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ROAD POLLUTION SOLUTIONS TOOL

User Guide

Funded by The Mayor of London, Zoological Society of London & the Environment Agency.

Undertaken in partnership with Middlesex University, South East Rivers Trust, Thames Water and the British Geological Survey.



SUPPORTED BY
MAYOR OF LONDON



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User Journey

This section provides an overview of the user journey that can be referred to for guidance using the borough of Barnet as an example. For an overview on the use and purpose of the tool itself please refer to the Project Summary, and for more detail behind the methodology please refer to the Technical Summary. For larger versions of each image please refer to the end of the document.

1. Select your region:

The Road Pollution Solutions Tool has been laid out to make it easy for those interested in using this tool. The ability to search by borough or by catchment, allows for investigations to be made by two different options. For example, councils might be interested on a borough scale and rivers trusts or catchment partnership teams might want to see what possibilities exist on a catchment scale.

The user can first select whether they would like to search by borough or by catchment. Once they have selected 'borough' or 'catchment' they will be able to pick from a drop-down menu which borough name or catchment area they would like to further explore.



Figure 1: Shows the 'Road Pollution Solutions Tool' visualisation and the ability to choose via Borough.

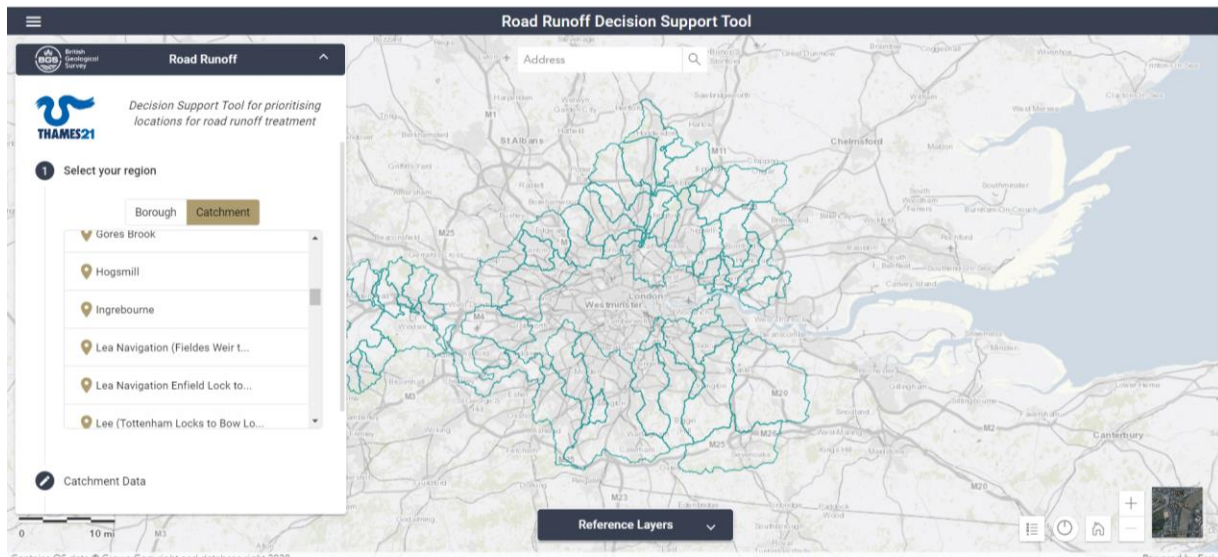


Figure 2: Shows the 'Road Pollution Solutions Tool' visualisation and the ability to choose via Catchment.

2. Borough Data/Catchment Data

Once a 'borough' or 'catchment' area has been loaded, the next section is revealed. The 'Road Pollution Solutions Tool' visualisation will display the roads that are part of the strategic road network in the 'borough' or 'catchment' that has been selected. These roads have been classified as per the method listed in section 2 and a key explaining their level of priority is displayed (Figure 3). If the user wishes to see which pollutant exceed its WQS then the user is able to select that pollutant in the panel; which will change the map visual to that shown in Figure 4. Alternatively the user can click on a specific road segment and bring up the popup for that section to see more detailed information on the determinants as well as if the respective WQS are exceeded.



Figure 3: Shows all roads for the borough of Barnet and the level of priority of each of the roads.

