



**BICYCLE  
NETWORK®**

CAR



## **Artificial Intelligence Road Surveys (AIRS)**

Providing accurate traffic data for ALL road users



## Providing accurate traffic data for decision makers

Accurate data on the movement, flow and direction of road users can have significant impact on urban and transport planning.

Cities around the world are using all types of data to actively monitor infrastructure improvements, enhance user experience, improve traffic flow and support effective policies.

Technological advancements in counting software is strengthening the ability of policy makers, traffic engineers and active travel experts to monitor and evaluate interventions and make decisions backed by evidence.

Artificial Intelligence (AI) software expands our capacity to track, collect and collate data on all types of road users. It builds a body of relevant, local data that is responsive, accurate, comparable and cost effective.

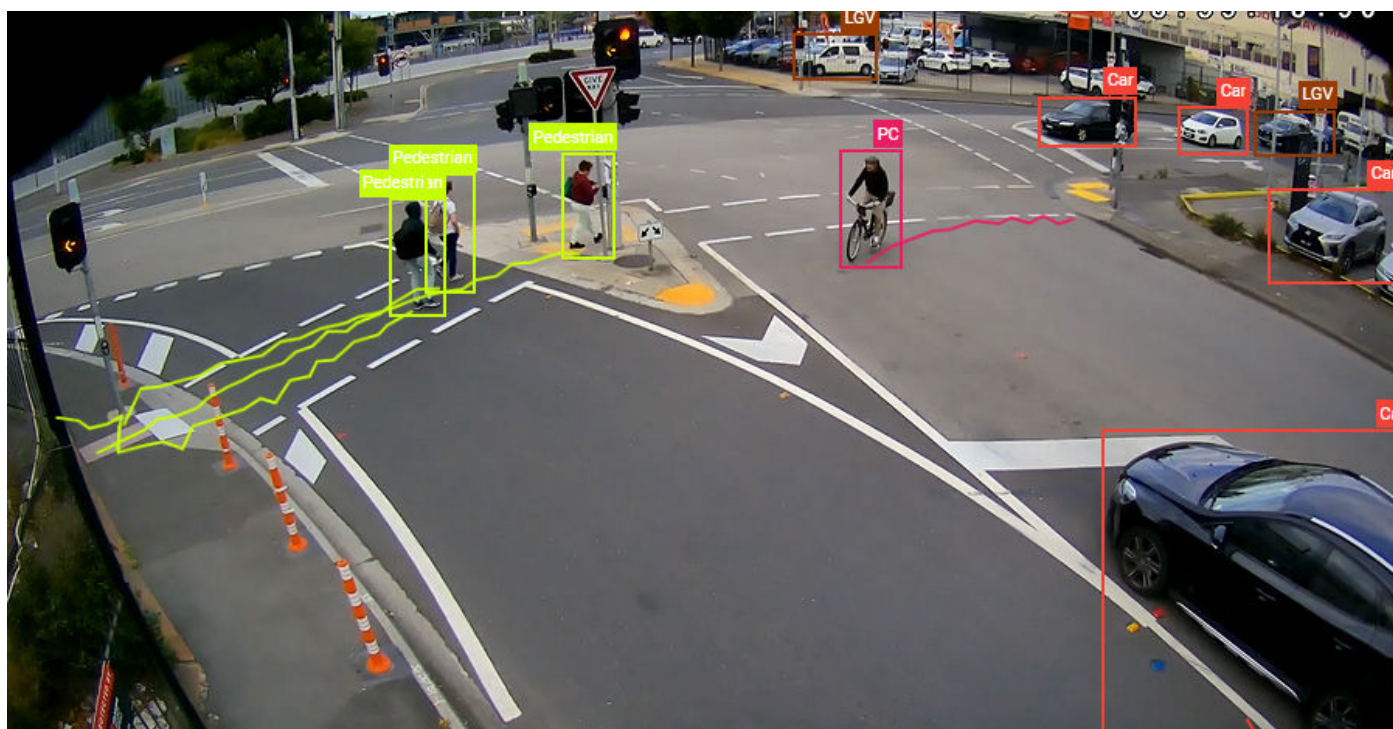
### What is AIRS?

