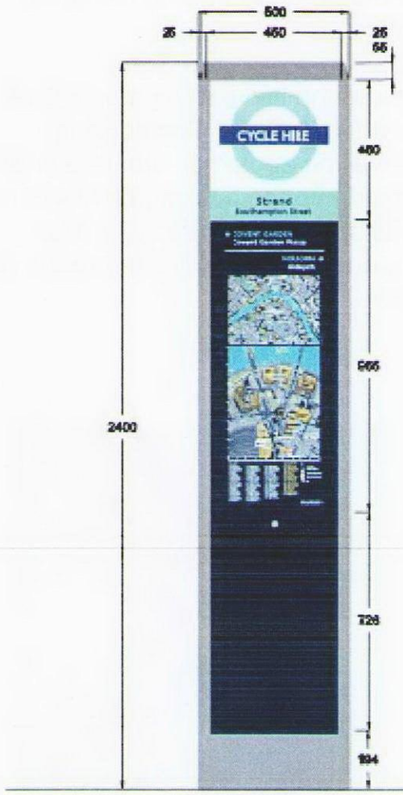
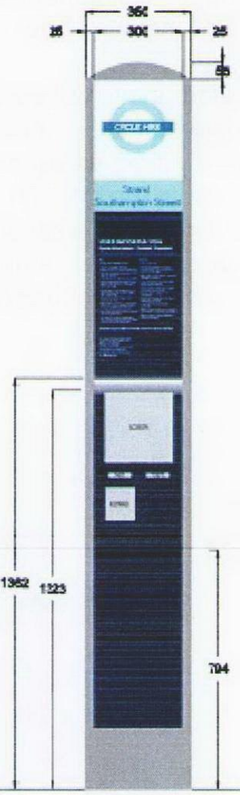
FACES A and C

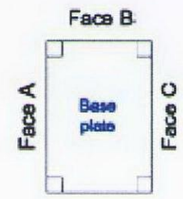


FACE B



FACE D1

FACE D2



Variant of Traffic Signs Regulations and General Directions 2002 Diag. 660 as approved by Department for Transport (DfT).

MATERIALS:

Housing, panels and doors:
Gravity cast aluminium, powder coated with graffiti resistant coating

Mapping, information and roundel panels:
Toughened glass

Top Cap:
Thermoplastic moulding

COLOUR REFERENCES:

Roundel and stop name panel:
NCS S 1040-B80G
(Pantone 338 turquoise)

Roundel bar and stop name:
NCS S 4060-R80B
(Pantone 072 blue)

Terminal body :
NCS S 8010- R90B
(Pantone 296C dark Blue)

Roundel panel background:
NCS S 0500-N (white)

Terminal Trim and Cap/Top:
Silver Grey RAL 9007

NOTE:
For larger or busier docking stations, Faces A & C (Mapping) and Faces B & D2 (registration/payment functionality).

For smaller, less busy docking stations, faces A & C (Mapping), Face B (registrations/payment functionality), Face D1, additional information.

Figure 1.6: Terminal Design

The terminal colour palette comprises:

- body - dark blue (Pantone 296c);
- base, trim and cap – silver grey (RAL 9007);
- roundel circle - turquoise (Pantone 338); and
- roundel bar - blue (Pantone 072);

The terminal will be constructed from the following materials:

- housing and main panels – cast aluminium with powder coat finish and a clear graffiti resistant coating;
- top cap – Thermoplastic; and
- information panels - toughened glass.

The TfL roundel will not be illuminated at any time. The screen, way-finding maps and information panel will only be illuminated on demand when a person is using the terminal during poor light conditions for registration, payment and/or way-finding.

The top of the terminal will be curved to mitigate the collection of litter. There is potential for the top of the terminal to incorporate a solar panel. However, existing solar technology would not supply sufficient power to operate the docking station and therefore, panels have not been included in the current design.

The footprint of the terminal and associated circulation area will generally be a minimum of 2.0 metres by 2.0 metres, allowing ample space for people to use the terminal without causing obstruction to pedestrians or a need to step out near to oncoming traffic. The exact location of the terminal within the circulation area is dependent on site characteristics, access to the required connection to electricity and the need to retain clear pedestrian paths.

The Docking Points

The docking points (Figures 1.7 and 1.8) for the docking of Scheme bicycles, will be contained within a defined area (or areas) adjacent to the terminal. The dimensions of the docking point area(s) will vary between docking stations depending on the number of bicycle docking points, the way in which they are laid out and the site constraints and characteristics.

