RAA

Advocating for SA

Risky Rides 2020

Report: January 2021

Motor | Home | Travel

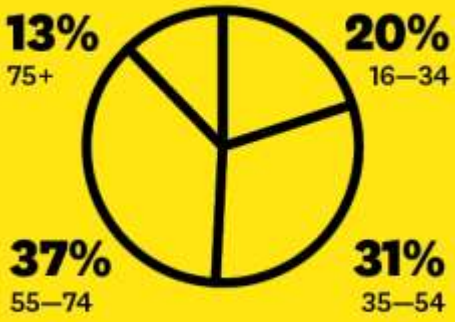
RAA at a glance

South Australia's **largest** membership organisation

Advocating for South Australians for over **115 years**

750k+
current members (55% of SA adults)

150k+
RAA members are also cyclists



Our members span all adult age groups

1000+
staff employed across SA

Largest
personal lines insurer in SA

340k+
roadside callouts per year

530+
tourism providers promoted on Experience SA

450+
businesses accredited through RAA's Approved Repairer network

29k+
people educated on road, bike and child safety each year

23k+
free lessons delivered to keep SA learner drivers safe

Contents

Executive Summary

RAA is South Australia's largest member organisation, representing more than 750,000 South Australians – about half the state's population. Through our diverse range of motor, home and travel products and services, we engage with our members in a variety of ways. This has given us unique insights into transport infrastructure improvements that South Australians want and need.

RAA has had a trusted advocacy role in transport and mobility for more than 115 years, and through this we've developed an expert understanding of South Australia's transport infrastructure requirements. We ensure our advocacy is evidence-based by consulting with industry, government and our members and by utilising open source data, research and technical field work to develop and test our recommendations.

RAA aligns its mobility advocacy with the following three themes:

- **Safe** – A safe mobility system can be defined as a system that not only achieves, but outperforms, national and international safety benchmarks. It encompasses safe people, using safe vehicles, on safe roads, at safe speeds.
- **Accessible** – To have a cost efficient, convenient and reliable transport network as an essential part of personal mobility.
- **Sustainable** - Sustainable mobility encompasses the needs of current and future generations, and considers financial, societal and environmental factors.

This report is based on the findings of RAA's inaugural 'Risky Rides' survey, which was promoted through an RAA media release, RAA's samotor e-news, RAA social media advertising aimed at cyclists, and promotional activity by Bicycle SA and the Bicycle Institute of South Australia. A total of 471 survey respondents made 933 nominations across South Australia's cycle network. These have been aggregated to produce a list of the top 10 on-road locations, top 5 off-road locations and a top regional location. Site inspections were undertaken at several of these locations to verify the issues raised and help build a greater understanding of these issues whilst producing this report.

Safer cycling infrastructure will encourage greater use of active travel, a key government objective as outlined in the South Australian Government's Climate Change Action Plan 2021-2025.

RAA now outlines the top ten nominated on-road locations, top five nominated off-road locations and top regional locations, as well as other key data and survey outtakes.

South Australia's Risky Rides

Top 10 on-road Risky Rides

1	2	3	4	5	6	7	8	9	10
ANZAC Hwy	**Marion Rd**	**Greenhill Rd (metro)**	**Payneham Rd**	**Port Rd**	**Portrush Rd**	**Cross Rd**	**Frome St/ Frome Rd**	**Unley Rd**	**Fullarton Rd**
Uneven surface	Discontinuous	Discontinuous	Discontinuous	Uneven surface	Trucks	Uneven surface	Motor vehicles	Discontinuous	Discontinuous
Motor vehicles	Motor vehicles	Motor vehicles	Motor vehicles	Motor vehicles	Motor vehicles	Motor vehicles	No cycle path	Parked vehicles	Motor vehicles
Rough surface	Uneven surface	Uneven surface	Uneven surface	Rough surface	Discontinuous	Discontinuous	Discontinuous	Motor vehicles	Uneven surface

Top 5 off-road Risky Rides

1	2	3	4	5
River Torrens Linear Park Trail	**Little Para Trail**	**Coast to Vines Rail Trail**	**Crafers Bikeway**	**Lynton Belair Urban Trail**
Uneven surface	Debris	Rough surface	Trucks	Steep
Pedestrians	Rough surface	Uneven surface	No cycle path	Rough surface
Narrow	Pedestrians	Debris	Motor vehicles	Pedestrians

Top regional

1
The Barossa Trail
Uneven surface
Obstacles
Narrow

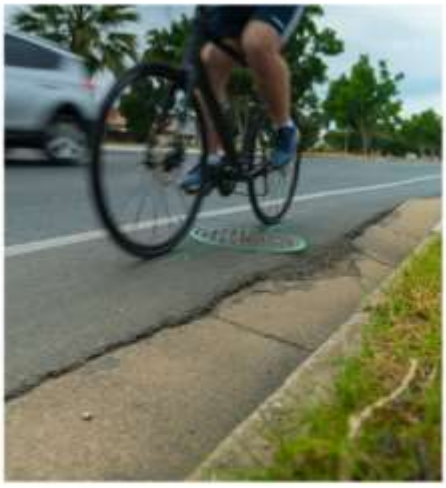
Legend

Uneven surface in cycle lane	Lots of trucks using road	Debris on cycle path for example water, leaves, glass	Lots of motor vehicle traffic on road	Vehicles stopped in cycle lane during operating hours	Steep gradient on cycle path	Rough, slippery or loose cycle lane surface	Cycle path shared with pedestrians	Bollards or other obstacles on cycle path	Cycle lane not continuous	Narrow cycle path	Lack of off-road cycle path

South Australia's Risky Rides

21% of RAA members have cycled in the past year

2,544 cyclists were injured (2,518) or killed (26) in a road crash between 2015 and 2019



Narrow, uneven cycle lane on ANZAC Hwy

Right angle and side swipe crashes involving a motor vehicle account for most cyclist crashes

11% of cyclist crashes occur in the Adelaide CBD

85% actively avoid main roads without cycle lanes

91% have experienced a close pass

471 Survey respondents

73% have experienced aggressive beeping, rude hand gestures or verbal abuse

39% have been knocked off their bike by a vehicle

82% were for an on-road cycle lane

18% were for an off-road cycle path

933 Risky Rides nominations

394 **cyclist casualty crashes** occurred on the top 10 on-road nominations between 2015 and 2019

70% had crashes or near misses reported by survey respondents

Introduction

Background and objectives

RAA has been running its Risky Roads initiative since 2013, which enables road users to nominate roads or intersections they find confusing, difficult to negotiate or that make them feel unsafe. The three iterations of Risky Roads have been highly effective at identifying trouble spots on the metropolitan and regional road network, enabling RAA to advocate for required upgrades and maintenance work. However, the vast majority of Risky Roads nominations come from motorists, meaning the initiative does not necessarily address the safety concerns of other road user groups.

There is an increasing number of cyclists using the South Australian road and cycle path network and approximately two in ten RAA members have ridden a bicycle in the past 12 months. RAA therefore launched its inaugural Risky Rides survey to identify the roads, cycle lanes and paths that pose the biggest risk to cyclists. This enables us to advocate for safer cycling infrastructure for RAA members and other South Australians who choose to cycle.

Safer cycling infrastructure will encourage greater use of active travel, a key government objective as outlined in the South Australian Government's Climate Change Action Plan 2021-2025[1].

Methodology

RAA created an online survey to enable members of the South Australian community to nominate up to 10 risky on-road cycle lanes or off-road cycle paths. The survey also collected demographic and cycling information about respondents and was open from 24 September 2020 until 1 November 2020. To engage a broad cross section of the community, the survey was promoted through an RAA media release, RAA's samotor e-news, RAA social media advertising aimed at cyclists, and promotional activity by Bicycle SA and the Bicycle Institute of South Australia.

A total of 471 people took part in the survey, submitting 933 nominations of specific risky cycle infrastructure, equating to approximately two nominations per respondent. A further 34 nominations were received that either did not relate to a specific location or raised concerns about cyclist behaviour rather than cycling infrastructure, which were analysed separately.

The survey results reflect the attitudes and behaviours of those who chose to take part, typically South Australians with a strong interest in cycling infrastructure (whether as cyclists or as non-cyclists). The survey results were aggregated to create a list of the top 10 roads and top 5 off-road paths nominated by cyclists. A desktop review of each location was then undertaken which considered survey verbatim responses, 2015-2019 crash data and approximate motor vehicle traffic volumes for on-road cycle infrastructure. RAA's safety and infrastructure team also conducted several site investigations to review and confirm some the issues being raised, with the intention being to undertake further site investigations to guide RAA's future advocacy priorities.

About this report

This report summarises the results of the Risky Rides survey and then profiles each of the 10 top roads and 5 top off-road paths, drawing on survey feedback as well as crash data and site assessments conducted by RAA. Verbatim responses provided in this report are the views of individual survey respondents and do not necessarily represent views held by RAA.

[1] South Australian Government, 2020, Department for Environment and Water, South Australian Government Climate Change Action Plan 2021 – 2025, Action 4.7, pg. 35, accessed at <Department for Environment and Water | South Australian Government Climate Change Action Plan 2021 – 2025>.

Results

Profile of all respondents

There were 471 people who took part in the Risky Rides survey and nominated one or more risky cycle lanes or paths. Following their nominations, respondents were asked to complete a set of demographic questions including gender, age, location and cycling frequency. The vast majority of respondents completed these questions and the results from these 422 respondents demonstrate broad community participation in the Risky Rides survey.

Responses were received from people covering a wide range of ages, with 21% of respondents aged 17-34, 40% aged 35-54 and 40% aged 55 and over. Survey results have been analysed by these three combined age categories. While 70% of respondents are male, this is reflective of higher cycling participation rates among males than females in South Australia.[2] Over nine in ten responses came from people who live in Greater Adelaide, meaning there is limited representation from regional SA. However, the focus of the Risky Rides survey was on existing cycling infrastructure and the vast majority if this is found in the metropolitan area, especially with regards to on-road cycle lanes.

Table 1: Respondent demographics

Subgroup	No. of responses	% of total
Gender		
Male	294	70%
Female	123	29%
Other	5	1%
Location		
Greater Adelaide	388	92%
Regional SA	17	4%
Other/Unknown	17	4%
Age		
17-24	16	4%
25-34	71	17%
35-44	82	19%
45-54	86	20%
55-64	77	18%
65-74	64	15%
75+	26	6%
Total	**422**	**100%**

[2] Austroads (2017) *National Cycling Participation Survey 2017: South Australia*, accessed at <https://austroads.com.au/resources/documents/supporting-documents/corporate-reports/AP-C91-17_Cycling_Participation_Survey_2017_SA.pdf>.

Respondents were asked how often they cycle to understand whether their nominations were made from the perspective of a cyclist or non-cyclist and also to gauge whether both regular and casual cyclists participated in the survey. Half of respondents cycle most days and eight in ten cycle either most days or at least weekly. Male and younger respondents typically cycle on a more frequent basis: 85% of males cycle either most days or at least weekly compared with 73% of females; and 92% of 17-34 year olds cycle either most days or at least weekly compared with 74% of those aged 55 and over. Most of the non-cyclists who completed the survey are aged 55 and over.

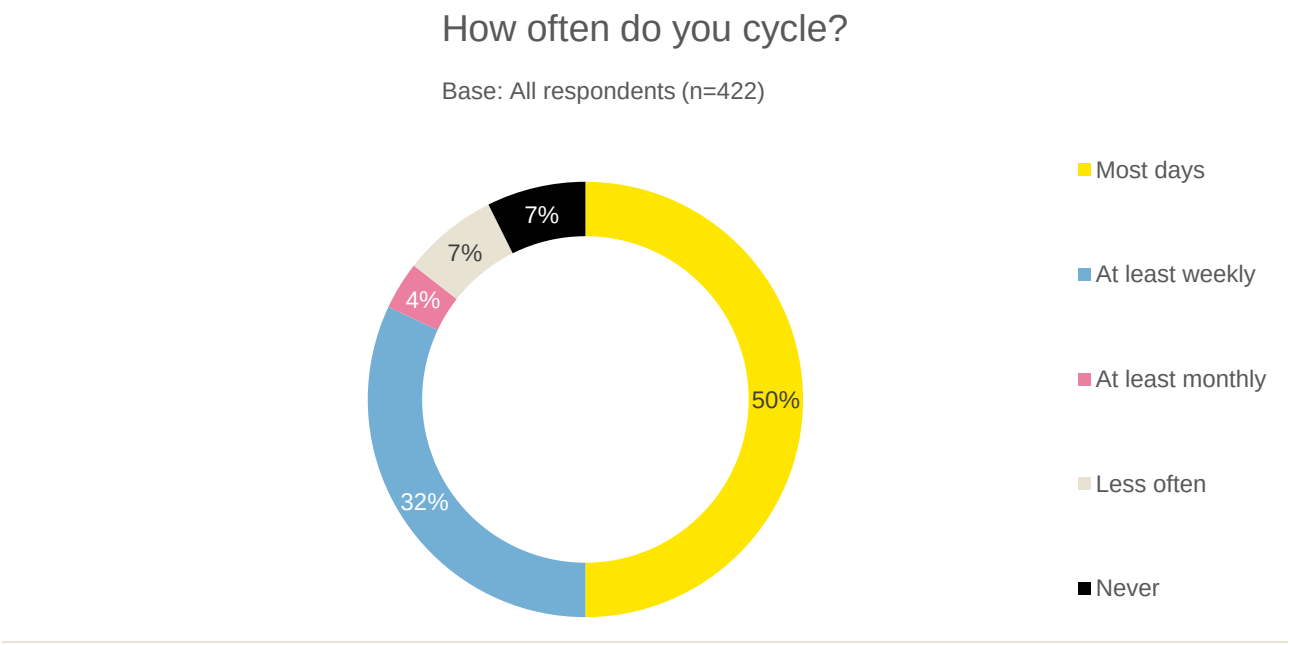


Figure 1: Cycling frequency

Profile of cyclists who responded

Those who indicated that they have ever cycled were asked a series of additional questions relating to their cycling to understand the types of cycling they do, the impact of the COVID-19 pandemic on their cycling and the extent to which they have had unpleasant or risky experiences when cycling.

Among respondents who cycle, eight in ten regularly do so on residential urban streets, three quarters regularly cycle on main urban roads and three quarters regularly cycle on off-road cycle paths or trails. This indicates that most survey respondents are utilising a range of infrastructure types depending on location and journey purpose, with main roads in towns and cities featuring prominently and hence likely to be well represented in Risky Rides nominations. This reflects that most respondents live in Greater Adelaide and that rural cycling is less common, with only a third regularly cycling on local country roads and a quarter regularly cycling on main country roads. In addition, a third regularly cycle on footpaths.

Male respondents are more likely than female respondents to cycle on main urban roads (80% compared with 63%) and on local country roads (39% compared with 24%), and 17-34 year old respondents are the most likely age group to cycle on main urban roads (88% compared with 78% of 35-54 year olds and 64% of those aged 55 and over).

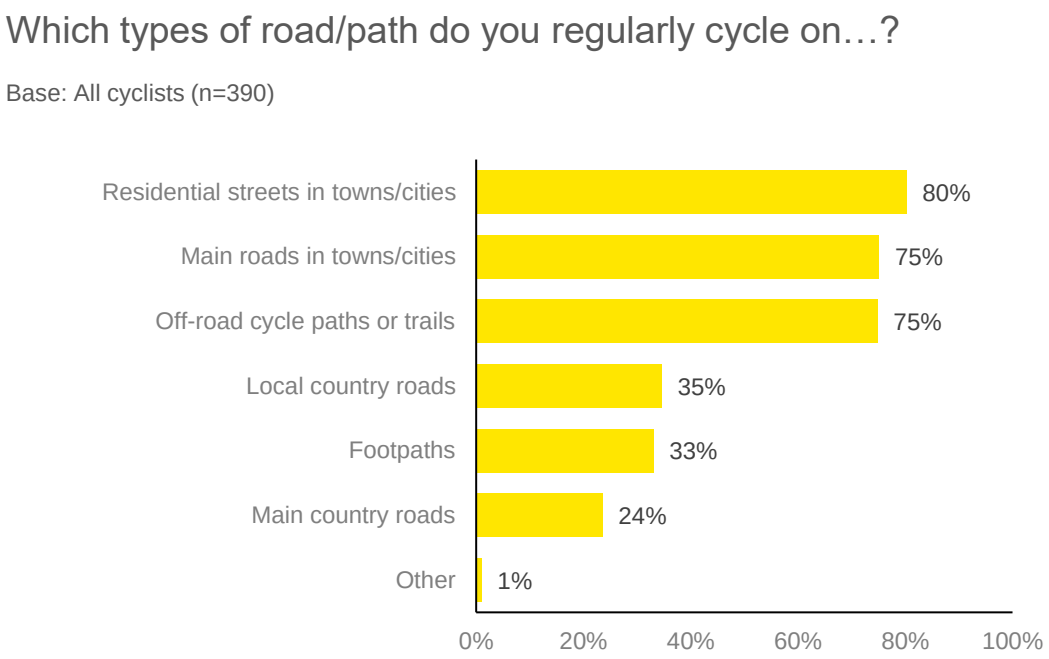


Figure 2: Types of road/path respondents regularly cycle on

The most common type of cycling trip among respondents who cycle is riding at least 10km for leisure, recreation or training, with three quarters regularly doing this. Males (79%) are more likely than females (56%) to regularly cycle this type of trip and it is equally common among both daily and weekly cyclists.

The second most common trip type is commuting for work, with over half of cyclists and seven in ten daily cyclists regularly doing this. While seven in ten of those aged under 55 regularly cycle to work, this falls to three in ten of those aged 55 and over, as likelihood to be working decreases.

A third of respondents who cycle ride to shops, retail or medical appointments regularly and a third regularly cycle under 10km for leisure or recreation. While daily cyclists (45%) are most likely to ride to shops, retail or medical appointments, infrequent cyclists who ride less often than weekly (75%) and females (41%) are most likely to ride under 10km for leisure or recreation.

A quarter of respondents regularly cycle to food or entertainment venues and to visit the homes of family or friends, increasing in both cases to a third of daily cyclists. Of respondents who cycle, 16% ride to fitness or sport venues regularly and one in ten regularly ride to an education venue, rising to two in ten of those aged 17-34.

Since longer recreational rides and commuting are the two most common types of trip among survey respondents, most Risky Rides nominations are likely to reflect routes commonly used for commuting or longer distance recreational riding.

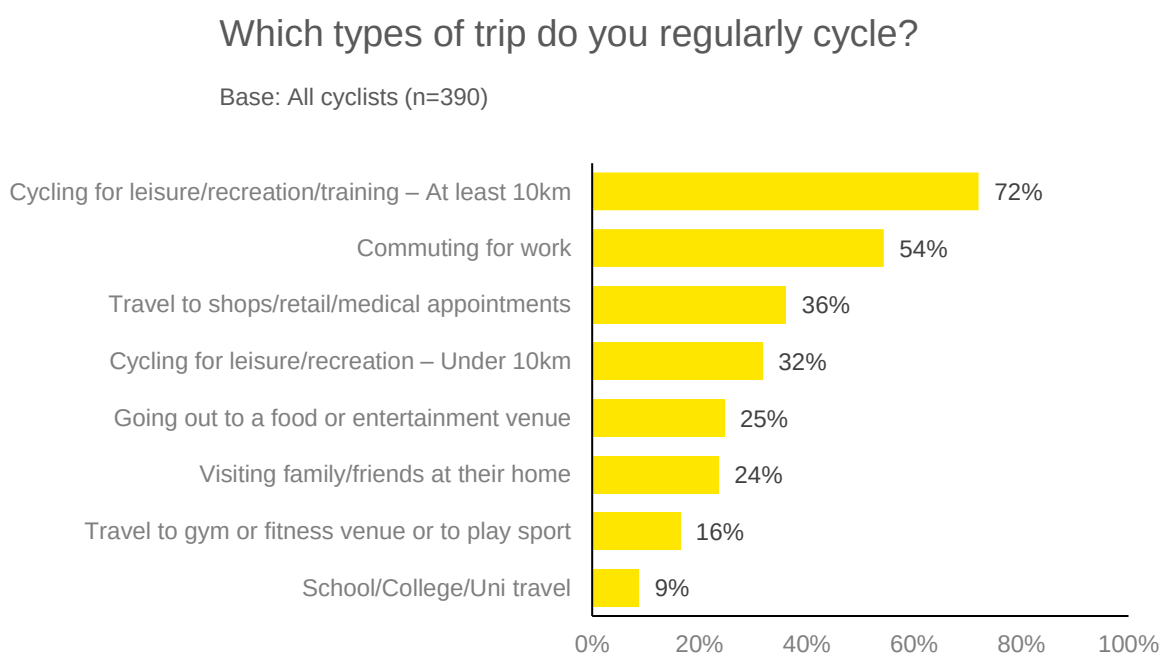


Figure 3: Types of trip respondents regularly cycle

Three in ten respondents who cycle indicated that the COVID-19 pandemic has influenced the amount they cycle, with two in ten now cycling more often and one in ten now cycling less often. This aligns with other evidence suggesting that COVID-19 has led to a net increase in cycling.

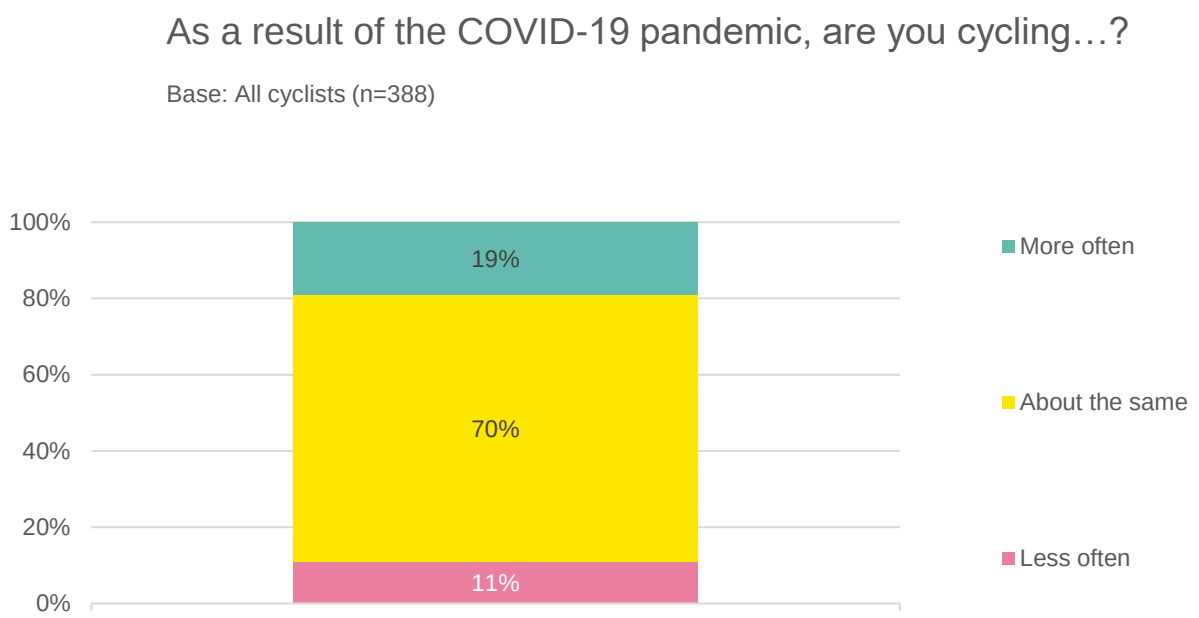


Figure 4: Impact of COVID-19 on the amount that respondents cycle

To provide broader context about road infrastructure that cyclists perceive as risky, cyclists were presented with a list of road, path and intersection types and asked if they actively try to avoid any of them when cycling. This highlighted that the vast majority (96%) of survey respondents indicated that there are sections of roads or paths which they actively try to avoid when cycling.