Bicycle Network is offering Artificial Intelligence Road Surveys (AIRS) as part of our suite of complimentary Super Count services.

AIRS is an artificial intelligence-based survey service which autonomously detects and classifies roads users and how they interact with road environments using cameras, sensors and smart software.

Developed by Vivacity Labs, the technology uses cameras or sensors and machine learning to detect and classify up to nine road user types (shown in graphic below) in any camera frame or field of view.

From active travel volumes to motor traffic congestion and movements, AIRS can be uniquely tailored to meet transport planning, monitoring and evaluation objectives.



### The eight road user types identified using AI-based software



Pedestrian



Cyclist



Motorbike



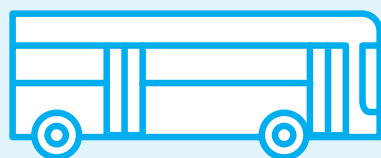
Car



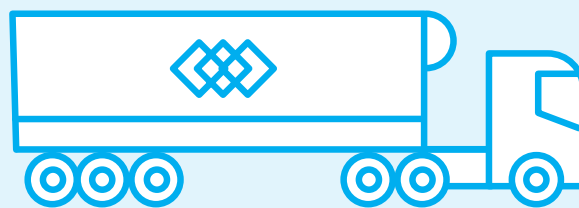
Van



Truck



Bus



Articulate

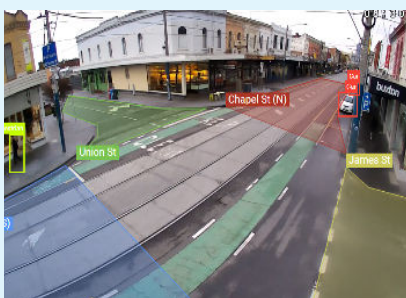
## What data can AIRS provide?

AIRS can provide decision makers with the traffic and active travel data they need to make evidence-based decisions.

Once the AI-technology has identified and classified all users in the field of vision of the sensor or camera, Bicycle Network’s analysts can provide reports on five key areas:

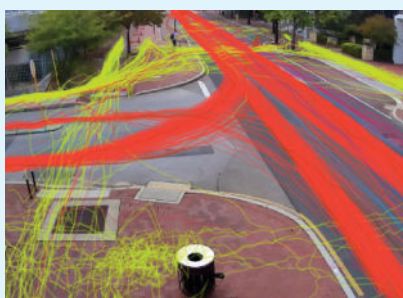
### 1. Road user counts

We can count all road users entering a camera’s field of view and break this data down by time increment and user type.



### 2. Road user path tracing

We can track the paths of movement made by users ('path tracing'), which offers insights into traffic flow and directionality.



