



Geographic maps standard

This document introduces the TfL geographic mapping toolkit, describes the features and explains how it can be used. The toolkit is currently used to provide all of the maps on the TfL website, including static ones.

Audience

- Designers
- Developers

Guidance

The toolkit is used to provide all of the maps on the TfL website, including static ones.

1. Software stack

The mapping framework relies on a number of third party components:

- [jQuery 1.9](#)
- [JavaScriptMVC 3.2.4](#)
- [Google Maps V3 API](#)

The Mapping Toolkit is delivered as a single compressed JavaScript file that includes all the parts of JavaScriptMVC that it needs, and it dynamically loads the Google Maps API when needed.

It also includes a single CSS file containing the styles it requires, and folders containing all necessary image files.

2. JavaScriptMVC

The Mapping toolkit makes extensive use of the JavaScriptMVC framework. This provides a Model-View-Controller (MVC) pattern for browser-side JavaScript.

As well as the MVC framework, JavaScriptMVC provides a number of other useful pieces of functionality, including:

- [StealJS](#) (a script loader, dependency resolver and packager)
- [jQueryMX](#) (a class framework for jQuery)
- [OpenAjax](#) (an implementation of the OpenAjax messaging specification)
- [FuncUnit](#) (functional and unit testing)

The Mapping toolkit currently includes these components:

- Core map component
- Disambiguation map
- Journey leg map
- Nearby map
- Road map
- Embedded map
- Cycle hire map
- Coach map

3. Core mapping

The core mapping component displays a Google map, with standard Google controls. The component applies styling to the map according to TfL requirements (ie it thickens roads at certain zoom levels so they align correctly with the Congestion Charging Low Emission zone polygons. It also turns off Google's representations of stations, bus stops and river piers).

The map also includes extra accessibility functionality that a standard Google map doesn't provide.

The core component also restricts the zoom level and constrains the map to the London area.

The component provides functionality for developers to:

- Add pins to a map
- Respond to interactions with pins

- Display pop-up information boxes
- Plot routes (including multicolour routes)
- Plot the user's location as provided by their GPS
- Position a map based on positions, boxes and routes
- Add various TfL-related layers to their maps
- Use an optional control that allows users to turn layers on and off

4. TfL map layers

The toolkit includes various layers that can be added to any map. These are used to provide functionality on specific maps and can also be used by developers to add layers to custom maps.

The layers include:

- StationStops (shows Tube stations, rail stations, bus stops and river piers)
- Places (these can be configured to show various different types of places, eg electric car charging points, coach stops etc)
- Congestion Charge zone, Low Emission Zone, Greater London Authority (GLA) boundary and coach ban areas (overlays a polygon on the map representing the relevant area)
- Barclays Cycle Hire layer (shows the cycle hire docking stations, including an indication of how many bikes/spaces are available)
- Cycling (displays the Google cycling base map)
- Traffic (displays the Google traffic conditions layer)
- Road disruptions (displays current and future road disruption incidents, shows a pin for each incident and, optionally, a polygon representing the area covered by the incident)
- Road corridors (shows the various road corridors in London; via code it can be configured to show either all corridors or individual ones)