Three types of road infrastructure are actively avoided by a majority of cyclists:

- Main roads without cycle lanes (85%),
- Travelling on roads during peak hour traffic (58%), and
- Shared paths or footpaths with high pedestrian volume (50%).

A further three types are actively avoided by at least a third of cyclists:

- Large roundabouts (45%),
- Intersections with a main road where there are no traffic signals (40%), and
- Intersections where a right turn is required (36%).

A quarter of cyclists actively avoid main roads with cycle lanes, two in ten actively avoid steep uphill roads and paths and one in ten actively avoid steep downhill roads and paths.

Most survey respondents are willing to ride on main roads with cycle lanes but actively try to avoid main roads without cycle lanes. This is likely to be reflected in a prominent focus within nominations on main roads where the cycle lane is not continuous.

Cyclists aged 55 and over are most likely to actively avoid travelling on roads during peak hour traffic (70%), which may reflect that some in this age group are not working and therefore do not need to travel during peak hour. On the other hand, those aged 17-34 year are most likely to actively avoid steep uphill routes (35%). Females are more likely than males to actively avoid some types of infrastructure, including intersections with a main road where there are no traffic signals (57%), steep uphill roads and paths (34%) and steep downhill roads and paths (19%). Infrequent cyclists are also particularly likely to actively avoid steep uphill (52%) and steep downhill (39%) routes.

Respondents were given the opportunity to name other types of road, path or intersection that they actively try to avoid. A range of other types were raised, including roads or paths with a poor surface, discontinuous cycling infrastructure, high speed roads (with no shoulder), roads with lots of trucks, roads with lots of parked cars and cycling infrastructure with debris or overhanging vegetation.

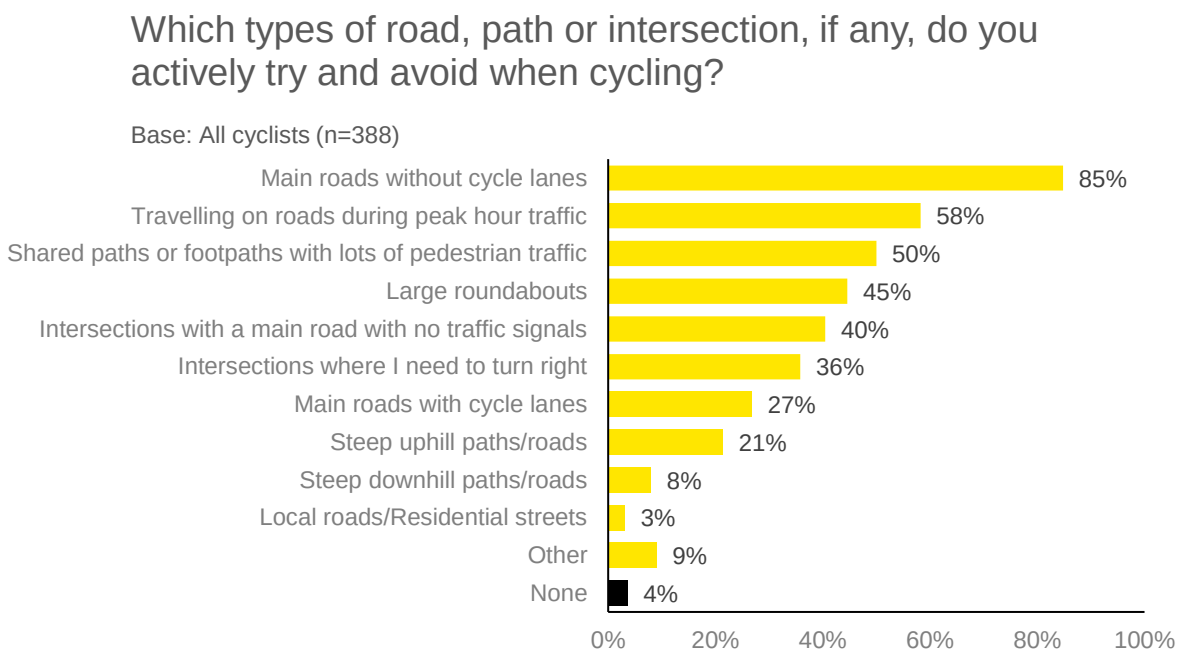


Figure 5: Types of road, path or intersection that respondents try to avoid when cycling

Finally, cyclists were presented with a list of risky scenarios involving road rage or a near miss or crash with another vehicle and asked whether they had ever experienced the scenarios when cycling. While these scenarios relate to other road user behaviour, the design of road and cycling infrastructure can play a significant role in the likelihood of the scenarios occurring. Only 5% of cyclists have not experienced any of the risky scenarios, varying from 0% of daily cyclists and 3% of weekly cyclists to 30% of casual cyclists.

Nine in ten survey respondents who cycle have experienced a close pass by a vehicle, eight in ten have experienced a vehicle cutting across their path when they have priority, three quarters have experienced aggressive horn beeping, rude hand gestures or verbal abuse and three quarters have experienced an overtaking vehicle pulling in and forcing them to brake sharply.

Two thirds of survey respondents who cycle have experienced a vehicle door opening directly in front of them, half have been tailgated by a vehicle and four in ten have been knocked off their bicycle by a vehicle.

There is a strong correlation between how often respondents cycle and how likely they are to have experienced the risky scenarios. For example, among respondents who cycle most days, 88% have experienced an overtaking vehicle pulling in and forcing them to break sharply, 80% have experienced a vehicle door opening directly in front of them and 51% have been knocked off their bike by a vehicle. In addition, males are more likely than females to have experienced a vehicle door opening directly in front of them (69% compared with 56%).

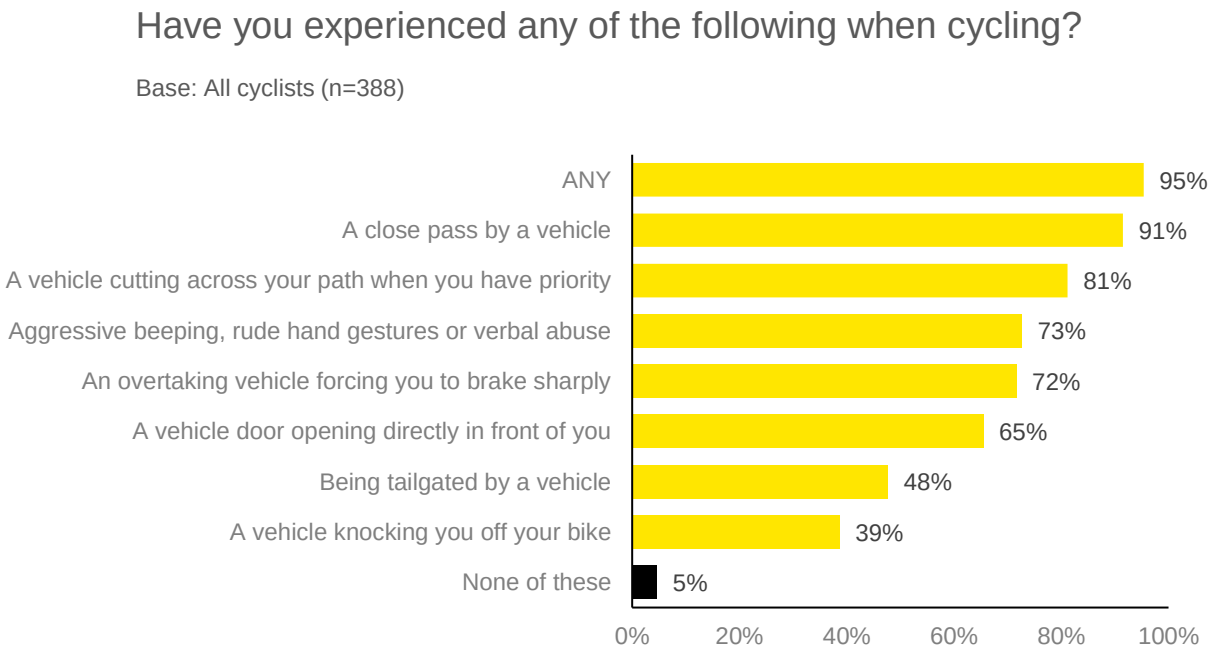


Figure 6: Risky scenarios experienced by respondents when cycling

Overview of nominations

There were 933 Risky Rides nominations made for a specific location where the cycling infrastructure presents a risk to cyclists. This equates to an average of approximately two nominations per survey respondent (noting that each respondent was able to make up to 10 nominations).

Eight in ten nominations (n=765) are for on-road cycle lanes, with the remaining two in ten (n=168) for off-road cycle paths. In both categories, the vast majority of nominations are for either the entire length of the lane/path or for a section of it, with these accounting for 84% of all nominations. The remaining 16% of nominations are for an intersection, with intersections comprising a slightly larger proportion of off-road cycle path nominations (22%) than of on-road cycle lane nominations (15%).

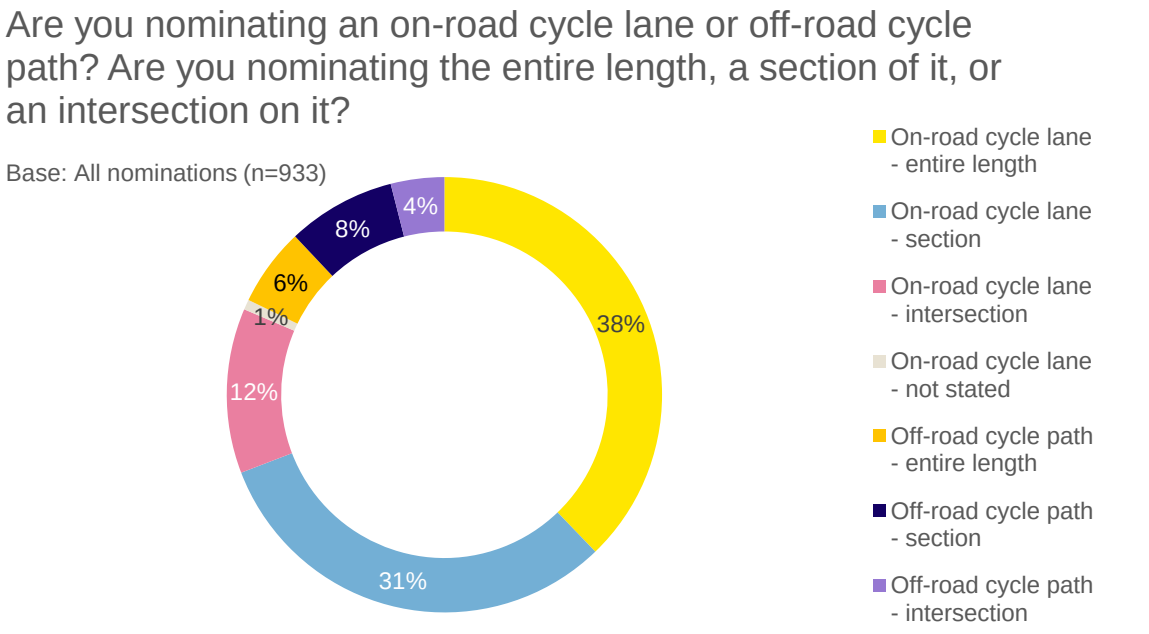


Figure 7: Type of infrastructure being nominated

As part of a nomination, respondents were asked to select up to five features that makes their nominated cycling infrastructure risky. The response options provided varied depending on whether the nomination was for a section or entire length of an on-road cycle lane, for a section or entire length of an off-road cycle path or for an intersection on either an on-road cycle lane or off-road cycle path.

Looking first at nominations for a section or entire length of an on-road cycle lane, a majority of nominations indicated that:

- there is lots of motor vehicle traffic on the road (59%), and that
- the cycle lane is not continuous (51%).

At least three in ten nominations indicated that:

- there is an uneven surface in the cycle lane e.g. potholes, cracks, bumps or drains (37%), and that
- an off-road cycle path is lacking (31%).

A further four risky features have been selected in at least two in ten nominations:

- vehicles stopped in the cycle lane during operating hours (24%),
- narrow cycle lane (23%),
- lots of trucks using the road (21%), and
- debris in the cycle lane e.g. water, leaves, glass (20%).

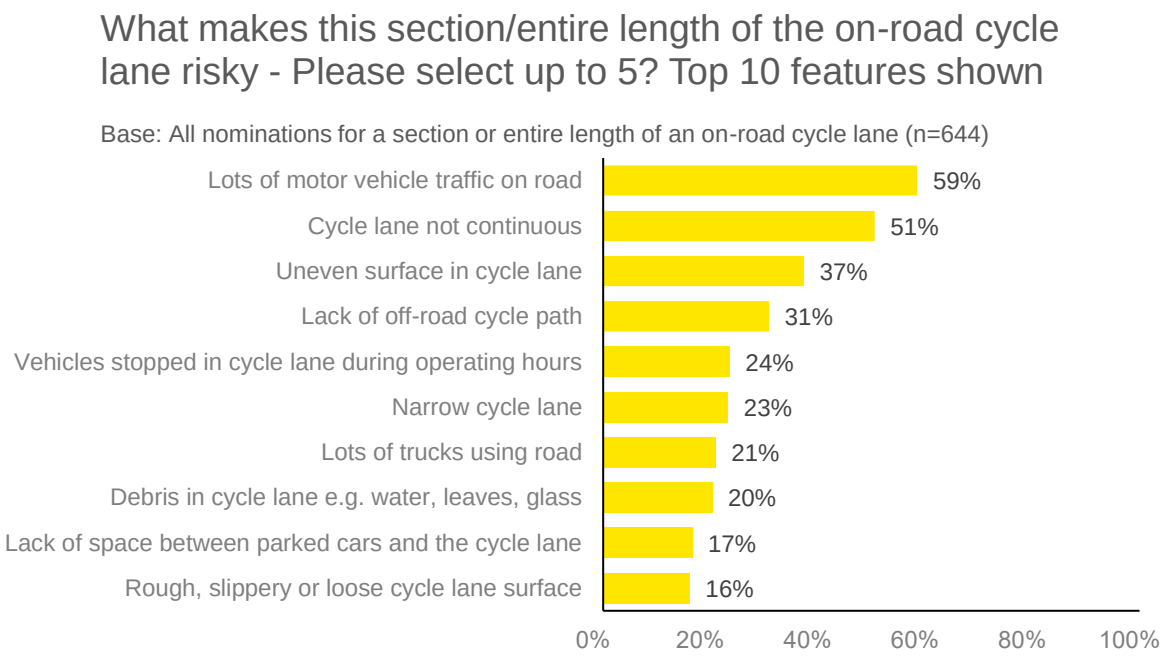


Figure 8: Risky features of nominated on-road cycle lanes

Moving on to nominations for a section or entire length of an off-road cycle path, the top two riskiest features selected are an uneven surface on the cycle path, specifically potholes, cracks, bumps or drains (45%) and cycle path shared with pedestrians (36%). Three in ten nominations indicated there is a rough, slippery or loose cycle path surface (31%) and that there is debris on the cycle path such as water, leaves and glass (29%). A further quarter selected the narrowness of the cycle path (26%) and the cycle path not being continuous (24%) as a risky feature.

Comparing the most common risky features of on-road cycle lanes and off-road cycle paths, in both cases uneven surface features prominently, but the risk to cyclists from other road/path users differs between motor vehicle traffic for roads nominations and pedestrians for path nominations. Lack of continuity is a more prominent risk for on-road cycle lanes.

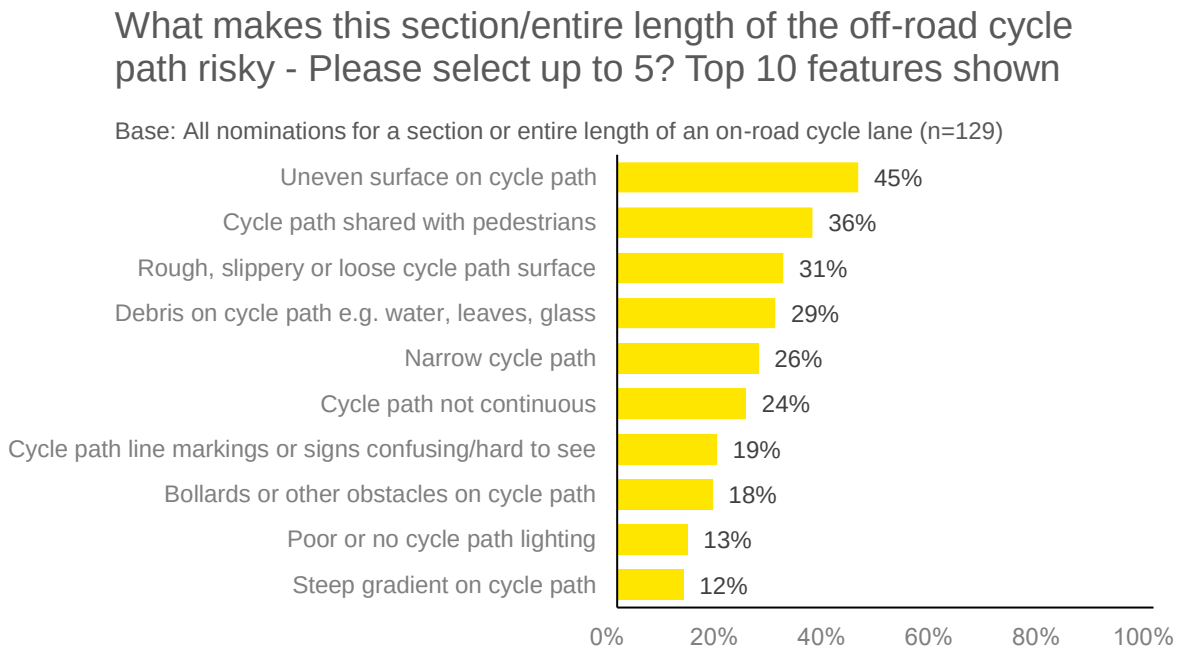


Figure 9: Risky features of nominated off-road cycle paths

In relation to intersections, a majority of nominations identified difficulties crossing at the location due to motor vehicle traffic (53%) and that the cycle lane or path did not continue through the intersection (53%). Around a third (36%) selected confusing intersection layout as a risky feature and around a quarter (23%) selected poor visibility at the intersection.

The top two risky features of nominated intersections closely align with the top two risky features of on-road cycle lanes, namely motor vehicle traffic and discontinuity of cycling infrastructure.

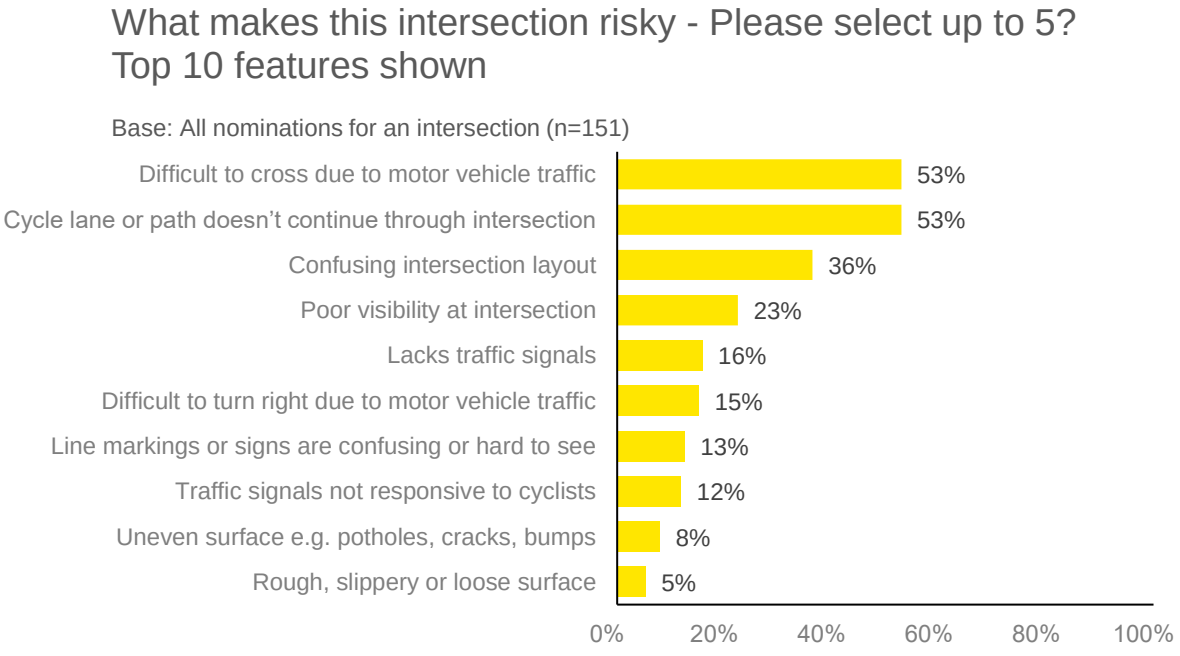


Figure 10: Risky features of intersections

Respondents were asked for each nomination whether they have seen, or been involved in, any cyclist crashes or near misses at the nominated location. For 61% of nominations, respondents have seen, or been involved in, a cyclist near miss at the location. For 13% of nominations, respondents have seen, or been involved in, a cyclist crash at the location. Therefore, a total of seven in ten nominations are associated with a crash or near miss.

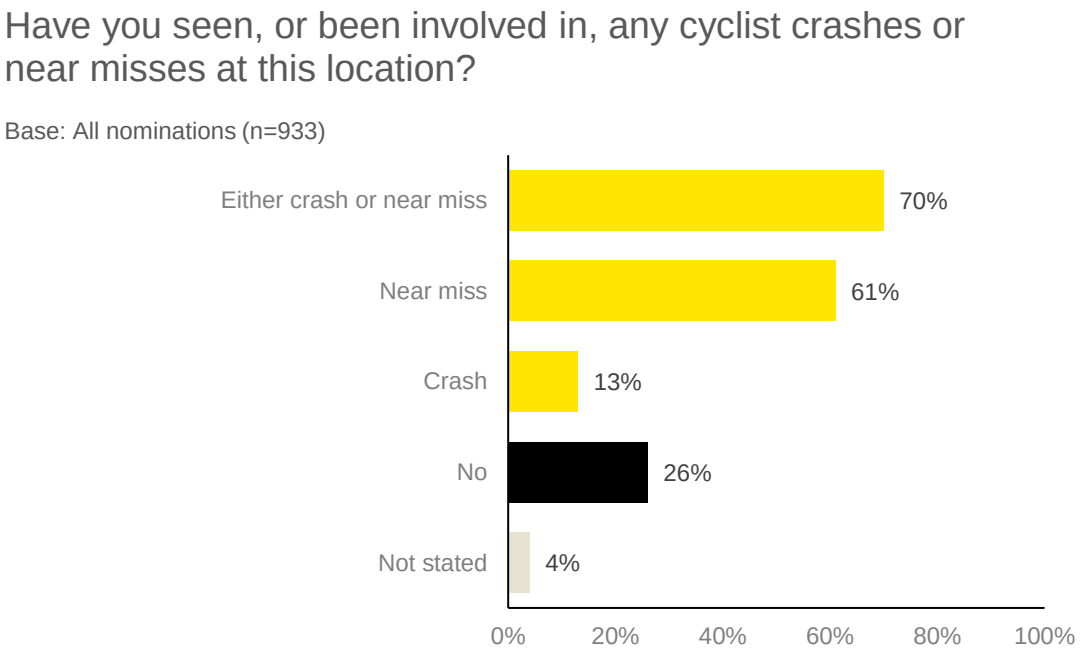


Figure 11: Respondents who experienced or witnessed a cyclist crash or near miss at the nominated location

Top 10 roads

Nominations relating to each road have been aggregated to include nominations for a cycle lane running along a road as well as nominations for a cycle lane or path intersecting that same road. This allows us to present the top 10 on-road risky rides as nominated by survey respondents, each of which received at least 20 nominations. Six of these roads are major thoroughfares directly into the Adelaide CBD, while the remaining four are critical components of the inner and outer city ring route. This is reflected in “Lots of motor vehicle traffic” being selected among the top three issues for all 10 roads. “Cycle lane not continuous” features among the top three issues for eight of the roads and “uneven surface in cycle lane e.g. potholes, cracks, bumps or drains” features among the top three issues for seven of the roads.