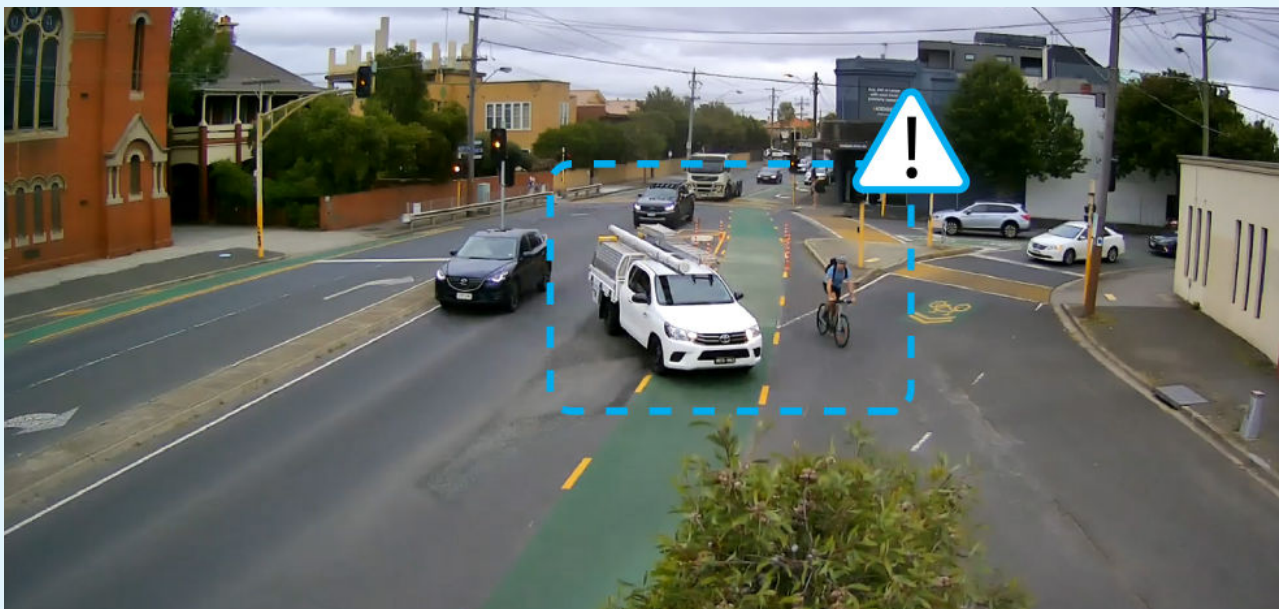
### 3. Road user speed analysis

We can measure user speeds, which is useful for congestion detection and shared path safety measures.



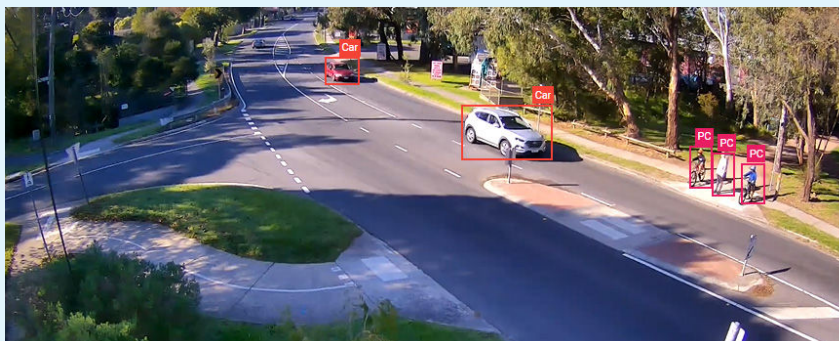
### 4. Conflict Analysis

Using the AIRS conflict analysis methodology, we can detect when different road users concurrently occupy a specified zone on the road before reviewing the footage to determine if a conflict occurred.