The docking points will each secure one bicycle and be laid out to provide 0.75 metres between the centre point of the bicycles once docked. The docking points area will be designed so that the bicycles will be angled at either 45 or 90 degrees within the site. The bicycle will be wheeled into the docking point where it will slot firmly into a secure locking cassette (as shown in Figure 1.7). The locking cassette of each docking point will incorporate a Cycle Hire key reader to allow quick release of bicycles for registered users.

Figure 1.7: Prototype docking point with bicycle

The docking points will each have a maximum height of 0.792 metres and maximum dimensions of 0.3 x 0.3 metres (Figure 1.8). The tops of the docking points will be sloped to avoid litter accumulation and allow rain water to drain.

The docking points will mirror the terminal in colour. They will be predominantly dark blue with silver inner panels, locking cassette and base as outlined below:

- body – dark blue (Pantone 296c);
- Inner panels and base – silver grey (RAL 9007);
- roundel – light green/ turquoise (Pantone 338); and
- locking cassette – silver grey (RAL 9007).

The docking points will be constructed from cast aluminium with a powder coated finish and a clear graffiti resistant coating.

The docking points will each be secured to a square foundation box (Figures 1.9 and 1.10)

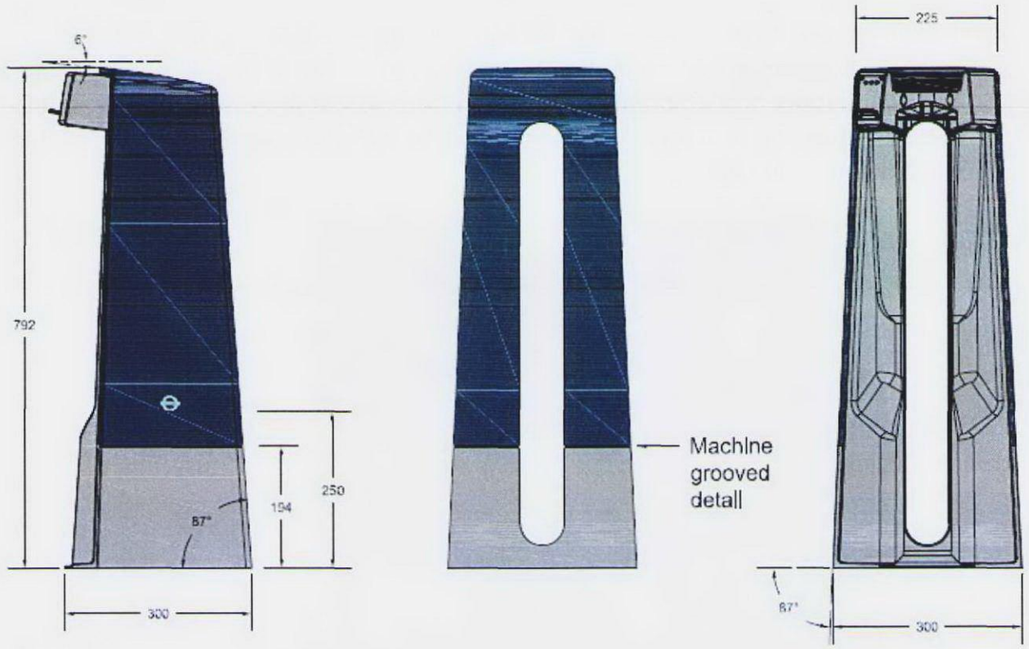


Figure 1.8: Docking Point

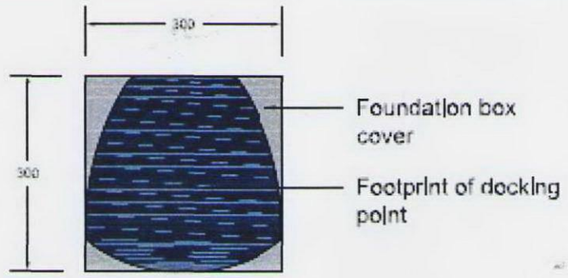


Figure 1.9: Footprint of docking point at base

Regardless of the layout and position of the docking station, the docking point foundations will not exceed a depth of 0.45 metres from the surface and a width of 0.7 metres. Figure 1.10 shows a cross section of the docking point foundations for a footway site. The foundation design is the same as for the terminal, except that it is constructed as a trench for the row of docking points.