Table 2: Top 10 nominated roads

Rank	Road name	No. of nominations	Top three issues raised
1	ANZAC Highway	38	Uneven surface in cycle lane; Lots of motor vehicle traffic on road; Rough, slippery or loose cycle lane surface
2	Marion Road	34	Cycle lane not continuous; Lots of motor vehicle traffic on road; Uneven surface in cycle lane
3	Greenhill Road (metro)	32	Cycle lane not continuous; Lots of motor vehicle traffic on road; Uneven surface in cycle lane
4	Payneham Road	28	Cycle lane not continuous; Lots of motor vehicle traffic on road; Uneven surface in cycle lane
5	Port Road	27	Uneven surface in cycle lane; Lots of motor vehicle traffic on road; Rough, slippery or loose cycle lane surface
6	Portrush Road	26	Lots of trucks using road; Lots of motor vehicle traffic on road; Cycle lane not continuous
7	Cross Road	25	Uneven surface in cycle lane; Lots of motor vehicle traffic on road; Cycle lane not continuous
8	Frome Street /Frome Road	24	Lots of motor vehicle traffic on road; Lack of off-road cycle path; Cycle lane not continuous
9	Unley Road	22	Cycle lane not continuous; Vehicles stopped in cycle lane during operating hours; Lots of motor vehicle traffic on road
10	Fullarton Road	20	Cycle lane not continuous; Lots of motor vehicle traffic on road; Uneven surface in cycle lane

A map showing the location of the top ten on-road Risky Rides is shown in Figure 12.

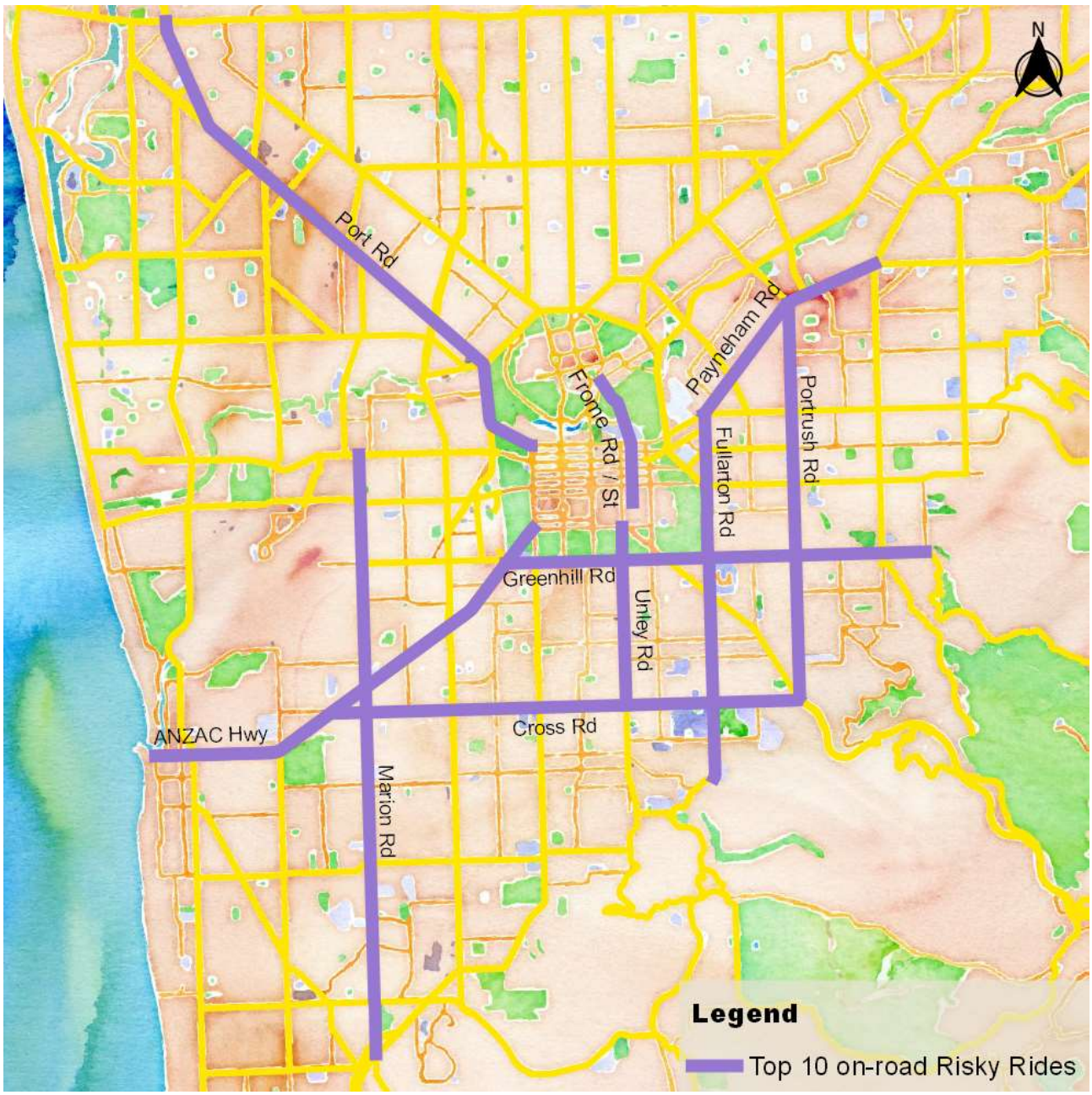


Figure 12: Map of the top ten nominated on-road Risky Rides locations

Top 5 off-road paths

The most frequently nominated off-road paths by survey respondents have been tabulated to present the top 5 off-road locations. All 5 shared paths are located in the Adelaide metropolitan area and regularly used by both cyclists and pedestrians (with the exception of a small on-road section of the Crafers Bikeway). The most common issues raised are “Cycle path shared with pedestrians” and “Rough, slippery or loose cycle path surface”, which are among the top three issues for three of the paths. Issues with sharing the path with pedestrians can be because the path is too narrow, or that pedestrians can be less aware of keeping to the left of the path. There is greater diversity in the top issues raised for off-road paths than is seen for on-road cycle lanes, with some of the off-road paths having unique location-specific issues.

Table 3: Top 5 nominated off-road paths

Rank	Path name	No. of nominations	Top three issues raised
1	River Torrens Linear Park Trail	21	Uneven surface on cycle path; Cycle path shared with pedestrians; Narrow cycle path
2	Little Para Trail	15	Debris on cycle path e.g. water, leaves, glass; Rough, slippery or loose cycle path surface; Cycle path shared with pedestrians
3	Coast to Vines Rail Trail	14	Rough, slippery or loose cycle path surface; Uneven surface on cycle path; Debris on cycle path e.g. water, leaves, glass
4	Crafers Bikeway	13	Lots of trucks using road; Lack of off-road cycle path; Lots of motor vehicle traffic on road
5	Lynton Belair Urban Trail	9	Steep gradient on cycle path; Rough, slippery or loose cycle path surface; Cycle path shared with pedestrians

A map showing the top five off-road Risky Rides location is shown in Figure 13.

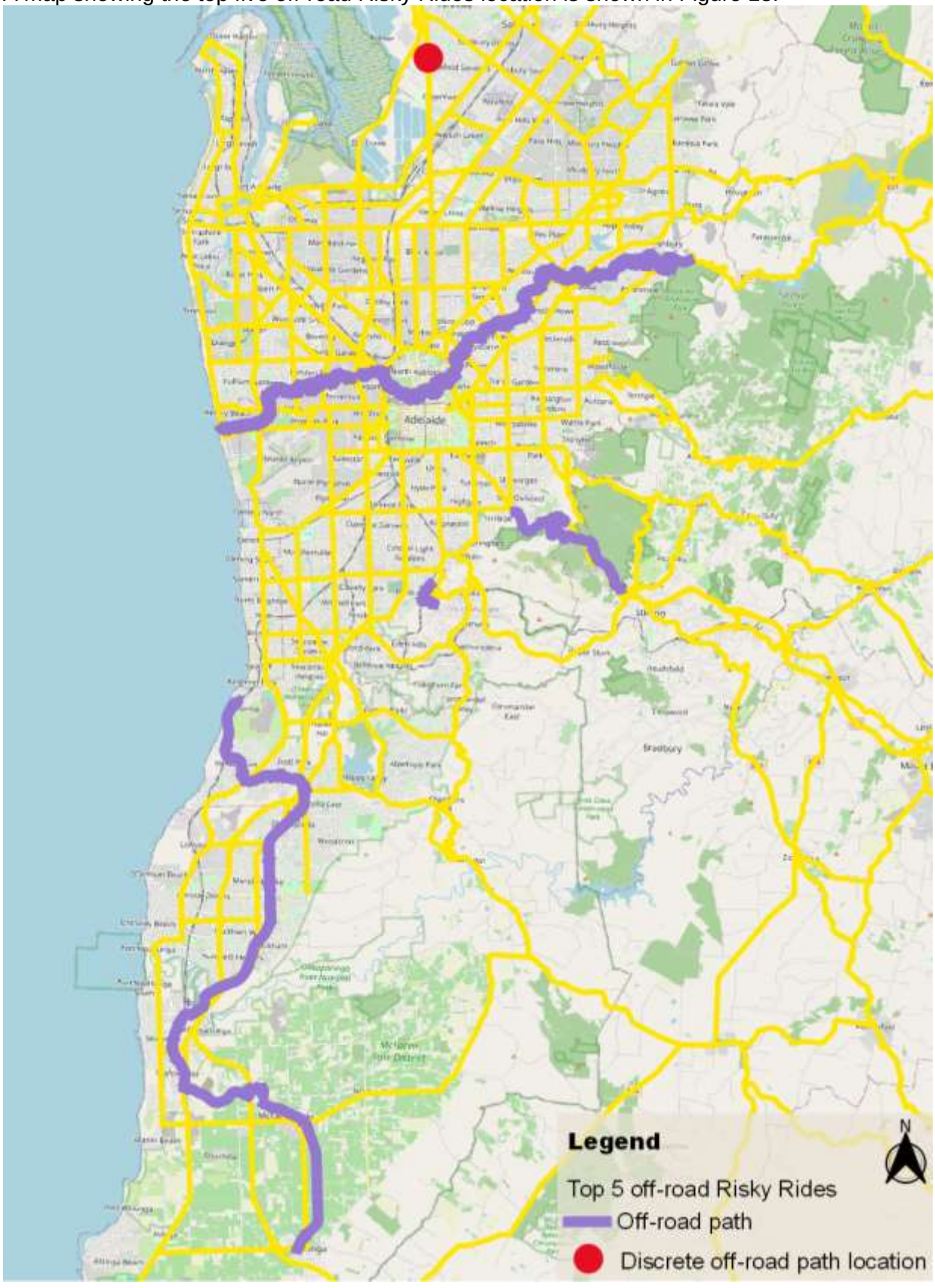


Figure 13: Map of the top five off-road Risky Rides locations

Top regional location

Although regional nominations were encouraged, there were few nominations received for regional risky rides. The most prominent regional location raised was the Barossa Trail, which is an off-road shared path that loosely follows the alignment of the former rail corridor between Gawler and Angaston. The Barossa Trail received seven nominations, with the top issues raised relating to the cycle path having an uneven surface, obstructions such as bollards or other obstacles posing a hazard and a narrow width in sections.

Other issues with cycling infrastructure in SA

Respondents were also given the opportunity to raise any issues with cycling infrastructure in South Australia not covered off within their nominations, for example broader rather than location-specific issues. Six in ten respondents chose to raise additional issues. The following chart displays the top 12 issues, which were each raised by at least 2% of the 471 survey respondents.

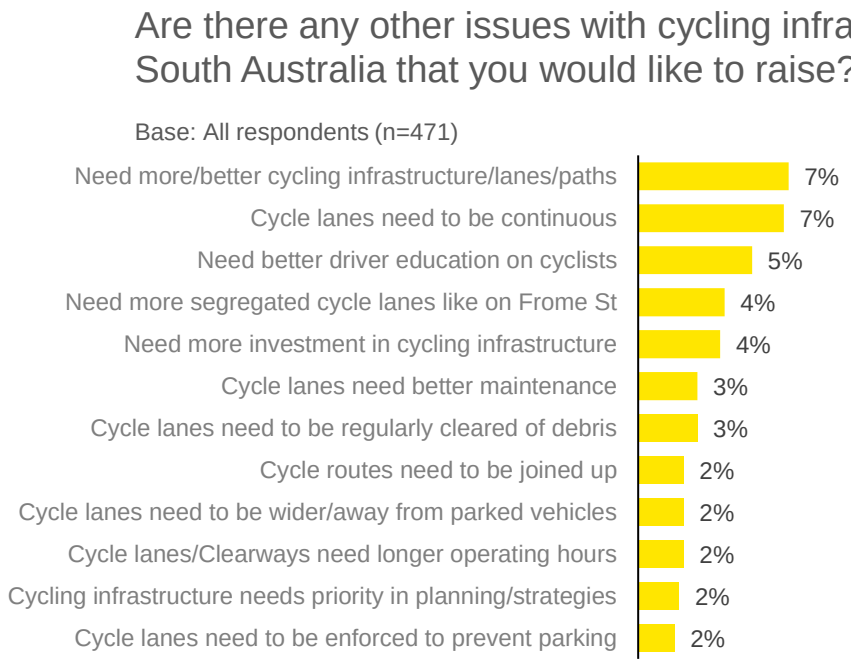


Figure 14: Top 12 general issues with cycling infrastructure

The top two issues raised (each by 7%) are the need for more, improved cycling infrastructure and the need for cycle lanes to be continuous. The third most commonly raised issue is the need for better driver education on cyclists (5%). The fourth and fifth most commonly raised issues (each by 4%) are the need for more segregated cycle lanes (like on Frome St) and the need for greater investment in cycling infrastructure. Other issues raised include better maintenance and cleaning of cycle lanes and reducing the impact of parking on cycle lanes (through wider lanes, longer operating hours or better enforcement). A selection of respondent comments is provided below.

"Bike lanes make me feel much safer on the road. The more of them that can be installed on major and semi-major roads the better."

"Cycle infrastructure in SA divides into 2 categories. Firstly, there are quite good off-road paths that would be better by separating pedestrians, but don't join up enough or access enough destinations. Secondly there are painted lanes on arterial roads that are only suitable for the bravest of riders. These often give up at intersections and are usually only in operation for a couple of hours a day. Neither of these types of infrastructure enable more people to cycle for everyday trips, relieving pressure on both our roads and our health system."

"If the bike lane surface is very uneven, too close to cars and is subject to regular debris (glass & water especially), it's pointless having bike lanes because you can't ride in them safely!"

"It's extremely unnerving riding on unfamiliar roads only to have to pull over when you suddenly find yourself dangerously riding in traffic because the bike lane came to a sudden end for no reason."

"Vision Zero strategy for road safety says bike lanes need be separated from roadway traffic by barriers not a painted line."

"Media campaigns to humanise cyclists (when people rage against cyclists they forget that most of us are drivers as well, and have families, jobs, participate in the community etc. Drivers tend to think we are some niche, cult-like mob of anti-car lunatics)."

"The current annual funding for development of Adelaide's cycling network is utterly inadequate…The State Bicycle Fund currently runs around $250K when it should be 1-2% of the transport budget - $6-12M p.a!"

"There needs to be a fully funded state cycling plan developed and implemented."

Non-Risky Ride nominations

The vast majority of survey respondents used the Risky Rides survey to nominate specific locations where they were concerned about unsafe cycling infrastructure, which led to 933 nominations in total. However, there were 34 additional nominations that either did not relate to a specific location or raised concerns about cyclist behaviour rather than cycling infrastructure.

Some cyclists raised broad issues about cycling infrastructure in South Australia, covering topics such as lack of cycling infrastructure or shortcomings with it.

"Any bike lane in rural or remote SA as there is not infrastructure for cyclists in SA (rural or remote)."

"All painted cycle lanes are essentially car parking/storage areas that bicycles are obliged to ride in. They offer no protection, disappear when there is a restriction in available space and occasionally direct cyclists into the areas where car drivers open their doors. Dangerous window dressing that allow car drivers to feel they are 'sharing' the road when the reality is quite different."

Concerns raised about cyclist behaviour came from both a pedestrian and a driver perspective:

Some have worries about pedestrian safety linked to cyclists riding on off-road paths or footpaths at considerable speed and failing to ring a bell to warn pedestrians of their presence.

> "Too many bike riders ride too fast and too close to pedestrians. We are over 80 and now fear for our safety."
>
> "I do not ride a bike but I walk my dog along the path. Bike riders do not stick to any speed limit, they use it as a race track, they do not ring their bell. It makes walking almost impossible. I am surprised there have not been many more accidents."

Others feel that cyclists could reduce the risks they face through better compliance with the road rules and through better understanding and considering other road users.

> "If cyclists did the right thing and ride no more than 2 abreast and keep within their lane it would be okay."
>
> "Cyclists seem to be unaware of being in a blind spot of a vehicle. Turning left has seen many near misses."

Crash data

Crash data in this section refers to crashes that occurred on a road, were reported to police and involved injury to at least one person. The current road crash data provided by the Department for Infrastructure and Transport on the Data SA[3] website does not include crashes occurring on off-road paths, nor does it include crashes that were not reported to police. For this reason, cyclist involvement in crashes is often underreported in this dataset, especially in the case of single cyclist crashes or crashes on off-road paths.

Over the decade between 2010 and 2019, more than 5,000 cyclists were involved in casualty crashes on South Australian roads, with an overall downwards trend in the annual number of cyclists involved in casualty crashes. This equates to an average of 558 cyclists injured or killed on South Australian roads every year since 2010.

Figure 15 shows a noticeable and sustained reduction in annual crashes since 2016, which could be partially attributed to the introduction of cycling laws commencing on 25 October 2015. These laws require drivers to provide 1m clearance when passing a cyclist on a road with a speed of 60km/h or lower, and 1.5m clearance when passing a cyclist on a road with a speed greater than 60km/h. An average of 586 cyclists per year were involved in crashes between 2010 and 2015 and an average of 515 cyclists per year were involved in crashes between 2016 and 2019, which is an average of 12% fewer every year.

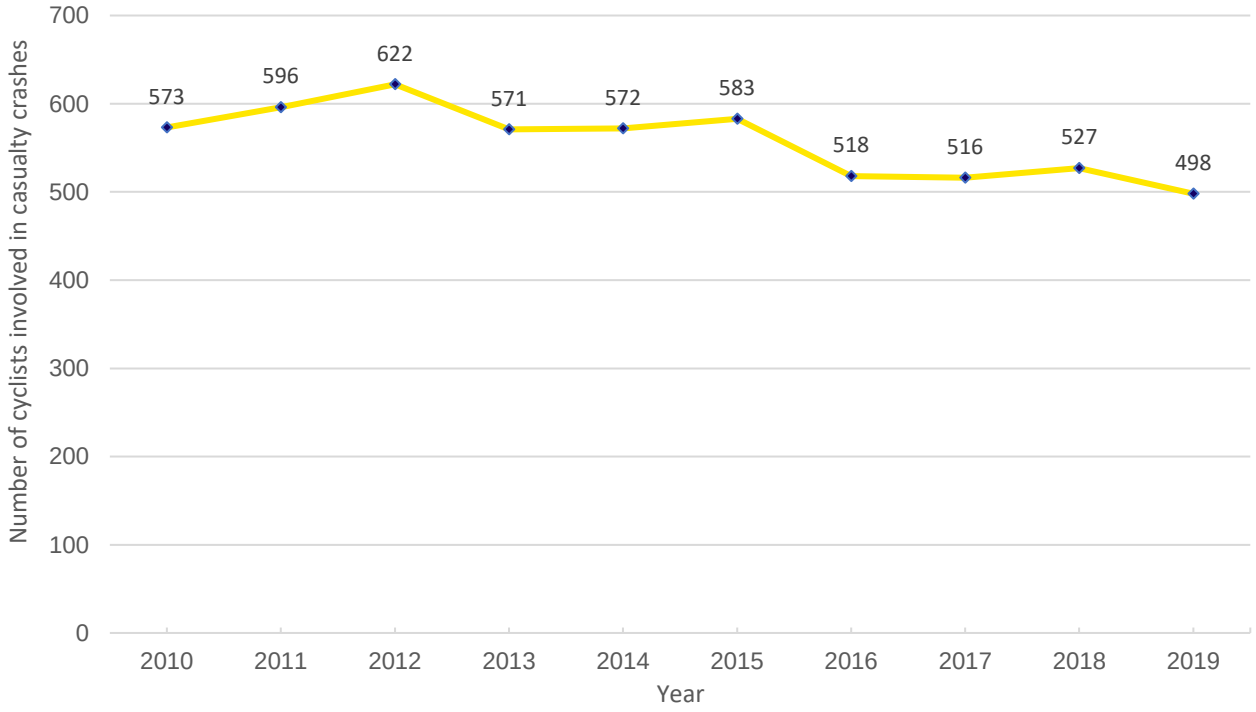


Figure 15: Annual number of cyclists involved in casualty crashes since 2010

[3] Data SA, 2020, South Australian Government Data Directory, Road Crash Data, accessed at <https://data.sa.gov.au/data/dataset/road-crash-data>.

In South Australia, over five years between 2015 and 2019, 2573 cyclists were involved in 2544 reported road crashes resulting in injury or death, with most crashes involving at least one other vehicle, or a single cyclist. A small number of crashes involved multiple cyclists, pedestrians, or animals.

Table 4: Units involved in casualty crashes (involving cyclists) in South Australia between 2015-2019

Units involved in crash	Per cent of all casualty crashes
Involving at least one vehicle	80%
Involving a single cyclist only	17%
Involving a pedestrian	2%
Involving multiple cyclists	1%
Unknown	<1%

The most common crash types involving at least one vehicle and a cyclist were right angle, side swipe and right turn crashes, which made up 82% of crashes involving a cyclist and other vehicles. Roll over crashes and crashes with a fixed object made up 86% of crashes involving only a cyclist and side swipe crashes were the most common multiple cyclist crash, making up 57% of crashes involving multiple cyclists.

Table 5: Reported casualty crash types involving cyclists in South Australia between 2015-2019

Crash type	Casualty crashes
Right Angle	881 (35%)
Side Swipe	500 (20%)
Roll Over	340 (13%)
Right Turn	332 (13%)
Hit Parked Vehicle	196 (8%)
Rear End	110 (4%)
Hit Fixed Object	67 (3%)
Hit Pedestrian	44 (2%)
Head On	21 (<1%)
Hit Object on Road	21 (<1%)
Other	20 (<1%)
Hit Animal	10 (<1%)
Left Road - Out of Control	2 (<1%)
Total	2544

When reviewing the suburbs with the most cyclist crashes between 2015 and 2019, Adelaide tops the list by a significant margin due to it being a key destination of cyclists commuting for employment or study purposes. Popular inner metro and coastal suburbs also feature prominently in the list.

Table 6: Top suburbs for casualty crashes involving cyclists between 2015 and 2019

Rank	Suburb	Casualty crashes
1	Adelaide	272 (10.7%)
2	Norwood	68 (2.7%)
3	North Adelaide	46 (1.8%)
4	Henley Beach	39 (1.5%)
5	Glenelg	36 (1.4%)
=6	Kent Town	29 (1.1%)
=6	Unley	29 (1.1%)
=8	Prospect	26 (1.0%)
=8	Glenelg North	26 (1.0%)
=10	Stepney	25 (1.0%)
=10	West Beach	25 (1.0%)

Across the top ten nominated on-road locations, a total of 394 casualty crashes involving cyclists were reported between 2015 and 2019. All roads nominated in the top ten have had at least 20 cyclist casualty crashes occur over this period. Port Road recorded the highest number of cyclist casualty crashes in the list, with 66 occurring, or more than one per month.

