



Active
Travel
England

Active Travel England Route Cross-Section Tool User Manual



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Route Cross-Section Tool User Manual

Publication date: February

All Active Travel England tools and user manuals will be reviewed regularly and updated as needed.

1. Introduction

- 1.1 This user manual is a desktop guide for the **Route Cross-Section Tool**. The tool is a 'design assistance' tool, created to show the user what infrastructure may be possible along a highway corridor in terms of available width. The tool lets users test different hypothetical cross-sections and provides guidance on what infrastructure is desirable as well as highlighting important issues. The tool aligns with current national guidance, sign-posting users to relevant passages in LTN 1/20¹, Inclusive Mobility² and The Design Manual for Roads and Bridges (DMRB)³ as appropriate.
- 1.2 The Route Cross-Section Tool can be used at any stage of the design process for highway corridor projects but it is most useful in the pre-feasibility/concept stages. It shows the user how to design high-quality walking, wheeling and cycling infrastructure for the widest-possible range of street users, including people with disabilities, within the constraints of the available space. It can be used alongside ATE's **Route Check** tool to help designers and other transport professionals find ways of maximising design quality and service levels within the available space. Values used in the **Route Cross-Section Tool** (such as minimum footway widths) are consistent with those used in the **Route Check** tool.
- 1.3 This tool is not suitable for assessing area-wide schemes, school streets, cycle parking or networks of routes.
- 1.4 First and foremost, the tool is a design aid, rooted in best practice, to help users provide infrastructure in line with the latest national guidance. It is not an audit, and it does not give answers, and while it is comprehensive, it may not cover all possible eventualities and contexts. It is the responsibility of the scheme designer to be familiar with the relevant design codes and work out the most suitable options that balance all the needs of a street.

1 [Cycle Infrastructure Design LTN 1/20](#) (DfT, 2020)

2 [Inclusive Mobility: making transport accessible for passengers and pedestrians](#) (DfT,2022)

3 Design Manual for Roads and Bridges (DMRB) – Standards for Highways (<https://standardsforhighways.co.uk>)

2. Route Cross-Section Tool Structure

2.1 The tool has three input tabs:

- **Summary of Scheme**
- **Proposed Cross-Sections**
- **Cross-Sections Check**

2.2 There is a fourth tab, called **ATE Summary**, where the ATE inspectorate team can add comments and further guidance.



Figure 1 – Structure of the Route Cross-Section Tool: a screenshot of the tabs in the Excel file.

3. Summary of Scheme

3.1 It is important that you fill in the Summary of Scheme tab to make sure there is a complete and accurate record of key scheme information. You should fill in all the Summary of Scheme tab fields before moving on to the next tab. If you do not have some of this information, you can get in touch with a relevant member of ATE's Regional Management team.

3.2 The fields in the first table in the Summary of Scheme tab are as follows:

- **Scheme Reference** – the relevant funding programme scheme reference, where applicable.
- **Scheme Name** – the scheme name according to the funding programme.
- **Scheme Summary** – use to provide a brief description of the scheme including any relevant programme-level information.
- **Authority** – the provisioning authority for the scheme.
- **Transport/Combined Authority** – the combined authority, where the scheme falls under a combined authority area.
- **Region** – the part of England where the scheme is located. There are also options for Scotland, Wales and Northern Ireland.
- **Funding Programme** – the main funding source for the scheme.
- **Design Stage** – the current design stage of the scheme.
- **Funding Conditions** – any specific conditions regarding infrastructure attached to the relevant funding programme.
- **Route Length Assessed in this File (km)** – the length of route assessed in the specific Excel tool copy.
- **Total Route Length (km)** – where the scheme is part of a longer scheme, assessed over multiple Excel tool copies.
- **Notes** is a space for the user to add any other relevant notes on the scheme.

3.3 There are additional spaces below the first table where you must give the network context by providing co-ordinates for the start and end of the route being assessed, along with a map showing the route in its wider context. You must include the locations of each cross-section taken along it on this map, and label them with the reference number corresponding to their entry in the **Cross-Section Check** tab (#1, #2, #3 etc.), so they can easily be identified. There is more information on where to take cross-sections in the **Cross-Section Check** part of this user manual.