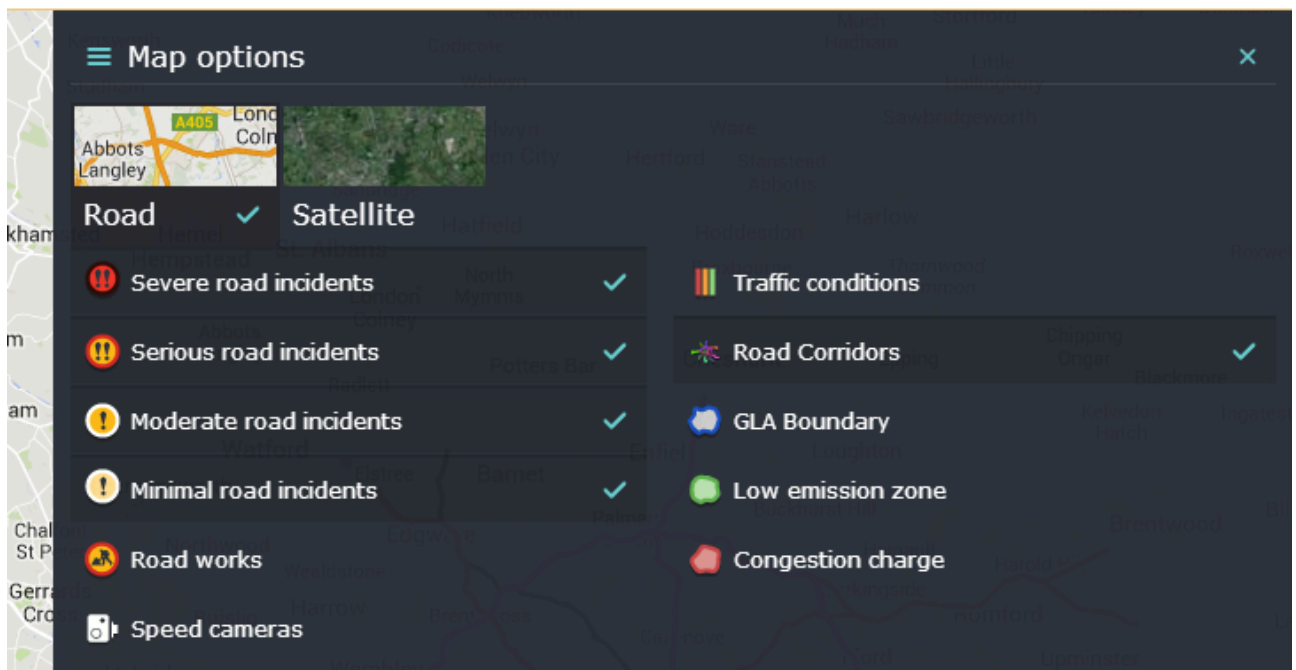
- KML (loads a KML file from a URL and displays the polygons, lines and points on the map)
- Disambiguation (can be used to show a set of locations on a map for the user to choose from)
- Geolocation (shows a pin representing the user's current location, where available)
- Leg (used to show a single leg of a journey)

5. Layer switcher panel

The Layer switcher panel can be accessed by clicking on the control in the top right-hand corner of the map. It opens a panel over the map that gives users the option of changing various options.

At the top of the panel is a control that lets users toggle between Road and Satellite map styles. Underneath that are a series of toggle controls that allow users to show or hide various layers or subsets of data on layers.

This is an example of the panel in use on the Road Map:



6. Disambiguation map

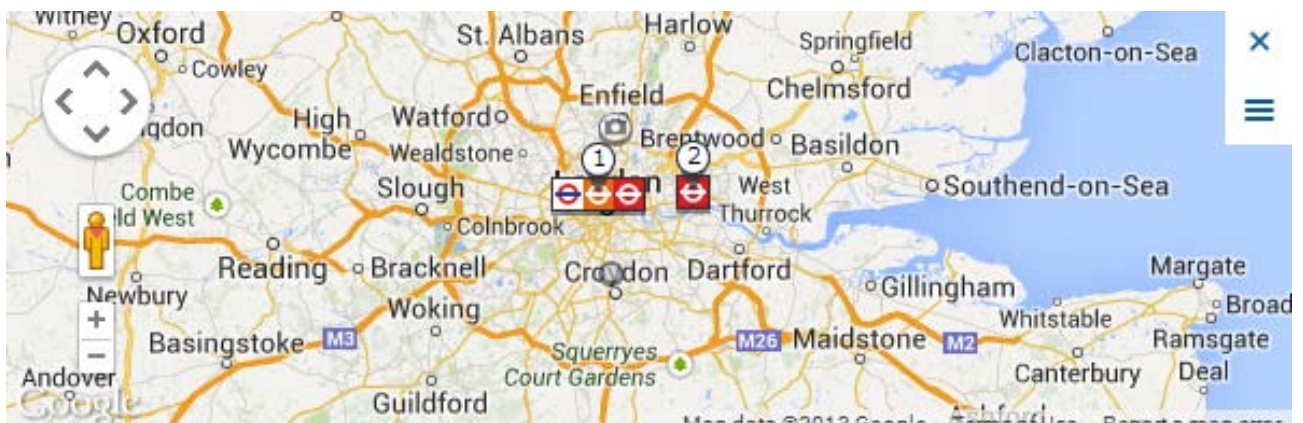
The Disambiguation map is used within the Journey Planner. When a user searches for a journey and the start or end point is not clear, they are presented with a list of possible places/stations/stops that match their search.