Table 7: The number of cyclist casualty crashes occurring on the top ten nominated roads between 2015 and 2019

Road Name	Number of cyclist casualty crashes	Crash severity		
		Minor	Serious	Fatal
Anzac Highway	46	39	7	0
Marion Road	55	48	7	0
Greenhill Road (metro)	50	45	5	0
Payneham Road	37	32	5	0
Port Road	66	61	4	1
Portrush Road	24	22	1	1
Cross Road	39	35	4	0
Frome Road / Frome Street	25	24	1	0
Unley Road	30	28	2	0
Fullarton Road	22	21	1	0
Total	**394**	**355**	**37**	**2**

Cycle infrastructure design guidelines

Current guidelines for cycle lanes

Australian Standard 1742.9:2018[4] and Austroads Guide to Road Design Part 3: Geometric Design[5] are the principal references for cycle lane management and design. The Australian Standard covers signage and pavement marking requirements for the provision of motorcycle lanes, whilst the Austroads guide details various design requirements and considerations.

The Austroads guide advises that motor vehicles and bicycles can generally share the road on local streets carrying less than 3000 vehicles per day, with additional lane and road width desirable where traffic volumes are higher, speeds are higher or where heavy vehicles regularly use the route.

Table 4.18 of the Austroads guide details the dimensions of exclusive bicycle lanes in urban areas. Usually this dimension includes the gutter/channel, where the gutter and lip is considered a traversable surface less than 400mm wide (when minimum dimensions are used). The gutter would not generally be included in measurements if the join between the pavement and gutter is not easily or safely traversable by a 20mm bicycle tyre, where side entry pit entrances inhibit travel, or where the surface condition of the gutter is poor.

At 60km/h the desirable minimum cycle lane width is 1.5m, however 1.2m is considered acceptable and preferable to having no cycle facility. At 80km/h the desirable minimum cycle lane width is 2.0m with an acceptable minimum of 1.8m preferable to having no cycle facility, and at 100km/h the desirable minimum is 2.5m with an acceptable minimum width of 2.0m.

On unkerbed regional roads, sealed shoulders provide significant protection for cyclists and the dimensions discussed above should be aimed for, to achieve a higher level of cyclist safety. At 100km/h, the desirable minimum width is 2.5m for cyclist safety, however sealed shoulders this wide are very uncommon across South Australia's regional road network, with one metre widths provided most frequently when shoulders are sealed.

From a safe system perspective, all cycle lanes would ideally be separated from traffic moving at greater than 30km/h, however this is not always possible with competing demands of the road network and the narrow road reserve width in most built up areas. This is where shared and cycle paths form a critical part of a safe cycle network as they regularly traverse open space such as nature reserves and waterways, away from moving traffic.

[4] Standards Australia, 2018, Manual of uniform traffic control devices, Part 9: Bicycle facilities, 1742.9:2018.

[5] Austroads, 2020, *Guide to Road Design Part 3: Geometric Design*, accessed at <https://austroads.com.au/publications/road-design/agrd03/media/AGRD03-16_Guide_to_Road_Design_Part_3_Geometric_Design_revised_Apr_2020.pdf>.

Current guidelines for shared and cycle paths

Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling[6] is the principal reference for shared path design and provides guidance on path design, construction, location, alignment and geometric requirements. Australian Standard 1742.9:2018 also provides guidance on signage and pavement marking requirements for cycle paths.

Figure 5.5 from the Austroads guide details desirable widths for shared paths, bicycle paths and footpaths and how they can be used interchangeably. This figure is for a 75/25 directional split which is typical for most commuter paths which have high peak directional volumes. This figure indicates that cycle and shared paths should be built to a minimum width of 2.5m when peak-hour cyclist and pedestrian volumes are low, and cycle paths should be built as wide as 4m where more than 1,100 cyclists use the path in the peak hour.

[6] Austroads, 2017, *Guide to Road Design Part 6A: Paths for Walking and Cycling*, accessed at <https://austroads.com.au/publications/road-design/agrd06a/media/AGRD06A-17_Guide_to_Road_Design_Part6A_Paths_for_Walking_and_Cycling.pdf>.

Risky Rides

Top 10 roads

ANZAC Highway

Risky Rides ranking	1
No. of nominations	38
Top 5 issues	• Uneven surface in cycle lane • Lots of motor vehicle traffic on road • Rough, slippery or loose cycle lane surface • Vehicles stopped in cycle lane during operating hours • Narrow cycle lane.
No. of cyclist casualty crashes 2015-2019	46 (7 resulting in serious injury, 39 resulting in minor injury)
No. of respondents involved in/witness to a crash	11

ANZAC Highway is a busy arterial road extending for almost nine kilometres between West Terrace in Adelaide and Colley Terrace in Glenelg. Most of the road is under the care and control of the Department for Infrastructure and Transport, however, the City of Adelaide and City of Holdfast Bay each manage a section of the road at their respective ends.

ANZAC Highway has high traffic volumes, with the busiest section between South Road and Greenhill Road, travelled by an average of almost 50,000 vehicles per day. The remainder of the corridor is travelled by an average of between 30,000 and 40,000 vehicles per day, except for the section between Colley Terrace and Brighton Road, which usually carries less than 20,000 vehicles per day.

The speed limit on ANZAC Highway is 60km/h between West Terrace and Brighton Road, and drops to 50km/h between Brighton Road and Colley Terrace where the road functions quite significantly more local access, on-street parking and pedestrian activity.

Current cycle infrastructure in place along ANZAC Highway is limited to part-time cycle lanes for the majority of the corridor between West Terrace and Brighton Road. These cycle lanes mostly operate on weekdays between 7:30am and 9:00am for inbound traffic, and between 4:30pm and 6:00pm for outbound traffic. Cycle lanes between West Terrace and Greenhill Road are full-time, and cycle lanes between South Road and Greenhill Road operate between 7:00am and 10:00am for inbound traffic. Cycle lanes disappear between Brighton Road and Adelphi Terrace, before returning for the short segment between Adelphi Terrace and Colley Terrace.

The top issue raised, by more than half of those who nominated ANZAC Highway, related to the uneven surface in the cycle lane. Survey respondents also raised issues with the high volume of motor vehicle traffic, a slippery or loose road surface, vehicles parking in cycle lanes and the narrow width of cycle lanes.

While there are sections of the cycle lane in serviceable condition, for the most part the road surface of ANZAC Highway in all lanes needs rehabilitation. Furthermore, the condition of kerb and gutter (which is the responsibility of the relevant local councils) on various sections of ANZAC Highway is very poor, and not safely traversable by cyclists, significantly reducing the usable width of the cycle lane to the point where it is very narrow in these locations. Given the current width of cycle lanes (including gutter) is 1.2m or below for most of ANZAC Highway, this leaves a traversable cycle lane of only 800mm when the bitumen is in good condition.

Figure 16: Deteriorated concrete kerb and gutter leaves a very narrow traversable cycle lane

The section of cycle lane just northeast of the intersection with Marion Road was identified by several respondents due to a combination of issues including the poor road surface, poor cycle lane delineation and poor cycle lane alignment. RAA confirmed these issues with a site investigation, noting that the cycle lane abruptly changes direction, whilst the left lane of ANZAC Highway narrows to make space for the cycle lane. Further, there is a spoon drain between the cycle lane and traffic lane which cyclists avoid travelling over, the road surface is in poor condition, line marking is faded and vehicles exiting the service station regularly block the cycle lane to improve their sight distance when entering ANZAC Highway.

Figure 17: The narrow cycle lane directs cyclists into the path of motor vehicles just north of Marion Road.

A review of crash data shows that 46 casualty crashes involving cyclists occurred on ANZAC Highway between 2015 and 2019, which makes up 17% of all casualty crashes occurring on ANZAC Highway. Side swipe and right angle crashes make up nearly two thirds of these crashes.

Table 8: Casualty crash types involving cyclists on ANZAC Highway between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Side Swipe	14	13	1	0
Right Angle	14	14	0	0
Right Turn	7	5	2	0
Roll Over	5	5	0	0
Rear End	3	1	2	0
Hit Parked Vehicle	1	0	1	0
Hit Object on Road	1	1	0	0
Hit Pedestrian	1	1	0	0
Total	**46**	**40**	**6**	**0**

Hotspots for crashes occur between Brighton Road and Colley Terrace, and in the vicinity of Leader Street in Forestville. The state government have previously offered Holdfast Bay Council $270,000 in funding to improve cyclist safety between Brighton Road and Adelphi Terrace, however council did not proceed with the upgrade and the funding offer was left to expire.

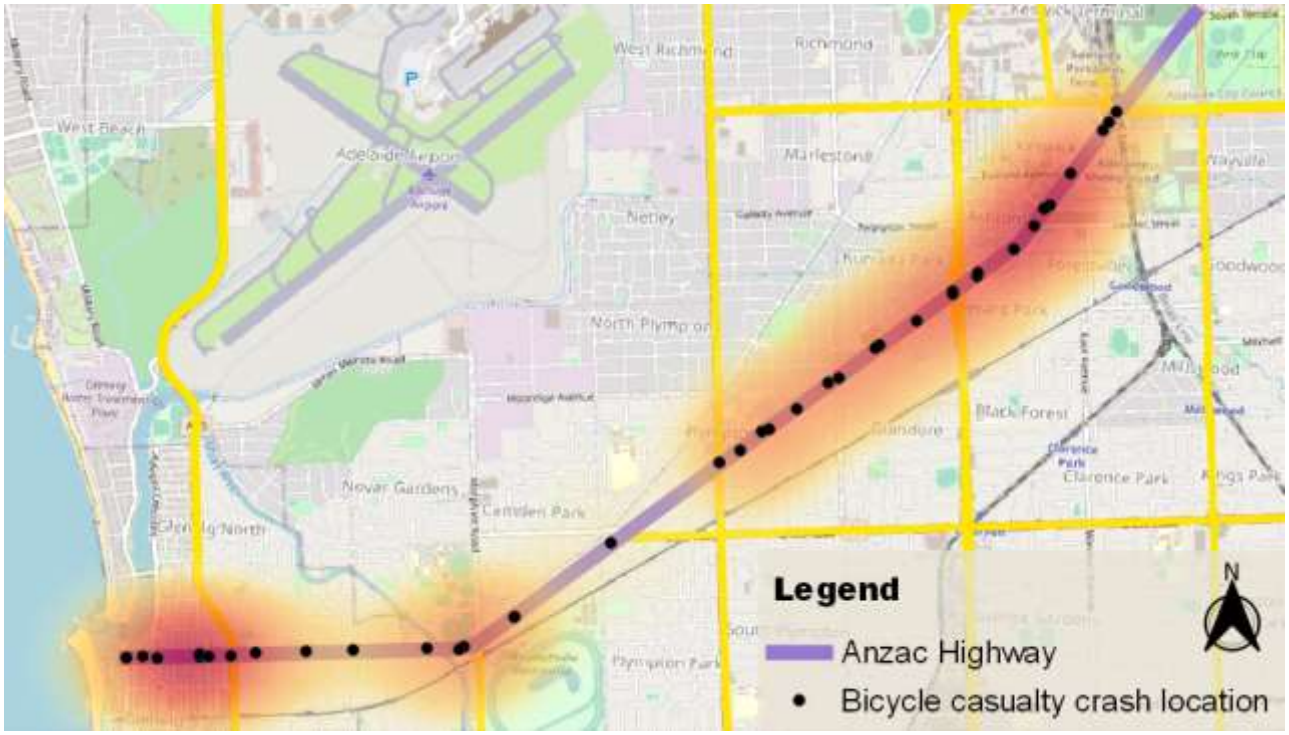


Figure 18: Map of casualty crash locations involving cyclists on ANZAC Highway

It is also noteworthy that 11 respondents who nominated ANZAC Highway had witnessed or been involved in a cyclist crash on the road, the highest of the top 10 nominated on-road locations.

Interestingly, there are two off-road cycle paths that approximately follow the ANZAC Highway alignment between Glenelg and Adelaide. The Westside Bikeway follows the former railway corridor north of ANZAC Highway, whilst the Mike Turtur Bikeway follows the Glenelg Tram line. These paths may not be as favourable from a travel time perspective for commuting cyclists as riders are required to stop and give way at most side roads, whereas the only locations where stopping may be required on ANZAC Highway are at signalised intersections.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated ANZAC Highway in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"Road is falling to pieces. Large cracks running with direction of traffic that tyres get caught in. Exposed drainage grates into road surface."

"There is little room for drivers to give appropriate distance with all three lanes usually busy. The cycle lane is narrow in some parts, is made up of mainly gutter and has significant potholes."

"The road is in terrible condition and constantly has broken glass in the lane."

Please provide any suggestions on how this risk could be reduced.

"Fix the intersection drainage so the strip drain isn't required, and make adequate allowance for the cycle lane to be marked and in the correct location."

"Remove the third car lane and turn it into a separated dual bike lane in both directions."

"Weekly sweeping would be a very good start."

RAA comment

Pavement rehabilitation and resealing along sections of ANZAC Highway is required, which will mostly address the poor condition of cycle lanes, as well as other traffic lanes in need of maintenance. Furthermore, the condition of kerb and gutter along the corridor varies significantly, and all relevant councils should look at a review of this infrastructure and schedule renewal and rehabilitation works where required. Ideally this should be programmed in conjunction with reseal works to minimise the negative traffic impacts of roadworks.

Locations where cyclists are exposed to a higher likelihood of conflict with vehicles should be delineated with green non-slip paint to remind motorists of the potential presence of cyclists before crossing the cycle lane.

Whilst RAA recognises that green non-slip paint in cycle lanes should be limited to the delineation of high-risk locations, there are several locations where it would be beneficial on ANZAC Highway, including at all signalised intersections, and for a length of about 75m northeast of Marion Road.

Safety may be improved by reviewing and consolidating the hours of operation of cycle lanes, considering an extension in operating hours to 7:00am – 10:00am for inbound traffic and 3:00pm – 7:00pm for outbound traffic. This would also improve traffic flow for motor vehicles by disallowing parking in the left lane during busy periods. On an aesthetic level, signposting of clearways and cycle lanes concurrently is unnecessary as the hours of operation are identical, and a cycle lane is a clearway by default.

Due to a lack of cycle infrastructure and a high number of conflict points, the section between Brighton Road and Adelphi Terrace is considered highly risky from a cyclist's viewpoint. Previous plans involving a lane reduction and substantially improved cycle infrastructure to improve cyclist safety on this notorious section should be reconsidered.

Consideration could also be given to providing priority to users of the Mike Turtur Bikeway and Westside Bikeway across minor side roads via an at-grade "wombat" style crossing, which would allow users a more continuous journey for commuting purposes and encourage cyclists to use these routes in preference to Anzac Highway.

Marion Road

Risky Rides ranking	2
No. of nominations	34
Top 5 issues	• Cycle lane not continuous • Lots of motor vehicle traffic on road • Uneven surface in cycle lane • Debris in cycle lane • Difficult to cross due to motor vehicle traffic
No. of cyclist casualty crashes 2015-2019	55 (7 resulting in serious injury, 48 resulting in minor injury)
No. of respondents involved in/witness to a crash	5

Marion Road is a busy arterial road extending for more than eleven kilometres between Henley Beach Road in Brooklyn Park and Main South Road in Darlington. The road is under the care and control of the Department for Infrastructure and Transport.

Marion Road has high traffic volumes, with the busiest section between Daws Road and the Southern Expressway travelled by an average of 45,000 – 50,000 vehicles per day. Most other sections of the corridor are travelled by an average of between 30,000 and 40,000 vehicles per day. The speed limit is 60km/h for the entire length.

A part-time cycle lane runs along Marion Road in each direction, however there are breaks in the cycle lane at most major intersections, including:

- Intersection with Henley Beach Road
- Intersection with Richmond Road
- Intersection with Anzac Highway
- Glenelg Tram level crossing
- Intersection with Cross Road
- Intersection with Daws Rd/Oaklands Rd
- North of the intersection with Sturt Road

The hours of operation of this cycle lane are 7:00am – 10:00am and 3:00pm – 7:00pm Monday to Friday, other than the section between Main South Road and Sturt Road, which operates full-time.

Unsurprisingly, a non-continuous cycle lane was the top issue raised by survey respondents who nominated Marion Road. Other common issues raised included the volume of motor vehicle traffic using the road, uneven surface in the cycle lane, debris in the cycle lane, and difficulties crossing the road due to motor vehicle traffic. Survey respondents also cited specific locations where they find cycling risky on Marion Road, with several nominations for the section north of Sturt Road, and the section between Anzac Highway and Cross Road. There were also a number of nominations for the Sturt River Linear Park trail crossing at Marion Road (south of Alawoona Avenue), citing that there are very few opportunities to cross the road during peak periods. This crossing point has a refuge island to assist with a staged crossing and is located about 100m south of the signalised crossing with Marion Road and Alawoona Avenue.

Figure 19: Marion Road cycle lanes end before all major intersections (Pictured: northbound towards ANZAC Highway)

A review of crash data shows that 55 casualty crashes involving cyclists occurred on Marion Road between 2015 and 2019, which makes up almost 12% of all casualty crashes occurring on Marion Road. Side swipe, right turn and right angle crashes make up more than 90% of casualty crashes on Marion Road

Table 9: Casualty crash types involving cyclists on Marion Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Side Swipe	20	16	4	0
Right Turn	15	15	0	0
Right Angle	15	14	1	0
Rear End	2	1	1	0
Hit Parked Vehicle	2	1	1	0
Roll Over	1	1	0	0
Total	**55**	**48**	**7**	**0**

When reviewing the locations of casualty crashes that involve cyclists on Marion Road, hotspots tend to line up with sections where there are a lack of cycle lanes, namely: north of Sturt Road, near the intersection with Daws Road, and near the intersection with Cross Road.

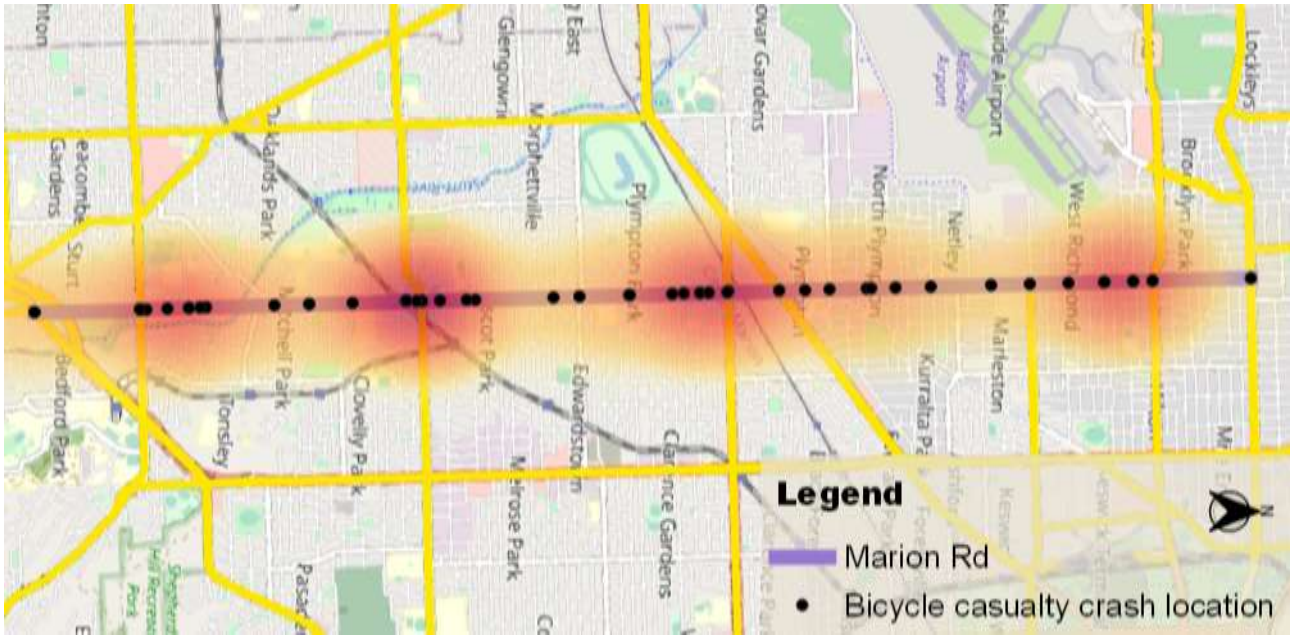


Figure 20: Map of casualty crash locations involving cyclists on Marion Road

There are no off-road cycle paths that run parallel to Marion Road, but there are several popular paths that connect with Marion Road, including:

- Patrick Jonker Veloway (Southern Expressway)
- Sturt River Linear Park
- Marino Rocks Greenway
- Mike Turtur Bikeway
- Westside Bikeway

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Marion Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"First the bike lane vanishes briefly when crossing Sturt Road resulting in a dangerous merge, then oncoming traffic turns into shopping centre car park when traffic in northbound lane backs up and disregards the bike lane. This resulted in a broken neck for me."

"Lots of traffic. Road gets narrow. Busses stopping near the tram line. Tram congests traffic in peak hours and there's no room for bikes."

"The surface is so bad it's almost unrideable."

Please provide any suggestions on how this risk could be reduced.

"Make it clear that there is a bike lane. Perhaps use green paint and increase signage. Make bike lane continuous and not abruptly end."

"Create physical barriers between the bike lane and the car lanes (both sides)."

"Where the Sturt River Path crosses, install quick responsive lights but at the very least a keep clear area so that when traffic banks up you are able to cross without having to weave through traffic."

RAA comment

Continuity of cycle infrastructure on Marion Road is critical in ensuring the safety of cyclists travelling along this busy arterial corridor. Whilst midblock sections are usually well served by cycle lanes, the cycle lanes often do not continue through major intersections. Intersections are the highest risk location for cyclists as they are often difficult for motorists to see between slow or stopped traffic, and motorist's attention is drawn away from surrounding traffic whilst observing traffic signals, looking for potential gaps in traffic, and preparing to make turning manoeuvres.

Marion Road is favoured by cyclists as one of the only viable continuous north-south routes to and from the southern suburbs as Morphett Road and South Road both significantly lack cycle infrastructure compared to Marion Road. Marion Road also forms a critical connection between several off-road paths. Whilst short to medium term improvements are required to improve cyclist safety on Marion Road, the development of the North-South corridor along the South Road Alignment, which is set to be complete by 2030, has already delivered significantly improved cycle infrastructure on sections that have been completed. It is therefore critical that cycle infrastructure along the South Road "surface road" is improved as part of the Torrens to Darlington upgrades occurring over the next decade.

Consideration should be given to installing a pedestrian actuated crossing to serve the Sturt River Linear Park Path crossing near Alawoona Avenue, provided that the see-through effect of the signals at Alawoona Avenue is mitigated, and the crossing is synchronised with the intersection as to reduce queueing across the crossing and adverse impacts to traffic flow.

Greenhill Road (metro)

Risky Rides ranking	3
No. of nominations	32
Top 5 issues	• Cycle lane not continuous • Lots of motor vehicle traffic on road • Uneven surface in cycle lane • Vehicles stopped in cycle lane during operating hours • Cycle lane or path doesn't continue through intersection
No. of cyclist casualty crashes 2015-2019	50 (5 resulting in serious injury, 45 resulting in minor injury)
No. of respondents involved in/witness to a crash	5

Greenhill Road is a busy arterial road extending for eight kilometres between Hallett Road in Burnside and Anzac Highway in Keswick. Greenhill Road also continues into the Adelaide Hills, terminating at Balhannah; however, nominations for Greenhill Road in the Adelaide Hills section were analysed separately to nominations for the Metropolitan Adelaide section as these sections are vastly different. Greenhill Road is under the care and control of the Department for Infrastructure and Transport and forms part of the Adelaide City Ring Route between Fullarton Road and ANZAC Highway.

