

National Cycling Data and Analytics Platform

Cycling Infrastructure Scenario Builder

Version 1.03

Quick Start Guide



December 2025

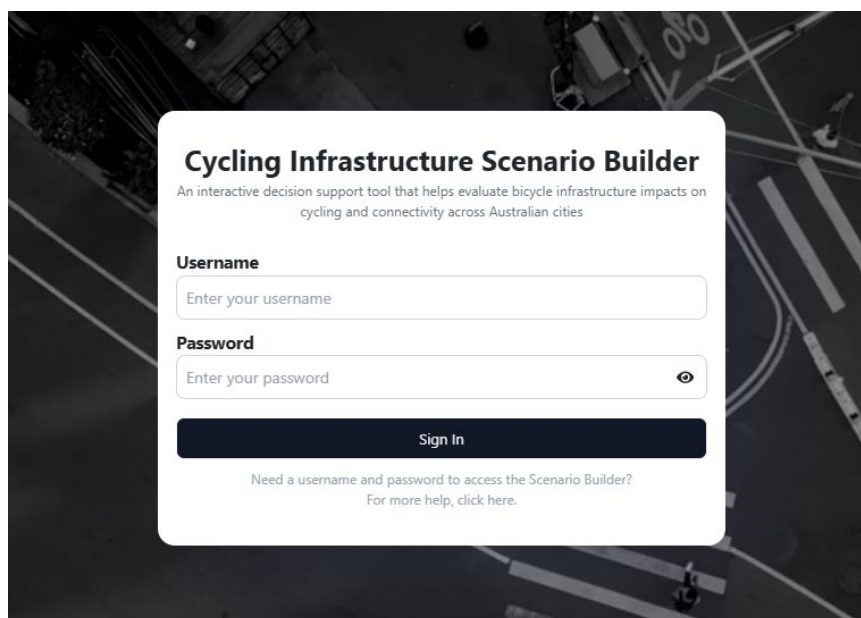
Welcome to this quick overview of the NCDAP Cycling Infrastructure Scenario Builder tool. This document provides information on the functions and capabilities of the tool.

Logging in

The tool can be reached via the website at www.ncdap.org/ The page for the Cycling Infrastructure Scenario Builder Tool has a link to the tool, as well as a form for requesting login credentials.


When you have your credentials, login using your username and password at <https://bikeability-tool.ncdap.org/login>

Note: Most layers in the tool include tool tips – click the layer name for more information.

The image shows a login form for the 'Cycling Infrastructure Scenario Builder'. The form is white with rounded corners and is centered on a dark background that features a faint, high-angle aerial view of a city street intersection. The form contains the following elements: a title 'Cycling Infrastructure Scenario Builder' in bold, followed by a subtitle 'An interactive decision support tool that helps evaluate bicycle infrastructure impacts on cycling and connectivity across Australian cities'; a 'Username' section with a text input field and the placeholder 'Enter your username'; a 'Password' section with a text input field, the placeholder 'Enter your password', and a small eye icon for toggling password visibility; a dark blue 'Sign In' button; and a footer line that reads 'Need a username and password to access the Scenario Builder? For more help, click here.'

Cycling Infrastructure Scenario Builder
An interactive decision support tool that helps evaluate bicycle infrastructure impacts on cycling and connectivity across Australian cities

Username
Enter your username

Password
Enter your password 

Sign In

Need a username and password to access the Scenario Builder?
For more help, click here.