The disambiguation map is displayed at this point to give a visual representation of the options. A map pin is shown for each option, including an icon presenting the type of location or mode of transport available at that location. For locations that provide multiple modes of transport, multiple icons are shown.

The map can also split the options into multiple pages. As the user selects a page of options, the pins for the options on the current page are highlighted and numbered.

The map takes the data it needs from the page that it is displayed in.

This is an example of a Disambiguation map:



7. Journey leg map

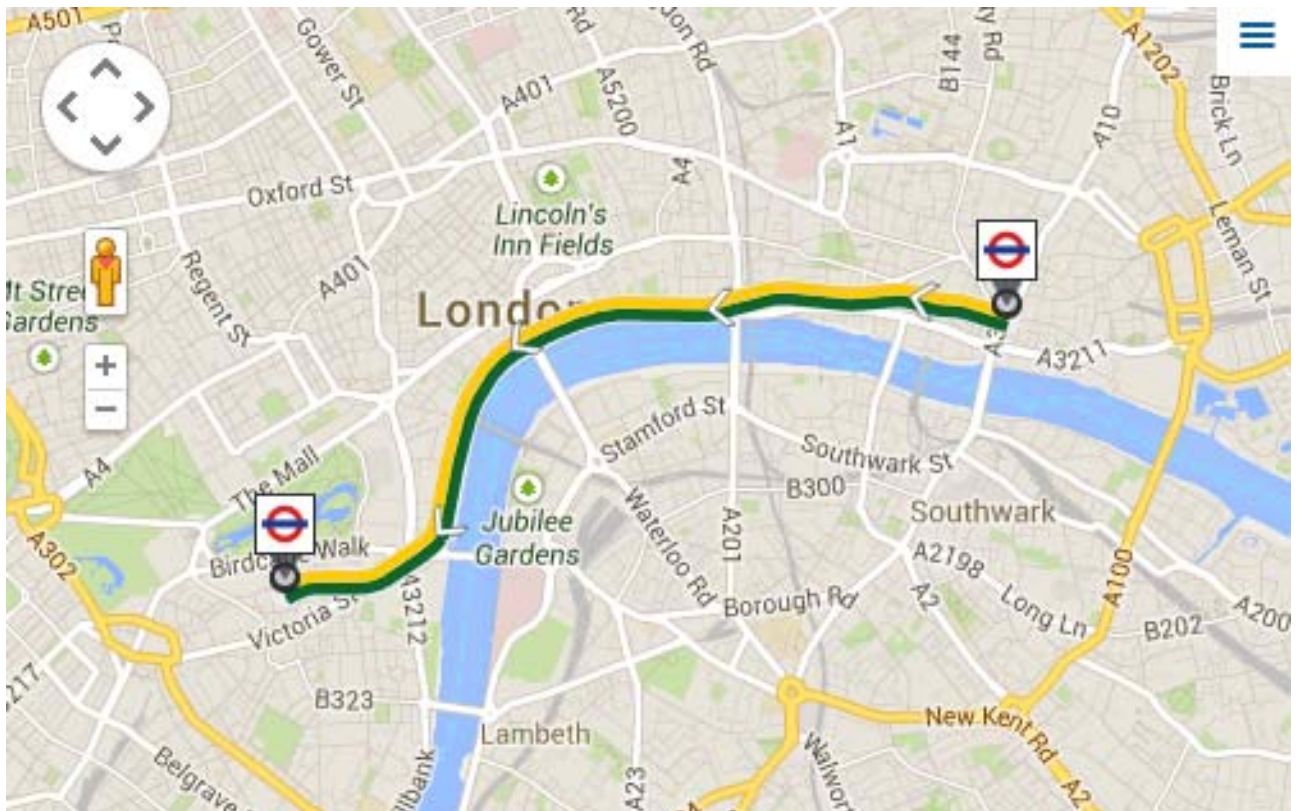
The Journey leg map is also used within the Journey Planner. When the user selects to view just part of a journey (ie a 'leg') the Journey leg map component is used.