Traffic volumes on Greenhill Road are very high, with an average of more than 50,000 vehicles per day travelling the section between George Street and Goodwood Road. An average of 43,000 to 46,000 vehicles travel the Fullarton Road to George Street section daily, with traffic volumes gradually decreasing as the road approaches the Adelaide Hills. Greenhill Road is subject to a 60km/h speed limit.

Most of Greenhill Road is serviced by a part-time cycle lane, which operates between 7:00am and 10:00am Monday to Friday between ANZAC Highway and Hawthorn Crescent (Hazelwood Park). This cycle lane operates between 3:00pm and 7:00pm during the afternoon peak period. There is no cycle lane between Hallett Road and Hawthorn Crescent, and there are various gaps in cycle lanes between Glen Osmond Road and east of Fullarton Road, especially in the westbound direction. The eastbound cycle lane also disappears briefly on the approaches to both Portrush Road and Devereaux Road, placing cyclists in a more vulnerable position at these intersections.

The top issue raised was a non-continuous cycle lane, which is referring to the section between Fullarton Road and Glen Osmond Road, where there is no cycle lane for westbound traffic, and a broken cycle lane for eastbound traffic, just east of Fullarton Road where three lanes merge into two. This makes this section, and both intersections dangerous for cyclists, which is compounded by parallel parking on the south side of Greenhill road and angle parking on the north side of Greenhill Road. The high volume of motor vehicle traffic, uneven surfaces and vehicles stopped in cycle lanes were other issues highly raised by survey respondents. The intersection with King William Road received several mentions due to narrow cycle lanes and difficulties associated with accessing the Mike Turtur Bikeway, and concept designs are currently being prepared by the City of Unley to upgrade this, when funding permits. The intersection of Devereux Road received several mentions due to the poor condition of the pavement through the intersection and in nearby cycle lanes.

Figure 21: Uneven pavement in the cycle lane makes for an uncomfortable ride on sections of Greenhill Road

A review of crash data shows that 50 casualty crashes involving cyclists occurred on Greenhill Road between 2015 and 2019, which makes up 18% of all casualty crashes occurring on Greenhill Road. Side swipe and right turn crashes make up nearly three quarters of these crashes.

Table 10: Casualty crash types involving cyclists on Greenhill Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Side Swipe	20	19	1	0
Right Turn	16	14	2	0
Right Angle	6	6	0	0
Rear End	2	1	1	0
Roll Over	2	2	0	0
Hit Parked Vehicle	2	2	0	0
Hit Pedestrian	2	1	1	0
Total	**50**	**45**	**5**	**0**

When reviewing hotspots where cyclist crashes tend to occur, the section bisected by Portrush Road between Devereux Road, Hazelwood Park and Conyngham Street, Glenside appears to be the riskiest from a crash history perspective, especially considering that motor vehicle volumes are

substantially lower than they are on western sections of Greenhill Road. The section between Glen Osmond Road and King William Road also performs poorly.

Figure 22: Map of casualty crash locations involving cyclists on Greenhill Road

The Marino Rocks Greenway and Mike Turtur Bikeway both cross Greenhill Road, as well as several sealed paths providing access to Greenhill Road through the South Park Lands. Adelaide's North-South Bikeway which incorporates the Frome Street Bikeway also meets the Rugby-Porter Bikeway at Greenhill Road in Parkside.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Greenhill Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"The intersection of Greenhill Road and Fullarton Road is particularly dangerous as cyclists are squashed on the south west corner."

"The road surface is unbelievably bad making it extremely dangerous to cycle in the bike lane especially at the intersection with Devereux Rd."

"Too narrow both directions, hard to turn right in traffic to get into parklands."

Please provide any suggestions on how this risk could be reduced.

"Increased hours of clearway and resurfacing."

"Replace the asphalt along the bike lane and at the intersection of Devereux Rd."

"There should be a paved cycle path all the way parallel along the Parklands side of Greenhill road."

RAA comment

Whilst Greenhill Road mostly has a continuous cycle lane, there are clearly issues for cyclists navigating the section between Fullarton Road and Glen Osmond Road where discontinuous cycle lanes make riding dangerous. The lack of cycle lanes on this section of Greenhill Road was raised as an issue in RAA's 2019 Risky Roads campaign, and it is not surprising to see this issue raised again. It is very important that work is undertaken to provide a continuous cycle lane along this section of Greenhill Road, despite potential constraints, particularly at the intersection with Fullarton Road.

RAA supported changes to cycle lane operating hours on Greenhill Road in 2016, which changed the hours of operation from 7:30am – 9:00am to 7:00am –10:00am and from 4:30pm – 6:00pm to 3:00pm – 7:00pm; however, this has not reduced the number of cyclists being involved in crashes on Greenhill Road. Full time cycle lanes should be considered, however the impact of a substantial loss in parking along Greenhill Road may render this option infeasible.

Pavement rehabilitation works in the vicinity of Devereux Road are also required to ensure a safe and comfortable ride for both cyclists and motor vehicle users.

Payneham Road

Risky Rides ranking	4
No. of nominations	28
Top 5 issues	• Cycle lane not continuous • Lots of motor vehicle traffic on road • Uneven surface in cycle lane • Cycle lane or path doesn't continue through intersection • Narrow cycle lane
No. of cyclist casualty crashes 2015-2019	37 (5 resulting in serious injury, 32 resulting in minor injury)
No. of respondents involved in/witness to a crash	3

Payneham Road is an arterial road under the care and control of the Department for Infrastructure and Transport, which provides a key link to and from the northeast of the city. Payneham Road extends for 4.5km between the intersection with North Terrace, Fullarton Road and Magill Road (Kent Town) to the intersection with Lower North East Road, Montacute Road and Glynburn Road (Glynde) and has a 60km/h speed limit.

Traffic volumes on Payneham Road are highest between Glynburn Road and Portrush Road with an average volume of 43,000 to 49,000 vehicles per day. Traffic volumes between Portrush Road and Fullarton Road are lower, at around 32,000 vehicles per day.

Part-time cycle lanes are installed on Payneham Road and operate between 7:00am and 10:00am (inbound) and 3:00pm and 7:00pm (outbound). These cycle lanes are not continuous through major intersections, exposing cyclists to greater risk on the approaches and departures to these intersections. Furthermore, whilst part of Payneham Road is divided, most right turns are permitted which increases the risk of right turn crashes occurring at minor road intersections. On the undivided section between Portrush Road and Fullarton Road, right turn lanes are not provided, which places additional pressure on drivers turning right who may be more likely not to consider cyclists when turning right.

Non-continuous cycle lanes were the most frequently raised issue by survey respondents who nominated Payneham Road, followed by high motor vehicle traffic volumes, uneven road surface, cycle lanes not continuing through intersections and narrow cycle lanes. Several intersections were also raised, most notably the intersection with Lower North East Road, Montacute Road and Glynburn Road, in Glynde (Glynde Corner). Of particular concern at this intersection is the turn from Lower North East Road onto Payneham Road. Road users in the centre lane of Lower North East Road can veer left onto Glynburn Road, or right onto Payneham Road, and this is a very dangerous location for a cyclist to place themselves in to make a right turn onto Payneham Road. Other turn movements at the intersection are also hazardous to cyclists due to narrow lanes, turning vehicles and the lack of cycle lanes on most approaches and departures of the intersection.

Figure 23: The Glynde intersection is particularly challenging to navigate as a cyclist

A review of crash data shows that 37 casualty crashes involving cyclists occurred on Payneham Road between 2015 and 2019, which makes up 15% of all casualty crashes occurring on Payneham Road. Right turn crashes, where a vehicle is making a right turn from Payneham Road are the most common type of casualty crash involving cyclists and make up almost half of all cyclist casualty crashes on Payneham Road. This is followed by side swipe crashes, which account for just over one quarter of cyclist casualty crashes.

Table 11: Casualty crash types involving cyclists on Payneham Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Right Turn	18	14	4	0
Side Swipe	10	9	1	0
Rear End	3	3	0	0
Right Angle	3	3	0	0
Roll Over	2	2	0	0
Hit Parked Vehicle	1	1	0	0
Total	**37**	**32**	**5**	**0**

When reviewing hotspots where cyclist casualty crashes tend to occur, the section northeast of Stephen Terrace in St Peters performs very poorly, with eleven reported casualty crashes between Stephen Terrace and Bakewell Road, including four at the intersection with Ann Street. In each of the four reported crashes at this location, the cyclist was travelling southwest. Two of these crashes involved vehicles turning right into Ann Street, one involved a vehicle turning right from Ann Street, and another involved a side swipe with a vehicle.

Figure 24: Map of casualty crash locations involving cyclists on Payneham Road

The River Torrens Linear Park Trail is located about 1km north of Payneham Road and runs parallel to the road. Whilst this can be utilised as a safer alternative, it is far less direct and could require up to 2km of extra travel depending on the start and end points of the cyclist. The O Bahn Bikeway takes a more direct route along the alignment of the O Bahn Busway, but only extends between Klemzig Interchange (OG Road) and Tea Tree Plaza Interchange.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Payneham Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"Many, many crashes. Cyclists cut off by cars turning left or right across banked up traffic."

"Bike lane on Lower NE Rd ends coming into the intersection so you are forced onto the footpath or share the road. If you want to travel up Glynburn Rd you have to ride in the whole lane or risk getting squeezed by a car due to the placement of the median strip/barriers around the lights, then there are cars turning from Montacute Rd to contend with. If you want to turn right into Payneham Rd you have to somehow ride across traffic and share the car lane, which is impossible."

"It's very uneven because of the gum tree root from the trees growing alongside the road. The lane is always littered with leaves, sticks and glass. The lane disappears at the intersection with Magill Rd and you are forced to ride in traffic. You can't use the footpath because the Maid and Magpie is always under construction and even when it's not, the footpath is non-existent. Then you have to tackle the intersection of Magill Rd and Fullarton Rd where you have cars turning from Magill Rd into Fullarton Rd, but you are a bike coming across the lights."

Please provide any suggestions on how this risk could be reduced.

"There appears limited room to extend the width of lanes in this section, and pedestrians are sometimes waiting to cross, making an off-road bike lane difficult also. I don't know if it has been attempted before, but maybe markings from the edge of the bike lane outwards into the car lane, to indicate that the one lane will shortly be a mixed zone - so that cars have opportunity to speed up or slow down accordingly and the bike rider can merge to the right slightly to hold a spot slightly more central to the mixed lane."

"Reallocate the lane on Lower North East Road to turn right only or straight on only. Widen Payneham road to include bike lane from intersection."

"Resurface the road and insert bike lane all the way (not ending at busy intersections)."

RAA comment

Compared to other roads in the top ten nominated Risky Rides, Payneham Road has one of the highest numbers of reported cyclist casualty crashes per kilometre, which highlights a need for cyclist safety treatments along the corridor.

A traffic management plan needs to be developed for Felixstow and Glynde which focuses on a review of right turn movements from Payneham Road, where there are fifteen right turns over a one kilometre section. Prohibiting at least half of these right turns, particularly during peak periods should be strongly considered, which would provide an improvement to not only cyclist safety, but also the safety of motor vehicle users and may also improve traffic flow.

Where right turns are permitted, green non-slip paint should be installed, such as at the intersection with Ann Street in St Peters where four cyclists were involved in crashes between 2015 and 2019.

Continuity of cycle lanes through major intersections including with Fullarton Road, Stephen Terrace, Portrush Road and Glynburn Road is important and should be provided. Glynde Corner is in likely need of a major overhaul to provide safety for cyclists in all directions, which is challenging considering the small footprint of the intersection and the level of roadside development.

Port Rd

Risky Rides ranking	5
No. of nominations	27
Top 5 issues	• Uneven surface in cycle lane • Lots of motor vehicle traffic on road • Rough, slippery or loose cycle lane surface • Debris in cycle lane e.g. water, leaves, glass • Cycle lane or path doesn't continue through intersection
No. of cyclist casualty crashes 2015-2019	66 (1 fatality, 4 resulting in serious injury, 61 resulting in minor injury)
No. of respondents involved in/witness to a crash	9

Port Road is a major arterial road connecting Adelaide at the intersection with West Terrace and North Terrace to Port Adelaide at the intersection with Grand Junction Road and Commercial Road. Port Road is under the care and control of the Department for Infrastructure and Transport and extends for more than 11km with several major intersections.

Traffic volumes on Port Road are very high, with the section between James Congdon Drive in Thebarton and Adam Street in Hindmarsh, one of the busiest road sections in Adelaide. This section of Port Road carries more than 70,000 vehicles per day whilst also accommodating a tram line in the centre of the road. Traffic volumes for most other sections of Port Road vary between 40,000 and 45,000 vehicles per day, but significantly reduce between Old Port Road and Grand Junction Road.

Current cycle infrastructure between West Terrace and Adam Street surpasses what is provided along the remainder of the corridor, and most other popular cycle corridors in South Australia. Separated shared paths are provided, as well as cycle lanes in both directions with a narrow traffic island providing some separation between cyclists and motor vehicles where possible. For the remainder of the corridor, wide cycle lanes continue through most intersections; however, improvements could be made at the intersections with Grand Junction Road, Woodville Road, Kilkenny Road and East Avenue where cycle lanes make way for left turn lanes.

The top issue, raised by more than half of survey respondents nominating Port Road, was the uneven surface in the cycle lane. This was followed by high traffic volumes, slippery surfaces, debris in cycle lanes and cycle lanes not continuing through intersections. Issues were also raised with accessibility between the Livestrong Pathway and the Parklands Trail, with many cyclists preferring to use the pedestrian crossing at Gaol Road and the footpath between Gaol Road and the start of the Livestrong Pathway instead of waiting for extended periods to cross at the signals at the intersection with James Congdon Drive.

Figure 25: Localised pavement deterioration in the cycle lane on Port Road presents a hazard for cyclists

A review of crash data shows that 66 casualty crashes involving cyclists occurred on Port Road between 2015 and 2019, which makes up 18% of all casualty crashes occurring on Port Road. This is the highest number of cyclist casualty crashes on any of the roads in the top-ten Risky Rides list. Right angle and side swipe crashes are the dominant crash types involving cyclists and make up almost three quarters of cyclist casualty crashes on Port Road.

Table 12: Casualty crash types involving cyclists on Port Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Right Angle	28	27	1	0
Side Swipe	21	19	1	1
Hit Parked Vehicle	5	5	0	0
Roll Over	4	3	1	0
Other	3	2	1	0
Hit Fixed Object	2	2	0	0
Hit Pedestrian	2	2	0	0
Hit Object on Road	1	1	0	0
Total	**66**	**61**	**4**	**1**

When reviewing hotspots where cyclist casualty crashes tend to occur, the section between Park Terrace and South Road in Hindmarsh appears to be the riskiest from a crash history perspective. Almost one third (21) of casualty crashes occurred on this section, with right angle crashes making up the more than half (12) of these.

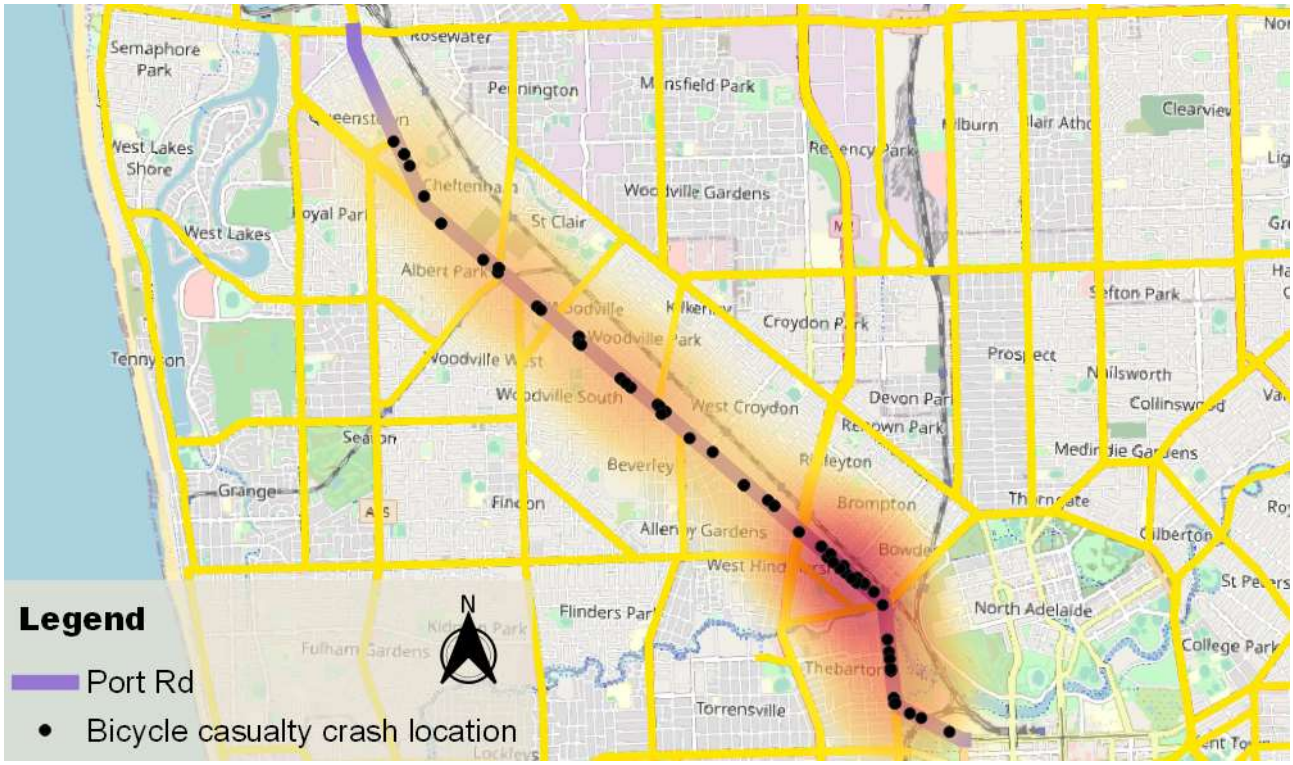


Figure 26: Map of casualty crash locations involving cyclists on Port Road

It is also noteworthy that nine respondents who nominated Port Road had witnessed or been involved in a cyclist crash on the road, which was the second highest across the most nominated on-road locations.

The Outer Harbor Greenway (completed in late 2019) follows the alignment of Port Road and runs adjacent to the Outer Harbor rail corridor along a series of off-road sealed paths and local streets. Port Road also connects with the River Torrens Linear Park Path and the Park Lands Trail in Adelaide.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Port Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"Road surface and cycling lane are in poor condition with rough, uneven surface and multiple drain covers."

"City bound is average most of the way. Out bound from round Welland to Cheltenham is pretty bad and bumpy."

"Many cyclists commuting from work use the path along West Terrace that continues along Port Road. It then goes up a very narrow bridge usually with pedestrians walking in the middle with headphones on so they don't move. You can either continue on and then have to wait to cross 3 sets of lights to get back on to the Livestrong Pathway. However, the best way is to cross at the pedestrian crossing on top of the bridge, where you need to ride along a paved footpath until you get to the Livestrong Pathway."

"Lane disappears when you need it most, eg. traffic lights, left turn lanes replace the bike lane. Cracks in road that are wider than my tyres."

Please provide any suggestions on how this risk could be reduced.

"Fix the road surface and road sweep the bike lane weekly."

"Improve the surface so you don't have to swerve out of the lane into traffic to avoid potholes, manhole covers, poor surfaces, debris including glass, improved visibility by re-painting the lane lines. Best option is to follow European ideas and create completely separate lanes away from major traffic."

"This pathway would make much more sense if that piece of paved footpath on Port Road (between Goal Road and the Livestrong Pathway) became a proper off-road cycle path like the rest of the pathway is. Most cyclists are using this route rather than waiting sometimes 5 minutes at the lights further up.

"Bike path incorporated into the incredibly wide median strip. People riding for transport should not have to divert North to the outer harbour greenway for a safe alternative."

RAA comment

Most comments in the survey were about the poor road surface in the cycle lanes, with service pit covers and debris in cycle lanes also encountered by regular users. It is evident that localised maintenance is required to ensure a safe and smooth road surface is provided for all users along this busy arterial corridor.

As with most arterial cycle corridors across Adelaide, there are issues with continuity of cycle lanes through intersections along Port Road, which regularly disappear to make way for left turn lanes. Improving continuity of cycle infrastructure can be expensive where there is not sufficient road width available; however, there is a wide centre median on Port Road that could be utilised for enough widening to facilitate cycle lanes at these locations.

Improvements to connectivity between the Livestrong Pathway and Parklands Trail at Gaol Road should be investigated, which would encourage more cyclists to utilise the off-road paths through the Adelaide Park Lands instead of on-road cycle lanes on the busiest section of Port Road.

Portrush Road

Risky Rides ranking	6
No. of nominations	26
Top 5 issues	• Lots of trucks using road • Lots of motor vehicle traffic on road • Cycle lane not continuous • Cycle lane or path doesn't continue through intersection • Lack of off-road cycle path
No. of cyclist casualty crashes 2015-2019	24 (1 fatality, 1 resulting in serious injury, 22 resulting in minor injury)
No. of respondents involved in/witness to a crash	4

Portrush Road is a major north-south arterial road and is listed on the Federal Government's National Land Transport Network as a route of national significance providing connectivity between the South Eastern Freeway and the north of South Australia including Port Adelaide. As such, the volume of traffic is very high, especially with regards to heavy freight vehicles. Portrush Road extends for 10km between the South Eastern Freeway and Payneham Road.

Traffic volumes on Portrush Road are consistently between 37,000 and 40,000 vehicles per day, of which up to 3,000 (7.5%) are commercial vehicles as large as b-doubles.

Current cycle infrastructure on Portrush Road is limited to on-road cycle lanes, which are not present between the South Eastern Freeway and Greenhill Road or at a number of intersections including Edward St (northbound), Luhrs Road (southbound) and Payneham Road (all directions). Where present, cycle lanes operate on a full-time basis.

The number one issue raised by more than half of survey respondents nominating Portrush Road was that there are lots of trucks on the road. High truck volumes can make cycling dangerous because of the blind spots on large freight vehicles, and the difficulties for drivers to observe cyclists that may be in these blind spots. High motor vehicle traffic volumes were also raised as a major issue by a majority of those nominating Portrush Road. Other prominent issues raised included non-continuous cycle lanes and a lack of a suitable off-road cycle path.

The most raised section was between the South Eastern Freeway and Greenhill Road, where there is no cycle lane other than for a short section between Glebe Road and the South Eastern Freeway. The intersection with The Parade in Norwood was also raised by several respondents: most specified crossing Portrush Road when travelling eastbound along The Parade, where there is a kink in The Parade across the intersection, forcing cyclists and motor vehicles to merge just as the road swerves to the right. The intersection with Payneham Road was also raised due to its lack of cycle infrastructure.

Figure 27: Some midblock sections have wide lanes that could theoretically accommodate a cycle lane on Portrush Road

A review of crash data shows that 24 casualty crashes involving cyclists occurred on Portrush Road between 2015 and 2019, which makes up 9% of all casualty crashes occurring on Portrush Road. Of these crashes, two involved trucks, including one which tragically had a fatal outcome.

Right angle, side swipe and right turn crashes are the most commonly occurring casualty crash types involving cyclists on Portrush Road, accounting for more than 80% of all cyclist casualty crashes.

