultural heart 21
3.4 Changing the purpose of the street 23
3.5 Rebalancing user needs 25
3.6 Reversing a gyratory 27
3.7 Simplifying a junction 29
3.8 Making the most of constrained space 31
3.9 Facilitating local businesses 33
3.10 Good ordinary 35
3.11 Accommodating all users 37
3.12 Reflecting local character 39
3.13 Rebranding a town centre 41
3.14 Ensuring good design 43

PART C
New measures for new challenges

4.1 Encouraging innovation and creativity 46
4.2 Trials and tests 48
4.3 Infrastructure and assets fit for the future 49
4.4 Making more efficient and flexible use of space 51
4.5 Intelligent systems and management 53
4.6 Changing behaviour and enabling different choices 53

PART D
Balancing priorities

5.1 Accommodating movement 56
5.2 Understanding competing demands . 56
5.3 Recognising place 57
5.4 Function, performance and form 58
5.5 Facilitating place 60

PART E
Physical design and materials

6 Introduction

7 High quality footways
7.1 Vision 66
7.2 Footway materials 66
7.3 Interfaces and transitions 78
7.4 Footway crossovers 81
7.5 Inspection covers 86
7.6 Smoke vents 94
7.7 Kerbs 95

8 Carriageways
8.1 Vision 104
8.2 Carriageway materials 104
8.3 Road markings 110
8.4 Cycle infrastructure 114
8.5 Bus lanes 122
8.6 Median strips/central reservations .. 124

9 Crossings
9.1 Introduction 130
9.2 Tactile paving 130
9.3 Controlled crossings 142
9.4 Uncontrolled crossings 155
9.5 Traffic signals and controller cabinets. 165
9.6 Grade-separated pedestrian crossings 168
9.7 Subways 170
9.8 Pedestrian and cycle bridges 172
9.9 Road bridges 173
9.10 Road underpasses and bridges over roads 175

10 Kerbside activity
10.1 Vision 178
10.2 Parking and loading bays 178
10.3 Motorcycle parking 186
10.4 Parking control equipment 188
10.5 Electric vehicle charging points 189
10.6 Bus stop environments 190
10.7 Coach facilities 200

11 Footway amenities
11.1 Vision 203
11.2 Footway zones 205
11.3 Working with businesses 213
11.4 Colour of street furniture 218
11.5 Cycle parking 219
11.6 Cycle hire docking stations 224
11.7 Seats 230
11.8 Art 234
11.9 Bins 235
11.10 Letter and pouch boxes 240
11.11 Telephone boxes 241
11.12 Pedestrian wayfinding 245

12 Safety and functionality
12.1 Traffic signs 249
12.2 Bollards and low level traffic signs .. 253
12.3 Street nameplates 258
12.4 Barrier free footways 260
12.5 Barriers 261
12.6 Utility cabinets 262
12.7 Feeder pillars 263
12.8 Variable message signs 265
12.9 Environmental monitoring equipment 268
12.10 Roadside cameras and CCTV 269
12.11 Planned events infrastructure 273

13 Street environment
13.1 Street environment 275
13.2 Growing a greener London 275
13.3 Keeping London dry 285
13.4 Lighting the way 295
13.5 Leftover spaces 305
13.6 Pocket parks 309

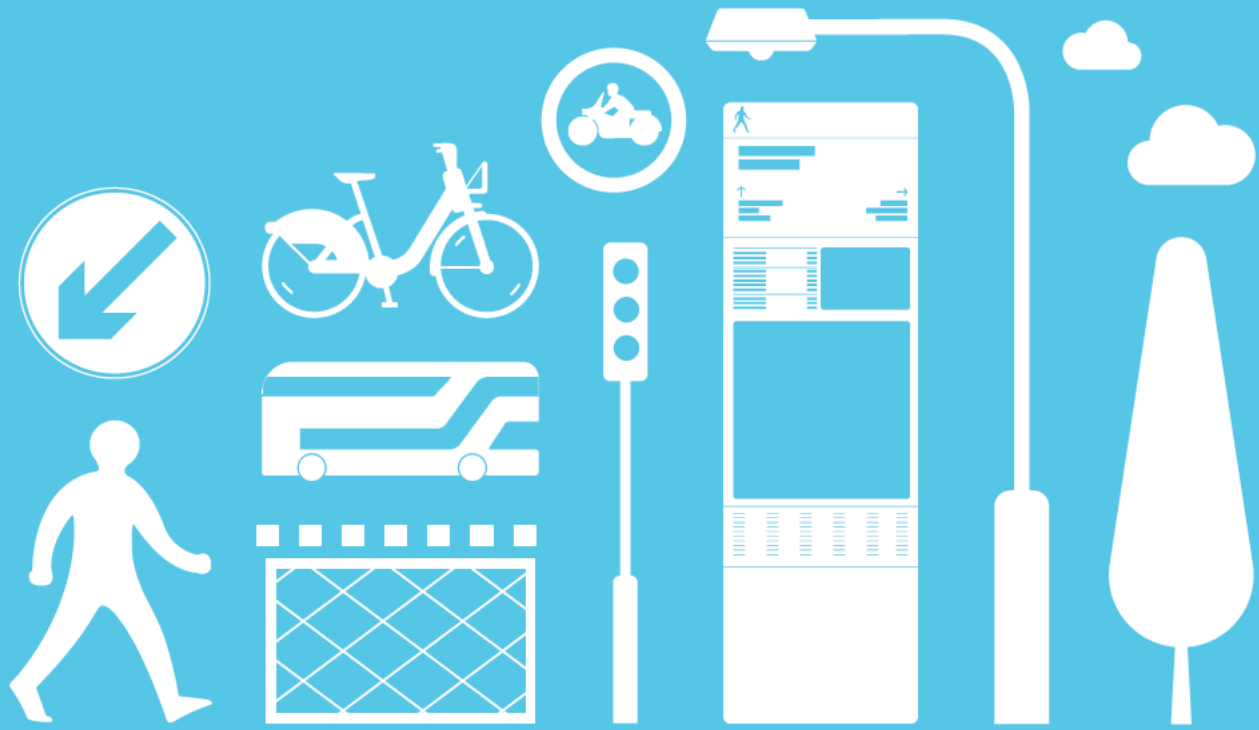
14 Transport interchanges
14.1 Vision 314
14.2 Street interchanges 314
14.3 Transport mode specific design considerations 317
14.4 Rail interchanges 318
14.5 On-highway bus station interchanges 319
14.6 Tram interchanges 320
14.7 London River Services interchanges 322
14.8 Taxi ranks 323
14.9 Cycle parking hubs 325

PART F
Appendix

15.1 List of references 328
15.2 List of revisions 333

Introduction

1.1 Background 01
1.2 What is Streetscape Guidance? 02
1.3 Who is Streetscape Guidance for? 03
1.4 How should I use the document? 03
1.5 How is the document relevant to my work? 04
1.6 How do I collaborate? 05
1.7 Engagement and approvals 06
1.8 How and when should I engage with TfL? 06
1.9 What is the Streetscape Review Design Group? 07
1.10 Do I require approval? 08



1.1 Background

The purpose of this Streetscape Guidance is to set a high standard for the design of London's streets and spaces by applying best practice design principles. With imaginative application of the right materials and good craftsmanship, Transport for London (TfL) is working towards breathing new life into the public realm. Through better and bolder design, we intend to transform our streetscapes into welcoming places, creating a public realm and transport network fit for a globally competitive economy.

This guidance sets the standard for London's streets and whether a one-off major project or a smaller local adjustment, it defines our aspirations and outlines the criteria for good design, material selection, installation and maintenance.

Streets account for 80 per cent of London's public realm. Raising the ambition for streets with a collaborative, design-led approach is key to achieving new standards of excellence and recognising the fundamental role our streets and places play in improving the public realm and providing an enhanced quality of life.

Figure 1: Wimbledon Bridge

Streets are places for people. Successful streetscapes are inclusive and provide for the competing requirements of their users, including pedestrians, cyclists, motorcyclists, bus operators, bus passengers, private vehicle owners, and freight vehicle operators. Understanding and carefully balancing the diverse needs of these users will ensure better and safer places to support the variety of activity on our streets.

Figure 2: Oxford Street has been designed to provide for the competing requirements of its users

1.2 What is Streetscape Guidance?

Streetscape Guidance provides the tools to apply best practice design principles and create consistently high quality links and places across London. While this guidance has been developed primarily for the Transport for London Road Network (TLRN), the principles are equally applicable to any street in London should a local authority choose to adopt them.

The guidance has three primary functions, which are:

- To encourage those responsible for designing, building, operating and maintaining London's streets to use a robust design approach in balancing the movement of people and goods with high quality urban realm
- To demonstrate the high level of ambition, innovation and creativity required on London's streets to deliver excellent levels of service
- To highlight the design considerations required for appropriate layout, material selection, application and maintenance, and to reinforce best practice design principles, ensuring that a high quality approach to street design is implemented across London

Figure 3: Streetscape Guidance provides the tools necessary to create high quality streets

Streetscape Guidance acknowledges emerging policies and describes the need to better understand the role of London's streets for 'place' and 'movement' functions, and to prioritise street improvements which enhance the efficiency and quality of the street environment as a whole.

1.3 Who is Streetscape Guidance for?

This guidance is a working tool for those responsible for designing, building, operating and maintaining London's streets. It also provides more general guidance and advice for a wider audience, including design professionals, academics, highway authorities, road user groups, local communities and private developers.

A broad range of topic areas are covered in this document, commensurate with the variety of design considerations that exist in a city as complex and varied as London. This guidance is designed to supplement rather than replace existing standards, requirements, or guidelines, such as the Traffic Signs Regulations and General Directions (TSRGD) and the Design Manual for Roads and Bridges (DMRB). Where further information exists on a topic area from an associated TfL guidance document, this will be clearly highlighted. Our associated guidance documents are listed below:

- Streetscape Guidance
- London Cycling Design Standards Guidance
- Kerbside Loading Guidance
- Accessible Bus Stop Design Guidance
- Station Public Realm Urban Design Guidance

While Streetscape Guidance has been developed primarily for the Transport for London Route Network (TLRN) the principles are equally applicable to any street in London.

Figure 4: Upper Street in Angel has flexible amenities which allows for a more efficient use of space

1.4 How should I use the document?

Streetscape Guidance is structured so that the reader can systematically work through a process that establishes how to best **plan, select and compose elements** which contribute to improving the quality and function of London's streets and places.

Part A sets out the **vision** for London streets. It details our strategy and ambition to build a more efficient and effective transport system while balancing user needs. The 'Street Types' framework is presented to recognise the different roles London's streets perform and to assist in the application of context sensitive design.

Part B presents **best practice case** studies from all over London to exemplify how excellence can be achieved. The case studies highlight the importance of identifying suitable interventions and the most appropriate measures and amenities to be used, in a context sensitive way, to enhance the experience of those using the space.

Part C describes how **creativity and innovation** must be integrated into the overall approach to ensure London continues to be an attractive, vibrant and accessible place to work, live and visit. Where practical and appropriate, it encourages the trialling and testing of new initiatives to stimulate future

street improvements and meet the evolving expectations of all street users.
The barriers that prevent experimentation are identified and the process for incorporating innovative ideas, technologies, materials and layouts is explained.

Part D recognises that each street has a **unique function, performance and character** which must be balanced to ensure the needs of the users are met while reflecting and enhancing the character of the place.

Part E provides the **technical guidance** for a range of street components. It recommends the material palette and layout options for composing London streets, and provides advice on the selection and placement of products which meet the strategic criteria for quality and function, while enabling local flexibility.

1.5 How is the document relevant to my work?

Streetscape Guidance can be used to support a variety of street improvement works, from small scale decluttering regimes to extensive new streetscape layouts. It provides the framework and criteria for selecting surface materials and street furniture, and identifies how these should be configured within the street environment.

Streetscape Guidance should be used as early as possible in the development of a project or proposal to help define the brief and inform the initial stages of the design process. This helps to ensure best practice design principles are applied and that a consistent approach is taken in the design of London's streets and places.

Site specific design and good detailing is integral to producing excellent streetscapes and so this guidance should be used to provide general advice on design details. Arrangements and technical drawings are for illustrative purposes only.

Figure 5: This document is provided to support a variety of street improvement works from planning through to design and implementation

1.6 How do I collaborate?

Collaboration is essential in realising the vision for London; providing world-class streets and places that are fit for the future. Continuous improvement of our streets relies on the united effort of a wide range of skilled professionals, technical staff and stakeholders.

Meeting the desired level of ambition will require new and exciting ways of involving people, and developing a joint understanding of the challenges, the trade-offs and the need for action. Active and meaningful partnerships will need to be made; working together to explore new opportunities, to promote regulatory change where necessary, and to improve all users experiences on London's streets.

The importance of early engagement cannot be overstated. At TfL we are committed to the discussion of new ideas, innovations and improvements at a sufficiently early stage to allow an impact on decision-making, and ensure that better and more informed decisions can be made.

It is our intention that Streetscape Guidance be a 'live' document – regularly reviewed, edited and updated to reflect the latest in best practice. Of course, this requires ongoing and valued contributions from a wide audience. Suggestions, comments and queries are strongly encouraged and should be emailed to: **StreetscapeGuidance@tfl.gov.uk**

Future editions of this document will continue to set out London's evolving aspirations for world-class streets, including the goals, knowledge, and advances in technology and innovation. This will ensure our guidance remains a comprehensive and valuable resource for those responsible for designing, building, operating and maintaining our Capital's streets and places.

Figure 6: Collaboration and engagement with communities and necessary stakeholders is essential to ensure a cohesive approach to improving the quality of London's streets

1.7 Engagement and approvals

To achieve London's vision for streets, open and honest discussion is needed among a wide range of stakeholders, including design professionals, academics, highway authorities, road user groups, local communities and private developers.

New ideas, products, materials or layouts being proposed to us will require active and early engagement to ensure a shared understanding of the challenges, constraints, and opportunities.

1.8 How and when should I engage with TfL?

Developers, consultants and TfL staff with streetscape-related proposals for the TLRN should contact our streetscape manager during concept development. The streetscape manager is responsible for advising on the application of Streetscape Guidance and can assist in clarifying processes, expected timings, and criteria for decisions and decision makers. It is therefore strongly recommended that contact is made as early as possible.

If the proposal relates to a new idea, product, material or layout, the streetscape manager may decide that further information is needed and stakeholders will be requested to complete a streetscape application form. This form is used to understand if the proposal:

- Offers a solution to a problem, such as improving legibility, increasing safety, or providing a multipurpose function to improve the overall street-user experience
- Is technically feasible and meets wider planning criteria
- Improves to the look and feel of the streetscape
- Is safe, durable, and cost effective to maintain or replace
- Resists damage
- Has demonstrated use, either in London, the UK or worldwide

Please contact the streetscape manager at: StreetscapeGuidance@tfl.gov.uk

Following review of the application form, the streetscape manager may ask for additional information, grant consent, or request that the proposal be presented to our Streetscape Design Review Group (SDRG) for further review and discussion.

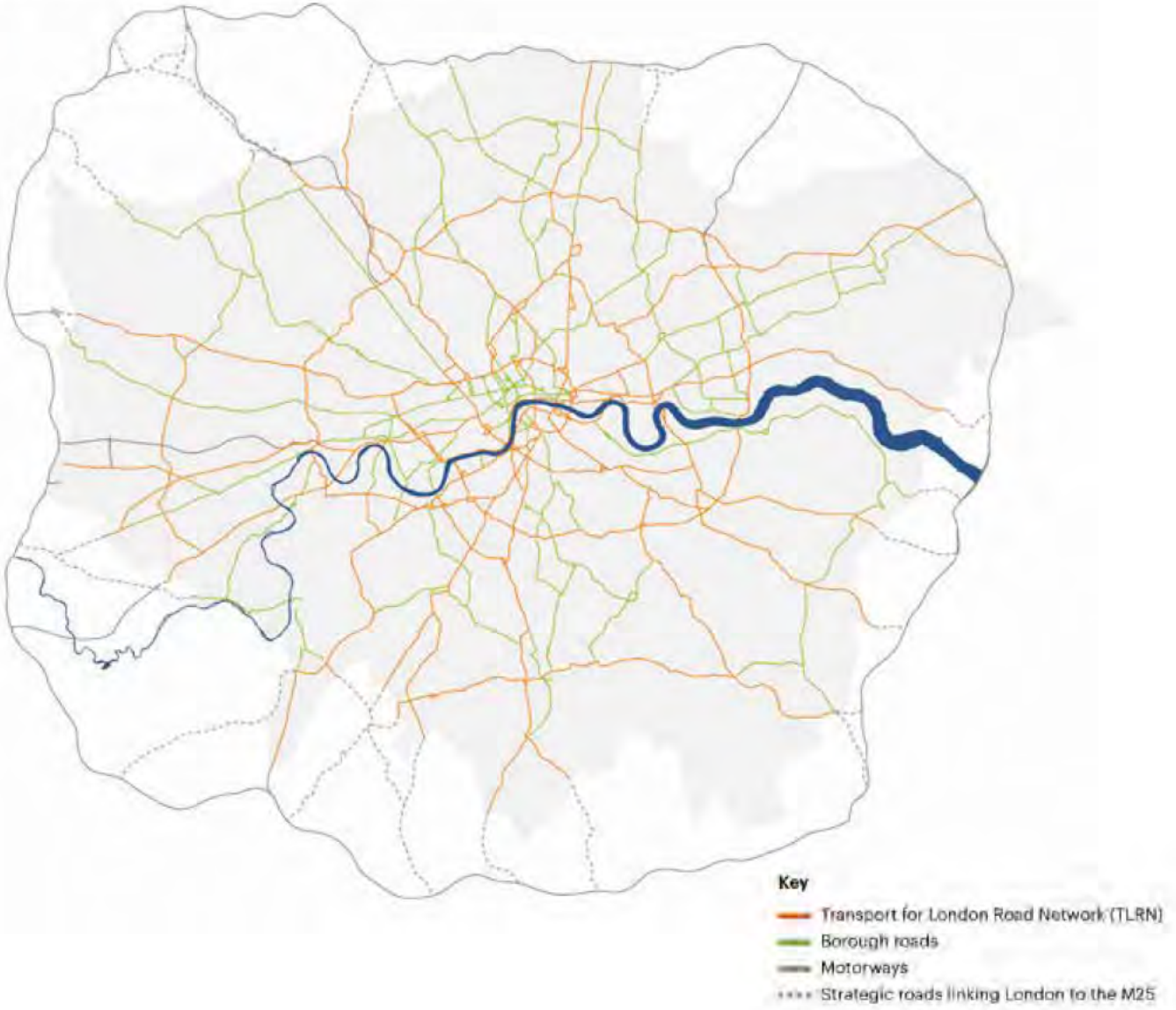
1.9 What is the Streetscape Design Review Group?

The SDRG is the decision-making body for all streetscape matters relating to the TLRN. It is a multidisciplinary panel formed of specialists from across TfL to ensure that the aspirations, design principles, materials and layouts outlined in Streetscape Guidance are well implemented and maintained. Meetings take place every four to six weeks and attendance is by invitation only.

We encourage early engagement as part of an iterative design process.

Proposals presented at the SDRG will receive practical advice and feedback to help guide ongoing development and design. The SDRG will also confirm if presented proposals deviate from Streetscape Guidance. Deviations from Streetscape Guidance will be subject to our formal approval process.

Figure 7: London's strategic road network



1.10 Do I require approval?

All proposals on the TLRN require formal approval from the SDRG. There is also an exceptions process for non-standard materials which is detailed below.

Proposals that are subject to our exceptions process may be invited to return to the SDRG periodically to ensure visibility of progress. Exception decisions will generally be informed within eight weeks if no further presentations have been requested by the SDRG. Additional information regarding the exceptions process can be made by contacting the streetscape manager at StreetscapeGuidance@tfl.gov.uk

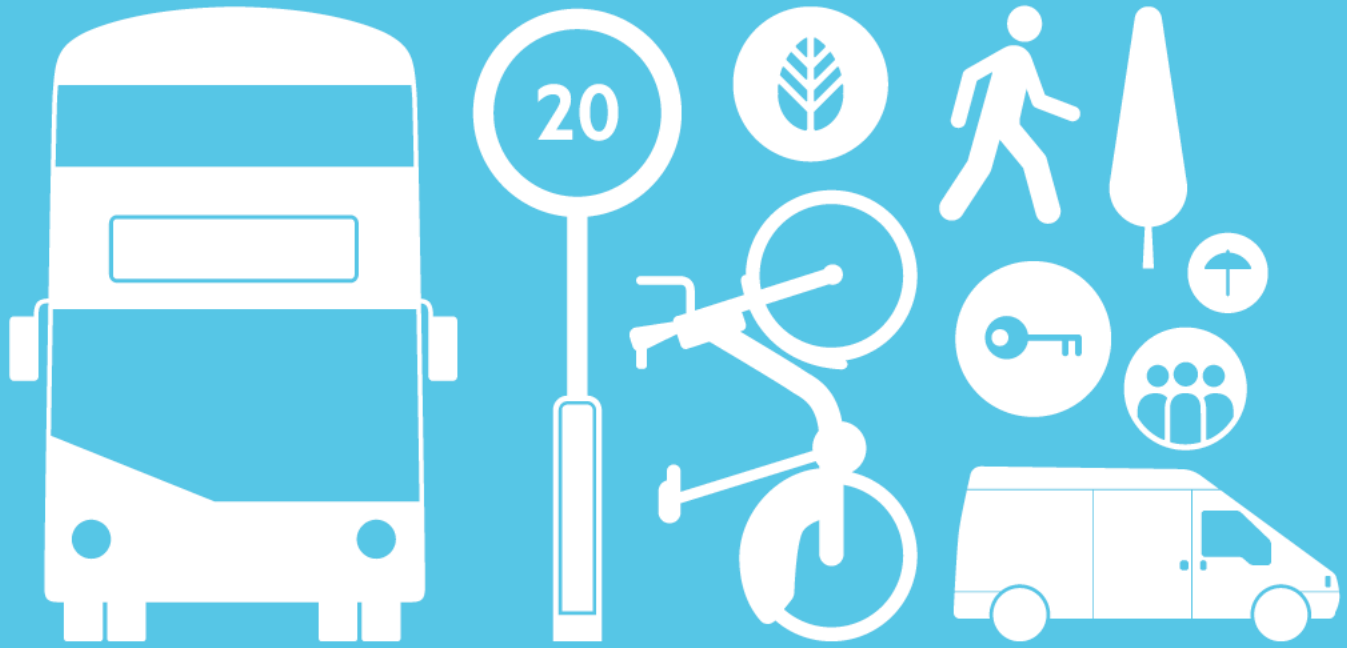
Figure 8: TfL's exceptions process

1. Pre-exception	**Review the Streetscape Guidance** – You'll need to provide evidence that the materials proposed in the guidance do not offer a better solution
2. Initial enquiry	**Contact the streetscape manager** – Speak to the streetscape manager about your proposal to determine whether an exception should be sought
3. Application	**Complete a Streetscape exceptions request form** – Forward the exceptions request form to the streetscape manager
4. Review	**Internal review** – You may be required to attend an SDRG meeting to review your proposal. However, there are some instances where an exception can be assessed internally
5. Exception decision	**Notification** – You will be informed of the outcome of your application shortly after the SDRG meeting or within eight weeks of the initial application

Figure 9: Exhibition Road required multiple exceptions and approvals from SDRG

Part A A vision for London's streets

2.1 Planning for the future 10
2.2 The Mayor's Transport Strategy 10
2.3 Street Types for London 11
2.4 Street design principles..... 13
2.5 Healthy Streets for London..... 15
2.6 Delivering value..... 16



2.1 Planning for the future

London is knitted together by a vast network of streets, roads, public squares, interchanges and junctions. Accounting for 80 per cent of London's public spaces, roads play an important role in our daily lives: as places where we live, work and move through. With such a high percentage of our public realm located on our streets, these spaces need to work hard to provide high quality places that are resilient, flexible and functional.

London's population is expected to reach 10.8 million people by 2041. To combat the effects of population growth a more efficient and balanced transportation network is required to respond to ever increasing demand.

The Mayor's Transport Strategy (MTS) sets the vision for transportation in London. It also addresses the need to invest in the road network so that an improved public realm supports more walking and cycling, to improve access to transportation, and better balances the needs of road users.

2.2 The Mayor's Transport Strategy

The Mayor's Transport Strategy sets out plans to transform London's streets, improve public transport and create opportunities for new homes and jobs. To achieve this, the Mayor wants to encourage more people to walk, cycle and use public transport.

The strategy uses the Heathy Streets Approach. This makes health and personal experience the priority as we plan our city.

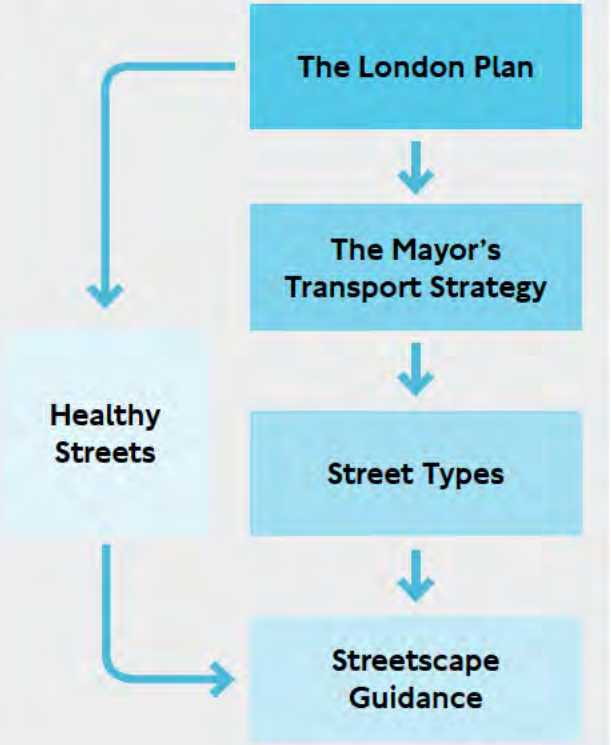
The Healthy Streets Approach will be applied to the whole transport system to help create:

- **Healthy Streets and healthy people:** Streets make up 80% of London's public spaces – making them Healthy Streets will improve the quality of life for everyone in London.
- **A good public transport experience:** Public transport is the most efficient way for people to travel distances that are often too long to walk or cycle. A seamless, 'whole-journey' experience will provide an attractive alternative to using the car.
- **New homes and jobs:** London needs 65,000 new homes every year to meet demand, plus around 1.3 million more jobs by 2041. We have an opportunity to reshape London and make sure it grows in a way that improves the quality of life for everyone.

Figure 10: London's network of streets knit the city together

[1]Commission for Architecture and the Built Environment (CABE)

Figure 11: London policy context map



2.3 Street Types for London

Key to delivering the goals set out by the MTS is a holistic understanding of and approach to managing London's current and future demands on the road network. Street Types sets out a new framework that helps takes account of local and network priorities and aims to guide operational, policy and investment decisions.

Street Types uses a classification matrix of nine categories to map London's streets according to their movement (of people and goods) and place functions. Thus far, the network in 32 out of 33 London boroughs has been mapped in a collaborative effort between TfL and the boroughs.

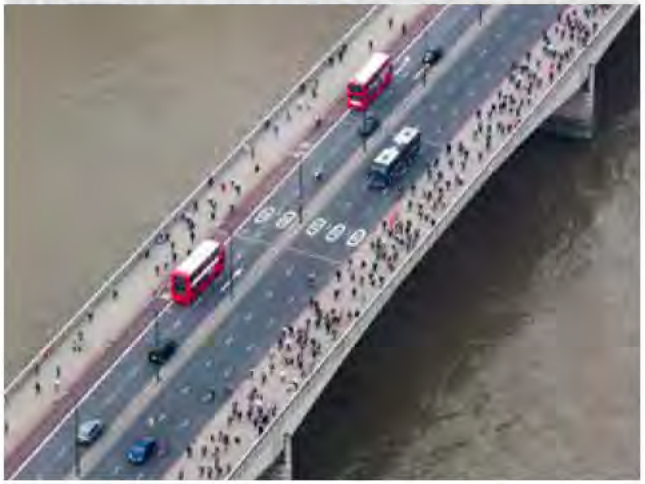
The resulting mapping of London's streets is intended to enable TfL, the boroughs and stakeholders to:

- Set priorities for different streets and roads, and make trade-offs accordingly
- Reflect changing functions and aspirations as streets and areas change
- Highlight to all interested parties where a mismatch between form and function may be limiting a location from realising its potential
- Identify the tools that may be appropriate locally to deliver change
- Balance place-specific needs with the overall function of the network
- Establish the need for intervention at a strategic level to keep London moving

Street Types has helped TfL, boroughs and developers collaborate to look at streets not as corridors that facilitate the movement of people, goods and services rather than 'traffic', and places which contribute to the Capital as a key part of the public realm. The mapping process has also helped us to understand the relative balance between movement and place functions at key locations across London.

This classification has identified parts of the road network which attract the most people allowing us to target locations where different types of intervention might be more or less appropriate. In that way we can ensure transport continues to support London's growth in a safe and sustainable manner, mindful that the

Figure 12: London bridge busy with pedestrians



that this is done by area or location, depending on outcomes sought.

Street Types for London (STfL) is an exciting and emerging transport planning concept. This new shared geography is helping to reshape how TfL and the boroughs use the limited space available on our road network. Importantly it doesn't just focus on the transformation of key locations, but ensures we are maximising the usage and maintenance of our existing infrastructure.

Please contact **StreetTypes@tfl.gov.uk** for further information, or visit our website tfl.gov.uk/street-types

Figure 13: Street Types matrix

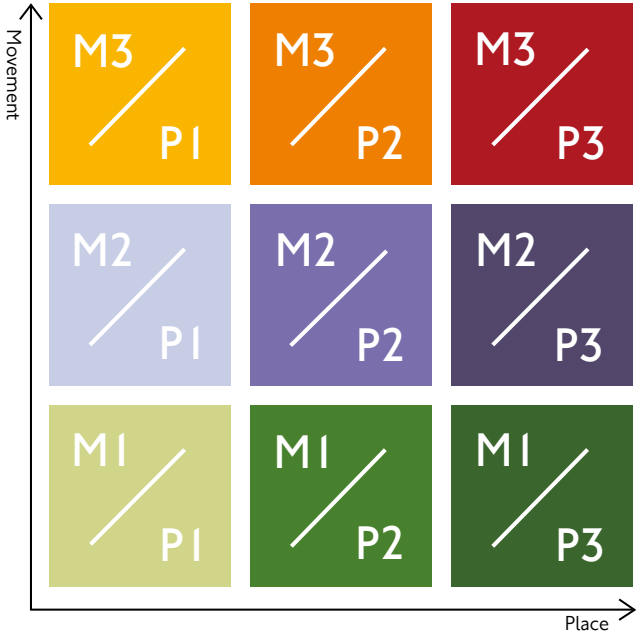
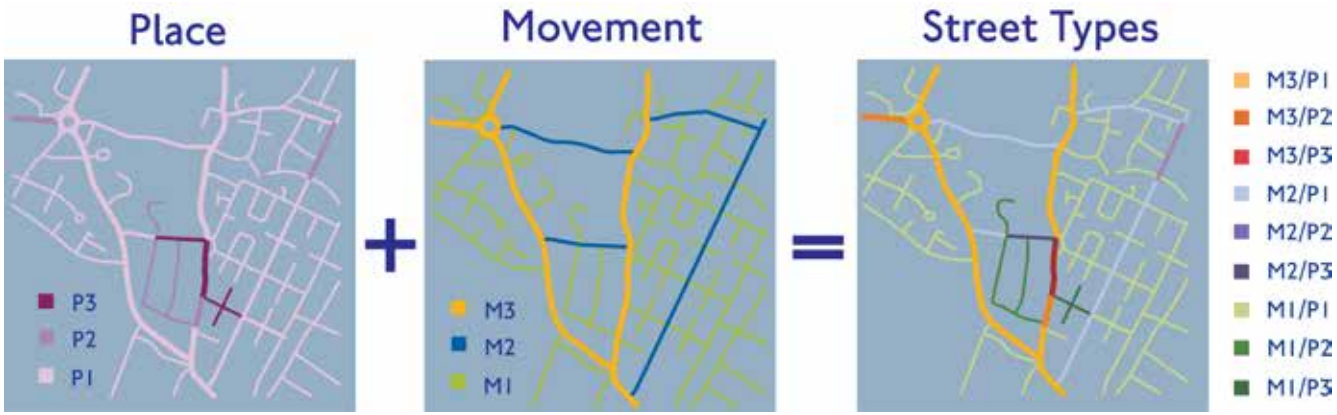


Figure 14: The Street Types transcend highway ownership and borough boundaries



2.4 Street design principles

Early 'Street Types' work proposed six key roles which streets and roads need to fulfil including moving, living, unlocking, functioning, protecting, and sustaining (www.tfl.gov.uk/cdn/static/cms/documents/rtf-report-chapter-1.pdf). Below, each role is described. From these six roles, key design principles have been extracted which define the aspirations of this guidance. These symbols will appear alongside case studies, vignettes and trials to denote how these interventions are working to achieve the aspirations of 'Street Types':

'Moving'

Help people, goods and services get from A to B, by enabling more efficient and reliable movement for a range of transport modes.

a) Facilitate an increase in walking and cycling – ensure that walking and cycling are the most competitive transport modes for short and medium length journeys. This can be achieved through an enhanced public realm, safer, more convenient crossings and prioritising pedestrian movements in key locations.

b) Balance user priorities – explore techniques that prioritise particular road users and communicate with the use of surfacing and material layouts.

c) Manage traffic speeds – ensure that vehicle speeds are appropriate for the surroundings, and reinforced through the street layout, scale and type of materials used.

'Living'

Provide welcoming and inclusive places which support economic, cultural and community activities.

a) Implement contextually sensitive design – streetscape design must respect the character of the place through which the TLRN passes, not only the physical attributes of landscape and townscape, but also the activity, vitality and distinctiveness of the local community.

b) Apply inclusive design principles – people of all abilities should be able to access different modes of transport and conveniently change between them. People should be able to comfortably move along footways unhindered by street clutter, poor quality materials or inappropriately located obstacles.

c) Facilitate social interaction – opportunities should be taken to encourage people to interact socially on the street and support stationary activities where appropriate.

d) Improve journey experience – ensure a high quality streetscape that makes the best use of the space available through rationalisation of street furniture and utilities, and through the use of high quality materials.

'Unlocking'

Improve the accessibility, connectivity and quality of major growth areas to support the delivery of new homes, jobs and economic sectors that London needs as it grows.

a) Reduce severance – the provision of safe and convenient crossings between neighbourhoods divided by infrastructure should be prioritised.

b) Foster regeneration – recognise the impact that streetscape improvements may have on public and private interests. Public realm improvements can act as a catalyst for further regeneration.

'Functioning'

Ensure essential access for deliveries and servicing, and upgrade utilities to better serve London's growing needs and foster a digital city.

a) Fit for purpose – products must be robust, durable, and fulfil their designed lifespan, wearing well over time.

b) Adaptable – select materials and products that are flexible to change, such as street light columns that can be adapted to take signs, signals and banners.

c) Convenient to maintain – new products should accord with current maintenance regimes and all existing assets brought up to a good state of repair.

d) Timeless – materials and designs must embody a simple and consistent approach to ensure that the street does not look dated quickly.

e) Seamless – avoid abrupt changes in paving and street furniture materials and patterns where possible and work to provide seamless integration of materials across administrative boundaries.

f) Simplicity – minimise the variety of materials; use intuitive solutions and declutter.

g) Improve legibility – streets need to be easy to understand and move through. This can be achieved through the consistent use of materials, good wayfinding signage, and a logical approach to street design.

'Protecting'

Improve safety and ensure that streets are secure.

a) Create safer streets –slowing traffic speeds where appropriate, maintaining good visibility and reducing the likelihood of collisions.

b) Improve the perception of personal security – design and manage our streets to actively reduce crime and the fear of crime.

c) Reduce crime and disorder – design teams have a duty to ensure that highway schemes provide a safe and secure environment and do not create opportunities for crime. This is especially important for pedestrian and cycling only routes.

'Sustaining'

Reduce road network emissions and support clean, green initiatives for a healthier and more active city.

a) Resilient design – mitigate the impact of current and future climatic conditions by assessing, managing and minimising risk through good design. Plant trees and integrate sustainable urban drainage systems to better accommodate surface water runoff.

b) Invest in modal change – support sustainable transport modes with greater capacity for cycling and higher quality public realm to enable walking.

c) Low carbon materials – priority should be given to materials that support local economies and reduce negative environmental impacts.

2.5 Healthy Streets for London

TfL is embedding a new Healthy Streets Approach, and putting in place policies and strategies to help Londoners use cars less and walk, cycle and use public transport more. You can take a look at this approach here: http://content.tfl.gov.uk/healthystreets-for-london.pdf and find more detailed information about walking here: https://content.tfl.gov.uk/the-planning-for-walking-toolkit.pdf

Because 80 per cent of London's journeys happen on our streets – including bus and tram trips and journeys to and from Tube and rail stations – we can only do this by creating streets that feel pleasant, safe and attractive, where noise, air pollution, accessibility and lack of seating and shelter are not barriers that prevent people – particularly our most vulnerable people – from getting out and about.

The purpose of the Healthy Streets Approach is not to provide an idealised vision for a model street. It is a long-term plan for improving Londoners' and visitors' experiences of our streets, helping everyone to be more active and enjoy the health benefits of being on our streets.

To deliver the Healthy Streets Approach, changes are required at three main levels of policy making and delivery:

1) Street level 2) Network level

3) Strategic level policy and planning

Work at every level aims to improve the experience of travelling through and spending time on London's streets and is judged on the ten Healthy Streets Indicators. The Healthy Streets Approach uses ten evidence-based indicators of what makes streets attractive and appealing places. Working towards these will help to create a healthier city, in which all people are included and can live well, and where inequalities are reduced.

Figure 15: Indicators of a healthy street environment

2.6. Delivering value

TfL is committed to ensuring that public money is invested to maintain and enhance London's transport network and provide the greatest benefits to all of society in the most efficient way. It is therefore vital that all investment decisions are based on clear and robust analysis of value for money.

TfL defines value for money as the optimal use of resources to achieve the intended outcomes. This focuses on spending less, spending well, spending wisely and spending fairly.

We adopt the following principles in practice as developed by National Audit Office (NAO) which consist of four main elements:

(a) Economy: minimising the cost of resources used or required (inputs) spending less;

(b) Efficiency: the relationship between the output from goods or services and the resources to produce them – spending well;

(c) Effectiveness: the relationship between the intended and actual results of public spending (outcomes) – spending wisely; and

(d) Equity: the extent to which services are available to and reach all people that they are intended to – spending fairly. Some people may receive differing levels of service for reasons other than differences in their levels of need.

TfL and the Borough's investment programmes should aim to deliver the optimal combination of whole-life cost, safety, reliability, effective commercial management, customer perception, mandatory standards and environmental impact in a sustainable way to meet requirements within the bounds of financial constraints.

The capability to realise value from any investment starts with *selecting the right things to do for the right reasons, then completing this work effectively and efficiently*.

Part B From strategy to delivery

3.1 Bringing it all together 18
3.2 A bold new approach 19
3.3 Enhancing a cultural heart 21
3.4 Changing the purpose of the street ... 23
3.5 Rebalancing user needs 25
3.6 Reversing a gyratory 27
3.7 Simplifying a junction 29
3.8 Making the most of constrained space 31
3.9 Facilitating local businesses 33
3.10 Good ordinary 35
3.11 Accommodating all users 37
3.12 Reflecting local character 39
3.13 Rebranding a town centre 41
3.14 Ensuring good design 43

3.1 Bringing it all together

It is not always necessary to undertake wholesale redesign of a space when simple, light-touch measures may be all that is needed to make a place more functional and attractive. Understanding the context, purpose and demands placed on the space helps us understand how best to deliver the right type and scale of intervention.

It is essential that good public realm and street design provides for a myriad of social and economic needs, in addition to responding to the characteristic and functional diversity of different places and the vital movement function that the road performs.

The Better Streets agenda advocates a considered and staged approach to tackling these intrinsic differences in function, performance and urban form. This guidance asks designers to consider some fundamental guiding principles of design before presenting a staged approach which recommends five levels of intervention with increasing levels of complexity and cost to improving the public realm:

- **Tidy up** – look to remove unnecessary road markings or broken furniture which is simple to clear up and will not damage the footway

Figure 16: Better Streets Delivered provides examples of what has been achieved across London

- **De-clutter** – requires a more strategic justification for every individual piece of equipment in the street, with the presumption of removal unless a clear reason for retention is given
- **Relocate or merge functions** – any remaining features should be rationalised to combine signage and lighting or better locate street furniture to fulfil its intended use
- **Rethink traffic management options** – by considering user priority, changes to carriageway widths, or removal of traffic signals
- **Recreate the street** – complete remodelling of the street may be suitable if a new set of objectives or character is desired, for example, by creating a shared surface. This approach is not suitable in all locations and requires extensive consultation

Streetscape Guidance brings together many of the physical elements commonly found on London's streets. By consolidating various elements in a rationalised, clear and well-executed composition we can determine how well a street performs its function and serves the people who use it.

This guidance emphasises the importance of creating vibrant and inviting public spaces that promote the principles of Better Streets. This section investigates some of the recently completed schemes in London that have successfully transformed place and user experience through a range of techniques and creative vision.

Additional information

Better Streets Delivered: Learning from completed schemes (2013) http://content.tfl.gov.uk/better-streets-delivered-web-version.pdf

Better Streets Delivered 2: http://content.tfl.gov.uk/better-streets-delivered-2.pdf

3.2 A bold new approach

Exhibition Road

Royal Borough of Kensington and Chelsea
SW7

Completion date: December 2011
Cost: £29m

Improvements

- Recreate the street
- Rethink traffic management
- Relocate/merge functions
- De-clutter
- Tidy up

Exhibition Road, which runs south from Hyde Park to South Kensington, is home to some of the top educational and cultural institutions in London, including the Victoria and Albert Museum, Natural History Museum, Science Museum, Royal Geographical Society and Imperial College London. Until recently, Exhibition Road had a poor urban environment dominated by vehicular traffic and narrow footways, frequently blocked by parked coaches, cars and street clutter. With more than 11 million visitors a year, this unwelcoming pedestrian environment often led to overcrowding with people spilling out on to the busy carriageway.

Figure 17: The redeveloped Exhibition Road creates a more pleasant environment for those living, working and visiting the area

The transformation of Exhibition Road into one of the finest streetscapes in London required extensive public and stakeholder consultation to ensure all users were able to access the space, that the design responded appropriately to the historical context of the street, and the needs of local residents and institutions were met. As the layout of the street is unique, without traditional methods defining the footway and carriageway, concerns raised for visually impaired people were met with rigorous testing of tactile delineation and monitoring for two years following completion.

The Royal Borough of Kensington and Chelsea, in partnership with English Heritage, Exhibition Road Cultural Group, City of Westminster and TfL worked to convert a busy and unappealing traffic-dominated road into an elegant pedestrian boulevard, setting new standards for urban design. The bold design features a kerb-free surface with tactile materials to distinguish boundaries between pedestrian and vehicular areas, a reduction in speed limits to 20mph, and the removal of street clutter and gyratory system around South Kensington station. The result is one of the most recognisable cultural destinations in the world.

Before

1. Street furniture obstructs narrow footway
2. Car parking impedes crossings
3. Road markings create visual clutter
4. Material choice and design creates poor setting for historic buildings

After

1. Granite paving setts applied in bold pattern across entire area to create shared surface
2. Drainage channel, corduroy paving and bollards define shared space
3. Inspection covers seamlessly integrate with paving
4. Art, seating and car parking provided in street furniture zone
5. Street furniture and equipment use consistent colours

3.3 Enhancing a cultural heart

Leicester Square

City of Westminster
WC2H
Completion date: 2012
Cost: £15.3m

Improvements

- Recreate the street
- Rethink traffic management
- Relocate/merge functions
- De-clutter
- Tidy up

Prior to the works, the urban environs of Leicester Square no longer mirrored its international landmark status. Shabby with neglect, the space struggled to encourage the 250,000 people who pass through the square every day to linger in the area. At the physical heart of London's West End, it functions as a beacon for entertainment and a destination in its own right with bars, clubs, cafés, restaurants and hotels. As the home of UK cinema and a flagship red carpet destination, the square also hosts major film premieres. To sustain this reputation, Westminster City Council committed to transforming Leicester Square. Westminster ran a design competition in 2007, with Burns + Nice ultimately being awarded the contract.

Figure 18: The high quality public realm at Leicester Square now sits comfortably within its surrounding street network, reinforcing the identity of this internationally important space at the heart of London's West End

During the development stages, there was significant involvement with local businesses and representative groups. This was followed up with weekly public drop-in briefing sessions, monthly meetings with key groups, a website detailing the planned works, and information displayed on construction hoarding – all coordinated through a dedicated communications officer.

The redesign of Leicester Square into a must-see destination presented an opportunity to consider the gardens, the square and the connector streets as one entity and create a coherent public realm that strengthens the identity of this part of the West End. Around the perimeter of the gardens, a curvilinear seating wall and shrub planting now extends the experience of the green square beyond its boundaries, while new lighting incorporated into the seating wall deters antisocial behaviour and makes the square more appealing after dark.

The identity of the square is highlighted with dark granite, while the primary movement corridors adopt a lighter shade. The existing 19th century Shakespeare fountain was retained and features water jets around the statue. Along the building lines a consistent alignment of alfresco dining areas now appear, reinforced with consistent edge treatments which again feature in the railings around the square. Legible London signage has been provided at key decision points. Vehicular access for loading is severely limited to times of day with the least visitors.

The square's makeover was completed in time for the Queen's Diamond Jubilee and the London 2012 Olympic and Paralympic Games. These revitalisation works have breathed new life into London's West End, attracting a number of new businesses to the square by providing a flexible and contemporary space that works well for everyday use and for large red carpet functions.

Image courtesy of Burns+Nice

Before

1. Multiple paving treatments create visual clutter
2. Paving tones conflict with architecture
3. Bollards restrict footways

Image courtesy of Burns+Nice

After

1. Simple light grey granite paving provides simplified backdrop
2. Café planters tie laneways to railings in the main square
3. Utility covers consistently paved

3.4 Changing the purpose of the street

Braham Street Park

London Borough of Tower Hamlets
E1

Completion date: February 2010
Cost: £2m

Improvements

- Recreate the space
- Rethink traffic management
- Relocate/merge functions
- De-clutter
- Tidy up

Braham Street Park was the first project completed under the High Street 2012 programme to improve links between the Olympic Park and the rest of London. This scheme was also part of a wider transformation of the Aldgate gyratory into a two-way system.

The redirection of four lanes of traffic by reverting Whitechapel High Street back to a two-way street, freed up road space owned by TfL for the development of new offices. Through a public-private partnership between the developer Tishman Speyer and ourselves, a much-needed open public space was created transforming an unfriendly busy street into an oasis of green.

Figure 19: The closure of a former one-way street has allowed for the creation of a large, fully accessible linear park in a busy area at the edge of the City of London

This long narrow park features many of the wishes expressed through extensive public consultation, including accessibility for all, with large expanses of greenery achieved through the use of sloping grass mounds. A simple palette of surface materials included asphalt paving, gravel and granite kerbs. The areas of planting combine grass, hedges, shrubs and trees which contrast nicely with light grey lighting columns and light grey granite kerbs. As the site prioritises children's play, it also features a waterfall and Europe's longest bench.

Before

1. Pedestrian movement restricted by guardrail
2. Inconsistent street furniture colours
3. Streetscape provided poor setting for commercial buildings

After

1. Loose aggregate allows water to infiltrate
2. Bespoke timber seating incorporating planters
3. Lighting column colour provides consistency with colour of kerb, bench and trees
4. Granite kerb used as dwarf wall
5. Low planting provides clear views of area

3.5 Rebalancing user needs

Angel town centre – Upper Street

London Borough of Islington
N1

Completion date: June 2012
Cost: £2.2m

Improvements

Recreate the space	☐
Rethink traffic management	☐
Relocate/merge functions	■
De-clutter	■
Tidy up	■

The initial aim of this scheme was to improve the ease of running buses through Angel town centre. However, the scope of the project quickly expanded to include bus reliability, improved conditions for cyclists and pedestrians, measures to smooth traffic flows, public realm improvements, and improved conditions for local businesses.

Early proposals included the widening of footpaths and the removal of one southbound lane between Islington Green and Duncan Street. TRANSYT modelling suggested that the scheme would be capacity neutral, however, consultation revealed intense speculation that the proposed road layout would worsen congestion in the area. Pedestrian crossings were widened as a result of the consultation.

Figure 20: A series of interventions at Angel town centre has led to a more user friendly street with increased space allowance for pedestrian movement and a negligible impact on vehicle capacity

Creating more 'people friendly' streets with improved facilities for pedestrians was a key focus of this project. A programme of decluttering was undertaken which included the removal of guardrails from the centre median and along footpaths. A key crossing serving Angel Tube station was relocated to the north side of Liverpool Road junction and rephased so that crossings could be made in a single stage. A staggered crossing was also added at the junction of Essex Road. Where existing tree plantings used a raised edge, these were lowered to be flush with the footway to increase the available width for pedestrians.

To create a consistent public realm with visual appeal, Yorkstone paving was laid throughout the scheme. A band of setts was used on the edge of the footway to visually reinforce the edge and prevent cracking of paving should a vehicle mount the kerb. The wide central median was extended along the length of Upper Street and guardrails removed to accommodate more informal crossings.

The needs of local businesses were also better served with three new inset loading bays added to the east side of Upper Street. These were paved in setts to match the surrounding footway and therefore functioned as part of the footway when not being used for deliveries.

To help traffic flow and increase the accessibility of the bus stops on Upper Street, the kerbs in the waiting area were moved. The southbound bus lane was also widened to better accommodate cyclists and motorcyclists.

Prior to these improvements, movement in Angel was tightly controlled and was subject to speeds not suitable to its context. Since the improvements, Angel town centre is better able to safely and efficiently serve businesses, pedestrians, buses, cyclists and other traffic.

Before

1. Pedestrian movement restricted by guardrail
2. Central island guardrail restricts pedestrian movement and creates a hazard for those that choose to cross informally
3. Inconsistent and damaged paving
4. Inspection covers with poor finish
5. On-carriageway loading bay restricts vehicular movement when in use

After

1. Grade change incorporated as a landscape feature increasing usable space
2. Carriageway islands paved in Yorkstone provides safe refuge for informal crossings
3. Consistent Yorkstone paving provides high quality footways
4. Corduroy paving denotes grade change
5. Street furniture, equipment and plantings are arranged in two furniture zones

3.6. Reversing a gyratory

Piccadilly Two Way

City of Westminster W1J, SW1Y and SW1A

Completion date: Phase 1 completed June 2012

Cost: £12.5m

Improvements

Recreate the space	☐
Rethink traffic management	■
Relocate/merge functions	■
De-clutter	■
Tidy up	■

The road network from Piccadilly Circus to St James's Street junction, and through to Pall Mall/ Waterloo Place, was changed into a one-way gyratory system in the 1960s to optimise traffic flows in London. A by-product of this one-way gyratory was streets dominated by traffic and an unpleasant pedestrian environment.

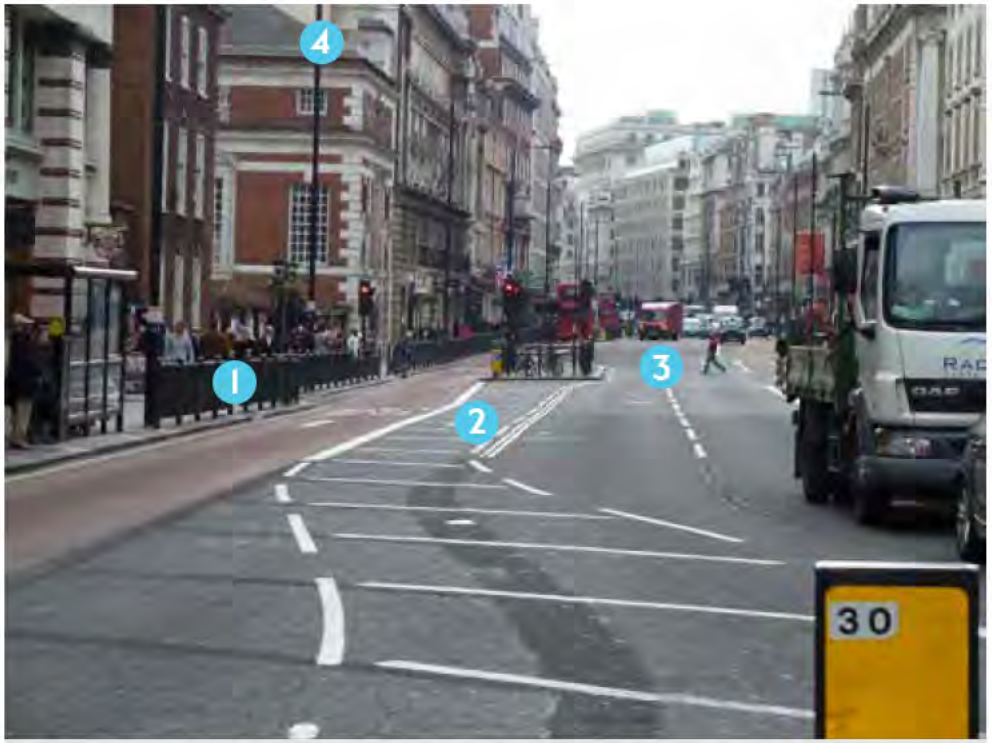
Besides the reversal of a one-way working system back to a two-way system, a major achievement of this project has been the partnership formed between TfL, Westminster City Council and The Crown Estate. The team worked collaboratively to undertake the modelling and design rather than TfL assessing a borough-led scheme. Three critical areas were identified by the team: Piccadilly Circus, Piccadilly/St James's Street junction and Pall Mall/ Waterloo Place. Each area required careful design and testing to balance and maintain efficient traffic flows and bus service reliability in an area of very high footfall, while simplifying crossings and creating additional public space in this architecturally and historically significant part of the Capital.

Figure 21: Streetscape enhancement has improved the historical setting of Piccadilly and provided greater space to accommodate the high level of pedestrian movement on the street

The scheme reintroduced a two-way traffic system to the road network, as well as significant improvements to the public realm. The scheme has responded to the high footfall levels by widening the footways on highly trafficked walking routes. Informal pedestrian crossings have been encouraged through the use of a wide central median paved in light grey granite setts and the removal of one kilometre of guardrailing. Pedestrian crossings have been improved with the use of single stage phasing and widened crossing points.

Street lighting previously placed on either side of the street was rationalised and included along the central medi an. Signals were combined with lighting and road markings were minimised where practical. To reflect the area's cultural and historic significance, heritage-style lighting, Yorkstone slabs, granite setts and kerbs were used.

The resulting street provides a quiet composition that allows the rhythm and beauty of the buildings to stand out. Movement for all modes has become less congested, safer and more enjoyable.



Before

1. Guardrails restrict pedestrian movement and add visual clutter
2. Road markings create visual clutter
3. Pedestrian crossings are narrow and infrequent
4. Lighting columns on both sides of street further restrict narrow footways

After

1. Wide central median paved in similar footway material encourages informal crossings
2. Minimal use of road markings
3. Footways are paved in Yorkstone slabs
4. Street furniture placed in single zone against carriageway
5. Central street lighting reduces clutter

3.7 Simplifying a junction

Herne Hill

London Borough of Lambeth
SE24

Completion date: July 2010
Cost: £1.7m

Improvements

Recreate the space	☐
Rethink traffic management	■
Relocate/merge functions	■
De-clutter	■
Tidy up	■

Figure 22: Strong relationships and flexibility throughout the design process has led to a multifaceted and vibrant space which is actively used by the local community and provides a distinct sense of arrival at Herne Hill

Image courtesy of the London Borough of Lambeth

The Herne Hill junction was identified as an overly complex arrangement with the intersection of six major roads causing significant traffic congestion. Initially, the scheme was a bus priority project to review bus lanes and signal timings, improve interchange links, and reduce bus delays by simplifying the junction.

The borough conducted extensive community engagement and set up a project board to help guide the process. As the brief developed, the focus shifted towards an all-encompassing town centre strategy. This included looking at walking and cycling facilities, opportunities for improved crossings and better access to Brockwell Park.

Policy 67 of the Unitary Development Plan (UDP) permitted 1,070 square metres of Brockwell Park to be used for a raised slip road between Norwood and Dulwich Roads, improving vehicular flow and safety for cyclists and pedestrians. This also allowed for a new, more open entrance to the park.

A major component of the design involved the closure of through traffic to Herne Hill station on Railton Road. A raised table outside the station and shared surfaces constructed of Yorkstone created a high quality pedestrianised environment.

On Milkwood Road, a raised zebra crossing and widened footway was introduced and staggered signalised crossings installed on Half Moon Lane. Junctions have also been tightened throughout the scheme to maximise footway space.

A strong project brief, coupled with political support from a project board, the local community and a flexible in-house design team, enabled the design of a more vibrant and multifaceted end product than originally planned. Simplifying the junction by closing Railton Road was the key component for justifying further interventions, with the pedestrianised area acting as an effective gateway to the scheme from the station.

Before

1. Pedestrian guardrail provides visual and physical barrier
2. Asphalt road surface in poor condition
3. Pedestrian realm poorly defined
4. Street furniture and equipment causes clutter and uses inconsistent colours

After

1. Pedestrian realm consistently defined with Yorkstone paving
2. Clear views to Brockwell Park enhanced
3. Granite kerbs provide a high quality finish
4. New tree planting

3.8 Making the most of constrained space

Kingsland High Street

London Borough of Hackney
E8
Completion date: April 2012
Cost: £2.58m

Improvements

Recreate the space	☐
Rethink traffic management	■
Relocate/merge functions	■
De-clutter	■
Tidy up	■

Figure 23: Bespoke detailing elements and treatment can help to enhance the sense of place and reinforce the identity of a street

Kingsland High Street is a bustling local centre in Dalston, east London, that experiences high footfall and traffic at all hours of the day. Prior to the improvements, the corridor suffered from a poor safety record largely as a result of narrow footways and high levels of pedestrians, with some forced to walk on the road due to congestion and inadequate footway widths. It was anticipated that following the completion of Dalston Junction station this situation would only worsen as passengers interchange between Overground stations and buses.

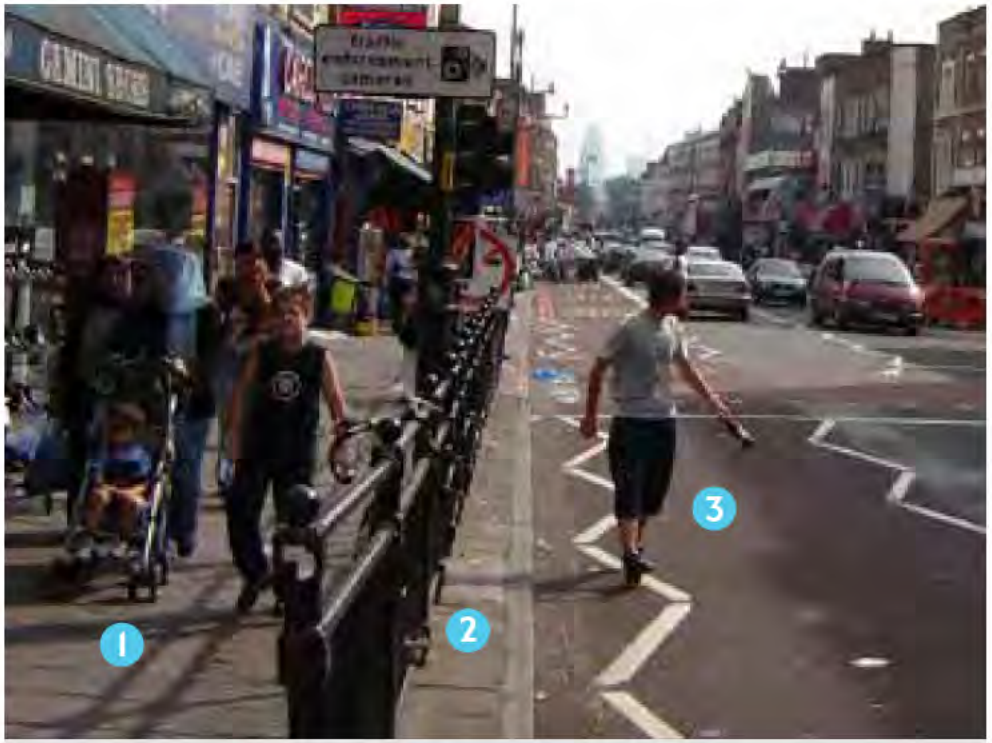
Coupled with the obvious transit-related need to improve Kingsland High Street, the London Borough of Hackney recognised the area was rundown and identified Dalston town centre as a regeneration area. Streetscape improvements were seen as the starting point for supporting regeneration aspirations to better support local communities and businesses, and encourage further investment and growth.