### 5. Queue Wait Time Analysis

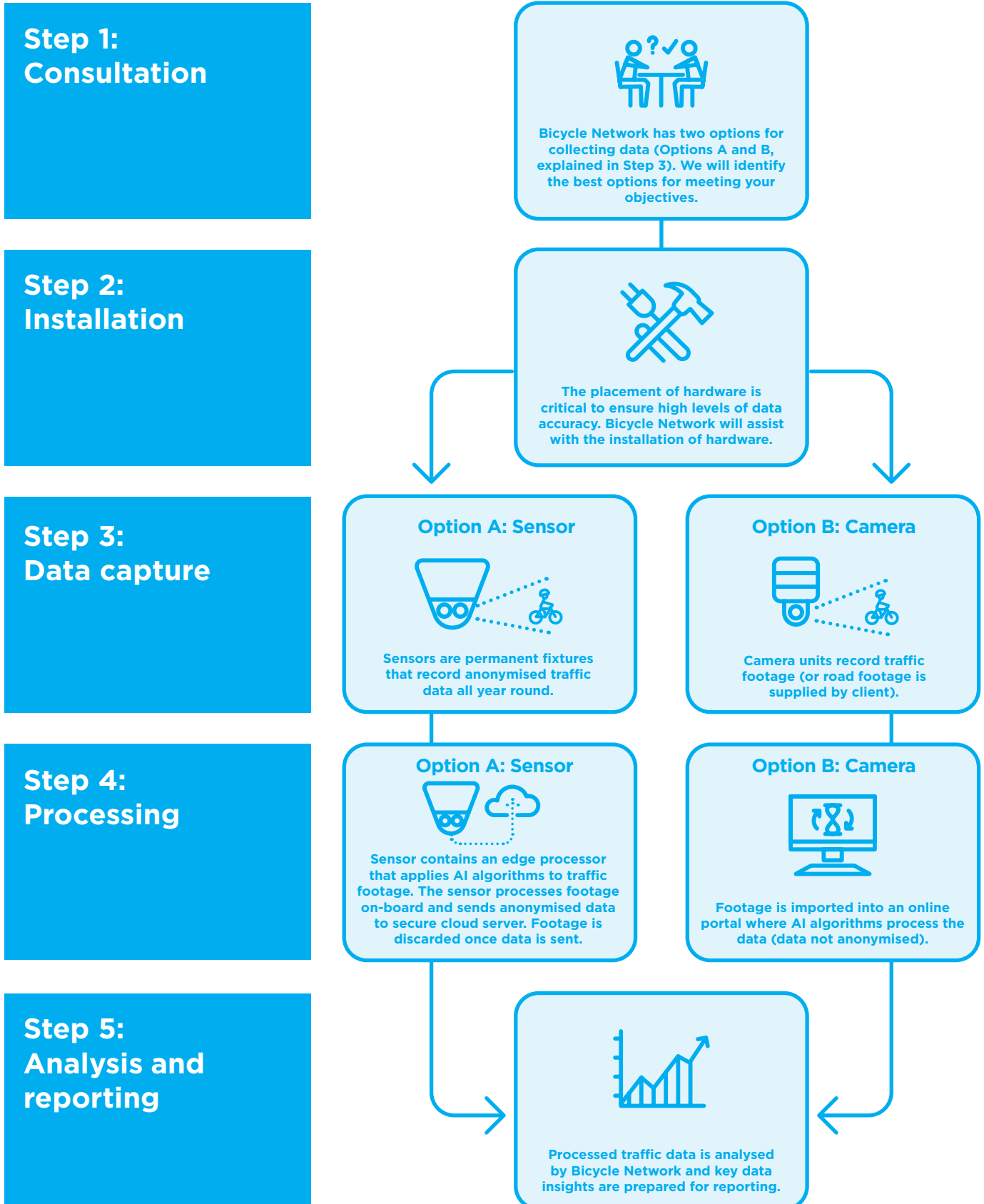
We can calculate all road users queue wait times, both for users on road and those using footpaths or pedestrian crossings.



### How does AIRS work?

AIRS offers clients precise insights into the different types of road users and their behaviours in any given road environment.

When implementing Bicycle Network's AIRS program, there are five key steps:



# Step 1: Consultation

Through an initial consultation with Bicycle Network, one of two data collection options will be recommended for collecting and analysing traffic data.

### Option A: Sensor

A permanently installed device captures and processes traffic data.

### Option B: Camera

A temporary camera is installed to capture data, which is subsequently processed via an online portal containing AI algorithms.

Suitable data collecting options are determined by the needs and objective of the survey - including data needs, limitations, and privacy policies.

	Option A: Sensor	Option B: Camera
<b>How it is installed</b>	Sensors must be hardwired to an existing power source.	Bicycle Network installs temporary, battery-powered HD cameras. Alternatively, pre-recorded footage can be supplied by the client.
<b>Survey length</b>	Continuous, real-time data all year round	Hourly to weekly options
<b>Road user privacy</b>	Privacy is a priority for this option. Sensors contain an edge processor that applies AI algorithms to traffic footage. The sensor processes footage on-board and sends anonymised data to secure cloud server. Footage is discarded once data is sent.	Traffic footage is recorded and imported into an online portal for AI processing. Footage is not anonymised.
<b>Network planning</b>	Sensors can communicate with each other to provide network planning capabilities.	Not available with this option
<b>Billing</b>	Monthly	Per hour

# Step 2: Installation

The placement of AIRS devices is important for obtaining high levels of data accuracy. Bicycle Network will work with external providers to manage the installation of devices.

We ensure that our devices capture the best field of view and are securely mounted through testing and trial.

# Step 3: Data capture

Once installed and tested, our devices will start capturing traffic data.



### Option A

Sensors capture data 24 hours a day, 365 days a year.



### Option B

Cameras record footage for the period nominated by the client.

## Step 4: Processing and storage

Once footage is collected, we use AI algorithms to identify and classify all road users moving within the devices' field of view, and then securely store the processed data for subsequent analysis.