It displays a map, which shows the route for the given leg. At the start and end of the leg is a map pin, styled to match the mode of transport used for the leg (eg Tube, tram, walking, bus etc).

The route is displayed in an appropriate colour, matching TfL's branding standards. In the case of Tube journeys, the line is multi-coloured if multiple Tube lines are used during the leg.

The map makes a call to the TfL API to get the data it needs to display the leg.

This is an example of a Journey leg map:

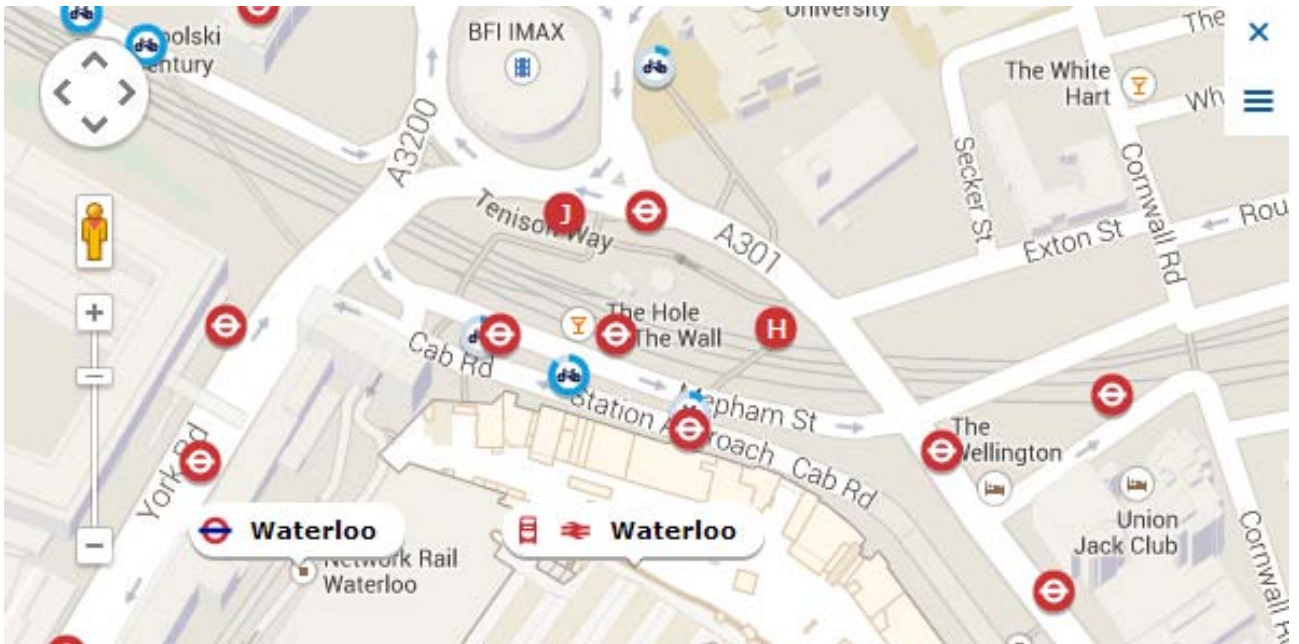


8. Nearby map

The Nearby map will be used on station, stop and piers pages, and on some search result pages. It plots the positions of places from the TfL Places API and station stops, with different icons according to their type.

If the user clicks a pin, that pin is centred on the map and the pin is highlighted.

This is an example of a Nearby map:



9. Road map

The Road Map is used on the Road status pages. It displays road disruptions and road corridors.

When a user selects road disruption, the map is centred on the disruption and a polygon is displayed to show the area affected.

The user can also choose to show the Congestion Charge zone, the Low Emission Zone, the GLA boundary and the Google traffic conditions layer.

10. Embedded map

The Embedded map is used on the content management system (CMS), allowing content editors to insert maps into any CMS page.