Following consultation with various parties including the police, the major objectives of the scheme were updated to include:

- Making Dalston a more walkable, attractive and thriving town centre
- Providing a more integrated streetscene and transport interchange
- Reducing levels of congestion and increasing levels of public transport use, cycling and walking
- Improving access to jobs, facilities and businesses
- Improving safety and security for residents and businesses

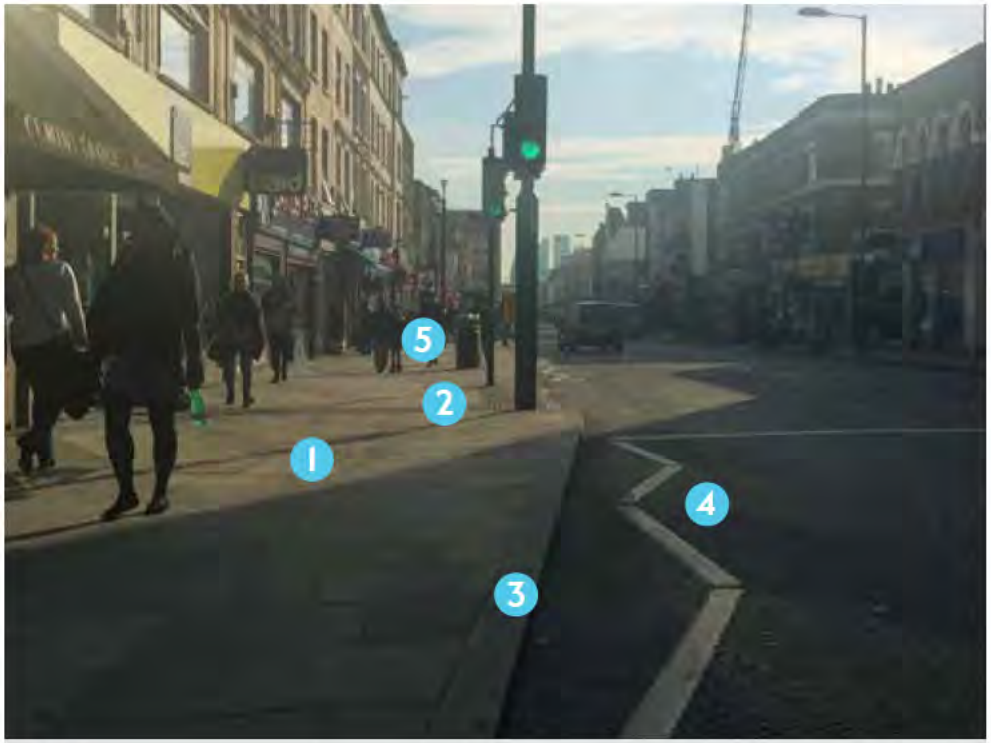
To simulate the effects of the scheme, which proposed a narrowed carriageway, a six-week trial was run. Temporary barriers were used to demonstrate that despite the reduction in overall capacity, congestion levels and bus travel times were not worsened.

This shift towards pedestrian priority is reflected in the new streetscape design which incorporates widened, decluttered and improved footways in Yorkstone and highlighted crossings. The transport interchange was highlighted with a bespoke treatment on the carriageway and relocation of bus stops. Businesses are better served with loading bays on the footway in granite setts. Wide kerbs were used to reinforce footway zones and bespoke paving was used to highlight special areas and enhance wayfinding. Lighting columns and lanterns were updated to LED. Despite the reduced carriageway capacity, traffic signals have been optimised to ensure that bus travel times are maintained and vehicle congestion minimised.



Before

1. Existing paving in poor condition
2. Signage and guardrails cluttering an already narrow footway
3. Crossings are infrequent causing pedestrians to cross informally



After

1. Consistent high quality footway paved in Yorkstone
2. Utility covers paved in Yorkstone provide unified footway
3. Wide granite kerbs provide elegant detail to pedestrian realm
4. Road markings rationalised
5. Street furniture and equipment have been decluttered and aligned in one furniture zone

3.9 Facilitating local businesses

Venn Street

London Borough of Lambeth
SW4

Completion date: September 2011
Cost: £0.46m

Improvements

- Recreate the space
- Rethink traffic management
- Relocate/merge functions
- De-clutter
- Tidy up

Monthly markets were introduced to Venn Street in 2001. Since then the popularity of the market has grown and Lambeth Council was asked to investigate how a weekly market could be introduced. The ambition for better market infrastructure quickly developed into a wider vision for wholesale streetscape improvements.

Prior to the improvements, Venn Street was dominated by vehicles and the footways were narrow and cluttered with equipment, limiting the street's social and commercial potential. A key challenge was that part of Venn Street was on the TLRN, however, in 2011 the Mayor of London returned this section of road back to Lambeth.

Figure 24: Engagement with local businesses and an innovative maintenance and funding regime has transformed Venn Street into a multifunctional space where businesses can benefit through the use of wide footway areas

Image courtesy of Ian Hingley, Urban Movement

The streetscape improvements have seen a new central paved area introduced using Yorkstone to create a level surface across the street. Recycled granite cobbles adjacent to this area demarcate the road and provide on-street car parking bays at either end. The shared surface approach helps to emphasise the 'villagey' Victorian character and enhances the quality of usable space for local businesses.

No road markings are painted on the street as it was granted a Restricted Zone by the Department for Transport (DfT) which has improved the aesthetic of the area. The design also includes building-mounted street lighting to reduce street clutter and electrical power points have been provided for market stalls.

The scheme has provided an economic boost for local businesses, as well as reducing council costs through a bespoke maintenance agreement. This has enabled businesses to take greater management responsibility for the street, which includes the funding of a regular jet wash. The bars and restaurants rent footway space and this money is invested in street cleaning and maintenance costs. Feedback from local residents and businesses has been positive, leading to calls for similar maintenance initiatives elsewhere.

Before

1. Streetscape dominated by car parking
2. Footways are narrow and cluttered

After

1. Yorkstone paving and granite kerbs provide defined spaces
2. Café seating, cycle parking and feature planting located in distinct zones
3. Key views are maintained

3.10 Good ordinary

Ambleside Avenue

London Borough of Lambeth
SW16

Completion date: November 2010
Cost: ±£1m (£60-£70 per sq m)

Improvements

- Recreate the space ☐
- Rethink traffic management ☐
- Relocate/merge functions ☐
- De-clutter ☐
- Tidy up ■

Ambleside Avenue is part of a one-way system linking Tooting Bec Green with Streatham High Road. It is flanked by attractive Edwardian houses; however, its streetscape had deteriorated and by 2010 was in a poor state.

As part of our commitment to streetscape improvement, we elected to carry out a full reconstruction, including complete re-kerbing and resurfacing as part of our capital renewal programme. Wide granite kerbs provide a clear edge between the footway and the carriageway; both were then surfaced in asphalt. New trees have been planted and skilfully integrated into the footway with attractive granite setts.

Figure 25: Ambleside Avenue was fully reconstructed

Amblesde Avenue is an excellent example of the 'good ordinary', where consistent and well-detailed application of our Streetscape Guidance can provide a significant enhancement in the quality of public open space, based solely on the use of standard components. Asphalt footway surfacing can be perfectly attractive if well implemented and framed by high-quality kerbstones. A similar scheme is currently underway over a long stretch of Edgware Road.

Before

1. Regular kerbs poorly define footway
2. Trees not defined with paving
3. Asphalt is scarred by repairs

After

1. Footway surfaced in asphalt
2. Wide granite kerbstone defines footway
3. Build-out protects car parking
4. Wide granite kerb used as channel for drainage
5. Granite setts used to define edge of tree pit

3.11 Accommodating all users

Royal College Street

London Borough of Camden
NW1
Completion date: August 2013
Cost: £0.37m

Improvements

Recreate the space	☐
Rethink traffic management	■
Relocate/merge functions	■
De-clutter	■
Tidy up	■

Royal College Street had a reputation for road accidents involving cyclists. Despite a 20mph speed limit, vehicles were averaging 30mph which made collisions more serious in nature. In the three years prior to the improvements, there had been 12 collisions with cyclists. A new scheme was implemented to tackle this but failed to reduce the number of collisions at Pratt Street and Plender Street junctions.

TfL and borough traffic engineers worked closely with cycling groups through several iterations to ensure final designs were robust. Completed in 2013, new segregated 2,000mm-wide cycle lanes run down both sides of the road. This narrows available space for drivers resulting in lower speeds which makes it easier to anticipate cyclists' movements. The cycle lanes use a 'light touch' approach to segregation with armadillo road bumps and planters placed between cycles and cars. These add greenery to the streetscape and provide an effective but permeable barrier to cars, while allowing pedestrians to cross the road and board buses. Car parking bays have been relocated away from the footway, doubling up as buffers to protect cyclists against traffic. Bus stops have been redesigned to accommodate the new layout and junction signals have been changed or removed to smooth traffic.

Six months after these works, traffic speed dropped by up to 21 per cent. The route also rapidly grew in popularity with a 46 per cent increase in cyclist use. This has led to aspirations to extend the scheme north and southbound of the site.

Figure 26: The use of 'light touch' cycle delineation measures at Royal College Street has led to a greener environment where cyclists feel safer using the road. The result has been a reduction in vehicle speeds and an increase in cycle numbers

Before

1. Bi-directional cycle lane with physical segregation
2. Inconsistent and small tree pits
3. 400x400mm concrete slabs

After

1. Two single direction cycle lanes separated with armadillos and planters
2. 600x900mm concrete slabs
3. Bus stop bypass
4. Tree pits resurfaced and new trees planted

3.12 Reflecting local character

Clapham Old Town

London Borough of Lambeth
SW4
Completion date: 2014
Cost: £2.8m

Improvements

Recreate the space	☐
Rethink traffic management	☐
Relocate/merge functions	■
De-clutter	■
Tidy up	■

Following the success of the public realm works undertaken in Venn Street, the Clapham Old Town Regeneration Project launched another scheme to improve Clapham Old Town, aiming to stimulate the local economy, improve connectivity and the overall ambience of the area. Working with local residents and stakeholder groups, the design consultants proposed the public realm works in conjunction with new traffic and road layouts to reverse the surface use from 35 per cent footway and 65 per cent road, to 65 per cent footway and 35 per cent road, effectively giving it over to pedestrians.

Figure 27: The Clapham Old Town scheme responded to the area's distinctive local character through the use of high quality materials and innovative treatments to pedestrian areas

The most transformative change was the replacement of a fast gyratory around a cluster of bus stands with a new public space connecting to businesses and pedestrian walkways, while retaining an efficient bus service.

To encourage walking and cycling in the area, new cycle paths and parking were introduced.

Footways have been widened, trees planted and seating added to create a pleasant environment to walk and pedal through while retaining loading facilities for local businesses. 'Copenhagen crossings', which extend the footway surface across the road, feature along the high street. These prioritise pedestrians, improve streetscape legibility and maintain traffic through flow.

Before

1. Taxi stand
2. Paving slabs in poor condition
3. Car parking on carriageway

After

1. Taxi rank relocated onto footway and stand removed
2. Paving renewed
3. Cycle parking provided
4. Car parking provided on footway

3.13 Rebranding a town centre

Hornchurch

London Borough of Havering
RM11
Completion date: April 2013
Cost: £2.5m

Improvements

- Recreate the space
- Rethink traffic management
- Relocate/merge functions
- De-clutter
- Tidy up

Hornchurch town centre is an important district centre in Havering distinguished by its medieval street pattern and modern centre. Although Hornchurch's retail economy is relatively healthy, the recent downturn has had a negative impact on local businesses. The area also suffers from road congestion, poor personal safety, inadequate inclusive design features and a tired public realm.

Recognising the increasing need for intervention, London Borough of Havering set out a programme of works consisting of cultural and residential redevelopment, physical improvements to the high street and support to rebrand businesses.

Figure 28: Hornchurch High Street has benefited from a series of interventions aimed at enhancing the pedestrian environment and reducing the visual and physical impact of vehicular traffic, resulting in a more prosperous town centre

Key features of the scheme included a focus on improving pedestrian permeability. This was achieved by removing guardrail, placing crossings on desire lines, increasing the width of the footways and implementing a continual central pedestrian crossing strip. The scheme also improved social spaces through planting, new lighting, wayfinding and street furniture. In addition to these, traffic was smoothed, bus stops were made fully accessible, and better provisions for cycling were installed.

Further public realm works have begun with additional funding from TfL following the success of the high street's improvements, which won a 'highly commended' Urban Transport Design Award in 2014.

Before

1. Small modular paving
2. Cluttered streets

After

1. Footway paved in 600x900mm slabs
2. Wide central median implemented to encourage informal crossings
3. New formal crossings implemented
4. Street furniture rationalised and new trees planted
5. Utility covers paved in same material

3.14 Ensuring good design

High quality urban design is an essential component for building a great city such as London. Streetscape Guidance is a tool to support the best in design which should be combined with the skilled judgement and expertise of professionals.

Multidisciplinary design teams are essential for exemplary streetscape design. A broad range of skills are vital for understanding the complex interactions, issues and requirements of the street environment. We recommend working with specialists to provide consistency and excellence in design, and encourage design teams to seek advice on specialist disciplines irrespective of project size.

Project design briefs

A systematic process should be employed for all street projects whereby a clear and succinct project brief forms the basis for delivering a focused and robust design. Refer to the DfT's Manual for Streets (2007) and CABE's Good practice in brief-writing (2011) for further information on briefs.

TfL Pathway is an integrated and consistent framework with the clear objective to provide the tools for delivery teams and their stakeholders to work effectively. Underpinned by common project management principles, it emphasises professional judgement in its flexible application to manage and control specific programme, project and delivery portfolio scenarios. Pathway is part of the TfL Management System and its use is mandatory for all project, programme and delivery portfolio work at TfL. Our staff should refer to the 'Pathway Handbook – Managing the Project, Programme or Delivery Portfolio' for further information.

The design team is responsible for producing designs which satisfy the brief and are Pathway compliant. Irrespective of the prime objective of the project, opportunities for streetscape improvements should be taken advantage of in accordance with Streetscape Guidance.

Reviewing the design

Internal review programmes should be embedded in the project programme as part of the design process.

Designers can also obtain impartial advice from Urban Design London (UDL), which is supported by TfL and strives to work closely with practitioners and other organisations to improve the quality of place. UDL runs a design surgery programme which can assist in shaping design decisions at an early stage in the project, and can prove useful as a sounding board for draft designs. For more information, contact info@urbandesignlondon.com

The Mayor's Design Advisory Group (MDAG) also provides expert advice and advocacy to support design quality, and is another sounding board for London-wide design strategies and major schemes. MDAG reviews serve as a prerequisite for selected projects and as a gateway to progress from development to delivery.

All streetscape projects impacting the TLRN should seek the endorsement of our technical approvals managers as well as the SDRG. Contact streetscapeguidance@tfl.gov.uk for more information, or refer to Section 1.8 – How and when should I engage with TfL?

How do we deliver and maintain high quality streets?

The materials outlined in Streetscape Guidance in the coming sections are recommended for all London streets and should be used across the TLRN regardless of project size, unless our SDRG approves an alternative. Like-for-like replacements will not achieve the world's best-managed streets, if they are not already world-class. The replacement of small quantities of surface materials or street furniture to correct a defect requires careful consideration.

Appropriate and timely maintenance regimes are essential for ensuring that the streetscape design and materials retain the quality of function set out by the designer, and meet safety, serviceability and sustainability requirements.

Working with TfL

Our routine maintenance works follow the principles of good practice set out in this guidance. Capital renewal works may occur on a cycle of more than 20 years. It is important that streetscape works are recognised as long-term investments in the streetscape of the TLRN. Any changes to materials or layouts should be reviewed by TfL Engineering and our road safety auditors at an early stage in the design process to ensure the scheme remains a long-term investment.

At regular intervals, a review of all TLRN streets is conducted to look for opportunities to improve aesthetics. Better Streets principles are applied to identify and remove unnecessary street signs, clear graffiti, declutter, relocate or merge functions, and in rare cases, to rethink or recreate the street.

Figure 29: It is important that detailed consideration is given to material type and method of laying to ensure longevity

Additional information

Commission for Architecture and the Built Environment (CABE):

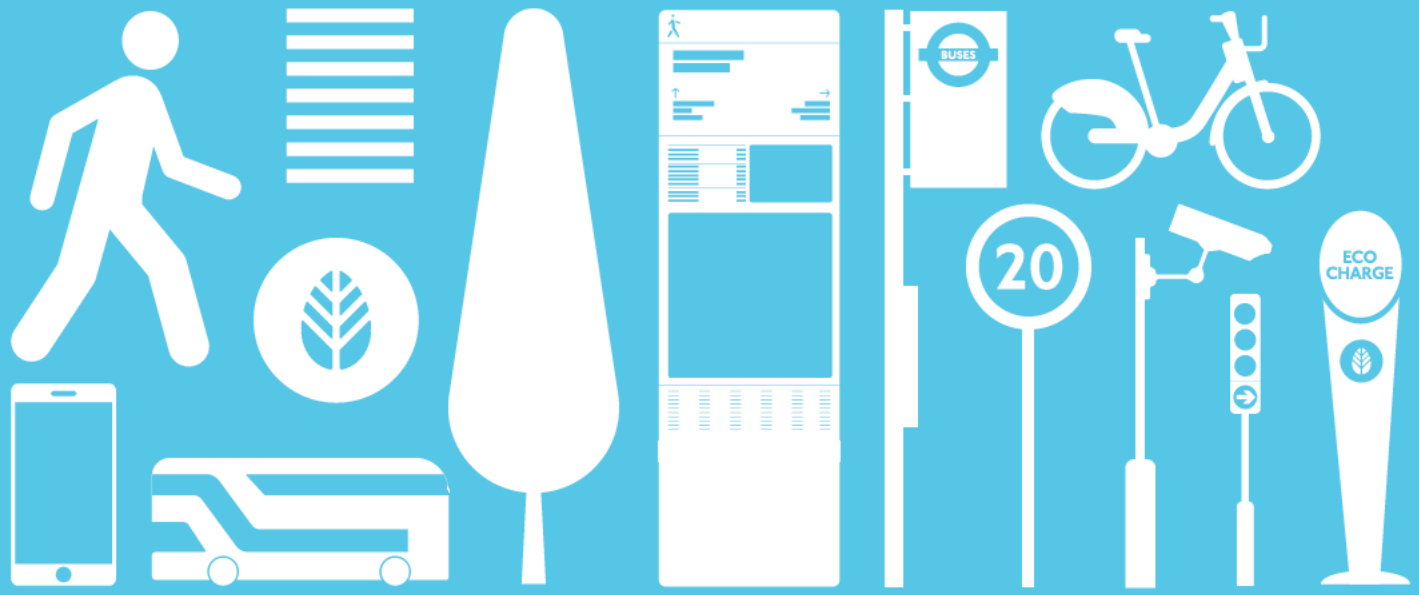
Good practice in brief-writing (2011): http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/masterplans/preparing-a-project-brief/good-practice

Department for Transport

Manual for Streets (2007)

Part C New measures for new challenges

4.1 Encouraging innovation and creativity 46
4.2 Trials and tests 48
4.3 Infrastructure and assets fit for the future 49
4.4 Making more efficient and flexible use of space 51
4.5 Intelligent systems and management 53
4.6 Changing behaviour and enabling different choices..... 53



4.1 Encouraging innovation and creativity

As London grows, the demands and expectations on streets and places will also grow and continue to diversify.

Continuous improvement of London's streets and places is therefore critical in meeting this challenge and will rely on best practice, creativity and innovation to develop places that are fit for purpose and fit for the future.

Best practice is an evolving concept and relies on continuous learning, research and trials. To maintain London's world-class streets and places, the barriers that prevent the uptake of new and innovative ideas need to be overcome.

This will require closer collaboration, open minds and earlier engagement.

Figure 30: Our streets need to be flexible to meet the changing demands that are placed on the network

Figure 31: The installation of the Oxford Circus all round crossing improved safety and aesthetics

Figure 32: New applications and technologies are working to improve information about the status of our network

Table 1: The innovation cycle

Innovate	**1. Aspiration** – London's streets must work hard to function and perform at a high level as places where we live, work and move through • An evidenced-based approach to innovation is required
Exception process	**2. Innovation** – Streetscape Guidance encourages designers to continually innovate; working with researchers and designers to produce better, more efficient and more attractive design solutions • Draw on best practice • The innovation must solve a problem, increase functionality, or better serve the customer
Deliver	**3. Exception** – The proposal must demonstrate that the innovation fulfils criteria set out within the Streetscape Guidance • The safety and security of all road users is of primary importance • The innovation must provide adequate accessibility features
Evaluate	**4. Installation** – Once the product is installed, it must be monitored and assessed as part of an iterative process of design development
Standardise	**5. Streetscape materials palette** – Where a design solution can be applied in a practical and reliable way across a range of settings, the Streetscape Design Review Group may elect to adopt the innovation as part of the approved materials palette for the TLRN • Use the materials palette as a baseline for the minimum standard required on the TLRN • Research new ways to improve the palette

Creativity and innovation should be directed at improving the efficiency of movement, the effectiveness of place, and in a way that improves the overall street user experience. To illustrate the level of creativity desired on London's streets, Streetscape Guidance references domestic and international examples of innovative streetscapes and streetscape components. These examples are not intended to be prescriptive but serve to demonstrate what is possible by adopting an innovative design attitude. While London is unique in character and complexity, the examples throughout the document highlight what may be achieved on its streets.

4.2 Trials and tests

Achieving the vision for London's streets requires a willingness to adopt a wider range of measures to address the emerging needs and functions of streets and places. This can be realised through trials and tests at small cost and scale to provide an evidence base from which to make permanent and positive change.

Off-street trialling of new measures, products, materials or layouts in a controlled environment, such as those at the Transport Research Laboratory (TRL), is generally required prior to proceeding to a DfT authorised on-street trial.

Off-street trials allow for quality testing and the collection of user feedback to help shape and refine proposals. Proceeding immediately to on-street trials may be necessary for testing site specific temporary measures, though should be subject to a range of authorisations and performance criteria assessments to determine whether adjustments are required. The results of on-street trials will determine if the measure, product, material or layout can be successfully implemented at a wider scale across London.

We are championing creativity and innovation at TfL by turning approach into action. A collection of examples below describe how innovation and creativity are being applied across a number of different functions.

Figure 33: Examples of creativity and innovation that will occur throughout the document

Protected junction temporary trial Portland, USA

A 'protected intersection' designed to eliminate cycle-car conflicts

Key functions

Opportunity
Right turns at junctions can put cyclists into conflict with motor vehicles. A redesigned junction can remove this conflict.

Benefits
This reinterpretation of a Dutch cycle-friendly junction provides a phased and safe way to make a right turn. The introduction of kerbs within the junction reduces the crossing distance and offers a refuge to cyclists while they wait to complete their turn.

Implementation
Junctions that avoid merging cyclists and drivers have proven safer for both. This is a trial aimed at making junctions more comfortable for cyclists to use. Cycle friendly junctions take many forms and need to be adapted to their context.

The image shows a trial example of a cycle friendly junction in Portland, Oregon, USA (Image courtesy of Nick Falbo)

Applying in London
This Dutch inspired concept is being studied to determine its suitability for the London context. The hope is that the design will provide an increased sense and level of safety and comfort for cyclists, especially at busy junctions. At the moment this is a concept design which will require further design development and trialling prior to implementation.

Figure 34: Innovations and creative ideas are constantly being reviewed to determine if they are right for our network

Figure 35: CMS is being installed on street lights across the network

4.3 Infrastructure and assets fit for the future

Better asset management

We are introducing Central Management Systems (CMS) on TLRN street lights. This system will allow us to remotely monitor and manage street lighting, allowing for dynamic control of lighting levels. This will allow lighting levels to be aligned better with traffic flows and road use, reducing energy consumption and carbon emissions without compromising safety or security. The system also remotely records failures allowing maintenance crews to ensure lighting levels are restored in a timely manner. CMS will dramatically cut carbon dioxide (CO_2) emissions by 9,700 tonnes and save approximately £1.85m a year. In addition, we are replacing conventional lighting with light emitting diodes (LED) which are more energy efficient and last longer.

Key functions – moving, living, protecting, sustaining

Figure 36: Trixi mirror on signals

Enhanced safety features

Improving safety for all street users is a top priority to ensure London remains an attractive place in which to live, work and invest. To reduce the conflict between cyclists and large vehicles, we have trialled the use of street cycle safety mirrors (also known as trixi mirrors) to give drivers of large vehicles better visibility of cyclists at junctions.

Key functions – moving, protecting

Improved materials

Adopting smarter and more innovative materials can drive significant improvements to streetscape performance by reducing environmental impacts and costs. Porous asphalt has been used at trial locations to better drain highway and footway surfaces from storm water to improve safety and reduce demand on storm water systems.

Key functions – moving, functioning, protecting, sustaining

Providing future flexibility

A lack of public and road space in London necessitates the need for streets and places to make best use of what is available. Implementing flexible street designs can allow for changing use over time. This is currently being explored with the introduction of 'pocket parks', small spaces that serve as extensions to the footway to provide amenities and green space.

Key functions – moving, living, sustaining

Basic street improvements

Areas with high foot traffic should have good quality footways to make walking easy and enjoyable and provide a range of pedestrian facilities, including good seating and lighting. At TfL we are using Better Streets principles to improve London's streets over time using a holistic highway maintenance approach.

Key functions – moving, living, protecting, sustaining

Figure 37: Permeable asphalt allows water to infiltrate

Figure 38: Derbyshire Street Pocket Park

Figure 39: New pedestrian facilities have been provided at Holborn Circus

Greener streets

Greater efforts can be made to enhance the environmental quality of London's streets through the use of recyclable materials and drainage improvements. Clapham Old Town has built a new town square which features tree planting and planters with seating.

Key functions – living, sustaining

4.4 Making more efficient and flexible use of space

More efficient people movement

New street and junction layouts can be used to build up safe, well-connected networks for travel by foot and cycle. We have sponsored UK trials of Dutch-style roundabouts for main roads. These use an orbital cycle track to separate cycles from motor traffic. This design minimises conflict and increases safety.

Key functions – moving, living, sustaining

Safer speed environments

Limiting traffic speeds through effective street design is important for cyclists and pedestrians. The introduction of 20mph trial zones and centreline removal studies takes a major step towards enhancing the quality of the streetscape beyond that of materials and layouts. Results suggest a consistent decrease in vehicle speeds as a result of these interventions.

Key functions – moving, living, sustaining

Figure 40: Clapham Old Town's new town square

Figure 41: Dutch style roundabout being trialled at TRL

Figure 42: 20mph speed limit

Enjoyable and active streets

As more people and families choose to live in London and its population grows, more is needed to get the most from public space, including the streets themselves. Around 4,000 planned events are already accommodated on London's streets every year. Simple but powerful ideas and showcase events can bring streets to life, boosting tourism, local economies and community interaction.

Key functions – moving, living

Re-imagined streets and places

London must evolve to keep pace with the aspirations and needs of its population. There are a number of locations across the city that benefit from implementing bold new design and traffic management to support safety and regeneration. We supported a shared space scheme on Exhibition Road, South Kensington, to great effect following extensive local engagement.

Key functions – moving, living, sustaining

Enhanced public realm

Balancing user priorities, especially the needs of pedestrians and cyclists, is often challenging in busy urban contexts. We are trialling new configurations, phasing and infrastructure to respond to the most challenging junctions and increase permeability across London.

Key functions – moving, living, protecting

Figure 43: Tour of Britain at Westminster Bridge

Figure 44: Exhibition Road has been reimagined

Figure 45: Hornchurch town centre redesigned to allow for informal crossings

Informal spaces

The creation of temporary and reversible city living spaces can support local initiatives to give streets a radical makeover in low cost and imaginative ways.

Key functions – moving, living

4.5 Intelligent systems and management

More dynamic information

We are promoting the use of cutting-edge cooperative technology at TfL to communicate with all streetscape users in real time to examine and improve customer experience, reliability, safety and the environment. Trials in this area include a real-time, state-of-the-art digital screen mapping tool at a Regent Street bus stop. The bus stop incorporates a data feed of live departure information. We share information across the modes and work with businesses to make this information accessible to all.

Key functions – moving, functioning, living

4.6 Changing behaviour and enabling different choices

Land use planning

High density, mixed-use development schemes with embedded walking and cycling infrastructure can ensure that travel by foot or cycle is the most competitive option for short and medium journeys. We are working with developers to promote schemes that implement car-free and 'car-lite' proposals, including the provision of Mayor's Cycle Hire Scheme and/or car club infrastructure to offer an attractive alternative to car ownership or use.

Key functions – moving, living, sustaining

Figure 46: Café seating in front of a pub

Figure 47: Interactive screen in a London bus shelter

Figure 48: The Shard at London Bridge

Additional information:

Transport for London:

International Cycle Infrastructure Best Practice Study, 2014
Network Operating Strategy, 2011
Highway Licensing and Other Consents, 2011

Licence application:

http://www.tfl.gov.uk/info-for/urban-planning-and-construction/

Legislation:

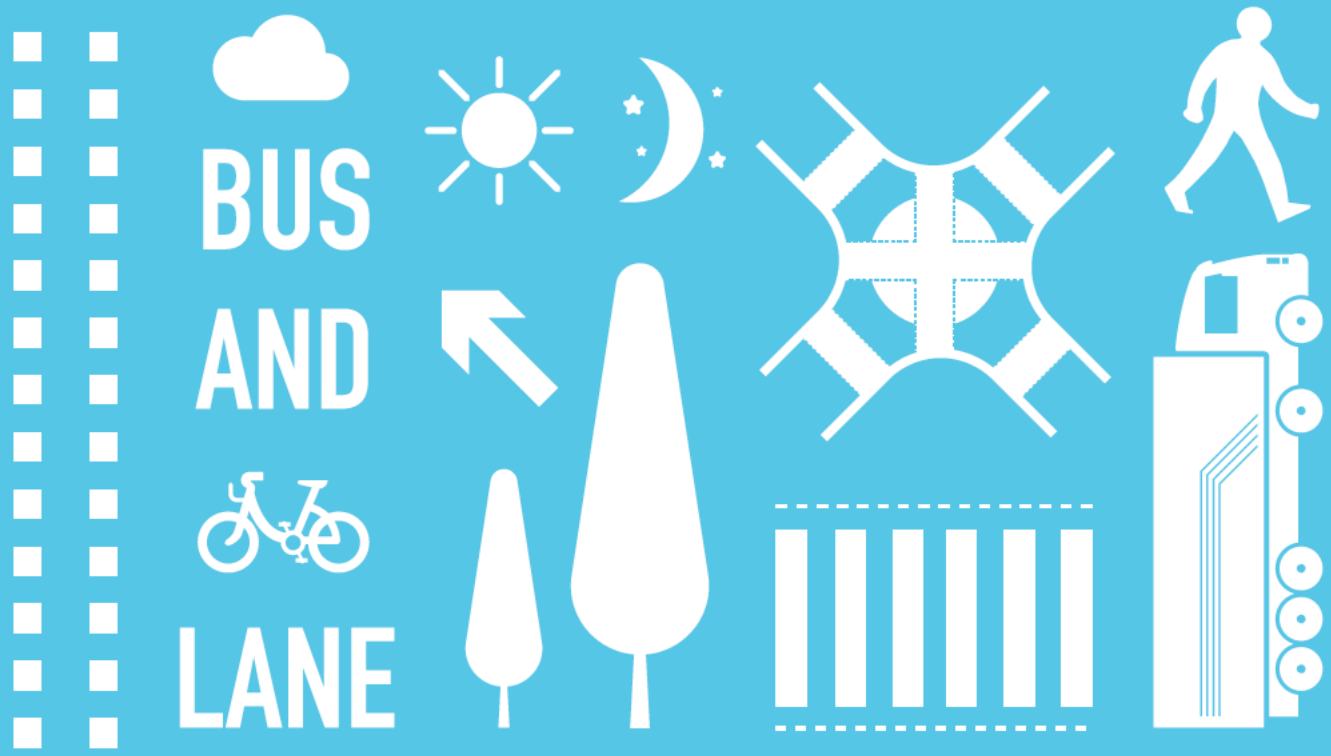
The Highways Act 1980

Infrastructure Commission:

World class infrastructure for a world city, 2010

Part D Balancing priorities

5.1 Accommodating movement 56
5.2 Understanding competing demands . 56
5.3 Recognising place 57
5.4 Function, performance and form 58
5.5 Facilitating Place 60



5.1 Accommodating movement

Streets are dynamic environments with movement playing a significant role in defining the character of the streetscape. The streetscape should act as a calm backdrop to facilitate movement in a logical, consistent and cohesive manner, acknowledging that streets are vibrant places of activity for a wide range of users.

Regardless of the mode of transport, all users require convenient, direct, safe, legible routes that are efficient and reliable. The design challenge is to facilitate these principles within the context of a confined street where different modes often require significantly different types of infrastructure. Only through a robust design process, backed up by safety and quality audits, can these objectives be achieved for all road users.

5.2 Understanding competing demands

Streets need to manage a wide range of road users and their competing demands by providing clear but flexible spaces, with consistent and legible features that acknowledge where, when and how users should interact. Priorities should be applied to best provide for efficient and safe movement of people, goods and services, while reflecting and enhancing the character of the place.

Detailed consideration should be given as to how different users inhabit, interpret and compete for the finite space available on streets. Particular attention needs to be given to accessibility and ease of movement for less able and less confident street users, which should be established through best practice design and consultation with accessibility groups and officers.

Figure 49: Streets support movement and can play a significant role in defining its character

5.3 Recognising place

A place is more than the sum of its spatial and physical attributes: the buildings, streets and spaces. A place is a location of meaning; one where everyday life occurs. Spaces are transformed through individual and communal experience into places. Places are diverse, dynamic, socially responsive and can range in cultural meaning. Places can also be considered across a multitude of scales; a seat within a park could be considered a 'place', or a park within a neighbourhood.

Successful streets and places tend to have common characteristics. These can be summarised as those places which have a distinct identity, vitality, are flexible, safe and easy to navigate.

Figure 50: Successful places are flexible, easy to access and navigate, locally identifiable and responsive to the needs of its users

5.4 Function, performance and form

While it may seem that the role of a street is defined and fixed, it is important to consider that spaces evolve, and that the function, performance and form of a street may change over time as a result of urban form redevelopment, changing demands, alterations to surrounding street network, new public transport stops etc. Designers should always consider the future aspirations of the street and surrounding area when developing proposals to ensure that they can respond successfully to change.

Function

Considering how the street functions in the wider movement network is a vital first step towards putting forward proposals which enable the street to perform better. A balanced design strategy must reflect the type and quantity of activity that exists on the street and ensure that all users are considered throughout the design process through quantitative analysis of the street.

Figure 51: Euston Circus sees large volumes of vehicles daily

Performance

Complex modal interactions regularly occur within the urban environment, for example, where pedestrians cross informally on desire lines or walk on the carriageway. Common activities not endorsed by or discouraged by existing infrastructure may indicate that the street is not performing well.

It is important to analyse the performance of the road network to ascertain how well the street is fulfilling its intended function and establish where changes can be made to improve conditions. For most roads, the width, speed limit, extent of kerbside activity, frequency of side roads and crossings, play a major role in how well the road is performing.

Many roads in London typically exhibit a morning and evening peak in use. However there are exceptions, such as some locations in central London, where roads are at capacity for most parts of the day. Measures to enhance capacity should be balanced so as not to compromise other uses.

Figure 52: Congestion may indicate that a street is not performing its intended function

Figure 53: Roads must perform well for all intended users

Figure 54: Streets need to be designed flexibly to allow for use at all times of the day

Form

Understanding the role and sense of place of the street or space is important for establishing how to compose its physical form and assist with the selection of materials that are of an appropriate scale, mix and fit for purpose.

When assessing the sense of place, it is essential to understand the site-specific qualities of the street and its surrounding area. These should be incorporated throughout the design process and can be established through a variety of techniques including site surveys, public consultation, mapping of historic street patterns, topographic surveys, public realm quality assessments, open space studies, land use analysis and townscape character assessments.

These methodologies can help to construct a detailed understanding of the place. They can also help identify constraints and opportunities, and should be used to inform the design brief.

Figure 55: Westminster Bridge

5.5. Facilitating place

Public space

Public spaces are at the cornerstone of all human interaction and engagement in London, with the majority of public life played out on the streets and public realm. The design of these spaces can have a significant impact on people's sense of belonging and quality of life as they can play a large role in promoting social cohesion and better mental and physical health.

Successful public realm allows for the congregation of people and social interaction to take place at all levels of the community. It offers different activities, caters for a variety of users, is safe and enjoyable to spend time in during both the day and night, and enhances the sense of place and identity of an area through cohesive integration with its surroundings.

Figure 56: Leicester Square is a vibrant London destination

In urban areas, public spaces can be considered as all areas open and accessible to the general public, and can include those spaces between buildings, parks, highways and cycleways. On streets, public spaces can be considered as any part of the streetscape where there is an opportunity for encouraging social activity. These can be gathering spots, places for interaction or simply a place to rest.

There are many important elements required to facilitate the design and maintenance of great streets, however, we would like to highlight four aspects of street design found to be critical in London. These include townscape character, local identity, heritage, and crime prevention and are briefly covered below. For further information on street design, please refer to following websites:

- www.livingstreets.org.uk
- www.designcouncil.org.uk
- www.landscapeinstitute.co.uk
- www.architecture.com

Townscape character

The aesthetic character and functional requirements of the surrounding buildings should be considered together with the street layout as part of an integrated composition. The urban structure, density and mix, together with the scale, massing and general appearance of buildings should influence the designer's

response. Designers should be sensitive to the architectural character of the buildings, their rhythm and scale and how these features can be reflected through detail in the streetscape.

Consideration should be given to other townscape elements such as framing of key vistas and landmarks, the texture, pattern and character of existing building materials, and the impact of microclimate and overshadowing as a result of tall buildings.

Figure 57: The street provides a neutral canvas that supports diverse architecture

Local identity

Local identity can be considered as the sense of distinctiveness defined by an individual or community. The look and feel of the streetscape impacts on how people perceive and respond to the street: it affects where people spend time and shop; where businesses choose to invest; it affects how neighbourhoods physically connect to each other; and it impacts on how people choose to travel. A poorly connected community with streets that are unattractive for walking will likely develop a completely different local identity to that of a neighbouring community which is well connected to retail centres with a vibrant street environment.

Designers should seek to reflect identity by engaging with local authorities and working collaboratively with communities to identify the attributes of the place which are important to local people.

It is important to be contextually aware, using the materials palette sensitively, detailing to a high standard, with careful placement and rationalisation of street furniture, signage and road markings to ensure context, character and identity are respected.

Figure 58: Coloured surfaces reinforce signalised diagonal crossings for pedestrian movements

Heritage

Buildings and elements within the streetscape provide symbols of community identity and are a focus for civic life. These assets and their setting should be celebrated so that their cultural and aesthetic value can be appreciated.

Figure 59: Cyclists riding past Victoria Tower and the Houses of Parliament

When dealing with heritage assets, it is important to consider that while the materials in this guidance are applicable in most circumstances, special treatments may be appropriate in accordance with areas of particular significance and the SDRG should be consulted in these instances.

It is the design team's responsibility to consult the relevant authority to establish the exact location and particular requirements of heritage sites and features, and the local authority's conservation officer should be consulted in all instances.

Detailed advice on conservation of assets in the urban environment is provided in Historic England's guidance The Setting of Heritage Assets (2011) which is recommended for assessing the value of the setting and the implications for change. For information on designated heritage assets, locally important buildings, archaeological remains and landscapes, contact the Greater London Archaeology Advisory Service, Heritage Environment Record at glher@HistoricEngland.org.uk

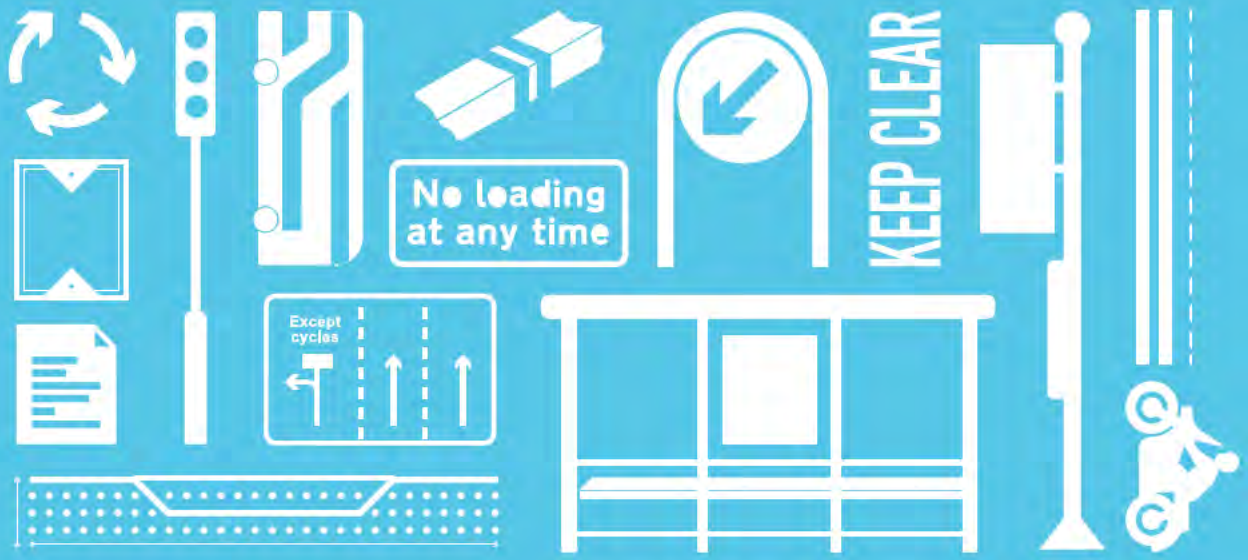
Crime prevention

All designers should seek to provide safe and secure environments, as outlined in Section 17 of the Crime and Disorder Act 1998. Our transport community safety managers can provide advice to help design teams meet their duties under the Act.

When developing public space design, contact should be made with a crime prevention officer to understand existing crime patterns early in the design process and ensure steps are taken to mitigate risk. Consideration should also be given to ensuring that routes designed exclusively for non-motorised users should be well-lit, overlooked (preferably by active frontages) well-connected, direct, following desire lines, and wide enough to avoid blind corners.

Figure 60: Safe and secure environments: A Metropolitan Police Service officer

Part E Physical design and materials



Section 6
Introduction 64

Section 7
High quality footways 65

Section 8
Carriageways 103

Section 9
Crossings 129

Section 10
Kerbside activity 177

Section 11
Footway amenities 201

Section 12
Safety and functionality 247

Section 13
Street environment 273

Section 14
Transport interchanges 312

6 Introduction

Part E of Streetscape Guidance provides layout and design information, including layout drawings. It sets out a vision for London's streets, covering a broad range of topics. This section has been structured to reflect the discrete spaces and materials that are encountered on the street, footways, carriageways, crossings; activities that occur between the carriageway and the footway; and amenities on the footway including those that provide safety and comfort functions, elements that occur on any street environment and interchange zone.

Each section is introduced by a vision for the future and is followed by a breakdown of how to best achieve the vision.

Part E begins by discussing surface material in three sections: 'High quality footways', 'Carriageways' and 'Crossings'. These sections cover a standard palette of materials, preferred layouts, and selection criteria for those materials.

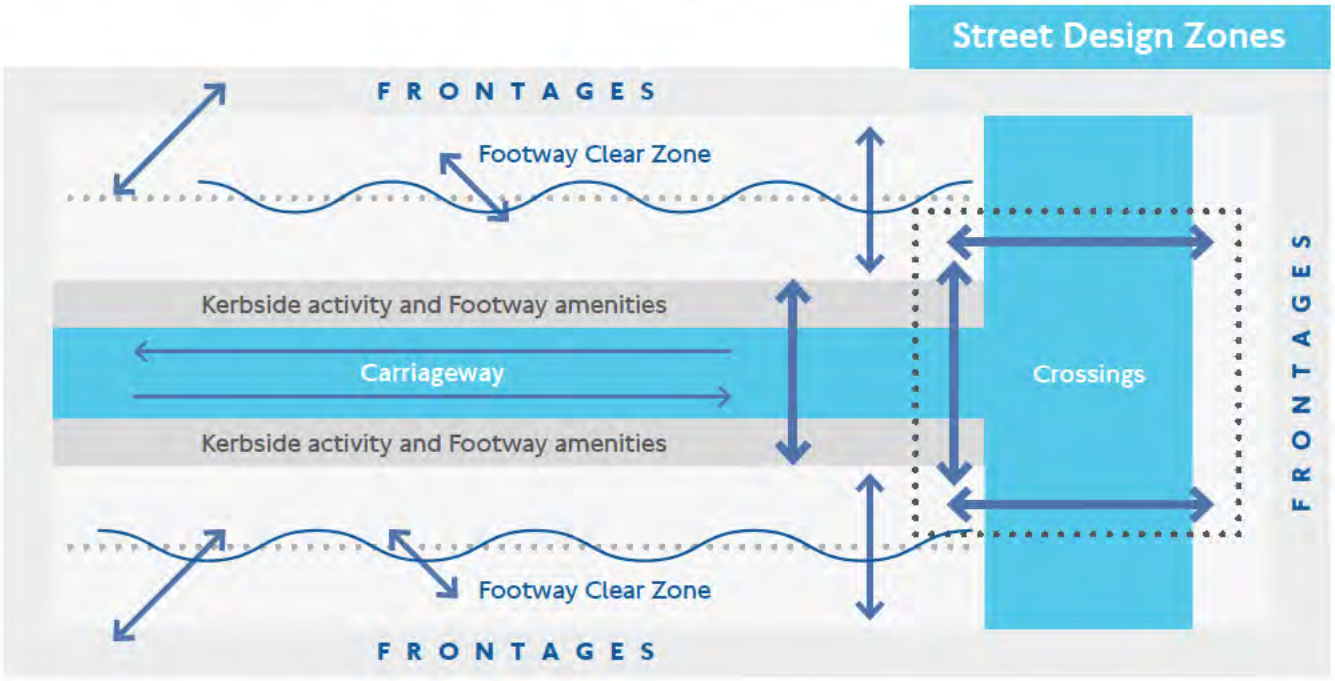
The following section, 'Kerbside activity', details how functions such as parking and loading bays, bus stops, and parking control can be accommodated in a range of circumstances.

The next two sections, 'Footway amenities' and 'Safety and functionality', deal with components on the footway that provide a comfort, convenience or facility to enrich the street environment or to provide another essential function.

The 'Street environment' section outlines the elements essential to achieving a comfortable street for all users. Information is also provided on how to treat leftover spaces in the public realm and seek out opportunities for pocket parks.

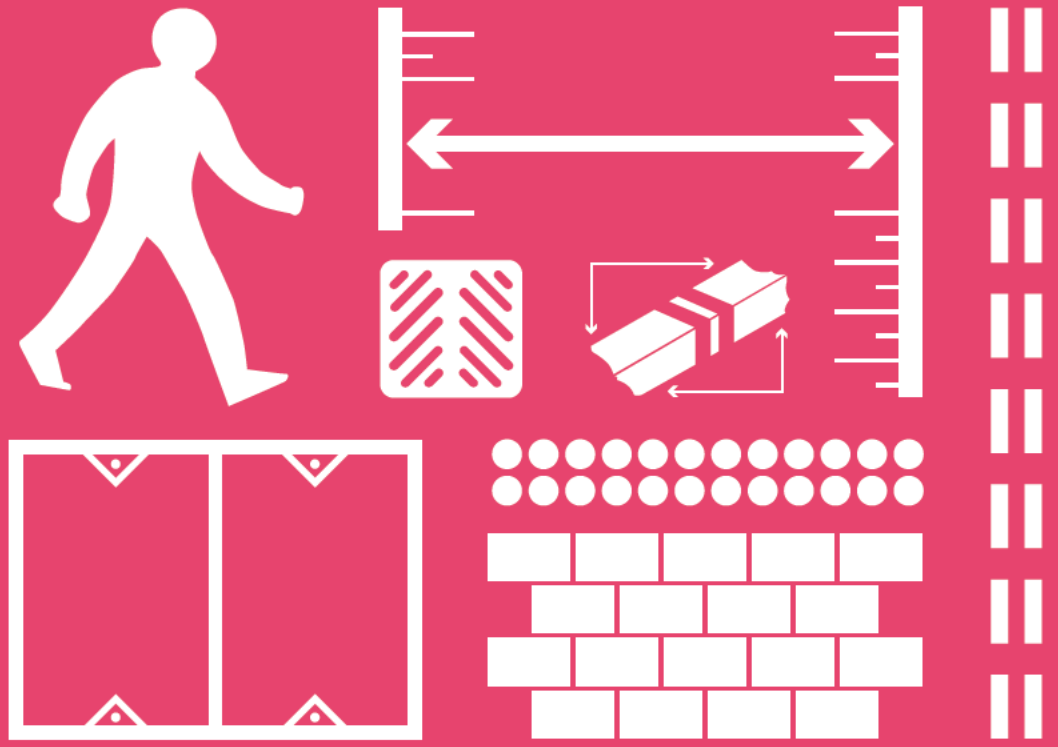
Finally, a section on 'Transport interchanges' covers those areas where more than one transport mode combines to form an interchange environment. This section details how to treat on-street interchanges for various modes, and how specific design consideration is required to ensure successful integration with the surrounding street network.

While the principles included within Part E are provided by ourselves as exemplary practice, reference is also made to wider best practice, relevant guidance and technical documents which offer more detailed information on how a designer should approach a specific area.



Part E High quality footways

7.1 Vision 66
7.2 Footway materials 66
7.3 Interfaces and transitions 78
7.4 Footway crossovers 81
7.5 Inspection covers 86
7.6 Smoke vents 94
7.7 Kerbs 95



7.1 Vision

Paving forms the background for almost every street scene and it is our intention to provide high quality environments that are robust, timeless and beautiful. At the heart of all well-designed streetscapes are high quality surfaces that are visually appealing and functional. Good footways are simple, durable and well maintained. Well-considered surfaces will tie together the disparate elements of the setting, making it comfortable and enjoyable to linger. The following section provides guidance on how to achieve high quality footways in London through the recommendation of footway materials, layout and application.

7.2 Footway materials

We aim to ensure that London's streets are safe, reliable and well maintained. Footway materials should respond to the distinctiveness of the area as a neutral 'carpet' that complements adjacent buildings rather than standing out in their own right. To achieve this, Streetscape Guidance recommends a simple and durable selection of footway materials applied in standard sizes: concrete, a limited palette of natural stone materials and asphalt.

All footway materials should be applied to achieve a high quality finish. The requirement for a 'high quality finish' does not mean that the most expensive materials are used, rather, that the composition and application of materials are well executed to achieve the best possible result. Careful consideration should be given not just to the footway material, but also the kerb type, tactile paving design and the overall composition that these components create.

This section highlights the recommended materials, layout and application of footway surfaces. Please note that any deviations from this guidance will require approval from the SDRG.

Concrete slabs for footways

TLRN standards:

Colour: Grey natural

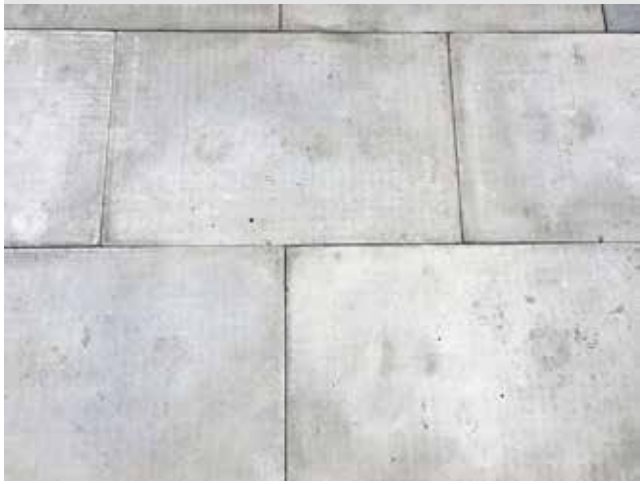
Finish: Pimpled

Dimensions: 900x600mm

Application: Preferred for extensive new areas of paving across most urban settings.

- Concrete and artificial stone paving (ASP) are the most common paving materials used on the TLRN and are TfL's preferred choice for large parts of the network

Figure 61: 900x600mm concrete slabs



Advantages:

- Cost effective
- Convenient to source
- Easy to cut and dress
- Can last between 20-40 years
- Can be reinforced to avoid cracking where vehicles are likely to mount the kerb

Disadvantages:

- The general appearance is utilitarian which may not be sufficient for special areas
- Can crack easily if mounted on poor construction base
- A moderate maintenance regime is required

Considerations:

- When considering a phased approach, designers should recognise that initially the interface will be evident between existing and new paving but will wear to provide a more seamless appearance
- Designers should work with adjacent property owners to better integrate private forecourts and promote a seamless use of paving materials across the footway
- Where the slabs are required to be cut, 600x450mm, 600mm and 750mm may be used to reduce onsite cutting and wastage. These sizes should not be used as standard within the footway without SDRG approval. Loading requirement must be considered when designing joints and structure. It is important to evaluate mechanical sweeping when designing a footway and in such cases butt finishes should be avoided. Bedding materials should be selected with equal care dependant on loading

Construction:

- Setting out of slabs including their orientation should be specified and based on existing interfaces or centrelines
- Chamfered edge concrete slabs should not be used

Figure 62: London Bridge is paved in concrete

Granite slabs for footways

TLRN standards:

Colour: Silver grey (also available in other colours)

Finish: Fine-picked

Dimensions: 900x600mm slabs (standard)

Application:

- Suitable in areas of high civic importance or adjacent to large new developments
- Granite is typically used as a paving surface within a distinct and defined area to highlight the area's importance
- Historically, granite was used extensively for footways and carriageways as small setts. More recently larger granite slabs have proved to be a durable and attractive material for footways. Bespoke treatments, including alternative dimensions and colours which are not standard, require SDRG approval

Figure 63: 900x600mm granite slabs

Advantages:

- High quality, organic appearance
- Durable, long lifespan, reusable and wears well with minimal colour fade
- Combines well with other footway materials
- Can be cut to size and dressed as required
- Relatively low maintenance
- A range of finishes and textures are available to achieve different effects using the same stone. Bespoke finishes must be approved by the SDRG

Disadvantages:

- High material cost
- Less convenient to source
- Installation can be more time consuming and costly than concrete

Considerations:

- The replacement of broken slabs that accurately colour match existing paving can be difficult as sourcing the same stone can be costly and time consuming
- Where the slabs are required to be cut, 600x450mm, 600mm and 750mm may be used to reduce onsite cutting and wastage. These sizes should not be used as standard within the footway without SDRG approval
- There are some circumstances where 100x100mm or 100x200mm stone setts may be used (see Carriageways for further guidance)
- Loading requirement must be considered when designing joints and structure. It is important to evaluate mechanical sweeping when designing a footway and in such cases butt finishes should be avoided. Bedding materials should be selected with equal care dependant on loading

Construction:

- Setting out of slabs including their orientation should be specified and based on existing interfaces or centrelines

Figure 64: Euston Circus uses two shades of granite paving

Yorkstone slabs for footways

TLRN standards:

Colour: Natural buff

Finish: Diamond sawn

Dimensions: 900x600mm slabs (standard) or variable lengthx600mm

Application:

- Yorkstone paving should be considered for use in conservation areas, sites of historic significance and locations with a high civic importance
- Existing Yorkstone should be recycled

Advantages:

- Attractive, organic appearance
- In keeping with much of London's traditional character
- Low maintenance
- Has a long lifespan if installed well; 60 years or more
- Can be cut to size and dressed as required
- Can be laid to sit alongside concrete slabs – this requires an aesthetic transition line, for example, tactile paving, crossover, etc

Disadvantages:

- High material cost
- Prone to fracturing if on an inadequate subbase
- Installation requires excellent workmanship
- Prone to staining

Considerations:

- Most locations should use a diamond sawn finish. However, it may be appropriate to use a flame texture, riven or reclaimed Yorkstone for repairs or to match an existing area
- To minimise waste and maintain a high quality finish, the length of the Yorkstone slab may be less than the prescribed 900mm, as long as it remains greater than the width and has a minimum bond stagger of at least 150mm
- Service ducting should be aligned in a strip and a flag removal method should be identified to minimise damage during service maintenance
- Loading requirement must be considered when designing joints and structure. It is important to evaluate mechanical sweeping when designing a footway and in such cases butt finishes should be avoided. Bedding materials should be selected with equal care dependant on loading.

Construction:

- No break joints less than 150mm on alternate courses and they should not be notched into each other
- Joints between slabs should have a uniform 8-10mm joint or if the specification is for close joints, the dimension is five to six millimetres

Figure 65: 900x600mm Yorkstone slabs

Figure 66: Yorkshire paving sits well alongside granite and concrete paving

Asphalt surfacing for footways

TLRN standards:

Colour: Neutral grey

Finish: Variable aggregate gradings acceptable

Application:

- Footways where structures such as cellars, subways or bridges are located directly beneath the surface
- Footways carrying shallow utilities
- Expansive areas of footway in suburban or rural-suburban areas with grassed verges
- Footways where vehicles regularly mount the kerb
- Cycle lanes and tracks
- Heavy footway crossovers

Figure 67: Asphalt paving

- Asphalt surfacing should not be disregarded as an inferior product to paving slabs as it can achieve an equally high quality finish when executed well. Always consult an experienced materials engineer to help decide on the appropriate bituminous mixture for particular surfacing requirements
- Shared footway/cycleways

Advantages:

- Construction is relatively fast and straightforward
- Finish is even and joint-free thereby reducing the risk of trip hazards and cracking
- Durable
- Easy to reinstate and recycle

Disadvantages:

- Reinstatement of asphalt paving can create a 'patchwork' effect
- A crossfall of two per cent is required
- Can deform with frequent heavy vehicle overrun if underlay is insufficient

Considerations:

- For areas that have a higher place value, consider using 300mm wide granite kerbs to emphasise the pedestrian realm
- Where it is anticipated services will regularly need to be accessed asphalt is not recommended as frequent reinstatement will degrade the appearance
- It is recommended that mastic asphalt is used for areas where waterproofing is essential

Construction:

- Recommendations for the laying of various asphalts are given in BS 594987

Figure 68: Westminster Bridge is paved with asphalt and wide kerbs

Footway construction

Consistent application is important for maintaining a clean aesthetic. Footway surfaces should be firm, slip resistant, and low in reflectivity, laid in a manner which is comfortable underfoot, minimises the risk of trip hazards and is well drained.

Structural design depends on the level of everyday use, the risk of vehicle overrun and the existing ground conditions. The relevant standard must be used to design the footway.

Joints and cuts

The following jointing parameters should be applied when selecting materials and constructing the surface:

Optimum jointing spacing	2-5mm between paving slabs
Acceptable joint spacing filled with compacted mortar	6-10mm between paving slabs
Maximum size of opening for covers and gratings	13mm

Design teams should consider the use of cuts to achieve changes in gradients where paving slabs are used. Generally the number of cuts should be kept to a minimum and a single straight line cut used as opposed to several. Residual slab lengths of less than 150mm should be avoided.

Where two footways intersect at awkward geometries, paving should be cut to ensure a clean aesthetic and respond appropriately to the road hierarchy and the building line. Generally, the primary road should take priority, with surface materials cut to provide continuity along this route.

Figure 69: Careful attention should be given to the treatment and appropriate cutting at locations where surface materials of different types or alignments join. The footway on the left side of the cut line shown in this image has taken precedence, as the primary road of the two

Figure 70: Paving units cut in a radial pattern could be appropriate at certain locations

An alternative approach is to cut the units in a radial pattern. Generally this approach should be reserved for wide or long corner radii and as a response to the adjacent building architecture.

Mortar

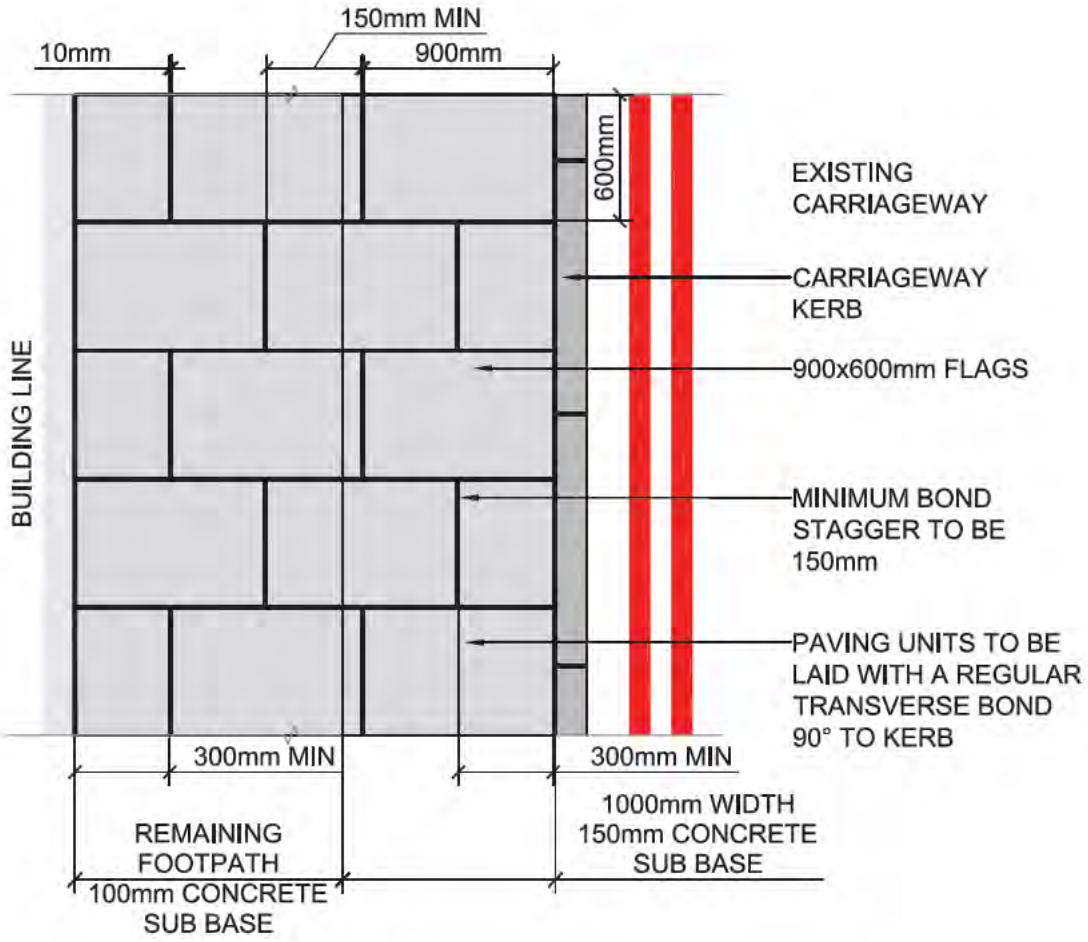
Where it is used, mortar has a significant impact on the aesthetic quality and overall appearance of the paving surface. Close butt jointing should be provided where possible to ensure a continuous high quality surface without a visible network of mortar joints. Good edge restraint on both sides is essential to prevent spreading. Where footways do not abut a kerb or existing wall, precast concrete edging is required. Clean joints at kerb edge and back of footway are required by careful detailing and cutting pre-construction.