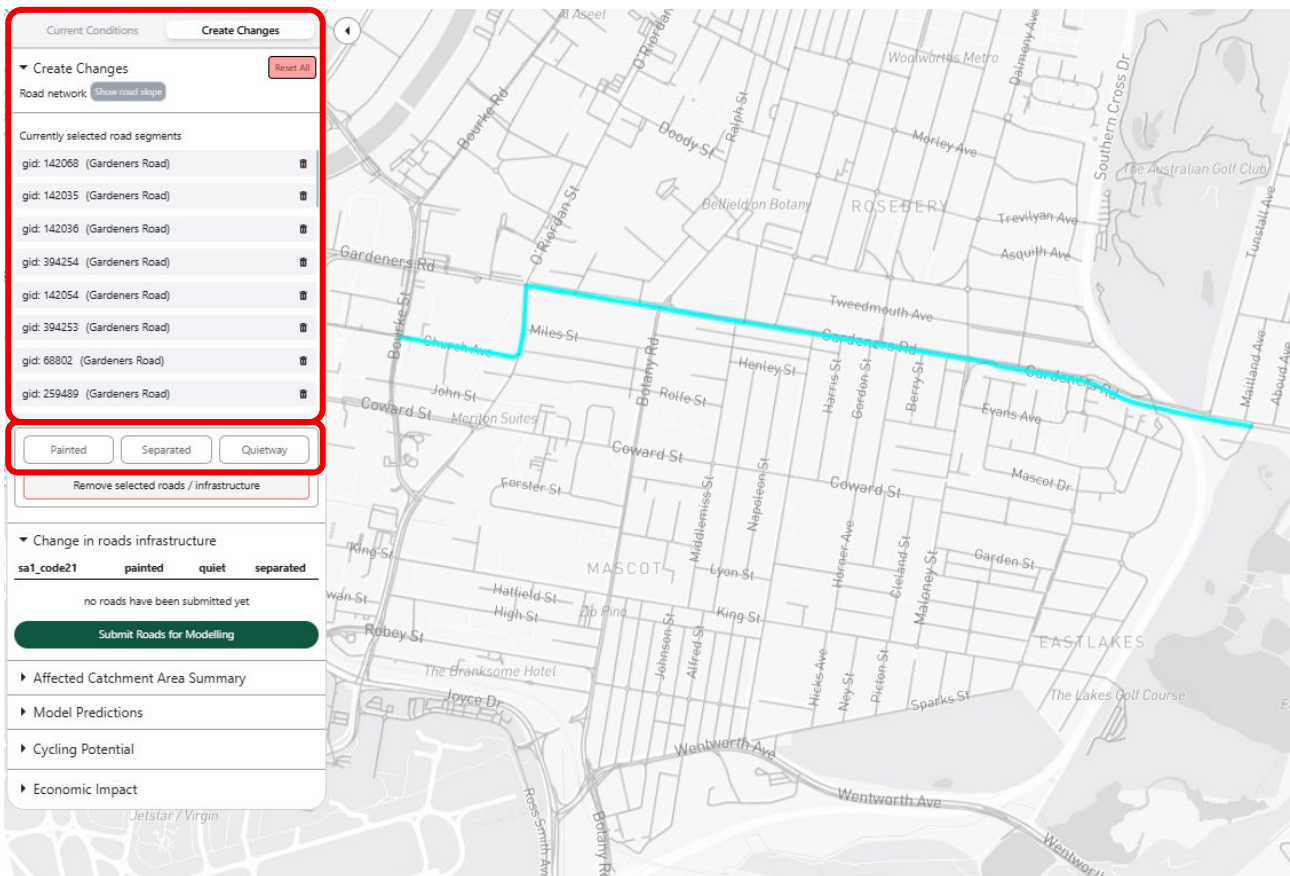
Current Conditions tab

The image shows a web application interface for the 'Current Conditions' tab. The interface is divided into several sections, each with a set of settings and controls. Red boxes highlight specific areas, and red arrows point from these boxes to descriptive text on the right side of the image.