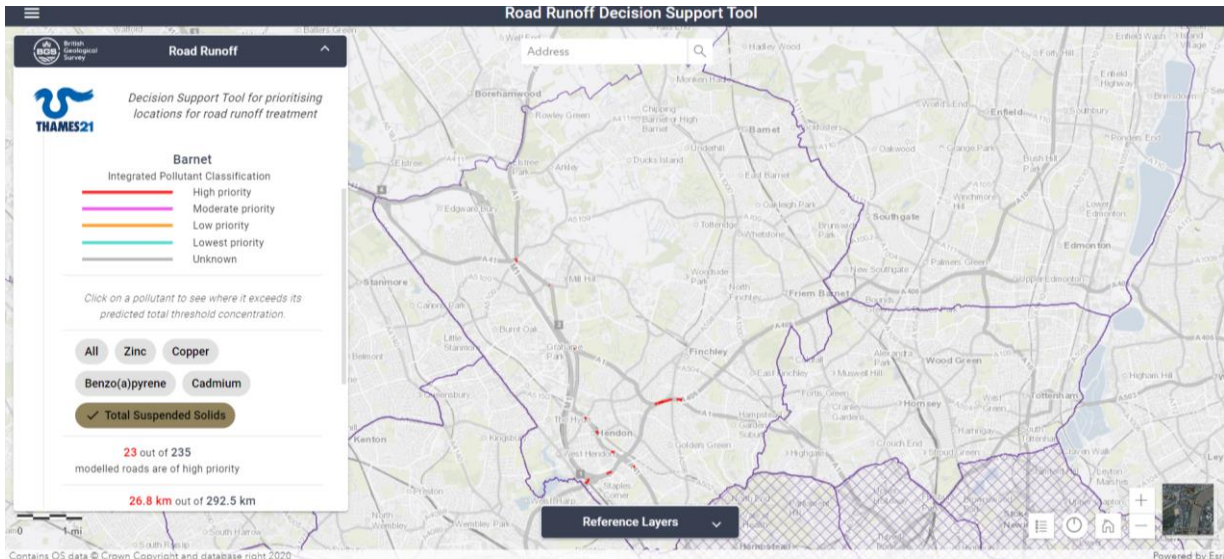


Figure 4: Shows the roads for the borough of Barnet and which roads exceed the Total Suspended Solids WQS.

Also in this section, some values are provided to show an overview of the ‘borough’ or ‘catchment’ that has been selected. For example, in Barnet, the information shown can be seen below:

- 23 out of 235 modelled roads are of high priority
- 26.8 km out of 292.5 km of total modelled road length in this region are of high priority

- This overview information allows the user to see how the ‘borough’ or ‘catchment’ chosen is performing against another. For example, the neighbouring Brent borough shows us that:
- 20 out of 162 modelled roads are of high priority
- 20.4 km out of 153.4 km of total modelled road length in this region are of high priority

This would allow the user to see that Barnet has a lower proportion of roads listed as high priority in comparison to the Brent borough.

If the user clicks the ‘Back’ button or ‘Reset Location’ button they will be able to choose a different location. If the user clicks the ‘Next’ button the user will be able to proceed to the next section. Alternatively, the user can also click directly onto the next section ‘Where does pollution enter the River?’ to proceed.

3. Where does the pollution enter the River?

In this section the user is able to turn on two layers:

- Surface Water Drain Outfalls – this layer represents the surface water drain discharge points in to rivers.
- Area Drained by Surface Water Drain – this layer represents the approximate surface water drain sub-catchment leading to an outfall.

4. Solutions

If the road name of interest is known, the user is able to select from a drop down list a road listed as high priority. Otherwise, the user can click directly onto the road section on the map of a road that might be of interest to them. Whilst the drop down shows only those roads listed as high priority, the user can click on any road on the map; even those of lowest priority.

The user is then able to click and activate the SuDS layer (Figure 5), however it should be noted that without clicking on a road from the drop down list or a selecting a road section the ‘Road Pollution Solutions Tool’ will not show the SuDS solutions on the visualisation.