Mortar infills must be avoided at the backs of kerbs, at building facades and around utility covers. Infills should be kept to a minimum around posts and special core drilled flags are recommended to ensure good fitting.

Quality control

A sample panel may be constructed at the start of the construction phase to establish specified standards of workmanship for the scheme, acting as a quality benchmark. Typically a sample panel area would cover around 30 square metres of footway and represent most features in the build, including a kerb edge, building line, inspection covers, a radius and at least one dropped kerb.

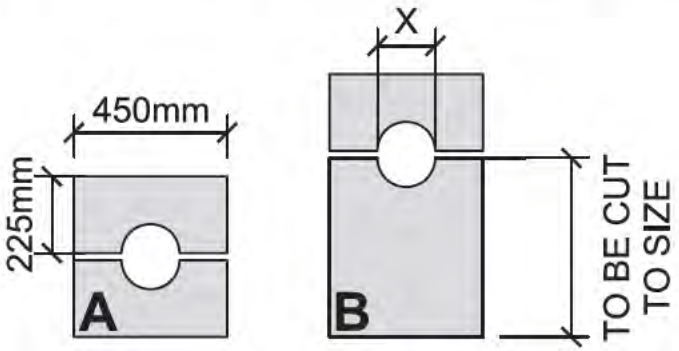
Figure 71: Paving slabs should be laid out as shown here



Notes :

1. Paving units to be laid out with a regular transverse bond across the footway at 90 degrees to the kerb.
2. Minimum bond stagger should be 150mm.
3. Designers should consider the layout of the paving to anticipate the minimising the amount of cuts that will be required and avoid creating small slivers of paving
4. Patterns which incorporate multiple sizes of flags or gauged width layouts are generally not recommended but may be considered for special areas or adjacent to larger civic or commercial projects.
5. When interfacing with private forecourts, cellars or basement lights, additional care should be taken to ensure that footway materials adjoin with surrounding materials smoothly by aligning with existing edges. it may be advantageous to gain the consent of the owner to realign or renew a small area of private forecourt to Improve the overall footway design. if the forecourt is to remain private, it is usual to define the property boundary with metal studs on the footway surface.

Figure 72: Required cuts around signal poles, columns and rails



Notes:

Optional treatment around posts:

1. Pedestrian all fasteners shall be stainless steel.
2. Concrete ready-made at lengths of A=225mm and B=525mm with semi-circular cut-out with variable diameter from X=60mm to X=230mm.
3. Onsite core drilled flag with semi-circular arrangement as indicated.

Figure 73: Paving layouts turning a 90 degree corner

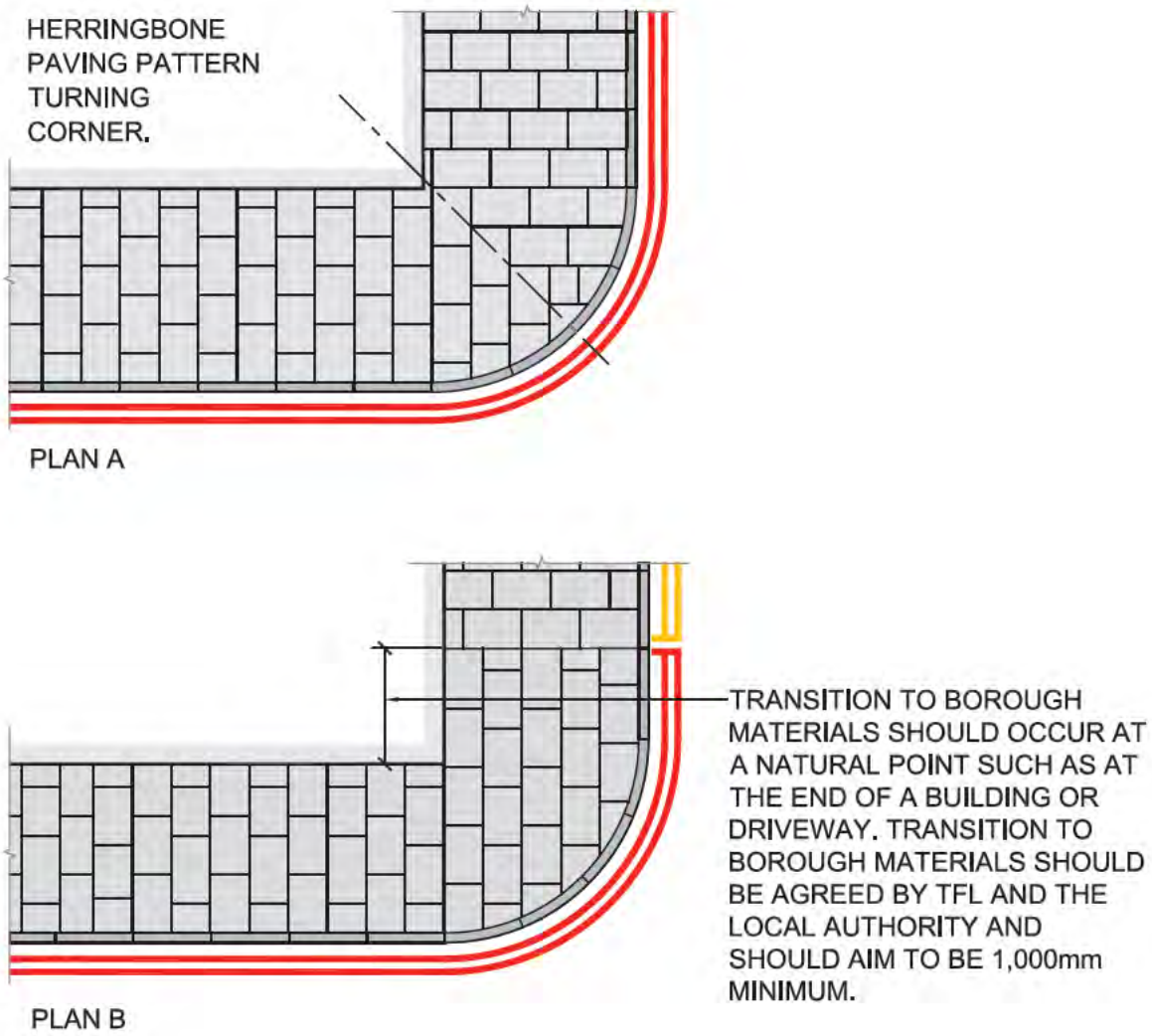
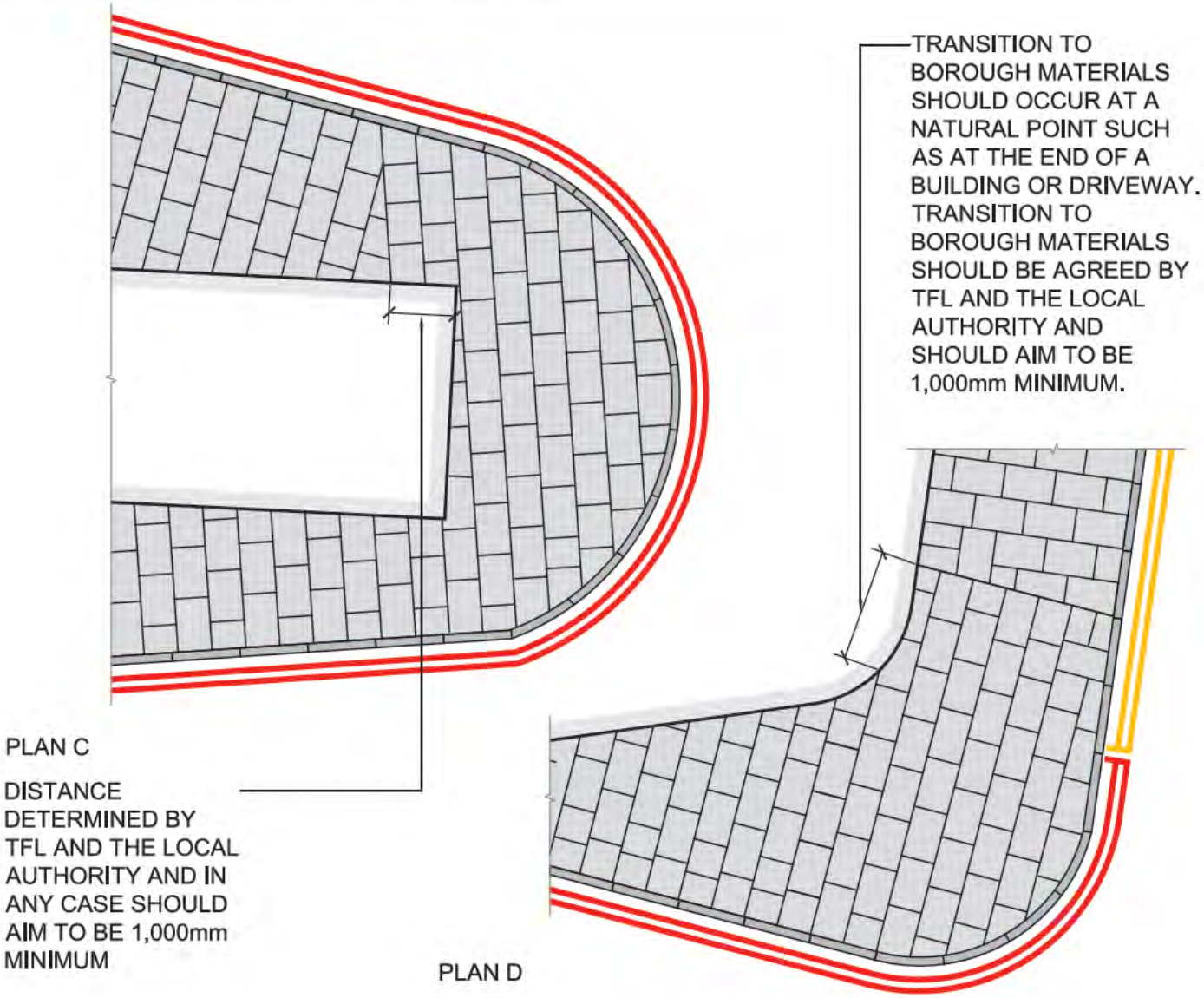


Figure 74: Paving layouts turning irregular corners



Additional information

Department for Transport, Highways Agency:

Design Manual for Roads and Bridges, Volume 6, Section 3, Part 4 TA81/99: Coloured Surfacing in Road Layout (Excluding Traffic Calming)

Design Manual for Roads and Bridges, Volume 7, Section 2, HD 39/01 Footway Design

British Standards:

BS EN 1341: provides guidance on the breaking load for setts and identifies some building specifications.

BS 7533: Part 4 offers a standard method of construction for pavements in natural stone or concrete pavers, including slabs.

BS 7533: Parts 7 and 10 offer a standard method for laying natural stone setts where traffic levels exceed 200 or 1,000 standard axles per day.

BS 7533: Part 12 provides sub-structure advice and shows the construction specification required for pedestrian areas which are occasionally used by vehicles. This detail applies to most pavement crossovers where vehicles occasionally drive on to them.

Transport Research Laboratory:

Footways and cycle route design, construction and maintenance guide

Commission for Architecture and the Built Environment (CABE):

Paving the way: How we achieve clean, safe and attractive streets, 2002

English Heritage:

Streets for All, 2005

7.3 Interfaces and transitions

Detailing of edges, insertions and level changes within paving should be resolved by the design team before construction and should not be left to site operatives. This is particularly important for how materials interface with the surrounding area, whether a borough road or a continuation of the TLRN.

Design teams should consider how the scheme terminates, where the edge is located and how to best tie-in with the adjoining street materials.

Figure 75: Yorkstone transitioning to granite setts with a flush granite kerb acting as a border

Good practice

Scheme boundary treatments:

- The scheme boundary should be detailed to provide a smooth transition between new and old materials, with appropriate edge restraints as required, ensuring alignment resilience
- Where possible, materials should terminate at a point which responds to the surrounding built character, for example, where a building frontage ends, or is aligned to a prominent feature such as a wall or street tree
- For side roads perpendicular to the TLRN, the surface material should continue around the corner for a minimum of 1,000mm
- Aim to avoid making a transition across an inspection cover as this will require additional work in cutting surface materials and result in the creation of small fragments of paving
- It is often more practical for new carriageway surfacing to not directly align with new footway materials. The scheme limits for the carriageway and footway should be resolved separately and detailed based on site-specific issues relating to the existing surface condition and drainage
- Any interface point should be discussed with the respective borough to reach an agreement on where the boundary limits should be extended to and how best to transition to borough materials

Materials

- Designers should look to optimise the modular nature of paving products to minimise cutting
- Footway materials should always be consistent on either side of the carriageway to provide visual continuity
- Any new surfacing should continue across the full width of the footway. This may be difficult to achieve where private forecourts or basements adjoin a building frontage. Design teams should work with shopfront owners to identify opportunities for continuing the paving across the forecourt to the building edge. This provides a far more visually attractive finish to the footway

Figure 76: 900x600mm concrete slabs transitioning to granite

Material transitions

Same modular size

Where new paving meets existing paving of the same size of unit, every effort should be made to ensure that the new paving units align directly with the surrounding materials and interlock.

Different modular sizes

Where new paving meets existing paving of a smaller unit size, a clean transition should be sought, such that new paving units are cut to provide a straight finish across the footway.

It is generally recommended that this cut should be at right angles to the kerb edge; however, it may be more appropriate in some instances where the footway is wide or the building line especially prominent, for the transition cut to be at right angles to the building.

Figure 77: Asphalt transitioning to 900x600mm concrete slabs with edging strip

Paving to asphalt

Where slabs meet non-paved areas, a clean line adjacent to the kerb edge should be implemented with a single row of slabs cut to one-third width 900x200mm and laid lengthways at the interface. This is particularly effective as a detail for natural stone surface edge treatments.

New developments

New building developments that front on to the road network will inherently change the character of the street. This especially relates to any changes that are made to the land use at ground floor level, the height of the new building, and the materials that are used in its construction.

New developments may therefore provide an opportunity to justify changes and improvements to the design of the street to meet new local requirements. This may include making improvements to surface materials, integrating additional street furniture and planting, or providing new crossing facilities and improved access to local public transport.

Building density and massing

In line with London development policies, new developments typically provide higher densities and greater building heights, putting additional pressure on the public realm to perform better for more people.

The ratio of building height to street width significantly impacts on the quality and experience of the public realm for all users.

Higher buildings can create a more overbearing presence on the streetscape, creating increased areas of shade and changing wind patterns and microclimate. This should be considered when planning for any new tree planting or seating in the area.

Buildings at the back edge of the footway, with no front garden or forecourt and a continuous frontage create a strong sense of enclosure and a more urban streetscape character.

Figure 78: A private development transitions subtly to the TLRN through use of similar materials and coordination with the streetscape

Land use changes and public realm design

New active frontages and building uses should be supported by reconsidering the design of the public realm where practicable. This may include providing space for outdoor seating, additional soft landscaping and other measures to support social activities and new land uses.

Any revisions to the street design should coordinate with new building accesses and changes in pedestrian behaviour.

Street furniture should be relocated and merged where appropriate and respond to the new character of the development where appropriate.

Figure 79: More London's active frontages are supported with seating, planting and water features

Street improvements

Where building heights are increased, there will likely be greater pedestrian flows to and from the development. This may provide justification for increased footway widths, cycle parking and new crossing facilities.

New buildings may provide additional opportunities to enhance the public realm through integrated facilities such as mounted lighting as part of the architecture, relocated street furniture, and enhanced wayfinding.

New buildings will likely require additional cycle parking to support the development. Designers should check building plans and internal parking facilities to establish whether additional cycle parking is required at street level. For further information about requirements on the TLRN, please contact our Borough Planning team by email at **boroughplanning@tfl.gov.uk**

Additional information

Department for Transport:
Manual for Streets, 2007

Greater London Authority Economics:
Retail in London, 2006

Transport for London:
Transport assessment best practice: Guidance document, 2010

Existing forecourts

The building setback distance and front boundary treatments significantly affect the character of the streetscape. We encourage developers to carefully consider the adjacent footway material so that the transition is visually cohesive with the street.

Where a forecourt area is provided, developers are encouraged to use Streetscape Guidance's recommended materials, to provide a more cohesive high-quality finish that transitions seamlessly with the street.

When working on the TLRN, should developers wish to extend the forecourt material to the kerb edge, SDRG approval is required. Materials should be suitably robust, slip resistant and maintainable. We will generally assume the maintenance liability for surfaces which extend across the footway for approved exceptions to the streetscape palette, but only up to the private property boundary.

Surface material transitions

Where a surface material transition occurs from private forecourt to the boundary of an authority, developers are encouraged to relate the forecourt surface treatment to the existing paving orientation and/or the surrounding paving module size.

Generally the existing paving will align with the kerb edge and so any new paving should intersect the building frontage at right angles if the building line is parallel to the kerb edge, providing a clean aesthetic.

Where a distinct change in surface paving is proposed, developers should terminate the paving at an agreed location on or adjacent to the boundary, such that the materials transition along a straight edge.

Figure 80: More London's paving extends to the kerb and is successful due to its attention to detail

Developers and the highways authority should agree an exact boundary point where the paving transition will occur to best accommodate the existing footway materials and avoid creating narrow fragments of paving and/or extensive areas of footway resurfacing.

Should the change in paving material not align with the public/private interface, metal studs no greater than six millimetres in height, can be used to outline the boundary.

New access arrangements

Additional footway crossovers may be required where new developments propose a change in access and servicing arrangements.

When working on the TLRN, new footway crossovers need to be approved by us and will be implemented at the cost of the adjoining landowner. Removal of defunct crossovers on the TLRN will be delivered by ourselves.

Additional information

Department for Transport:
Manual for Streets, 2007

Greater London Authority Economics:
Retail in London, 2006

7.4 Footway crossovers

Footway crossovers provide an entry point for motor vehicles to private land. They can be considered an intrusion by vehicles into pedestrian space and can have a detrimental impact on the streetscape if they disrupt the continuity and comfort of the footway. Designers should consider the impact of crossovers on pedestrian experience and ensure that they maintain ease of passage for wheelchair users.

Design

Footway crossovers take one of two forms, light crossovers and heavy crossovers.

Light crossovers are used to access a property with a low level use, such as a house. Light crossovers should provide restricted access to cars or light vehicles. They should provide a continuous footway surface for the crossover with a dropped kerb.

Heavy crossovers are used by heavy goods vehicles (HGVs) for deliveries and servicing requirements. A continuous footway surface is preferable which should be suitably robust. This may require using the same material but in smaller or deeper set paving units. Designers may delineate the crossover with flush kerb treatments or in exceptional circumstances, a change of material to setts or asphalt provided

that there is not a series of heavy crossovers in close proximity.

Good practice

- Tactile paving either side of the crossover is not required but may be recommended in some circumstances
- Sightlines should be kept clear for motorists to see pedestrians on the footway and give way accordingly. Access gates to private land must not open on to the public highway as they reduce sightlines and create a physical obstruction
- Surfacing should match that of the surrounding footway for light crossovers
- Generally, the ramp to the dropped kerb should not extend across the full width of the footway, but only sufficient to accommodate a suitable gradient of 1:12 and the transition kerbs. Where the footway is too narrow for such an approach, the whole width of the footway should be partially lowered for the crossover, such that a level area of footway is achieved with a constant gradient from back of footway to carriageway level
- When an existing crossover becomes redundant through changes in access arrangements to the private land, the developer or land owner will need to remove the crossover and reinstate the footway and kerb alignment through a Section 278 Agreement, without charge to the authority

Heavy crossover using setts and quadrant kerbs

The construction of crossovers should accommodate the magnitude of loading when vehicles cross the footway. The width of the dropped kerb and crossover should enable vehicles to pass without mounting the surrounding footway.

Surface runoff from the carriageway should not pool at the crossover or enter private land. Footway crossovers should not be located within bus stop cages, car parking or loading bays.

Crossovers are to be constructed in accordance with section 184 of the Highways Act 1980.

Figure 81: Heavy vehicle crossover

Design standards	
Typical width	2,400-3,000mm
Kerb upstand height from bottom of dropped kerb to carriageway	25mm
Minimum distance for crossover edge from street furniture	800mm
Gradient to dropped kerb	Maximum 1:12 Maximum 1:40

Planning

New footway crossovers require planning permission and may be requested by the adjacent landowner to the planning and highway authority. The authority will consider the impact of any proposed crossover on safety and free flow of traffic, as well as visibility and proximity to junctions and street furniture, among other considerations outlined in the Highways Act 1980, and will then decide whether to accept or modify the proposal. For work on the TLRN, please contact Borough Planning by emailing **boroughplanning@tfl.gov.uk**

The crossover is part of the public highway and does not give the occupier of the premises any particular rights, except to gain access to their property with a private motor vehicle.

The general presumption is to refuse an application if there is a conflict with a street tree.

If works are agreed they will usually be undertaken at the expense of the landowner, including the cost for footway strengthening and street furniture relocation. The authority is responsible for subsequent maintenance.

Additional information

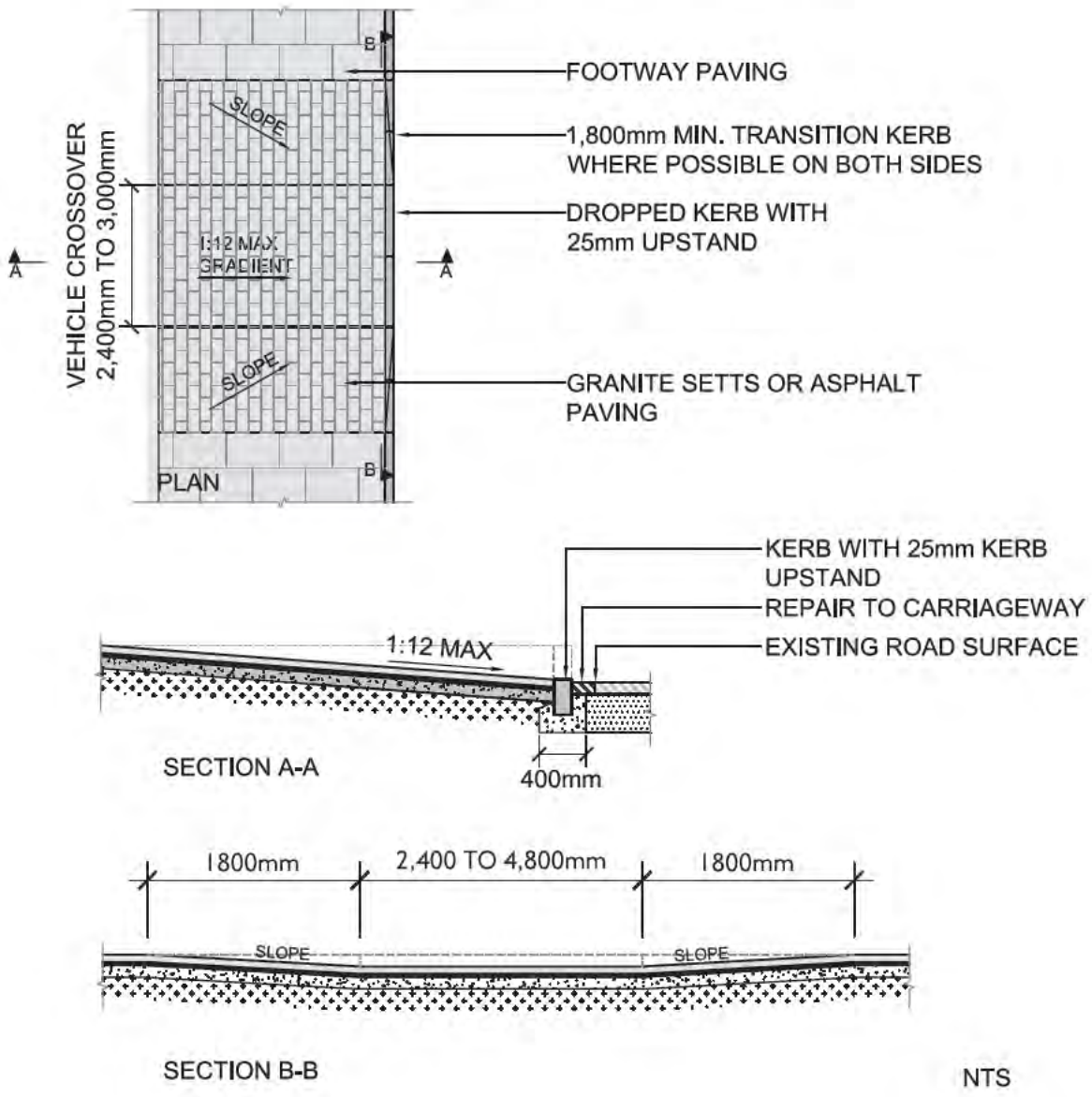
Legislation:

Highway Authorities, Highways Act 1980

Department for Transport:

Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Figure 82: Domestic vehicle crossover in paved footway – Option 1

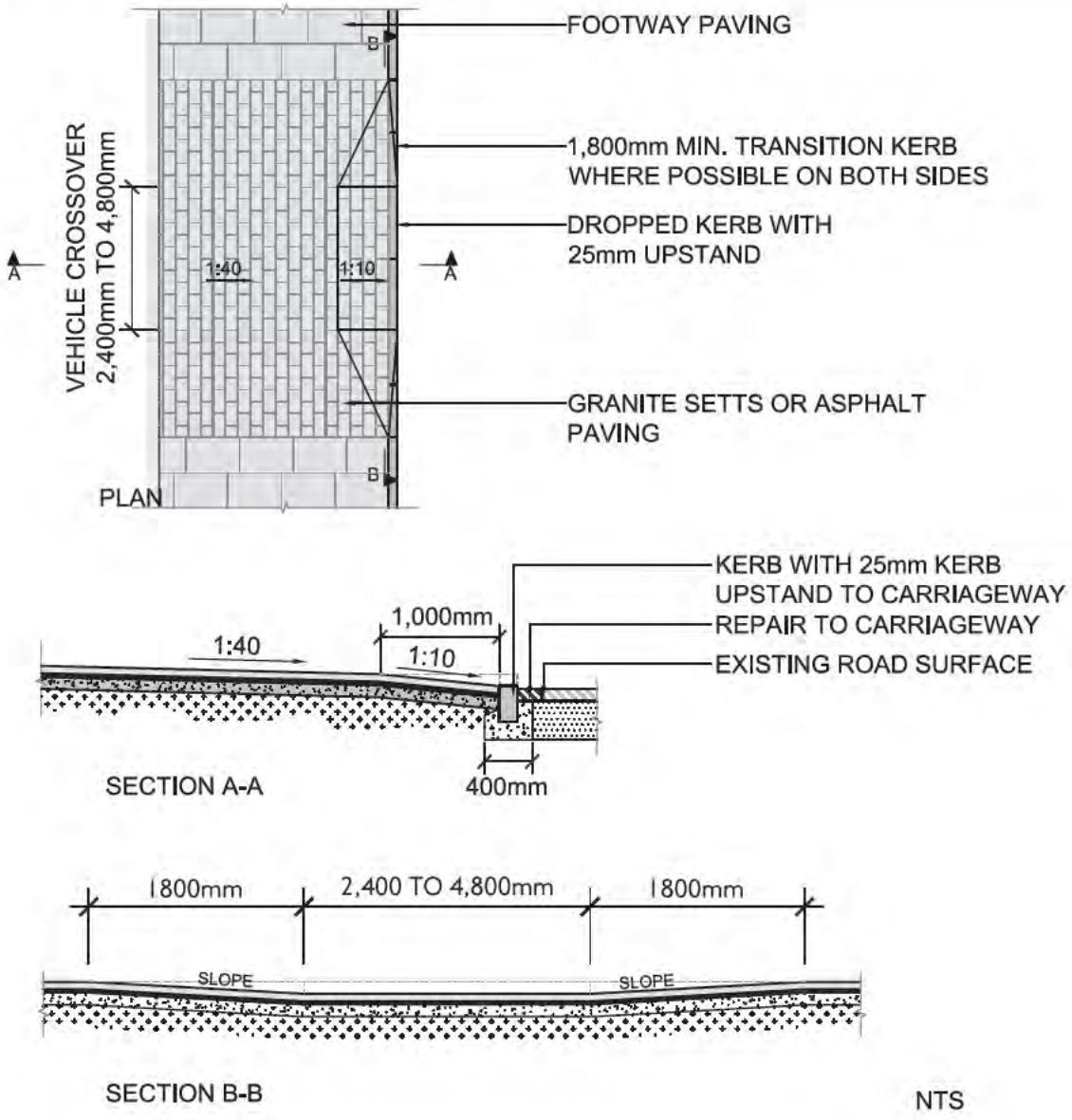


NTS

NOTES

1. Crossovers can be constructed using asphalt, setts or blocks. Material selection should be in keeping with the context.
2. Lateral clearance to all street furniture to be 450mm minimum from face of kerb.

Figure 83: Domestic vehicle crossover in paved footway – Option 2



NOTES

1. Crossovers can be constructed using asphalt, setts or blocks. Material selection should be in keeping with the context.
2. Lateral clearance to all street furniture to be 450mm minimum from face of kerb.

NTS

7.5 Inspection covers

Access chambers, inspection chambers and manholes, often collectively referred to as ironwork, are located across the highway to provide varying degrees of access to underground utilities. Inspection covers at the surface can be unsightly, especially when located on footways, as they can fragment the visual continuity of paving materials.

Placement

Ironwork should be positioned in a location that minimises visual disruption. When creating new streetscapes, it is important to liaise with utility companies to explore all opportunities for achieving this.

The utility company generally predetermines the location of ironwork to best satisfy servicing requirements.

The following points should be considered when determining the placement of an inspection cover:

- All inspection covers and frames should be to the appropriate strength rating to ensure that they do not "fail" under the expected loading conditions. These strength ratings are laid down in BS EN 124. In footways the normal strength rating would be B125
- Inset covers are only mandatory by TfL in tactile paving areas. Although not mandatory by TfL there may, in some instances, be a desire to use inset covers to achieve a more homogeneous footway surface finish. In these situations the designers should contact the utility companies concerned to ascertain their requirements. In some cases special types of covers may be specified with or without identification markings
- A highway authority can arrange for a utility company to relocate the access point in certain circumstances, however, this can be very expensive
- There is usually a small degree of flexibility for altering the orientation of ironwork within footways. Design teams should seek to align the orientation of the edges of a cover, where possible, with that of the pointing employed on rigid footway surfaces
- Care should be taken to ensure that access to chamber covers is not impeded with the addition of any new item of street furniture
- For new chambers, such as for traffic signal ductwork, the cover should be positioned in as inconspicuous a position as possible, and ideally aligned to the modular paving layout
- In high security areas, inspection covers may need to be marked. Advice should be sought from our transport community safety managers within the Community Safety, Enforcement and Policing directorate
- Some utility companies have bespoke labelled covers and inset covers – determine this by asking the utility company
- Inspection covers that are required to do so should have ventilation

Inset covers

Inset covers are composed of a recessed tray and frame, which can accommodate paving materials to match the surrounding palette and help hide the presence of ironwork. Inset covers are not mandatory; decide on a case-by-case basis whether they are appropriate for each location.

The cost of providing an inset cover will need to be part of the associated scheme costs and its maintenance will be borne by the highways authority. Contact the utility company well in advance so they can provide details of the covers that will need replacement.

Utility companies need to be consulted to approve the use of inset covers. At present

Figure 84: Granite tactile paving inset into an inspection cover

British Telecom and TfL ironwork can be finished with an inset cover.

Recessed fire hydrant covers should not be inlaid with paving materials as they need to remain visible for safety reasons.

Attention should be given to the detailing around the covers to ensure that footway surfaces abut the frame and to avoid unsightly cement infill.

Surface materials

We prioritise the use of inset covers in areas where high quality surfacing is provided in the form of natural stone and for areas of tactile paving.

Careful detailing should ensure that the inset cover matches the surrounding cuts and scale of the adjoining materials. This can include where different materials interface across the cover so that the inset cover is composed of both materials. On tactile surfaces, the detailing must ensure that the blister is orientated consistently across the inset cover and adjoining paving.

Any treatment which draws attention to the inspection cover should be avoided; do not use a different inset material to the surroundings, and do not provide a band of blocks around the inspection cover.

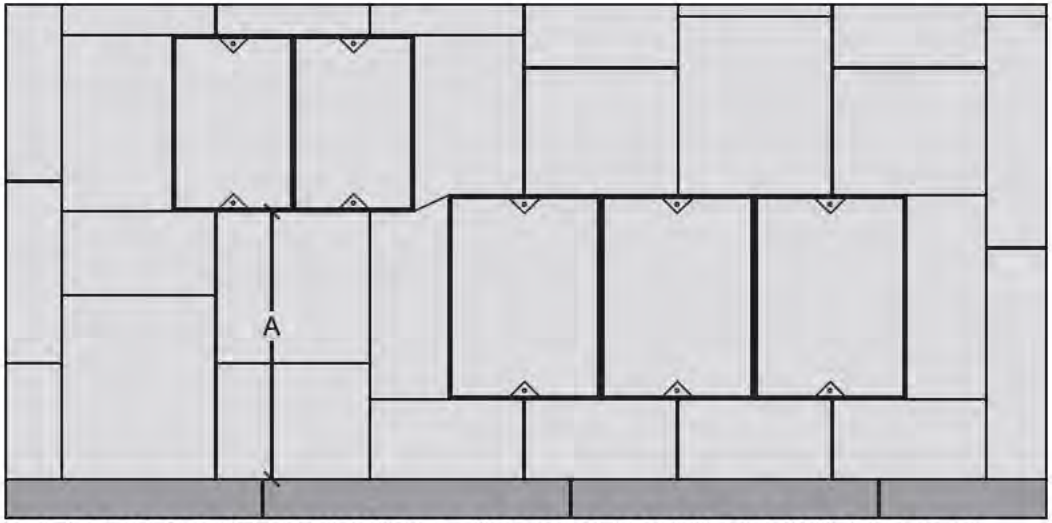
We recommend the use of deep frames and trays to enable a greater range of material depths to be used and help ensure consistency with footway surface materials. The depth of the inset cover must be sufficient for the proposed paving and bedding materials.

Where level changes occur in close proximity to the inspection cover, common at dropped kerbs, careful consideration should be given as to where surrounding materials are cut and folded. Ironwork cannot include a fold across the unit and therefore the surrounding surfaces need to be treated such that a new cut line may be introduced, or a more gradual change in levels detailed around the inspection cover.

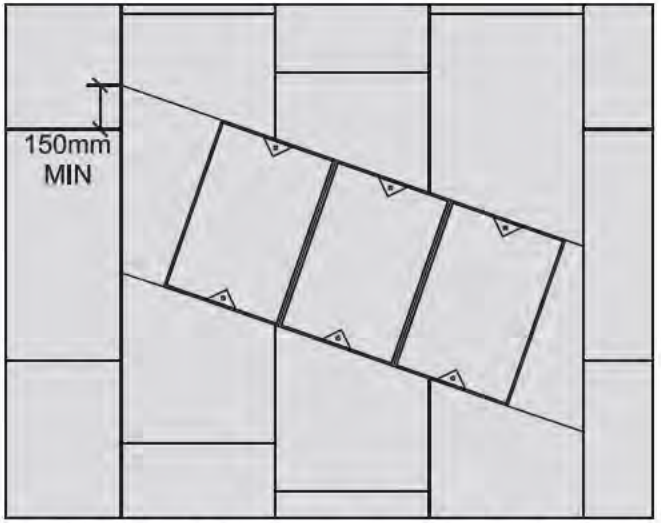
Figure 85: Paving pattern inset into an inspection cover

Figure 86: Tactile paving inset into an inspection cover with blisters orientated consistently

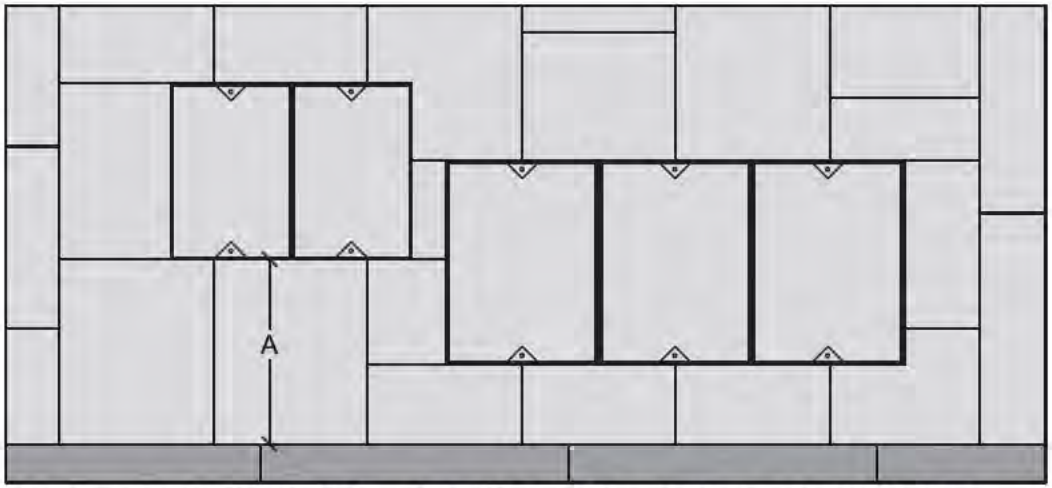
Figure 87: Utility cover arrangements in paving



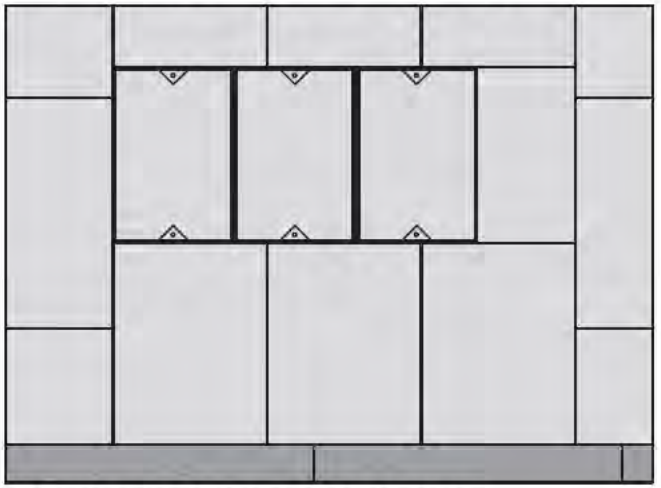
WHEN 'A' IS GREATER THAN 900mm SLABS TO ALIGN WITH EXISTING BOND



UTILITY COVER NOT IN LINE WITH PAVING

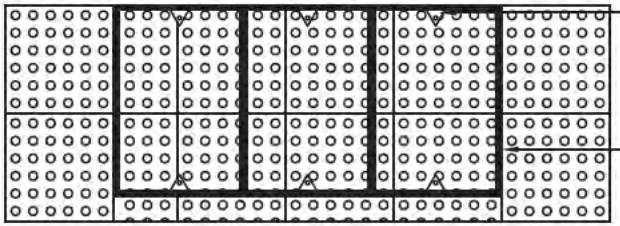


WHEN 'A' IS LESS THAN 900mm SLABS DO NOT ALIGN WITH EXISTING BOND



UTILITY COVER IN LINE WITH PAVING

Figure 88: Utility cover arrangements in blister paving



PLAN

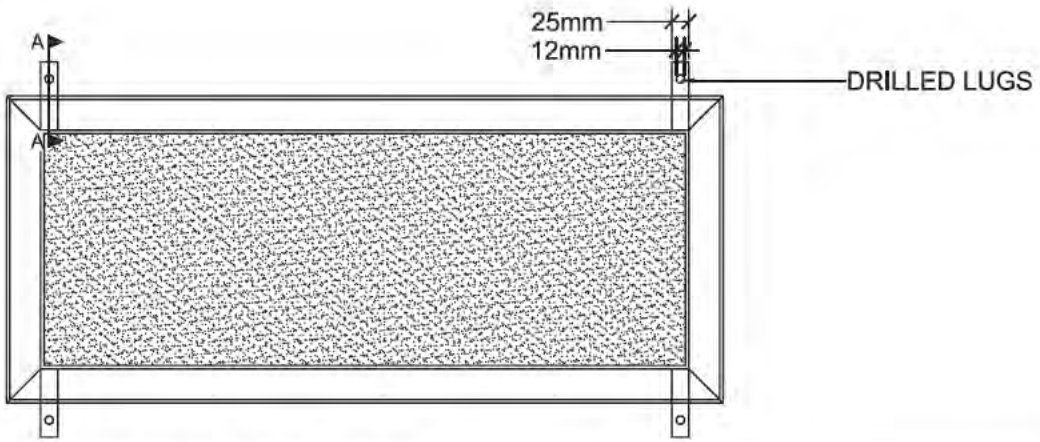
TYPICAL CLEAR OPENING CHAMBER SIZE	NUMBER OF COVERS	TYPICAL INDIVIDUAL COVER SIZE
725 X 225	1	785 X 315
915 X 445	2	485 X 505
610 X 610	2	333 X 670
1,310 X 610	3	454 X 670
1,690 X 710	5	347 X 770
2,285 X 710	6	388 X 770

THE NUMBER OF COVERS ON OTHER SIZED CHAMBERS TO BE COMPATIBLE WITH THE ABOVE TABLE TO ALLOW FOR ONE MAN LIFT OF THE COVERS

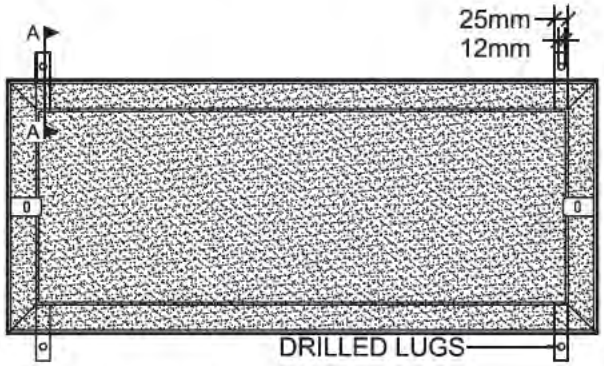
NOTES:

1. Existing chambers to be surveyed by the contractor to determine appropriate frame and cover to be supplied by utility company at each location.
2. All frames and covers to be to BSEN124-1 and constructed using min. 6mm thick structural steel plate formed to the required profile.
3. All steel frames and covers to be hot dipped galvanised after manufacture to BSENISO1461:2009.
4. Covers should be to the correct strength in accordance with BSEN124-1. In footways the normal strength requirement is "B125".

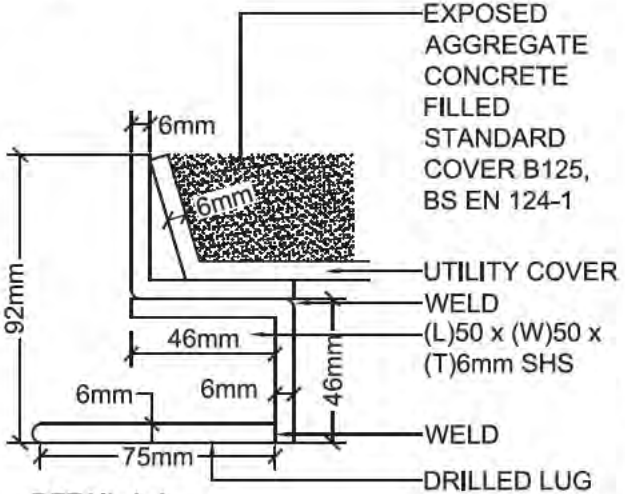
Figure 89: Deep type frame for utility access covers – water mains, EL, CT



UTILITY ACCESS COVER A - PLAN



UTILITY ACCESS COVER B - PLAN

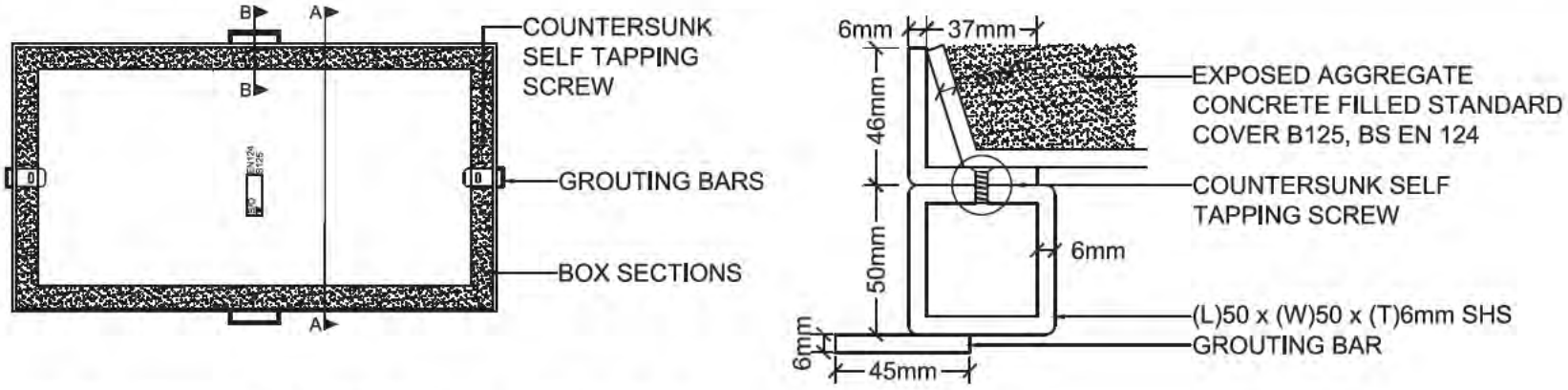


DETAIL A-A

Notes

1. The deep frame allows close butting up to the frame of adjoining materials.
2. Existing chambers to be surveyed by the contractor to determine appropriate frame and cover to be supplied at each location.
3. Existing chamber walls may require lowering to accommodate the deeper frame. Where this is necessary a line of bricks is to be removed and the chamber wall rebuilt. The frame should be flush and must abut surrounding paving flags.
4. All frames and covers to be min. 6mm thick cast structural steel plate to BS EN 124-1 formed to required profile and welded using co_2 process.
5. All frames and covers to be hot dipped galvanised after manufacture to BS 729:1995.
6. Bespoke covers from utility companies shall be provided.
7. After brushing in of sand, all covers shall be lifted, and sand between the covers and frame removed to ensure future ease of access. The covers shall then be re-fitted.
8. Six sets of lifting keys to be provided to engineer.
9. All work must be carried out in compliance with the requirements of the Manual Handling Operations Regulations 1992 (as amended in 2002).

Figure 90: Deep type frame for utility access covers – water mains, EL, CT

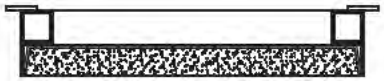


UTILITY ACCESS COVER FOR BRITISH TELECOM - PLAN

DETAIL B-B

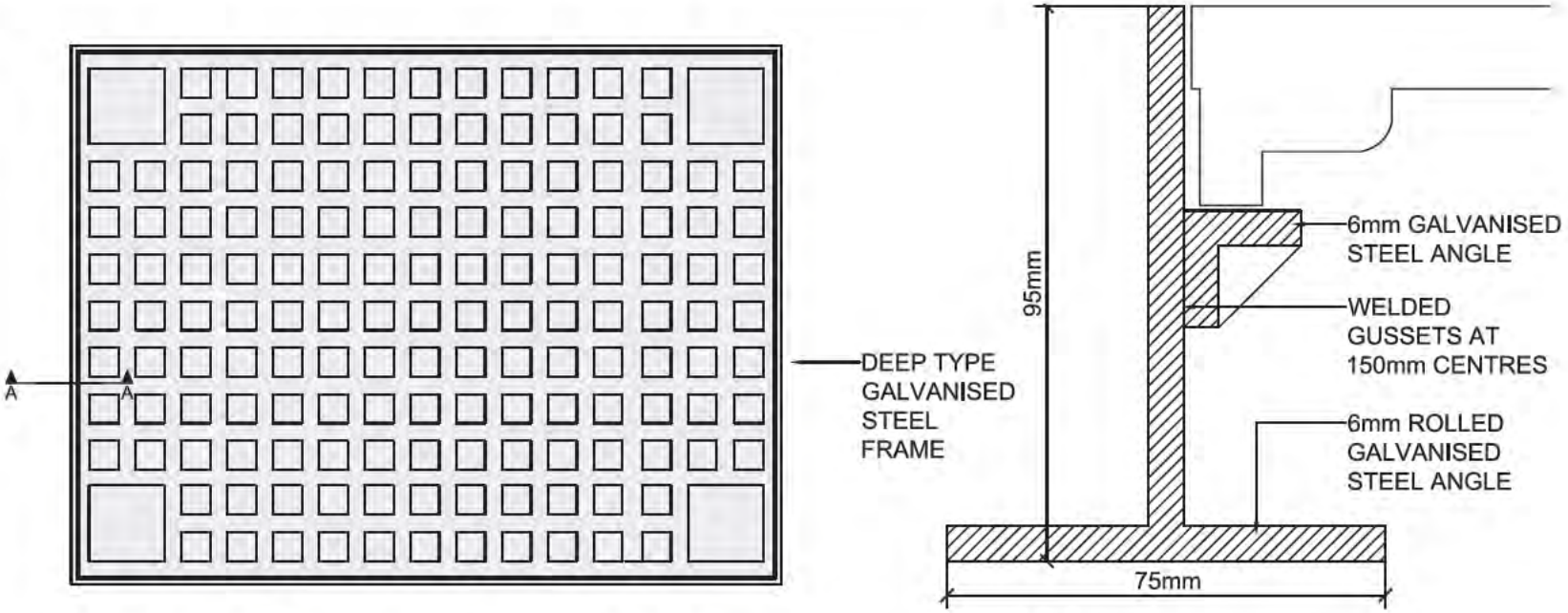
NOTES

1. The deep frame allows close butting up to the frame of adjoining materials.
2. Existing chambers to be surveyed by the contractor to determine appropriate frame and cover to be supplied at each location.
3. Existing chamber walls may require lowering to accommodate the deeper frame. Where this is necessary a line of bricks is to be removed and the chamber wall rebuilt. The frame should be flush and must abut surrounding paving flags.
4. All frames and covers to be min. 6mm thick cast structural steel plate to BS EN 124-1 formed to required profile and welded using CO_2 process.
5. All frames and covers to be hot dipped galvanised after manufacture to BS 729:1995.
11. Bespoke covers from utility companies shall be provided.
12. After brushing in of sand, all covers shall be lifted, and sand between the covers and frame removed to ensure future ease of access. The covers shall then be re-fitted.
13. Six sets of lifting keys to be provided to engineer.
14. All work must be carried out in compliance with the requirements of the Manual Handling Operations Regulations 1992 (as amended in 2002).



DETAIL A-A

Figure 91: Deep type frame for utility access covers – TfL



DEEP TYPE FRAME FOR UTILITY ACCESS COVERS - PLAN

DETAIL A-A

Notes

1. The deep frame allows close buttIng up to the frame of adjoining material.
2. Existing chamber to be surveyed by the contractor to determine appropriate frame and cover to be supplied at each location.
3. Existing chambers walls may require lowering to accommodate the deeper frame. Where thls Is necessary a llne of bricks Is to be removed and the chamber wall rebuilt. The frame should be flush and must abut surrounding paving flags.
4. Strength class to suit location of cover in accordance with BSEN124-1.
5. All frames to be to BSEN124-1 and constructed using min. 6mm thick structural steel plate to BS formed to the required profile.
6. All steel frames and covers to be hot dipped galvanised after manufacture to BSENISO1461:2009.

Maintenance

Deep frame construction

- Inset covers that do not have a deep frame or edge restraint will not have the same load bearing capacity as the rest of the footway
- Where multiple inspection covers are arranged in a row, maintenance works should ensure that the covers are not swapped over, as any carefully detailed layout will become misaligned
- External edges of the tray should be lubricated with a non-setting petroleum jelly to avoid the tray becoming stuck in the frame
- Failure as a result of shallow inset materials

Ownership

Utility companies own the majority of ironwork that appears on the public highway and are responsible for the maintenance of their inspection covers. A small proportion are owned by the highway authority and these relate to traffic signalling, drainage and CCTV surveillance equipment. Where the highway authority replaces the utility company standard cover with a bespoke inset cover, the highway authority assumes the maintenance responsibility for that cover.

Additional information

Legislation:

New Roads and Street Works Act 1991

British Standards:

BS 7903: Guide to selection and use of gully tops and manhole covers for installation within the highway

BS EN 124: Gully tops and manhole tops for vehicular and pedestrian areas

7.6 Smoke vents

Smoke vents allow the fire brigade to vent smoke from basements by breaking the panels. Vents are generally located on private land belonging to the building they serve. There may be circumstances in which vents need to be located in the adopted highway, usually by grant of an undersailing licence. Permission must be sought from ourselves for any works below, above or on the TLRN, including the proposed introduction of any new smoke vents.

Performance criteria

Smoke vents should be slip resistant and sufficiently robust to meet appropriate loadings, as well as performing their intended fire safety function.

Vents should be flush with the footway surface and may be delineated with metal studs.

Responsibility

Where smoke vents are within the adopted highway, footway maintenance lies with the highway authority. Responsibility for repair of the smoke vent lies with the property owner.

Figure 92: A smoke vent demarcated with studs and an inscribed metal plate

7.7 Kerbs

Kerbs provide an important visual and physical delineation between footway and carriageway.

We advise using a limited material palette for kerbs, providing a clear and consistent aesthetic for all street types.

Kerb unit sizes, profiles and options vary significantly between different suppliers, so the Streetscape Guidance focuses on the key aspects of performance which are required on the TLRN. The core criteria are:

- To use a consistent material palette
- To enhance safety and legibility by providing an appropriate degree of carriageway delineation
- To provide long-term durability and ease of maintenance

Figure 93: Granite kerb

- To offer inclusive facilities for all users
- To enable good drainage and surface water removal

Kerb materials

Kerbs can be provided in both granite and concrete. Both materials have benefits and drawbacks.

Granite kerbs are preferred for environments that:

- Have regular pedestrian movement
- Have low to moderate speeds
- Are in conservation areas or
- Have historic or civic significance
- Require a high quality finish, especially when combined with other natural stones or asphalt footways
- Where footways need to be emphasised or high pedestrian flows exist
- Where enhanced longevity of a scheme is required as granite has a longer life than concrete and can be reused

Concrete kerbs are preferred:

- In high speed environments where pedestrians are less likely to linger or spend time
- Where a kerb must be cast in place to suit the circumstance

The initial installation and material cost of concrete kerbs is relatively inexpensive, however, it does not tend to wear well over time.

Standard kerb dimensions

The kerb face or upstand height is important for delineating the boundary of the carriageway, providing a visible edge and drainage channel.

Kerb heights can have a profound impact on physical visibility and protection, as well as a perceptual impact on user behaviour. Lower kerbs are more conducive to informal pedestrian crossing but offer less physical protection from vehicles and can prove difficult for those with visual impairments to navigate.

Dropped kerbs offer convenient, step-free access and are especially beneficial for users with impaired mobility, however, some users may experience discomfort if the gradient is too severe. Dropped kerbs should be provided with transition kerbs on the approach to provide a gentle gradient to a flush edge at carriageway level.

Figure 94: Southwark Street

Standard kerb dimensions on the TLRN

Application	Height above carriageway
Standard upstand height for conventional road layouts	125mm
Standard upstand height for bus stops	125-140mm
Suggested minimum kerb height for delineating footway and carriageway	60mm
Suggested minimum kerb height for delineating footway and cycle track Please note that the minimum kerb height between the cycle track and the carriageway is 125mm	50mm
Kerb upstand height from bottom of dropped kerb to carriageway	25mm
Upstand height for pedestrian crossings	0mm (ie flush); 6mm is the maximum allowance

Application	Width
Standard width	150mm
Conservation and bespoke width	300mm if laid horizontally; 200mm if laid vertically
Note: Kerbstones used in conservation areas have a rectangular (200x300mm) profile. They may be laid horizontally, giving a wide, shallow kerb, or vertically, giving a narrow, deep kerb	TfL prefers the use of 200mm width because this allows a height of 300mm, the majority of which is located below carriageway level, thus improving durability compared with shallower constructions (ie 175mm below carriageway compared with 75mm)

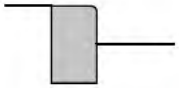
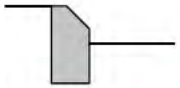
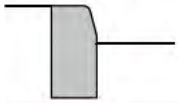
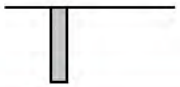
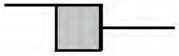
The physical limitations of pedestrians with mobility impairments should be considered when specifying kerb heights to ensure inclusive design standards are attained. The Accessibility Research Group's studies in 2009, at University College London (UCL), concluded that heights below 60mm could not be detected by some visually impaired users. It is recommended that should a shared space approach be employed, careful consideration of kerb heights is required based on the character of the road and the amount of activity.

Figure 95: A selection of kerbs on the TLRN

Standard TLRN kerb types

The following guidance outlines the suite of standard kerb types used on the TLRN. This list focuses on the significance of the kerb upstand height and kerb profile for fulfilling a range of different functions in the street environment.

It should be noted that for a typical kerb with an upstand of 125mm, the kerbstone will be approximately 300mm in total height as it will be bedded approximately 175mm below the carriageway surface. Dimensions stated are therefore not representative of the kerbstone size, but of the intended surface level aesthetic.

Kerb type	Profile options	Upstand height	Application
Standard straight kerbs	Bull-nosed 	Maximum: 140mm (bus stops and central reserves) Standard: 125mm From footway to cycle tracks: 60-70mm maximum Low: 25mm (crossover)	These kerbs can be laid on their wide or narrow side however laying on the wider side will increase the risk of dislodging from vehicles. A technical specialist should be consulted. Low sizes can be used in shared space settings, crossovers, or on-footway loading bay edge treatment as an option.
	45° splayed 	Variable	Used where vehicles may need to ride up on to the verge (ie in an emergency). Bespoke splayed transition kerbs are also used adjacent to designated cycle lanes to maximise the effective width of the lane (125mm upstand) although any other kerb with a maximum 60-70mm upstand fulfils the same purpose.
	Half-battered 	Variable	Used to notify motorists when they are too close to the edge of the carriageway. Footpath can be provided next to this kerb.
	Edging 	Flush	Flat topped edging laid on edge used to contain paving when transitioning from one material to another.
Kerbs for channels	Square edge 	Flush Can be laid on edge or laid flat based on requirements	Channel (normally laid flat). These kerbs can be used to delineate a raised table at an entry treatment (normally laid on edge).
Kerbs for corners	Radius	Maximum: 140mm Standard: 125mm	To provide a smooth radius where the carriageway is turning. For corner radii greater than 15 metres, standard straight kerbs can be used interspersed with radius kerbs.

Kerb type	Profile options	Upstand height	Application
	Quadrant	Variable (to match surrounding kerbs)	To provide a radiused kerb where otherwise there would be a right angled corner geometry. May be used at entry treatments, islands or refuges.
Transition kerbs	Transition	Variable configurations to meet requirements	To transition from one level to another (ie a crossing). The kerb profile is angled to allow for a smooth transition from one kerb height to another without stepping down.
Safety and containment kerbs	High containment	Variable	Carriageways (40mph or greater). For use as a high containment safety kerb.
	Bus access	Maximum: 200mm Standard: 140mm	For use at bus stops – allows 50mm gap between bus and footway. Can be customised for different entry levels of public transport vehicles.

Radius and special shaped kerbs

Changes in kerb alignment should be smooth and detailed using radiused kerbs, not mitred.

Always refer to the outward facing kerb edge side of the radius: ie if the outer kerb profile is the long edge, refer to the external radius; if the kerb profile is the short edge, refer to the internal radius.

Bespoke special shaped kerbs may be ordered where a more robust kerb is required, for example, at narrow, busy side road entries which may be more susceptible to vehicle impact.

Containment kerbs may be considered for high speed settings where a clear visual edge and additional safety precautions are required to help contain vehicles within the carriageway and to discourage pedestrians from crossing.

At crossovers where the footway continues across an access to a driveway or garage, pedestrians are given full right of way, with preferably no change in footway height except adjacent to the carriageway. Kerb heights should be dropped and subbase construction detailed to a loading grade.