- Settings:** A gear icon in the top left corner is highlighted, with an arrow pointing to the text 'Settings: About, methodology, and logout'.
- Search and City Selection:** A search bar with the placeholder 'Type to search for LGA / SA2' and a dropdown menu showing 'Sydney' is highlighted, with an arrow pointing to the text 'Select city; search for LGA or suburb'.
- Map Controls:** A circular button with a left-pointing arrow is highlighted, with an arrow pointing to the text 'Collapse sidebar'.
- Imagery Options:** A section titled 'Imagery Options' is highlighted, containing radio buttons for 'Mapbox Light', 'Mapbox Dark', 'Satellite', 'Maptiler Light', 'Open Layers', and 'Google Map'. An arrow points from this section to the text 'Choose background map image'.
- Cycling Metrics:** Two checkboxes are highlighted: 'Cycling metrics based on LGA for' (with a dropdown set to 'commute') and 'Severe cycling crashes' (with a dropdown set to 'Cluster'). Arrows point from these to the texts 'Cycling participation by trip purpose' and 'Bicycle crash data from state police records' respectively.
- Cycling and Road Infrastructure:** A section titled 'Cycling and road infrastructure' is highlighted, containing several sub-sections:
 - 'Road network' with a toggle 'Show road slope'.
 - 'Existing cycling infrastructure' with checkboxes for 'Separated / Protected', 'Quietway', 'Shared Path', 'Painted Bicycle Lane', and 'Other bike infrastructure'.
 - 'Cycleway network connectivity' with a dropdown set to '100 Meters'.
 Arrows point from these sub-sections to the texts 'Show road network; toggle to show road slope', 'Show existing bicycle infrastructure by type', and 'Show sections of cycleway network that are connected to each other; dropdown selects gap tolerance' respectively.
- Population and Job Density:** A section titled 'Population and job density' is highlighted, containing checkboxes for 'Population density (by postcode)' and 'Job density (by SA2)'. An arrow points from this section to the text 'Population and jobs per square kilometer'.
- Points of Interest:** A section titled 'Points of interest' is highlighted, containing checkboxes for 'Parks (polygon)', 'Service', 'Transit', 'Schools', 'Shopping', and 'University (polygon)'. An arrow points from this section to the text 'Points of interest and potential trip destinations'.
- BikeSpot 2023:** A section titled 'BikeSpot 2023' is highlighted, containing checkboxes for 'Positive Spots (Safe)' and 'Negative Spots (Unsafe)'. An arrow points from this section to the text 'Crowdsourced data on safe/unsafe locations; reports and data at bikespot.org'.
- Accessibility:** A section titled 'Accessibility' is highlighted, containing checkboxes for 'Park within catchment' (with a dropdown set to '5 mins'), 'Mesh blocks with school connectivity (Primary)', and 'Mesh blocks with school connectivity (Secondary)'. Arrows point from these to the texts 'Relative density of nearby amenities', 'Shows residential areas that have safe connected bicycle infrastructure to their local area public school', and 'Shows residential areas that have safe connected bicycle infrastructure to their local area public school' respectively.
- Map Controls (Bottom):** A row of controls at the bottom of the map is highlighted, including:
 - 'Current zoom: 10.94'.
 - A circular arrow icon for 'Reset view'.
 - A vertical line icon for 'Reset rotation; shift-click the map to rotate'.
 - A square icon for 'Toggle full screen view'.
 - A scale bar labeled '10 km' for 'Graphic scale'.

Create Changes tab 1

Testing infrastructure configurations is a three-step process: Selecting the roads where you want to add infrastructure, choosing the type of infrastructure to be added, and submitting your changes to model the predicted impacts.