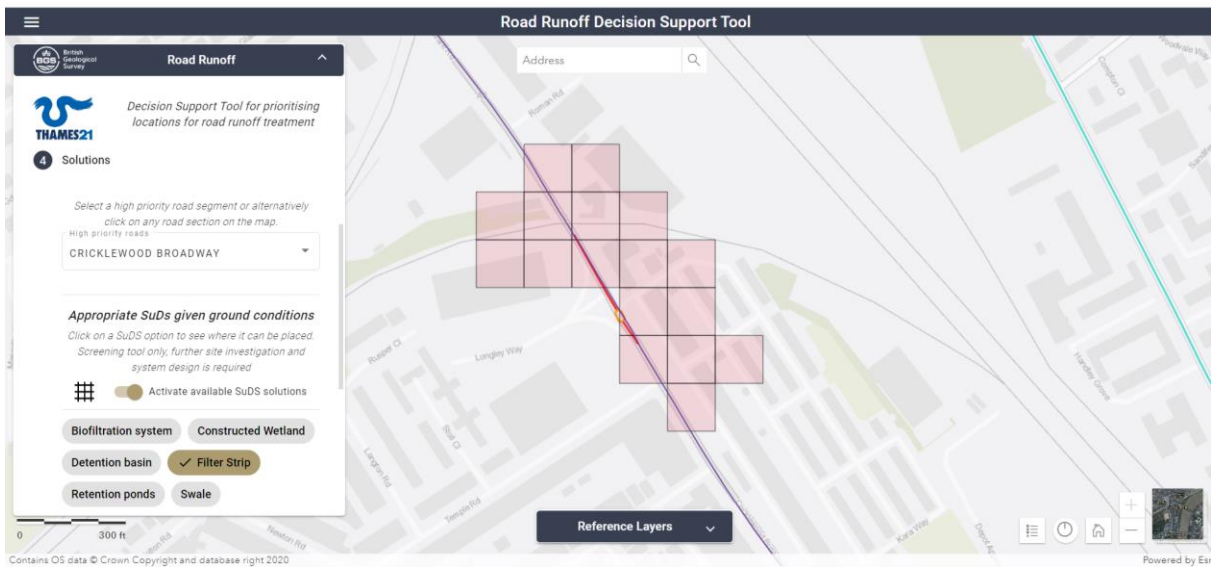


Figure 5: Shows the appropriate SuDS solutions available for the example of 'Cricklewood Broadway' in Barnet.

The user is able to click on a grid of interest and a pop-up feature will then display providing information and links for the SuDS proposed (Figure 6).

Also, in this section the user is able to turn on additional pathway layers:

- Suitable Greenspaces – this layer shows greenspaces which are suitable for constructed wetlands
- Surface Water Drains – this layer shows sewers in or near a park with potential for connection