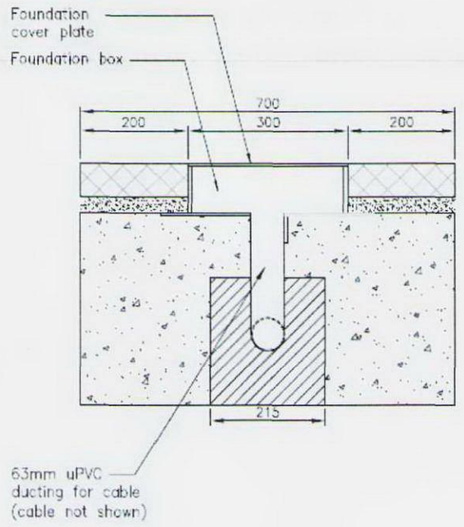


Figure 1.10: Cross-section of docking point foundations for a footway site

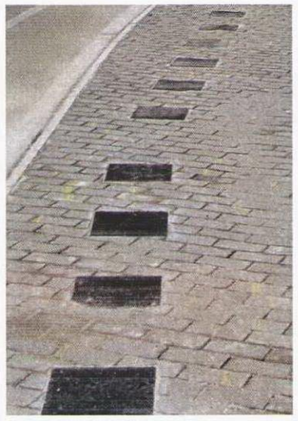


Figure 1.11: Examples of completed foundations

The cover of the foundation box will be finished to a high standard with a non-slip surface, as shown in the examples in Figure 1.11.

Once the street furniture is installed, only the corners of the foundation box cover will be visible around the edges of the docking points. The foundations for the terminal will be completely concealed.

1.5 Implementation

In addition to planning permission, other consents and orders, including a Traffic Regulation Order, will be sought for all docking stations.

All preparatory works, including the installation of ducting to provide power and communications, will be undertaken prior to the installation of the docking station. Where the site is not located on part of the TfL road network, these works will be undertaken with the agreement of the relevant borough or other land owner.

Construction will normally take place over approximately 5 working days, although normally a 10 day New Roads and Streetworks Act permit is sought to allow for site set-up and appropriate reinstatement.

The foundation depth for the terminal and docking point structures will be a maximum of 0.45 metres (including surfacing), which will limit the duration of excavation activities and minimising potential impacts to archaeology and tree roots.

The street furniture (terminal and docking points) will be installed and the equipment tested shortly before scheme launch. This will involve connecting the electrical cables and bolting the street furniture to the foundations. These are relatively quiet operations which are anticipated to normally take no more than one day for each site.

Figure 1.12: Docking station foundations under construction

1.6 Operation

The docking station will be available for use 24 hours a day, seven days a week, with the main periods of use expected to be during daylight hours and early evening.

The majority of patrons using the docking station are expected to be members who would not need to be at the station for long as they will simply insert their key into a docking point to release a bicycle (Figure 1.13), rather than interacting with the terminal. Casual users will register at the terminal and receive a cycle release code which they will enter using the touch sensitive numbered pad located above the key slot. The noise level associated with using the terminal would be comparable to bus patrons using a ticket machine located at a bus stop, or to people viewing Legible London way-finding maps.

Figure 1.13: Use of the London Cycle Hire Scheme key to release a bicycle

The locking mechanism used to secure bicycles to the docking point utilises innovative technology developed for the Public Bike System in Montreal. The design has been carefully optimised to ensure that the risk of bicycles being stolen is minimised. The docking point has been designed to guide the user to wheel the bicycle into the correct position to engage the locking mechanism first time.

The locking mechanism is contained within the docking point and the progress of locking and unlocking of bicycles is indicated by discrete lights on the locking cassette (Figure 1.12) There are no beeps or buzzers and the release and re-docking of the bicycles is expected to occur without any discernable noise.

These design features all provide a streamlined system of releasing and locking bicycles that is easy, efficient, quick and quiet.

Contractual arrangements between TfL and the Scheme Operator regarding maintenance, repair and replacement will ensure the appearance of the docking station meets appropriate standards. A key objective has been to minimise the physical depreciation of the street furniture through design by, for instance, the use of curved edges on equipment and the selection of robust materials and finishes that are easy to maintain.

Each docking station will be inspected by maintenance staff a minimum of every 14 days to ensure all equipment is fully functional and a high standard of station cleanliness is maintained. Any damage identified during this visit will be repaired on site where possible or reported for follow-up action. In general this inspection will occur during daytime hours when visibility is best and by a single member of staff on a bicycle. The noise generated by these activities is not anticipated to cause any disturbance and each inspection visit is expected to take around 15 minutes, depending on station size.