Figure 96: Splayed kerb on a cycle super highway

Figure 97: Kerb type options plan and section views

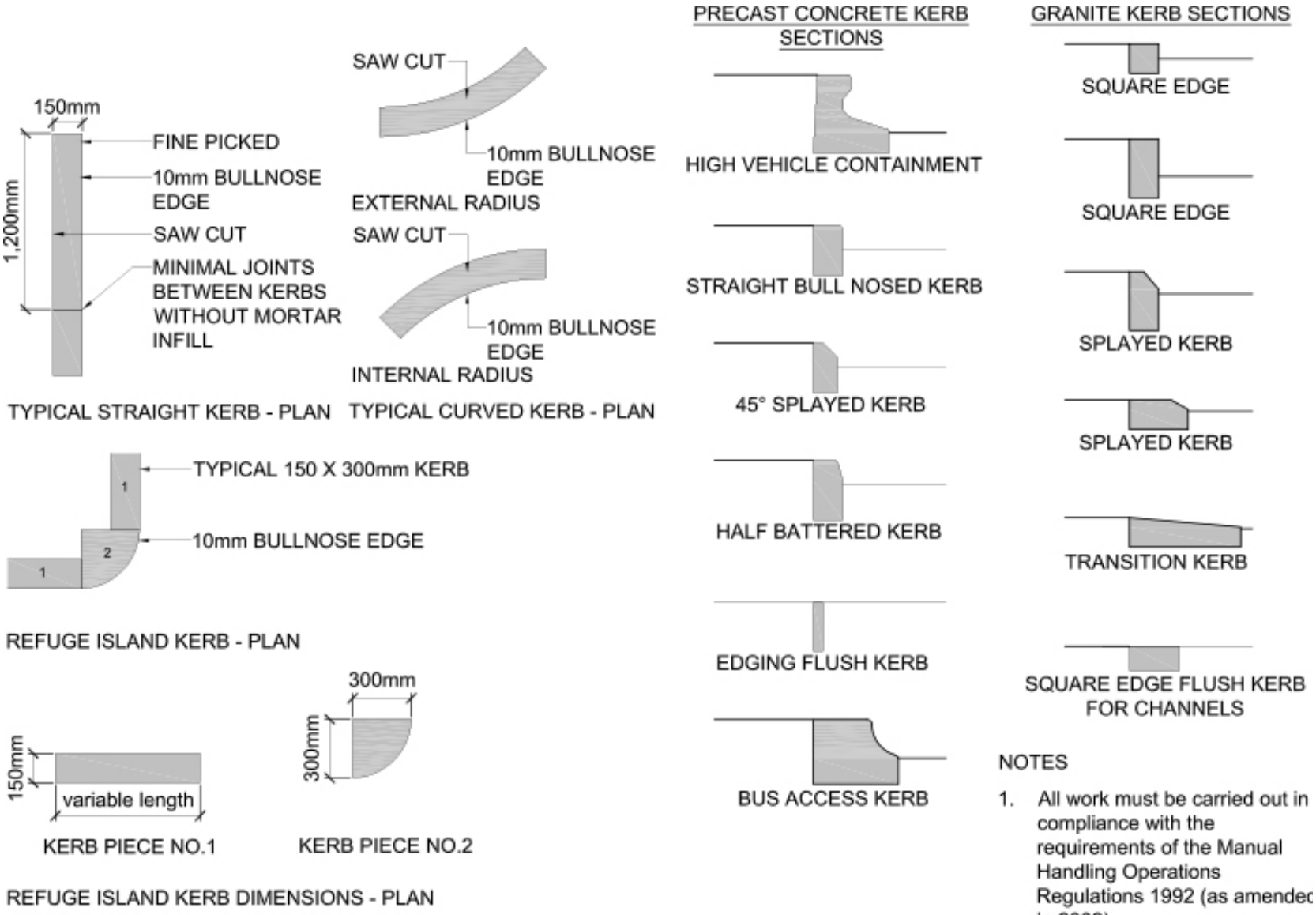
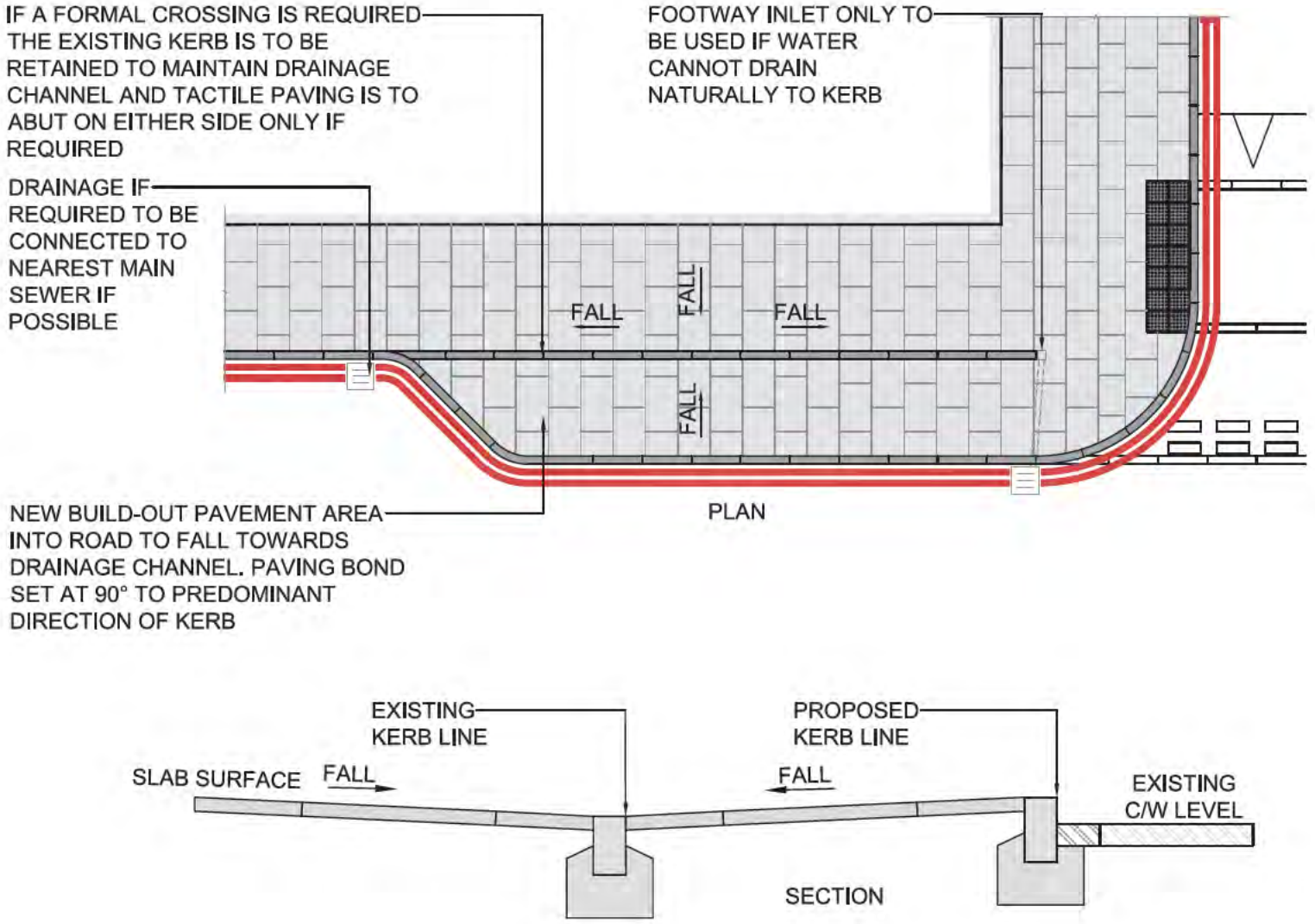


Figure 98: Footway build-out with flush kerb to facilitate drainage



Kerb construction

Kerbs should be:

- Dry jointed and closely butted where possible
- Sawn on the rear face to avoid the need for mortar infill between paving
- Set on a concrete subbase of minimum 150mm depth as standard

Additional information

British Standards:

BS EN 1340:2003 Concrete kerbs

BS EN 1343:2012 Kerbs of natural stone for external paving. Requirements and test methods

BS 7533-6:1999

University College London:

Effective Kerb Heights for Blind and Partially Sighted People (Accessibility Research Group, UCL, 2009)

Transport for London:

Accessible Bus Stop Design Guidance, 2015

Part E Carriageways

8.1 Vision 104
8.2 Carriageway materials 104
8.3 Road markings 110
8.4 Cycle infrastructure 114
8.5 Bus lanes 122
8.6 Median strips/central reservations .. 124

8.1 Vision

If we are to achieve world-class roads and streets appropriate surfacing specification is essential for providing durable, safe, comfortable and legible road layouts. Selecting the right materials is key to creating a backdrop that will sustain all the activities within the streetscape. Materials should be selected based on their:

- Long-term durability
- Safety performance
- Legibility
- Relationship to the surrounding urban character and overall appearance of the streetscape
- Visual performance characteristics
- Cost to implement
- Whole life cost (maintenance)
- Asset accessibility

Asphalt, and in special circumstances, coloured surfacing and natural stone setts are recommended for carriageway surfaces.

Surface construction must be detailed to accommodate the loads and foreseeable uses acting upon it, and to ensure long-term durability and maintenance of the materials. Surfaces should be smooth, firm and non-slip in all weather conditions with gradients that are both comfortable to walk on and sufficient for free draining of surface water.

We have an internal procedure to review new products proposed for the TLRN and approval should be sought from the SDRG and TfL Engineering at the design stage.

Figure 99: Roundabout where Stamford street joins Waterloo Road

8.2 Carriageway materials

Asphalt surfacing for carriageways

Asphalt is the standard surface material for all carriageways and should be applied in most cases. Asphalt has a high deformation resistance and can be repaired relatively quickly and inexpensively. It can be designed to meet the needs of the expected use. Variable aggregate gradings are acceptable. Aggregate properties such as shape and size, and resistance to crushing or polishing, should be selected based on site conditions. All asphalt surfacing should comply with BS EN 13108 Bituminous mixtures standards.

Figure 100: Cheyne Walk and Battersea Bridge

Maintenance

Resurfacing regimes should be based on an understanding of the existing surface composition and condition of the carriageway. Contractors are encouraged to recycle materials where practicable

Innovative surface materials

There is continual innovation within the industry of materials science, improving the performance and cost effectiveness of surfacing through more efficient laying techniques and new technologies. While the materials palette is strictly defined on the TLRN to ensure quality and consistency, advances in material technologies will be considered on an ad hoc basis to trial new finishes and test the resilience of the product on a limited stretch of road.

Additional information

British Standard:

BS 594987:2015 Asphalt for roads and other paved areas. Specification for transport, laying, compaction and product-type testing protocols

Granite setts for carriageways

A sett is a dressed block or stone, 50-300mm in length and 75mm or more in depth. Setts are used to aid the creation of a high quality surface finish to help emphasise greater pedestrian priority. Setts may be considered in exceptional circumstances where looking to:

- Provide a high quality low speed environment, for example, for shared space schemes, where vehicle traffic is especially low
- Communicate a traffic calmed space with visually related carriageway and footway surfaces
- Improve material durability for footway surfaces which are subject to regular vehicle overrun
- Reflect the historic character of an area

Figure 101: Granite setts used on a carriageway to slow vehicles and create a more pedestrian friendly setting

Design considerations

The installation of setts should be considered for:

- Inset on-carriageway bays and on-footway loading or parking bays and in front of pubs
- The flat surface of raised tables on side road entry treatments, but not on the ramp
- Footway crossovers
- Traffic islands, central median strips or within central reservations that are not flush and do not have regular vehicle overrun

Only in exceptional locations where vehicles are known to mount the kerb, can a band of five 100x100mm setts be installed on the footway, running parallel to the kerb.

Figure 102: Granite setts on a raised table at Goswell Triangle

These may be considered where:

- The area has special historic or civic significance and requires a high quality surface finish
- There is no capacity to provide designated loading bays, but where informal loading is known to take place with a high number of retail units fronting on to the street
- Footways are narrow such that installing bollards would overly impinge on footway space
- There is insufficient depth to structurally reinforce paving slabs

When considering the use of setts it is important to anticipate loading requirements. The specified material and subbase must be designed to withstand expected loading, traffic volume and ground conditions. Where setts terminate and meet tarmac, it is important to specify a robust edge containment detail.

Materials

Setts should be composed of natural stone: granite or Yorkstone, to match the surrounding footways and complement the character of the built environment.

Granite setts are recommended for footways and low speed carriageway settings on side roads or minor roads which do not serve as a bus route.

Yorkstone setts are permitted where vehicle overrun is infrequent, such as adjacent to the kerb edge or on footway crossovers.

Preferred sizes

Generally 200x100mm units are preferred on the TLRN, with depths selected based on the load bearing requirements – please refer to BS7533-12 for further information. Other bespoke dimensions may be permitted upon approval by the SDRG.

Herringbone pattern is the preferred way to lay block paving as the interlocking pattern makes it more resilient to turning movements.

Maintenance

Maintenance of setts is more costly and time consuming than asphalt. Using a mixed palette of colours can help mask dirt, discolouration and marks.

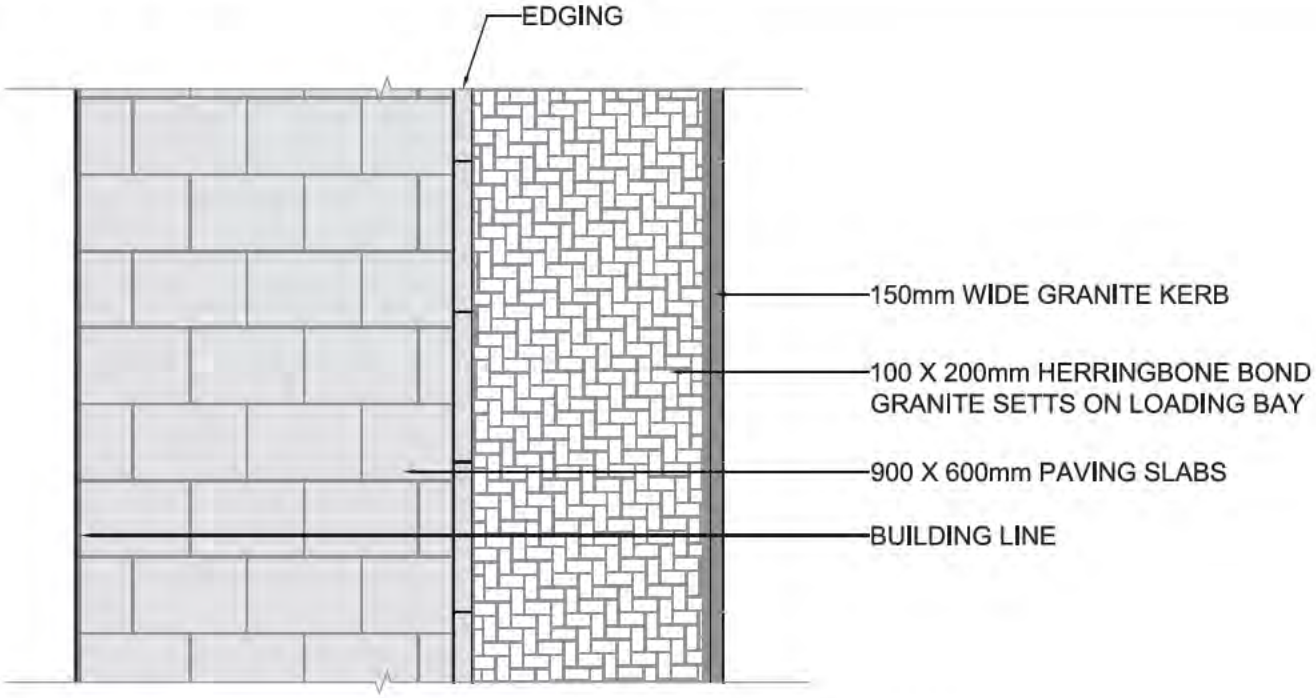
Additional information

British Standards:

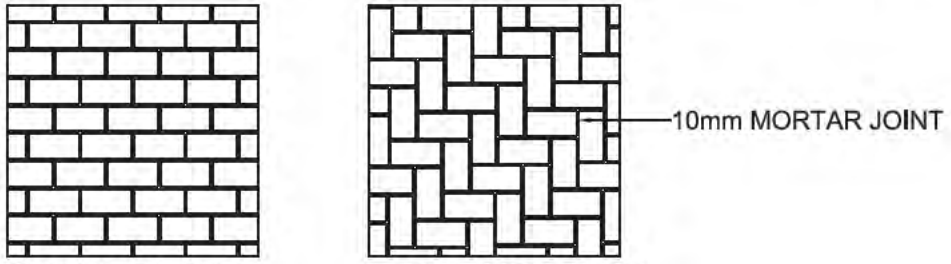
BS EN 1341: Provides guidance on the breaking load for setts

BS 7533: Part 12 provides sub-structure advice for pedestrian areas

Figure 103: Sett paving patterns on footway loading bay



EXAMPLE PLAN - HERRINGBONE JETS IN WADING BAY FLUSH WITH FOOTWAY



TYPES OF BONDS - ELEVATION

Coloured surfacing

Coloured surfacing includes any surfacing that changes the appearance of the conventional asphalt wearing course. The use of coloured surfacing should be justified on a site-by-site basis and approved by the SDRG.

Coloured surfacing may be considered where there is a safety or operational benefit to specified users in making a facility more conspicuous and should only be implemented when other remedial measures have been deemed inappropriate. Coloured surfacing should be used sparingly and selectively to minimise capital and maintenance costs and improve the appearance outcome where surface repairs are required.

Figure 104: Colour used to emphasise a crossing and used to delineate a cycle track

Use across London

There is variable support for use of coloured surfacing across the London boroughs. The use of conspicuous colours, especially in areas with high heritage and conservation value has been challenged based on concerns about their visual impact. However, some partially sighted pedestrians use differences in colour and tone to help them identify the interface between footway and cycle tracks or carriageways. Therefore where there is an identified risk of conflict between various users, the use of coloured surfacing may be recommended to support legibility and road user recognition.

Design considerations

Design teams are encouraged to carefully consider the use of coloured surfacing treatments as they should only be applied to highlight areas of conflict by emphasising the existence of certain facilities.

Coloured surfaces have no legal status as they do not constitute a formal road marking or sign, however, they can be used to supplement road signs and markings and discourage vehicle encroachment.

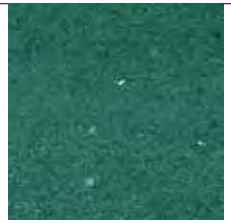
Coloured surfacing should not be applied at locations with a high density of utilities or where one or several utility companies have a high rate of attendance and trenching as the reinstatement of this type of surface still shows as a trench. Colour does not show up well at night under headlights or in wet conditions.

Application

There are several materials that can be used to achieve a coloured surface on the carriageway including: coloured asphalt, resin-bound aggregate and a surface dressing. The specification of coloured surface, skid resistance and method of application is to be in accordance with Clause 924 of the Highways Agency's Specification for Highway Works.

Please speak to one of our technical specialists when considering the use of a coloured surface on the TLRN. The table on the following page provides a range of colours commonly used on the road network.

Figure 105: Coloured surface on the carriageway is used to suggest pedestrian priority

Colour	Example	Purpose
'Venetian' red BS381C – colour 445		To supplement road markings and aid bus lane compliance. We no longer apply red surfacing to bus lanes, however, some boroughs still do require this.
'Deep chrome' green BS381C – colour 267		To highlight cycle facilities that do not have physical segregation.
'Sky blue' RAL5015		To highlight cycle facilities that do not have physical segregation.
Natural buff – to match Yorkstone paving		To visually reinforce crossing locations, a change in traffic management, or align the colour of an off-carriageway facility to other elements in the streetscape for aesthetic reasons.
Grey – to match granite or concrete streetscape elements		To visually reinforce crossing locations, a change in traffic management, or align the colour of an off-carriageway facility to other elements in the streetscape for aesthetic reasons.

Maintenance

Some types of coloured surfacing fade rapidly in heavily trafficked locations (after 6-12 months) and may need to be reapplied regularly. Maintenance regimes should match the original colour pigmentation by selecting the same coloured product and binder. Bespoke treatments are more difficult to maintain, especially where underground servicing is required.

Where maintenance or highway works are required, the colour surface should be laid to provide a consistent finish across the carriageway and should not be applied as a patchwork. Good quality repair work requires the whole surface to be relaid as patchwork repairs are unsightly.

8.3 Road markings

Road markings provide traffic signing information and look to enhance the safety and legibility of the road space for all road users. Road markings are applied to the carriageway surface as lines, symbols or words, and in some instances will be marked on the kerb and footway, or temporarily at roadworks.

Road markings are classified as:

- Regulatory – enforceable traffic management markings
- Warning and information – road markings that increase awareness of likely hazards
- Directional – location and route guidance

Statutory requirements and detailed information on the design and placement of road markings for the public highway are provided in the TSRGD.

Design approach

Design teams should adopt a consistent approach across the network to:

- Ensure safety
- Provide sufficient information to promote good lane discipline
- Encourage traffic regulation compliance and enable efficient enforcement

Minimising visual clutter

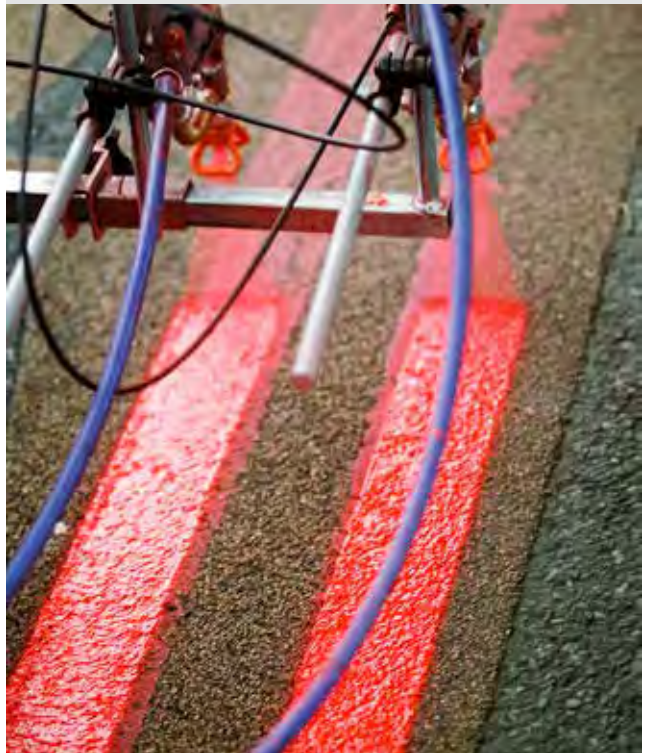
Design teams should adopt an approach of minimising road markings to ensure they are carefully considered in conjunction with the character and function of the street, as well as the placement of adjacent traffic signs. The removal of any unnecessary road markings will help to reduce visual clutter and maintenance costs, and in most cases contribute to improved legibility. The following considerations should be made to rationalise road markings:

- Road markings which include words (for example, 'keep clear'/'look left') should be assessed to see if they are needed
- Yellow boxed areas can look unsightly and consideration should be given to removal where legal enforcement is not necessary
- To help facilitate a traffic calming effect, reduced road markings can help in some locations, such as the removal of carriageway centrelines (Centreline removal trial, TfL, 2014)

Figure 106: Victoria Embankment: 'Keep clear' markings have been used instead of a yellow box

Figure 107: Carefully considered road markings will improve legibility and reduce visual clutter

Figure 108: Renewed red line markings



Marking dimensions

Many markings are fully dimensioned in the TSRGD and Traffic Signs Manual (TSM). These documents are the main resource for prescribing standard road markings.

Markings should be provided to a maximum thickness of six millimetres where pedestrian activity might be expected. Any higher and the marking could pose a trip hazard or adversely impact on drainage.

Red route road markings to diagrams 1018.1 and 1017 (TSRGD) should not be thinner than 100mm as this would pose an issue for enforcement cameras.

Materials

Expert advice should always be sought before prescribing the road marking material as a range of products are available with widely differing performance characteristics.

Road markings are available as:

- **Water based paint** – best restricted to roads with lower traffic flows as the markings are more prone to wear
- **Thermoplastics** – standard paint system and should be avoided on concrete and natural stone
- **Preformed markings** – preferred where complex shapes and symbols are required
- **Cold plastic** – can be used to mark pedestrian crossings, yellow boxes, bus lanes and other common road markings. If applied well it can last between four to eight years
- **Setts** – where setts are used on a side road entry treatment, red setts are permitted to designate the red route but are not a requirement; conventional markings may be used

Performance

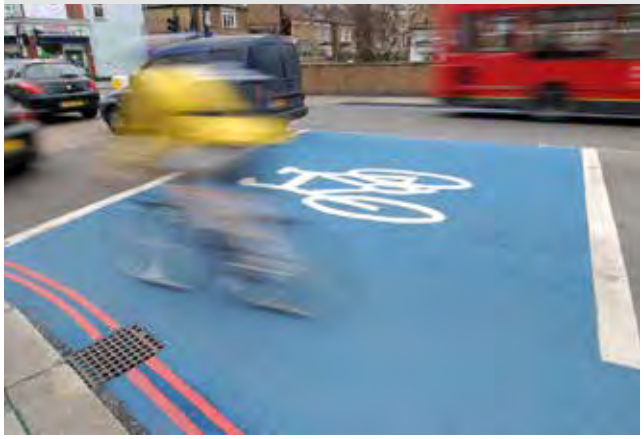
Most road markings that have a regulatory function are required to incorporate a retroreflecting material such as glass beads that better reflect vehicle headlights (TSM chapter 5, table 23-1 and TSRGD).

Line colours

All markings and colours should be in accordance with the TSRGD, British Standards (BS EN 1790 and BS EN 1871) and our Design Standards for Signal Schemes in London.

The colours white, red and yellow are prescribed for road marking materials on the TLRN. Black road marking materials may also be introduced where existing markings need to be temporarily obscured. Black road markings have been used to change an advisory cycle lane as a temporary measure.

Figure 109: An advanced stop line coloured in sky blue on a Cycle Superhighway



Coloured resin aggregates for larger areas of carriageway such as bus lanes or for demarcating cycle infrastructure are not formal road markings, but aim to improve the compliance of regulatory road marking signage.

Road studs

Retro-reflective road studs may be used to supplement longitudinal road markings, and are particularly effective for areas with low lighting levels. Metal road studs should be avoided as they can cause problems for two-wheeled vehicles.

Removal

It is important that all the material used to define the road marking is removed where new marking arrangements are proposed. Ghost images of old markings are unsightly, detract from the streetscape and can have an impact upon legibility and road safety.

Trials – centreline removal

Our aspiration for a safer network, reinforced through good design, has been put forward in a recent study which challenges conventional assumptions into the application of centrelines (Centreline removal trial, 2014). The study looks at the impact of removing centrelines on traffic speeds, across three outer London routes scheduled for resurfacing. Initial results suggest a consistent decrease in vehicle speeds as a result of the interventions. We will continue to monitor collision data at these sites and use this evidence to determine the long-term applicability of centreline removal for encouraging lower speed driving environments. Any centreline removal trial should be subject to a pre and post-construction road safety audit.

Maintenance

Regulatory markings must be maintained adequately to provide good visual contrast and ensure good effective enforcement. To ensure this:

- Road markings should be regularly reviewed to ensure good legibility and definition
- Maintenance requirements are dependent on traffic flows, the material used and the position of the marking on the road surface, and so will not be the same for all types of street
- During routine maintenance when road markings are often re-marked it is important to ensure the new surface is accurately applied over the old material so that the edges of the markings remain crisp and of the desired width
- The excessive build up of thermoplastic can lead to the ponding of surface water and should be avoided

Centreline removal trial London, UK

Investigating the impact of centreline removal on traffic speeds across three sites in London

Key functions

Opportunity

The Mayor's Better Streets initiative challenged TfL to justify any road marking.

Benefits

The investigation showed that at all three sites there was a statistically significant reduction in traffic speed. Collision data will be tracked at these sites for the next three years to ascertain the long-term effects of centreline removal.

Implementation

A study was conducted at three sites across London to judge the effect of removing centrelines on traffic speeds and accidents.

Applying in London

While it is not suitable to remove markings at all locations, it is desirable to remove clutter where possible.

Additional information

Statutory instruments:

Traffic Signs Regulations and General Directions (TSRGD)

British Standards:

BS EN 1790: For preformed markings

BS EN 1871: For directly laid materials

Department for Transport:

Traffic Signs Manual, 2003

Traffic Advisory Leaflet 01/13: Reducing Sign Clutter, 2013

Transport for London:

Design Standards for Signal Schemes in London, 2011

Centreline removal trial, 2014

8.4 Cycle infrastructure

The London Cycling Design Standards (2014) (LCDS) provides comprehensive advice that all designers of cycling infrastructure should refer to. It uses the Cycling Level of Service (CLoS) methodology as a measure for the quality of provision for cycling on any street or route.

Streetscape Guidance identifies the palette of materials appropriate for the different types of cycling infrastructure identified in the LCDS. It also reinforces the importance of a holistic approach to street design, to maintain the quality and continuity of the streetscape character.

Design considerations

Network planning

The network for cycling comprises signed cycle routes and any other street or space that cyclists may legally use. In general, a higher level of service for cycling can be achieved on branded routes and on any street where motor traffic speeds and volumes have been calmed, such as where 20mph limits apply.

New and improved cycling facilities should be planned coherently to encourage more cycling, to address risks to cycle safety and allow coherent, direct and comfortable access to local destinations. All route proposals should include a maintenance plan to ensure cycle routes remain free of debris and in a good riding condition.

We acknowledge the significance of 20mph speed limits for enhancing the quality of the cycling environment and will continue to review sections of the road network with a view to broadening the 20mph designation.

Figure 110: Blackfriars bridge mandatory cycle lane

Cycling interventions

Proposals for cycling should reflect the place function of a street within a wider area – the street's character and the uses and activities that take place within it – rather than be determined solely by the movement of other vehicles.

Cycling facilities should enhance the area through which a route passes and design teams should consider the cycling experience along the full length of the route to provide a consistently attractive setting for cycling and walking. Good design should provide cycle routes which are safe, continuous, clear, coherent and attractive. They should complement the existing streetscape quality and avoid additional unnecessary clutter.

The degree of separation required for cycling should be based on an assessment of the existing conditions, on proposals for improvement of the area and on addressing key safety, capacity and accessibility issues. Higher levels of service for cycling can be achieved through designing for lower speeds, lower motor traffic volumes and through greater separation from motor vehicles, while avoiding conflict with pedestrians.

A street may be part of a proposed new or improved cycle route, or may have existing or proposed cycle routes crossing it. In both cases, the level of service offered at junctions and crossing points is a key determinant of the overall quality of provision for cyclists.

- Cycle infrastructure need not be heavily engineered or costly but should be consistent and aligned to the uses and dimensions of the street environment
- Streetscape Guidance encourages designers to consider the impact of cycle infrastructure on the pedestrian environment as well as the visual quality of the streetscape. This includes being mindful of any facility that proposes additional street clutter, the creation of small fragmented areas of space, or overly complicated arrangements to the detriment of other users
- Designs should avoid making cosmetic alterations for the sake of change and should be rooted in an evidence-based design approach
- Trials of temporary layouts to assess impacts of changes to road space allocation should be considered as a step-change towards long-term infrastructure provision

Designating space for cycling

Formal cycle infrastructure on the highway consists of: cycle lanes (regulatory road markings on carriageway), cycle tracks (generally, provision dedicated to cycling off the carriageway) or areas shared with pedestrians.

Cycle tracks are usually away from the carriageway or separated from it by a verge or height difference. A Section 65 Notice (Highways Act, 1980) can be used to convert a footway into a cycle track and prioritise cycling. Appropriate signing should be incorporated including TSRGD diagram 955 and associated cycle symbol marking (diagram 1057).

LCDS describes different kinds of provision for cycling in terms of the 'degree of separation' they offer from motor vehicles on-carriageway or from pedestrians off-carriageway. With the highest degree of separation first, the on-carriageway options are:

Full separation on links

Segregated lane/track:
Cycle lane or track separated by a continuous or near-continuous physical upstand along links (usually verges or kerbed segregating islands).

Stepped tracks:
Vertically separated cycle tracks at an intermediate level between the footway and main carriageway, with or without a buffer zone.

Dedicated cycle lanes

Light segregated lane:
A facility separated and protected by intermittently placed objects generally alongside formal, mandatory cycle lane markings. (Note that no light segregation product has been approved for use across the TLRN, so any proposal should be brought to the attention of the SDRG to ensure that the product satisfies streetscape requirements and does not pose a maintenance and safety liability).

Mandatory cycle lane:
A marked lane for exclusive use of cyclists during the advertised hours of operation. It is an offence for other vehicles to enter, unless they are exempted. Separate parking restrictions are needed to be fully effective.

Shared lanes

Shared bus lane:
Cyclists may use the full width of the bus lane during and beyond its hours of operation. Applies to all nearside, with-flow bus lanes, and should extend to contraflow and offside types.

Advisory cycle lane:
An area intended for, but not legally restricted to, cyclists' use. Other vehicles are permitted to enter or cross it.

Integrated with other users

Cycle street:

A street where cyclists have assumed priority in a speed restricted area, variously marked with or without formal cycle lanes or indicative areas for cycling.

Mixed traffic:

A street or space without cycle lanes or tracks, often including cycle symbols on carriageway. Motorised traffic is either absent or at low volumes and speeds. May include space shared between all road users.

Footways and footpaths may be designated as shared between pedestrians and cyclists. Degrees of separation between cyclists and pedestrians by the carriageway are:

Separated footway ('segregated shared use'):

A footway divided between users usually with a low, raised delineator, often punctuated by fully shared areas. Marked with a sign to diagram 957 of TSRGD.

Shared use footway or area ('unsegregated shared use'):

A footway fully shared between users and marked with sign to diagram 956 of TSRGD. May exist in a limited area, usually to allow cyclists to make a crossing movement and/or transfer from on- to off-carriageway provision.

However, as a general principle, there is a presumption that footways are to be used only by pedestrians. These two options should therefore only be used in exceptional circumstances – for example, where the footway is wide and pedestrian flows sufficiently low, or where motor traffic conditions justify off-carriageway provision and cycle tracks are not suitable or viable.

See LCDS for further description and guidance on the application of each of these cycle infrastructure types.

Materials

Surface materials

The visual impact of materials associated with cycle infrastructure should be carefully considered. Layouts which are overly complex will not only impact on the visual quality of the streetscape, but will likely lead to ambiguous layouts which reduce the legibility of the scheme design for all road users.

Where there is a requirement for kerbside access an adequate dropped kerb access across the cycle track must be provided.

Where there is a requirement for vehicles to access equipment for maintenance purposes on the footway including lighting columns, utilities, etc., any adjacent cycle facilities must be constructed to withstand the weight of vehicles. The material palette should be simple to minimise issues of maintenance and ensure consistency across the network. Mechanically laid asphalt, where possible, is the standard surfacing material for cycle infrastructure on the TLRN and may take the form of either:

- **Asphalt concrete** – typically a six millimetre aggregate is recommended to provide a smooth finish
- **Proprietary asphalt** – thin surface course systems (TSCS) may be considered in special areas
- **High stone content hot**-rolled asphalt – typically HRA55/10

In selecting a type of asphalt, consideration should be given to the permeability of the surface and the extent to which more porous open-graded mixes are incorporated as part of a sustainable drainage strategy.

Natural stone for prolonged stretches of cycle routes should be avoided as skid resistance can be low. Anti-skid surfacing for cycle routes is acceptable for use on the TLRN but should be laid longitudinally to avoid ridges. Resin-bound aggregate may be considered for footway areas which operate as a shared use area. Unbound surfaces such as gravel or hoggin are not recommended for major cycle routes as they can deteriorate quickly and provide a low quality of riding surface.

Signage

Signage should be designed to minimise visual clutter and be combined with existing street furniture, such as lamp columns, and only used at decision points and sparingly as route repeater signs. The sign reverse should match the surrounding street furniture colour: black-backed in central London and town centres, grey on arterial routes.

The height of the signage should provide adequate head clearance: 2400mm as a minimum. Where cycle tracks or shared use areas are provided the appropriate signing must be erected with consideration to minimising clutter.

Road markings

TSRGD standards should be applied to ensure consistency for all road markings across the road network. Consult LCDS for guidance on how to use road markings for cycling.

Bespoke cycle symbol treatments such as engraved or inlayed natural stone may be appropriate in conservation areas; approval should be sought from the SDRG for TLRN cycle routes.

Coloured surfacing and cycling

Coloured surfacing is not a formal traffic sign and should be kept to a minimum for aesthetic and maintenance reasons. Please refer to LCDS for further information on applying colour to cycle infrastructure.

The provision of highly conspicuous surfacing can detract from the aesthetics of the streetscape and may not be appropriate in conservation areas.

Where coloured surfacing is to be applied, a veneer coat should be laid on to the wearing course.

Figure 111: Cycle track demarcated with lines and colour

Figure 112: Cycle lane delineator strip

Kerbs

- Low kerbs of between 50-100mm may be considered for the cycling and footway surface interface however a 125mm kerb must be provided between the cycle facility and carriageway
- Kerb heights should be carefully detailed to maximise the effective width of the cycle facility by allowing cyclists to travel closer to the kerb, reducing the likelihood of a cyclist catching their pedals on the upstand
- Bull-nose, battered (45 degree) or half-battered kerbs may be used adjacent to any cycle facility
- Where cycle provision is next to the footway and at footway level, a raised delineator strip (diagram 1049.1 of TSRGD) must be used
- The delineation for segregated cycle lanes needs to be carefully detailed to provide good visual definition between carriageways and footways
- Where cycle tracks or shared use areas are provided, flush dropped kerbs must be provided at entry and exit points from the carriageway

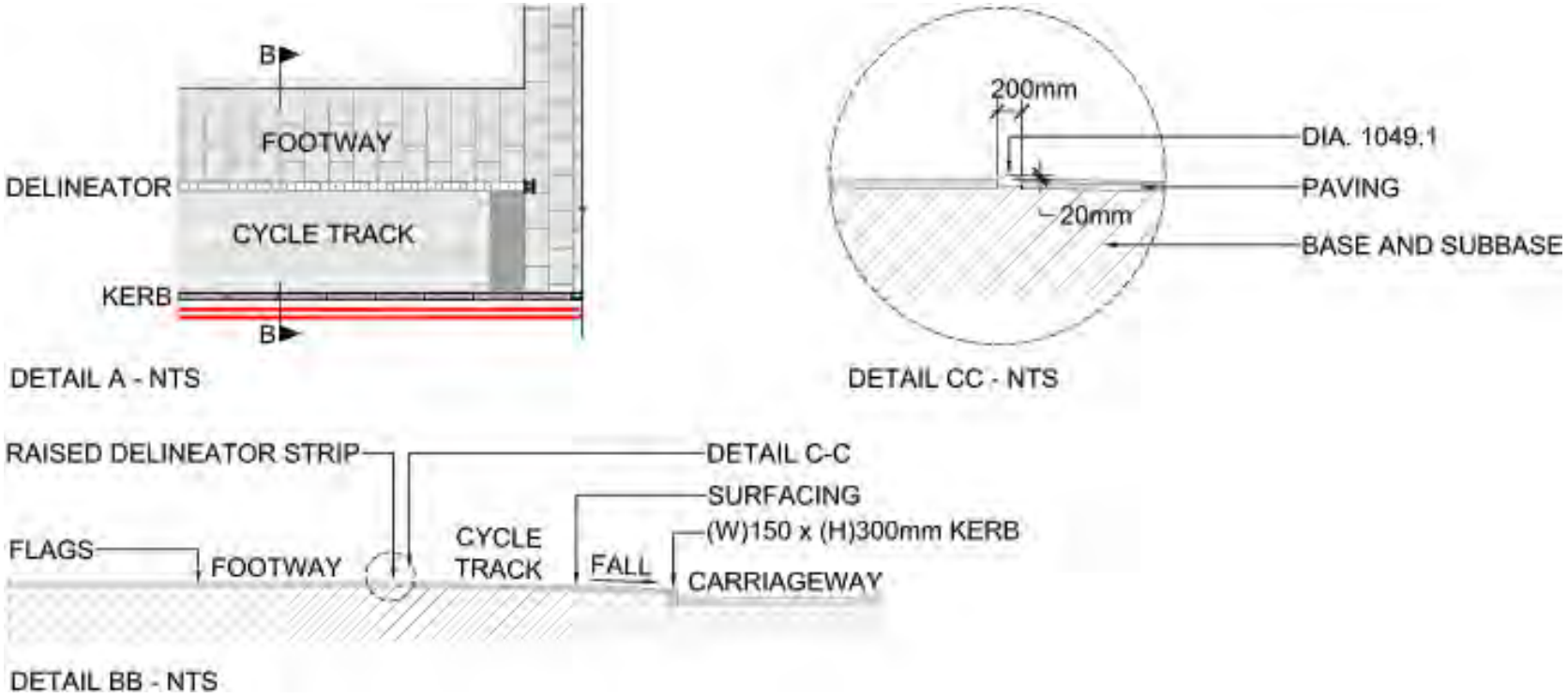
Drainage

- Cycle infrastructure should be free-draining to ensure effective widths for cycling and skid resistance properties are maintained across the facility
- Gully locations and levels need to be carefully detailed and the type of grating needs to be considered to best provide for cycling, refer to 'Keeping London dry' in this guidance for further information
- Gully gratings should be perpendicular to the direction of cyclists' travel to avoid wheels becoming caught in the grating

Maintenance

- All signing should be regularly monitored to ensure that surface markings are maintained and signs appropriately positioned
- Planting adjacent to cycle lanes and tracks should be maintained regularly to ensure cyclists do not have to leave the facility to avoid overhanging vegetation
- Surface defects can cause significant risks for cyclists and a regime to maintain high quality surfacing is essential for all designated routes
- Maintenance regimes should be aligned to our hierarchy of designated cycle routes, to ensure that the level of maintenance matches the extent of use

Figure 113: Segregated route on footway



Protected junction temporary trial Portland, USA

A 'protected intersection' designed to eliminate cycle-car conflicts

Key functions

Opportunity

Right turns at junctions can put cyclists into conflict with motor vehicles. A redesigned junction can remove this conflict.

Benefits

This reinterpretation of a Dutch cycle-friendly junction provides a phased and safe way to make a right turn. The introduction of kerbs within the junction reduces the crossing distance and offers a refuge to cyclists while they wait to complete their turn.

Implementation

Junctions that avoid merging cyclists and drivers have proven safer for both. This is a trial aimed at making junctions more comfortable for cyclists to use. Cycle friendly junctions take many forms and need to be adapted to their context.

The image shows a trial example of a cycle friendly junction in Portland, Oregon, USA (Image courtesy of Nick Falbo)

Applying in London

This Dutch inspired concept is being studied to determine its suitability for the London context. The hope is that the design will provide an increased sense and level of safety and comfort for cyclists, especially at busy junctions. At the moment this is a concept design which will require further design development and trialling prior to implementation.

Additional information

British Standards:

BS 594987:2010 Asphalt for roads and other paved areas

BS EN 13108: Bituminous mixtures. Material specifications (BSI, 2010)

Transport for London:

London Cycling Design Standards, 2014

Figure 114: Bus lane and advisory cycle lane on Westminster Bridge

8.5 Bus lanes

Bus lanes are provided on many red routes to increase journey time reliability for certain types of vehicles and encourage the use of sustainable transport modes. They are usually located at the kerbside to serve bus stops. However, they can also be located in the centre or offside of the lane. Other bus priority features on the carriageway can also include bus gates and access to bus station.

Other vehicles that may be permitted in bus lanes during designated times include coaches, taxis, motorcycles and cycles. In some limited locations, heavy goods vehicles may also use the bus lane and this will be indicated accordingly.

Design considerations

In determining the feasibility of implementing a bus lane within the existing built environment, consideration should be given to:

- The volume of potential bus users
- The carriageway width
- The overall capacity of the carriageway
- The proximity of street trees to the carriageway
- Delays to buses and impacts on general traffic

Start and end points of bus lanes

When determining the precise position of the start and end points of bus lanes, coordination of regulatory signs with other street furniture should be considered. Minor bus lane amendments may involve moving the start and finish by a few metres to enable existing street furniture to be used to locate regulatory signing, and minimise clutter. Any amendment to a bus lane requires a Traffic Regulation Order (TRO).

Designing for cyclists

There should be a general presumption that cycles are allowed to use bus lanes, however there are exceptions. For further information on bus lanes and cycling please see LCDS.

Road markings and signage

Signs and markings are a powerful way of representing legally enforceable bus lanes. Their format and use are controlled by the DfT, and they are disseminated via TSRGD, Traffic Signs Manual and TfL's Red Route Signing Manual.

Design teams should consider how to minimise the physical and visual impact by avoiding the unnecessary introduction of additional signposts.

Contact

Advice on the design and layout of bus lanes should be sought from our buses team, please contact the streetscape manager to determine the appropriate contact by emailing: **StreetscapeGuidance@tfl.gov.uk**

Authorisation

Any changes to a bus lane length or location requires a Traffic Regulation Order from the relevant regulatory authority, in the case of the TLRN the authority would be TfL. The installation or removal of a bus lane also requires a TRO.

Additional information

Statutory instruments:

Traffic Signs Regulations and General Directions (TSRGD)

Department for Transport:

Design Manual for Roads and Bridges

Local Transport Note 1/97: Keeping Buses Moving

Traffic Signs Manual, Chapter 3: Regulatory Signs

Traffic Signs Manual, Chapter 5: Road Markings

Figure 115: Waterloo Bridge Roundabout

8.6 Median strips/central reservations

Median strips have traditionally been used on high speed arterial routes to separate traffic flows and provide safety and operational benefits on the approach to junctions. These centrally located islands, usually consisting of a raised kerb edge and paved surface, are also found on numerous inner city roads with four lanes or more.

The use of median strips within urban street environments is becoming an increasingly attractive design option to provide an informal crossing point thereby reducing severance created by a wide carriageway or heavy volumes of traffic.

Figure 116: Upper Street in Angel with a wide central median used by pedestrians for informal crossings

Benefits

Median strips offer several benefits including:

- Facilitating safer and more convenient informal pedestrian crossing movements by effectively acting as an extended pedestrian refuge
- Reducing the carriageway width can help to reduce vehicle speeds, reduce crossing distances and create an environment more conducive to informal pedestrian crossing and social vibrancy
- Providing an opportunity to declutter the footway by locating street furniture on the median itself
- Kerbside activities such as loading or parking can also be integrated within wider median strips, while ensuring sightlines are maintained

Layout

Median strip design standards

There is no prescribed minimum width for a median strip, however, where the median is intended to also act as a central refuge for pedestrians, the following dimensions should be applied:

Median strip width	Suitable functions
1200mm – absolute minimum	Pedestrian refuge space for a straight across single phase formal crossing or informal crossing
1500mm – preferred minimum	More comfortable pedestrian refuge space for a straight across single phase crossing
3000mm	Sufficient space to accommodate a staggered crossing facility Minimum width to consider cycle parking Minimum width to consider tree planting Minimum width to consider central loading or parking bay
4000mm	Minimum width to consider a pedestrian refuge space for a straight across two phase crossing

Design considerations

Designs which have numerous short sections of median strip and open carriageway can detract from the quality and legibility of the street environment, and reduce the visual coherence of the median as a whole.

Layouts which significantly vary the width of the median strip should be avoided as this can create pinch points on the carriageway, pockets of ineffective space and visual clutter.

Medians may be introduced asymmetrically within the overall street layout, such that a single lane in one direction may be separated from two lanes in another direction, for example. This can be used to help support contraflow bus lane and contraflow cycle lane designs.

Figure 117: Brixton Road where a narrow median (less than 1,200mm) is widened at a controlled crossing to provide an acceptable refuge width

Road hatching is not always required therefore road geometry on the approach to the medians should be detailed so that minimal use of road hatching markings are required to reduce visual clutter and maximise useable road space.

The decision to include a median strip should consider the impact on cyclist comfort, as narrowing of the carriageway will likely be required. Poorly positioned or overly wide median strips can create pinch points on the carriageway which impact on cycle comfort and safety.

Street furniture

Care should be taken when locating furniture on the central median as it can impede informal crossing movements and reduce visibility of oncoming traffic.

Standard streetscape principles apply so that the median strip does not become overly cluttered and detract from the view of the other side of the street and the surrounding architecture.

- Street furniture on a median strip should be located a minimum 600mm from either kerb edge
- Street furniture should be located a minimum 1,000mm away from adjacent objects in long profile along the length of the median strip; 1,200mm for cycle parking stands, to allow for adequate pedestrian permeability across the median
- For speed limits of 40mph or more, the type of street furniture used on the median should be carefully considered. Furniture such as cycle parking will likely not be appropriate
- Low-level 'keep left' bollards can be used at the start of the median strip and should be clearly positioned 450mm from the kerb edge

Relocating lighting columns on the median strip can help to reduce clutter on the footway; however, this is a non-standard arrangement on the TLRN and requires SDRG approval. Designers should recognise the aesthetic impact of locating light columns in the centre of the road, and the safety implications in terms of lighting distribution, glare and providing sufficient footway lighting.

Figure 118: The central median on A40 Holborn Circus utilised for highway lighting and cycle parking

Planting on median strips can have maintenance implications which may require lane closures. Consult an arboriculturist to discuss viable planting options.

Cycle parking placed on the median strip can help to reduce clutter on the footways, but care should be taken as traffic conditions may make it difficult for cyclists to cross to the parking and rejoin the carriageway afterwards. It may also increase the distance to their destination such that they choose to 'fly park' on the footway instead.

Seating is rarely a practical solution on a central median and unlikely to provide a comfortable resting environment unless the median strip is sufficiently wide.

Figure 119: The central median on Kensington High Street utilised for cycle parking and tree planting

Construction

Surface materials

Surface materials for the median strip should be consistently applied along the length of the median and the tone and colour should resemble the surrounding footways.

The median strip surface materials do not need to match the actual materials used for the footway, however, a higher quality of finish and consistent aesthetic can be achieved when the materials do match.

Where a raised kerb is provided, no tactile paving delineation is required, except at designated formal crossing points with a dropped flush kerb.

Where vehicle overrun is anticipated or parking and loading bays incorporated as part of the median, small unit paving should be applied in the form of setts. Alternatively, these areas may be surfaced in asphalt with a kerb edge to delineate the median strip and appropriate edge restraint construction detailing for either side of the kerb.

Kerbs

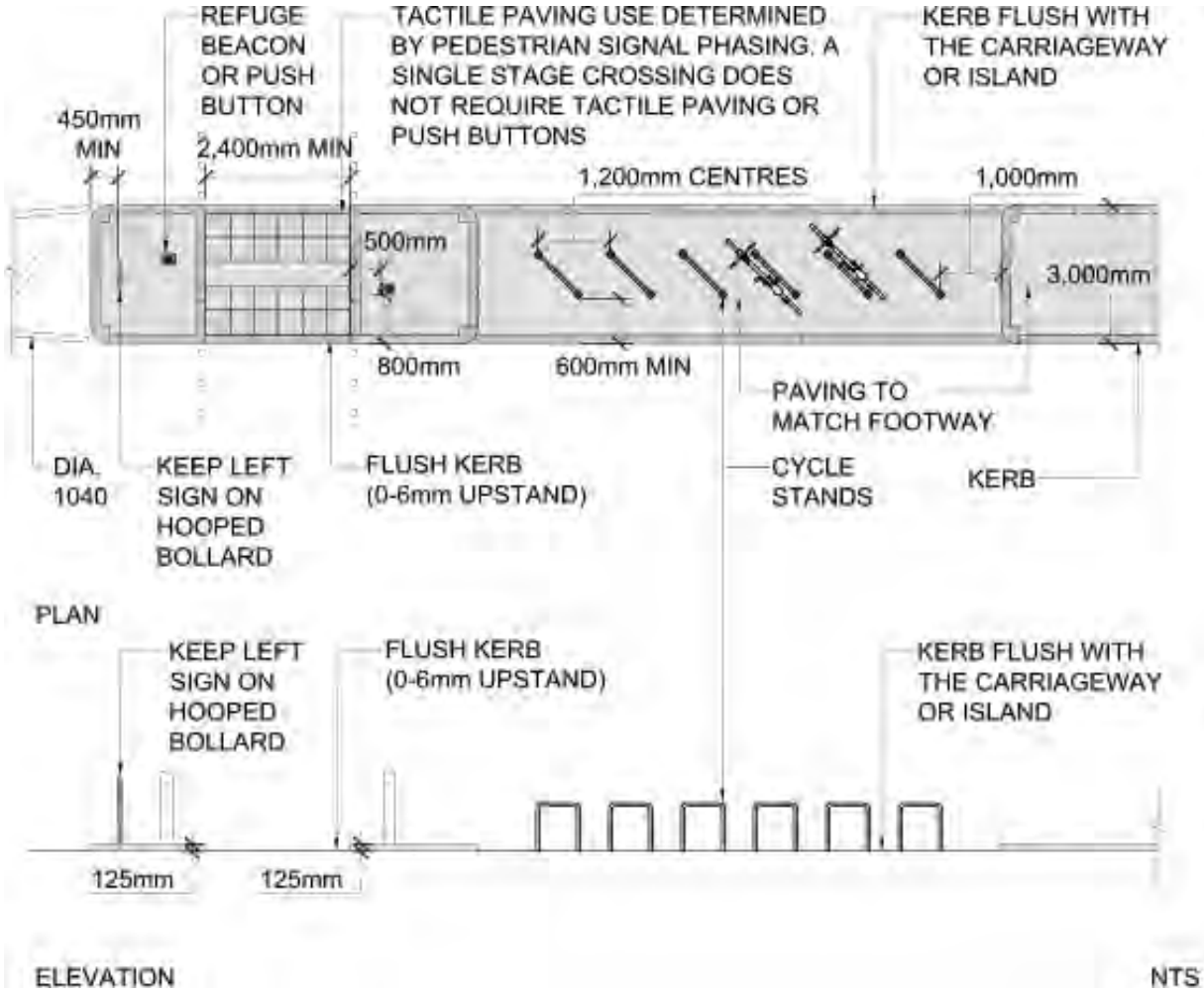
The kerb material and width should be consistent along the length of the median to provide clear delineation from the carriageway surface.

The kerb edge restraint detailing is vitally important and should be able to withstand impacts from vehicle overrun.

The kerb height for the median strip should be carefully considered and respond to the character and use of the street. The height is important to delineate the median from the carriageway and support the functional requirements of the median strip at specific locations.

Where inspection covers intersect the line of the median strip it may be necessary to detail the kerb edge around the cover. The preference, however, would be to accommodate the inspection cover on the median strip itself by moving the access point where practicable.

Figure 120: Median strip with street furniture



NOTES

1. Granite kerbs to comply with BS 435.
2. Precast kerbs to comply with BS 7263: part 1.
3. Signal poles must be positioned to provide a minimum lateral clearance of 450mm from all signal equipment to kerb face.
4. Where a pedestrian crossing phase is limited to permit pedestrians to cross a whole carriageway in one movement, then the width of the refuge in the carriageway shall be a minimum of 1,500mm. However a width of 2,000mm is recommended to permit a pedestrian with a pram or wheelchair to wait in safely.
5. All street furniture to be installed using retention sockets.
6. If a lighting column is required (subject to lighting levels) they should be combined with the signal posts/push buttons where possible.

Technical detail

Kerb cuts and paving layout for median strip

Kerb height	Median strip application
125mm-150mm	Standard upstand height where vehicle speeds are 40mph or greater
	Standard upstand height for central refuge at controlled crossing points and designated uncontrolled crossing points
60mm-125mm	Standard kerb upstand range where vehicle speeds are 30mph or less
Flush-6mm	Adjacent to centrally located cycle parking provision to allow convenient access for cyclists
Dropped kerb at formal crossings	
60mm	For shared surface schemes
	For centrally located parking and loading bay access

Additional information

The Highways Agency:
Design Manual for Roads and Bridges, Volume 6, Section 2: TD 42/95 Geometric Design of Major/ Minor Priority Junctions, 1995

Department for Transport:
Traffic Signs Manual (2003), Chapter 5: Road Markings

Figure 121: The central median should be paved in the same material as the footway

Figure 122: Oxford street's central median is paved in granite setts to match the concrete paving on the footways

Part E Crossings

9.1 Introduction 130
9.2 Tactile paving 130
9.3 Controlled crossings 142
9.4 Uncontrolled crossings 155
9.5 Traffic signals and controller cabinets 165
9.6 Grade-separated pedestrian crossings 168
9.7 Subways 170
9.8 Pedestrian and cycle bridges 172
9.9 Road bridges 173
9.10 Road underpasses and bridges over roads 175

Figure 123: Tactile paving is used to communicate important information to the visually impaired

9.1 Introduction

Walking is a great way of getting around London. It's free, healthy, environmentally friendly, and often the quickest option for short journeys. The provision of safe, inclusive and well-designed crossings is key to ensuring a quick and pleasant journey. Crossings can take on several forms including controlled, uncontrolled and grade-separated which are detailed here.

Figure 124: A crossing on Bishopsgate

9.2 Tactile paving

The consistent application of tactile paving is crucial for ensuring that pedestrians with visual impairments are supported in navigating the street environment safely and confidently.

A range of tactile paving types are used to help people identify particular hazards in the street and/or orientate towards a crossing. Generally these are units of paving that are specially designed to differ from the surrounding footway material, providing a detectable change in texture underfoot and a visual tonal contrast.

Figure 125: A busy crossing

There are four types of tactile paving used in London:

Blister

Corduroy

Ladder and tramline

Lozenge

Those involved in the design of tactile paving layouts should familiarise themselves with the design principles outlined in DfT's Guidance on the use of Tactile Paving Surfaces (2021), acting as the current national guidance. Designers should also acknowledge that ongoing research and experience in delivery has shaped what we consider to be best practice.

Common issues in application

Along with other local authorities in London, we have become increasingly aware that rigid application of the national guidance can have a detrimental impact on the legibility of tactile provision and negatively impact on the visual quality of the footway.

The complexity of London's street network, with irregular kerb geometries and angles of crossings, creates challenges for designers to comply with national guidance while providing a visually clean layout which is easily understood by people with visual impairments.

Common issues with layouts have emerged since the national guidance was produced and Streetscape Guidance recommends a number of departures from national guidance to overcome these challenges.

Ongoing research

We are undertaking ongoing research to conclude best practice designs for tactile paving to ensure the materials are effective. Streetscape Guidance will be reviewed and updated as research is completed to reflect best practice. TfL are in discussion with DfT to understand the latest research and will review any departures from National Guidance considering the latest research.

Good practice

Tactile paving should be carefully detailed to ensure consistency and quality in application so that it does not adversely affect the overall aesthetic of the streetscape. This extends to the workmanship and neatness of finish, with good planning and detailing required for overcoming any potential construction issue.

Detailing

- Inset covers should always be used where tactile paving meets an inspection cover and the careful design of fold and cut lines should be detailed to ensure the blister texture is consistently aligned across the cut
- Borders, such as the use of paint or setts, should not be provided around tactile paving
- The gradient of dropped kerbs should be carefully designed so as to maintain a constant gradient across the tactile surface
- Quadrant kerbs can be useful to ensure a neat finish at tight corners, ensuring vertical alignments are well integrated to avoid trip hazards
- Minimise the amount of tactile surfaces used to provide adequate support for visually impaired people while reducing the discomfort for those with walking difficulties and users of buggies or large bags

Materials

Concrete and natural stone are the most suitable materials for tactile paving as they are readily available in a range of appropriate colours, can be precast or cut into the required shape and have good slip resistance properties.

Yorkstone and granite may be considered at the request of the borough or where there is an urban design or heritage justification. It is prone to wear and does not generally comply with colour guidance. Use of Yorkstone or granite for tactile paving is subject to SDRG approval.

Metal studs are not generally recommended for use on the TLRN but may be considered by the SDRG in exceptional circumstances.

Detailed application

Blister paving

Application: Blister paving is used for two different purposes, functioning as a navigational guide for visually impaired pedestrians to help users locate, operate and cross at:

- Controlled crossings
- Uncontrolled crossings

Red concrete

Grey concrete

Yorkstone

Granite

Metal studs

The design and layout differs for these two applications, enabling this variation in crossing type to be communicated to users.

Layout

Blister paving at signal controlled crossings

- Should be provided at the kerb of the designated crossing point, as well as across the footway itself as a 'tactile tail'.

Figure 126: Blister paving at a crossing

Layout criteria

Dimensions

- 400x400mm paving unit with series of regular flat-topped blisters (5mm high, 25mm diameter) regularly spaced at 64-67mm across the unit.

Placement

- Two rows of 400x400mm tactile, for a total of 800mm wide at the narrowest point across the full width of the flush crossing. Tactile tails will form an 'L' shape at the crossing and are to be 800mm wide
- Blister paving should be oriented to align with the direction of the crossing
- Only full tactile slabs should be installed
- The maximum gradient should be of eight per cent (1 in 12) on the direct approach to a crossing and nine per cent (1 in 11) on the flared sides

Colour

- Red is standard on the TLRN for controlled crossings
- Contrasting grey for controlled crossings will be considered in conservation areas, or where red paving does not provide suitable contrast with surrounding paving
- Natural stone tactile paving may be produced using milled Yorkstone or granite but must have SDRG approval
- Metal paving studs are generally not recommended but may be adopted as an exception with SDRG approval

TLRN departures from national guidance

The following departures from national guidance should be used by designers working on TLRN schemes when designing tactile paving at controlled crossings:

- Exceptionally, where the area covered in tactile paving will be unnecessarily extensive or illegible due to a high radii kerb line combined with an abnormally wide crossing, consideration should be given to cutting the area of tactile paving to be consistently 800mm from the kerb edge. Each location is to be assessed and approved by TfL Engineering individually at the detailed level
- Research shows that partially visually impaired people often use the contrasting colour of tactile paving to guide them through the streetscape. However, there is less evidence that the specific colour used makes the space more legible. As such, the use of alternative contrasting coloured tactile paving will be considered on a case-by-case basis, for instance, in conservation areas or where the 'standard coloured' tactile paving does not contrast with the surrounding paving
- The use of reduced width tactile tails and tactile paving at the kerb edge (800mm instead of 1,200mm). Research undertaken in 2010 by University College London concluded that 'the blister profile is readily detectable when it is 800mm wide' as it will always capture a person's stride. We have therefore reduced the width used for all tactile paving surfaces from 1,200mm to 800mm; two rows of 400x400mm flags (reduced from three)
- The crossing of tactile tails can cause confusion for visually impaired users, and should be avoided. To avoid tails crossing, the tail associated with the crossing with lower pedestrian demand should be terminated at least 800mm from the other tail

Recording departures from national guidance

Consistency in application is of fundamental importance for legibility and so any deviations from national guidance and the national approach to tactile provision should be carefully justified.