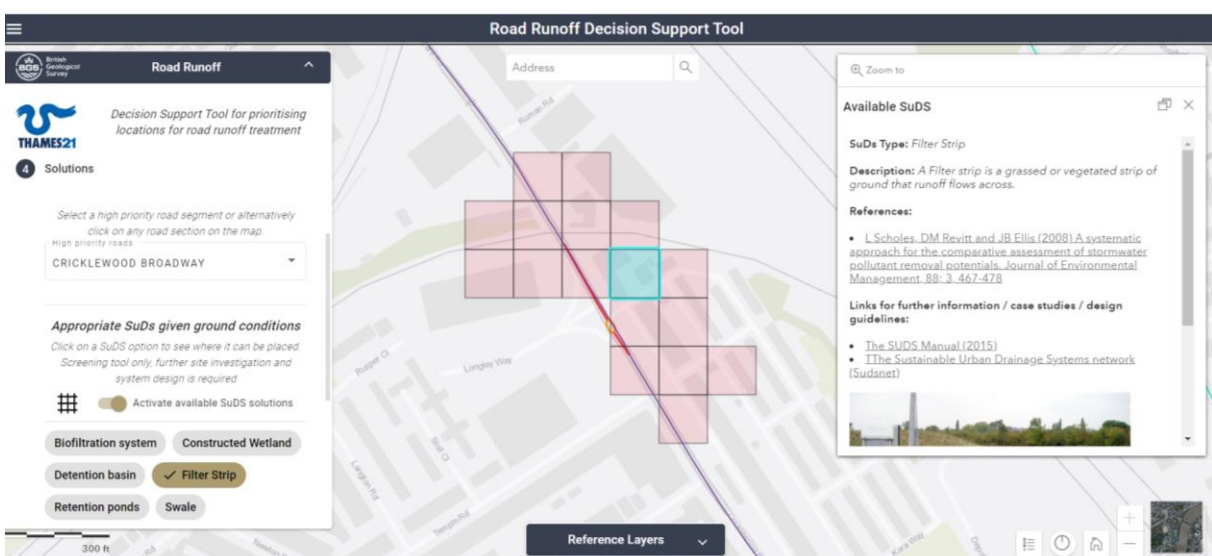


Figure 6: Shows the pop up feature on the 'Road Pollution Solutions Tool' that provides more information on the selected SuDS option.

Lastly, the user is able to turn on the Retrofit SuDS solutions layer. This layer represents locations in Greater London where retrofit SuDS solutions have already been implemented.

5. Next Steps

Once using the tool to identified the appropriate opportunities the user will need to investigate the feasibility of these options in more detail, and consider how the range of additional benefits that nature based solutions can provide could integrate with other local priorities (e.g. flood risk reduction, biodiversity improvements etc).

[The Urban Wetland Design Guide](#) (Russell, Pecorelli, & Glover, 2021) and SuDS Manual (CIRIA, 2015) may be useful in helping consider the feasibility and design of these opportunities in more detail.

6. Reference Layers

The user is also able to turn on additional layers (Figure 7) that underpin the model, these are:

- OS Open Rivers
- Soil Permeability
- OS Open Greenspaces
- London Boroughs
- River Catchment

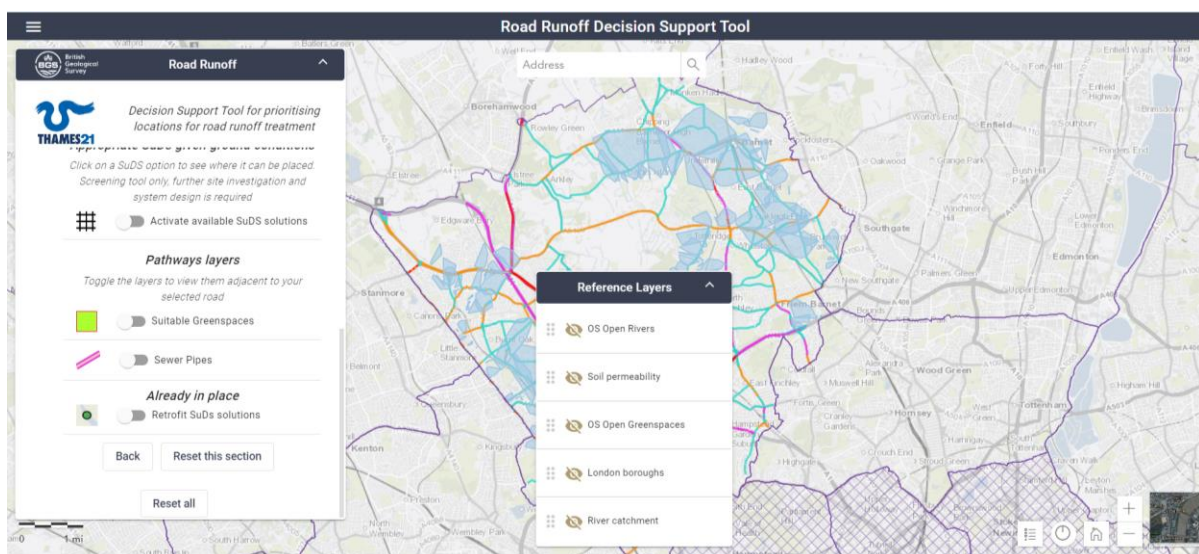


Figure 7: Shows the 'Reference Layers' that the user is able to switch on or off.