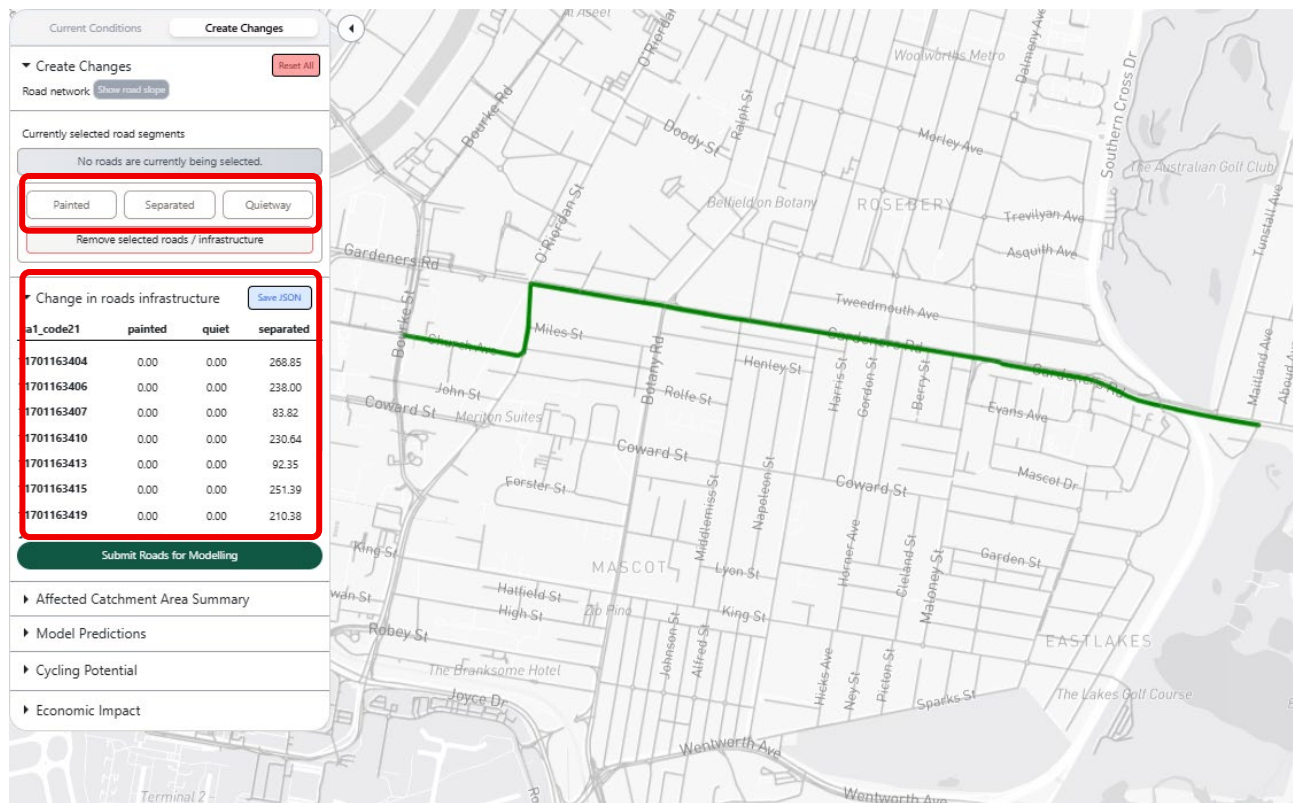


Step 1: Click with your mouse to select the road segments where you want to add bicycle infrastructure. Selected road segments show in light blue. Ensure that you are zoomed in far enough – the road network is only visible at zoom levels 14.5 and above.

Road segments can be deselected by clicking them again. All selected road segments can be deselected by clicking the "Remove selected roads / infrastructure" button.

Note that the tool assumes that all new cycleways will be 2-way. It is not necessary to select both sides of a street, even if it is a divided road.

Create Changes tab 2



Current Conditions **Create Changes**

▼ Create Changes [Reset All](#)

Road network [Show road slopes](#)

Currently selected road segments

No roads are currently being selected.

[Painted](#) [Separated](#) [Quietway](#)

[Remove selected roads / infrastructure](#)

▼ Change in roads infrastructure [Save JSON](#)

a1_code21	painted	quiet	separated
1701163404	0.00	0.00	268.85
1701163406	0.00	0.00	238.00
1701163407	0.00	0.00	83.82
1701163410	0.00	0.00	230.64
1701163413	0.00	0.00	92.35
1701163415	0.00	0.00	251.39
1701163419	0.00	0.00	210.38

[Submit Roads for Modelling](#)

► Affected Catchment Area Summary

► Model Predictions

► Cycling Potential

► Economic Impact

Step 2: Choose infrastructure type to test. Currently the options are Painted bike lanes, separated / protected bike lanes, or quietways / safe active streets.