Project files must record the reason for not following the national guidance. This includes recording how Streetscape Guidance has been followed in respect of the aforementioned departures from national guidance.

Figure 127: Blister tactile paving at controlled and uncontrolled crossings

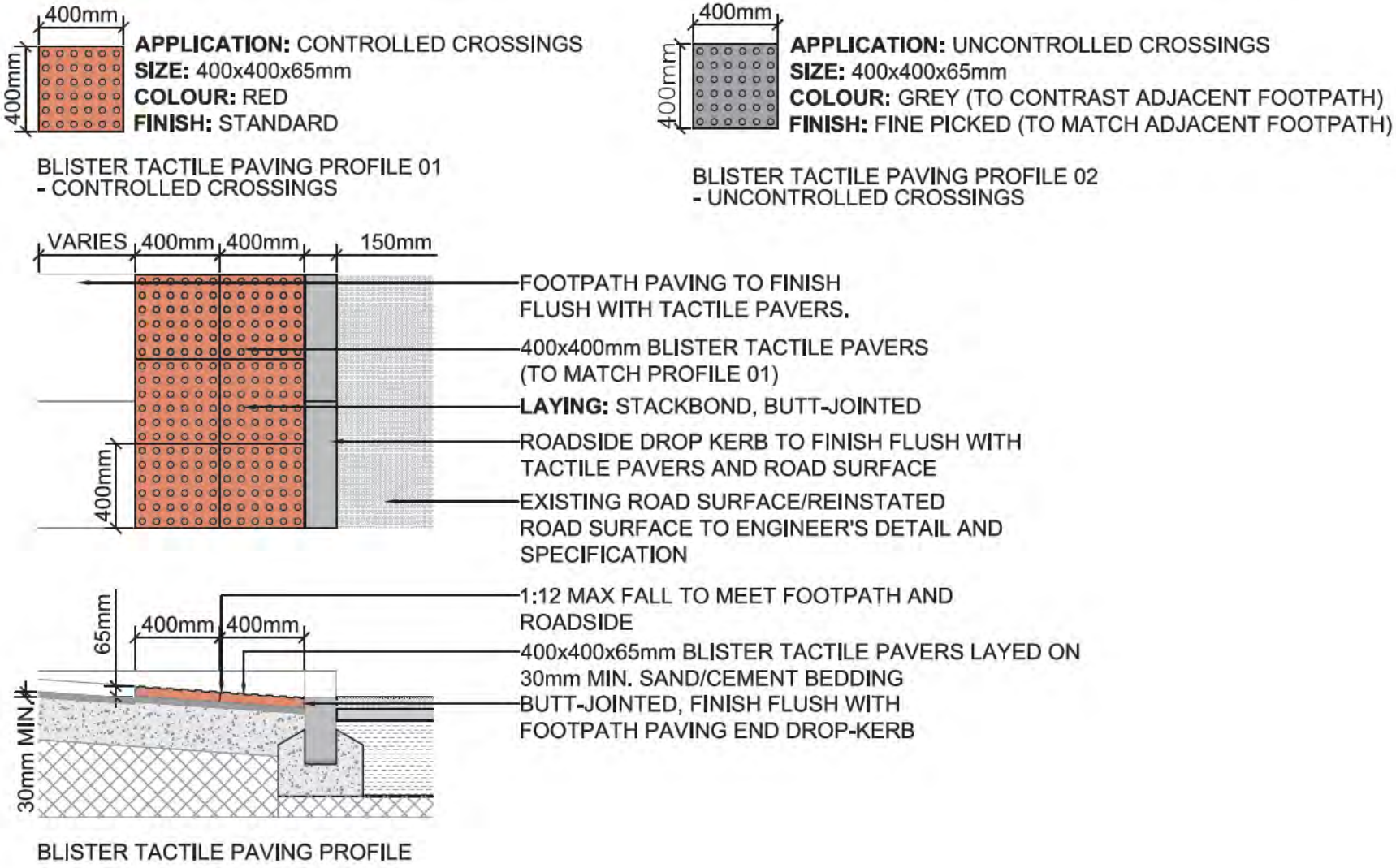


Figure 128: Controlled and uncontrolled crossing tactile layout

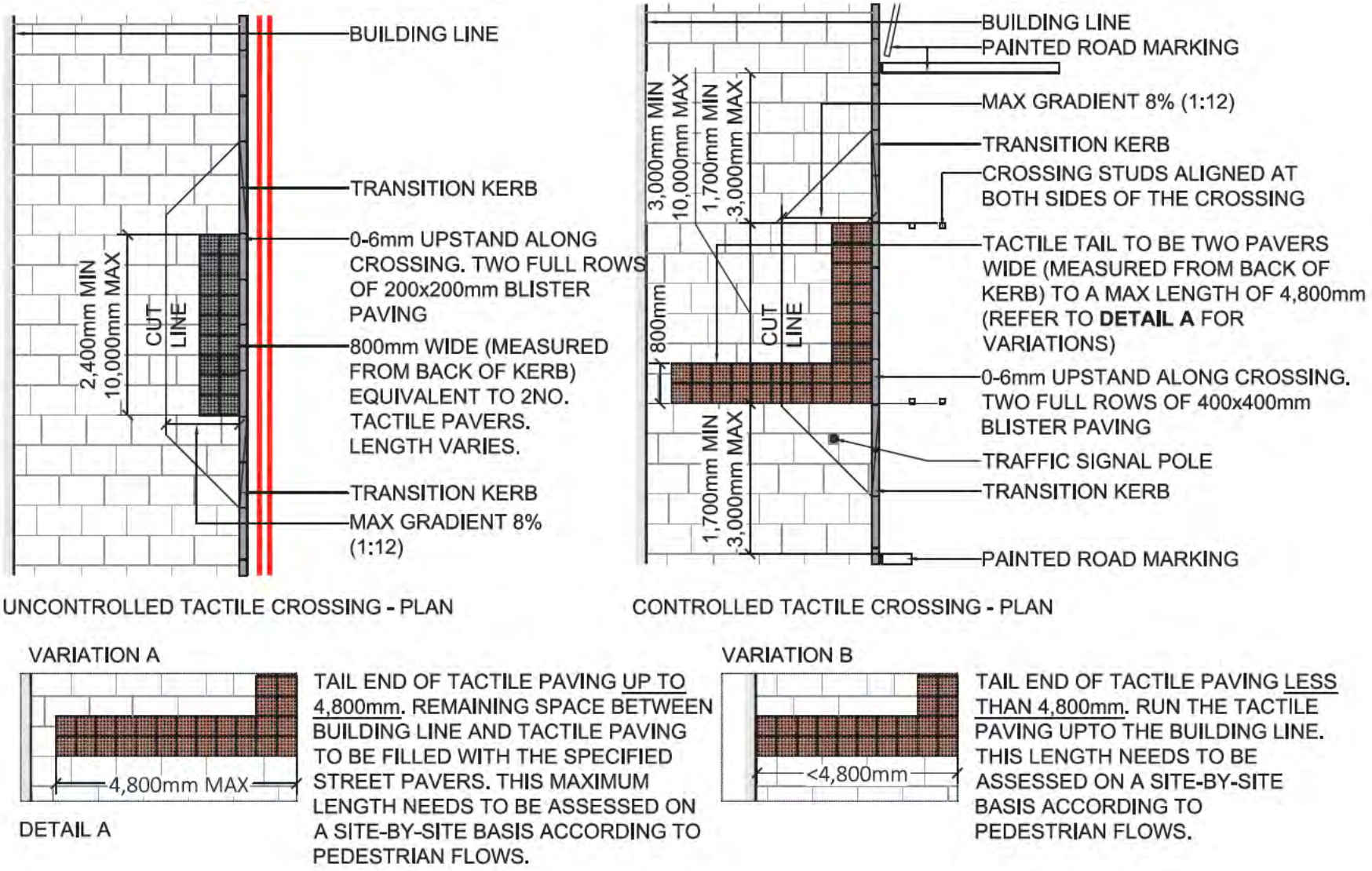
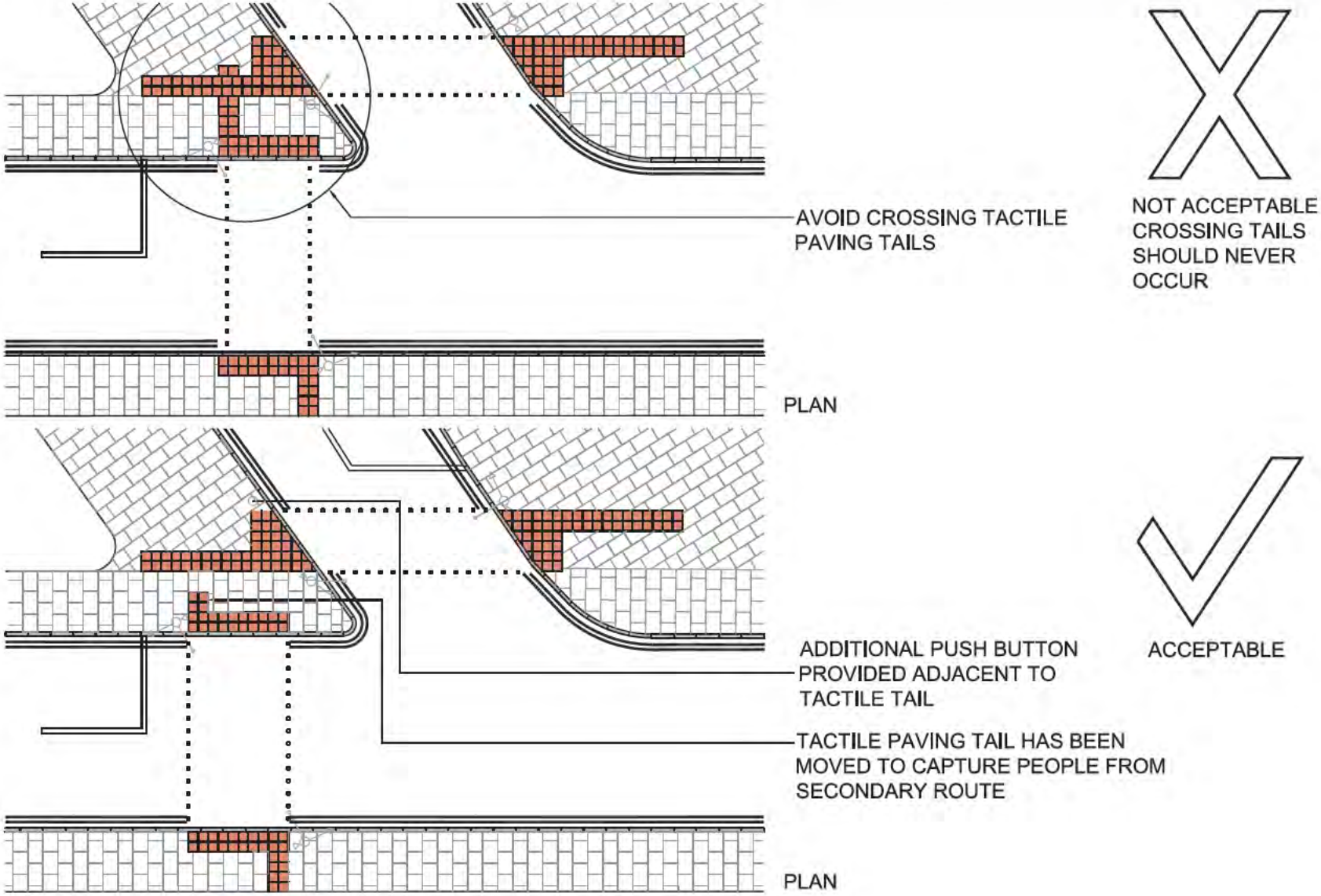


Figure 129: How to resolve a difficult tactile layout



Blister paving at uncontrolled crossings – uncontrolled crossings are used where vehicle flows and speeds allow pedestrians safe opportunities to cross a street without the need for a formal facility such as a signal crossing or zebra.

Layout criteria

Dimensions

- 400x400mm paving unit with series of regular flat-topped blisters (5mm high, 25mm diameter) regularly spaced at 64-67mm across the unit

Placement

- Two rows, 800mm wide at the narrowest point across the full width of the flush crossing
- Blister paving should be oriented to align with the direction of the crossing

Figure 130: Tactile paving should contrast with the surrounding footway material

- Exceptionally, the back of the crossing tactile paving may not need to be oriented at right angles to the crossing, and may be cut to be consistently 800mm from the kerb edge. This must be reviewed and approved by TfL Engineering on a case-by-case basis
- Tactile tails should not be provided
- Tactile paving associated with separate crossings should not join as this impacts on legibility
- Only full tactile slabs should be installed
- The maximum gradient should be of eight per cent (1 in 12) on the direct approach to a crossing and nine per cent (1 in 11) on the flared sides

Colour

- Contrasting grey – charcoal grey is standard on the TLRN for uncontrolled crossings
- Natural stone if tactile paving produced with milled granite/Yorkstone and as approved by SDRG

TLRN departures from national guidance

The following departures from national guidance should be used by designers working on TLRN schemes when designing tactile paving at uncontrolled crossings:

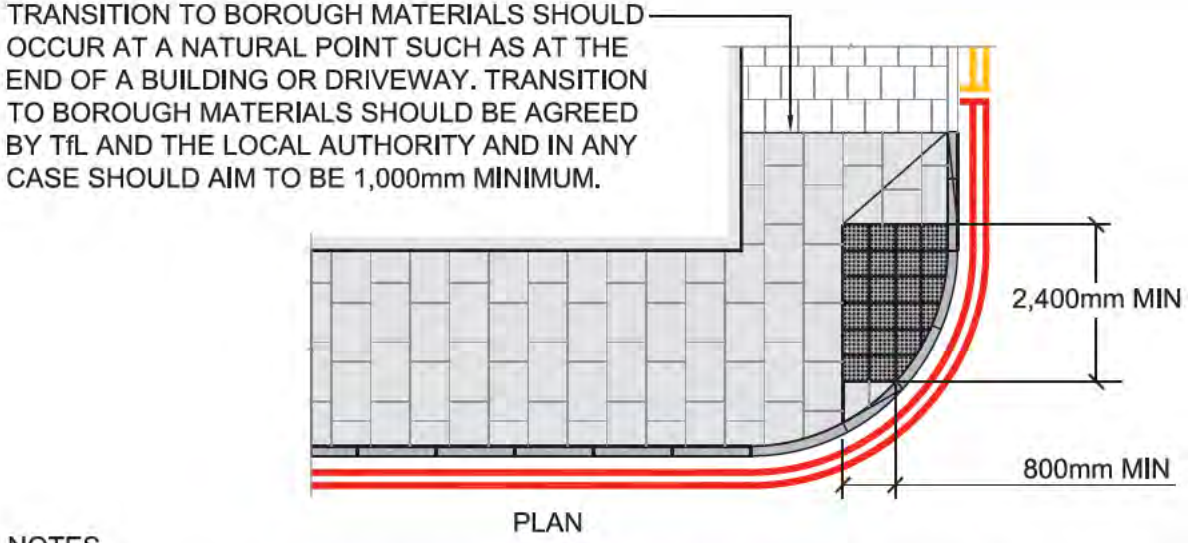
- Exceptionally, where the area covered in tactile paving will be unnecessarily extensive or illegible due to a high radii kerb line combined with an abnormally wide crossing, tactile paving should be cut to be consistently 800mm from the kerb edge. Each location is to be assessed and approved by TfL Engineering individually at the detailed level
- Research shows that partially visually impaired people often use the contrasting colour of tactile paving to guide them through the streetscape. However, there is less evidence that the specific colour used makes the space more legible. As such, the use of alternative contrasting coloured tactile paving will be considered on a case-by-case basis, for instance, in conservation areas or where the 'standard coloured' tactile paving does not contrast with the surrounding paving
- The use of reduced width tactile paving at the kerb edge in all cases (800mm instead of 1,200mm). Research undertaken in 2010 by University College London concluded that 'the blister profile is readily detectable when it is 800mm wide' as it will always capture a person's stride. We have therefore reduced the width used for all tactile paving surfaces from 1,200mm to 800mm; two rows of 400x400mm flags (reduced from three in certain circumstances)

Recording departures from national guidance

Consistency in application is of fundamental importance for legibility and so any deviations from national guidance and the national approach to tactile provision should be carefully justified.

Project files must record the reason for not following the national guidance. This includes recording how Streetscape Guidance has been followed in respect of the aforementioned departures from national guidance.

Figure 131: Uncontrolled pedestrian crossing at a side road



PLAN

NOTES

1. Flags to be laid with courses set at 90 degrees to kerb and a minimum overlap bond of 150mm.
2. The bonding of paving to be cut around utility service covers unless directed by the resident engineer.
3. Flags should not be cut so that a width less than 300mm remains. Previous courses should be cut to distribute evenly over width.
4. Kerb dropped over approximately 1,800mm to provide a flush kerb (0-6mm upstand) over crossing width.
5. All work to be carried out in compliance with the requirements of the Manual Handling Operations Regulations 1992 (as amended in 2002).
6. All covers within the tactile areas have to be recessed and in-filled with blister paving. It would be desirable for the rest of the covers to be recessed in order to match the footway surface but this needs to be agreed with TfL and the utility companies need to be contacted in order to get an agreement and request appropriate labeled assets.

Corduroy paving

Application – corduroy should be used to identify specific hazardous situations for pedestrians including:

- The top and bottom of steps
- The foot of a ramp to an on-street light rapid transit platform, but not any other ramps
- While national guidance illustrates where the footway is to be shared-use with a segregated path for cyclists, the results of future research should conclude appropriate use
- On the approach to level crossings

Application – corduroy should not be used to:

- Identify segregated routes for pedestrians and cyclists where ladder and tramline paving should be used
- Provide a defined edge of kerb instead of a kerb upstand

Layout criteria

Dimensions

- 400x400mm paving unit with rounded raised ridges 6mm high, 20mm in diameter and equally spaced at 50mm

Placement

- The placement should comply with the DfT's Guidance on the use of Tactile Paving Surfaces (2021); generally 800mm (two paving units) wide, except for the approach to a level crossing and should extend the full width of the steps, ramp or footway

Colour

- Contrasting grey – charcoal grey is standard on the TLRN unless this provides insufficient contrast with surrounding footways

TLRN departures from national guidance

The following departures from national guidance should be used by designers working on TLRN schemes when designing corduroy paving:

- Research shows that partially visually impaired people often use the contrasting colour of tactile paving to guide them through the streetscape. However, there is less evidence that the specific colour used makes the space more legible. As such, the use of alternative contrasting coloured tactile paving will be considered on a case-by-case basis, for instance, in conservation areas or where the 'standard coloured' tactile paving does not contrast with the surrounding paving

Recording departures from national guidance

Consistency in application is of fundamental importance for legibility and so any deviations from national guidance and the national approach to tactile provision should be carefully justified.

Project files must record the reason for not following the national guidance. This includes recording how Streetscape Guidance has been followed in respect of the aforementioned departures from national guidance.

Figure 132: Corduroy paving

Figure 133: Corduroy paving used at stairs to indicate a level change

Ladder and tramline paving

Application – ladder and tramline paving should be used to delineate between segregated cycle and pedestrian surfaces on a shared use route. It should be used at the start and end of a cycle route on and level with the footway, as well as at any junction where pedestrians with visual impairments may unknowingly walk on to the cycle track, and as a repeater marking as required.

Layout criteria

Dimensions

- 400x400mm paving unit with flat-topped bars 5mm high, 30mm wide and spaced 70mm apart

Placement

- Consideration should be given to omitting the ladder (pedestrian) side of ladder and tramline paving, in order to enhance the simplicity and legibility of the pedestrian environment. In all such cases, an Equality Impact Assessment should be completed to ensure this approach is appropriate, and the results clearly highlighted and justified in consultation materials. Where this approach is not appropriate national guidance should be followed and designs brought to SDRG for approval.

Colour

- Contrasting grey or to contrast the surrounding footway material

Figure 134: Ladder and tramline paving 800mm width on Borough Road

TLRN departures from national guidance

The following departures from national guidance should be used by designers working on TLRN schemes when providing ladder and tramline paving:

- Customer research by TfL (2015) has demonstrated that ladder and tramline paving is poorly understood, serves a limited function in informing visually impaired people where they should or should not walk and is difficult to traverse by people who are mobility impaired. The cycle facility should be properly delineated so that all users know if they are walking into it. Consideration should therefore be given to omitting ladder paving (pedestrian side) on segregated footways and only provide tramline paving (cycling side), to enhance the simplicity and legibility of the pedestrian environment. In all such cases, an Equality Impact Assessment should be completed to ensure this approach is appropriate, and the results clearly highlighted and justified in consultation materials. Where this approach is not appropriate national guidance should be followed and designs brought to SDRG for approval.
- While national guidance for ladder and tramline recommends an application 2,400mm depth, 800mm will be accepted based on the findings of UCL's (2010) research which revealed an 800mm depth for blister paving will capture a person's stride.

Recording departures from national guidance

Consistency in application is of fundamental importance for legibility and so any deviations from national guidance and the national approach to tactile provision should be carefully justified.

Project files must record the reason for not following the national guidance. This includes recording how Streetscape Guidance has been followed in respect of the aforementioned departures from national guidance.

Lozenge paving

Application – lozenge paving should be used at tram stops on the open street.

Figure 135: Lozenge paving at a tram stop

Layout criteria

Dimensions

- 400x400mm paving unit, with rows of lozenge shaped rounded raised ridges 6mm high, 150mm in length and 83mm in width and equally spaced at 50mm

Placement

- The placement should comply with the DfT's Guidance on the use of Tactile Paving Surfaces; generally 400mm (one paving unit) wide parallel to the platform edge and a minimum of 500mm back from the edge

Colour

- Buff

Additional information

Department for Transport:

Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Guidance on the use of Tactile Paving Surfaces, 2021

Inclusive Design for Getting Outdoors (I'DGO): Design Guide 003 Note: Tactile Paving

9.3 Controlled crossings

To create a high quality walking environment it is essential that where the pedestrian desire lines, pedestrian demand and vehicular flow justify, controlled crossing points are provided to cross the carriageway, typically but not necessarily at junctions.

Provision of formal crossings can partially change desire lines but they will not prove successful if they require a significant deviation in natural pedestrian flow.

On the TLRN several different controlled crossing types are used to provide fit for purpose crossing facilities appropriate to the urban context, including:

- **Signal controlled crossings** – located on busy routes where pedestrians need a formal pedestrian phase
- **Non-signal controlled crossings** ('protected crossings') – the zebra family of crossings are non-signal controlled crossings

The design team should consider the relationship of the crossing to adjacent building entrances and side roads, and coordinate the design with surrounding street furniture and tree planting.

Crossing category	Permitted crossing type
Signal controlled crossing	Ped-X Toucan Pegasus
Non-signal controlled crossing	Zebra Zebra with parallel cycle crossing

Controlled crossings can be further split into:

- Straight-across single stage
- Straight-across two stage
- Staggered two (or more) stage

Figure 136: Controlled crossing on Upper Street, Angel

General crossing considerations

For all types of crossing, the following general design guidance should be followed.

Design

The effective design and layout of crossings requires an understanding of a number of interrelated factors including the road context and proximity to any junctions, traffic and pedestrian flows, existing desire lines, traffic speeds and road safety issues.

Materials

Anti-skid surfacing should not be used on the carriageway surface between the crossing studs as pedestrians with mobility impairments can experience discomfort or difficulty in crossing these surfaces.

Coloured surfacing should not be applied unless approved by the SDRG.

It may be appropriate to continue footway materials across the carriageway where pedestrian priority or a unified space is being promoted.

Drainage

- Ensure drainage gullies are not located within the crossing
- Levels must enable surface water to drain away from the crossing

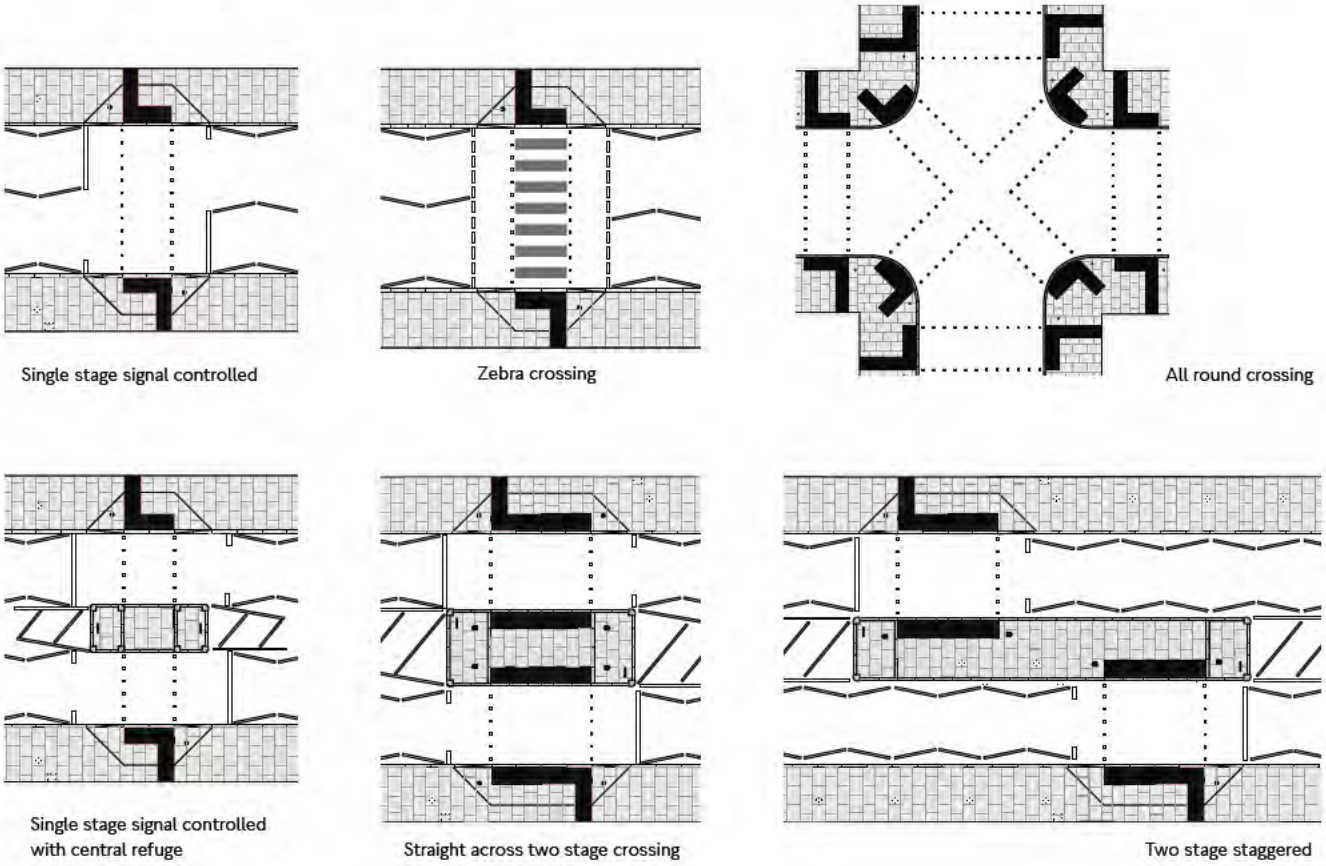
Safety

- Guardrailing should not be used unless there is evidence that pedestrian safety would otherwise be compromised. Please refer to 'Barrier free footways' for further information
- Sightlines at crossings should not be obstructed by street furniture, plantings or parked/stopped vehicles
- Crossings should not be located where sharp bends in the road occur as this may create blind corners and reduce driver awareness to stop within a safe distance

Pedestrian comfort

- Both the footway and the crossing should be fit for purpose such that pedestrians are not overly constrained on the crossing or in the waiting area. Refer to our Pedestrian Comfort Guidance for London (2010) to determine the required levels of service
- A 5,000mm wide crossing or similar is recommended where footways are narrow (less than 3,000mm) to increase waiting space and minimise obstructing pedestrian flows on the footway
- At-grade crossings are preferred to subways and footbridges, to better serve pedestrian desire lines and facilitate greater priority for pedestrians

Figure 137: Controlled crossing types



- At especially busy crossings, for example outside stations, the designer should review the potential for footway widening and the provision of crossings wider than 5,000mm
- Single stage crossings are preferred to staggered arrangements, to better serve pedestrian desire lines and facilitate greater priority for pedestrians

Signal controlled crossings

Pedestrians establish priority over vehicles at signal controlled crossings through the use of signal controlled pedestrian phases. Selection should be based on traffic volumes, speed and pedestrian flows, as well as whether the crossing is at a junction or standalone.

Pedestrian crossing facility (Ped-X)

This is the preferred crossing for all new, modified and modernised signal layouts. The layout appears similar to a pelican crossing with far-sided pedestrian aspects, but the traffic light sequence is as a signalised junction, has no flashing amber vehicle signal and usually includes a countdown timer.

Figure 138: A Ped-X crossing on Harrow Station Road with no pedestrain countdown timer

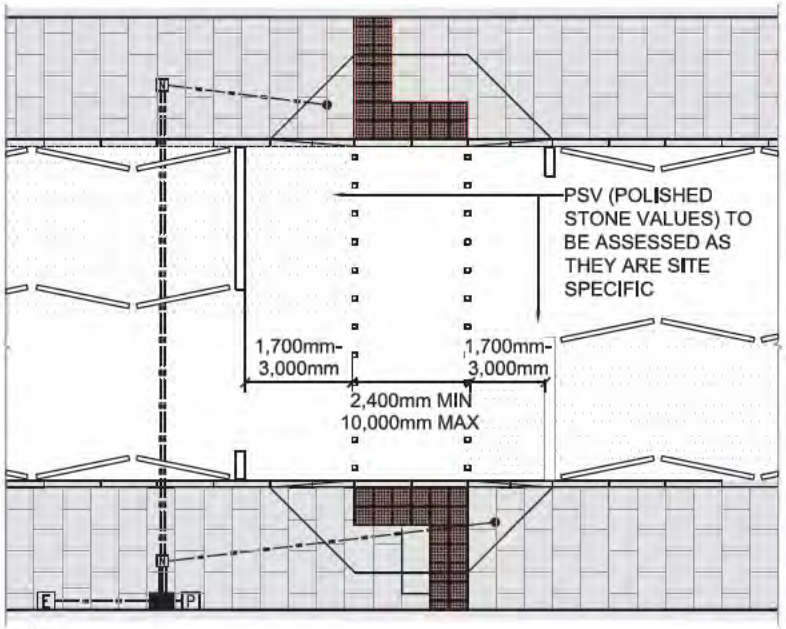
Layout criteria

Straight-across Ped-X crossings	
Preferred minimum crossing width	3,200mm
Maximum crossing width	10.0 metres
Dropped kerbs	1:20 preferred to 1:12 (maximum)
Additional requirements where a central refuge is provided	
Recommended minimum central refuge depth	2,000mm
Recommended minimum central refuge length	7,200mm
Kerb upstand around central refuge	125mm
Additional requirements for staggered Ped-X crossings	
Preferred minimum central refuge kerb to kerb	3,000mm
Minimum stagger distance between crossing points on central refuge	4,000mm recommended. Relaxations may be permitted with SDRG approval
Stagger for all two-way roads	Left stagger to face oncoming traffic, unless otherwise agreed with SDRG
Recommended minimum distance from uncontrolled junctions to primary signal pole	20.0 metres

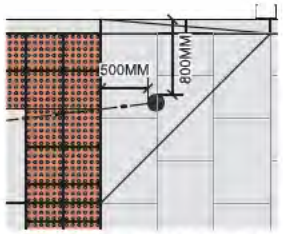
Good practice

- Countdown timers should be considered for all Ped-X crossings
- Signal timings should be appropriate to pedestrian flows and traffic volumes
- All signal schemes are required to have a design and safety check in line with the Design Standards for Signal Schemes in London
- Tactile rotating cones should be fitted to all controlled crossings
- Audible bleepers should be fitted to standalone signal controlled crossings and 'all round' crossings at junctions as detailed in DfT Traffic Advisory Leaflets 4/91 and 5/91

Figure 139: Ped-X crossing



PLAN

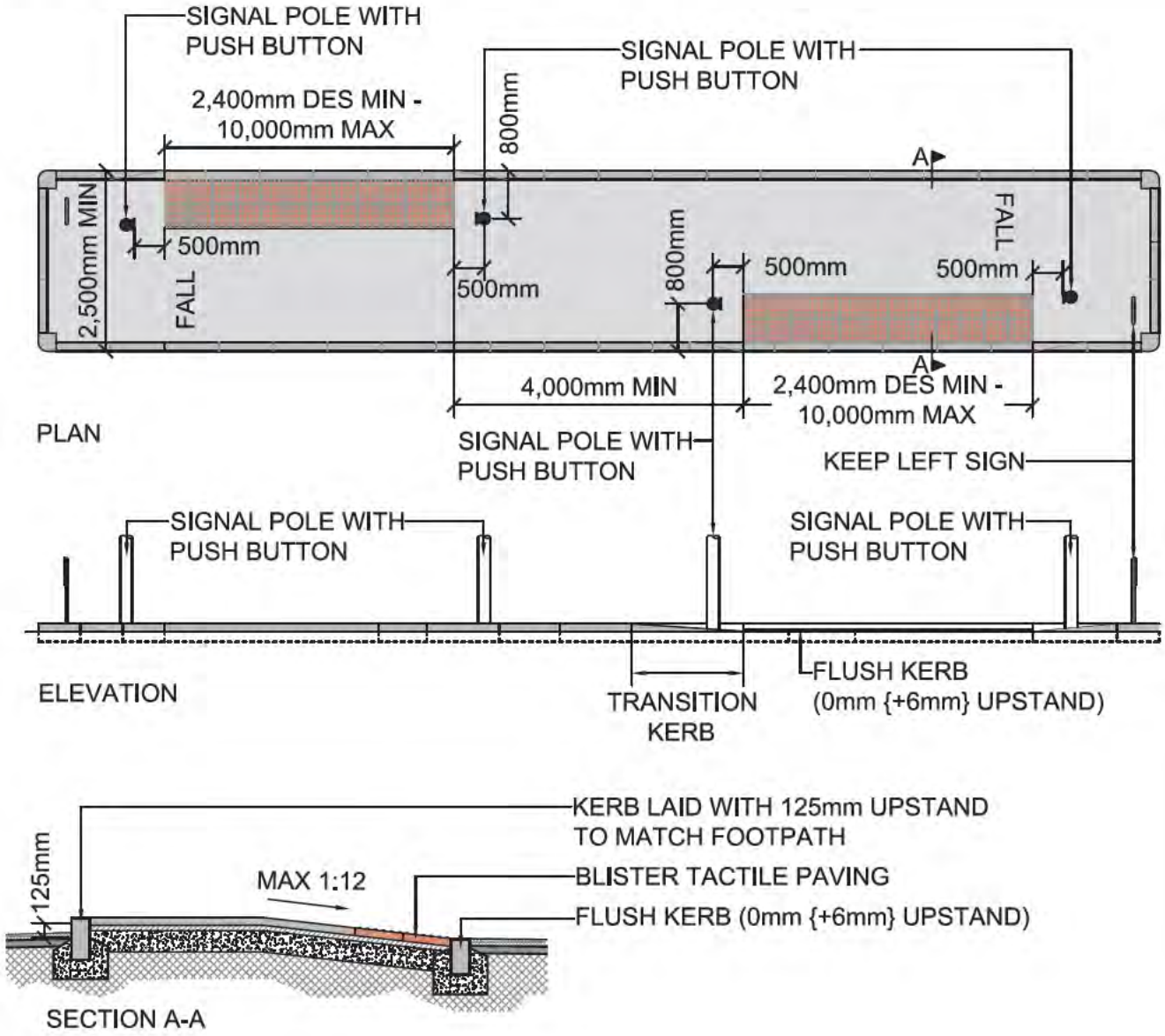


PED-X SIGNAL SCALE 1:50

Notes:

1. All works to be carried out to the relevant tfl specification.
2. Duct layout is indicative only and subject to site conditions.
3. Traffic signal poles must be positioned to provide a minimum lateral clearance of 450mm from all signal equipment to kerb face.
4. All poles to be installed on retention sockets.
5. Pushbuttons to be mounted at 45° to kerb on all poles.
6. Engineer to specify width of crossing (between stud lines). Width should be in increments of 400mm to accommodate exact number of standard 400x400mm blister paving slabs.
7. Ideal tactile arrangement as shown with two rows of blister for the width of the crossing and a tail of three blister slabs wide from the right hand side of the crossing extending to back of footway or to 5,000mm maximum.

Figure 140: Pedestrian refuge islands – staggered crossing



Notes

1. All street furniture must be positioned to provide a minimum lateral clearance of 450mm to kerb face.
2. If a lighting column is required (subject to lighting levels) they should be combined with the signal posts/push buttons where possible.
3. Material in central refuge island to match material on footway.

Toucan crossing facility

Toucan crossings allow both pedestrians and cyclists to cross without segregation. These crossings are typically used in conjunction with shared use footways. Far-sided signals have a green cycle symbol alongside a green/red man.

If a two-stage toucan crossing is required in exceptional circumstances its design should be carefully considered as cyclists may not stop on the refuge.

Figure 141: A busy toucan crossing at Hyde Park Corner

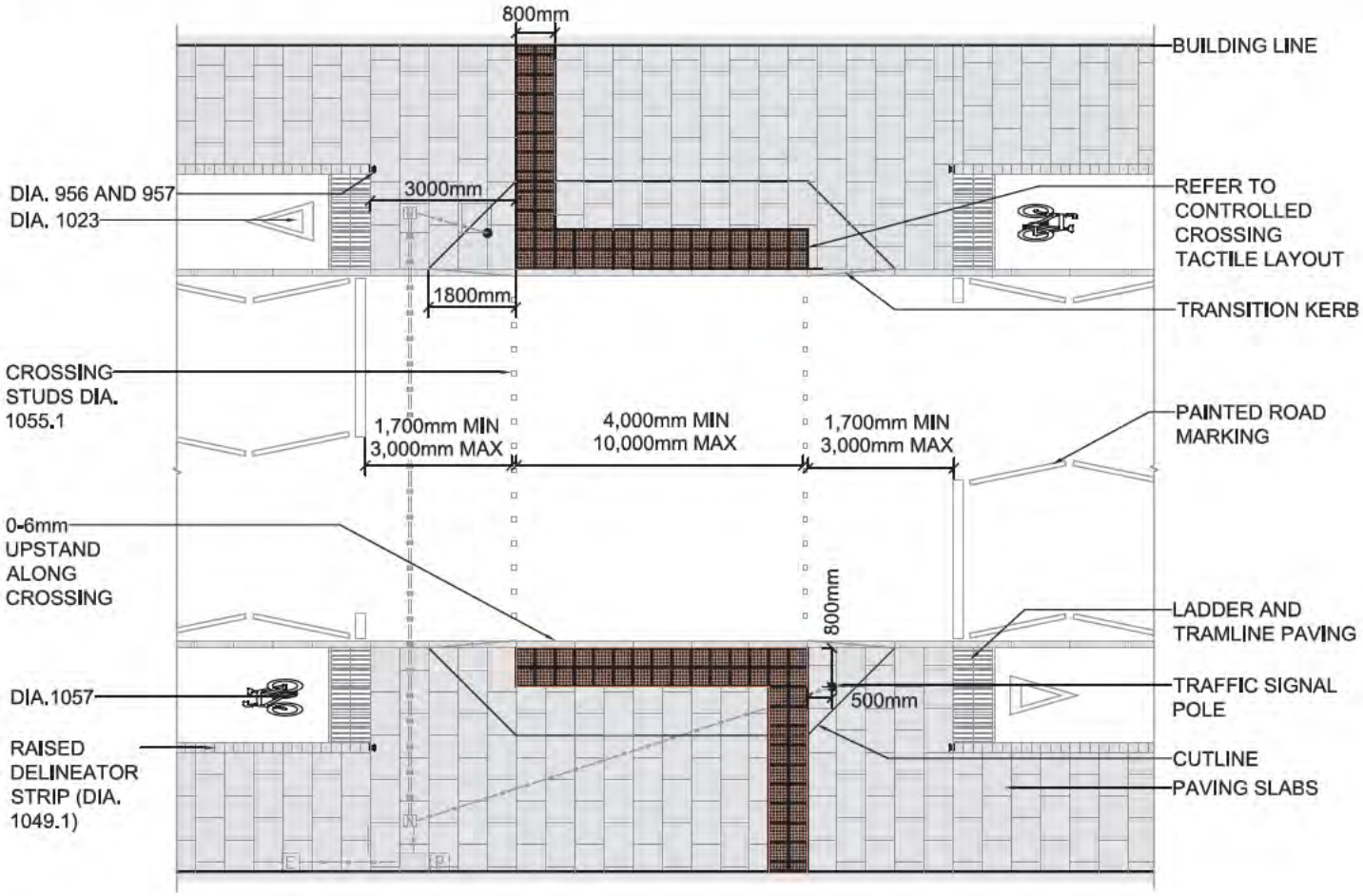
Layout criteria

Straight-across toucan crossings	
Preferred minimum crossing width	4,000mm
Maximum crossing width	10.0 metres
Dropped kerbs	1:20 preferred to 1:12 (maximum)
Additional requirements where a central refuge is provided	
Recommended minimum central refuge width	3,000mm
Recommended minimum central refuge length	8,000mm
Kerb upstand around central refuge	125mm
Additional requirements for staggered toucan crossings	
Central refuge width kerb to kerb	7,000mm recommended 4,000mm preferred minimum
Minimum stagger distance between crossing points on central refuge	4,000mm recommended. Relaxations may be permitted with SDRG approval
Stagger for all two-way roads	Left stagger to face oncoming traffic, unless otherwise agreed with SDRG
Recommended minimum distance from uncontrolled junctions to primary signal pole	20.0 metres

Good practice

- Far-sided toucan crossings are preferred. This permits the addition of countdown signals
- Signal timings should be appropriate to pedestrian and cycle flows and traffic volumes
- All signal schemes are required to have a design and safety check in line with the Design Standards for Signal Schemes in London
- Tactile rotating cones should be fitted to all controlled crossings
- Audible bleepers should be fitted to standalone signal controlled crossings

Figure 142: Toucan crossings



Other cycle facilities

Where safety considerations, traffic flow, speed or demand provide justification, signal controlled cycle facilities can be used to enable cyclists to cross. Cycle facilities can come in the form of a toucan or facilities that treat cyclist as a vehicular movement.

There are a range of cycle facilities available to allow cycle routes to cross a carriageway. Please refer to LCDS or speak to the Traffic Infrastructure team for further information.

Figure 143: A signalised cycle facility next to a pedestrian crossing

Pegasus crossing

Pegasus crossings allow horses and their riders to cross. These crossings are similar to toucan crossings but have a red/green horse symbol and additional push buttons mounted at a greater height.

Figure 144: A parallel toucan and pegasus crossing at Constitution Hill and Duke of Wellington Place

Layout criteria

Pegasus crossing	
Preferred minimum crossing width	4,000mm
Maximum crossing width	10.0 metres
Dropped kerbs	1:20 preferred to 1:12 (maximum)
Additional requirements where a pegasus crossing is adjacent to a pedestrian/cycle crossing	
Minimum separation between crossings	3,000mm
Maximum separation between crossings	5,000mm
Other standards apply as per the relevant pedestrian/cycle crossing type	

Good practice

- For specific design guidance consult with TfL's Traffic Infrastructure team
- All signal schemes are required to have a design and safety check in line with the Design Standards for Signal Schemes in London
- Tactile rotating cones should be fitted to all controlled crossings
- Audible bleepers should be fitted to the adjacent pedestrian/cycle crossing as detailed in DfT Traffic Advisory Leaflet 3/03

Diagonal or 'all red signal' crossings

At a signal controlled junction, a diagonal or 'all red signal' crossing provides an exclusive pedestrian stage to enable pedestrians to use all crossing points simultaneously and enable diagonal crossing movements (which may be appropriate for crossings with high, consistent pedestrian flows across all arms).

Figure 145: Diagonal crossing in Wimbledon

Layout criteria

Diagonal or 'all red signal' crossings	
Preferred minimum crossing width	3,200mm
Maximum crossing width	10.0 metres
Dropped kerbs	1:20 preferred to 1:12 (maximum)
Additional requirements where central refuge is provided	
Minimum central refuge depth	2,000mm
Minimum central refuge length	7,000mm
Kerb upstand around central refuge	125mm

Good practice

- Signal timings should be appropriate to pedestrian and traffic volumes
- All signal schemes are required to have a design and safety check in line with the Design Standards for Signal Schemes in London
- Tactile rotating cones should be fitted to all controlled crossings
- Audible bleepers should be fitted as detailed in DfT Traffic Advisory Leaflets 4/91 and 5/91

Controlled non-signalised crossings

Zebra crossings

Zebra crossings are laid out with alternating black and white bands, marked by zigzag markings on the approach and flashing beacons. Pedestrians only have right of way once they have stepped on the markings designating the crossing. However, pedestrians should remain on the kerbside for safety until approaching vehicles have stopped.

Zebra crossings are therefore only recommended for low speed environments, 35mph or less, provided there are clear sightlines.

Cyclists do not have legal priority over motor vehicle traffic, however it is not illegal, depending on the provision from the footway, to cycle across a zebra crossing.

Zebra crossings are not generally permitted on routes under the Urban Traffic Control (UTC) system, and require SDRG approval.

Zebra crossings with parallel cycle crossing

Unlike a conventional zebra crossing, this design requires motorists to give way to cyclists using the crossing.

- Belisha beacons are required at each end of the crossing
- Zigzag markings are required at each side of the crossing
- Care must be taken to design out conflict between road uses. The cycle crossing should connect at each end to provide clear coherent cycle routes
- This type of crossing can be used on roundabouts with a cycle lane, as shown below
- For detailed information please refer to London Cycling Design Standards (2014)
- Authorisation to use this type of crossing shall not be permitted until such time as it is approved for use within the TSRGD

Figure 146: Zebra crossing

Figure 147: A zebra crossing with a parallel cycle crossing in Milan

Figure 148: Zebra crossing

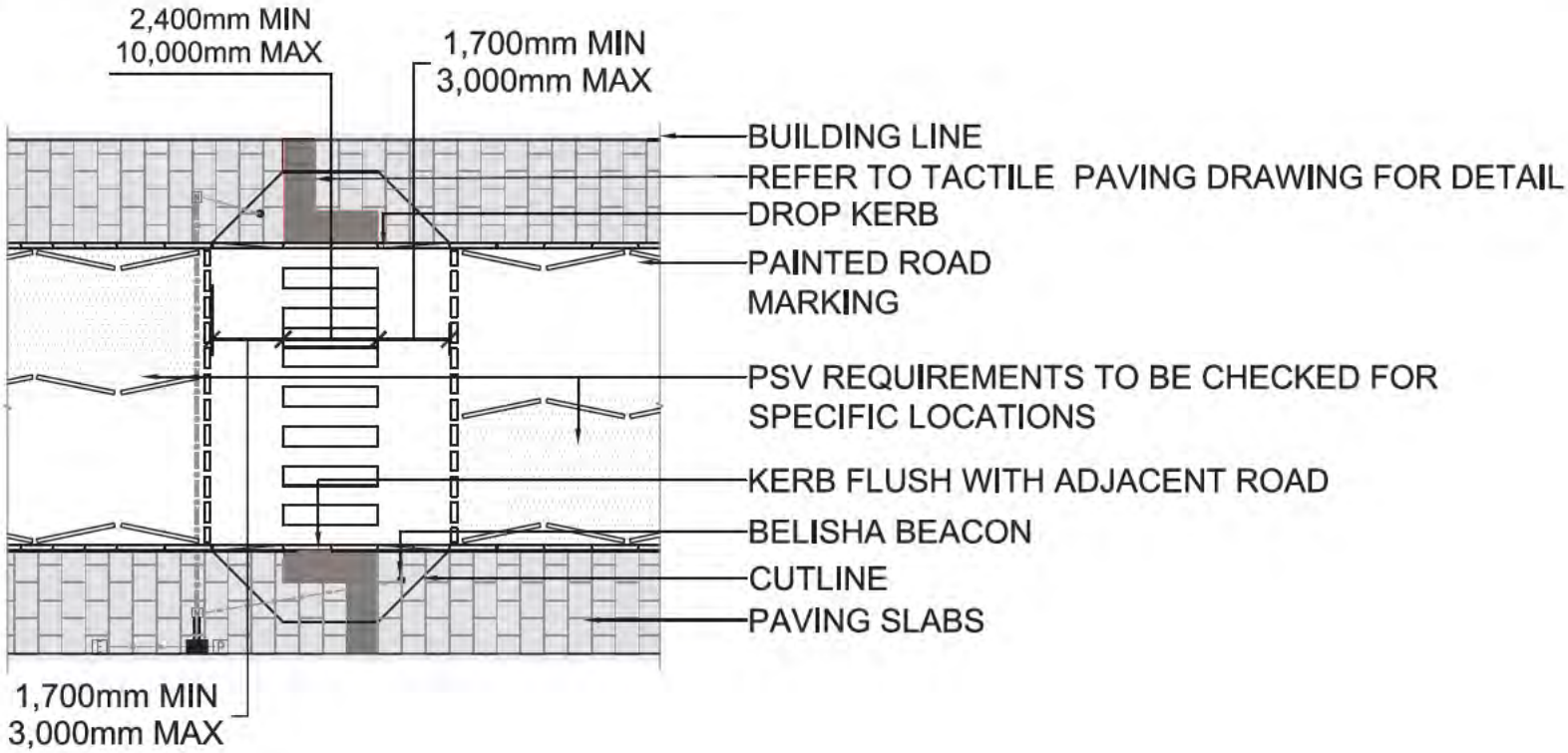
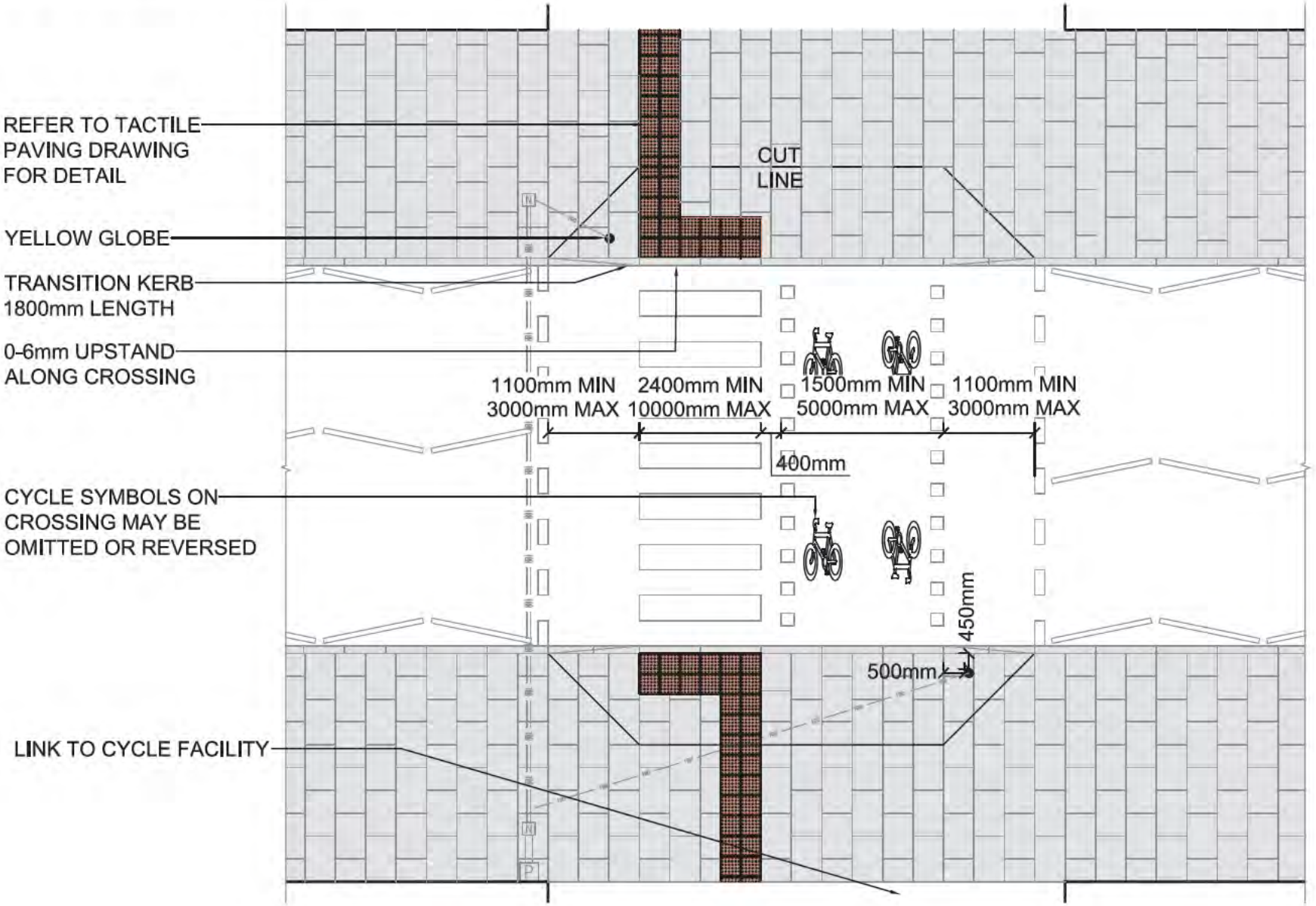


Figure 149: Parallel pedestrian and cycle crossing



Additional information

Department for Transport:

Guidance on the use of Tactile Paving Surfaces, 2021

Local Transport Note (LTN) 1/95: The Assessment of Pedestrian Crossings, 1995

LTN 2/95: The Design of Pedestrian Crossings, 1995

Traffic Advisory Leaflet 3/03: Equestrian Crossings, 2003

Traffic Advisory Leaflet 5/05: Pedestrian Facilities at Signal-Controlled Junctions, 2005

Traffic Advisory Leaflet 5/91: Audible and Tactile Signals at Signal-Controlled Junctions, 1991

Traffic Advisory Leaflet 1/06: General Principles of Traffic Control by Light Signals, 2006

Transport for London:

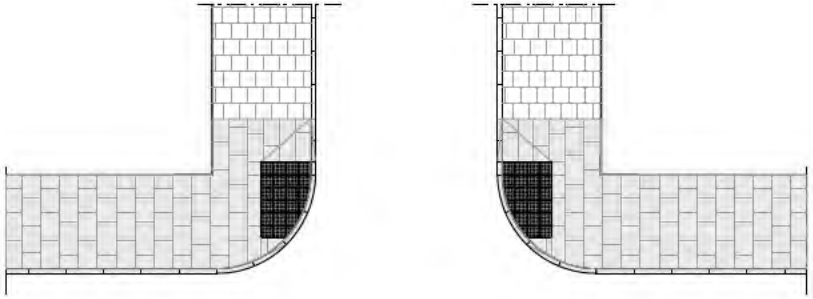
Design Standards for Signal Schemes in London

9.4 Uncontrolled crossings

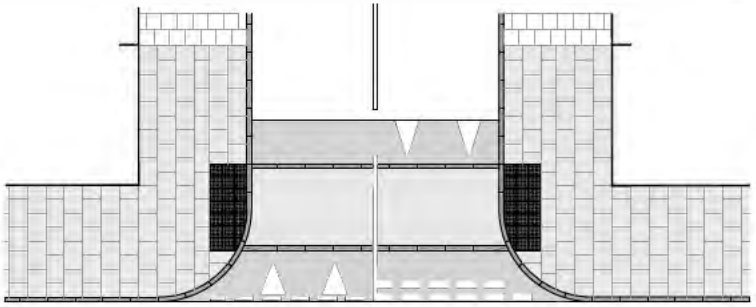
Uncontrolled pedestrian crossings should be located on pedestrian desire lines at side roads or at signalised junctions without pedestrian phases as a 'walk with traffic' facility. The pedestrian does not have priority over vehicles at these crossings and has to seek safe crossing opportunities when traffic is held on a red signal.

Figure 150: Uncontrolled crossing

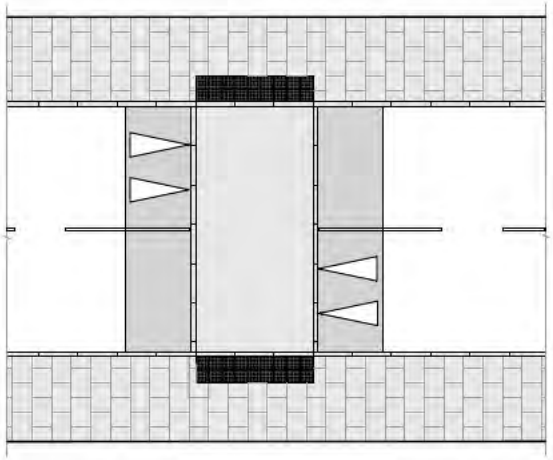
Figure 151: Uncontrolled crossing



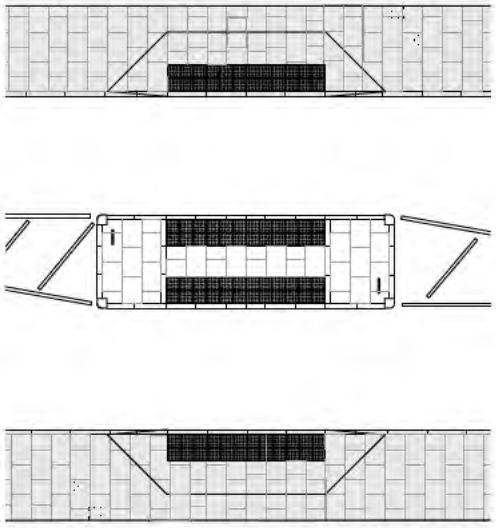
Side road uncontrolled crossing



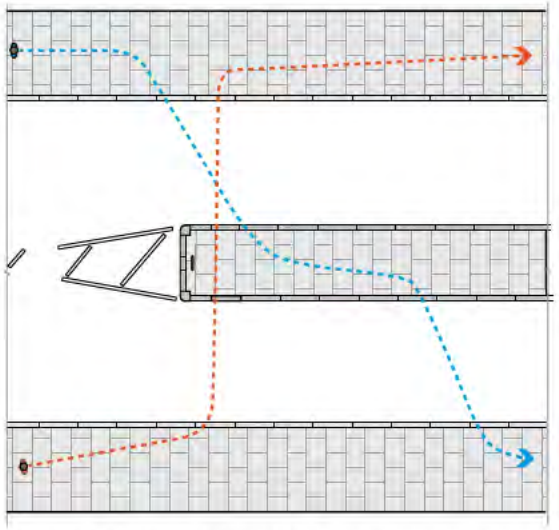
Side road uncontrolled crossing with raised entry treatment



Uncontrolled crossing with raised table



Uncontrolled crossing with refuge island



Typical informal crossing movements supported with central median

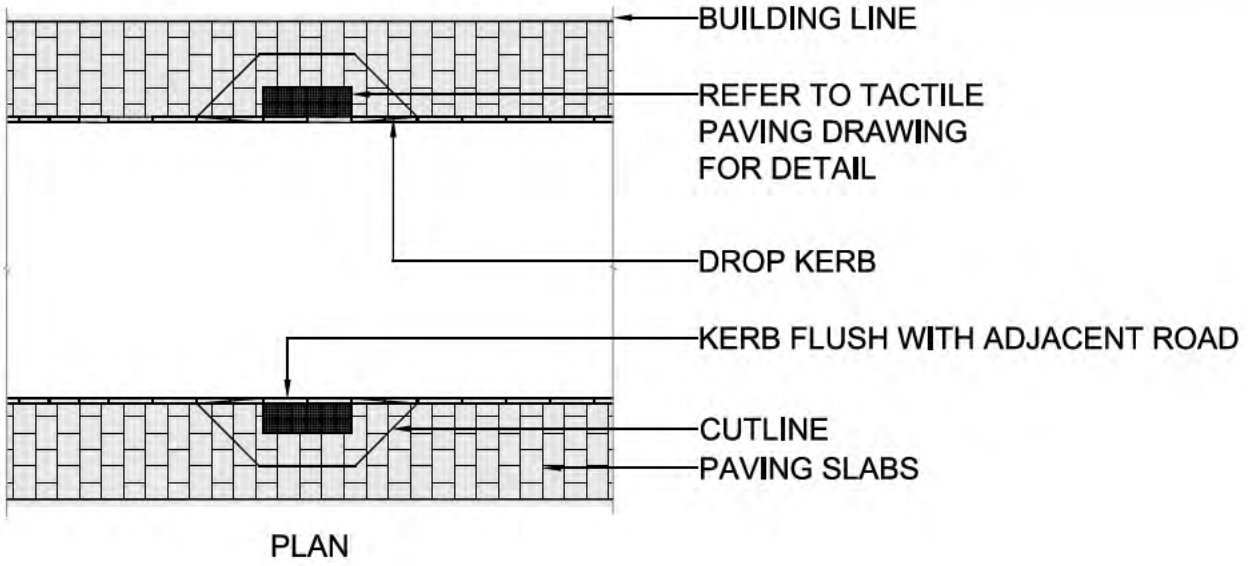
Crossing category	Crossing type	Stages
Uncontrolled crossing types	Uncontrolled	1 or 2
	Traffic island	2
	Dropped kerb	1
	Side road entry treatment	1
	Courtesy crossing	1
	Informal island	1 or 2

Uncontrolled pedestrian crossing design standards	
Preferred minimum central refuge width	2,000mm
Absolute minimum central refuge width	1,500mm
Dropped kerbs	Flush with carriageway
	1:20 optimum gradient to 1:12 maximum
	Provided at least every 100 metres on residential roads
Tactile paving	Contrasting grey/two rows deep/no tactile tail

The provision of tactile paving and a dropped kerb on each side of the road helps to delineate the crossing point. Central refuges may be provided at uncontrolled crossings to facilitate crossing in two stages and protect pedestrians from traffic. Uncontrolled crossings are appropriate where there are moderate to low vehicle flows.