References

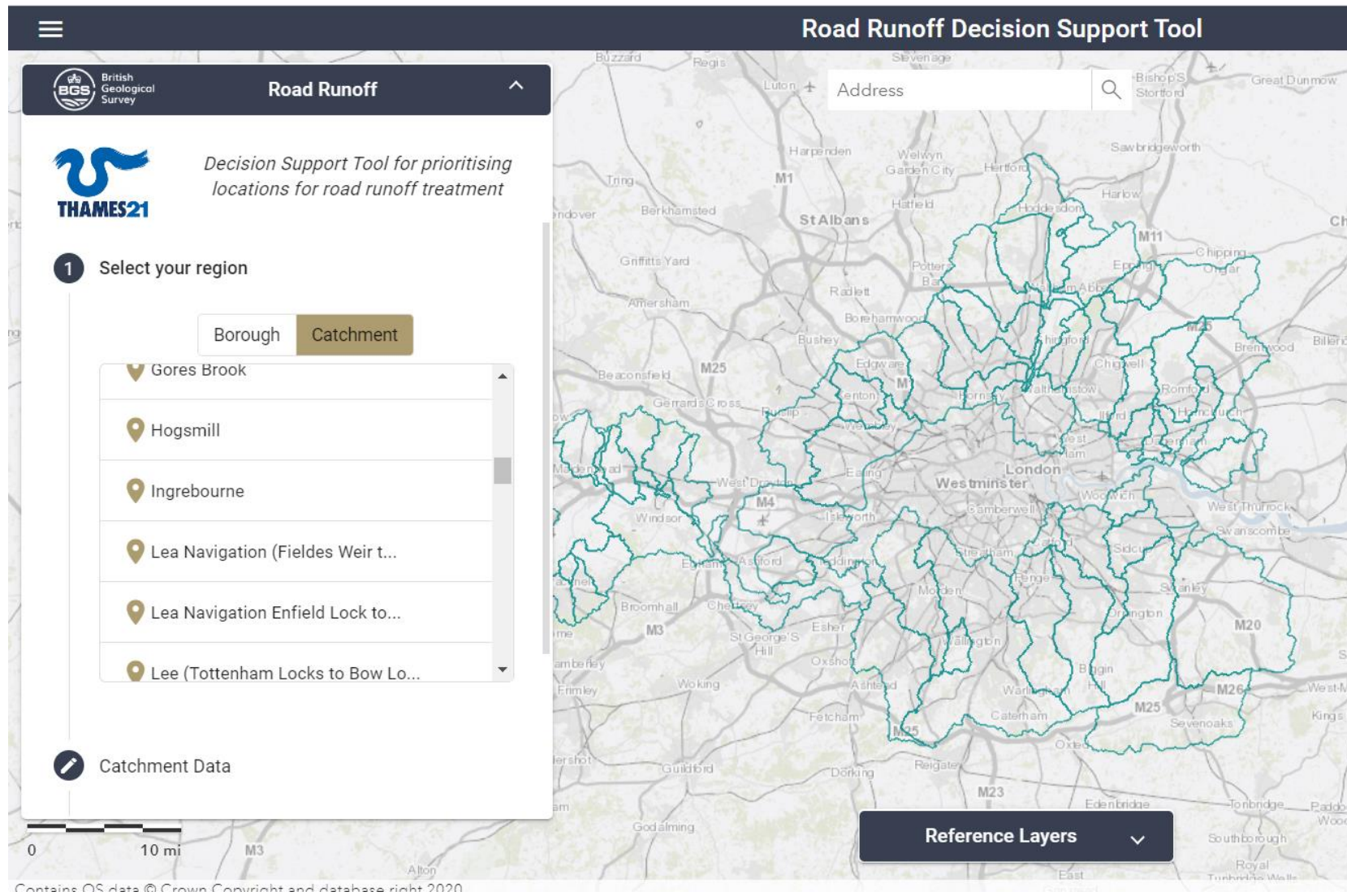
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- Revitt, D. M., Ellis, J. B., Gilbert, N., Bryden, J., & Lundy, L. (2022). Development and application of an innovative approach to predicting pollutant concentrations in highway runoff. *Science of the Total Environment*.
- Russell, I., Pecorelli, J., & Glover, A. (2021). *Urban Wetland Design Guide: Designing wetlands to improve water quality*. London: Enfield Council. Retrieved from https://cms.zsl.org/sites/default/files/2022-09/2021_Urban%20Wetlands_FINAL%5B125594%5D.pdf