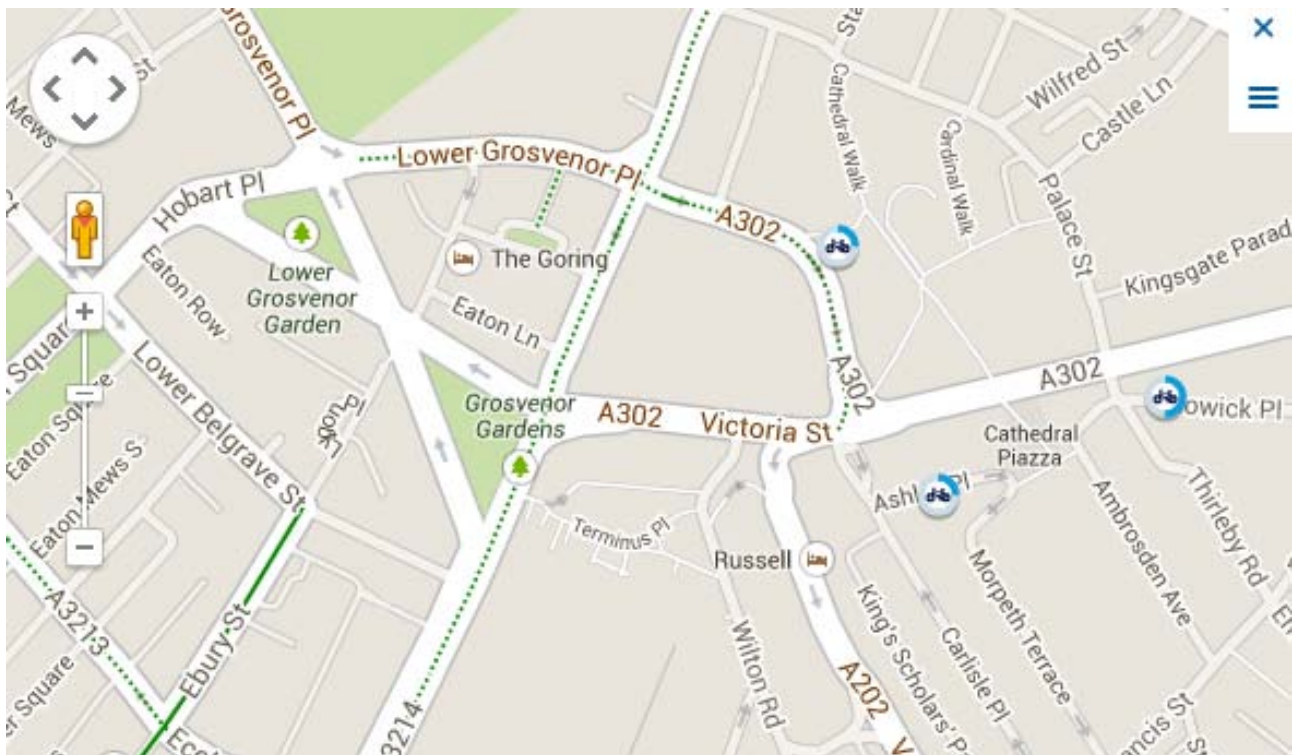
The content editor can, via the CMS editor, choose which options to apply to the map. These options include:

- Which layers to display
- Where to centre the map
- The zoom level to load the map at

- Whether to load the map with the road or satellite style
- Whether to load the map in its expanded or collapsed state
- Whether to show the user's current location
- The URL to a KML file to display on the map