Where traffic capacity at a junction does not allow for a green pedestrian crossing phase in the signal timings, an uncontrolled crossing point may be provided. These arrangements are not recommended for locations where there are moderate to high pedestrian flows with evidence of a crossing desire line.

Figure 152: Uncontrolled crossings may or may not be combined with an island



Side road entry treatments

Entry treatments should be used to emphasise pedestrian priority and as traffic calming devices. Generally they are placed across a minor road at, or within a short distance of a junction with a major road.

Side road entry treatments are generally only used in urban areas and may be implemented in isolation or as part of a series of traffic calming features. They should not be used adjacent to high speed road environments as vehicles turning on to the ramp and raised table are required to move at low speeds. A side road entry may be considered for an intersecting road which is of a lower movement order than the adjoining road.

Entry treatments aim to achieve a combination of objectives relating to safety and user priority, through a series of physical interventions:

Figure 153: A side road entry treatment at Windrush Square, Brixton

Objective	Corresponding design intervention
Denote a change in street character where a side road intersects a major road type and signals to drivers that they are entering or leaving a different traffic condition and should act accordingly	Use materials to suggest greater pedestrian presence and priority on the side road
To emphasise pedestrian movements	Raise carriageway level to footway level Reduce the carriageway crossing distance Use materials to suggest greater pedestrian presence and priority
Reduce vehicle speeds on the approach	Provide a change in surface before the junction Include vertical deflection
Reduce vehicle speeds through the turn	Tighten corner geometries
Improve junction visibility	Provide footway build-outs to deter parking near the junction
Additional site specific objectives	**Corresponding design intervention**
Identify the start of a 20mph zone or traffic calmed area	Use a combination of measures including signage, carriageway surface materials and build-outs

Design

Side road entry treatments should consist of:

- An uncontrolled crossing with appropriate tactile paving treatment
- A crossing width of minimum 2,400mm
- A flush crossing surface raised to footway level through vertical deflection
- Tight corner radii of 3,000mm or less to control vehicle entry speeds, with radius kerbs used
- Footway build-outs where appropriate to reduce carriageway width
- The extent of carriageway narrowing should be based on local traffic flows and classified turning movements.
- The highest point on a flat-topped road hump must be no more than 100mm above carriageway level. Where a standard 125mm kerb is provided, the surrounding carriageway needs to be built up, so that the side road entry does not exceed a 100mm rise above carriageway level
- One-way side roads should provide carriageway widths suitable for single vehicle access, usually in the range of 3,000mm to 6,000mm dependent upon the vehicles expected
- Two-way side roads should ideally be between 5,000mm and 6,500mm wide

Good practice

- Entry treatments should not interfere with vehicle access to properties
- Street furniture may be introduced on widened footways as part of the entry treatment and should be selected in accordance with Streetscape Guidance
- Relocate drainage gullies where necessary and avoid locating within the uncontrolled crossing
- Designers should review the impact of carriageway narrowing on cycling

Figure 154: Uncontrolled raised crossing

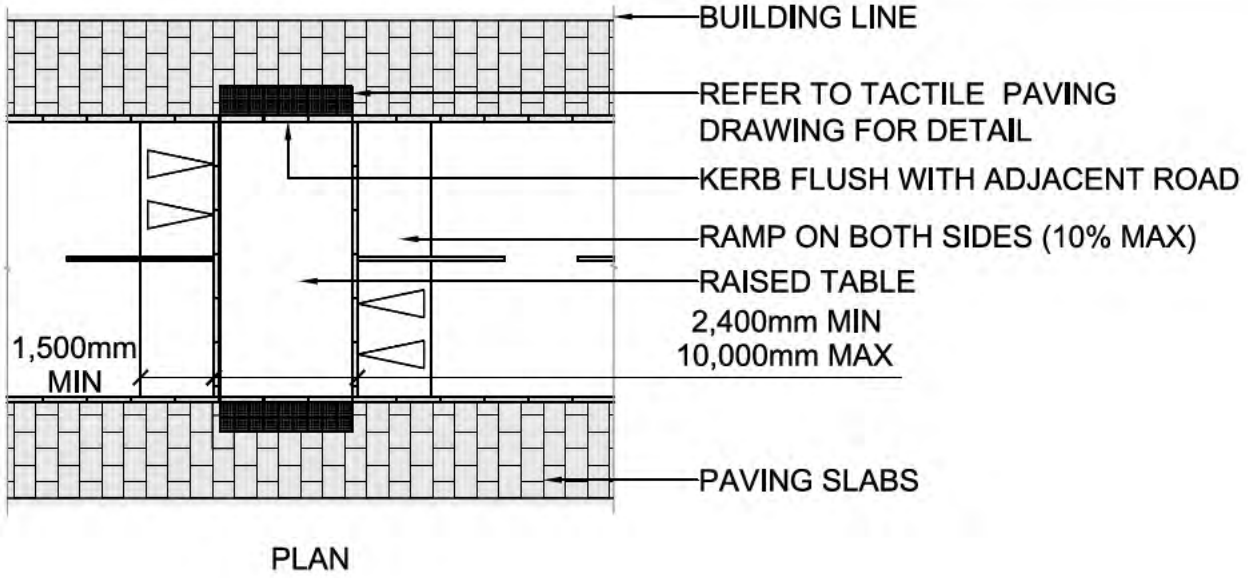
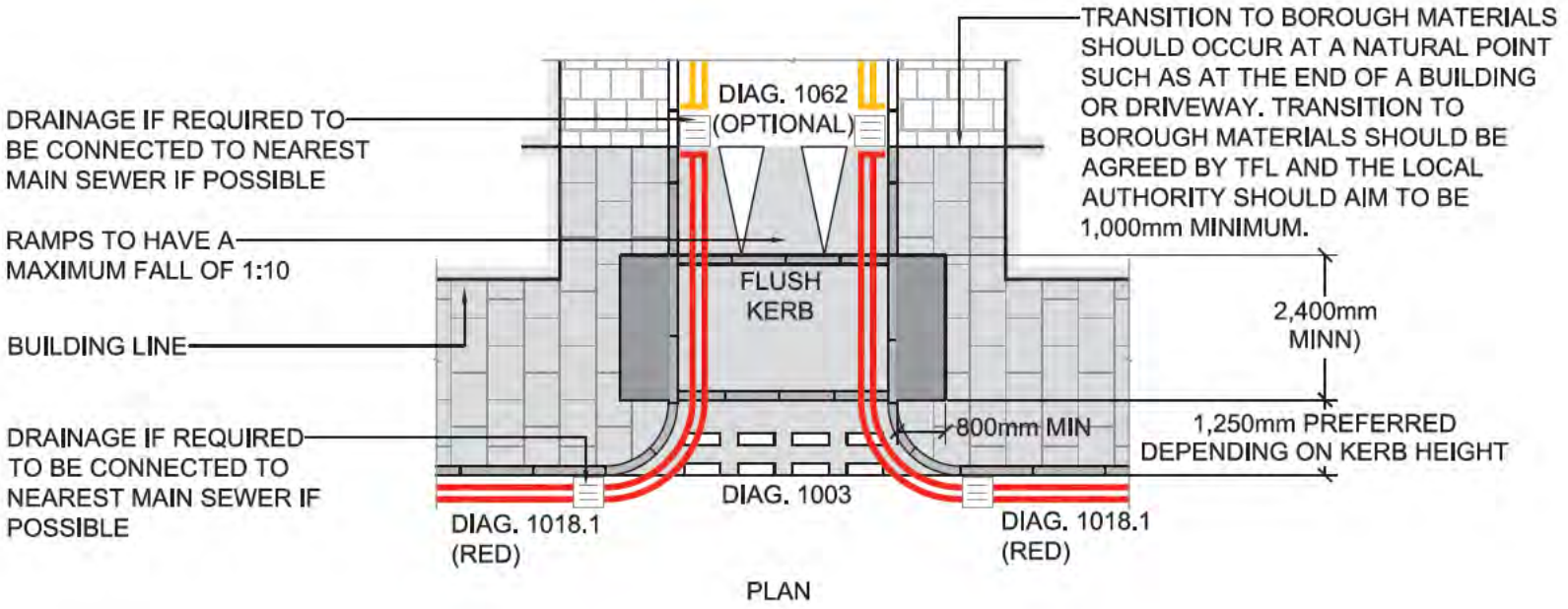
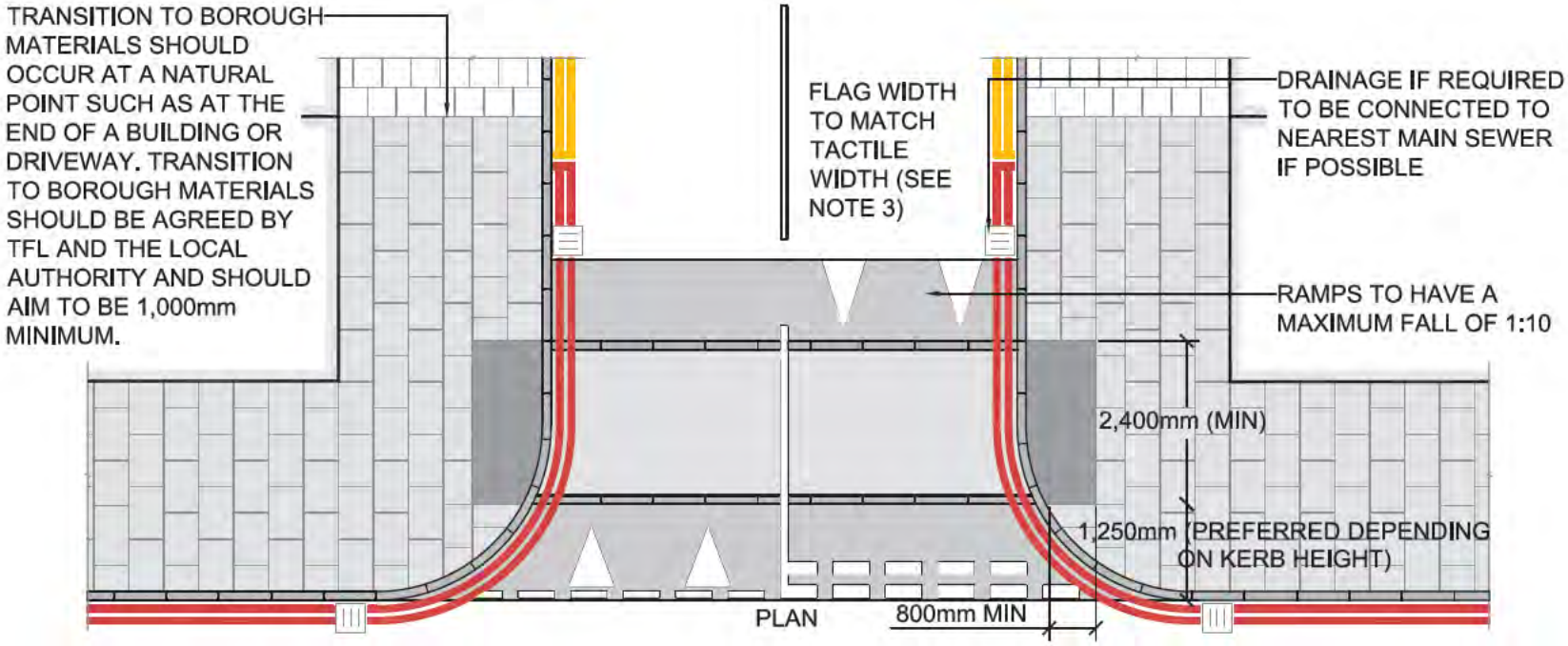


Figure 155: Side road (one-way) raised entry treatment



1. Entry treatments can be constructed using asphalt, setts or blocks. Material selection should be in keeping with the context.
2. The bonding of paving to be cut around utility service covers unless directed by the resident engineer.
3. Cutting materials should be kept to a minimum and should not be cut so that a width less than 300mm remains.
4. All covers within the tactile areas have to be recessed and in-filled with blister paving. It is desirable for the rest of the covers to be recessed in order to match the footway surface but this needs to be agreed with TfL and the utility companies need to be contacted in order to get an agreement and request appropriate labeled assets.
5. Where side road entry treatments are added, and surrounding asphalt is not replaced, kerbs are to be used on the bottom edge of the ramps in order to achieve a clean channel.
6. Drainage locations shown are indicative and should only be used if required.

Figure 156: Side road (two-way) raised entry treatment



1. Entry treatments can be constructed using asphalt, setts or blocks. Material selection should be in keeping with the context.
2. The bonding of paving to be cut around utility service covers unless directed by the resident engineer.
3. Cutting materials should be kept to a minimum and should not be cut so that a width less than 300mm remains.
4. All covers within the tactile areas have to be recessed and in-filled with blister paving. It is desirable for the rest of the covers to be recessed in order to match the footway surface but this needs to be agreed with TfL and the utility companies need to be contacted in order to get an agreement and request appropriate labeled assets.
5. Where side road entry treatments are added, and surrounding asphalt is not replaced, kerbs are to be used on the bottom edge of the ramps in order to achieve a clean channel.
6. Drainage locations shown are indicative and should only be used if required.

Materials

Side road entry treatments are generally provided in one of two conditions:

- In asphalt to indicate traffic calming with continuous footway priority
- In setts to redefine the emphasis of the carriageway as footway (SDRG approval must be sought)

Flush granite edge constraints should be provided at the top of the ramp and at the bottom if the ramp is composed of a different material.

Where pedestrian flows are high relative to motor vehicle turning movements, design teams may consider continuing the footway surface material across the side road entry as a 'blended footway'. No kerb line delineation or tactile paving is required in this instance as pedestrians have priority.

Standard construction for a narrow side road entry treatment with asphalt across the carriageway.

Additional information

Legislation:

The Highways (Road Humps) Regulations 1999

'Continuous footway' treatment Clapham Old Town, London

Bespoke 'continuous footway' treatment, continuing the footway surface across a side road

Key functions

Opportunity

Clapham Old Town in southwest London is largely composed of attractive 18th century buildings. Despite being a conservation area, the surrounding streetscape was in poor condition. The pedestrian environment was unappealing because it was dominated by swathes of empty asphalt.

Benefits

Continuous footways at side roads (previously unseen in the UK) provide a coherent pedestrian environment. Well-chosen materials enhance the historic buildings and sense of place.

Implementation

A collaborative effort by TfL, London Borough of Lambeth, local residents and a specialist consultancy produced a series of design options. These were refined through extensive public consultations to produce an area-wide scheme.

The final result is a step change in the quality of the public realm.

Applying in London

This method should be regarded as experimental in the UK. Further development and research is needed, in consultation with access groups, to determine acceptable approaches, given concerns over the lack of delineation between the footway and the area accessible to vehicles that runs over the entry treatment. Any proposals of this nature are subject to SDRG approval. Any proposal must be subject to an Equality Impact Assessment

Informal crossings

Designers should also acknowledge the significance of informal pedestrian crossing movements as part of the streetscape. An informal crossing point can be any location where a pedestrian chooses to cross the carriageway and is the product of a pedestrian assessing the road conditions before following their desire line.

Although it may not have been explicitly designated as a crossing point in the scheme layout, designers should consider informal crossing demand and whether to provide additional design support to encourage or discourage informal movements. This will depend on the design context, the character of the road, traffic speeds, surrounding land uses and pedestrian flows.

Central refuge islands

- Central refuge islands enable pedestrians to cross the road in two stages, providing a safe standing area to wait to cross. They can be introduced on controlled, uncontrolled and informal crossing types
- Where refuge islands are specified they need to provide a minimum depth of 1,200mm and 2,400mm crossing width. This should be increased for crossings with high pedestrian flows or for straight-across two stage crossings
- Refuge crossing provision should be consistent with the crossing detail on the footway
- Consider the needs of cyclists on the carriageway who require sufficient space adjacent to the central refuge pinch point. This should be either at least 4,000mm where the speed limit is 30mph or greater, or 3,200mm or less where the speed limit is 20mph or lower (subject to site conditions)

Additional information

Department for Transport:

Guidance on the use of Tactile Paving Surfaces, 2021

Local Transport Note (LTN 1/95): The Assessment of Pedestrian Crossings, 1995

Local Transport Note (LTN 2/95): The Design of Pedestrian Crossings, 1995

Traffic Advisory Leaflet 5/91: Audible and Tactile Signals at Signal-Controlled Junctions, 1991

Transport for London:

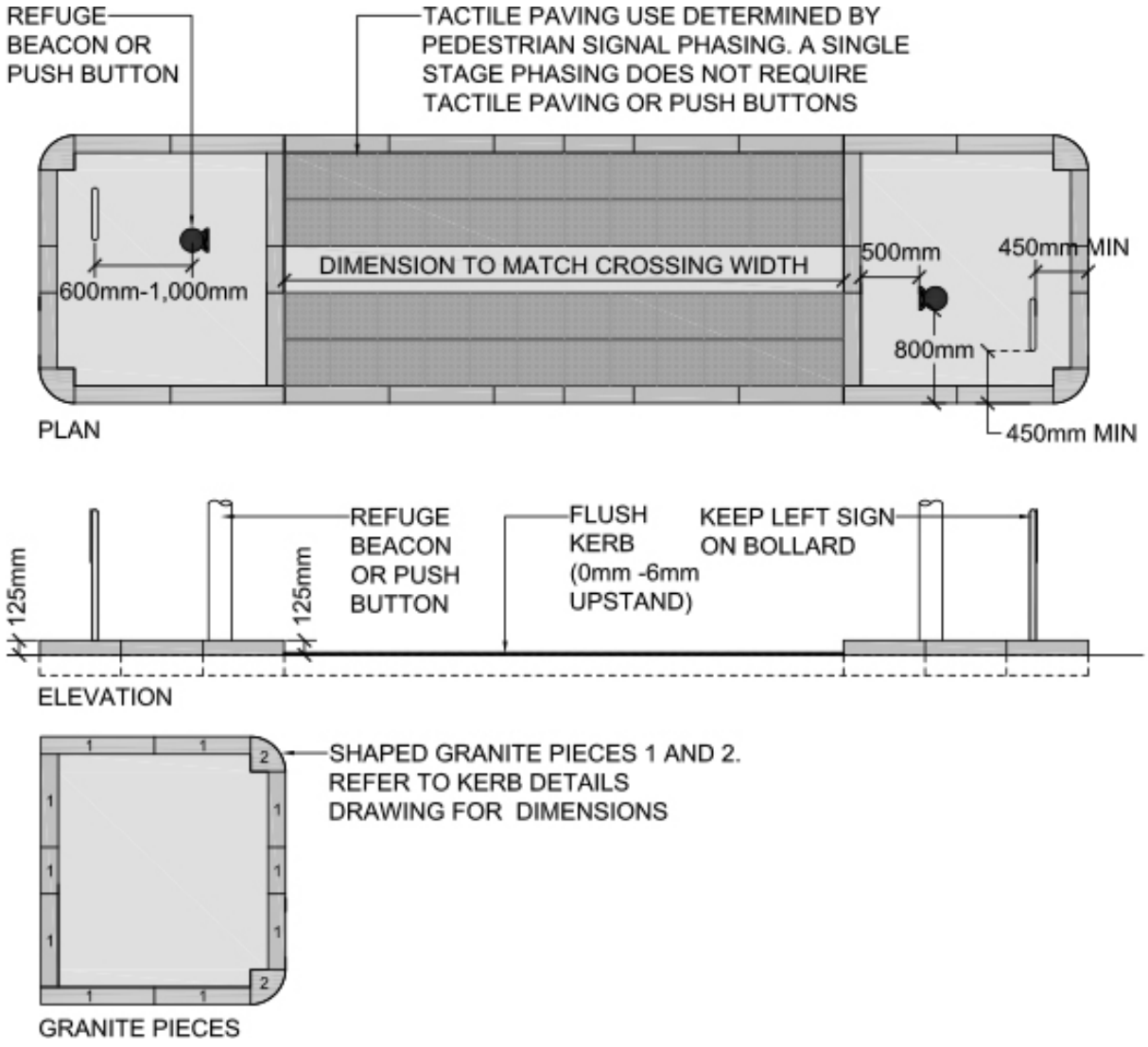
Bus pre-signal assessment and design guidance – Bus Priority Team technical note BP1/05, July 2005

Bus priority at traffic signals keeps London's buses moving – Selective Vehicle Detection (SVD), January 2006

Design Standards for Signal Schemes in London, 2011

Traffic calming measures for bus routes – Bus Priority Team technical note BP2/05, September 2005

Figure 157: Pedestrian refuge islands – straight-across crossing



Notes

1. Granite kerbs to comply with B 435.
2. Precast kerbs to comply with BS 7263: Part 1.
3. Refer to hooped bollard drawin for keep left sign.
4. Signal poles must be positione to provide a minimum lateral clearance of 450mm from all signal equipment to kerb face.
5. Where a pedestrian crossing phase is limited to permit pedestrians to cross a whole carriageway in one movement, then the width of the refuge in the carriageway could be an absolute minimum of 1,500mm This width should be increased to at least 2,000mm at areas used for pedestrian refuge to permit a pedestrian with a pran or wheelchair to wait in safety.
6. All street furniture to be installe using retention sockets.
7. If a lighting column is required (subject to lighting levels) they should be combined with the signal posts/push buttons where possible.

9.5 Traffic signals and controller cabinets

Streetscape issues

Traffic signals and poles can add unnecessary clutter to the streetscape. In addition, signal controller cabinets and associated equipment can create obstructions on the footway. Any redundant equipment must be removed and the footway reinstated to match the surrounding surfacing.

While ensuring any design is fully compliant with signal design standards, design teams should undertake a streetscape review to ensure that junctions and crossings also conform to current best practice in relation to urban design and accessibility. This should include a priority to reduce street clutter by minimising the number of poles used to deliver a signal scheme, for instance by mounting signal heads on street light columns or by combining multiple signal heads on one pole.

The design and placement of controller cabinets should be in accordance with section 12.7.

Figure 158: Traffic signal for toucan crossing

Design

- Traffic signals must be designed in accordance with TSRGD
- Traffic control systems must be designed in accordance with the specification TR2500
- Design should consider good practice standards outlined in LTN 1/98 The Installation of Traffic Signals and Associated Equipment
- The effective design and layout of signals requires an understanding of a number of interrelated factors including the road context and proximity to any junctions, traffic and pedestrian flows, existing desire lines, traffic speeds and road safety issues

- TfL is the traffic authority for traffic signals across London, including the Strategic Road Network and roads which are managed by the local highway authority. The Traffic Infrastructure (TI) team within our Surface Asset Management is responsible for the design, installation, commissioning, maintenance and decommissioning of traffic signals and associated equipment
- Streetscape Guidance encourages design teams involved in any new or modification of existing signals, to work closely with the TI team to ensure that the scheme will function safely, while minimising the adverse visual and physical impact on the streetscape
- Backing boards are not normally fitted to signal heads in London, except on TLRN roads with speed limits greater than 30mph. They may also be considered in exceptional circumstances when a visibility issue has been raised, such as on east-west road alignments where the sun can impact on drivers' vision, or if surrounding street lighting creates additional glare or by an engineer's judgement
- High six metre poles with additional signal heads may be used where there is a clear design need or a safety issue

Figure 159: Trixi mirrors are used by motorists at junctions to detect cyclists in their blind spot

Smart's 'For More Safety' campaign Lisbon, Portugal

Dancing red man keeps pedestrians safe

Key functions

Opportunity

In Lisbon, a campaign by Smart entitled 'For More Safety' uses the red phase of a pedestrian signal to entertain people while they wait to cross a busy junction.

Benefits

The campaign is reported to have made 81 per cent more people stop at the junction.

Implementation

A video booth near the junction transmits live volunteers who dance to music of their choosing while feeding back reactions of people.

Applying in London

An entertaining pedestrian crossing such as this could be applied to one of London's many busy central junctions.

Additional information

Statutory instruments:

Traffic Signs Regulations and General Directions, 2002 and 2015

Department for Transport, Highways Agency:

Design Manual for Roads and Bridges, Volume 8, Section 1, TA 84/06: Code of Practice for Traffic Control and Information Systems for All-Purpose Roads

Department for Transport:

Local Transport Note (LTN 1/98): The Installation of Traffic Signals and Associated Equipment

Transport for London:

Bus pre-signal assessment and design guidance – Bus Priority Team technical note BP1/05, July 2005

Bus priority at traffic signals keeps London's buses moving – Selective Vehicle Detection (SVD), January 2006

Design Standards for Signal Schemes in London, 2011

9.6 Grade-separated pedestrian crossings

General principles

Where other design approaches are not possible, grade-separated crossings can reduce the severance effect of major highways and other barriers. They need to be designed very carefully, to make them easy to use, direct, safe and attractive. They should always cater for people on foot and on cycles.

Grade-separated crossings on the TLRN are most commonly found on high speed roads (40mph or greater) and at complex junctions. In London these often take the form of subways rather than footbridges to minimise the visual intrusion on the street environment.

Figure 160: This footbridge L01 crossing Ruckholt Road, becomes a landmark through use of bright colours and thoughtful design

Grade-separated crossings should only be considered in exceptional circumstances where high vehicle speeds and traffic capacity need to be maintained and where there is evidence that road safety risks would not support at-grade facilities. This should be prioritised where designated cycle routes meet a barrier in the form of a motorway or topographic constraint, such as a river, and the route needs to continue.

Benefits

- Provides the opportunity for improved connectivity between neighbourhoods severed by a high speed road network
- Separated crossings are considered safer than at-grade facilities for high speed road types
- Enables continuity for cycle and pedestrian routes
- Does not impact on traffic capacity
- Wide land bridges can provide additional amenity and green infrastructure value

Constraints

- Expensive to construct and maintain
- Will only be used by pedestrians if it is situated appropriately on a desire line and does not require negotiating a large number of steps or ramps
- Requires additional space for constructing a landing point and approach ramp
- May pose a personal security risk if not well-lit or with adequate surveillance

Figure 160: A footbridge in Queen Elizabeth Olympic Park in Stratford, London

Grade-separated crossing design standards	
Minimum grade-separated crossing width for pedestrian only use	2,000mm
Optimum grade-separated crossing width for shared use with cyclists	Minimum 4,000mm effective width
Minimum subway height for pedestrian only use	2,300mm
Recommended subway height for shared use with cyclists	2,300-3,000mm
Optimum ramp gradient	1:20
Optimum landing dimensions	1,200-1,800mm in depth
Maximum number of steps in a flight	12 steps
Corduroy paving	800mm provided at the top and bottom of each flight of steps
Handrails	Provided on both sides of steps Central handrail required for widths greater than 3,000mm

Melkwegbrug Purmerend, Netherlands

Distinctive, attractive and practical crossing for pedestrians and cycles

Key functions

Opportunity

Whether a bridge is needed to cross a river or a motorway, inspired designs act as icons within the community making it a place in its own right.

Benefits

The creation of the Melkwegbrug in Purmerend, Netherlands was such a project as it connected two communities and reinforced the identity of the area.

Implementation

This double bridge provides facilities for cyclists and pedestrians. The pedestrian arch rewards users with a panoramic view and the 'z' shaped bridge provides an accessible ramp for cyclists and wheelchair users.

Applying in London

New infrastructure in London should seek to enhance or reflect local context while acting as a beacon thereby making it a destination in its own right.

9.7 Subways

Subways can provide high capacity pedestrian and cyclist crossing opportunities in relatively constrained urban environments where carriageway or architectural constraints limit other crossing options. They can, however, provide a low quality environment, lacking natural surveillance and forcing pedestrians to deviate from the surface. This can also cause difficulties for people with mobility impairments. These issues may result in people choosing to cross informally to avoid using the subway.

Removal

Opportunities to provide at-grade pedestrian crossing facilities to replace subways should be explored.

Figure 162: Old Street subway entrance built in 1969 has been recently updated with brightly coloured graphic devices to aid in wayfinding

Where at-grade crossings are implementable, subways should be closed for access (see TfL Surface Transport Panel note on Subways). This may open up new potential uses for the subway space, such as storage, or could enable the creation of additional useable space where the access ramps are infilled.

Figure 163: Bricklayers Arms roundabout subway closure in Southwark, before and after

New subways

New subway crossings should only be implemented in exceptional circumstances where high pedestrian demand cannot be provided for with an at-grade facility.

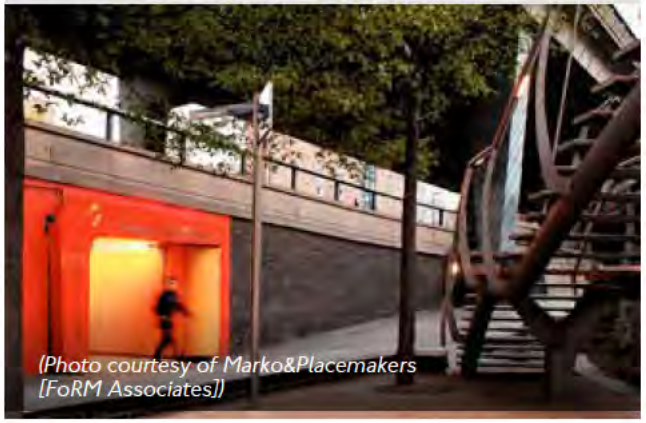
They need to be located as close as possible to existing pedestrian (and where appropriate, cyclist) desire lines and should be supported with a consistent wayfinding signage to support legibility.

To accommodate cyclists, subways require direct sightlines and avoid sharp corners at their entrances and exits.

Security

- Lighting should be in accordance with BS 5489 (Code of practice for the design of road lighting) within the subway and on the approach, ramps and steps. Walls, floors and ceilings should be designed to reflect light
- Vandal-resistant and sound deadening materials should be used within the subway to minimise echo
- Tiling and artwork produced by the local community should be considered to deter vandalism
- CCTV may be used to promote a sense of personal security, and mirrors should be provided to enhance visibility

Figure 164: A subway entrance acts as a beacon in the streetscape



(Photo courtesy of Marko&Placemakers [FoRM Associates])

Figure 165: Artistic lighting used to illuminate a subway and enhance the character of the place

(Photo courtesy of Raphael Daden)

Additional information

Transport for London:
Surface Transport Panel – Subways (2009)

Department for Transport:
Design Manual for Roads and Bridges, Volume 6, Section 3. TD36/93: Subways for Pedestrians and Pedal Cyclists. Layout and Dimensions

Odenplan piano key staircase Stockholm, Sweden

Musical staircase encourages physical activity at subway entrance

Key functions

Opportunity
Odenplan is a station on Stockholm's T-Bana (metro system). It is a busy station, near the city centre.

Benefits
Physical inactivity is a worldwide problem. On urban metro systems, most people will use an escalator in preference to an adjacent staircase

The piano key staircase led to 66 per cent more people choosing the stairs than had done so previously. By making them fun to use, the extra effort of climbing the stairs was offset by the pleasure of making music.

Implementation
The station's staircase was converted into a large piano keyboard. Controlled by sensors, each stair would play a musical note when stepped on. It was therefore possible to play a musical scale by climbing or descending the stairs.

Applying in London
Technology is relatively easy to transfer – potentially suitable for Tube stations that do not see huge tidal flows.

9.8 Pedestrian and cycle bridges

Existing

Pedestrian and cycle bridges within central London cross railway lines, watercourses and roads and inherently form an important part of the streetscape by integrating routes within the walking and cycling networks.

The palette of materials on the bridge structure itself may differ from the standard palette set out by Streetscape Guidance, but should interface cleanly with the street. This can be achieved through high quality detailing at the transition point between the street and bridge structure.

Figure 166: Footway bridges, such as the Millennium Bridge in central London, provide important links and can also become landmarks in their own right if well designed

Figure 167: One of the Golden Jubilee footbridges

Approaches should be clearly signposted with consistent wayfinding support. Existing footbridges should be inspected regularly to identify surface defects and ensure structural integrity.

Proposed

Proposals for major infrastructure should demonstrate a clear need for improving connectivity by identifying wider community, health and journey time saving benefits.

New layouts should look to support key walking routes and be sympathetic to the surrounding urban character in their architecture and material palette.

Where possible any new structure should use the existing topography to minimise visual intrusion on the landscape and avoid obstructing key views. Layouts should allow for step-free access and accommodate cyclists where appropriate with a coherent route.

Materials should satisfy the same design considerations as footway surfacing materials with good slip resistance qualities, visual contrast at steps and changes in gradient and high durability.

Additional information

Department for Transport:
Design Manual for Roads and Bridges, Volume 2, Part 8

Figure 168: The bright colouring of this bridge acts as a beacon in the streetscape

Figure 169: Necessary structural elements can be designed to be beautiful elements in their own right

Image courtesy of Mark Humphreys

9.9 Road bridges

This section details streetscape design considerations for bridges which support motor vehicle traffic. In most inner city areas, bridges will also provide access for pedestrians on the footway (for pedestrian and cycle bridge design guidance, see 'Pedestrian and cycle bridges').

Figure 170: Tower Bridge is an international symbol of London

From a streetscape perspective, bridges are an extension of the street environment and should be considered a cohesive and integral part of the road network. Bridges differ from a standard street arrangement in that there will typically be no active frontages or intersecting side roads. Most bridges can therefore be considered a linear self-contained link; one where vehicles and pedestrians only enter from either end. For this reason it is important to ensure that a consistent approach is adopted across any bridge structure, in layout and materiality.

Design considerations

- Bridge alignments should be selected to minimise the use of retaining structures, while making the crossing as square as practicable to the existing road geometry
- Footways, cycleways and road widths should be maintained across the full length of the bridge where practicable, with regular kerb alignments. Any change in alignment should consider the potential impact on cyclists
- A preferred minimum footway width of 2,000mm should be provided on both sides of the carriageway
- The needs of cyclists and other non-motorised vehicle traffic must be fully considered in any bridge design
- Street furniture on the bridge itself should be kept to a minimum to maximise footway capacity
- Parking bays should not be implemented within the bridge structure or on the approach
- For bridges located close to non-signalised junctions, any associated infrastructure such as guardrails should be positioned so as not to reduce visibility for motorists and pedestrians
- Designers should look to minimise the use of guardrails on bridges and only consider where there is a proven safety issue
- At-grade pedestrian crossings should be provided within close proximity to either end of the bridge structure
- Utility cabinets and access arrangements may become clustered at either end of the bridge. Design teams should look to ensure that the approach remains as unobstructed and free from clutter as possible
- All bridges in visually important locations shall be given appropriate aesthetic design considerations. This may include artwork and bespoke design treatments, upon approval by the SDRG
- Designers should consider all sides of the bridge aesthetics, particularly the underside and how it relates to other roads and the surrounding architecture

Materials

- The bridge streetscape should be designed to provide a seamless transition from the surrounding street environment
- Surface paving should continue as it is found on the approach to the bridge structure. Paving units may require a consistent cut across the full length of the footway should a change in gradient be required
- Expansion joints should be carefully detailed with respect to any adjoining paving materials
- Trees on bridges should generally be avoided. Consult the Arboriculture and Landscape team for further information
- Lighting should be carefully considered so as to provide a symmetry and quality that enhances the architecture of the bridge structure. In exceptional circumstances, lighting may be incorporated within the bridge structure itself
- Signage should be used on the approach to the bridge but should be avoided on the bridge
- Acoustic protection for adjacent land uses may be required
- Materials for the actual bridge structure are to be selected on a basis of maximising durability, while minimising maintenance requirements
- Timber is only acceptable for use as cladding in exceptional circumstances, where the bridge has a significant role for pedestrians

Additional information

Department for Transport, Highways Agency:

Design Manual for Roads and Bridges, Volume 2 – Highway Structures: Design (Substructures and Special Substructures), Materials

Transport for London:

London Cycling Design Standards (2014)

9.10 Road underpasses and bridges over roads

The density of London's road network frequently creates situations where underpasses and bridges over roads are necessary to provide convenient and direct routes.

Underpasses are a particularly challenging design context for upholding the values of Streetscape Guidance. Underpasses should be carefully considered so as to promote a greater sense of quality, especially for those routes which serve as pedestrian and cycle links alongside the carriageway.

Figure 172: Bridge creating a friendly urban environment under its structure

Figure 171: Euston Circus underpass, clad in metal reflects light

Design

- Footways should preferably be provided on both sides of the underpass where there are local pedestrian links. An unobstructed width of minimum 2000mm should be provided
- For roads with speed limits of 50mph or more, footways alongside underpasses are not appropriate and road restraint systems should be considered on the approach to the underpass

Figure 173: Light installation in the railway bridge at Southwark Street and Redcross Way near London Bridge transforms a drab underpass into a dynamic environment

(Image courtesy of www.piersvan.com/category/travel/)

- Structural constraints may limit the capacity for adequate footway widths to be provided on both sides of the underpass. A wide footway on one side may be considered in these locations, assuming adequate crossing facilities are provided for pedestrians on the approach
- Underpasses should be designed to promote a sense of security. A well-lit and open aspect structure is important, to minimise opportunities for concealment
- The approach slopes to underpasses require special attention such that gradients remain in line with the Equality Act
- Designers should pay particular attention to the integration of utility access chambers, as these must be set flush with finished levels
- On long stretches of an underpass, in excess of 20 metres, the provision of an emergency telephone should be integrated within the wall structure. The telephone must be wheelchair accessible and fitted with an inductive coupler.
- Tiling, artistic lighting and other public realm treatments are encouraged in all underpasses to enhance the pedestrian environment, improve lighting and improve a sense of safety

Materials

- Paving materials should be consistent with either side of the underpass
- Gabions for underpass walls on the TLRN require SDRG approval
- Consider acoustic measures within underpasses to reduce noise pollution and provide a better environment for pedestrians and cyclists
- Guardrailing may be required in exceptional circumstances where there are narrow sections of footway
- Safety containment kerbs should be considered where road speeds are 40mph or greater

Additional resources

Department for Transport:

Design Manual for Roads and Bridges, Volume 2, Section 9

Part E Kerbside activity

10.1 Vision 178
10.2 Parking and loading bays 178
10.3 Motorcycle parking 186
10.4 Parking control equipment 188
10.5 Electric vehicle charging points 189
10.6 Bus stop environments 190
10.7 Coach facilities 200

10.1 Vision

Kerbside activity seeks to address the allocation of space on carriageway and at the kerb edge on the footway to accommodate the needs of users without detracting from the quality of the environment. This section details how to achieve a high quality interface and serve the needs of various users.

Figure 174: A loading bay in use by a private vehicle and a lorry at one time

10.2 Parking and loading bays

Loading and, where appropriate parking, allocation is important for supporting local businesses and providing for a range of users' mobility needs. Parking and loading bays should be designed to ensure that their use, and turnover of use, best provides for surrounding buildings and the character of the street.

The distribution, placement and type of bay provided should correspond to the surrounding land uses and the dimensions of the street. The arrangement of parking and loading controls should not restrict the free and safe flow of traffic, particularly buses, nor should they adversely impact on pedestrian movement.

Our Kerbside loading guidance provides in-depth advice on loading requirements for the TLRN and should be referred to when designing loading bays. Street Audit: Freight Mode (also known as Freight Environment Review System) is a valuable tool to ensure appropriate delivery and servicing consideration.

This section covers a range of parking and loading bays including on-street and on-footway parking and loading by coaches, freight and private vehicles.

Parking and loading activities

Parking and loading activities exhibit different vehicle use characteristics that will vary at different times of day. These characteristics should be considered when assessing whether to locate parking bays or loading bays, and how these should be managed:

- Parking typically involves the driver leaving the vehicle for any length of time within the defined parking limits
- Loading involves the collection or delivery of goods to a nearby property and is generally conducted over a short period. Loading bays usually have a greater turnover of vehicles, and may have periods where the bay is unoccupied

Figure 175: A parking bay paved in granite setts extends the footway when not in use

Car clubs

Car clubs provide access to shared vehicles to members on a pay-as-you-drive basis, providing a cost-effective alternative to private car ownership. Car clubs are supported by TfL as a means to promoting sustainable travel choices, helping to reduce congestion, and bring about environmental benefits. London already has one of the largest car club markets in Europe and there is considerable potential for growth.

The main model of car club to date has been the round-trip scheme, where the member rents a vehicle from a designated bay (usually on-street and controlled by the host borough) and returns it to the same bay when the rental period finishes. New models are now emerging where the cars can be used for one-way journeys and either returned to one of a number of designated bays or parked within a defined area. Where dedicated bays are required, these should be visible and easily accessible to both private and business users.

Figure 176: Car Club space demarcated with road markings

All public highway car club bays in London are currently located on borough roads and must conform to the local authority's streetscape requirements. Car club bays may be located on the TLRN in future.

Good practice

Parking and loading facilities should be located for the convenience and safety of all road users, not just motorists. Bays that permit people to stop should only be introduced where there is no viable alternative location to stop off the highway.

Figure 177: A sign used to demarcate a car club bay

When locating a loading bay, the designer needs to consider the vehicle type and frequency of use. The type of goods being transported may also influence the design of the bay and the surface materials used. For further information please refer to our Kerbside loading guidance.

Figure 178: Unloading activities occurring next to the delivery door

The distance that a load has to be moved can dictate the length of time that a vehicle will need to remain in the bay. Therefore calculating the time it takes for the driver to walk to deliver the goods must be considered to ensure that the loading bay can operate as intended and that users are able to operate legally.

The location of the bay and its signing should take account of, and coordinate with, other street furniture to avoid clutter (see 'Traffic signs'). Bays must be visible to motorists and pedestrians through the use of appropriate markings. Loading and parking bays should be marked using a contrasting paving where possible rather than paint.

Operation and enforcement

Operation

Restrictions on the permitted period of use can be defined by means of an appropriate Traffic Regulation Order, so that a bay can operate for all or part of the day. The control can additionally restrict the maximum duration of stay for a single vehicle within the bay.

Usage

Changes in use may be required over time. Design and operation teams will need to react to patterns of use that may occur throughout the week as well as throughout the day.

Figure 179: Enforcement sign

Enforcement

A sign detailing restrictions as to the nature of activity, duration and hours of operation must be erected next to the bay for the directions to be enforceable.

Vehicle and user type

Parking and loading bays can be specifically allocated for use by a particular type of vehicle, for example, buses, coaches, lorries, vans or motorcycles will have different requirements (see sections on 'Motorcycle parking' and 'Coach facilities').

Parking bays can be reserved for particular types of user, for example, Blue Badge holders or doctors.

Recommended street context		Minimum bay dimensions
Loading bays	Provide adjacent to commercial or industrial premises which require regular deliveries and collections. Minimise transfer distance by aligning delivery doors with destination doors wherever possible. Minimise proximity to delivery point to minimise lorry dwell time.	No minimum length for standard vehicles but should be related to vehicle demand and manoeuvring requirements. Please refer to Kerbside loading guidance, Appendix 2 for detailed information on loading bay dimensions.
Parking bays (including car clubs)	Can be provided in a wide range of circumstances including residential streets, commercial and industrial streets.	No minimum length for standard vehicles but should be related to vehicle demand and manoeuvring requirements. Absolute minimum width: 1,800mm.
Blue Badge bays	Reserved for Blue Badge holders. Should be located adjacent to local amenities. Always consult a local representative group for people with mobility impairments when considering a Blue Badge bay.	Absolute minimum: 6,600mm Preferred width: 2,700-3,600mm

Types of parking and loading bays

On-carriageway parking bay

On-carriageway parking/loading bays

Parking should not be permitted within bus or mandatory cycle lanes during the hours in which the lanes operate. Loading may be permitted in certain circumstances, but must be carefully enforced to ensure that the facility is not compromised.

Designers must consider how permitting a vehicle to stop on the carriageway will affect the sightlines of pedestrian and motorists.

On-carriageway loading bay

Designers must allow for good access to the footway from the bay, especially when introducing loading or Blue Badge parking bays. The installation of a dropped kerb next to the bay should be provided, particularly where the delivery of wheeled goods or waste is expected.

Disabled parking combined with loading bays shall generally not be permitted.

Inset bay – flush with carriageway

Inset parking/loading bays

Inset bays are on-carriageway facilities, fully recessed into the footway, offering additional protection for parked vehicles by being positioned out of the general flow of traffic.

Only in exceptional circumstances should the introduction of inset bays be considered. Such situations should already have a wide footway and a clear demand for loading.

Where designers are considering reducing footway space through the installation of loading bays, either inset or on-footway, we must be consulted and an agreement made.

On footway – flush kerb

On Footway – chamfered kerb

On-footway – dropped kerb

On-footway parking/loading bays

On-footway loading involves a vehicle mounting the kerb and coming to rest on the footway. On-footway bays enable flexibility in the use of the footway and can be designed to remain clear during peak pedestrian periods.

On-footway bays should be considered as part of any scheme that involves footway widening, where loading, parking or servicing requirements need to be retained and traffic lanes kept unobstructed.

On-footway loading should never be at the expense of pedestrian safety or amenity. Pedestrian Comfort Level assessments should be based on the non-loading part of the footway to ensure it still meets minimum standards when a vehicle is present. Where there are heavy periods of peak pedestrian use it may be appropriate to restrict loading times outside of pedestrian peak flow hours.

Due regard should be given to the construction and material choice to ensure that the footway can support vehicular movement. Designers should ensure that any change in elevation is clearly delineated with a kerb edge detail, and trip hazards are minimised by providing a flush bay treatment where practicable.

Half-on, half-off

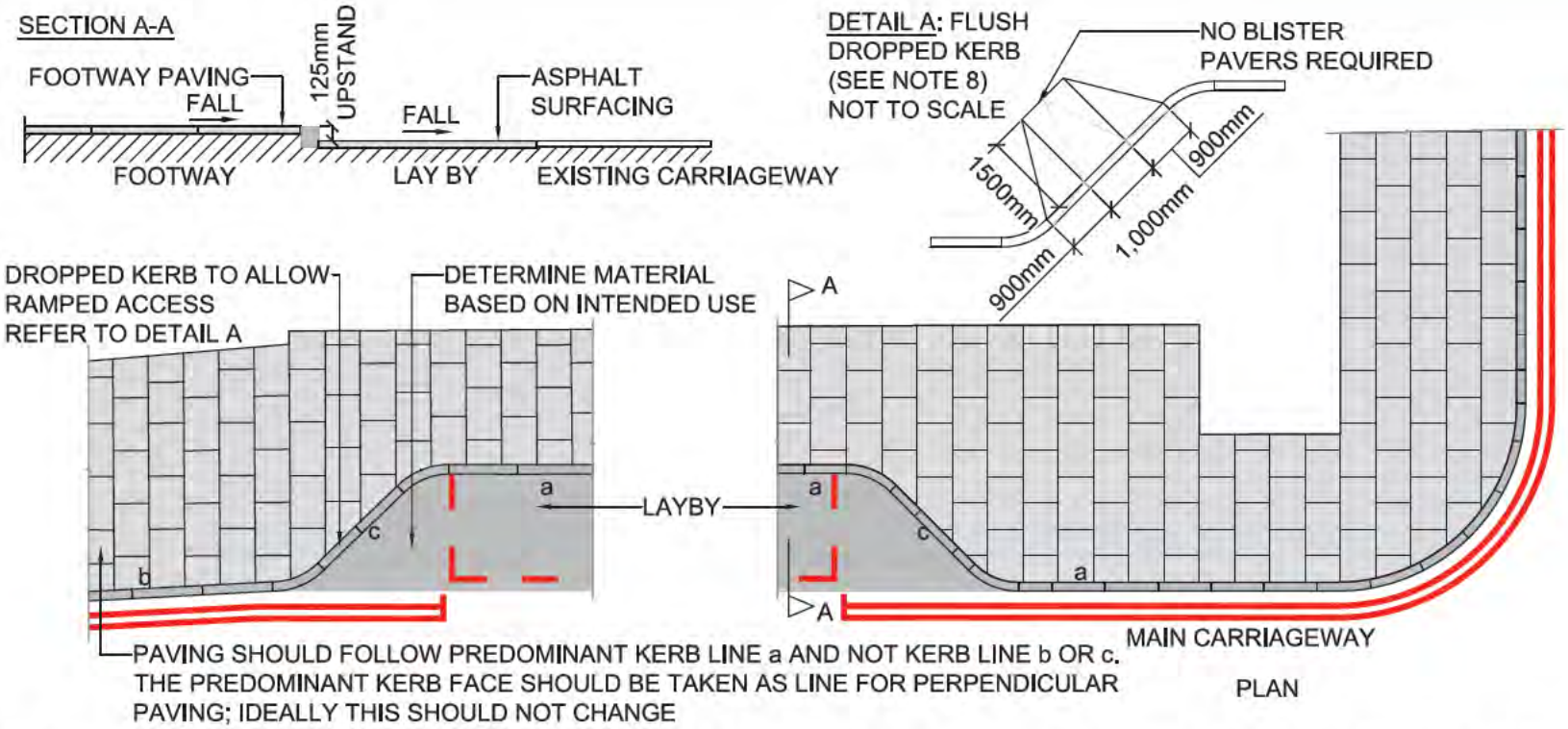
Half-on, half-off loading bays

Some loading facilities are designed to allow vehicles to park with the nearside wheels on the raised footway and the offside wheels on the carriageway. Such facilities should use the same placement principles as inset bays regarding vehicle flows, pavement strength and remaining footway width.

Due to the restrictions this type of arrangement has on movement, this approach will only be considered as a last resort.

As width on-footway loading, half-on, half-off facilities are suitable in some circumstances but are not appropriate where pedestrians would be impeded or damage to infrastructure might result.

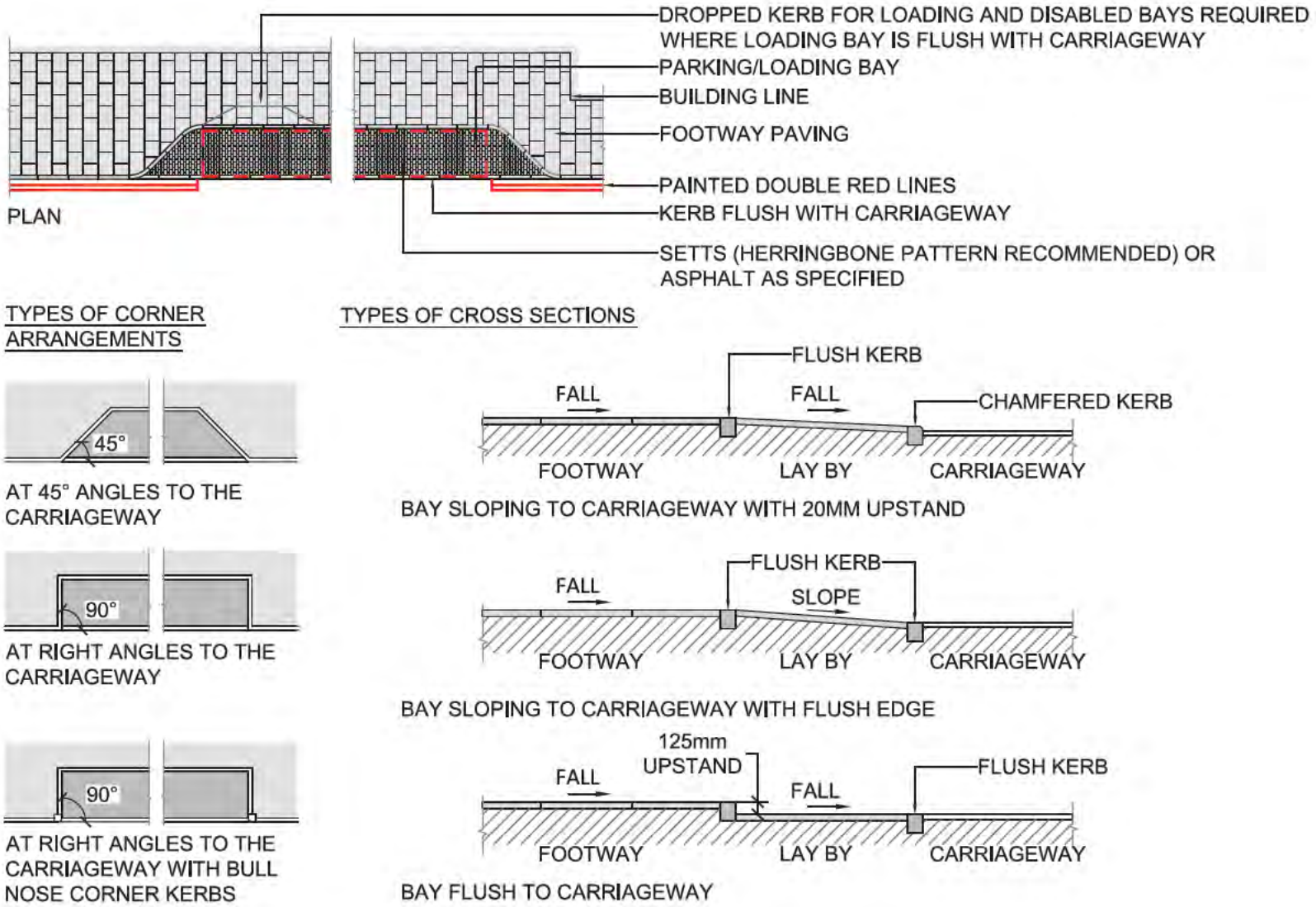
Figure 180: Loading bay



Notes

1. The resident engineer should be advised where the preferred depth of construction cannot be achieved on site.
2. Flags to be laid with courses set at 90° to kerb and a minimum overlap bond of 150mm.
3. The bonding of paving to be cut around utility service covers unless directed by the resident engineer.
4. Flags should not be cut so that a width less than 300mm remains. Previous courses should be cut to distribute evenly over width.
5. All covers within the tactile areas have to be recessed and infilled with blister paving. It would be desirable for the rest of the covers to be recessed in order to match the footway surface but this needs to be agreed with TfL and the utility companies need to be contacted in order to get an agreement and request appropriate labeled assets.
6. Lateral clearance to all street furniture to be 450mm minimum from face of kerb.
7. All work to be carried out in compliance with the requirements of the Manual Handling Operations Regulations 1992 (as amended in 2002).
8. Kerb dropped over approximately 900mm to provide flush kerb (0-6mm upstand) for good transportation and disabled access if applicable.

Figure 181: On-footway parking and loading bay



Surface materials

Material design standards

Setting	Material
On-street bay	Asphalt
Inset bay	Asphalt or setts
Half-on half-off bay	Asphalt for carriageway area Setts for footway level
On-footway bay	Continue surrounding footway material across the bay with a flush kerb delineation or provide setts across the full width of the bay

- Inset parking and loading bays should be constructed using radius kerbs with an asphalt finished surface
- A flush kerb should be provided for half-on, half-off bays and on-footway bays
- Paving material choice and construction workmanship should consider the need for smooth and level surfaces to aid the safe movement of cages and palette trucks

Road markings

Signs and markings are a powerful way of representing legally enforceable loading and parking restrictions. Their format and use are controlled by the DfT, and they are disseminated via TSRGD, Traffic Signs Manual and TfL's Red Routes Signing Manual.

Signage

In most cases there will be an associated sign. Loading may also occur where there are no restrictions and it is safe to park.

- Parking/loading signs should be located a minimum of 450mm from the bay edge and should not obstruct the pedestrian clear zone
- The smallest allowable text size should be used to keep the size of the sign to a minimum

Figure 182: Enforcement sign

- Designers should orientate the signs as required by the Traffic Signs Manual
- The colour of the backs of signs and any dedicated poles supporting them should be consistent with other street furniture, ie black or grey in accordance with the palette

Additional information

Legislation:

Traffic Signs Regulations and General Directions 2002: Section 4 and Schedule 6 (Road markings)

Traffic Signs Regulations and General Directions 2015

Highways (Road Humps) Regulations 1999

Department for Transport:

Delivering the goods: Guidance on delivery restrictions, 2006

Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Traffic Signs Manual, Chapter 5: Road Markings

Legislation:

Highways Act 1980
Traffic Calming Act 1992

Transport for London:

Kerbside loading guidance, 2009
Parking and loading legally, 2014

10.3 Motorcycle parking

Although the motorcycle/moped mode share of trips by London residents is down since 2005 (TfL's London Travel Demand Survey, 2011), ownership of motorcycles and mopeds has increased. They have become particularly popular for business use in central London. This has increased pressure on ourselves and the boroughs to deliver more motorcycle parking facilities where they are most needed.

Parking reviews along the TLRN, including side roads adjoining the main road, will be used to assess demand and determine motorcycle parking allocations.

Figure 183: Motorcycle parking bay enforced through road markings

Location

Parking facilities for motorcycles are generally provided on the carriageway, within designated bays. Motorcycle parking should be placed:

- As close as possible to trip attractors, such as shops, town centres and transport interchanges
- Where passive surveillance can take place
- Away from any overhanging trees and vegetation
- Away from pedestrian crossings where parked motorcycles may cause visibility problems for wheelchair users
- Where they can be well-lit

Design

Motorcycle parking bays are marked with 100mm-wide broken white lines on the carriageway in accordance with the TSRGD and supported by means of a Traffic Regulation Order.

Parking bays should be sufficiently large to accommodate a number of motorcycles and allow adequate manoeuvring space.

A typical motorcycle parking space width is 1500mm.

Motorcycle parking facilities should offer:

- A well-drained, well-maintained site
- Shallow crossfalls
- Non-slip carriageway surfaces
- An especially rigid surface which does not deform in warm weather and resists point loadings from the stands attached to motorcycles
- Discrete anchor points for securing motorcycles where a need has been demonstrated

Secure motorcycle parking facilities

Secure motorcycle parking facilities should not be provided unless survey data from the Metropolitan Police Service, illumination levels or other information suggests there is a need for a secure amenity.

Figure 184: Motorcycle parking bay

The anchor point must be easy to use and compatible with a wide range of motorcycles and locking devices. Anchor points should be discrete and should not add unnecessary clutter to the streetscape.

Facilities should be simple in design, require little maintenance and must not present a tripping or slipping hazard to pedestrians.

Authorisation

- Section 63 of the Road Traffic Regulation Act 1984 as amended by the Transport Act 2000 (Section 75 [2]), sets out the powers of authorities
- Section 32 or 45 of the Road Traffic Regulation Act 1984, details on-street parking provision

Additional information

Statutory instruments:
Traffic Signs Regulations and General Directions (TSRGD)

Department for Transport:
Traffic Advisory Leaflet 2/02: Motorcycle Parking, 2002

Motorcycle Action Group:
A Guide to the Design and Provision of Secure Parking for Motorcycles, 2002

Transport for London:
Motorcycle Safety Action Plan, 2014

Travel in London, Supplementary Report: London Travel Demand Survey, 2011

Figure 185: Ground level anchor points provide the least visual intrusion when secure parking facilities are required.

10.4 Parking control equipment

Parking controls are introduced to manage kerb space where demand for parking exceeds supply. TfL does not charge for any parking on the TLRN as the majority of carriageway space is dedicated to maximising capacity and enabling essential servicing, loading and maintenance.

Parking meters are being phased out across many parts of London in favour of pay by phone charges.

Location

Payment equipment should be located a minimum 450mm from the kerb edge and within 10 metres of a parking bay to provide convenient access for motorists, without overly impinging on footway space. There should be sufficient footway space to manoeuvre a wheelchair to the machine (1,850mm x 2,100mm).

Design

Paid parking equipment is available in a range of products which vary in size, colour and finish. A consistent application of pay and display machines should be used to ensure ease of operation and maintenance:

- The colour and style should match that of adjacent street furniture
- The mounting height of payment equipment should be readily accessible to wheelchair users, with any message display or instruction centred approximately 1,500mm above the footway
- Pay by phone parking is becoming an increasingly attractive option to minimise the need for on-street equipment. This will require the agreement of the relevant local authority

Figure 186: Parking control equipment

Figure 187: Parking control posted on a lighting column

Signage

The number and size of signs used should seek to minimise clutter while ensuring an appropriate level and size of signs are provided as prescribed by TSRGD. Signs showing tariffs should not be visually dominant and fixed to other items of existing street furniture, such as lamp columns, or mounted on adjacent buildings subject to necessary consents.

Parking bays, single line controls and Blue Badge restrictions must be signed with clear communication of operating times and restrictions. Within controlled parking zones, waiting and loading signs only need to be erected where yellow line controls differ from the hours of operation for the parking zone.

Enforcement

Paid parking is excluded from the red route controls and is enforced by the local authority.

Residential parking zones may extend on to parts of the TLRN and are enforced by the local authority.

Additional information

Legislation:
Traffic Signs Regulations and General Directions (TSRGD)

10.5 Electric vehicle charging points

Vision and purpose

The installation of electric vehicle charging points (EVCPs) is one of several strategies being promoted to reduce vehicle emissions, in order to improve the health of all Londoners and tackle climate change. We need to support the creation of a coherent and safe charging infrastructure for all types of electric vehicle.

We have been tasked with implementing a network of rapid charging points (RCPs) in London to help support the introduction of the Ultra Low Emission Zone (ULEZ) and the requirement for taxis and private hire vehicles (PHVs) to be zero-emission capable.