Table 13: Casualty crash types involving cyclists on Portrush Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Right Angle	9	9	0	0
Side Swipe	6	5	0	1
Right Turn	5	5	0	0
Roll Over	1	1	0	0
Rear End	1	1	0	0
Hit Fixed Object	1	1	0	0
Hit Parked Vehicle	1	0	1	0
Total	**24**	**22**	**1**	**1**

When reviewing hotspots where cyclist casualty crashes tend to occur, the area surrounding the intersection with Kensington Road appears to be the worst, with other hotspots for cyclist crashes near the Greenhill Road intersection and near the South Eastern Freeway intersection.

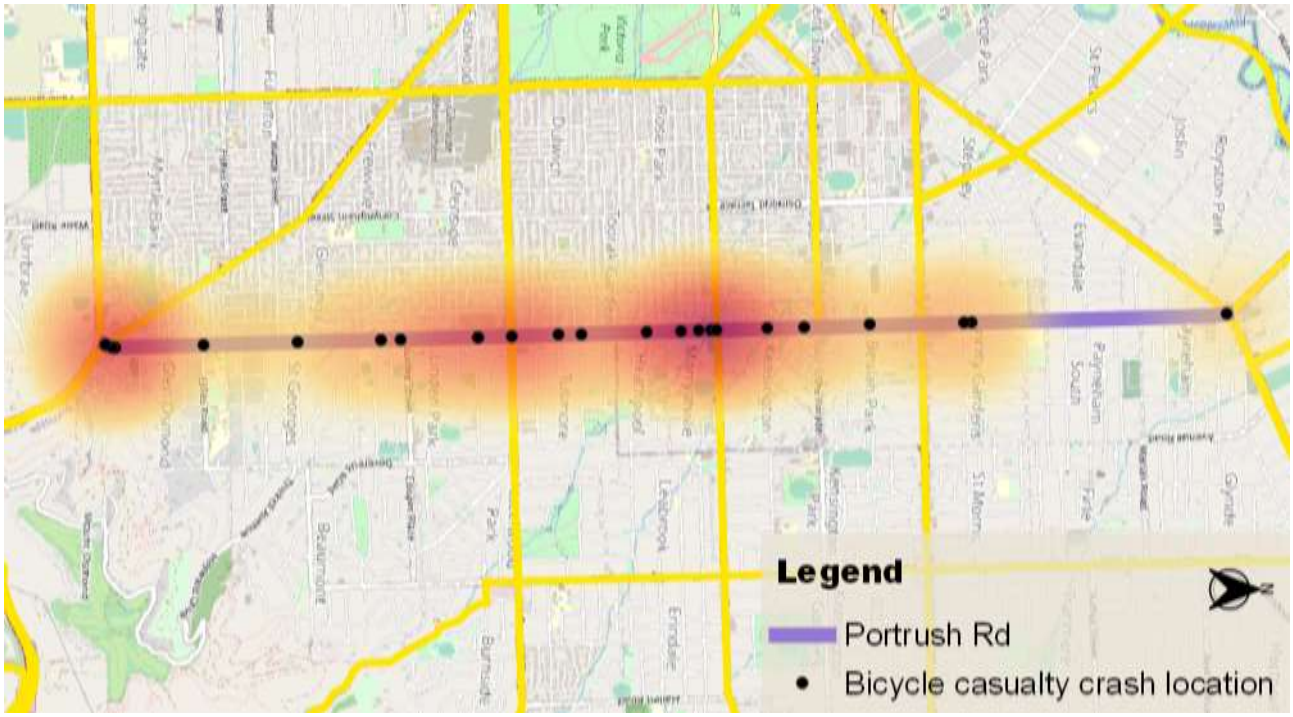


Figure 28: Map of casualty crash locations involving cyclists on Portrush Rd

There are no off-road cycle paths in Adelaide's eastern suburbs; however, Portrush Road is one of three key feeder roads to the Crafers Bikeway, which extends from the intersection with the South Eastern Freeway to Crafers. Portrush Road also feeds into Lower Portrush Road, which connects with the River Torrens Linear Park and O Bahn Bikeway.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Portrush Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"There is no cycling lane but there is car parking on the road (some of it with clearways in certain hours, some not). Trying to weave around parked cars in heavy traffic is dangerous. During peak hour you get squeezed out by cars/trucks when riding and often end up stuck between parked cars and stopped traffic."

"Lots of truck use particularly early in the morning. Bikes use this to connect to the Crafers Freeway bike path which sees a lot of use."

"Lots of heavy vehicles use this road and for most of this section there is no cycle lane. This road is a major cycling route as it is one of only a few ways to link to the freeway cycle path."

Please provide any suggestions on how this risk could be reduced.

"At The Parade, either widen the intersection (difficult due to the church on the corner) or have the bike lane continue on to the footpath and move the pedestrian crossing a metre or so north."

"Have a continuous north/south alternative for cyclists away from main roads like this, utilising less trafficked roads with safe crossing options across major east/west roads."

"Install as a minimum a cycling lane. Preferably a separated cycling lane (but space provisions are challenging)."

RAA comment

Portrush Road is the only freight route through Adelaide's eastern suburbs, with few current alternative routes for heavy freight to take to or from the South Eastern Freeway. Whilst proposals such as GlobeLink, which will not go ahead, have been made to alleviate heavy vehicle volumes on Portrush Road, the reality is that Portrush Road will continue to be the primary heavy vehicle route at least until the North-South Corridor upgrade is complete.

Cycle lanes are lacking between the South Eastern Freeway and Greenhill Road and the left lane is very wide, and signposted as a clearway between 7:00am and 10:00am, and 3:00pm and 7:00pm. Converting this clearway to a part-time cycle lane should be considered, although there are some challenges at side road intersections where the wide left lane narrows to allow for channelised right turn lanes.

Continuity of current cycle lanes should also be provided, particularly at the intersection with Payneham Road, which is very busy and provides no safe route for cyclists to take through the intersection. At the intersection with The Parade in Norwood, the footpath is wide on the north-eastern corner, so a short section of off-road shared path with suitable cycle ramps for access may be a more cost-effective solution than widening the road to provide a dedicated on-road cycle lane; this would make travelling across the intersection substantially safer for cyclists.

Cross Road

Risky Rides ranking	7
No. of nominations	25
Top 5 issues	• Uneven surface in cycle lane • Lots of motor vehicle traffic on road • Cycle lane not continuous • Debris in cycle lane e.g. water, leaves, glass • Lots of trucks using road
No. of cyclist casualty crashes 2015-2019	39 (4 resulting in serious injury, 35 resulting in minor injury)
No. of respondents involved in/witness to a crash	2

Cross Road is a busy east-west arterial, forming part of the outer Adelaide ring-route. Cross Road is under the care and control of the Department for Infrastructure and Transport and extends for nine kilometres between the South Eastern Freeway and ANZAC Highway in Plympton.

Traffic Volumes on Cross Road are high, with the busiest section between the South Eastern Freeway and Fullarton Road carrying an average of 33,000 vehicles per day. Other sections typically carry 25,000 – 30,000 vehicles per day, and less than 20,000 travel the section west of South Road.

The current cycle infrastructure on Cross Road consists of a combination of part-time and full-time on-road cycle lanes. Part time lanes operate between 7:30am and 9am, and between 4:30pm and 6:00pm, and are situated between ANZAC Highway and South Road, with full-time lanes extending between South Road and West Terrace (Malvern). There is no cycle lane for approximately 2.5km between the South Eastern Freeway and West Terrace, which is particularly dangerous for eastbound cyclists who are usually riding at a slower pace due to the gradual incline of almost 5% (average) between Fullarton Road and the South Eastern Freeway. The $61m upgrade of the Fullarton Road/Cross Road intersection will add dedicated cycle lanes in the vicinity of this intersection, however, there will still be gaps in cycle lanes east and west of Fullarton Road. Cycle lanes at the Goodwood Road intersection are shared with left-turn lanes and are not continuous through the ANZAC Highway intersection.

There was a high degree of consensus among survey respondents when nominating the top issues experienced when cycling on Cross Road. Uneven surfaces, high traffic volumes and a non-continuous cycle lane were all raised by more than half of survey respondents that nominated Cross Road. Debris in cycle lanes, and the volume of heavy vehicles using the road were also frequently raised.

The most highly raised section was between Fullarton Road and the South Eastern Freeway, where there are no cycle lanes, and the surface is said to be uneven due to tree roots. The importance of this section of Cross Road for access to the Crafers Bikeway was also flagged by several respondents.

Figure 29: The cycle lane on Cross Road abruptly ends to make way for on-street parking bays

A review of crash data shows that 39 casualty crashes involving cyclists occurred on Cross Road between 2015 and 2019, which makes up 16% of all casualty crashes occurring on Cross Road. Right turn crashes, where a vehicle is making a right turn from Cross Road are the most common type of casualty crash involving cyclists and make up almost one third of all cyclist casualty crashes on Cross Road. This is followed by roll over and side swipe crashes as the next most common crash types. Roll over crashes occur more frequently on Cross Road than other roads in the top ten Risky Rides. These crashes generally involve a single cyclist and the term 'roll over' is used to describe crashes where the cyclist falls off the bicycle, usually due to a loss of control.

Table 14: Casualty crash types involving cyclists on Cross Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Right Turn	12	10	2	0
Roll Over	8	7	1	0
Side Swipe	7	7	0	0
Rear End	5	4	1	0
Right Angle	4	4	0	0
Hit Object on Road	2	2	0	0
Head On	1	1	0	0
Total	**39**	**35**	**4**	**0**

When reviewing hotspots where cyclist casualty crashes tend to occur, major intersection approaches appear to be the riskiest, particularly in the vicinity of Marion Road and Goodwood Road.

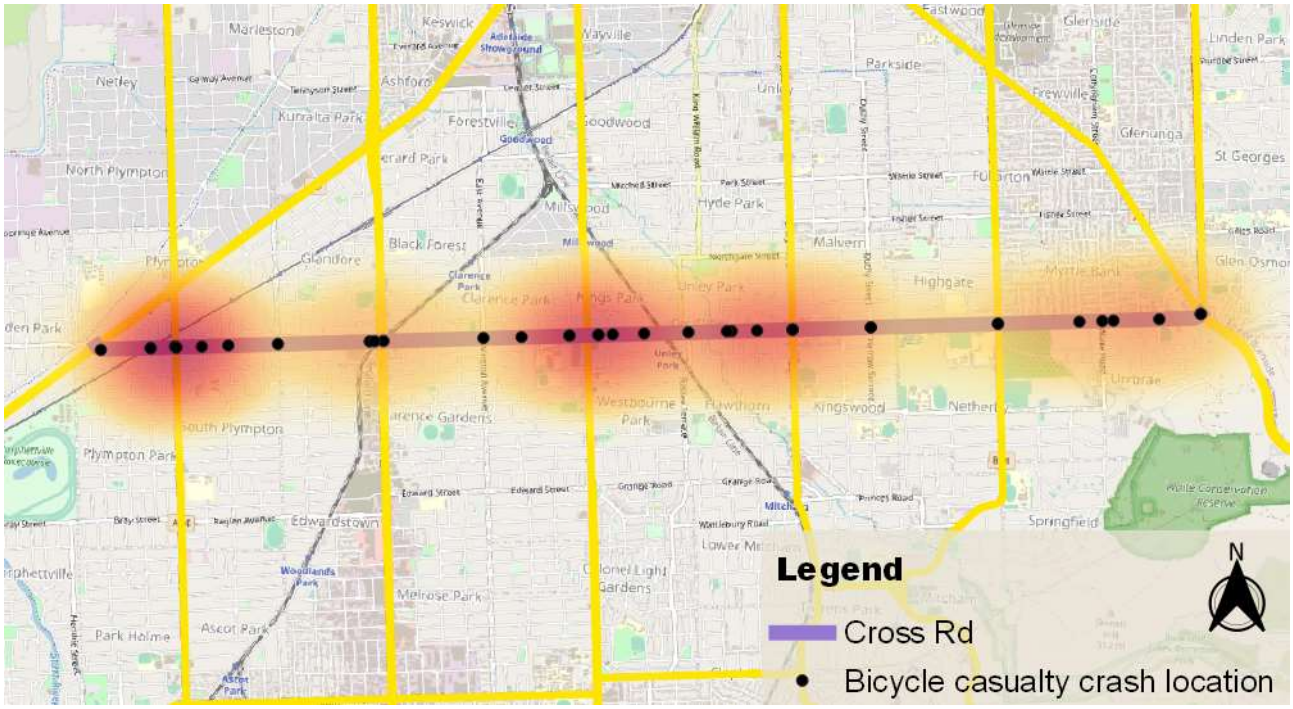


Figure 30: Map of casualty crash locations involving cyclists on Cross Rd

Cross Road is a key connection to the popular Crafers Bikeway, however the cycle infrastructure on Cross Road is poorest on approach to this bikeway. Cross Road also intersects several cycle corridors including the Rugby-Porter on-road bikeway (near Unley Road), the Marino Rocks Greenway (at South Road) and the Mike Turtur Bikeway (near Cross Road)

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Cross Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"Along this section (Urrbrae) the road surface is very uneven and may be due to tree roots lifting up sections of the bitumen, so much so that riders move out into the car lane more to avoid crashing."

"Main feed to Crafers Bikeway, no safe bike lanes on approach from any road. Trucks drive very close to cyclists, quite frightening."

"When heading east the bike lane disappears near Fullarton Rd. It is then necessary to take up the car lane to get to the bottom of the freeway. One of the most used pieces of cycling infrastructure in the State is the Old Freeway bikeway, but there is no safe way to get to the bottom of that bikeway. Cross Rd is one option, but it is not safe for bikes."

Please provide any suggestions on how this risk could be reduced.

"Widen the bike lane. Remove parking along Cross Road."

"Continue lane to freeway, repair existing lane, highlight intersections with green bitumised detail to increase visibility."

"A bike lane on that section (Fullarton Road to South Eastern Freeway) would be ideal, or at least repair the road surface so that bikes can ride in a straight line along the road without having to ride around obstacles and debris."

RAA comment

Cross Road, being a major east-west arterial, serves an important function in Adelaide's transport network. Whilst cycle lanes are provided for most of the corridor, they are lacking on one of the more heavily utilised sections on approach to the South Eastern Freeway and the popular Crafers Bikeway. There is sufficient width along most of this section of Cross Road to provide continuous dedicated cycle lanes, however, on-street parking would likely need to be sacrificed to facilitate this. On some sections where there are no cycle lanes or marked parking facilities, no standing zones operate during peak periods, however, there are sections, particularly in the westbound direction between Waite Road and West Terrace (Malvern) where there are not any parking restrictions during peak periods. These areas are not highly utilised by parked vehicles, and provision of a cycle lane would have minimal impact to parking availability.

RAA expects traffic volumes on Cross Road to increase as the North-South Corridor upgrade reaches completion, which will expose cyclists to even more traffic, particularly heavy vehicles, on this section of Cross Road unless an alternative route between the South Eastern Freeway and South Road is created.

Frome Street / Frome Road

Risky Rides ranking	8
No. of nominations	24
Top 5 issues	• Lots of motor vehicle traffic on road • Lack of off-road cycle path • Cycle lane not continuous • Narrow cycle lane • Cycle path shared with pedestrians
No. of cyclist casualty crashes 2015-2019	25 (1 resulting in serious injury, 24 resulting in minor injury)
No. of respondents involved in/witness to a crash	2

Frome Road is a major north-south corridor in Adelaide extending 2.5 kilometres between Melbourne Street and North Terrace, before continuing as Frome Street through to the intersection with Angas Street. The corridor is under the care and control of the City of Adelaide Council, and is a critical link to universities on North Terrace and Adelaide's east end precinct.

Frome Road and Frome Street are subject to 50km/h speed limits. Traffic volumes on Frome Road are about 15,000 vehicles per day, whilst volumes on Frome Street are about 10,000 vehicles per day at the northern end, dropping to about 3,000 vehicles per day at the southern end.

Frome Street has an on-road separated cycle lane in each direction which provides a safe north-south cycling corridor across Adelaide CBD and is promoted as the preferred route for cyclists to take. However, cycle lanes are not present between Rundle Street and North Terrace, with this hazardous section off-putting to many cyclists in Adelaide. Frome Road includes a combination of full-time cycle lanes and an off-road dedicated cycle path for southbound traffic travelling uphill between Victoria Drive and North Terrace. There are gaps in infrastructure at the intersections with War Memorial Drive, Victoria Drive and North Terrace through to Rundle Street.

Figure 31: Most of the Frome Street Bikeway is built to a very high standard and is one of the best on-street bikeways in South Australia

The top issue raised by survey respondents was the high volume of motor vehicle traffic, with issues regarding a lack of off-road cycle paths and non-continuous cycle lanes also highly raised. Narrow cycle lanes and having to share cycle paths with pedestrians were also issues to those who nominated this corridor.

Survey respondents highly nominated two key issues along the corridor. Firstly, the section between North Terrace and Victoria Drive, where the cycle lane is narrow for northbound cyclists, and there are frequent reported near misses with pedestrians and turning motor vehicles for southbound cyclists. Secondly, the section between North Terrace and Rundle Street, where there is no cycle infrastructure along what is otherwise a route that highly encourages cycling. This section is flagged for completion when major construction work is finalised near the intersection of North Terrace and Frome Street.

There were also mentions of near-misses involving drivers turning from Frome Street into side roads failing to give way to cyclists travelling along the Frome Street Bikeway. Under the Australian Road Rules, drivers turning left at an intersection are required to give way to cyclists approaching from the same direction and travelling straight through the intersection.

Figure 32: The section between North Terrace and Rundle Street leaves much to be desired for cyclist safety

A review of crash data shows that 25 casualty crashes involving cyclists occurred on Frome Street and Frome Road between 2015 and 2019. Eight of these occurred on the bikeway south of Rundle Street, four occurred between Rundle Street and North Terrace (including intersections) and thirteen occurred north of North Terrace. Overall, 39% of all casualty crashes occurring on Frome Street and Frome Road involve a cyclist. When looking at Frome Street and Frome Road separately, 52% of all casualty crashes involve a cyclist on Frome Road (north of North Terrace) and 23% of all casualty crashes involve a cyclist on Frome Street (south of North Terrace). Side swipe, right angle and right turn crashes are the three most common crash types along the corridor.

Table 15: Casualty crash types involving cyclists on Frome Street and Frome Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Side Swipe	9	8	1	0
Right Angle	7	7	0	0
Right Turn	5	5	0	0
Other	2	2	0	0
Hit Parked Vehicle	1	1	0	0
Hit Fixed Object	1	1	0	0
Total	**25**	**24**	**1**	**0**

When reviewing hotspots where cyclist casualty crashes tend to occur, the section between Melbourne Street and War Memorial Drive appears the worst, due to five cyclist crashes occurring at the roundabout at the War Memorial Drive intersection. Three of these crashes involved northeast-bound cars failing to give way to northwest-bound cyclists, whilst the remaining two involved southwest-bound cars failing to give way to southeast-bound cyclists. Whilst roundabouts are generally the safest treatment for motor vehicle occupants, they can increase the risk to vulnerable users such as pedestrians and cyclists. The section between North Terrace and Rundle Street also performs poorly from a crash perspective, highlighting the concerns raised at this section by survey respondents.

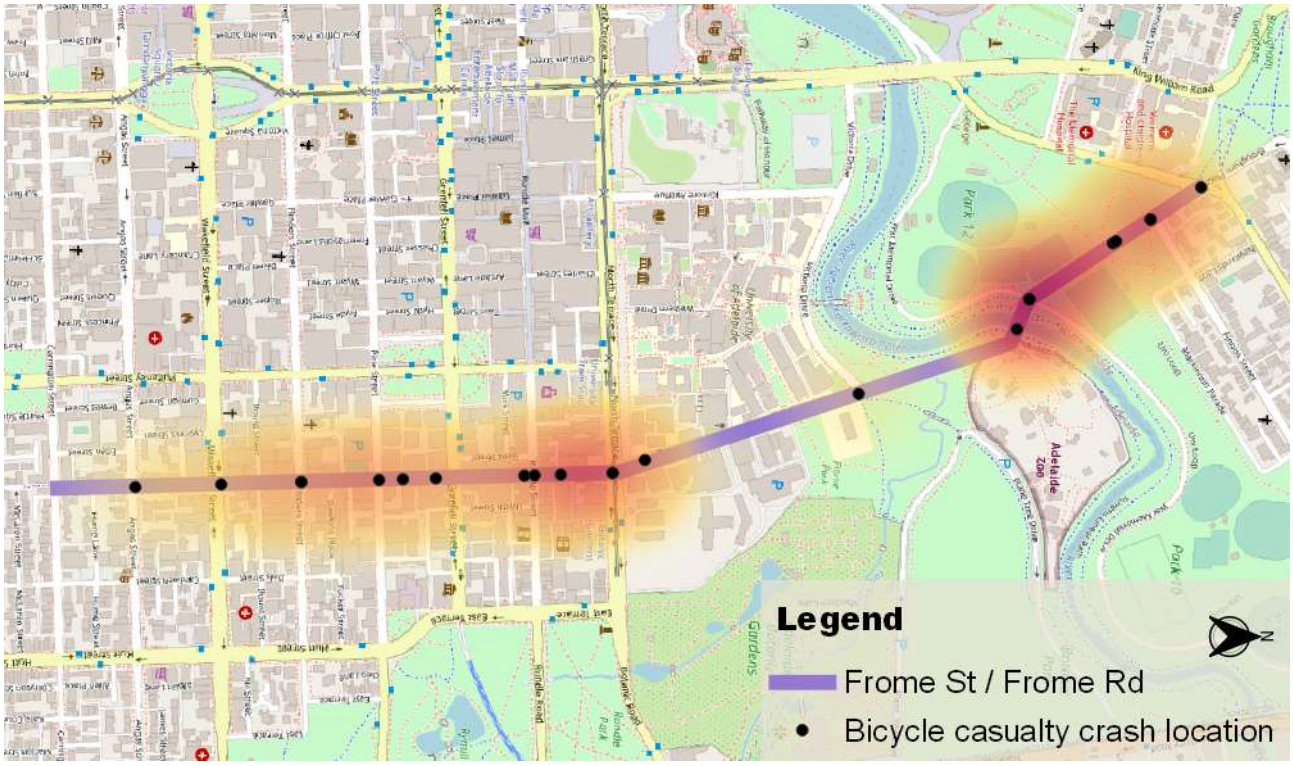


Figure 33: Map of casualty crash locations involving cyclists on Frome St and Frome Rd

Frome Road and Frome Street are part of Adelaide's North-South Bikeway, which extends from Fitzroy Terrace in the north to Greenhill Road in the south and links in with the various Park Lands trails. The corridor also crosses the River Torrens Linear Park Trail, and links on to inner-metropolitan on-road bike boulevards such as the Rugby-Porter Bikeway (City of Unley) and Braund Street Bikeway (City of Prospect).

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Frome Street or Frome Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"The path is not shared. Pedestrians and bikes do not mix well. Pedestrians are constantly walking in what is designated as bicycles only."

"This gap in the Frome bikeway is risky both ways as one often has to ride squeezed between the kerb and two lanes of traffic and or parked cars and construction. It's sad that this is a very unsafe feeling segment on what is otherwise one of the safest bike routes in the city!"

"It is about time the divided bike lanes were finished, there's lots of traffic due the safety of the other section but the North Terrace pinch point heading to North Adelaide is really dangerous as is the pretend cycle lane alongside the universities."

Please provide any suggestions on how this risk could be reduced.

"Create proper segregated bike lane. No need to have two main lanes here, as these merge after Victoria Drive anyway."

"I imagine this bike path was created based on the examples we see in Belgium and The Netherlands. Bike traffic lights need to be installed so that when the green light goes for cars etc to go that a green light also illuminates for cyclists meaning cars etc must give way to cyclists crossing. In addition every intersection should be clearly marked that the bike path continues across the intersection for those vehicles turning left."

"Complete the separated bike lane in both directions ASAP."