Data capture differs slightly depending on which option is pursued:



### Option A: Sensor

The sensor contains an edge processor, which applies AI algorithms to traffic footage. The sensor processes footage on-board and converts it into anonymised traffic data (road user classification, time stamp and x-y coordinates) and deletes footage. Data is then sent to a secure cloud server and footage is discarded.

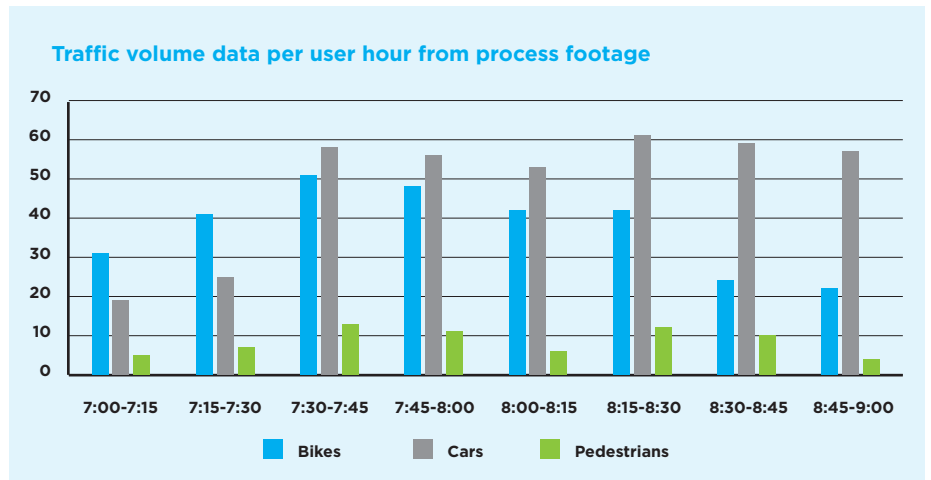


### Option B: Camera

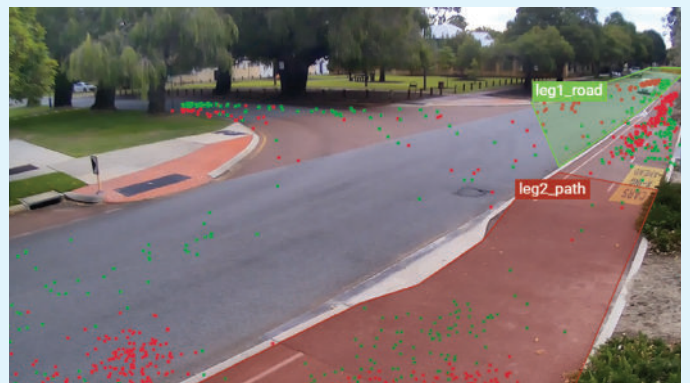
Camera footage is imported into an online portal containing AI algorithms. Object detection algorithms are applied to the raw footage and processed into traffic data. Please note that the traffic footage is not anonymised with this option. Bicycle Network's privacy and confidentiality policy applies to all footage captured.

## Step 5: Analysis and reporting

Bicycle Network will undertake a detailed analysis of the processed data (road user counts, path tracing analysis, speed analysis, etc.) and present tailored insights that inform your project objectives.



**Path tracing.** In this graphic pedestrian paths (yellow lines) reveal their interaction with the streetscape.



**Detailed road user counts:** Spatially focused analysis allows us to undertake detailed investigations of road use. Here, we analyse the number of users 'gutter-hopping' (shifting from bike lane to road).

## What option is best for you?

Feature	Option A: Sensor	Option B: Camera
Road user detection	✓	✓
Road user classification and volume	✓	✓
Live data feed	✓	
Data privacy	Anonymised data	Not anonymised data
Survey duration	Permanent (annually)	Temporary (daily, weekly)
Installation/power source	On-site power source required.	Internal battery, no on-site power required.
Billing	Monthly	Per hour
Traffic counts	✓	✓
Path tracing	✓	✓
Speed analysis	✓	✓

## Costing

Option A: Sensor: Permanent (continuous and live), anonymised data.	Total (ex GST)
Supply and connection of one Vivacity Sensor w/ 5 year warranty	\$6,800 per sensor
Ongoing yearly fee to access to data dashboard	\$1,000 per sensor