4. Proposed Cross-Sections

- 4.1 In this tab, you will enter contextual information to work out what types of infrastructure are suitable for the locations you are assessing. You can build different cross-sections to standards and test them to see if they fit the available space.
- 4.2 You must start by adding the data asked for in the 'Traffic data and additional information' table. These inputs are mandatory, and the tool will not work if all the relevant fields are not populated. The exception to this rule are cells C8, C9, C10 & C11. You should only fill in these cells if applicable to the proposed cross-section. For example, you can leave out 'Expected peak hour cycle flow: shared use cycle tracks' (cell C11) if you are not proposing any shared-use cycle tracks.

Traffic data and additional information			
Before inputting your cross-section, the cells below must be populated			
Expected peak hour cycle flow: 1-way cycle tracks		Speed limit (MPH)	
Expected peak hour cycle flow: 2-way cycle tracks		Observed 85th percentile speed (MPH)	
Expected peak cycle hour flow: shared use cycle tracks		Street function	
Traffic flow (vpd)			

Figure 2 – Screenshot of a completed 'Traffic data and additional information' table in the Proposed Cross-Sections tab

- 4.3 Next, you must fill in the 'Desirable Minimum Cross-Section' table. You will build your ideal cross-section here:

Desirable Minimum Cross-Section			
Build your scheme's desirable minimum cross-section from left to right by selecting the street features from the drop-downs in the cells opposite >>>>>	Footway	Buffer / Verge	Wide Traffic / Bus Lane

Figure 3 – Partial screenshot of a completed 'Desirable Minimum Cross-Section' table in the Proposed Cross-Sections tab.

- 4.4 You will build the desired cross-section as follows:
- First, choose a point on the corridor that looks wide enough to fit the infrastructure you want to include. Next, measure this width using the most accurate method available (Topographical data is best, followed by OS data. You can use Google Earth in the absence of topographical or OS data, although it is less reliable). The width measured should be the full width of the adopted highway.
 - Now, enter this width in cell F/G23.

- c. You can then build the proposed cross-section in Row 15 using the dropdown options – see **Appendix A** for these and any important points to note. As you start to work through this, some cells in this section will autocomplete with:
- links to references in the relevant guidance e.g., LTN 1/20 and a brief summary;
 - suggested considerations where the proposed cross-section does not comply with guidance; and
 - desirable minimum widths for each feature, based on the relevant guidance.

As you add features to the cross-section, you will see the total width needed to accommodate them shown in cell F/G22. You can clearly identify whether this total width exceeds the available width you entered into cell F/G23 by comparing the numbers in cells F/G22 and F/G23. For additional clarity, cell F/G23 will turn red if there is not enough width available (see Figure 4 below). If this happens, you may need to propose an alternative cross-section in the ‘Absolute Minimum Cross-Section’ table, as described in (e).

Total Width Required (m):	18.50
Available Width (m):	18.00

Figure 4 – Partial Screenshot showing an example of completed Total Width Required (m) and Available Width (m) cells.

- d. You can add up to eight extra items for any feature types that are not covered in the preset options (see Figure 5) in the ‘Custom Street Features’ table. These custom features will then appear in the dropdown lists in row 15. Any spare width highlighted as available by the tool could be used for features such as rain gardens and other sustainable drainage features, benches and resting places, additional planting and/or trees. Adding these to the street improves the Placemaking score in ATE’s separate **Route Check** tool. The names you give these custom features must not be the same as any of the existing options in the dropdown menus on row 15.

Custom Street Features			
Feature	Minimum Width (m)	Feature	Minimum Width (m)
SUDS	1.40	Custom Feature #5	0.00
Custom Feature #2	0.00	Custom Feature #6	0.00

SUDS	2-way protected cycle track
<ul style="list-style-type: none"> Parking Bay Disabled Parking Bay Loading Bay Buffer / Verge SUDS Custom Feature #2 Custom Feature #3 Custom Feature #4 Custom Feature #5 Custom Feature #6 Custom Feature #7 Custom Feature #8 	<p>LTN 1/20 Table 5-2 pp.43</p> <p>LTN 1/20 Figure 4.1 pp. 33</p>

Figure 5 – Partial screenshots of the Proposed Cross-Sections tab showing how a user can add a 1.4m wide SUDS (Sustainable Drainage Systems) feature as a custom street feature.