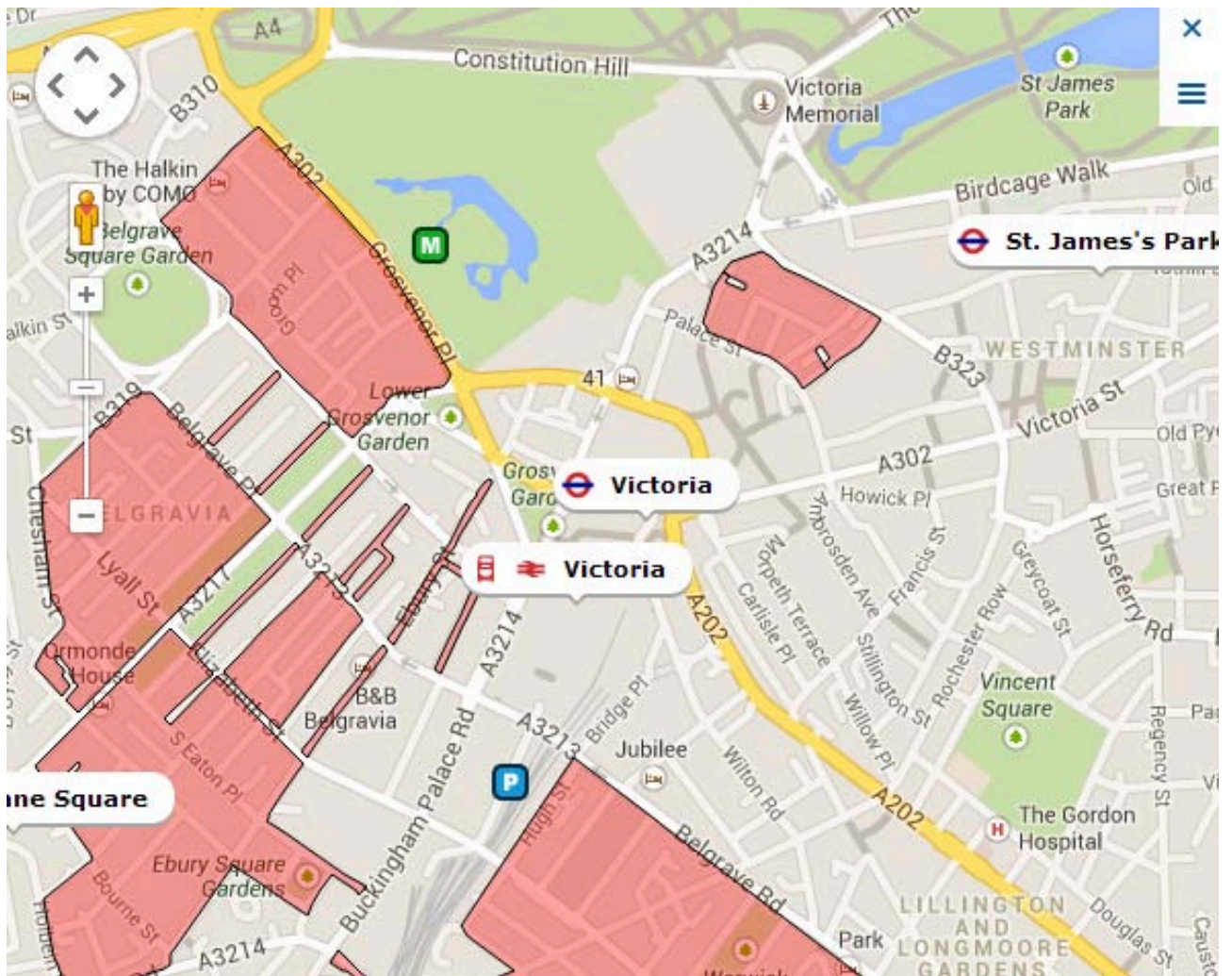
11. Cycle hire map

The Cycle hire map shows cycle hire docking stations and other related layers.



12. Coach map

The Coach map shows coach ban areas, coach bays, on-road coach parking and other coach-related layers.



Why we do this

There are a number benefits to using a single mapping platform:

- **Value for money**
A single platform will benefit from the potential for better licensing negotiations with mapping providers due to combined usage, and may reduce the cost of future development and testing due to the sharing of common elements
- **Sharing new functionality**
New functionality development for one map, where appropriate, will be available to all the other maps at little or no additional cost

- **Rapid development of new maps**
New maps will be quicker and cheaper to develop as they will be able to re-use common elements from other maps, and their elements will be available for use in existing maps
- **Future upgradability**
As the chosen future mapping platform is updated with new functionality or features, it will be easier and cheaper to update all the maps at once

Further reading

- [Schematic maps standard](#)
- [Map data standard](#)

Type: Standard
 Owner: TfL Online Compliance
 Department: TfL Online

Version History

Version	Date	Summary of changes
1.0	23/01/2014	First issue

Review History

Name	Title	Date	Comments
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