Option B: Camera: Temporary (daily or weekly), non-anonymised data.	Total (ex GST)	
Hourly fee to process footage collected by Bicycle Network*:	New Sites	Repeat Sites
Surveys of less than 24 hours <sup>^</sup> <sup>^</sup> a setup fee of \$300 will be charged for surveys less than 12 hours	\$75 p/h	\$55 p/h
Surveys of 24 hours to less than 48 hours	\$65 p/h	\$50 p/h
Surveys of 48 hours or more	\$60 p/h	\$45 p/h

\*Semi-automated analysis, such as for compliance, near-miss/conflict, and queue waiting time, is charged at an additional rate of \$75 per hour.

**A discount will be applied for surveys where the client supplies the footage.**





## **BICYCLE** NETWORK®

With nearly 50,000 members, Bicycle Network is the largest member-based bike riding organisation in Australia. At Bicycle Network, we campaign for better conditions, infrastructure and policies that make it easier and more accessible for people of all ages and abilities to ride a bike. We work closely with all levels of government to improve conditions for all people who ride.

Did you know that at Bicycle network we also do:

### **RIDE2SCHOOL**

Our Ride2School team work collaboratively with schools, students and councils to help young people overcome the barriers preventing them from riding to school and getting active. Schools engaged in the year-long program report an active travel rate of 45 per cent, nearly double the national average. Other Ride2School initiatives include:

**MIND.BODY.PEDAL** - a one-day program aimed at empowering and inspiring secondary school aged females. It is designed to address the unique barriers holding teenage females back from being physically active.

**ACTIVE PATHS** - is a collaborative way-finding initiative, designed to make the journey to and from school as safe, fun and easy as possible!

Find out more by visiting [ride2school.com.au](http://ride2school.com.au) or contacting [ride2school@bicyclenetwork.com.au](mailto:ride2school@bicyclenetwork.com.au).

### **ADVOCACY AND CAMPAIGNS**

We work with government, stakeholders, and the community to improve the bike riding environment across Australia. We provide expert advice on transport planning, and campaign for policies that support people riding bikes.

If you want our help on a bike riding issue or active transport plan in your LGA, reach out to our Public Affairs team at [campaigns@bicyclenetwork.com.au](mailto:campaigns@bicyclenetwork.com.au)

**GET IN TOUCH** - If your council would like to explore opportunities to collaborate with Bicycle Network or our members in the future, please get in touch with via [bikefutures@bicyclenetwork.com.au](mailto:bikefutures@bicyclenetwork.com.au)

### **BIKE PARKING**

Bicycle Network are the bike parking experts - we design, quote, construct and install a wide range of bike parking and end-of-trip facilities for Council's and private developments.

For more information, visit [bicyclenetwork.com.au/bike-parking-experts](http://bicyclenetwork.com.au/bike-parking-experts) or email [parking@bicyclenetwork.com.au](mailto:parking@bicyclenetwork.com.au) (1300 727 563)

### **PARKITEER - BIKE CAGES**

We manage a network of 130 secure bike parking cages at public transport hubs across Melbourne and regional Victoria on behalf of the Department of Transport.

Learn more at [parkiteer.com.au](http://parkiteer.com.au) or by contacting [parkiteer@bicyclenetwork.com.au](mailto:parkiteer@bicyclenetwork.com.au)

### **RIDES AND EVENTS**

We run some of Australia's biggest bike rides, including The Great Vic Bike Ride (3,000+ riders), Around the Bay (10,000+ riders), the Great Outback Escape (NT), the iconic Peaks Challenge Falls Creek (VIC) and many more. We also coordinate regular social bike rides to help encourage riding and discuss the concerns of the riding public.

To organise events and social rides in you LGA, visit [bicyclenetwork.com.au/rides-and-events](http://bicyclenetwork.com.au/rides-and-events)

### **CORPORATE MEMBERSHIPS**

Sign up as a corporate member and your employees will be able to take advantage of our exclusive corporate membership offer. In addition to helping us improve bike riding conditions across Australia, our members are covered every time they ride with our bike riding insurance. Plus, they'll get access to a range of services and discount offers.

Contact us at [membership@bicyclenetwork.com.au](mailto:membership@bicyclenetwork.com.au)

CAR