In addition, docking stations will also be visited when faults or damage is reported by users or following an inspection. Generally the visit will be by a single staff member on a bicycle who will assess the fault and if possible resolve it on site. If this is not possible, an operational vehicle will be directed to the station to collect and remove the equipment to the maintenance depot for repair.

All graffiti and vandalism will be removed / repaired by the Scheme Operator within 24 hours of it being reported. The Scheme Operator will maintain painted or treated surfaces, repairing or re-applying treatments as required so as to retain the original finish and quality of the docking station equipment.

The success of the Scheme relies on the appropriate distribution of Scheme bicycles across the network and availability of vacant docking points at the end of each hire. The Scheme network has therefore been designed to maximise the natural redistribution of bicycles. However, in the event that redistribution is required, specifically designed vehicles will be used, the majority being electric to minimise any noise nuisance. Two staff members will load or unload Scheme bicycles and the operation is expected to take no more than a couple of minutes.

Once operational, the network will be monitored and fine-tuned (where required) to minimise the need for redistribution of bicycles by the Scheme Operator.

2. DESIGN STATEMENT

DESIGN PRINCIPLES

2.1 Overview

This section demonstrates how the design of the docking station has evolved and explains how the Scheme will discourage crime and support sustainability.

TfL has looked at operational cycle hire schemes in cities around the world (Figures 2.1-2.4), in particular the Paris (Vélib') and Barcelona (Bicing) schemes. Both of these schemes are broadly comparable to the proposed London Cycle Hire Scheme. The successes and shortcomings of these schemes have informed the design of the London Scheme.

TfL has carried out the design development in partnership with the host boroughs, the Royal Parks and other key stakeholders. This included working closely with English Heritage, Design for London and access and inclusivity groups to produce a design that is appropriate for London. The final design, materials , finishes and livery have been developed in close consultation with Transport for London's design standards team, who have extensive experience in the development and maintenance of street furniture in the London street context.

The result is a high quality design, detailing and finish that will be robust and sustainable. It will also complement and enhance the public realm in Central London. TfL is confident that the resulting design is also the most appropriate in terms of meeting the requirements of users and stakeholders.

A high quality contemporary design has been achieved that will be equally appropriate in either a traditional or modern townscape setting. The design solution is practicable, achievable and functional in the context of central London.

Figure 2.1: Montreal Cycle Hire Scheme

Figure 2.2: Lyon Cycle Hire Scheme

Figure 2.3: Stuttgart Cycle Hire Scheme

Figure 2.4: Nantes Cycle Hire Scheme

2.2 Case Studies

This section looks at the operational bicycle hire schemes in Paris and Barcelona and discusses how these schemes have influenced the London Scheme.

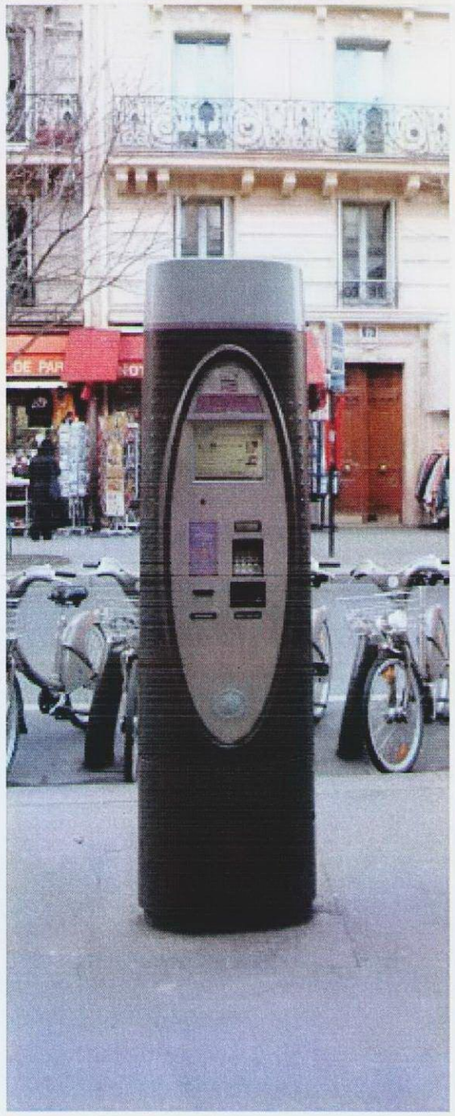


Figure 2.5: Vélib' Terminal

Vélib': Paris, France

In 2007 Paris implemented a self-service bicycle system (Vélib') to promote sustainable travel and improve mobility and the quality of life in the city. After 18 months of operation, the scheme recorded 80,000 to 100,000 users every day, 41 million users (in total) and 238,000 long term subscribers.