Selected road segments will change colour, and the segments will now show in the “Change in roads infrastructure” section.

Go back to Step 1 to add additional new infrastructure segments or go on to Step 3 to predict results.

Create Changes tab 3

Current Conditions

Current Conditions	Create Changes	
11701163407	0.00	83.82
11701163410	0.00	230.64
11701163413	0.00	92.35
11701163415	0.00	251.39
11701163419	0.00	210.38

Submit Roads for Modelling

Affected Catchment Area Summary

Category	Value
Population affected	734055
Jobs	462367
Parks	361
Schools	116
Services	489
Transit	40

Model Predictions

Please note: Cycling Prediction estimates the increase in trips from this new cycleway. The prediction assumes that residents' cycling perceptions and confidence improve by 1% as a result of the implementation and messaging around the cycleway project.

Category	Value
Additional people cycling for transport	444
Additional people cycling for recreation / exercise	296
Additional transport cycling trips (per week)	919
Additional recreation / exercise cycling trips (per week)	532

Cycling Potential

Economic Impact

Step 3: Submit roads for modelling. Click the green “Submit Roads for Modelling” button.

The tool will calculate population, jobs, and points of interest within 1.5 km of the new infrastructure.

The tool then calculates the predicted additional number of people riding for transport or recreation and exercise because of the new infrastructure, as well as the predicted number of new weekly cycling trips for transport or recreation and exercise.