- e. Where the available highway width will not accommodate features at their desirable minimum widths, you can use the 'Absolute Minimum Cross-Section' table to test if the same features will fit based on the absolute minimum widths allowed in the relevant guidance. To check this, you should input the same features in the same order that you used in the 'Desirable Minimum Cross-Section' table and enter the same value for available width in cell F/G35. Any custom options you entered previously can also be used here and will be set to the width requirements specified in the 'Custom Street Features' table. The absolute minimum widths in row 33 will then default to the minimum allowed as specified in the relevant guidance and the tool will provide the total width needed in cell F/G22. It will also highlight if the total width needed exceeds the available width.
- 4.5 If either the desirable minimum or absolute minimum cross-sections include shared-use cycle tracks, the tool will remind you that you will need to justify this in light of LTN 1/20 guidance in row 9 of the **Cross-Sections Check** tab – see guidance on this tab below.

5. Cross-Sections Check

5.1 This tab tests if the *desirable minimum* or *absolute minimum* cross-sections built in the **Proposed Cross-Sections** tab can be delivered at regular intervals along the route, and at any constrained or atypical locations.

5.2 A cross-section deliverability test should be completed:

- Once for every homogenous section of route, where the total available width and the proposed features are the same.
- At every ‘pinch point’ where there is less available width, and at every atypical section along the route, to make sure that every challenging location is tested.

The first cross-section deliverability test, for group (1) above, is covered in the first table in the tab: *Checking possible cross-sections of homogenous sections of route along the proposed corridor*.

Checking possible cross-sections of <i>homogenous sections</i> of route along the proposed corridor					
At regular intervals along the corridor measure and enter the available width to see if your proposed cross-sections can be accommodated >>>>	Cross-section #	#1	#2	#3	#4
	Available Width (m):	20.00	19.00	15.90	17.00
	Cross-Sections Possible:	Desirable Minimum	Absolute Minimum	Insufficient Space	Absolute Minimum

Figure 6 – Partial screenshot of the first table in the Cross-Sections Check tab, which checks which cross-sections are possible at different homogenous sections along the proposed corridor.

5.3 To complete this section, you should measure the available width for each homogenous section of route where the width stays similar and enter these values in row 7. You must make sure that the map you put in the **Summary of Scheme** tab is marked-up with the locations of cross-sections and that you clearly label each of these with the matching *Cross-Section #* from row 6.

5.4 You should be as accurate as possible with every measurement you enter in the tool, as confidence in the output of the **Route Cross-Section Tool** depends on the quality of the measurements you put into it.

5.5 Once you have entered the available width, the *Cross-Sections Possible* (row 8) will auto-populate to show whether your proposed cross-section will fit that location.

Cross-section #	#1	#2	#3
Available Width (m):	20.00	19.00	15.90
Cross-Sections Possible:	Desirable Minimum	Absolute Minimum	Insufficient Space

Figure 7 – Partial screenshot of the Cross-Sections Check tab showing which (if any) cross-sections are possible at the first three cross-sections (of homogenous sections of route) made.

5.6 The second cross-section deliverability test, for group (2) above, is covered in the second table: *Checking possible cross-sections of any constrained or atypical locations along the corridor*.

5.7 You now need to locate any pinch-points or atypical sections of the route and repeat the exercise described above, to check which cross-sections are possible at more constrained or challenging places along the route. You should also add a reference in row 14 to allow locations to be pin-pointed and enter the available width at each location into row 15.

Checking possible cross-sections of any <u>constrained or atypical</u> locations along the proposed corridor				
<i>At key constraints along the corridor, measure and enter the available width to see if your proposed cross-sections can be accommodated >>>></i>	Location of constraint (map link, coordinates etc.)	53.46009675617143, -2.245004715820413	53.454637059677324, -2.2451588075717455	53.446570751666776, -2.2444551497350944
	Available Width (m):	17.30	17.10	15.50
	Cross-Sections Possible:	Absolute Minimum	Absolute Minimum	Insufficient Space

Figure 8 – Partial screenshot of the second table in the Cross-Sections Check tab, which checks which cross-sections are possible at constrained or atypical locations along the proposed corridor.