The main characteristics of the Paris scheme are as follows (Figures 2.5-2.7):

- **The terminal** is oval in plan with one main functional panel, dimensions of 2.1 metres (height) by 0.5 metres (width), payment point, Vélib' top-up card point and mapping;
- **The docking points** are for a single bike and are approximately 0.8 metres in height;
- **Bicycle release** from the docking points for subscribers is controlled by a swipe card system at either the terminal or a docking point;
- **Advertisement panels** are located in the vicinity of the site as the scheme is funded in part by advertisements;
- **The colour scheme** comprises grey terminal, docking points and scheme bicycles; and
- **The docking stations** are located on streets, pavements, parks and public squares.

Figure 2.6: Vélib' Bicycle Docking Points

Figure 2.7: Vélib' Advertising Panels

Bicing: Barcelona, Spain

The Barcelona scheme (Bicing) was implemented in 2007 and comprises 200 docking stations with 3,000 bicycles located approximately every 300 to 400 metres.

Figure 2.8: Bicing Terminal

The main characteristics of the scheme are as follows (Figures 2.8-2.10):

- **The terminal** comprises a flat rectangular column that is approximately 2.5 metres in height and contains a payment point, a touch screen display and a small local area map;
- **The docking points** are connected to the terminal and comprise a single horizontal bar with upright supports;
- **Bicycle release** from the docking points for subscribers is controlled by a swipe card system at the terminal;
- **Advertising** does not form part of the scheme;
- **The colour scheme** comprises red, black and white bicycles and a red and black docking point and terminal; and
- **The docking stations** are located on streets, pavements and public squares/plazas.

Figure 2.9: Bicing Docking Station

Figure 2.10: Bicing Bicycle Docking Point

A Design for London

The design of the London docking stations (Figure 2.11) has been influenced by the Paris and Barcelona experiences as follows:

- **Terminal**
  The height of the London terminal is similar to that of the Vélib' and Bicing schemes. This is considered appropriate in relation to the docking points and other street furniture. The images demonstrate that the height is appropriate in the context of the centre of a large European city.

- **Docking points:**
  The Bicing design features a horizontal bar with the docking points attached. The London Scheme will incorporate individual docking points to provide for pedestrian circulation between the docking points when bicycles are not docked.

- **Bicycle release**
  The Vélib' scheme enables release of bicycles by way of a smart card system at either a docking point or the terminal. The London scheme will also operate in this manner.

- **Logo/ Colour Scheme**
  The Vélib', Bicing and London schemes have incorporated their own individual colour scheme and logo. The grey colour scheme of the Vélib' scheme makes it difficult to identify the docking stations from a distance. The London Scheme incorporates a roundel and a predominantly dark blue colour scheme to ensure that the docking stations are instantly recognisable to users.

- **Advertising**
  Unlike the Vélib' scheme, the London Scheme will not be part financed by advertising, as additional street advertising is not considered desirable in the London streetscape.

- **Location of docking stations**
  As discussed in Section 1.3 the docking station locations for the London Scheme have been selected by TfL, the host boroughs and the Royal Parks using similar criteria as the Vélib' and Bicing schemes. They are, as far as is reasonably practicable, located in easily accessible locations on streets within convenient walking distance from prominent landmarks, attractions, public transport nodes and other areas likely to serve a high number of users.

Figure 2.11: Indicative Docking Station

2.3 Design Evolution

This section explains how and why the docking station design has evolved during the design development process.

Stage 1: Design Conception
A preliminary design (Figure 2.12) was prepared to illustrate how the Scheme may look and operate to initiate discussions with the host boroughs, the Royal Parks, interested local parties and design and access groups.

The terminal was shown with no cycle hire branding and was mainly designed to accord with relevant cycling standards and guidance. The docking station design had the following characteristics:

Component	Design Characteristics
Terminal	Oval shape Approximately 2.0 metres in height Payment and registration facilities Basic mapping
Docking Points	Stand alone docking points Bicycles at each docking point 0.75 metres apart Single or double row arrangement Orientation at 45 or 90 degree angle to kerb
Branding and colour	Blue TfL roundel Grey terminal and docking points Red bicycles
Materials	Not detailed
Location of sites	Site selection criteria under development with host boroughs and the Royal Parks. Suitable locations included: - Safe and secure areas - Easily accessible areas - Areas within walking distance of landmarks and attractions

Figure 2.12: Stage 1 – Design Conception Artists Impression