RAA comment

Sections of the Frome Street and Frome Road corridor are Adelaide's best cycling corridors, however, there are sections which require crucial upgrades to ensure safety of cyclists along all sections of this important part of the city cycling network.

On-road cycle lanes between North Terrace and Melbourne Street still expose cyclists to motor vehicles, where there are opportunities to provide further off-road pathways and intersection upgrades to enhance cyclist safety. Following a review of crash data, the roundabout at Frome Road and War Memorial Drive performs particularly poorly as far as cyclist safety is concerned, and an upgrade such as a Dutch-style roundabout could be a feasible solution at this intersection. This would require motorists to give way to cyclists and pedestrians when entering or leaving the roundabout using raised zebra-style crossings at the roundabout. Whilst this would be a first for South Australia, this is one of the most viable locations to install this type of treatment along one of our busiest cycle corridors.

Completion of the Frome Street Bikeway between North Terrace and Rundle Street is also critical in providing a complete cycle corridor along Frome Street and enhancing cyclist safety on this hazardous section. Whilst this project has been delayed due to several major construction projects in the vicinity, it is highly important that this is completed as soon as possible.

Unley Road

Risky Rides ranking	9
No. of nominations	22
Top 5 issues	• Cycle lane not continuous • Vehicles stopped in cycle lane during operating hours • Lots of motor vehicle traffic on road • Lack of space between parked cars and the cycle lane • Cycle lane hours of operation too short
No. of cyclist casualty crashes 2015-2019	30 (2 resulting in serious injury, 28 resulting in minor injury)
No. of respondents involved in/witness to a crash	5

Unley Road is an arterial road corridor extending 3.5km between South Terrace in Adelaide and Cross Road in Unley Park. Most of the corridor is under the care and control of the Department for Infrastructure and Transport, however the section between South Terrace and Greenhill Road is under the care and control of the City of Adelaide Council.

Unley Road has a 60km/h speed limit with moderate traffic volumes. Between 27,000 and 29,000 vehicles use the corridor every day, although the section between South Terrace and Greenhill Road is travelled by about 18,000 vehicles daily.

Cycle infrastructure on Unley Road is limited to part-time cycle lanes which operate on weekdays between 7:30am and 9:00am for citybound traffic and between 4:30pm and 6:00pm for outbound traffic and they are signposted as clearways, rather than cycle lanes. There are sections of full-time cycle lane between South Terrace and Greenhill Road. Cycle infrastructure is completely lacking between Frederick Street and the Unley Shopping Centre, on approaches and departures from the Park Street/Wattle St dogleg intersection.

Non-continuous cycle lanes and vehicles stopped in cycle lanes during operating hours were the two biggest concerns raised by more than half of survey respondents who nominated Unley Road. High traffic volumes, lack of space between parked cars and cycle lanes, and short cycle lane operation hours were also raised by numerous respondents.

Figure 34: Faded clearway signage is not legible on sections of Unley Road

Verbatim commentary received about Unley Road regularly included that cycle lane hours were too short, the road surface was very rough and that the non-continuous cycle lane was a major safety concern for regular users.

A review of crash data shows that 30 casualty crashes involving cyclists occurred on Unley Road between 2015 and 2019, which makes up 24% of all casualty crashes occurring on Unley Road. Compared to other roads in this top ten list, Unley Road has the second highest number of reported cyclist casualty crashes per kilometre. Side swipe crashes are the most common crash type, making up almost one third of cyclist casualty crashes. Right turn crashes, which involve a vehicle turning right from Unley Road, are the next most commonly occurring cyclist casualty crash type, making up almost one quarter of cyclist casualty crashes.

Table 16: Casualty crash types involving cyclists on Unley Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Side Swipe	10	9	1	0
Right Turn	7	6	1	0
Right Angle	4	4	0	0
Roll Over	3	3	0	0
Hit Fixed Object	3	3	0	0
Hit Pedestrian	1	1	0	0
Hit Parked Vehicle	1	1	0	0
Rear End	1	1	0	0
Total	**30**	**28**	**2**	**0**

When reviewing hotspots where cyclist casualty crashes tend to occur, the section between Greenhill Road and Park Street appears to be the worst from a cyclist crash perspective, with almost two thirds of cyclist casualty crashes occurring on this section. In particular, the intersection with Young Street recorded three cyclist casualty crashes between 2015 and 2019, and another two crashes in very close proximity to the intersection.

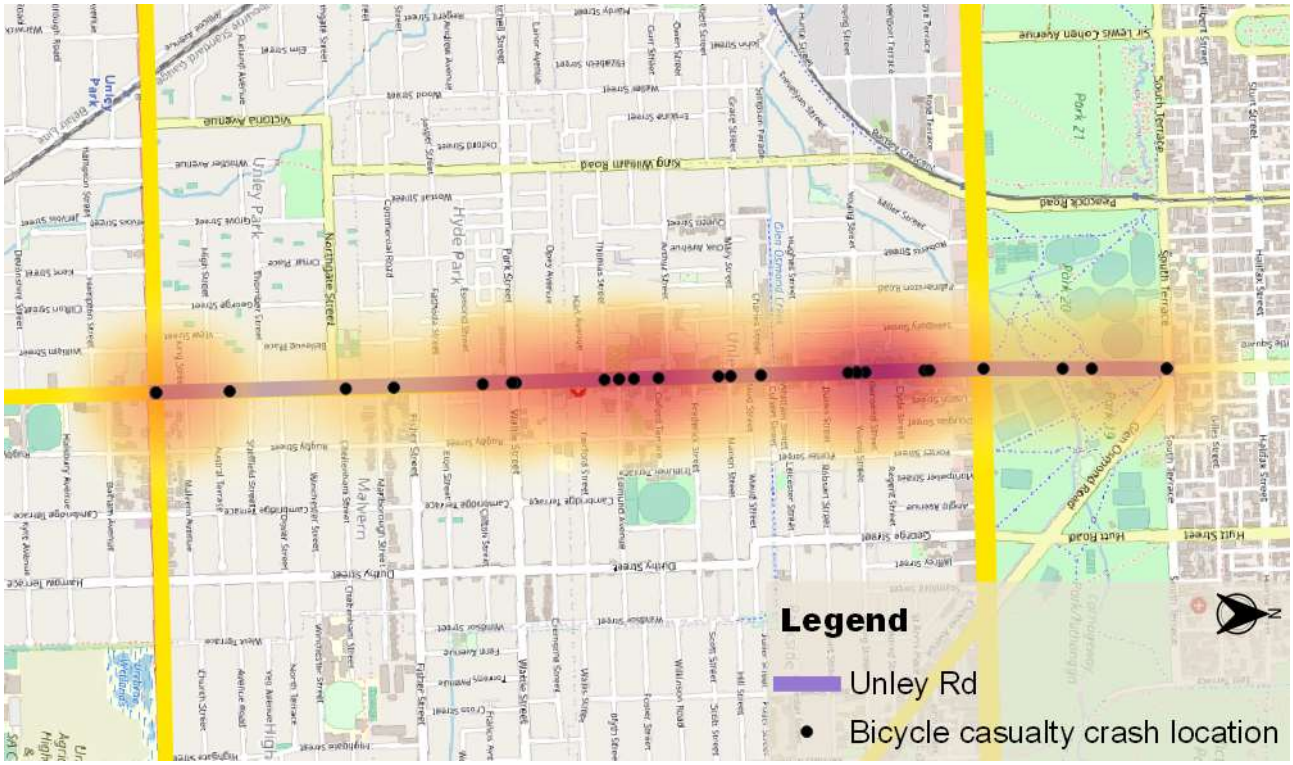


Figure 35: Map of casualty crash locations involving cyclists on Unley Road

The Rugby-Porter on-road bikeway runs parallel to Unley Road, about 200m east and provides an alternative route with substantially less motor vehicle traffic. This route may be less attractive to commuting cyclists as there are several intersections where slowing or stopping to give way to traffic is required, whereas this is only required at red lights along Unley Road.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Unley Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"This road is ridiculous for me the cyclist and me the motorist to have any car stopping at all along the length of Unley Road. Cyclists have an alternative in Rugby Street with its strange unsafe alternating give way procedures and dead end at N Parade."

"At pinch points the cycle lane disappears entirely. Lots of cars turning left into side roads and businesses. Lots of buses stopping. The Wattle/Park intersection has bonus sunken manhole covers necessitating a weave at the 60km/h pinch point."

"Unley Road is a popular cycling route and has a bike lane almost the whole way. It's one of the riskiest sections of my ride as the lane is not continuous and parked cars make it more dangerous."

"Incredibly rough surface, jarring, throws bike around badly. Lane comes and goes lots of pinch points."

Please provide any suggestions on how this risk could be reduced.

"Resurface and restrict parking."

"24h operation (there is plenty of side street parking). Bike lane widened and smoothed. Separated bike lane using the plastic bollards that they are using in Melbourne and Sydney. Green paint at intersections."

"Continue the bike lane even if it has to be narrower than usual and include painted image of bike on the road as a reminder to traffic."

RAA comment

Unley Road is a challenging environment due to the competing demands of retail and hospitality venues, commuters, local and active transport, and even commercial vehicle use extending along the corridor. This broad range of uses means that Unley Road does not perform particularly well at any of them, and there is no single solution that will allow each of these competing demands to operate safely and effectively. This is highlighted from a cycle safety perspective with the second highest number of cyclist casualty crashes per kilometre of all roads in the top ten on-road Risky Rides list.

To maintain on-street parking and provide consistent cycle infrastructure that aligns well with a safe system would involve substantial reductions in road capacity by reducing Unley Road to a single lane, or loss of land and property to increase the width of this narrow corridor. This type of treatment would have widespread implications on the surrounding local road network and other north-south arterial roads such as Fullarton Road and Goodwood Road. Loss of parking would have implications on local businesses that require on-street parking for patrons; however, it is recognised that the surrounding local road network may absorb some of this parking demand.

Simple and affordable safety improvements should be made such as installation of green non-slip paint on cycle lanes running through intersections such as Young Street, where cyclist crash history is poor. Operating hours of cycle lanes are currently very short and do not accurately reflect today's peak traffic period. Extension of these operating hours should be more in line with the surrounding arterial road network which would provide an immediate improvement to cyclist safety and peak hour traffic flow on Unley Road. Signposting cycle lanes as cycle lanes, rather than as clearways, will also help improve driver awareness of cyclists and should help demonstrate an improvement to cyclist safety on Unley Road and improve alignment with Australian Standards.

Fullarton Road

Risky Rides ranking	10
No. of nominations	20
Top 5 issues	• Cycle lane not continuous • Lots of motor vehicle traffic on road • Uneven surface in cycle lane • Cycle lane or path doesn't continue through intersection • Difficult to cross due to motor vehicle traffic
No. of cyclist casualty crashes 2015-2019	22 (1 resulting in serious injury, 21 resulting in minor injury)
No. of respondents involved in/witness to a crash	0

Fullarton Road is a state maintained arterial road extending for 7 kilometres between Payneham Road in the north and Carrick Hill Drive in the south. Fullarton Road forms part of the inner-city ring route between Britannia Roundabout (Kensington Road) and Greenhill Road.

Traffic volumes on Fullarton Road are varied, with the busiest section between Britannia Roundabout and Greenhill Road carrying about 43,000 vehicles daily. South of Greenhill Road, volumes sit between 25,000 and 30,000 vehicles per day, and north of Britannia roundabout they sit between 19,000 and 24,000 vehicles per day.

Fullarton Road services cyclists poorly, with the only sections of cycle lane extending 60m through the William Street intersection (Norwood), and 380m between the intersection with Grenfell St (Kent Town) and Chapel St (Norwood). There is sufficient space to install cycle lanes between Kensington Road and the Parade; however, there are constraints with the corridor width where the road widens to accommodate additional lanes through the intersection with the Parade.

The issue raised most by respondents was a lack of a continuous cycle lane, followed by heavy traffic volumes and an uneven surface. Sections of Fullarton Road were resurfaced following the survey close date, which addressed some of the poorest sections of Fullarton Road.

Many survey respondents nominating Fullarton Road raised the lack of any significant cycle infrastructure along Fullarton Road, and issues with cycling through Britannia Roundabout.

Figure 36: Approaching and traversing Britannia Roundabout is particularly hazardous for cyclists

A review of crash data shows that 22 casualty crashes involving cyclists occurred on Fullarton Road between 2015 and 2019, which makes up almost 9% of all casualty crashes occurring on Fullarton Road. Right angle crashes are the most commonly occurring cyclist casualty crash type on Fullarton Road, making up more than 40% of cyclist casualty crashes.

Table 17: Casualty crash types involving cyclists on Fullarton Road between 2015 and 2019

Casualty crash type	Number of casualty crashes	Crash severity		
		Minor	Serious	Fatal
Right Angle	9	9	0	0
Side Swipe	4	4	0	0
Right Turn	4	4	0	0
Roll Over	3	2	1	0
Other	1	1	0	0
Rear End	1	1	0	0
Total	**22**	**21**	**1**	**0**

When reviewing hotspots where cyclist casualty crashes tend to occur, the section between Payneham Road and The Parade appears to be the riskiest from a cyclist crash perspective, with half of all cyclist casualty crashes occurring on this section. Of particular note is the intersection with The Parade, where 5 cyclist casualty crashes were recorded between 2015 and 2019. Three crashes also occurred at the staggered intersection with Beulah Road and Little Grenfell Street, which is part of a popular east-west local road cycle route into Adelaide.

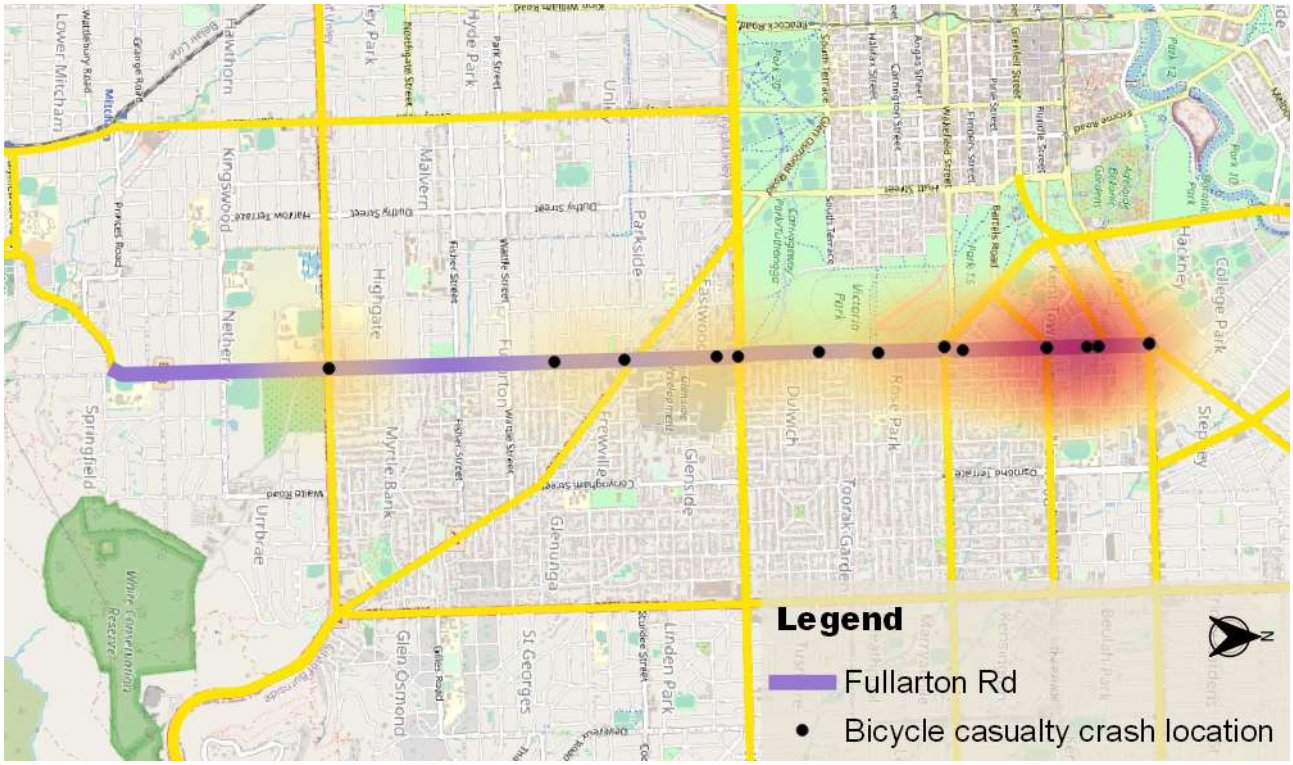


Figure 37: Map of casualty crash locations involving cyclists on Fullarton Rd

There are no off-road cycle paths that run parallel to Fullarton Road, however there are a number of cycle routes on local streets that, while indirect, do provide a route with substantially less motor vehicle traffic. A narrow shared path begins at the intersection with Glen Osmond Road and directs cyclists through the South Park Lands.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated Fullarton Road in the Risky Rides survey.

Is there anything else you'd like to tell us about why this on-road cycle lane is risky?

"There is no on-road cyclist reservation at all. The section between Greenhill and Glen Osmond Roads has a parallel shared footpath which is quite narrow. There is then no simple and safe way to join road traffic at either end of the path as pedestrian refuge islands are very small, especially when more than one cyclist is crossing."

"There's no cycle lane at all, lots of traffic, no options to go off road."

"How are cyclists and pedestrians expected to cross Fullarton Rd at the Britannia roundabout?"

Please provide any suggestions on how this risk could be reduced.

"A bidirectional separated cycle path could be installed the full length of Fullarton Rd on the southbound side of Fullarton Rd to connect to this path at the Glen Osmond Ed intersection to direct cyclists off-road. This could be a curb separated path or a grade separate widening on the footpath with a cycle reservation."

"The road surface needs fixing for cars and bikes, it's terrible. Needs a bike lane or off-road bike path on the footpath."

"Divert bike lane to William Street and make it a bike boulevard. Have traffic lights for pedestrians and bikes across Dequetteville Terrace to Angas St, Kent Town."

"Signpost alternative routes."

RAA comment

Fullarton Road has a lower level of cycle infrastructure than most of the metropolitan arterial road network. Whilst this serves as a deterrent to many cyclists, there are still users that cycle along the corridor, and others that would utilise the corridor if cycle infrastructure were in place. Retrofitting cycle lanes, particularly through major intersections, would be a difficult and expensive exercise along Fullarton Road due to its narrow cross-section.

South of Greenhill Road, the surrounding road network is not particularly accommodating of a bicycle boulevard that would attract commuting cyclists. Duthy Street/George Street is the nearest practical north-south route, however, this corridor is located 1km west of Fullarton Road. There are also more informal cycle routes along Highgate Street/Castle Street and along Riverdale Road/Conyngham Street, however these are quite indirect as they follow the local road network. North of Greenhill Road, north-south cycle routes are better defined than south of Greenhill Road, with routes along Sydenham Road/Victoria Terrace and Stuart Road/Prescott Terrace/Osmond Terrace.

Recent attempts to introduce cycle infrastructure on Fullarton Road north of Britannia Roundabout are welcome, however significant gaps in this infrastructure means that it is less likely to be utilised than it would be if a continuous cycle lane were provided. Cyclist wayfinding signage on all approach roads to Britannia roundabout could also be improved to encourage cyclists to utilise safer alternative routes.

Consideration should be given to providing a continuous cycle lane along Fullarton Road which would provide a cycle corridor to the south-eastern suburbs, for which one currently does not exist.

Top 5 off-road paths

River Torrens Linear Park Trail

Off-road Risky Rides ranking	1
No. of nominations	21
Top 3 issues	• Uneven surface on cycle path • Cycle path shared with pedestrians • Narrow cycle path
No. of respondents involved in/witness to a crash	6

The River Torrens Linear Park Trail is one of Adelaide's most popular off-road cycle corridors. This path provides a continuous, mostly grade separated (from roads) pathway extending from the foothills in Highbury and Athelstone along the alignment of the River Torrens over approximately 30km. The path is popular amongst many different user groups including recreational and commuting cyclists, walkers and runners, often with children and pets.

The path bisects Adelaide and North Adelaide, and concludes at Henley Beach South, where it connects with the Coast Park Path which runs along the metropolitan coastline. It also links into the O Bahn Bikeway near Darley Road, which provides a link to the Tea Tree Plaza bus interchange and the north-eastern suburbs. In Adelaide, it connects with the Parklands Trail, the Frome Road cycle corridor, and the Outer Harbor Greenway.

For the most part, the River Torrens Linear Park Trail is a sealed path running along both sides of the Torrens River. The width varies along sections of the path, and gradually descends from the hills through to the coast.

A majority of survey respondents who nominated River Torrens Linear Park Trail raised the issues of the uneven surface on the cycle path and difficulties sharing the path with pedestrians. In addition, the narrow cycle path width was frequently raised as an issue. As the path is very long, it is recognised that these issues are not present for the entire path length, but for more localised sections of the path.

Specific issues raised by respondents widely varied, with surface related issues raised almost along the entire path. The general commentary surrounding surface issues was that this was due to tree roots, with several respondents highlighting that a synthetic surface, such as that used on the Sturt River Linear Park Path, could significantly improve this.

Interactions between a large variety of different path users were also highlighted as an issue by several survey respondents, with some calls to create a dedicated cyclist only path along the River Torrens Linear Park. Centre line marking is not present along sections of the path or is very worn. Refreshing or painting new centre line markings may assist in reminding path users to keep to the left.

Figure 38: Refreshing faded line marking will help remind path users to stay left

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated the River Torrens Linear Park Path in the Risky Rides survey.

Is there anything else you'd like to tell us about why this off-road path is risky?

"Large sections do not meet standards set by Campbelltown. Narrow, poor signage and should be duplicated for entire length. Improvements are ongoing and welcome but as the premier path in Adelaide, full upgrade is justified."

"The concrete slabs have lifted, more dangerous for damage to bikes than people as some bumps are quite big."

"Tree roots bulging up the track. Can catch you off guard especially in low light. Dangerous especially considering it's a tourist heavy spot with bike hire at the golf club house just on the other side of the river about 100m away."

"This path has become way too busy with all types of users from bike riders, joggers, walkers, dogs, people pushing prams, skaters, scooters, mobility riders."

Please provide any suggestions on how this risk could be reduced.

"The north eastern suburbs need a direct and safe cycling route (like the train/tram routes from south west and western suburbs). The government should build a cycling Highway adjacent to the O Bahn (no pedestrians where linear trail is nearby). Would be the best bicycle infrastructure SA has ever built."

"Signage, media. Share the path, a path for all, not just one group of users - and a beautiful path at that."

"Change path to bitumen as in Port Adelaide Enfield where they do not have this problem."

"Build an entirely separate path for bike riders, separate to all the other users."

"Remove bitumen and replace with a flexible synthetic surface. This has been used on the Sturt Creek Bike path"

RAA comment

The River Torrens Linear Park Path is one of Adelaide's most attractive and scenic pathways and attracts a wide variety of users. It is important that this is maintained to a safe and acceptable standard, and all relevant stakeholders should look to implement more flexible pavements where deformation is an issue to ensure the pathway remains in good condition and is easily accessible.

Widening or separating the pathway in high-traffic areas as a minimum should be considered to provide more clearance between different path-users, which will reduce the likelihood of crashes occurring. Refreshing line marking and installing centre dividing line markings should also be considered which will encourage all path users to keep to the left.

At entry points to the park, councils could consider installing uniform informative signage which would serve to highlight the responsibilities of different users.

Little Para Trail/Tapa Martinthi Yala

Off-road Risky Rides ranking	2	
No. of nominations	15	
Top 3 issues		• Debris on cycle path • Rough, slippery or loose cycle path surface • Cycle path shared with pedestrians
No. of respondents involved in/witness to a crash	4	

Tapa Martinthi Yala is the name of the new Northern Connector cycle path, which connects the Stuart O'Grady Bikeway (Northern Expressway) and the South Road/Port River Expressway interchange. This new infrastructure links into existing cycle ways including the Port River Bikeway, Dry Creek Trail, Little Para Trail and the future Gawler Greenway which will follow the Gawler rail line alignment.