Appendix 1: Enlarged Images

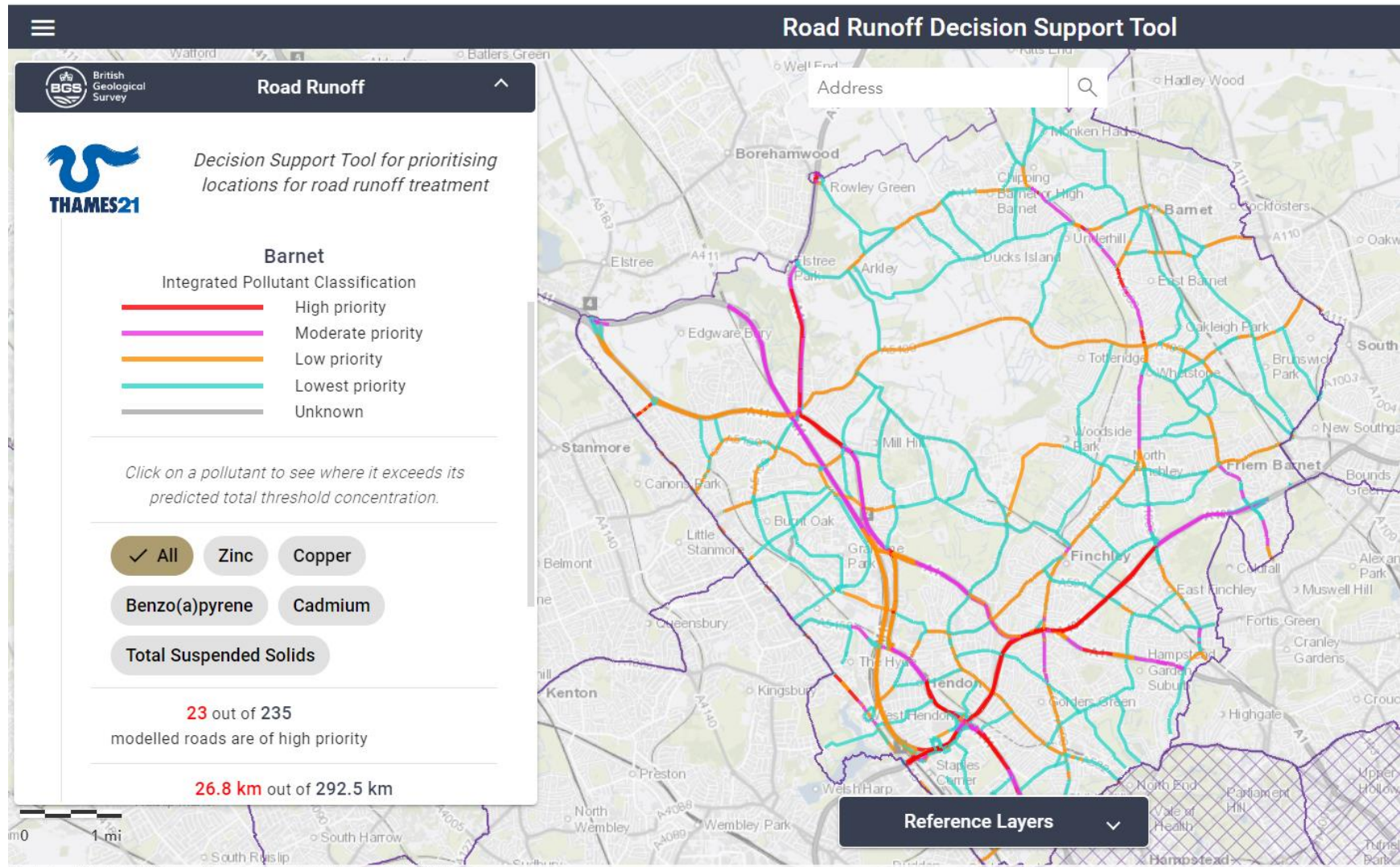
Enlarged Figure 1: Shows the 'Road Pollution Solutions Tool' visualisation and the ability to choose via Borough.