The rapid charging infrastructure will enable electric taxis, PHVs and commercial vehicles to charge in as little as 20-30 minutes. This will minimise operational downtime and help vehicles operate in zero-emission mode for as long as possible. Many of the RCPs will be available for public use, especially those outside of central London.

Development planning

Planning permission is required for RCPs proposed on TfL highway land. The submission of a planning application means consideration is given to general street design principles – to minimise street clutter and mitigate any negative impact on road users.

Providing a safe environment that does not negatively impact on the street scene is a

Figure 188: Electric vehicle charging point

priority. The following activities can help to ensure we are considering all users in the installation and maintenance of new infrastructure:

- Fire risk assessment
- Environmental risk assessment
- Electrical risk assessment
- Road safety audit
- Equality impact assessment
- Crime and disorder impact assessment
- Heritage and archaeology assessments
- Tree impact assessments

Street design principles

Please refer to our Pedestrian Comfort Guidance (2010) to determine pedestrian flows. The aim is for a level of service no less than B+ rating.

Ideally, footways should be at least two metres wide. Refer to section 11 'footway amenities' of this guidance for general principles and more detailed layout considerations – such as minimum space requirements, footway width and operational access.

All electric vehicle charging infrastructure should be at a minimum of 450mm from the kerb edge and maintain a 'pedestrian clear zone'. Charge points should be placed on footway build-outs where practicable.

All sites will be subject to a full Road Safety Audit and any materials should follow the TfL Highways Technical Approval Authority (TAA) process.

Product specification

RCPs are produced by different manufacturers so designs can vary. However, each unit should have common TfL branding to be recognisable to users.

Feeder pillars

Please refer to section 12 'safety and functionality' of this guidance. Always consult an electrical engineer when locating and specifying a feeder pillar unit.

Additional information

British Standards:

BS 7671: Requirements for Electrical Installations.

BS EN 61851-1:2011: Electric vehicle conductive charging system.

More detailed guidance will be provided. We are currently updating our 'Guidance for implementation of electric vehicle charging infrastructure' (2010).

10.6 Bus stop environments

Bus stops

Bus stops are an integral part of the streetscape and should be recognised as gateways to the wider public realm, not just a location where buses stop.

The provision of bus stops across the network should be consistent. Designers should consider the important role that bus stops play as the 'shop window' for our services and a key part of the journey experience for passengers. Refer to our Accessible Bus Stop Design Guidance (2015) for comprehensive advice.

Figure 189: A bus waiting at a bus stop

Location

The location of bus stops should be based on operational considerations, policy and consultation, addressing passenger convenience, pedestrian and traffic safety, and bus service frequency, such as the following:

- Any new or amended bus stop and shelter layout must seek to design out crime, according to section 17 of the Crime and Disorder Act
- Generally stops should be provided at intervals of between 300-400 metres
- Where bus stop cycle by-pass lanes are planned or exist, specific attention must be paid to the width/adequacy of passenger waiting areas and safe walking routes to and from the bus stop
- Stops should ideally be located close to health centres, places of worship, leisure centres, hospitals and retail areas
- To comply with the duties under the Equality Act, a ramp should be able to be deployed on the kerb from the bus to enable wheelchair access. Further information is available in the Accessible Bus Stop Design Guidance
- Consideration should be given to the impact of the bus stop on commercial and residential land uses. This may include inconvenience to adjacent property users. It also includes the visual impact on sensitive landscape and townscape locations and listed buildings
- Cage lengths are an important factor in appropriately locating bus stops. Cage lengths are described in the Accessible Bus Stop Design Guidance
- In some circumstances it may be appropriate to combine the bus stop flag with street lighting
- Except on wider roads and dual carriageways, stops should be not be sited opposite each other. They should be staggered to allow traffic to pass comfortably and safely
- Stops should be sited clear of central refuges. If located near a pedestrian crossing they should be positioned after the facility, so as to give a clear view of the crossing for oncoming vehicles
- Where possible, stops should be sited back from the crest of hills and bridges, on the approach side. Stops should not be placed at or near sharp bends
- Placing bus stops near shops which stay open late can help to provide natural surveillance for passengers waiting at the stop. However, it may also be advisable to move bus stops away from pubs, clubs, and off-licences to help reduce the risk of passengers becoming targets for harassment and other crimes

Public realm

- The bus stop, passenger shelter and surrounding footway should be well illuminated and maintained
- Street clutter in the boarding/alighting zones should be avoided to allow full accessibility. Litter bins should be placed well clear of the boarding and alighting zones (refer to Bins)
- Bus boarders are beneficial for reducing the amount of kerbside space needed for the bus stop
- Please refer to 'Kerbs' for further information on kerbs at bus stops

Bus boarder design

For TLRN and borough roads subject to a 30mph speed limit or less, bus boarders should be considered at bus stops where:

- Parked or loading vehicles cause operational problems for buses
- Buses have difficulty rejoining the main traffic flow

Kerb heights greater than 140mm upstand should only be used where the bus will not overhang the kerb. Detailed guidance can be found in Accessible Bus Stop Design Guidance.

Cycle lanes at bus stops

Options for cycle infrastructure at bus stops depend on the nature of the general provision for cycling on the corridor, and on bus infrastructure and operation. Factors to be taken into account include:

- Cycle flows, and flow variation during the day and week
- Degree of separation of cyclists
- General motorised traffic volumes
- Volume and frequency of buses stopping (including the frequency with which more than one bus is likely to use the stop at any one time)
- Access for wheelchair users
- The number of bus passengers using the stop at different times
- The pedestrian routes to and from the bus stop
- Pedestrian comfort in using the adjacent footway

Figure 190: A bus boarder used to raise the kerb height to 140mm

Figure 191: A bus stop by-pass for Cycle Super Highway 2 on Whitechapel Road

Our Accessible Bus Stop Design Guidance (2015) should be consulted for further guidance.

Authorisation

The Highways Act 1980 allows local highway authorities to give consent for objects to be sited on the highway.

The safe operation of bus stops signs should be assessed via the Road Safety Audit process.

Section 55(i) of the DfT Road Traffic Regulation Act 1984 provides that a highway authority may cause or permit traffic signs, which includes bus stop signs, to be placed on or near any road in their area.

DfT Traffic Signs Regulations and General Directions 2002 Schedule 5, Signs for Bus, Tram and Pedal Cycle Facilities, diagrams 973.2 and 973.3: Stopping place for buses operated by or on behalf of or under agreement with Transport for London. This describes the TfL LBSL roundel bus stop flag graphics as a recognised road traffic sign; permitted variants enable the face of the sign to be curved, and the word 'STOP' may be varied as 'STAND'.

Bus station Digital Sign London, UK

Providing customers with live bus arrival information in bus station and interchange environments

Key functions

Opportunity

Responding to demand for more live bus arrival information, TfL introduced the award winning Digital Sign in 2013.

Benefits

The Digital Sign provides passengers with access to live bus arrival information away from the bus stops, helping them to make informed travel choices.

Digital Sign technology has been further enhanced for use in bus station and interchange environments where it is often more complex to display bus arrival information than at standard bus stops due to the number of routes and bus stops converging.

Implementation

We have also developed a means of displaying the sign in a robust, secure and weatherproofed structure that is fit for purpose in exposed environments.

Applying in London

The bus station Digital Sign is currently under trial at Vauxhall and Harrow.

Bus flags

Every bus stop in London is equipped with a TfL bus stop flag. Bus flags provide passengers with service information and a location from which to queue, as well as a reference point for where buses will stop.

Figure 192: A coach stop on Buckingham Palace Road for Victoria Station

Location

The post is generally positioned on the approach side of the passenger shelter, but may also be positioned towards the middle of a shelter for 'centre of path' and 'back of path' layouts. The flag should not compete for space or clear visibility of other road signs and equipment.

TLRN bus flag location standards	
Minimum kerb setback	550mm
Recommended distance from bus stop to shelter and existing posts	2,000mm
Recommended minimum distance from adjacent street furniture	2,000mm
Recommended minimum distance from street trees	2,000mm
Recommended flag height	3,500mm

- Bus flags may be affixed to walls or lamp columns, if owner consent is given, to minimise the number of posts on the footway. Stop posts must be sited clear of inspection covers, pillar boxes, trees and similar obstructions
- A restricted foundation plate should be considered where underground obstructions such as drains or cable ducting are expected within one metre of the post

Figure 193: An example of a bus flag at a bus stop

- Overall post design should be provided in accordance with TSRGD, with the flag positioned at a height of 3500mm to ensure good visibility. Flags are fitted with additional timetable and route information to complement the poster publicity in shelters
- The finish should be silver grey in our standard approved palette

Authorisation

Our bus stop flag is a traffic sign as defined by the Traffic Signs Regulations and General Directions 2002, and is erected only after consultation with the highway authority.

Bus passenger shelters

The following should be read in conjunction with section 6.1.3 of the DfT's Inclusive mobility guide (2021) and our Accessible Bus Stop Design Guidance (2015).

Location

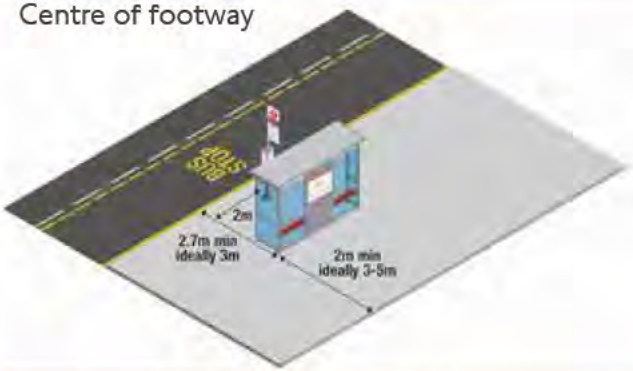
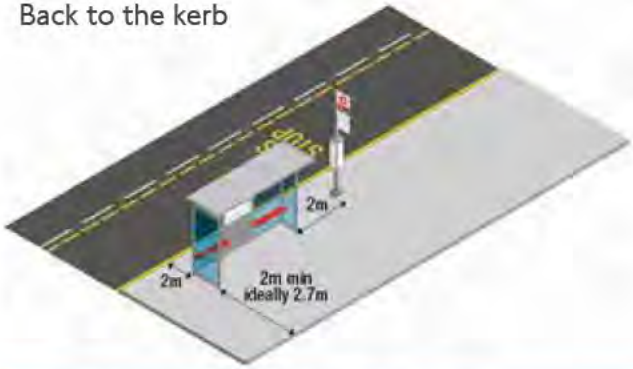
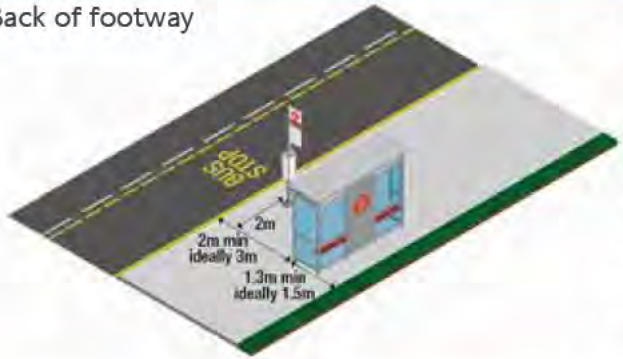
There are three general arrangement options for bus passenger shelter placement based on the footway width, pedestrian flows, required bus stop capacity and adjacent building entrance locations.

Shelters should ideally be positioned a minimum 2,000mm from any other street furniture. Where there is inadequate space for a shelter, a free-standing unit with integral flag, Realtime information (RTI) 'Countdown' and perch seat may be provided.

Figure 194: A new bus stop featuring an interactive touch screen on Westminster Bridge Road

Bins should be provided where space allows, although not sited within 2,000mm of the passenger waiting, boarding or alighting areas.

Figure 195: A bus stop on Oxford Street with the shelter orientated with the back to the kerb

Position option	Application	Minimum setback from kerb	Recommended setback from kerb
Centre of footway 	Preference for wider footways (4,700mm or more)	2,700mm	3,000mm
Back to the kerb 	Preference for narrower footways (less than 4,700mm)	550mm	550mm
Back of footway 	Preference for footways between 3,300-4,500mm, with no adjacent active frontage and large volumes of pedestrians at peak periods (500mm clearance at back of shelter for maintenance; 450mm clearance of roof from kerb to avoid asset damage)	2,000mm	3,000mm

Design

- The choice of style, size and configuration of bus shelters must be agreed with us
- The shelter design must be able to accommodate the numbers of intending passengers and bus information products
- Shelters generally consist of one to four panels (known as a 'bay'); each bay being 1,300mm in width
- Where footway widths allow, bus shelters should be fitted with either a full or half-end panel to provide greater protection from the elements
- See-through panels have advantages for visibility, security and safety including interactions between pedestrians and cyclists if there are adjacent cycle paths or tracks

Responsibility

TfL Bus Infrastructure supplies and maintains shelters for London Buses, taxis and coach services within Greater London. TfL London Buses is responsible for providing bus services throughout London in a safe, efficient and economic manner, while encouraging the use of buses and public transport, aligned with the Mayor's Transport Strategy.

Authorisation

TfL has powers under Section 104 of the London Passenger Transport Act 1934 to erect passenger shelters on the public highway with the consent of the highway authority. In addition to the provisions of the London Passenger Transport Act 1934, local authorities may themselves provide passenger shelters where we are unable to do so, granting licences to erect and maintain them.

Commercial advertisements on bus passenger shelters require the owner to apply for consent under the Town and Country Planning (Control of Advertisements) (England) Regulations 2007.

Additional information

Department for Transport:

Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Traffic Signs Manual 1982, Chapter 1: Introduction

Transport for London:

Accessible Bus Stop Design Guidance, 2015

Bus pre-signal assessment and design guidance – Bus Priority Team technical note BP1/05, July 2005

Bus priority at traffic signals keeps London's buses moving – Selective Vehicle Detection (SVD), January 2006

Traffic calming measures for bus routes – Bus Priority Team technical note BP2/05, September 2005

Statutory instruments:

Section 104, London Passenger Transport Act 1934 – power to erect a bus shelter given to the local authority or highway authority

Section 64, London Passenger Transport Act 1937 – adds a requirement to give frontagers notice of TfL's intention to build a shelter

Greater London Authority Act 1999

Bus intelligence technology

Realtime information (RTI) Countdown displays

Passenger shelters can be fitted with RTI Countdown displays, which show the arrival predictions in minutes for approaching buses as well as indicating which routes are running. The displays also have the functionality to scroll special messages to passengers regarding information on traffic delays, forthcoming roadworks and major events impacting the network.

The displays are hardwired into the shelter power supply and data transfer is carried via a 3G network.

Location

The RTI display is usually attached to the underside of the shelter roof at the arrival end. It can also be fitted in a void above the information panel on a Landmark London type shelter model. In a small number of exceptional locations it may be provided as a free-standing unit (FSU), however, at the time of print there is currently a programme underway to upgrade the estate of eight FSUs with single bay narrow roofed 'info' shelters.

Figure 196: Bus countdown displays

Interactive bus stop London, UK

Assisting wayfinding and functionality of London's bus stops

Key functions

Opportunity

Real-time information is increasingly perceived as necessary for public transport users in London. TfL and Clear Channel have developed the UK's first interactive bus shelter.

Benefits

The interactive bus stop addresses the needs of commuters and visitors alike. Piccadilly Circus was chosen for the initial trial because it is one of London's most popular destinations.

Implementation

A large colour touchscreen was installed in a shelter at Piccadilly Circus in 2014. Rather like a smartphone, the screen can display Tube status, weather forecasts, maps and Mayor's Cycle Hire Scheme locations. It also provides information on local tourist attractions and walking routes. It has USB charging ports and a free WiFi connection.

Applying in London

If the trial proves successful, interactive bus stops could be deployed across much of central London.

Pepsi MAX bus stop London, UK

Surprising and delighting customers at a London bus stop

Key functions

Opportunity

A 2014 advertising campaign by PepsiCo used a specially designed London bus shelter to surprise and amuse passengers waiting at the stop.

Benefits

The Pepsi MAX bus stop shows how augmented reality can provide stimulation and surprise as part of a person's journey.

Implementation

The end panel of the bus shelter was fitted with high-resolution camera and screen. From within the shelter, the panel resembled a window; however, this view was augmented by giant robots, flying saucers and an enormous tentacle plucking a hapless pedestrian off the street.

Applying in London

The technology has numerous potential applications, for information, entertainment and commercial purpose

Additional information

Transport for London:
Guidance on bus intelligence systems, 'Countdown for London'

10.7 Coach facilities

The demand for tourist coaches is forecast to increase as the population of London increases and our population ages. Facilities to pick up and set down passengers and park are important for the coach industry but must be done in a way to minimise impact on the streetscape and

Figure 197: Coach parking bays demarcated with road markings

Figure 198: A row of coaches parked on the Albert Embankment

other road users. Please read this section in conjunction with 'Bus stop environments' and Accessible Bus Stop Design Guidance.

Overview

Any motor vehicle containing eight or more seats (exclusive of the driver) can park in an on-street coach bay. This may require hourly payment as set out by the borough. Some coach parking bays (for example, in Westminster) may not be used between 00:00-08:00.

On-street coach parking is found throughout London. It is concentrated in central London, where most coach activity takes place. This type of facility is typically, but not exclusively, used by the tourist coach sector. A number of places – including Madame Tussauds, Shakespeare's Globe Theatre, Tate Modern, Natural History Museum and some hotels in Cromwell Road – have 20-minute set down and pick up bays outside or nearby.

Within the central London boroughs there are 214 on-street facilities. Of these, 44 per cent are located on the TLRN. Long-stay parking and coach stations are located off the public highway.

Facilities

The following types of on-street coach facilities exist in London:

Type	Description
Pick up and set down (PUSD) – on red routes	Coaches are allowed to stop at certain locations while passengers are boarding or alighting. These sites include dedicated facilities and red route bus stops where the sign plate indicates 'except buses'.
PUSD – on yellow lines	Coaches are allowed to set down and pick up passengers on single and double yellow lines. Some highway authorities allow up to 10 minutes waiting time when no loading restrictions are in operation. Where a bus stop sign plate indicates 'except local buses', tourist coaches are not permitted to stop.
Short-stay parking	Mostly dedicated on-street facilities – maximum stay of 20-30 minutes depending on location. Charges apply in some cases.
Medium-stay parking	Mostly on-street – maximum stay of one to four hours, however, a few locations permit up to 12 hours. A charge applies to the majority of these dedicated facilities. Overnight parking is not generally permitted.

Design

Coach disabled ramps require 3000mm of space. Pick-up/set-down locations need to incorporate footway space.

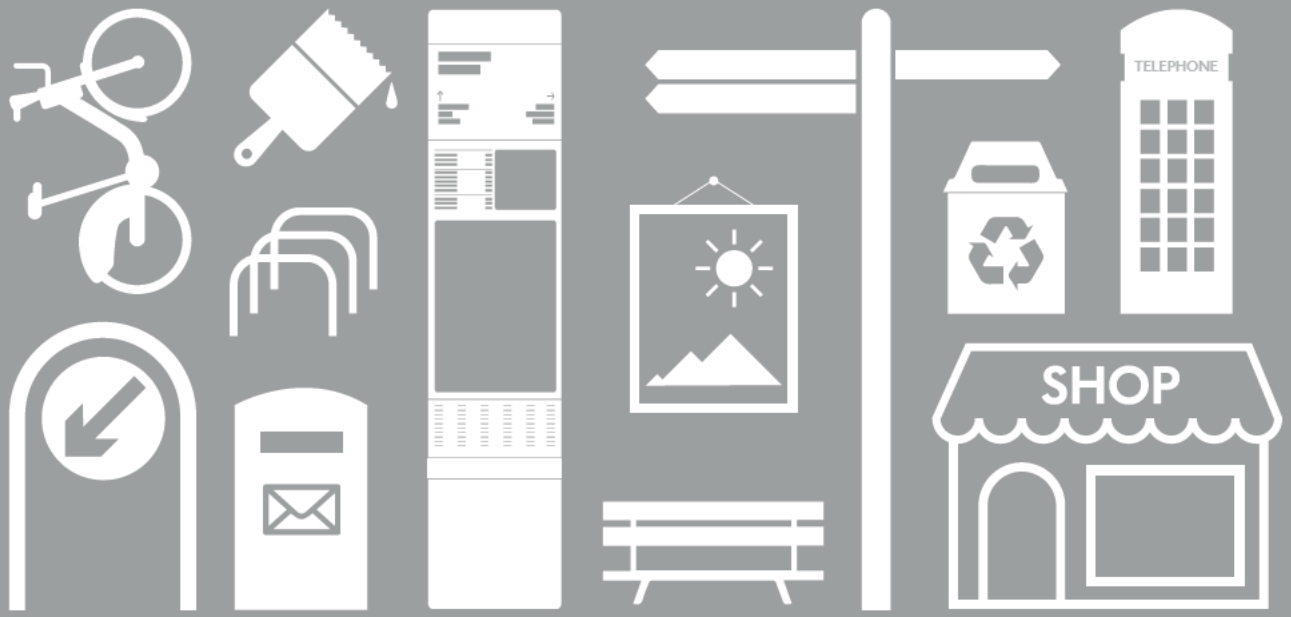
Additional information

Transport for London:
Tourist Coach Action Plan, 2013
http://www.tfl.gov.uk/cdn/static/cms/documents/tourist-coach-action-plan.pdf

Figure 199: A coach stop flag

Part E Footway amenities

11.1 Vision 203
11.2 Footway zones..... 205
11.3 Working with businesses..... 216
11.4 Colour of street furniture..... 218
11.5 Cycle parking 219
11.6 Cycle hire docking stations 224
11.7 Seats 230
11.8 Art 234
11.9 Bins 235
11.10 Letter and pouch boxes 240
11.11 Telephone boxes..... 241
11.12 Pedestrian wayfinding 245



11.1 Vision

The immediate impression and character of any modern city is often determined by the quality and aesthetic appeal of its street furniture design. This can help to animate the public realm and signals to users what and where certain behaviour is desirable and appropriate. A specific location can often be recognised by simply referring to its street furniture design. However, poorly placed or excessive street furniture can create a cluttered environment resulting in obstructions, reduced legibility and a blighted character. Successful public spaces have had every piece of street furniture rationalised and creatively placed to achieve multiple aims.

There is no 'one solution fits all' when selecting and applying street furniture. Material selection and layout must be contextually appropriate. Some settings may require street furniture that quietly complements the character of the area, provides structure, or adds surprise and delight.

We value exceptional detailing to ensure that street furniture is beautiful, robust and maintainable, complementing the surrounding streetscape with 'the right product in the right place, done right'.

General principles

The term 'street furniture' applies to any vertical piece of equipment placed within the highway, to provide a practical function. Most components are located on the footway and provide functions relating to traffic management, safety and amenity. Products include signposts, signals and enforcement equipment to inform motorists, as well as pedestrian oriented elements such as seating, wayfinding signage and kiosks.

The palette of materials selected for the TLRN reflects our ambition to provide a consistent high quality streetscape. The street furniture components shown in this section emphasise design intent rather than prescribing specific products. Dimensional requirements are mandatory and have been specified based on advice from best practice.

Design teams should check specifications with manufacturers and select products that satisfy the criteria. Options are given where there may be an opportunity to reflect local character be it stylish and contemporary or historic. Design teams may recommend alternatives to the standard palette that are in keeping with the spirit of this guidance. Alternative street furniture will require SDRG approval for any TLRN route.

Figure 200: A street furniture zone of cycle parking and trees located at the back of the footway

Figure 201: A street furniture zone located at the front of the footway

Coordinating street furniture

Streetscape Guidance advocates using a coordinated approach for designing and maintaining the layout of street furniture to:

- Minimise cluttering footways with unnecessary furniture
- Maximise unobstructed widths for comfortable pedestrian movement
- Satisfy network operational requirements
- Ensure that the product is appropriate for the location in function and style
- Merge or combine street furniture components on a single post where practicable to further reduce clutter

In identifying locations for street furniture within the footway, a number of related factors should be considered which will impact on appropriate placement. These factors determine how to integrate street furniture.

Designers should consider:

- **Footway and verge widths** – location, orientation and quantity
- **Vehicle speeds** – speed limits will govern minimum set backs from the kerb line
- **Pedestrian flows** – refer to Pedestrian Comfort Guidance for London (2015) to determine these
- **Parking and loading requirements** – street furniture should not be located where it is at risk of damage from vehicle movement or where access to the street furniture poses a safety risk to pedestrians except where street furniture has been placed to discourage vehicle movement
- **Street Types** – the material and layout of furniture should contribute to the function, performance and character of the street
- **Adjacent land uses** – furniture should satisfy a need as well as reflect the character of the setting without causing an obstruction or reducing the functionality of the surrounding buildings or land uses
- **Street furniture size and location requirements** – individual components should satisfy designated criteria to ensure a minimum standard is attained
- **Security** – furniture must not create a situation which compromises the safety or security of any user
- **Maintenance** – street furniture placement does not restrict standard cleansing regimes

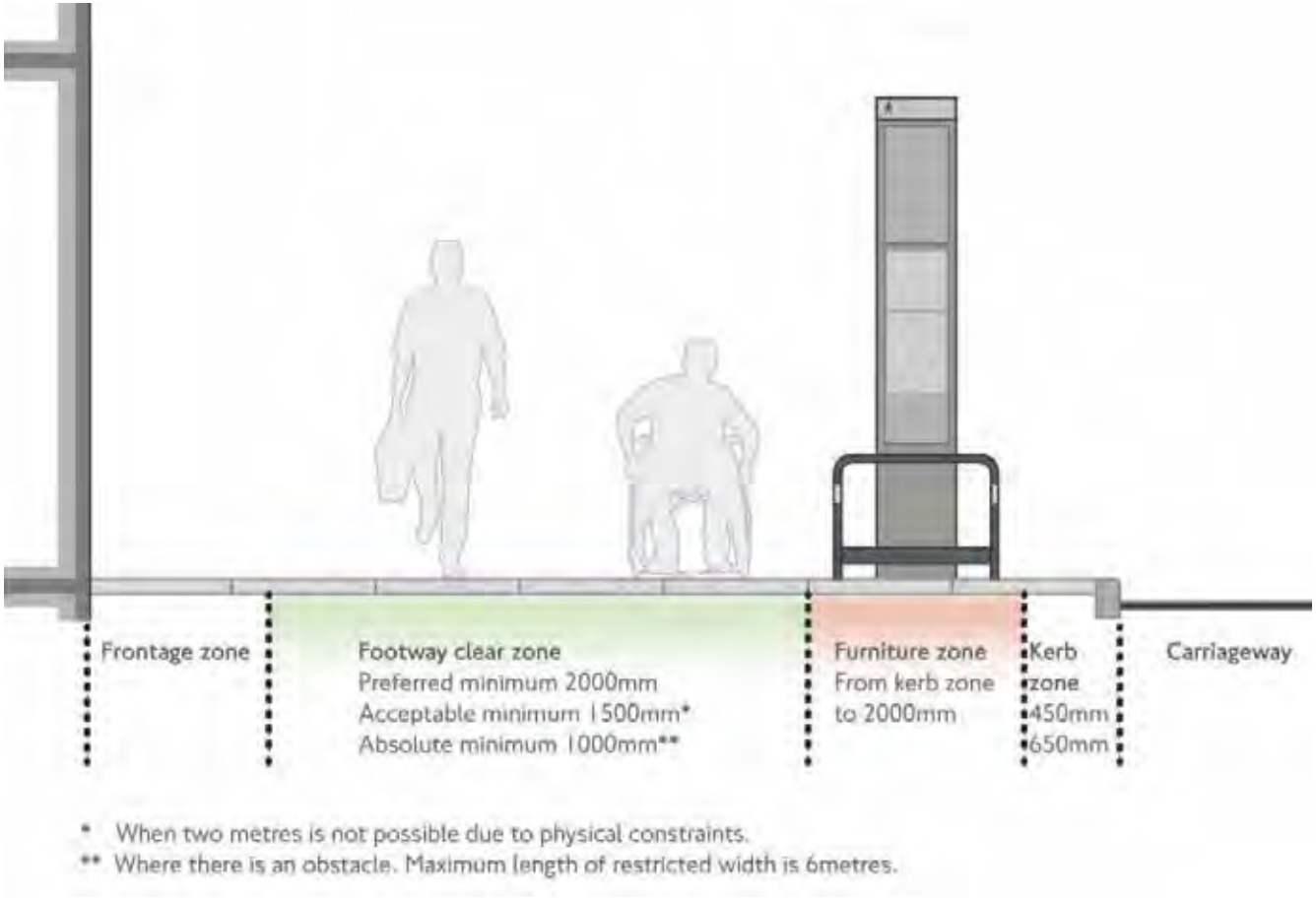
11.2 Footway zones

The area between the kerb line and the highway boundary can be divided into four zones, which serve distinct functions within the streetscape:

- Kerb zone
- Furniture and planting zone
- Footway clear zone
- Frontage zone

The relative importance, scale and treatment for each of the zones will vary according to the context.

Figure 202: Footway zones



Kerb zone

A kerb zone should be kept completely free of street furniture to prevent damage from vehicles overhanging the carriageway edge. Each piece of street furniture and equipment has a minimum distance it must be placed away from the kerb edge. Please refer to each streetscape element to determine the specified distance from kerb edge.

It is essential to consider the camber of the road to allow for high-sided vehicles leaning over the footway.

Figure 203: Street furniture and bus stops aligned towards the front of the footway in Barking

Furniture and planting zone

The furniture zone is provided adjacent to the kerb zone to coordinate street furniture in a consistent arrangement which maximises the unobstructed width of the footway for pedestrian use. Features such as lighting and signage should be located in this zone, along with on-footway cycle parking, seating and other amenity elements.

Furniture should only be provided where it serves a specific function and is appropriate for the location. A furniture zone should therefore not exist where there is no need for street furniture.

Design teams should acknowledge that the requirements for the footway clear zone will ultimately determine how much space can be afforded to street furniture.

A furniture zone should only be provided where suitable clear footway widths and kerb zone widths are deliverable. The width of the furniture zone should be selected based on the footway constraints, which in turn will impact on the street furniture that can be used:

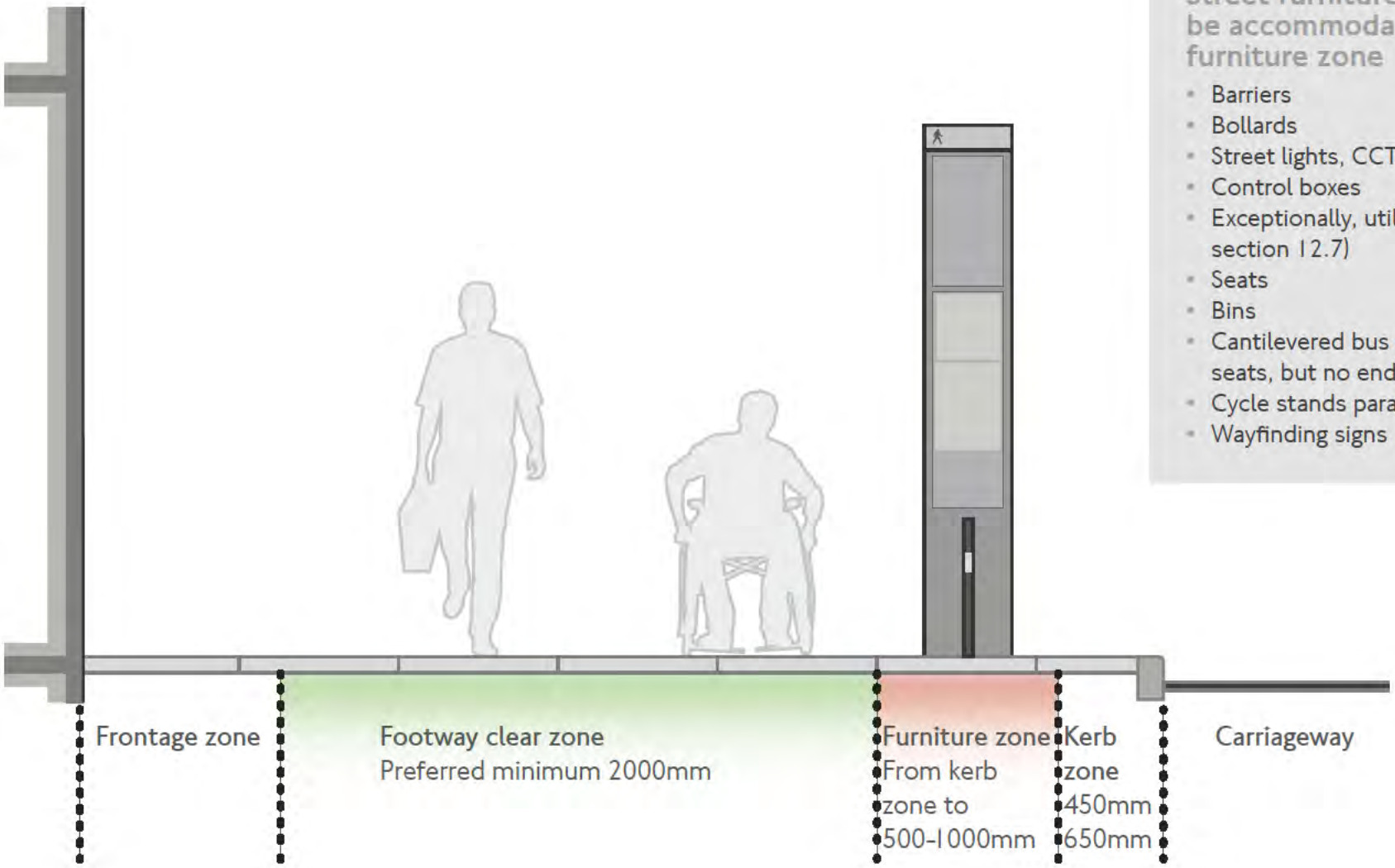
Furniture zone design standards

Furniture zone width

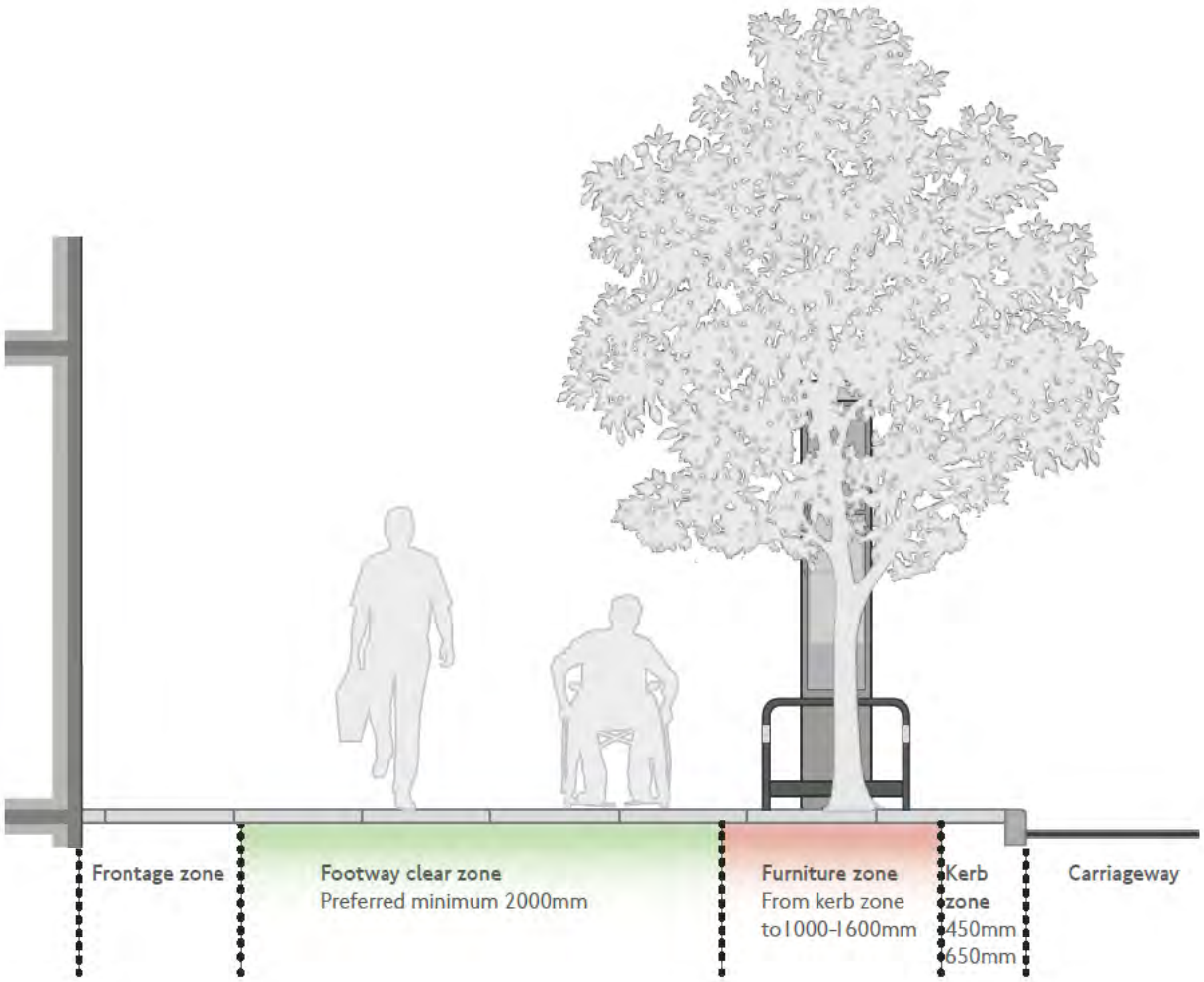
500-1,000mm wide

Street furniture that can be accommodated in the furniture zone

- Barriers
- Bollards
- Street lights, CCTV, traffic signals, signs
- Control boxes
- Exceptionally, utility cabinets (see section 12.7)
- Seats
- Bins
- Cantilevered bus shelters with perch seats, but no end panels
- Cycle stands parallel to the kerb
- Wayfinding signs



Furniture zone design standards



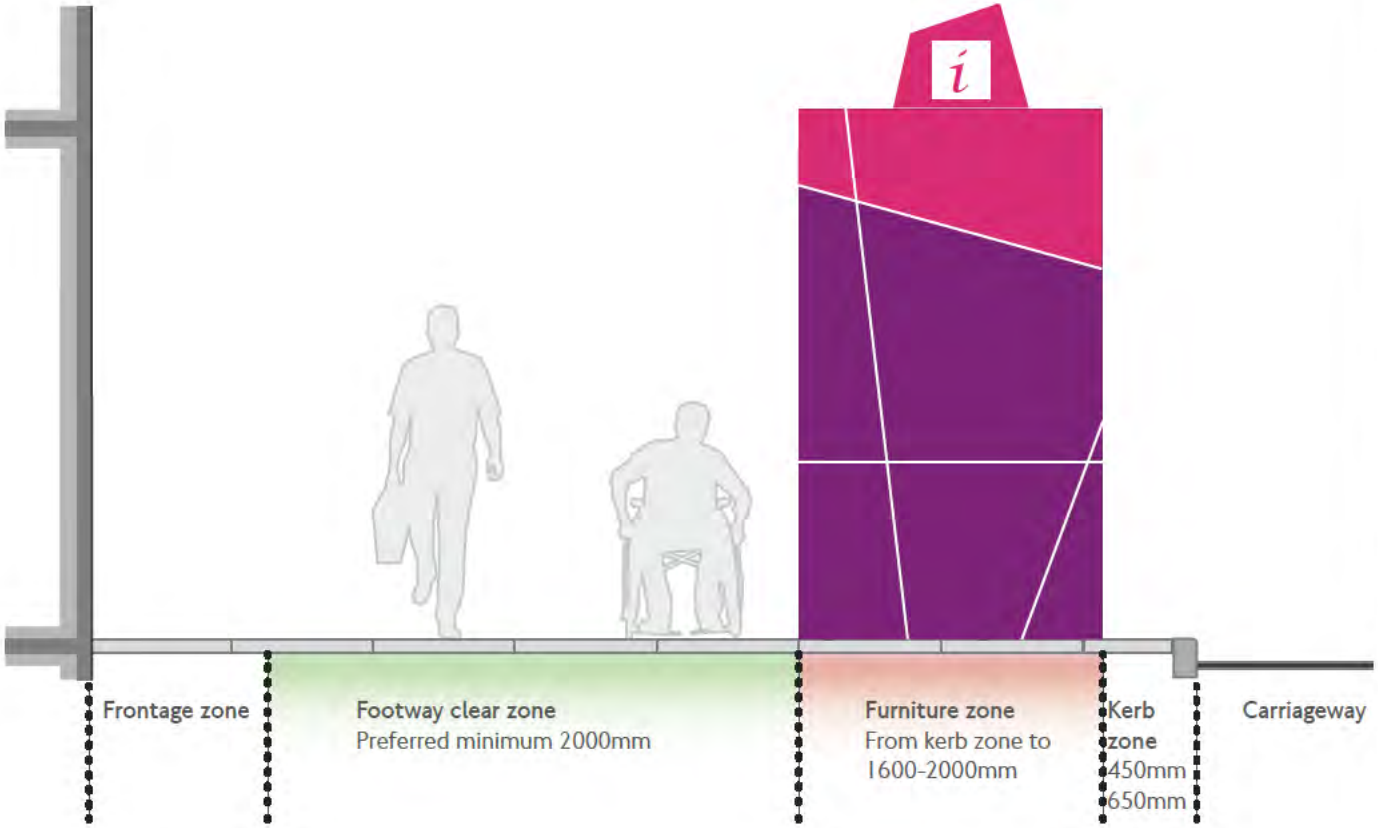
Furniture zone width

1,000-1,600mm wide

Street furniture that can be accommodated in the furniture zone

- Barriers
- Bollards
- Street lights, CCTV, traffic signals, signs
- Control boxes
- Exceptionally, utility cabinets (see section 12.7)
- Seats
- Bins
- Cantilevered bus shelters with perch seats, but no end panels
- Cycle stands parallel to the kerb
- Wayfinding signs
- Telephone boxes and other larger items
- Cycle stands angled at greater than 45 degrees to the kerb line (echelon cycle parking)
- Street trees

Furniture zone design standards



Furniture zone width

1,600-2,000mm wide

Street furniture that can be accommodated in the furniture zone

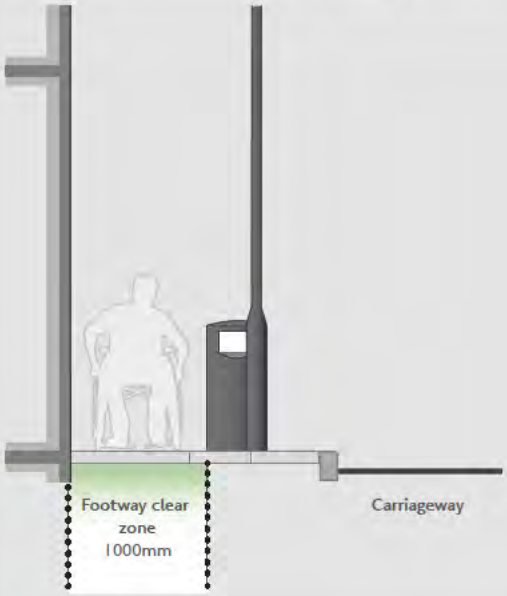
- Barriers
- Bollards
- Street lights, CCTV, traffic signals, signs
- Control boxes
- Exceptionally, utility cabinets (see section 12.7)
- Seats
- Bins
- Cantilevered bus shelters with perch seats, but no end panels
- Cycle stands parallel to the kerb
- Wayfinding signs
- Telephone boxes and other larger items
- Cycle stands angled at greater than 45 degrees to the kerb line (echelon cycle parking)
- Street trees
- Cycle stands can be provided at 90 degrees to the kerb line, although echelon parking remains the preference
- Kiosks and other large structures
- Bus shelters with half and full end panels
- Larger street trees

Footway clear zone

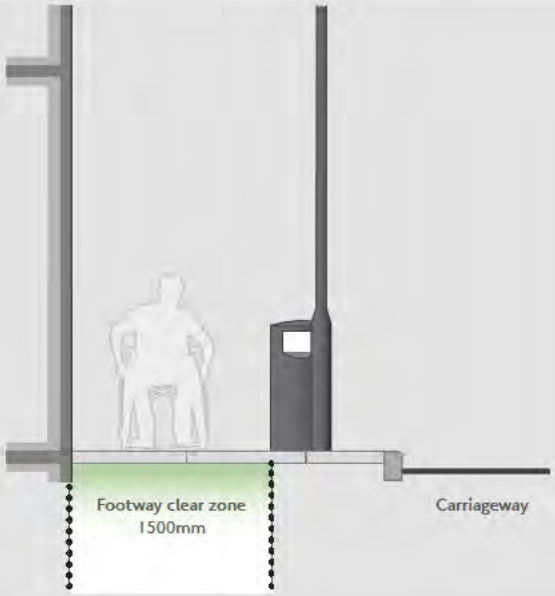
The clear zone should be entirely free of obstructions to allow for unhindered pedestrian movement along the footway. The width of the clear zone provided should relate directly to the character and use of the street, and in particular the volume of pedestrians. The footway clear zone should be designed to comfortably accommodate peak pedestrian demand and satisfy acceptable levels of service (refer to DfT's Inclusive mobility, 2021, and to our Pedestrian Comfort Guidance for London, 2010, for further information).

Footway clear zone design standards

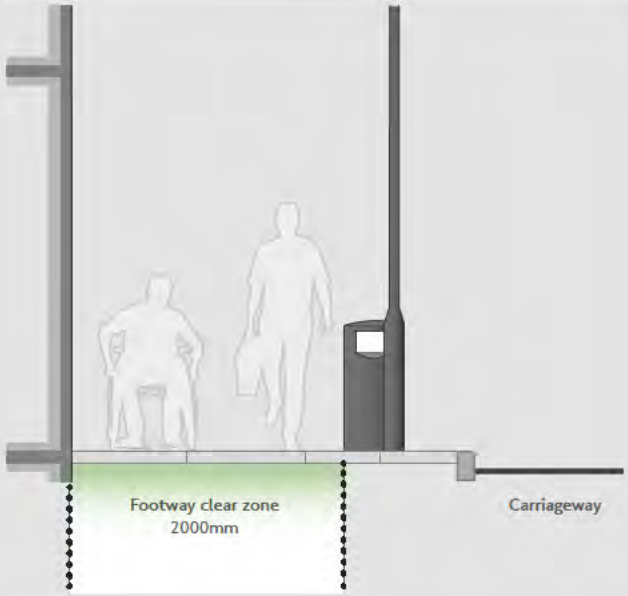
Unobstructed width	Design criteria
1,000mm wide	• Absolute minimum unobstructed width • Where a minimum width is provided, it should not be continued for more than 6,000mm along the length of footway



Unobstructed width	Design criteria
1,500mm wide	• Minimum acceptable unobstructed width. Allows for a wheelchair user and person walking to pass one another



Unobstructed width	Design criteria
2,000mm wide	• Preferred minimum unobstructed width. Allows for two wheelchair users to comfortably pass one another



Frontage zone

The frontage zone is the area adjacent to the property line and highway boundary. Wherever possible this zone should be kept free of street furniture to:

- Enable visually impaired people who use canes to navigate the street using the building line
- Minimise obstructing retail frontages to encourage window browsing

Where footway widths are narrow, essential street furniture may be located tight against the property boundary to minimise street clutter within the kerb zone. The maximum recommended distance is 275mm away from the building line for positioning street furniture within the frontage zone. Building overhangs, shop signs, awnings, banners, planters, and drain pipes may encroach upon this zone and require statutory approval from the highway authority.

Approval for extension beyond the frontage zone into the footway zone must only occur where minimum clear headroom of 2,400mm is maintained. A 2,100mm clearance below suspended signs is allowed where cyclists are not permitted on the footway.

In certain areas, the frontage zone may be occupied by café seating. In these instances it is important to ensure that clear boundaries are defined so that café furniture does not obstruct the footway clear zone.

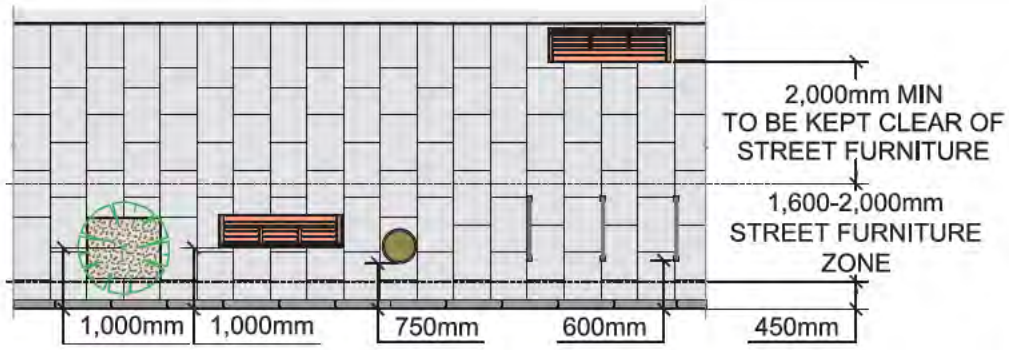
Alternative solutions

If the existing situation and/or the scope of the project makes it difficult to create a furniture zone, larger furniture objects will be difficult to incorporate within the streetscape.

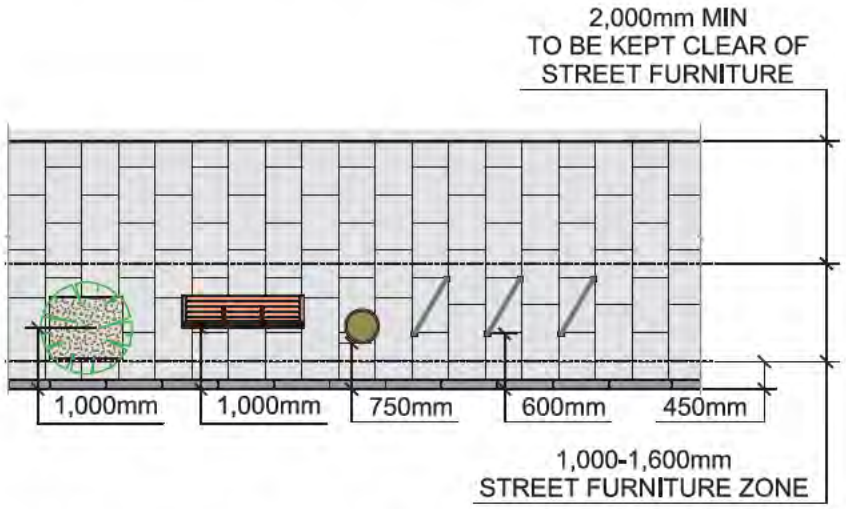
Alternative solutions may be to:

- Locate street furniture on side roads, with due consideration for operational requirements
- Locate service boxes, signal controllers or telephone kiosks in building recesses
- Integrate post boxes and cabinets, where practical, into the building structure with appropriate access (wayleaves required)
- Negotiate with adjacent landowners the location of street furniture beyond the highway boundary
- Consider locating specific furniture on the central median or carriageway, such as cycle parking

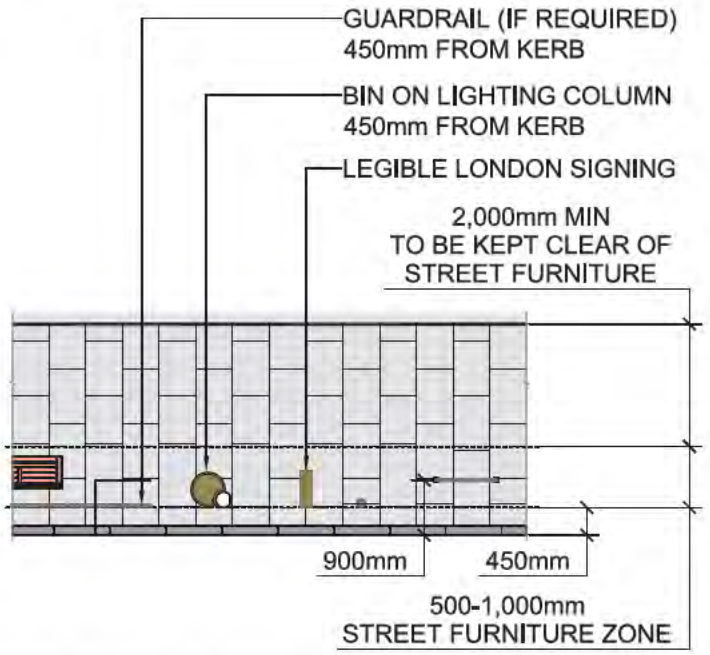
Figure 204: Street furniture placement



PLAN - FURNITURE ZONE 1,600-2,000mm



PLAN - FURNITURE ZONE 1,000-1,600mm



PLAN - FURNITURE ZONE 500-1,000mm

11.3 Working with businesses

Many controllable on-street activities contribute directly to the economic viability of the local community, the vibrancy of the place and/or the safety of the surrounding structures. London's road network provides, in select locations, the opportunity for a variety of services to be offered to Londoners in the form of a kiosk, market stalls and outdoor café seating. Business opportunities are provided in a range of forms from retail opportunities to providing information, exhibitions, or public engagement.

Figure 205: A local market on the carriageway

Like all elements of the streetscape businesses must sit comfortably within their environment, be well designed and provide a benefit to Londoners. The following section presents standards for the siting, design and maintenance of kiosks, market stalls, pop-ups and outdoor café seating in their various forms to create flourishing and welcoming spaces. Many of the activities listed are controllable by the issue of consents or licences issued by the highway or local authority. When working on the TLRN, in most cases TfL's consent should be sought.

Kiosks and pop-ups

Retail kiosks and pop-ups are owned and managed by companies to assist in the sale and distribution of their products or to provide information and are most often located at stations or transport interchanges. These areas are the busiest and most congested parts of London so footway space is especially valuable for ensuring adequate pedestrian comfort. Newspaper stands should therefore be carefully managed to reduce their visual and physical intrusion within the street environment

Newspaper kiosks

Permanent and temporary kiosks which are operated by local traders can have a positive impact on the street environment if they are well managed and do not spill out across the footway. Kiosks should be provided so as to minimise the visual intrusion within the streetscape and allow adequate space for pedestrians on the footway.

Designers should consider the impact that pedestrians gathering around a stall can have on footway capacity and should ensure that any existing kiosk is not overly impacting on the quality and comfort of the walking environment.

Kiosks should be removed where situated in a position that adversely impacts on the quality of the streetscape, or where poorly managed and maintained by the leaseholder.

Figure 206: A permanent newsagent kiosk located towards the front of a wide footway

Design

Designers are encouraged to work with the newspaper companies to use a limited colour palette for stands placed on the road network to reduce their visual intrusion. The design of newspaper kiosks should reflect the local context in materiality, colour and form. The preference is to provide temporary facilities that are removable. Designers should consider using metal studs to demarcate agreed locations for newspaper stands and to aid enforcement.

Enforcement

Greater enforcement of newspaper kiosks is required to minimise the encroachment of stands on to the footway. As a general principle, a newspaper kiosk is not acceptable where it impacts on sightlines at corners or crossing places, nor where it impacts on the free flow of pedestrian traffic.

Location

- Stands should be located in an agreed location upon consultation with London Underground, the borough and the relevant newspaper companies
- Newspaper stands are typically located against a building wall in close proximity to a station entrance, and should be placed to minimise obstructing pedestrian desire lines
- They may be positioned temporarily during peak periods and removed when all papers have been sold, or larger units can be a permanent fixture in the streetscape
- Newspaper stands should not back on to guardrails as it increases the visibility and visual intrusion of the stand, with fixings visible from all sides
- Where multiple newspaper stands are located in close proximity, the stands should be located directly next to each other to minimise the footprint size

Licensing

The borough's licensing requirements must be met for street trading. On any section of the TLRN our approval is required unless evidence exists that the local authority had passed a 'designating resolution' for the street (or part of the street) in question prior to July 2000, under section 24(1)(a) of the London Local Authorities Act 1990, or under such equivalent provisions repealed by the 1990 Act. In those circumstances designation would be continued by section 24(2) of the 1990 Act without further express designation. Any such designations will have been made by formal resolution of the local authority. No presumption of designation can be made without the support of appropriate contemporaneous records. When considering new designations then the general principles of this guidance relating to safe passage around licensed areas will apply, as will the requirement to remove receptacles and other equipment from the highway at the end of each trading session and not to retain it on the highway overnight.

Pop-up kiosks

Pop-up kiosks provide a temporary service. Examples include retail, information, exhibitions and public engagement. They were used extensively during the 2012 Games.

As with permanent kiosks, pop-ups must not have an excessive impact on the quality and comfort of the walking environment. Given their association with large-scale events, the requirement for an unobstructed pedestrian environment may be even more acute.

Figure 207: Temporary or pop-up kiosks offer short-term services

Design

The main design characteristic of pop-up kiosks is that they are flexible. They will also need to be distinctive, attractive and appropriate to their context. They are typically single-storey and need to be quick to assemble/disassemble, while maintaining a high-quality appearance throughout the duration of their use.

Location

The location of pop-up kiosks will vary depending on their function and associated events. The procuring authority should follow the guidelines for permanent kiosks as far as is necessary to ensure a functioning streetscape.

Licensing

Consent should be sought from the local authority and ourselves.

Market stalls

Design considerations

Market pitches may be delineated and numbered using paint, paving materials, or studs depending on the context. Market stalls may be owned by individual traders, supplied by the local authority or by stall contractors. Market stalls must not cause interference or inconvenience to street users.

Licensing

Market stalls are usually licensed by the relevant local authority which grants a street trading licence, however, our consent is also required when working on the TLRN. The local authority can also grant licences for various street activities or street trading to control the type and scale of activity.

Dealing with waste

Market traders are responsible for keeping their stall and surrounding area clean and free of litter and rubbish during hours of trading. Traders are also responsible for removing and disposing of their rubbish.

Despite these requirements, litter and waste often blight market stalls. Local authorities and market stalls should aim to reduce the total space taken by waste. Waste should be managed and kept out of sight until ready for collection, as well as limiting the amount of waste produced by market activities.

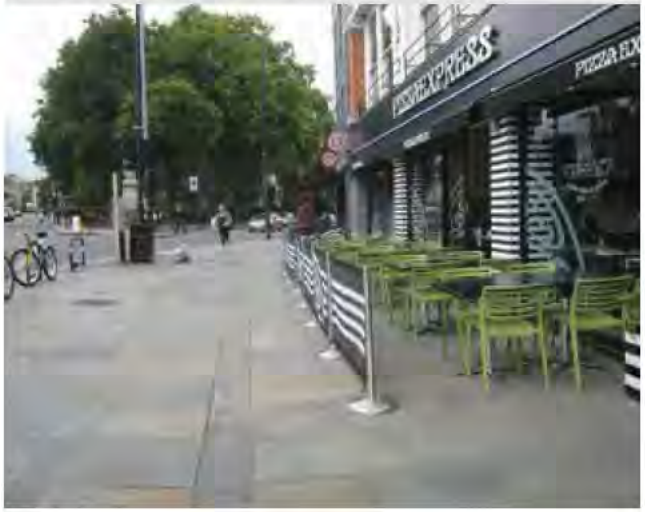
Figure 208: A woman shopping at a market stall

Wastewater is also an important consideration. Drains in market stall areas are susceptible to blockages from wastewater, fat and refuse. Provision of foul water sewers (not gutter gullies) helps to prevent this.

Outdoor café seating

Outdoor cafés and dining can provide a sociable and attractive addition to the streetscene when located appropriately and successfully managed. Outdoor café seating will be promoted where space allows and where it will animate and add character to the street. Wider footways make this more achievable.

Figure 209: Outdoor café seating may be located on wide footways



Design considerations

Pedestrian movement must be taken into consideration when outdoor café applications are received, ensuring that acceptable footway widths are maintained. Clearance for access to adjacent properties and for emergencies must also be maintained. The footway adjacent to the café seating should provide a minimum unobstructed width of 2000mm.

Materials and layout

- Areas can be demarcated by a variety of means; the most common and visually acceptable is through the use of metal studs
- Metal studs can be retrofitted to most paving surfaces by drilling and secured with a high strength adhesive
- Stainless steel studs in chrome or bronze should be bevelled and not exceed six millimetres in height, so as to avoid posing a potential trip hazard when no seats are laid out
- Temporary barriers to cordon off the seating should have a plain style and be within the height range of 700-1,000mm, so as to not visually obstruct views down the street or pose a trip hazard
- Awnings should be free of advertisements and should not exceed the width of the designated seating area
- Planters may be used where adequate drainage can be provided and upon agreement with the SDRG, as these constitute permanent structures
- Outdoor furniture or appliances are not permitted to be stored on the road network

Licensing

- Outdoor cafés are usually licensed by the relevant local authority which grants a Highways Act S115E licence in accordance with set criteria for the purposes of providing refreshments. Licensed areas on the TLRN must have our prior consent to be valid
- Local policies provide the management principles for licensing and managing commercial activities on or adjacent to the highway
- Seated areas that are located on private forecourts or to the rear of buildings and in private courtyards do not generally require a licence if they are an extension of an A3 or A4 commercial use; however planning permission will be required for any permanent structure
- It is the local authority's duty to ensure that access along the footway and to the seating area is compliant with standards outlined in the Equality Act 2010
- The local authority can also grant licences for various street activities or street trading to control the type and scale of activity

Additional information

Department for Transport:

Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Highways Act:

Guidance on the application of powers under Section 115, Highways Act 1980

Advertising boards

An objective of the MTS is to make it easier for cyclists, pedestrians and disabled people to get about. In support of that objective, we have removed miles of unnecessary pedestrian guardrail and thousands of unnecessary traffic signs and bollards.