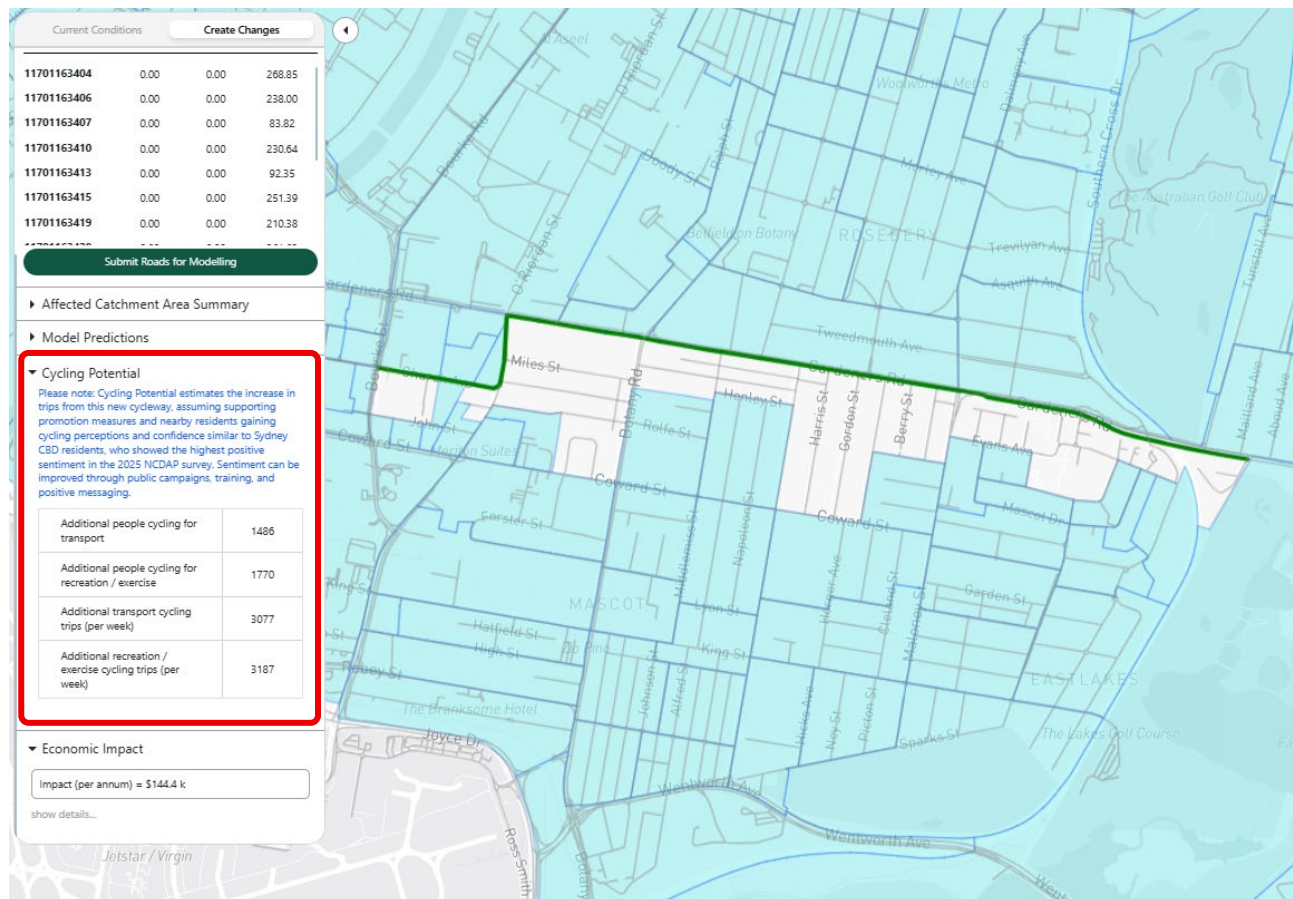
Create Changes tab 4

The tool also estimates the potential additional impact of the new infrastructure if there is also a change in the sentiment of people living within the catchment area of the cycleway. Our modelling indicates that when people have positive feelings about cycling, and when they feel confident in their abilities to ride, new infrastructure will result in much higher numbers of new cyclists and new trips.

For this Cycling Potential table, we assume that the people living in the catchment area have the same feelings about cycling and their cycling skills as people living in the City of Sydney. The City of Sydney showed the highest sentiment scores in our survey, which we attribute to the consistent pro-cycling public messaging from the government and leaders of the city, and the availability of free bicycle training courses for Sydney residents.

This suggests that cycleways in other parts of the study area could expect higher ridership if they combine new infrastructure with cycling-supportive programs.

Note that infrastructure scenarios that show zero values for Cycling Potential are located in areas with equivalently high cycling sentiment to the City of Sydney.



Create Changes tab 5

▼ Economic Impact

Impact (per annum) = \$144.4 k

hide details...

Calculation = Additional transport cycling trips (per week) * Average cycling trip distance (2.85 km) * Economic benefit per kilometre cycled (\$1.06) * 52 weeks per year

The calculation for Economic benefit of new trips uses two data points: An average trip distance of 2.85 km per trip, based on Goel et al (2022); and an economic benefit of \$1.06 per kilometre cycled, based on Del Rosario et al (2024). These benefits include a range of factors that include health, societal, environmental and direct economic impacts. We multiply the number of new transport trips per week by these average figures, and then extrapolate to get the annual economic benefits of the new infrastructure.

Del Rosario, L., Wu, H., Lee, J. B., Roberts, L., Arnold, T., Mathur, S., & Pettit, C. (2024). Assessing the monetary value of active transport and e-mobility: A systematic review. *Transportation Research Interdisciplinary Perspectives*, 27, 101243.

Goel, R., Goodman, A., Aldred, R., Nakamura, R., Tatch, L., Garcia, L. M. T., ... de Nazelle, A. (2022). Cycling behaviour in 17 countries across 6 continents: levels of cycling, who cycles, for what purpose, and how far? *Transport Reviews*, 42(1), 58-81.

Finally, the tool estimates the annual economic impact of the new infrastructure, using a per-kilometre societal benefit of new transport cycling trips. This conservative value is based on literature that considered a range of social, economic, health and wellbeing impacts of additional cycling. Additional information on this calculation can be found by clicking the “show details...” text below the calculation.

Questions, issues, and suggestions for the tool can be sent to ncdap@unsw.edu.au.