The image shows a screenshot of the 'Road Runoff Decision Support Tool' interface. The tool is titled 'Road Runoff Decision Support Tool' and features the BGS (British Geological Survey) logo and the THAMES21 logo. The main purpose is 'Decision Support Tool for prioritising locations for road runoff treatment'. The interface includes a search bar for an 'Address' and a 'Reference Layers' dropdown menu. A sidebar on the left contains a 'Road Runoff' section with a 'Select your region' step. Under this step, there are two tabs: 'Borough' (selected) and 'Catchment'. A list of boroughs is displayed, including Barking and Dagenham, Barnet, Bexley, Brent, and Bromley. A 'Borough Data' icon is also visible. The main map area shows a detailed view of London with various boroughs outlined in purple. Major roads like the M1, M25, M4, M3, M20, and M26 are labeled. A scale bar at the bottom left indicates 0 to 10 miles. The footer text reads 'Contains OS data © Crown Copyright and database right 2020'.

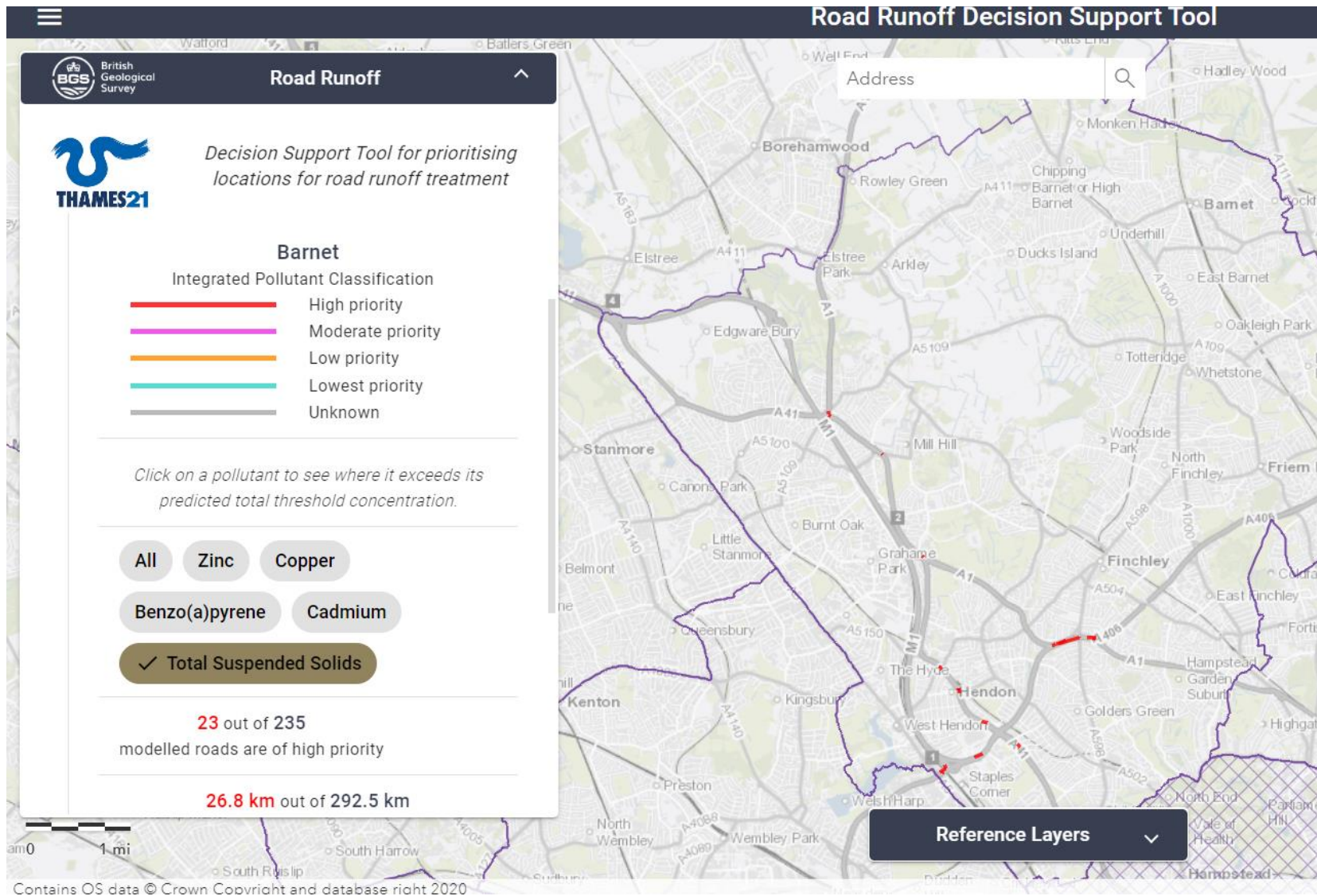
Enlarged Figure 2: Shows the 'Road Pollution Solutions Tool' visualisation and the ability to choose via Catchment.