Figure 210: This advertising board is obstructing the footway and should be removed

We have also set a priority for the removal of unauthorised obstructions from our roads as such items can cause inconvenience to pedestrians, present a hazard – particularly for people with poor eyesight – and make the street feel unnecessarily cluttered.

We will serve removal notices and issue a fixed penalty notice to businesses that obstruct the public footway with advertising 'A' boards. 'A' boards constitute any type of free-standing advertisement, directional or information signage placed within the highway.

TfL policy

- Planning authorities are responsible for regulating and approving advertising in the public highway as detailed in the Town and Country Planning (Control of Advertisements) (England) Regulations 2007

Figure 211: Advertising boards correctly placed on Station Road in Harrow

- 'A' boards placed without permission within the highway authority's jurisdiction should be removed. Authorities are able to issue fixed penalty notices for unauthorised obstruction of the highway
- Boards positioned on private forecourts do not require planning permission, however, local authorities are encouraged to engage with shopfront owners to adopt a regime of minimum clutter and conform to the design standards outlined below

Unacceptable placement

The following placements are unacceptable, regardless of property ownership considerations:

- Where the board constitutes a hazard as identified by the local authority or ourselves
- Where any form of vehicular access is required
- 'A' boards fixed to street furniture, trees or the public highway
- Boards leaning against walls
- Partial placement on the public highway and private forecourt
- Boards on grass verges; these can create a road safety hazard

Ownership of subsoil does not necessarily negate an area being public highway. Highway authorities should ensure that any 'A' boards on the highway are removed and have powers to do so, provided by the London Local Authorities and Transport for London Act 2003.

Additional information

Department for Communities and Local Government:

Outdoor advertisements and signs: a guide for advertisers, 2007

Legislation:

Highways Act 1980, Section 132

Town and Country Planning Act 1990

Town and Country Planning (Control of Advertisements) (England) Regulations 2007

London Local Authorities and Transport for London Act 2003

11.4 Colour of street furniture

The colour of metal components for any piece of street furniture should comply with the following colour criteria:

- Black street furniture is preferred as a default for the TLRN with the exception of higher speed routes that do not provide for pedestrian movement
- Signal grey is the standard colour for higher speed non-pedestrian roads
- A stainless steel finish should be considered as non-standard and requires SDRG approval
- Contrasting band

Colour of metal street furniture	Application	Finish	Contrasting visibility band
RAL 9005 Black	TLRN in most boroughs, town centres and low speed roads	Matt micaceous iron oxide	White (RAL9010)
RAL 7004 Signal grey	High speed non-pedestrian roads and by exception as approved by the SDRG	Matt micaceous iron oxide	Black (RAL9005)
Stainless steel	By exception as approved by the SDRG	Stainless steel or aluminium finish	Black (RAL9005) if required

Visibility

Black furniture can provide better colour contrast for visually impaired pedestrians. Visibility bands are required on all street furniture with the exception of guardrails and seats.

Bands should be provided to contrast with the colour of the main body of the stand: white or white reflective banding on black furniture; black banding on stainless steel (an exception to the standard colour palette).

Special finishes and coatings

Requests to use alternative colours to black, to match borough, town centre or historic palettes will be treated as exceptions and should be submitted for approval by the SDRG. Special coatings for flyposting and graffiti prone areas can be applied up to a height of 3,000mm on lighting columns.

Additional information

Legislation:
The Equality Act 2010

Department for Transport:
Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Figure 212: A 'keep-left' hoop bollard illuminated by carriageway lighting

Figure 213: A 'keep-left' hoop bollard which is internally illuminated

11.5 Cycle parking

We are supporting the Mayor's Vision for Cycling, published in March 2013, by planning for growth in cycling and making safer and better streets for all. The provision of fit for purpose, well-located and secure formal cycle parking facilities is vital for supporting the cycling growth targets for London. A lack of appropriate parking is often cited as a barrier to cycling and cycle ownership.

The number and the quality of cycle parking spaces must not only keep pace with the growing use of cycles, but allow for the substantial future growth set out in the Mayor's vision. It must also allow for all types of cycle to be securely parked, ensuring that any cycle user with a physical, sensory or cognitive impairment should enjoy access to good quality cycle parking. Please refer to LCDS for further information.

Figure 214: A row of Sheffield cycle stands at Euston Circus

Location, demand and security

Cycle parking facilities on the TLRN are generally located on the footway within the furniture zone. London Cycling Design Standards (2014) should be referred to for further information on assessing demand for cycle parking and ensuring that provision:

- Meets current and likely future demand
- Supports different uses
- Is appropriately located
- Has step-free access
- Is secure, well-overlooked, and well-lit at night
- Is well integrated with the public realm
- Includes some provision for larger models, such as cargo cycles and tricycles

Placement

Cycle parking is best positioned where it is not visually or physically intrusive, yet is sufficiently overlooked for security purposes. The visual impact of cycle stands can be reduced if placed between other street furniture, such as tree planting, bus stops and seating, as part of a coordinated furniture zone. Cycle parking may also be useful in discouraging pedestrians from crossing at certain points.

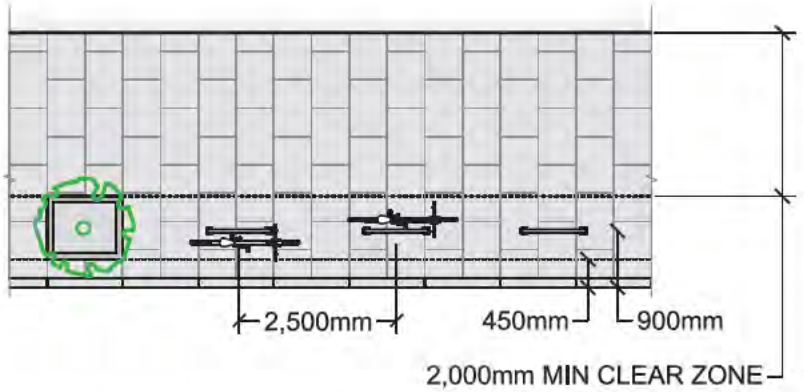
Echelon and perpendicular arrangements offer greater capacity than parallel layouts. In addition, echelon arrangements take up less width than perpendicular arrangements. Please be aware of the following when selecting locations for cycle parking:

- Cycle parking facilities may be provided on the carriageway alongside the kerb but require a traffic order
- Locations under overhanging deciduous trees may require additional maintenance
- A minimum clearance of 450mm between any part of the cycle and the carriageway should be retained when a cycle is parked on the stand
- Leaving a large gap (1,500mm or more) after the last stand in each run is a good way of ensuring that spaces for larger cycles are available
- Cycle parking placed on the median strip can help to reduce clutter on the footways, but should be carefully considered with regards to access, safety and pedestrian crossing visibility
- Tactile paving should not be provided around the base of cycle parking stands on the TLRN

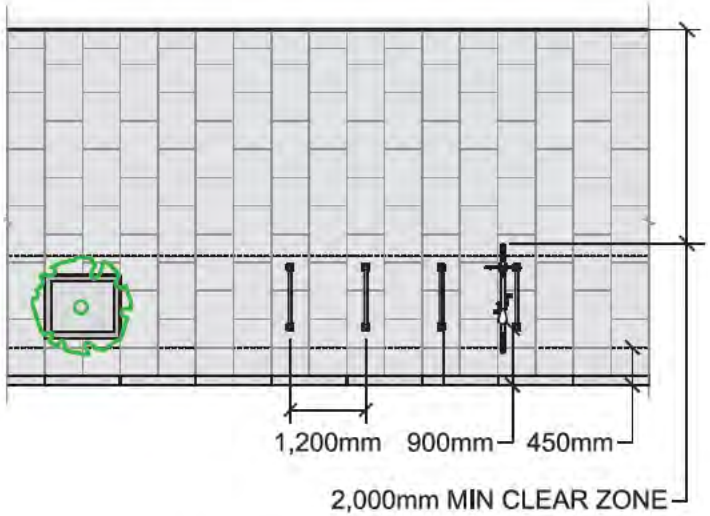
To consolidate furniture placement and facilitate integrated transport, cycle parking should be considered at stations, tram stops and bus stops, particularly outside central London.

Easy, step-free access to the facility should be provided through the use of dropped kerbs, crossings and sufficient space to manoeuvre. Dropped kerbs should be located as close to the cycle parking as possible.

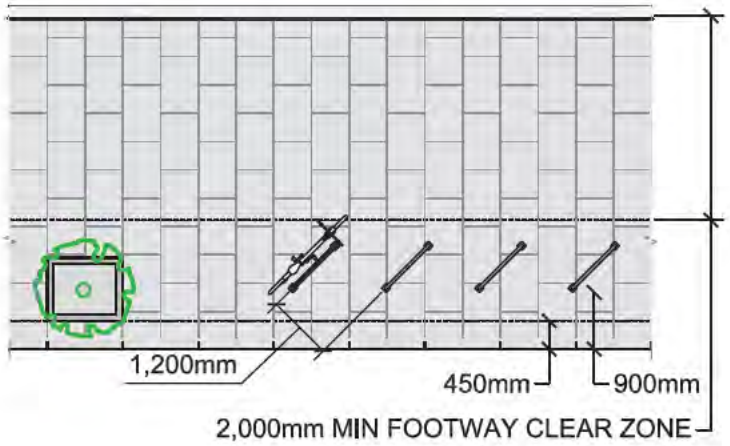
Figure 215: On-footway cycle parking arrangements are dictated by the amount of footway space



PLAN - CYCLE RACKS PARALLEL ARRANGEMENT



PLAN - CYCLE RACKS PERPENDICULAR ARRANGEMENT



PLAN - CYCLE RACKS ECHELON ARRANGEMENT

Figure 216: Sheffield cycle stand

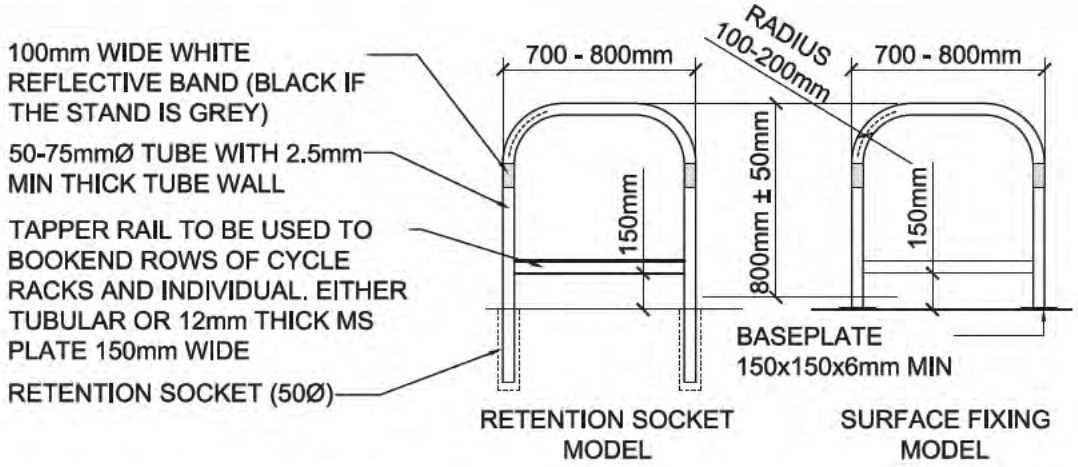


Figure 217: Cycle stands must have a contrasting visibility band

M-profile stands are also now accepted for use on the TLRN, but should not be considered the default option as they have a more intrusive presence within the public realm than the Sheffield style.

Product specification

Short-stay parking in the form of footway-mounted cycle parking stands is the standard facility for the TLRN.

The Sheffield (or inverted U) stand offers a simple, durable and cost effective tubular design, enabling the frame of the cycle and both wheels to be secured. These stands are the default option for the TLRN, assuming the following criteria are satisfied:

Cycle parking stand design criteria	
Distance between legs	700-800mm
Crossbeam height	700-800mm
Tube diameter	50mm
Tapping rail height above footway	100mm±25mm
Tapping rail width	Equal to the tube diameter of the stand up to a maximum of 75mm

Colour

The colour of the cycle stand should generally match the street furniture standards: black nylon-coated stands are standard on the TLRN, and stainless steel may be used following approval from the SDRG. However, there is some flexibility with regards to selecting cycle stands that are deemed appropriate for the context, such that stainless steel may be considered for areas adjacent to stations or new developments.

Visibility bands should contrast with the colour of the main body of the stand: white reflective banding on black stands; black banding on stainless steel.

Accessibility features

A tapping rail should be provided on the end stands where stands are placed in a row perpendicular or 45 degrees to the kerb or building, but are to be omitted for intermediate stands. Stands placed parallel to a kerb or on a curve require a tapping rail.

- Parking symbols on the tapping rail are not required to reduce visual clutter
- Stands should be root fixed within the footway and surface materials carefully cut or drilled to provide a round hole that minimises the visibility of concrete infill
- At locations where vandalism is anticipated, demountable bolt-down fixings may be used

What if I want to do something different?

Tubular stands other than the Sheffield model, which fulfil the design criteria, may be considered for use on the TLRN but require SDRG approval.

TfL-branded cycle stands recently introduced at stations require SDRG approval for use on the TLRN.

Long-stay facilities such as lockers, cycle hubs or two-tiered racks should be provided at transport interchanges, but again require SDRG approval when considered for the TLRN. Covered structures require planning approval from the local authority.

Paperclip cycle rack Minneapolis, USA

Cycle racks that speak to urban contex

Key functions

Opportunity

Customised street furniture can enhance the character of a local area, emphasise a unique local history, or speak to the purpose of neighbouring businesses

Benefits

The innovative design of the cycle racks combine utility and style; alterations to basic cycle racks were made to improve their appearance while preserving their functionality.

Implementation

The customised cycle racks on the Minneapolis Art Institute's campus have added a surprising twist to a necessary element of the public realm

Applying in London

Customised designs can reinforce an element of the local context. For occasions where there is a particular need for bespoke cycle parking, such an approach can work well. At other locations, Sheffield stands are best.

ECO-Cycle system Tokyo, Japan

Automatic underground cycle parking system

Key functions

Opportunity

The ECO-Cycle system is a space-saving and secure solution for cycle storage in cities.

Benefits

By removing ground level storage and placing cycles underground, station entrances can become obstacle free and increase pedestrian capacity in and out of the entrances and exits.

Implementation

It takes 15 seconds to insert or retrieve a cycle from 11 metres underground. Each unit can hold up to 144 cycles, thereby freeing up space in the public realm. The underground garage protects cycles from theft and bad weather. Like all Japanese structures, it is designed to withstand earthquakes.

These subterranean cycle parks have been successful and have been rolled out across Tokyo and currently hold 800 of Tokyo's cycles.

The system owes its success to the speed and ease at which it operates. The units are also located in areas adjacent to metro stations for commuter convenience

Applying in London

High demand for cycle parking in London gives this system significant potential.

Additional information

Transport for London:

London Cycling Design Standards, 2014. Chapter 8: Cycle parking

Cycle Security Plan, 2010

Department for Transport:

Traffic Advisory Leaflet (TAL) 5/02: Key elements of cycle parking provision

Figure 218: A cycle hire docking station on Albert Embankment

11.6 Cycle hire docking stations

Vision and purpose

The Mayor's Cycle Hire Scheme is a public scheme for London, launched in July 2010 as a standalone mode. It was the first TfL mode to be sponsored and it provides more than 10,000 bicycles for hire from more than 730 docking stations and 20,000 docking points within a central London area of 100km2. The scheme was expanded to east London in March 2012 and launched in southwest London in December 2013.

The scheme has become a renowned part of London's streetscape since its inception in 2010, with its distinct look and stylised bicycles and docking stations. It is a self-service, bike-sharing scheme, designed as an affordable, alternative option to conventional public transport for short journeys.

We are keen to see that the network continues to serve our customers and will be looking for new opportunities for intensification of the existing network where appropriate. Where new docking stations are proposed, the design and layout of the station should be carefully considered to complement the overall composition of the streetscape.

Cycle hire scheme

The scheme comprises of physical on-street assets, namely bicycles which can be hired from, and returned to, docking stations placed around various locations within central and inner London. Each docking station comprises of at least one terminal that customers interact with for setting up access to hire. Each terminal is connected to docking points where the bicycles are physically docked for hire and return. Supporting the scheme are back office and on-street systems and operations.

As part of a Mayoral initiative to develop the customer offering for cycle hire, a TfL mobile application for Apple and Android users was released in May 2015. All the functionality of a terminal at a docking station has been replicated along with options linked to TfL journey planner. The real-time data feeds have been made available to commercial developers and a number of apps are now available which provide real-time information about docking stations locations, bike availability, free docking points and more.

The Mayor's Cycle Hire Scheme provides an effective way to add transport capacity to the network and helps relieve congestion for peak trips in central London. As an active, self-powered, emissions free and almost silent mode of transport, the scheme delivers important health benefits and contributes towards reducing CO_2, harmful local air pollutants and urban traffic noise.

The Mayor's Vision for Cycling commits to future enhancements of the scheme. It recognises the hire scheme as one of the world's most successful, playing an important role in normalising cycling in London by enabling customers to try cycling for a minimal outlay and encouraging them to adopt cycling as a lifestyle choice. This commitment is reflected in the cycle hire vision as stated below:

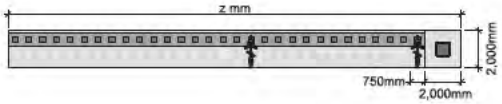
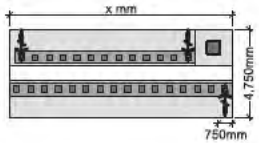
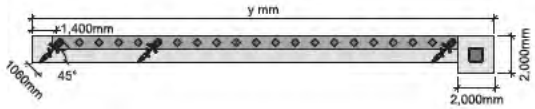
'To deliver a service fit for the future, enabling Cycle Hire to adapt and grow.'

Detailed layout considerations

The following is an indicative checklist of things to consider when identifying a potential docking station location. Please note consultation with, and agreement by ourselves and the local planning authority will be required prior to final station location.

Docking station layouts

There are three types of docking stations layouts, detailed below:

Layout name	Layout	Docking point formula	Example picture
Linear docking station		DPS= [length (x) 2,000mm]/750mm	
Double row		DPS= [length (y)-2,000mm]+[length (y)]/750mm]	
Echelon		DPS= [length (z)-2,000mm-1,400mm]/1,060mm	

Detailed layout considerations

Consideration	Detailed information
Space	A rough guide is 25 metres by 2,000mm as the minimum space required for a viable docking station of 27 docking points (see above indicative layouts).
Operational access	Redistribution vehicles must be able to legally stop within 15 metres of the station to maintain it and distribute bicycles. Line of sight must be maintained between station and vehicle. Loading and parking bays are the preferred location for stopping.
Footway width	A preferred minimum clear footway of 2,000mm in width must be maintained. Clearance of 450mm must be maintained from the carriageway.
Utility covers	Docking points or terminals cannot be installed over utility covers however bicycles can be docked over covers.
Drainage	Site footprint is required to have sufficient drainage to prevent ponding.
Vertical clearance	A vertical height clearance of 2,800mm is required for terminal and installation.
Existing vegetation	No loss of trees or grassed areas.
Existing street furniture	Minimal relocation of existing street furniture, including existing cycle stands.
Pedestrian/cycle/ vehicular flows	Sufficient space to maintain clear pedestrian/ cycle/vehicular paths.

Consideration	Detailed information
User safety	Safe and secure areas with good natural surveillance and street lighting.
Existing usage	Avoid areas of high pedestrian congestion and areas known to be unsuitable for cyclists.
Public access	Docking stations must be accessible to the public 24 hours a day, 365-days-a-year, ie they must be on public highway or land where the public have a right to unfettered access.
Terminal power	Terminal power is obtained from UK Power Networks (UKPN) via a feeder pillar located near the docking station. Typically feeder pillars are installed on the public highway and trenched to the terminal.
Foundations	The maximum foundation depth required for a docking station is 450mm and maximum width is 700mm.
Road safety audits	All sites will be subject to a full road safety audit.
Lease	A lease/agreement is required between TfL and the landowner, ideally at nil cost.
Connecting to existing cycle routes in the area	Sites should be located near existing cycle routes for users to continue their journey.

Infrastructure

Each docking station consists of at least one terminal and should have a minimum of 27 docking points, which can be provided in a number of layouts to fit the local circumstances. Based on our five years of experience operating Mayor's Cycle Hire Scheme in London, it has been found that 27 docking points is the best operational number at the majority of locations. Stations of this size require much less redistribution and have higher bike and space availability for users' convenience.

Please note there is a six-month lead time for all infrastructure to be manufactured and delivered.

Terminal

Each docking station has a payment and registration terminal which allows users to:

- Print a record of their journey
- Print cycle release code
- Find other docking stations if one is full or empty
- See a local street map, costs and code of conduct
- Buy 24-hour access for up to four cycles
- Get extra time if user needs to return their cycle to another docking station should the docking station be full

The terminal displays Legible London style mapping to assist wayfinding for cyclists and pedestrians. Legible London mapping is the only mapping used to ensure uniformity across the scheme and maintain ease of use.

Docking points

- Docking points release and secure bikes
- Members insert key to release bikes
- Non-members must retrieve a code and enter the digits into the keypad

Terminal

- Height: 2400mm
- Width of wide face: 500mm
- Width of slim face: 350mm

Figure 219: A cycle hire payment and registration terminal

Docking point

- Height: 792mm
- Width of bottom: 300mm
- Width of top: 225mm

Figure 220: Docking points without bikes

Foundations

There are three types of foundations as described below:

Standard

One foundation per docking point set into a concrete base. This is our preferred method of reinstatement as it is adaptable, allowing docking stations to be constructed on slopes or in a curved arrangement. In addition reinstatement around the docking points can aesthetically match existing, surrounding material. This foundation type requires 350mm depth and can be used on either the carriageway or footway.

Inset

Steel plate set into a concrete base, shallower dig required. Inset foundations can be used in circumstances where there are shallow utilities running underneath the docking station footprint. These are to be used on the footway only and require 150mm depth.

Surface mounted

No excavation required. Surface mounted foundations are used when there is significantly limited depth. However, the surface must be completely level and straight.

Figure 221: A cycle hire docking point in a concrete base and paved to match the carriageway

Figure 222: An inset cycle hire docking point on a steel plate

Figure 223: Surface mounted docking points

Procedures

There are various consents and approvals required as part of the delivery process. Such as:

Stage	Requirement
Pre-planning consent:	• Archaeological impact assessment (where relevant) • Arboricultural assessment (where relevant) • Ground radar survey • Topographical survey • Planning permission • Stage 1/2 Road Safety Audit • Planning permission from the relevant local planning authority
Prior to construction:	• Traffic Regulation Order (for carriageway sites) • Permit for construction works • Parking suspension (where relevant) • UKPN install feeder pillar for electricity supply • Watching briefs arranged (where relevant) • S8 agreement/private lease completed • Area reinstated around foundations • Install appropriate TSRGD traffic signs and line marking
Prior to installation:	• Permit for works • Parking suspension (where relevant) • Mapping updated on local docking stations
Post-installation:	• CAT/LAT test completed • Health and safety documentation completed • Stage 3 Road Safety Audit is required as soon as possible once live, wherever possible within three months of becoming operational. Please refer to TfL SQA-0170

Additional information

Transport Trading Limited:

London Cycle Hire Scheme Agreement, 2009:

Schedule 2 – On-Street Infrastructure Statement of Requirements Lot 1

Schedule 37 – Docking Station Implementation and Traffic Management

11.7 Seat

Functionality, comfort and accessibility are key requirements of seating, but equally it provides the opportunity to delight users through creative designs and thoughtful placement. The material choice, composition and form offer a multitude of opportunities to select or design a seat that improves the user experience.

We are eager to raise the ambition of seating choice and placement within the streetscape. Functionality is no longer considered the only criteria to satisfy.

Seating can perform many functions within the streetscape besides providing a place for people to rest. Designers should consider how seating can: reflect the character of the space; create a sense of whimsy; provide social cues about the purpose of the space; reinforce the design intent; or encourage socialisation. Whatever the intention, seating provides one of the most effective ways to enhance or reflect the character of an area and add to the vibrancy of the space.

Figure 224: Seating at Holborn Circus with arm and back-rests

Placement considerations

Formal seating should be provided according to the following criteria:

- A clear space either side of the seating should be provided so that wheelchairs/scooters/ prams can be positioned alongside
- Adjacent to or visible from a pedestrian route
- Where pedestrian flows will not be impaired
- Where provided near walls, the seatbacks should be against a wall to reduce the likelihood of damage from skateboards
- In an open aspect that enables approaching pedestrians to be seen
- In areas of natural surveillance to minimise antisocial behaviour
- So as to avoid impeding access to buildings
- In public spaces that are attractive and in sunlit areas where possible, as these areas are more likely to be used
- Away from wind tunnels, for example between tall buildings, which could make use uncomfortable
- Where possible a continuous run of seats should be provided where high use is anticipated. However, seating should not be placed directly opposite to one another.

Seat placement standards	
Recommended set back from kerb for inward facing seat	1,000mm
Recommended set back from kerb for outward facing seat	2,000mm
Maximum recommended spacing interval for seating on high streets, city places and steep inclines	50 metres

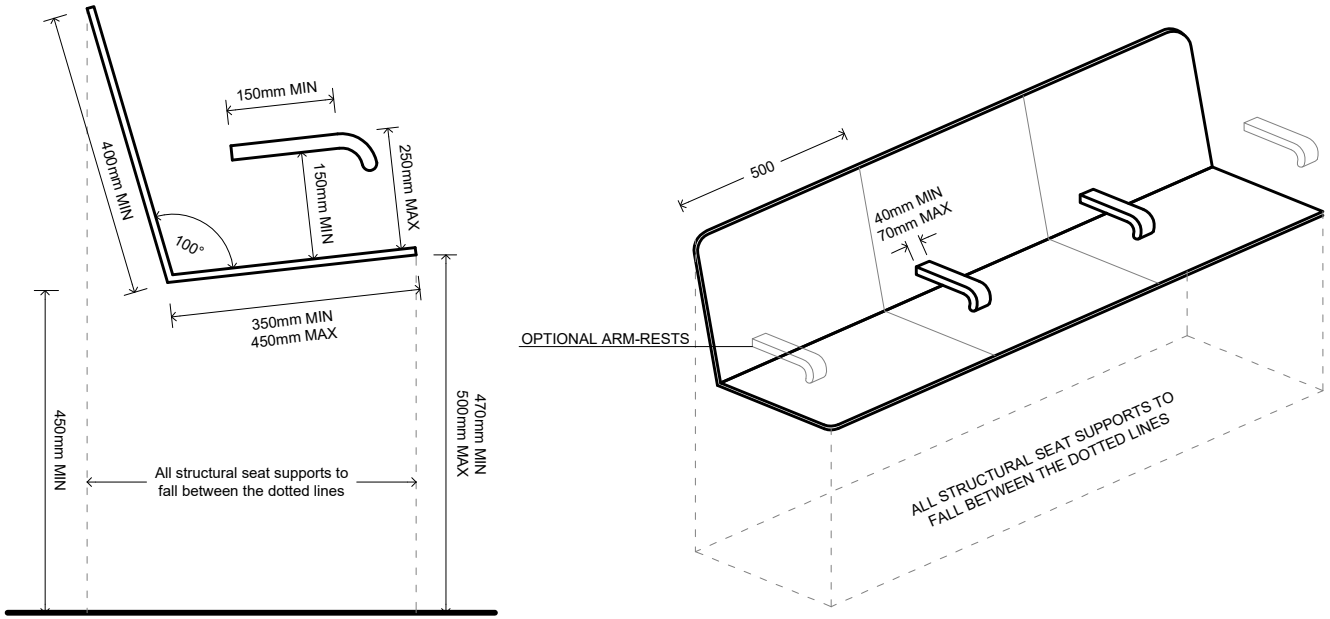
Product design standards

Seating should be selected which combines comfort, ease of maintenance, durability and resistance to vandalism.

Figure 225: A bench with arm and back-rests offers a range of options for users

The following design criteria should be used to assist in selecting an appropriate product:

Figure 226: Minimum bench requirements



Seat material standards	
Timber	Preferred material for where people may wish to sit for longer periods To be compliant with GLA's responsible procurement policy and accredited to Forest Stewardship Council (FSC) standards or equivalent Is preferred where the seat will be well maintained and vandalism is rare
Stainless steel	May be considered for areas where vandalism is anticipated Concealed ground fixings should be used
Natural stone	Non-standard. May be used as an alternative to security bollards, large natural stone blocks may be used upon approval by the SDRG

Authorisation

Seats may be provided by the local authority or adjacent landowner subject to the approval of the highway authority.

Wharf Green, Swindon, UK

Seats may be provided by the local authority or adjacent landowner subject to the approval of the highway authority. High quality Streetscape Guidance compliant bench planter

Key functions

Opportunity

This project took place in Wharf Green, central Swindon. Traditionally a commercial area, this was a catalyst project aimed at regenerating the local area and reinforcing a sense of place.

Benefits

Wharf Green has subsequently transformed into a popular space that hosts regular events.

Implementation

This seating planter was built from durable hardwood with stainless steel corner edge detailing and feature lighting. It was designed as an innovative piece of street furniture to enhance the newly created events space.

Image courtesy of Woodscape Ltd

Applying in London

Beautifully detailed and durable street furniture should be encouraged everywhere in London.

The High Line, New York, USA

A family of benches as a unifying element

Key functions

Opportunity

New York's High Line is a world-famous redevelopment of a disused heavy rail viaduct into a public park, with high quality materials throughout.

Benefits

The 'peel-up' bench is an integral repeating element in High Line Park. These benches create a 'family' of design elements which are used not just for seating but as play elements and picnic areas.

The family of benches acts as a unifying element that ties disparate spaces together and reflects the historic use of the High Line.

Implementation

A family of benches have been created through the use of a similar form and a consistent palette of materials, ie wood, stainless steel and natural stone.

Applying in London

Street furniture families should be used in London to enhance local character and to connect disparate spaces. The proposal for a family of benches should be reflective of the local character and identity.

Images courtesy of Aleksandra Grabowska

Additional information

Department for Transport:
Inclusive mobility – A guide to best practice on access to pedestrian and transport infrastructure, 2021

Greater London Authority:
The GLA Group Responsible Procurement Policy, 2008

11.8 Art

The use of public art on the TLRN may be considered for an area where a special or decorative design feature or landmark will help to define a particular place and enhance people's daily experiences. We will prioritise designs in which the promoter can demonstrate that the installation will make a positive impact on the quality and distinctiveness of the local setting.

Design considerations

Public art is often designed to provide a landmark which people can identify and use to navigate. Artwork may therefore be appropriate in areas which lack other recognisable features.

Public art should not be limited to single objects or expensive finishes. The best design response is often the most simple: a repeated single element across a wider area, or a well-conceived adjustment to the 'standard'.

Public art should be delivered in accordance with the Equality Act 2010 and should not pose a health and safety risk, restrict sightlines or pose a trip hazard.

Temporary art installations may be considered for certain situations, such as during the construction of wider street improvement works, or as part of a temporary wayfinding strategy and, in exceptional circumstances, to promote major events.

The maintenance and management of public art must always be taken into account as part of the design process.

All art installations (temporary or permanent) should be detectable at ground level by a symbol or a long cane. Any projections from art installations should not present a collision hazard to those using the footway.

Designers should aim to support local artistic talent. In some cases, it may be appropriate to involve the local community in judging a design

Figure 227: Playful artwork

Figure 228: A sculptured granite bench in Windrush Square

competition through the local authority's arts coordinator.

Public art does not necessarily need to be expensive or complex. A simple transformation of everyday objects can be just as effective.

Location

Design teams should ensure that the placement of the artwork complies with our Streetscape Guidance general location principles and that any structure does not overly impinge on footway space and impede pedestrian movement.

Public art may be considered across a wide range of settings including, but not restricted to: public areas where people gather, such as transport interchanges or public squares; highly visible traffic corridors and routes, for example on roundabouts; and distinct urban structures, such as bridges or subways.

Delivery

Planning consent may be required from the local planning authority. Design teams wishing to commission art for the TLRN should liaise with one or more of the following contacts:

The relevant local authority's arts coordinator.

Our Art on the Underground team – for projects relating to London Underground station forecourts.

Art in the Open – support organisation for additional public realm art commissioning guidance.

When working on the TLRN, design teams or external promoters of public art should forward their recommendations to the SDRG.

Figure 229: Winning sculpture: Goat atop packing crates in Spitalfields

Maintenance

Any proposed intervention should not require significant changes to the existing maintenance regime. The standard of maintenance depends on many factors including the location, condition and function of the area or feature.

Additional information

Greater London Authority:
All London Green Grid SPG, 2012
The London Plan, 2011

11.9 Bins

The regular and convenient provision of bins on footways provide an important contribution towards supporting a litter free environment, but can also impact on the general appearance and quality of the streetscape.

Limited provision of bins in litter hotspots, where people congregate or near tourist attractions, can help to manage the problem of litter, assuming bins have sufficient capacity and are regularly serviced.

Figure 230: Bins which combine functionality to separate several types of waste are encouraged

We acknowledge the distinct character of different areas on the road network and so a single style of bin cannot be used across all environments. Streetscape Guidance recommends a restricted range of styles which relate to the surrounding context and the anticipated level of use, while ensuring that efficient cleansing regime standards are maintainable.

There are three types of bins that typically occur on the road network: the litter bin, recycling bins and trade refuse bins. This section details the types of bins, their placement, appearance and coordination with the local authority who generally provides and maintains them.

Figure 231: Cigarette bins may be located on poles if approved by SDRG

Litter bins

Litter bins should have a simple aesthetic which is robust and functional. Conservation and special areas require heritage bin designs which better reflect the character of the area and should be finished in black.

Bins should be freestanding, however, wall-mounted bins may be considered in exceptional circumstances where there are footway constraints. Bins should be bolted down to discourage antisocial behaviour. The use of integrated cigarette disposal units may be considered.

The capacity of the bin needs to take account of the intensity of use to avoid contents spilling on to the surrounding footways.

Litter bins on the TLRN should be covered and have open-sided access, sufficiently wide for convenient disposal of litter. Bins should not have an open top, as they allow rainwater to collect and litter can blow away when full. Fully closing lid designs should also not be used as these can discourage use by being less sanitary and have additional maintenance issues.

Location

Bins should be placed according to the following standards:

- Litter bins should be placed a minimum of 450mm from the kerb edge and within the streets furniture zone (see pages 203-210)
- Bins should be positioned so as not to cause an obstruction on the footway
- Access to adjacent properties should not be constrained
- Visibility should not be obstructed
- Maintenance and access requirements should be considered

Ensure footway width is not reduced below 2,000mm.

Bin placement should be coordinated with other street furniture, such that bins may be positioned adjacent to seating. Bus Infrastructure should be consulted regarding any proposal for bins near to bus stops.

Bins may be attached but not mounted on to lamp columns as they are prone to leaking and can pose a hazard for white cane users who cannot detect them.

Materials

The colour and finish should be consistent with other street furniture on the TLRN; black as standard.

- Cast iron or plastic bins are the preference on the TLRN
- Stainless steel should be treated as an exception to the palette. Designers should note that stainless steel bins with solid sides can stain and deteriorate quickly and are prone to flyposting

- Timber may be used in exceptional circumstances, adjacent to parklands or in rural areas, but requires SDRG approval
- Plaques and ornate labelling are acceptable where approved by the borough
- Where graffiti and flyposting are a problem, a chemical-resistant low adhesion anti-graffiti finish should be applied to the surface of the unit
- Litter bins on the TLRN which provide advertising space require SDRG approval

Planning

The placement of litter bins needs to be carefully considered, so that any provision is aligned to demand where there is a proven issue of littering. This is especially relevant to surrounding land use; for example, shops such as takeaway restaurants will likely require additional litter bin facilities.

Local authorities have borough specific policies regarding the provision of bins and the standards that are acceptable within the borough. Bins on the TLRN should be provided which align with both the borough standard and Streetscape Guidance. Design teams need to liaise with the relevant local authority to ensure that the design of the bin allows the local authority to carry out standard cleansing regimes.

Security

In high security areas, the use of blast-resistant litter bins with concealed ground fixings will be required. Advice should be sought from our transport community safety managers within the Enforcement and On-Street Operations team.

Trials

Where routine monitoring of the TLRN identifies a lower level of cleansing standards than normal, the introduction of litter bins may be considered as part of a trial.

During the trial period the condition of each bin and the remaining capacity should be noted regularly to establish how the bin is being used and whether permanent provision would make a long-term contribution towards enhancing the quality of the streetscape.

Additional information

British Standards:
Publicly Available Specifications (PAS) 68 and 69, 2005

Figure 232: A combined rubbish and recycling bin uses bold colour to emphasise proper use

Recycling bins

Recycling bins are provided to encourage Londoners to recycle waste. Recycling bins can be combined with litter bins. However, when recycling bins are not combined, the design of the bins should be similar yet distinctive enough to differentiate its purpose from other litter bins.

Recycling bins do not offer disposal facilities for commercial or retail establishments. The provision and management of recycling bins is the responsibility of the local authority, and governed by local policy. The demand for recycling bins is likely to increase in line with sustainability policies, the United Nations' Agenda 21 and growing public awareness.

Location

Recycling bins should be located to provide convenient, safe access for residents, as well as adequate space for collection and emptying. Representatives from the local authority and TfL must agree a suitable location.

Recycling bins should not be installed where the footway width would be reduced to less than 2000mm. Bins should conform to Streetscape Guidance's furniture zones and not be placed in special areas or where they detract from listed buildings or heritage features.

Care is required to ensure that traffic flows are not impeded by collection vehicles. Access to adjoining properties should be maintained.

Where collection vehicles are anticipated on the footway, the structural strength of the surface materials must be reinforced to avoid damage.

Best practice

The functional design of each bin is generally related to the type of material being recycled.

Recycling bins should be robust, fire-resistant and contain explanatory graphics where required. Bins should be leak-proof to avoid the staining of surface materials. Recycling bins should be secure to deter antisocial behaviour.

Smart recycling bin London, UK

Recycling bins with liquid crystal display (LCD) screens for information, advertising and data collection

Key functions

Opportunity

Recycling bins are an essential item of street furniture; however, they are inherently large and can be obstructive. The smart bin uses its bulk to provide useful information via a large screen.

Benefits

This design was an attempt to get more out of the infrastructure of street furniture. The recycling bin also doubles up as a public billboard displaying everything from the weather and news to transport information, adverts and stock prices.

Implementation

A trial of eight bins have been placed in the City of London.

Image courtesy of Control Group

Applying in London

Street furniture that provides enhanced functionality to customers is encouraged.

Trade refuse containers

Trade refuse containers are high capacity bins which ensure the safe storage of large quantities of waste from commercial properties. They are required by a wide range of commercial properties and so should be carefully arranged and managed to minimise their visual impact. Bins should preferably be located away from the TLRN, in servicing alleys and back streets.

The provision and management of trade refuse bins is the responsibility of the local authority and/or private contractors.

Location

Where unavoidable and upon agreement with ourselves, trade refuse bins may be located on the TLRN, assuming safe access can be ensured. They should be positioned where parking for collection and delivery vehicles can be provided and traffic flows are not impeded. The following criteria must be met:

Figure 233: Trade refuse bins can be detrimental to the character of the streetscape and should be kept out of sight where possible

(Image courtesy of STE Waste)

- They should only be placed on footways if the footway clear zone is to remain 2000mm or more
- Visibility sightlines must be maintained
- Metal refuse corrals may be used where a number of moveable bins are located together and need to be aligned and contained for safety and aesthetic reasons
- Bins should be located where access to adjacent properties will not be hindered
- Where collection vehicles are anticipated on the footway, the structural strength of the surface materials must be reinforced to avoid damage

Product specifications:

Trade refuse bins should be robust and fire-resistant, and contain explanatory graphics where required. Integrated discreet graphics are preferred to stick-on labels which tend to peel off.

Bins should have wheels to manoeuvre to collection vehicles and incorporate a facility to allow them to be lifted using modern lifting equipment. Bins should be of a uniform style and colour where possible and coordinated with other street furniture.

Consideration should be given to the use of higher quality bins or screening when located in or near special or historic areas.

In high security areas, the use of lockable or sealed bins will be required. Advice should be sought from our transport community safety managers within the Enforcement and On-Street Operations team.

Implementation and maintenance

A licence from the local authority may be required before installation. Installation is the responsibility of the local authority or a private contractor. Regular collection and maintenance is required to ensure that overflow waste does not pile up next to the refuse container.

Subterranean bins London, UK

Large underground containers to store household waste

Key functions

Opportunity

This system is designed to meet the waste disposal needs of a highly populated city in an efficient manner.

Benefits

By placing a street's rubbish in a large bin, refuse agencies need to make far fewer trips. Sensors in the bin alert the waste company when the bin is getting full. Rubbish collectors can plan the most efficient way of collecting; minimising the use of dustcarts, noise pollution and traffic build-up from the process. Placing the bins underground removes them from the streetscape where they are an eyesore and take up room in the public realm.

Image courtesy of Justine Ancheta

Implementation

The containers take up minimal space on the surface level and store waste in a large container below ground. The system uses WiFi and radio frequencies to transmit information on the waste levels from the sensor.

Applying in London

These are already being used in the London Borough of Lambeth.

11.10 Letter and pouch boxes

Letter boxes

Post letter boxes are a distinct and recognisable feature within the streetscape which perform a daily operational use as well as being an iconic piece of street furniture.

There are several forms of letter box including the pillar box, wall box and small lamp-post boxes.

Pouch boxes

Pouch boxes are used to store mail for onward delivery and are not accessible to the general public. The standard pole mounted design is functional but unsightly and creates significant additional street clutter.

When streetscape improvement projects are being undertaken, the Royal Mail should be contacted with a view to removing any linked post pouches within the scheme.

Design

- Typically 400mm deep and 450mm wide, pouch boxes are usually pole mounted
- Wall-mounted letter boxes reduce street clutter and are the preference where practicable
- Pillar boxes have greatest capacity and have preference over multiple smaller lamp boxes

- All Royal Mail boxes will be painted in standard red and black livery

Location

- Letter boxes should not be installed where the footway clear zone will be less than 2,000mm wide
- They should preferably be placed within the furniture zone and should not obstruct sightlines to crossing facilities
- Post boxes should be placed on a hard surface to allow for easy emptying

Responsibility

Post and pouch boxes are the responsibility of the Royal Mail.

Authorisation

Royal Mail has a statutory right to place and retain letter boxes in the street under paragraph 1, Schedule 6 of the Postal Services Act 2000. Ownership remains with Royal Mail. Although consent is not required, Royal Mail will liaise with the highway authority to obtain agreement for the location and placement.

Planning consent is not normally required for a post box or self-service stamp machine. Listed building consent is required where there are proposals to alter or remove a listed post box, or those set in or adjacent to a listed building. Refer to Planning (Listed Buildings and Conservation Areas) Act 1990.

Additional information

Legislation:

Postal Services Act 2000 c.26, Schedule 6 – Power to place post-boxes etc in streets, section 1. http://www.legislation.gov.uk/ukpga/2000/26/schedule/6/paragraph/1

English Heritage:

Royal Mail Letter Boxes: A Joint Policy Statement by Royal Mail and English Heritage, October 2002.

Figure 234: Post boxes should be located in the furniture zone

11.11 Telephone boxes

Telephone boxes are a common and recognisable feature across the London streetscape, with several distinct modern and traditional styles in operation.

Relocation or removal

Where more telephone boxes exist than deemed necessary, or where a unit or units adversely impact on the quality and functionality of the streetscape, the highway authority should work with the operator to reach an agreement to relocate or remove the structure, while retaining adequate service coverage.

The highway authority may remove a telephone box when it has been disconnected from the network. This means that the operator is

Figure 235: A historical telephone box in Westminster

no longer satisfying the requirements of the electronic communication code and the unit can be construed as an obstruction.

Application for new boxes

The impact of any new telephone box on the coherence and quality of the streetscape should be considered. Locations need to be assessed on their own merits, with due consideration for available footway widths, the impact on pedestrian and cycle desire and sightlines, existing footway demand from surrounding activities and buildings, availability of ATMs, and an analysis of local antisocial behavioural issues.

Telecommunication companies should provide details on location and placement so that we can make a robust and informed decision on the application. Under the Highways Act 1980, any shopfront affected by the unit should be consulted and their views taken into consideration.

Location

- Telephone boxes should not be installed where the footway clear zone is less than 2,000mm wide
- They should not be installed if doing so would create an obstruction which could pose a safety hazard ie at the front of a kerb in close proximity to a junction or side road
- They should be located away from loading bays, service access points and crossovers The doors should not open into the path of pedestrians
- The box should be no less than 450mm from the kerb face
- Boxes should be positioned to ensure that there is sufficient space to allow mechanised cleaning

Products

Telecommunication operators may use their own telephone box style and branding where deemed appropriate, but should be encouraged by the highway authority to coordinate the colour and placement of the box with other street furniture in the local area. The most common units in operation include:

K2 and K6

Traditional red telephone boxes are retained in many central and conservation areas of London. A large proportion of these are heritage-listed structures. They are no longer in production but can be moved to locations to replace other models as they are preferred by TfL to the KX or ST6 series in central areas.

Figure 236: A traditional telephone box, many of which are heritage-listed

KX series

The KX series was rolled out across London in the 1980s and 1990s. A small proportion of these have listed status. They allow for advertisements and are designed to be easier to maintain and better protect against vandalism than older structures. Multiple units may be considered for replacement with an ST6 in specific approved locations.

Figure 237: An example of a KX series telephone box

ST6

New open-sided units, such as the ST6, are now in use and include a 1.36-metre wide illuminated advert on one side. ST6 units should be fitted so that the advertisement faces the flow of traffic. The width of the unit can significantly impinge on footway space and so should not be fitted on streets where footway unobstructed widths would be reduced to below 2,000mm. A footway width of minimum 4,200mm is required but designers should also consider pedestrian flows to determine appropriate placement. They are not appropriate for conservation areas and require planning consent for illuminated advertisements.

Figure 238: An example of an ST6 telephone box

Advertisements

Class 16 of Schedule 3 of the Town and Country Planning (Control of Advertisements) (England) Regulations 2007 [as amended by the Town and Country Planning (Control of Advertisements) (England) (Amendment) Regulations 2011] gives deemed advertisement consent for an advertisement displayed on the glazed surface of a call box, other than a kiosk of type K2 or K6.

The following types of display of advertisements did not receive deemed consent:

- Illuminated advertisements
- Advertisements in conservation areas or where special advertisement controls are enforced
- Advertisements placed on more than one face of a single telephone box (other than the operator branding)
- Where three units or more are located next to each other, advertisements can only be provided on a maximum of two faces

Responsibility

Telephone boxes are the responsibility of the telecommunication operators. Service providers have a duty to provide an appropriate number of working phone boxes where most needed, under the Universal Service Obligation (USO). The Electronic Communications Code (Schedule 2 of the Telecommunications Act 1984) gives operator companies the power to install and retain electronic communications equipment on the public highway. They should be adequately maintained by the operator to ensure good working order and cleanliness.

Authorisation

Telecommunication operators have to seek approval from the relevant local planning authority to determine whether prior approval is required for the siting and appearance of a new unit.

Telecommunication operators with a licence under Section 7 of the Telecommunications Act 1984 may install public call boxes on the public highway.

The Highways Act 1980 provides that the local highway authority has to give consent for objects on the highway.

Listed building consent is required where there are proposals to alter or remove a listed telephone box, or those set in or adjacent to a listed building. Refer to Planning (Listed Buildings and Conservation Areas) Act 1990.

LinkNYC internet pylons New York City, USA

Replacement of payphones with internet pylons

Key functions

Opportunity

With an ever increasing use of smartphones and reliance on the internet, free public WiFi is an increasing priority in New York.

Benefits

The LinkNYC programme aims to replace old payphones with a free public WiFi infrastructure, available across New York. The kiosks will also have a touchscreen interface where members of the public can research locations and public amenities and it will provide capacity for advertisements.

Implementation

As LinkNYC is scheduled to be built during 2015 the results of its success are not yet determined.

Image courtesy of Control Group

Applying in London

These internet pylons would be appropriate for areas in London which are popular tourist destinations and in busy office and retail areas.

11.12 Pedestrian wayfinding

Vision and purpose

Walking is a great way of getting around London; it is free, healthy, environmentally friendly, and often the quickest option. Yet many people are put off by inconsistent signage and confusion about distances between areas.

We have developed 'Legible London' to tackle these issues and help residents and visitors walk to their destination quickly and easily. This award-winning map-based system is integrated with other transport modes so when people leave the Underground, for example, they can quickly identify the route to their destination.

Location

Design teams should provide wayfinding guidance to aid navigation and encourage people to walk rather than seek out public transport, while aiming to minimise the total number of pedestrian signs used to reduce additional street clutter.

Signs should be located where users start their journey as a pedestrian, at key decision points and landmark destinations.

Signage should be located to minimise physical intrusion within the streetscape, but should be sufficiently visible so as to serve its intended purpose.

Figure 239: Pedestrian wayfinding systems such as Legible London offer a consistent and recognisable system of maps across our city

Where pedestrian routes cross the TLRN and are signposted using local authority signs, the signage strategy may be continued on the TLRN subject to compliance with TSRGD.

Wayfinding signs do not need to be illuminated by internal or external lighting, or retroreflective materials.

Legible London

Since its introduction in 2007, the Legible London signage system has become the TLRN standard for pedestrian directional signage.

The system provides a consistent and connected approach to the design and layout of pedestrian wayfinding across London.

Scheme designers should follow a systematic approach to locating Legible London signs in the urban realm by drafting a placement strategy based on the Legible London Design Standards (2010).

Figure 240: Legible London temporary foundation cover plate

A range of approved signage products are available including free-standing map-based totems and fingerposts. Selecting an appropriate product from the family of wayfinding signs available will depend on the scheme objectives and footway space available.

On-street 'liths' include finder maps (a five-minute walk) and planner maps (a 15-minute walk) taken from the Legible London basemap, complete with 3D buildings, walking circle, 'you are here' marker and off-map tabs along with a panel for directional information.

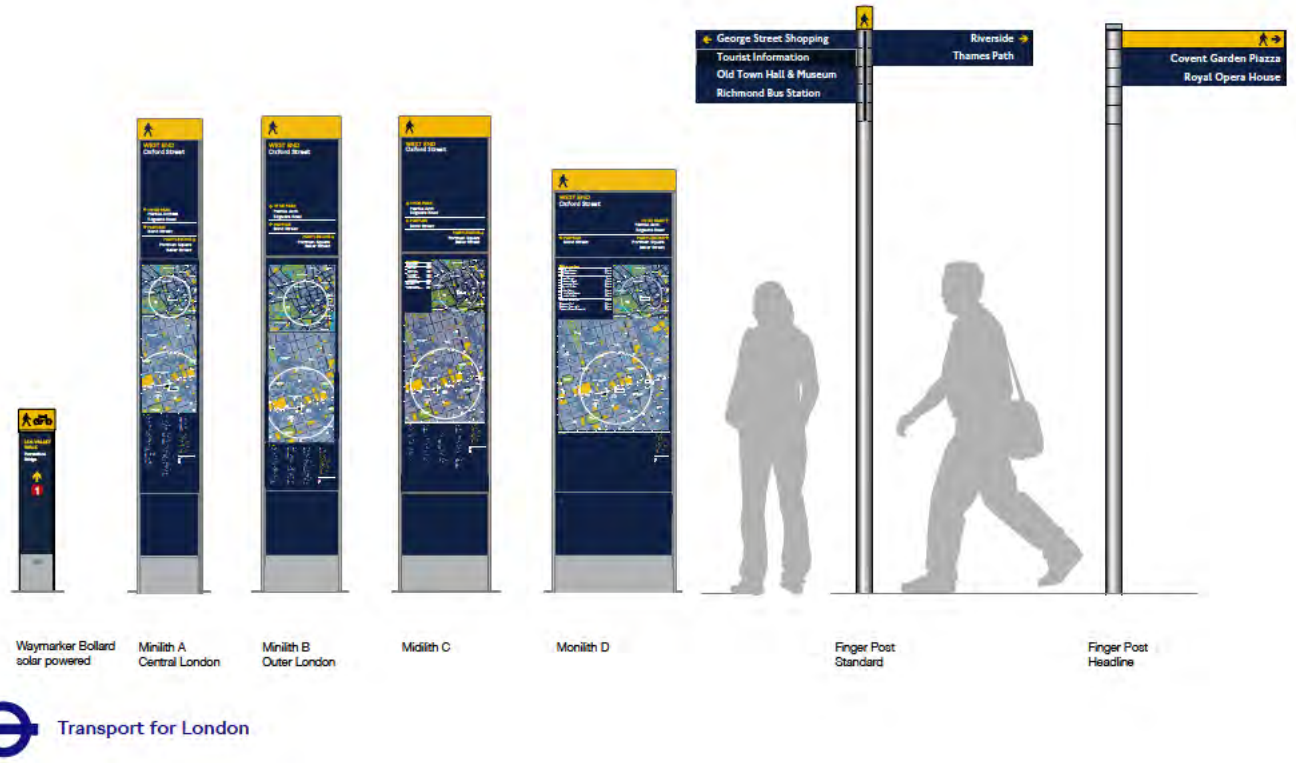
'Liths' should typically be located within the furniture zone, with the map face oriented down the street. Placement should be a minimum 450mm from the kerb edge, and increased to 800mm on flush surfaces or where road speeds are 40mph or greater. Designers should avoid locating signage where vehicle overrun is likely, such as near inset loading bays or on tight street corners.

Sufficient space should be provided on both sides of the sign for pedestrians to view the 'lith' from either side. 'Liths' should not be placed facing a wall, and this placement will only be approved in exceptional circumstances.

A temporary on-street cover should be provided once the placement has been agreed and the foundation has been installed. Heads-up mapping artwork can then be produced from this location and the sign installed once manufactured.

Figure 241: Legible London's wayfinding 'liths'/map-based totems product range

Legible London Product Range



Fingerposts

Fingerpost signs may be used in particularly complex urban environments at junctions, or as a simple route confirmation sign. However, map-based Legible London products are to be prioritised over fingerposts. Fingerslats can be installed on existing lamp columns where possible, or at low level on pedestrian guardrails.

Designers should ensure that the sign allows for a minimum clearance of 450mm away from the kerb edge for any part of the sign, including the fingers. This can mean that the pole for the sign needs to be mounted more than 1,000mm from the kerb edge, which will not be appropriate in many situations.

Figure 242: Legible London's finger post

The use of fingerposts is limited to areas with a sufficiently wide footway such that the post does not impede the footway clear zone or the sign overhang the carriageway.

Blue TSRGD approved fingerposts exist on parts of the TLRN and should be maintained until replacement is required. When replacement is required, Legible London branded signage should be used to maintain consistency across the TLRN, unless it forms part of a wider borough route signage strategy.

Information signage:

- Any third party information signage proposed for the TLRN which does not follow the Legible London template, requires Legible London programme team consent
- Non-standard products may be considered in exceptional locations for heritage areas, landmark sites, or to fit with adjoining signage strategies
- All information boards must be in accordance with TSRGD, Schedule 4

Authorisation

Only TfL has the authority to erect pedestrian signs on the TLRN. Permission should be sought from the property owner for erecting signs on to building frontages.

The safe operation of wayfinding signs should be assessed via the Road Safety Audit process to ensure the installation does not hinder visibility and sightlines.

Additional information

Legislation:

Traffic Signs Regulations and General Directions (TSRGD)

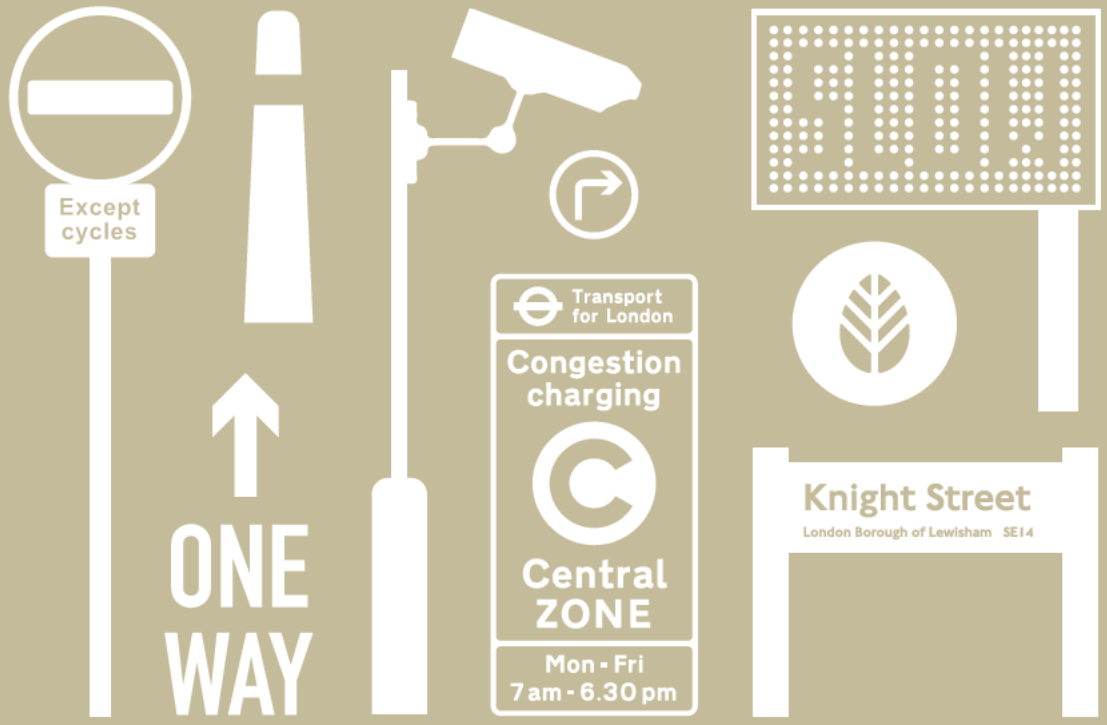
Transport for London:

Legible London Design Standards, 2010

Legible London: https://tfl.gov.uk/info-for/boroughs/legible-london

Part E Safety and functionality

12.1 Traffic signs 249
12.2 Bollards and low level traffic signs .. 253
12.3 Street name plates 258
12.4 Barrier free footways 260
12.5 Barriers 261
12.6 Utility cabinets 262
12.7 Feeder pillars 263
12.8 Variable message signs 265
12.9 Environmental monitoring equipment 268
12.10 Roadside cameras and CCTV 269
12.11 Planned events infrastructure 273



12.1. Traffic signs

Ensuring the safe and reliable operation of London's road network for all users while reducing congestion and clutter is our prime focus. The quality and consistency of traffic sign design and their placement is vitally important for communicating a clear message to all road users, providing reliable directional information, traffic regulations and the warning of hazards.

Traffic signs referred to in this section have a fixed legend (directional and informatory signs) and/or a fixed symbol (warning and regulatory signs).

Technically, traffic signals and road markings can be described as traffic signs but are detailed separately:

- Road markings
- Traffic signals and control boxes
- Variable message signs
- Pedestrian wayfinding

Figure 243: The quality and consistency of traffic signage is imperative to communicating effectively to all users

Key streetscape aims

Design teams should aspire to implement a traffic sign system that embraces the significant innovations in traffic engineering and policy. Therefore all unnecessary signage should be removed from the network, especially where identified as a roadside distraction or visibility hazard. This will ensure that the road network is better managed and will enhance the quality of the streetscape.

The purpose of signage is to provide clarity for the user, it should have a clear purpose and convey necessary information.

Signage strategy

Signage is one of the main causes of clutter on our footways and where possible should be reduced. A well-designed strategy can be created by:

- Regularly conducting traffic sign audits to review the effectiveness of existing signage and identify signs that are obsolete or unnecessary. TSRGD should also be considered within the auditing process. For example, the ability to reduce the provision of regulatory signage required in certain situations. Where road widths are less than 5000mm, a single regulatory sign is now recommended, rather than providing a sign on both sides of the carriageway (note this does not apply to speed limit signs)
- Warning signs should only be provided where there is a specific safety issue or hazard
- In general we have a presumption against the provision of place name signs. However, should a convincing case be made for the need for a place name sign they should be simple and discreet. It is important to retain national consistency while developing bespoke solutions for local issues, such as place specific signs

In addition, signs can be combined with other street furniture, signals or mounted on buildings which can reduce clutter on the footway. However expert engineering advice should be sought as not all columns/structures are suitable for mounting signage on. The TSRGD and Traffic Signs Manual provide standards and guidance on what signs can be combined.

Post mounted signs

Design teams should minimise the number of posts used for each sign.

- Round posts are preferred with designers encouraged to use simple but robust support structures for the sign face
- Larger posts should be fixed within the footway using a bracket, while smaller posts should be installed with minimal infill between the post and the footway surface material
- Cantilevered signs from a single post can be used to maximise unobstructed footway widths. When cantilevering, the post should be located at the front, rather than the back of the footway with the sign towards the footway.
- Single posts are usually of greater diameter to ensure sufficient strength to accommodate additional wind loading

Alternative fixtures

To reduce the number of posts which contribute to street clutter, the design team should explore opportunities for mounting traffic signs on other highway furniture, structures or building frontages. Where traffic signs are not erected on dedicated posts, the adequacy and suitability of support must be checked.

Lighting columns and signal mounting

- Expert engineering advice should always be sought for any large sign, 600 square millimetres or above, that is proposed for attachment to a lighting column
- Smaller diameter 'no entry', 'no left' or 'right turn' and some other restrictive signs are allowed to be mounted on traffic signal heads
- Where practicable, smaller traffic signs (up to 0.3 square metres) should be mounted on lighting columns

Figure 244: Post mounted loading restriction signage

Figure 245: Signage and bus flag mounted onto existing street furniture

Figure 246: Signage mounted onto building facade