5.8 For any locations where the cross-section does not fit the available width, in rows 9 & 10, and 17 & 18, you must then provide a description of what would need to change in order to fit the infrastructure in and what, if anything, could change in order to fit a more suitable cross-section there.

Location of constraint (map link, coordinates etc.)	53.46009675617143, -2.245004715820413	53.454637059677324, -2.2451588075717455	53.446570751666776, -2.2444551497350944
Available Width (m):	17.30	17.10	15.50
Cross-Sections Possible:	Absolute Minimum	Absolute Minimum	Insufficient Space
What will need to change to fit this in? Please leave a justification if space has been taken away from pedestrians or cyclists, or if shared use cycle tracks are proposed.	Road hatching will need removing to create space for a two-way cycle facility, with associated kerblines changes	Road hatching will need removing to create space for a two-way cycle facility, with associated kerblines changes	
Where only the absolute minimum cross-section is possible, what (if anything) could change to fit in the desirable minimum cross-section? Where there is insufficient space even for the absolute minimum cross-section, what (if anything) could change to allow this to be implemented? Otherwise, what else could be implemented as an alternative?	If the general traffic lanes can be reduced in width from 3.9m to 3.25m, this would allow the desirable minimum footway and cycle track widths here. However, this narrowing would have to happen over a longer section of street and this would require careful consideration.	Desirable minimum not likely possible here	Taxi rank would need to be relocated around the corner in order for the absolute minimum width option to be viable

Figure 9 – Partial screenshot of the Cross-Sections Check tab showing which (if any) cross-sections are possible at the three constrained or atypical cross-sections along the route. This screenshot also shows example comments on the results.

5.9 When considering alternative arrangements, you must make sure that schemes implementing cycling infrastructure do not compromise pedestrian facilities unacceptably. Wherever you propose shared-use cycle tracks in cross-sections, the tool will remind you to justify these against LTN 1/20 guidance. Shared-use cycle tracks are not suitable for many locations and contexts and should only ever be a last resort when all other possible options have been considered and evidenced as undeliverable.

Appendix A – List of Preset Options in the Proposed Cross-Sections tab

Preset option	Notes
Footway	Preset width will vary with street function (Cell E10) to account for scenarios with higher pedestrian traffic. Test pedestrian comfort level with ATE's Route Check tool.
Narrow traffic/bus lane	Where conditions are favourable, cycling in mixed traffic on the carriageway may be an option. The tool highlights where speed and traffic volumes will not suit most cyclists, according to Table 4-2 of LTN 1/20.
Wide traffic/bus lane	Where conditions are favourable, cycling in mixed traffic on the carriageway may be an option. The tool highlights where speed and traffic volumes will not suit most cyclists, according to Table 4-2 of LTN 1/20.
Traffic lane (no buses): speed limit 20/30	Where conditions are favourable, cycling in mixed traffic on the carriageway may be an option. The tool highlights where speed and traffic volumes will not suit most cyclists, according to Table 4-2 of LTN 1/20.
On-highway advisory/mandatory cycle lane	The tool highlights where speed and traffic volumes will mean that this provision will not suit most cyclists, according to Table 4-2 of LTN 1/20.
1-way protected cycle track	The width needed is taken from Table 5-2 in LTN 1/20 with an extra 0.3m added to allow for the minimum width needed to accommodate protection to the track (2 back-to-back kerbs, light segregation, etc). If you need an extra buffer to a traffic lane and width is very constrained, this extra 0.3m can be taken off the buffer width: use Custom Street Features to create a custom-width buffer.
2-way protected cycle track	Justification is needed for this provision. For more information see LTN 1.20 paragraph 6.5.
Shared-use cycle track	Buffer required between this and any cycle facility (due to potential for 'dooring')
Parking bay	Wider buffer needed between this and any cycle facility (due to potential for 'dooring')
Disabled parking bay	Buffer needed between this and any cycle facility (due to potential for 'dooring')
Loading bay	Preset at variable widths depending on context.
Buffer/verge	Preset at variable widths depending on context.