Enlarged Figure 3: Shows all roads for the borough of Barnet and the level of priority of each of the roads.



Enlarged Figure 4: Shows the roads for the borough of Barnet and which roads exceed the Total Suspended Solids WQS.



Enlarged Figure 5: Shows the appropriate SuDS solutions available for the example of 'Cricklewood Broadway' in Barnet.

The screenshot displays the 'Road Runoff Decision Support Tool' interface. At the top, the title 'Road Runoff Decision Support Tool' is centered. Below the title, there is a search bar labeled 'Address' with a magnifying glass icon. The main content area is divided into a left sidebar and a right map area. The sidebar contains the BGS logo, the text 'Road Runoff', and the THAMES21 logo. Below the logos, it says 'Decision Support Tool for prioritising locations for road runoff treatment'. A section titled '4 Solutions' includes instructions: 'Select a high priority road segment or alternatively click on any road section on the map.' A dropdown menu for 'High priority roads' is set to 'CRICKLEWOOD BROADWAY'. Underneath, it says 'Appropriate SuDS given ground conditions' and 'Click on a SuDS option to see where it can be placed. Screening tool only, further site investigation and system design is required'. There is a grid icon and a toggle switch labeled 'Activate available SuDS solutions'. Below this are several buttons for SuDS options: 'Biofiltration system', 'Constructed Wetland', 'Detention basin', 'Filter Strip' (which is selected with a checkmark), 'Retention ponds', and 'Swale'. At the bottom left of the sidebar is a scale bar from 0 to 300 ft. The map area shows a street grid with 'CRICKLEWOOD BROADWAY' highlighted in red. A grid of pink squares is overlaid on the map, indicating potential locations for SuDS solutions. A 'Reference Layers' dropdown menu is visible at the bottom right of the map area. At the very bottom, there is a copyright notice: 'Contains OS data © Crown Copyright and database right 2020'.

Enlarged Figure 6: Shows the pop up feature on the 'Road Pollution Solutions Tool' that provides more information on the selected SuDS option.

The screenshot displays the 'Road Runoff Decision Support Tool' interface. The main map shows a grid of red squares overlaid on a street map, with one square highlighted in cyan. The left sidebar contains the following elements:

- Logo for British Geological Survey and THAMES21.
- Section '4 Solutions' with the instruction: 'Select a high priority road segment or alternatively click on any road section on the map.'
- A dropdown menu for 'High priority roads' currently showing 'CRICKLEWOOD BROADWAY'.
- Section 'Appropriate SuDS given ground conditions' with the instruction: 'Click on a SuDS option to see where it can be placed. Screening tool only, further site investigation and system design is required.'
- A grid icon and a toggle for 'Activate available SuDS solutions'.
- Buttons for various SuDS options: 'Biofiltration system', 'Constructed Wetland', 'Detention basin', 'Filter Strip' (selected with a checkmark), 'Retention ponds', and 'Swale'.

The right sidebar shows a pop-up window titled 'Available SuDS' with the following information:

- SuDs Type:** Filter Strip
- Description:** A Filter strip is a grassed or vegetated strip of ground that runoff flows across.
- References:**
 - L.Scholes, DM Revitt and JB Ellis (2008) A systematic approach for the comparative assessment of stormwater pollutant removal potentials. *Journal of Environmental Management*, 88: 3, 467-478
- Links for further information / case studies / design guidelines:**
 - The SUDS Manual (2015)
 - The Sustainable Urban Drainage Systems network (Sudnet)

At the bottom of the interface, there is a 'Reference Layers' dropdown menu and a scale bar indicating 300 ft.

Enlarged Figure 7: Shows the 'Reference Layers' that the user is able to switch on or off.