The only issue raised by every survey respondent who nominated this off-road path related to the underpass of Port Wakefield Road in Parafield Gardens, which is the end section of the Little Para Trail that is now part of Tapa Martinthi Yala. The location of this underpass is highlighted by the map in

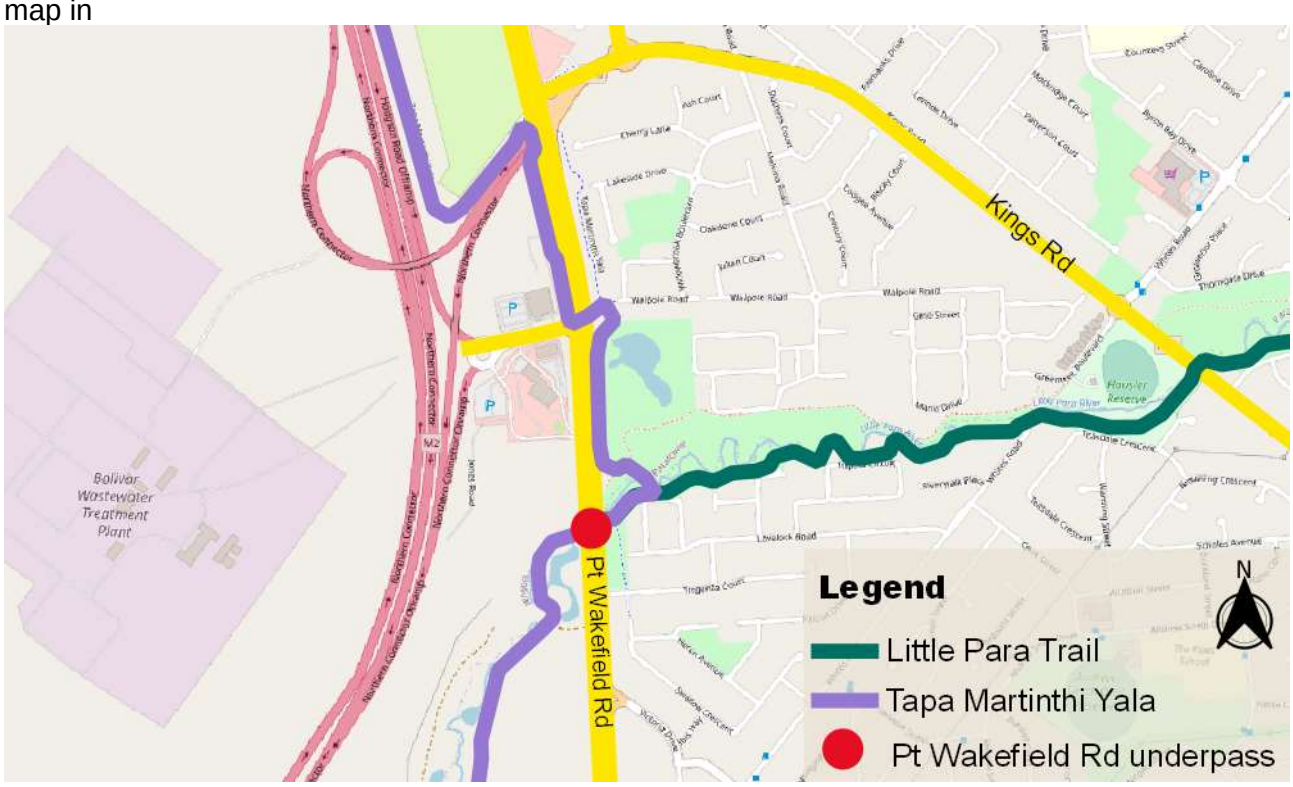


Figure 39.

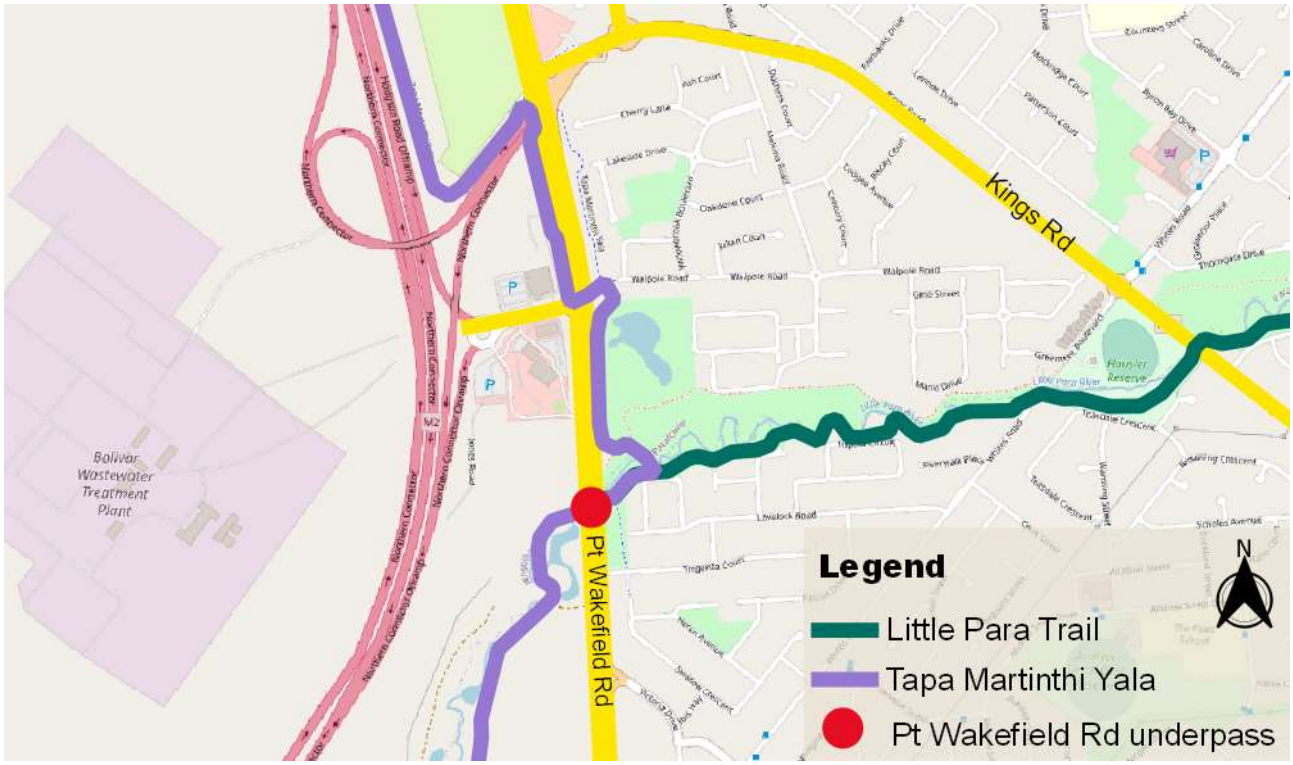


Figure 39: Location of the Little Para Trail Port Wakefield Road underpass

Debris on cycle path, including water was the top raised issue by survey respondents, raised by almost all survey respondents.

Like many shared paths in Adelaide, the Little Para Trail follows a waterway, namely the Little Para River. When the Port Wakefield Road bridges were initially constructed, it is unlikely that consideration to pedestrian and cycle movements was given and there is only enough clearance under the bridge beams to allow water to pass through the channel. The current shared path is at a lower level than the waterway to provide enough head clearance and, as such, water will be inclined to fill the shared path. City of Salisbury council have recently improved drainage by creating somewhat of a detention basin that prevents reverse-flow on the western side of Port Wakefield Road. Whilst this will offer some reprieve during minor rainfall events, it is still expected that this section of the path will fill with water during heavier rainfall events.

Currently, there is no safe alternative route for a pedestrian or cyclist to take should they be faced with a flooded pathway. A shared path along the western side of Port Wakefield Road linking to the Hodgson Road intersection would provide an alternative route in the event of flooding, and also form part of a primary route for those with destinations north of Parafield Gardens. This would require construction of an additional footbridge over the Little Para River and would also require pedestrians and cyclists to cross the entry to the On The Run truck stop at the intersection of Port Wakefield Road and Hodgson Road, which could pose additional hazards to these pathway users.

Figure 40: The shared path (left) sits substantially below the level of the Little Para River bed (right)

Alternatively, a stormwater pump station could be incorporated into the existing underpass which would allow water to drain from the path and be pumped elsewhere.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated the Little Para Trail/Tapa Marthinthi Yala in the Risky Rides survey.

Is there anything else you'd like to tell us about why this off-road path is risky?

"This section is risky after rain, when the path is submerged under the water (due to the river flowing). The water is risky to ride through, and once the water subsides slippery mud and debris is left behind."

"The underpass at Port Wakefield Rd floods after rain and is impassable. When water subsidies it leaves behind a muddy silt which is dangerous. This is also part of the new northern connector path."

"Cycle path often is impassable during rain forcing cyclists to cross Pt Wakefield Rd without a crossing. River level rises often, dumping mud and sediment, debris. Causing accidents when water has receded."

Please provide any suggestions on how this risk could be reduced.

"The underpass needs to be redesigned to prevent flooding and removed from the Northern Connector Path. The Northern Connector Path should use the now unused service road which follows the freeway and exits behind On The Run at Bolivar."

"Provide proper drainage or raise footpath level above water line."

"Unfortunately, due to the finished road level, only an overpass at this point on track. Otherwise, a continuation of the Northern Connector Pathway alongside the Expressway over Little Para River would also help."

> “The new bike path needs to continue from Kings Road along Northern Connector rather than joining up with the Little Para Trail to then reconnect with Northern Connector near Globe Derby.”

RAA comment

RAA considers development of a solution at the Port Wakefield Road underpass to be a priority given the high amount of feedback received for a single issue on this path. Cyclists or pedestrians attempting to cross Port Wakefield Road in this location when the pathway is under water would have to climb over multiple roadside barriers and cross four lanes of busy, high speed traffic to continue their journey – an undesirable and dangerous situation.

Coast to Vines Rail Trail

Off-road Risky Rides ranking	3
No. of nominations	14
Top 3 issues	• Rough, slippery or loose cycle path surface • Uneven surface on cycle path • Debris on cycle path
No. of respondents involved in/witness to a crash	2

The Coast to Vines Rail Trail is a shared path that follows an old rail corridor between Marino and Willunga over a distance of approximately 37km. The trail is popular amongst recreational cyclists and tourists, and also serves a purpose for commuters, linking into the Patrick Jonker Bikeway (Southern Expressway) and rail stations at Seaford, Seaford Meadows, Hallett Cove and Marino Rocks. The path is surfaced with bitumen and is relatively wide.

Rough, slippery and uneven surfaces were raised by more than half of survey respondents nominating the Coast to Vines Rail Trail. Debris on the cycle path was also raised by several survey respondents.

When reviewing commentary received by survey respondents, it was evident that uneven timber bridge decks were the primary concern held by path users. Two bridges were identified: firstly, the bridge over the Onkaparinga River in Seaford Meadows; and secondly, the bridge over Pedler Creek in McLaren Vale. There were also several comments regarding loose bitumen on the path between River Road and the Onkaparinga River Bridge. RAA's Safety and Infrastructure team reviewed these issues on-site, with the images below highlighting these two issues raised.

Figure 41: Raised bolt heads and uneven slats on the bridge deck present a risk for cyclists and pedestrians

Figure 42: Loose aggregate creates a slip hazard between River Road and the Onkaparinga River

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated the Coast to Vines Rail Trail in the Risky Rides survey.

Is there anything else you'd like to tell us about why this off-road path is risky?

"From the new apartments at River Road, Old Noarlunga, south to The Onkaparinga Footbridge - the terrible coarse bitumen quality is a major safety concern."

"Wooden planks are uneven, rough, and splintering. Narrow bridge and slippery if wet."

"The old wooden planking on this bridge has become almost un-rideable because of it's extremely rough condition, especially if, like most of us, you are riding a carbon road bike with narrow high-pressure tyres."

Please provide any suggestions on how this risk could be reduced.

"Resurfacing or coating of the bridge timber with a coarser (grippier) surface."

"Nice smooth resurfacing (River Road to Onkaparinga Footbridge) would help. The rest of the path is good, but that 200 metre stretch is horribly surfaced."

"The old wooden timber surface needs to be completely removed and re placed with 'one piece' PVC plastic type of sheeting that of which is being used on many other bridges and walkways."

RAA comment

Most of the Coast to Vines Rail Trail is reported to be constructed to a good standard and geometry, with most nominations for the trail relating to localised issues. Replacement of timber bridge decks over the Onkaparinga River and Pedler Creek must be considered to bring these sections of the pathway up to the standard of the rest of the path.

The surface between River Road and the Onkaparinga River should also be reviewed and replaced if necessary; however, maintenance and regular sweeping may be able to resolve the issues with a slippery surface here in the interim.

Crafers Bikeway

Off-road Risky Rides ranking	4	
No. of nominations	13	
Top 3 issues		• Lots of trucks using road • Lack of off-road cycle path • Lots of motor vehicle traffic on road
No. of respondents involved in/witness to a crash	0	

The Crafers Bikeway is a pathway that follows the South Eastern Freeway from Glen Osmond to Crafers over a distance of about 10km. The path is relatively steep with an average gradient of almost 5%, with sections steeper than 10%. The first 350m of the path is via cycle lanes on the South Eastern Freeway, before an off-road path connects to Mount Barker Road at the Eagle on the Hill turnoff. A separated on-road cycle lane is provided on the ascent of Mount Barker Road, whilst there are two lanes on the descent, allowing motorists to safely overtake cyclists. Mount Barker Road has a 60km/h speed limit, which is attainable by cyclists on the descent where overtaking would occur far less frequently than it would on the ascent. A combination of off-road paths and local access roads connects Mount Barker Road from the Measdays ramp to Crafers.

The top issues raised by survey respondents related to the high volumes of trucks and motor vehicles on the South Eastern Freeway, and the lack of an off-road cycle path. These nominations were mostly for the 350m section of the South Eastern Freeway between Portrush Road and the old tollgate, where cyclists are required to use on-road cycle lanes. This is particularly problematic for northwest-bound users that are also required to cross seven lanes of the South Eastern Freeway to access the cycle lane from the end of the off-road path.

Figure 43: Crafers Bikeway users must cross seven lanes of the South Eastern Freeway to continue their trip

The bikeway is accessible from local roads via Boucaut Street or Gill Terrace, which minimises required travel along cycle lanes between Portrush Road and the start of the Bikeway, but this is really only a viable route for travellers approaching from the north. For north-west bound path users, access to Gill Terrace and Boucaut Street requires riding on a narrow footpath not well suited to cyclists, and not clearly signposted.

Between 2015 and 2019, three cyclists were injured in crashes between the end of the Crafers Bikeway and the intersection with Portrush Road. One of these involved a cyclist colliding with a fixed object, one involved a side swipe with a truck in the northwest-bound direction and the third involved a right-angle crash between a southeast bound cyclist and a vehicle exiting a driveway.

Some survey respondents also commented that the path was too narrow given the high number of cyclists that regularly use it and others highlighted dangers with pedestrians using the path, debris on edges of the path and uneven sections of the path that were hazardous for road bikes.

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated the Crafers Bikeway in the Risky Rides survey.

Is there anything else you'd like to tell us about why this off-road path is risky?

"The purpose-built off-road cycle path is one of the best in Adelaide, so therefore attracts a high volume of cyclists all year round but having to negotiate a narrow cycle lane that shares the road with 3 lanes of heavy vehicular traffic on the up-track and having to cross 6 lanes of heavy vehicular traffic on the down-track is ridiculous."

"Trucks are required by law to use the left lane, which means that cyclists getting to the bike path alongside the freeway (which starts at the tollgate) need to ride uphill in a narrow bike lane jammed in alongside semi-trailers. I'm very surprised that more people aren't killed there."

"The path is very narrow for the number of cyclists who ride along it. If cyclists ride two abreast, crashes are inevitable."

Please provide any suggestions on how this risk could be reduced.

"An overpass to allow cyclists to cross the freeway safely."

"Extend the off-road cycle track down to the intersection of Portrush Rd and Cross Rd."

"Needs a resurface to smooth the path or signs at the very least. This was fixed in the past but has occurred again."

"Widen the bike path."

RAA comment

There is no doubt that the Crafers Bikeway is one of Adelaide's most popular off-road cycle paths, providing a challenging ascent and a link from the city to the Adelaide Hills whilst almost completely separated from motor vehicle traffic. Unfortunately, what remains in users' memories is the dangerous crossing of the South Eastern Freeway in Glen Osmond, and the limited cycle infrastructure on connecting roads such as Cross Road and Portrush Road, which were both ranked in the top 10 on-road Risky Rides.

With an average of about 51,000 vehicles (of which, almost 5,000 are trucks) passing the tollgate every day, it can be difficult to find a safe gap in traffic to cross. Ideally, a grade separated cycle path for northwest-bound cyclists would be constructed, however the challenge with this is providing sufficient vertical clearance for freeway traffic and minimising interference with the entrance to Mira Monte Estate. RAA also considers a safety ramp for errant trucks to be feasible in this vicinity, which may also impact the positioning of a potential cyclist overpass.

Extending the two-way off-road path through to Portrush Road should be considered, which would improve linkages between the bikeway and the local road network and also would allow cyclists to cross the South Eastern Freeway more safely at the traffic light controlled intersection.

Lynton Belair Urban Trail

Off-road Risky Rides ranking	5	
No. of nominations	9	
Top 3 issues		• Steep gradient on cycle path • Rough, slippery or loose cycle path surface • Cycle path shared with pedestrians
No. of respondents involved in/witness to a crash	1	

The Lynton Belair Urban Trail is a shared path extending only about 1.7 kilometres from Beagle Terrace near the Lynton Railway Station to High Street in Belair. It passes through Lynton Reserve, connecting to several mountain bike and walking trails. The Lynton Belair Urban Trail was constructed by the City of Mitcham in 2010 to provide an alternative route to Belair Road or Old Belair Road, which are both steep and narrow with high traffic volumes, posing a particular risk to cyclists using these corridors to travel between the city and southern hills. However, the Lynton Belair Trail is steeper than these roads and increases in elevation by about 125m over its length, highlighted by a section about 300m long with an average grade of more than 20%. The average grade for the entire path is almost 8%.

Survey respondents were most concerned about the steep gradient on the path, which was raised as an issue by most respondents nominating this path. A slippery or loose surface was also raised by several respondents, as well as concerns with sharing the path with pedestrians. Following a site visit, debris is regularly present on the path, either falling from adjacent embankments, or where mountain bike trails cross the sealed path

Figure 44: Debris on the Lynton Belair Trail from an adjacent embankment

When it comes to gradients of cycle paths, Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling[7], suggests that gradients above 3% reduce desirability for uphill sections, however, recognises that this is not always going to be achievable. For safety on downhill travel, this guide suggests that gradients steeper than 5% should not be provided unless it is unavoidable. This also states that it is important that sharp horizontal curves or fixed objects don't exist near the bottom of steep hills. In the case of the Lynton Belair trail, there is a horizontal curve near the bottom of the steepest part, which is fenced on the outside, posing a particular hazard for cyclists that may lose control coming downhill.

Figure 45: Fencing located on the outside of the sharp curve immediately after a section with 20% downgrade

The verbatim commentary highlighted below is an example of typical comments received by respondents who nominated the Lynton Belair Urban Trail in the Risky Rides survey.

Is there anything else you'd like to tell us about why this off-road path is risky?

"22% is too steep for a path supposedly for commuting."

"The only bike friendly route from Mitcham to the top of the hill in Belair is extremely steep and unrideable for most people. Also it doesn't even take you to the top of the hill - the section before and after requires you to follow a complex maze of streets to make the journey."

"This is dangerous because it's not good enough to be used for commuting, when going to Belair, and too fast a descend when coming from there. Fine for super fit and experienced riders, but everyone else?"

"Far too steep. Part of this has a 21% gradient - almost impossible to ride up, and dangerous to ride down. Gravel & mud often get washed across the surface, making it even more treacherous."

[7] Austroads, 2017, *Guide to Road Design Part 6A: Paths for Walking and Cycling*, accessed at <https://austroads.com.au/publications/road-design/agrd06a/media/AGRD06A-17_Guide_to_Road_Design_Part6A_Paths_for_Walking_and_Cycling.pdf>.

"Very steep ascent and in parts so steep that the only way to climb is to walk the bike which damages cleats. Very steep descent is hard on the brakes and the fence on the corner near the bottom takes skill to avoid crashing in to. Also when ascending it is dangerous when riders are coming down towards you at very high speed."

Please provide any suggestions on how this risk could be reduced.

"Needs to be longer at a lower gradient."

"Completely re design and re-engineer this path or provide a suitable, rideable alternative."

"Provide replacement route for the steep parts with a gradient of no more than 5%. Retain the original alignment for pedestrians."

"More zig-zagging up the hill following the fire tracks instead of straight up to lower the gradient."

RAA comment

The Lynton Belair Urban Trail is one of the newer off-road cycle corridors in South Australia, however, in its current form is not suitable for cyclists of all skill levels. Reducing the grade of the Lynton Belair Urban Trail to be more suited to average or novice cyclists is not possible without substantially extending the path and introducing several switchback curves. This would be costly and take up more space in the Lynton Reserve, whilst requiring cyclists to take a longer route, which may also serve as a deterrent for some users, particularly commuters.

Whilst warning signage is prominent, there are some improvements to safety that could be made including a review of the placement of fixed objects including fences, located near the bottom of the steep descent, and considering further protection for the event of a high speed collision. Whilst RAA do not have access to crash data pertaining to off-road locations, it is considered that this section is highly risky to descending cyclists.

Loose gravel on sections of the path is a slip hazard, particularly on steep sections and curves, with this occurring where mountain bike trails cross the sealed path, and where debris falls onto the path from adjacent embankments.

Regional cycling

Cycle infrastructure in regional South Australia is scarce, and the state's regional population is comparatively low in contrast to Metropolitan Adelaide. As such, there were few nominations received in the 2020 Risky Rides survey for issues with regional cycle infrastructure.

Barossa Trail

The most raised location in terms of regional cycling was the Barossa Trail, which received seven nominations in the survey. The Barossa Trail is a mostly off-road path following the former Barossa rail corridor for almost 40 kilometres between Gawler and Angaston. The trail is regularly used by recreational cyclists and tourists and is well-promoted within the region.

Concerns raised by survey respondents were varied, with multiple mentions of large cracks in the pathway and stobie poles in the centre of the pathway. There were also several nominations about connectivity to Gawler and the wider Adelaide cycle network. RAA supports developing a continuous cycle route which could link the Barossa Trail, where it ends in Kalbeeba, east of Gawler and the Stuart O'Grady Bikeway which ends in Buchfelde, west of Gawler. This connection could incorporate sections of the Gawler Rivers Tapa Pariara Path, which runs along the North Para River, South Para River and Gawler River.

RAA also support the proposed Adelaide Wine Capital Cycle Trail, which would create new shared paths to connect the Barossa Trail to the Clare Valley, Adelaide Hills and McLaren Vale wine regions.

Is there anything else you'd like to tell us about why this off-road path is risky?

"The cracks run along the track. Some are so big a wheel will fit in them comfortably."

Sharp bends on steep terrain are dangerous as high speeds can be obtained on downhills.

Stobie poles located in middle of cycle path

Barossa Trail finishes at Calton Road, Kalbeeba. remainder of route to Gawler is on Calton Road now becoming heavily trafficked with increasing housing estates.

Please provide any suggestions on how this risk could be reduced.

"Needs to be longer at a lower gradient."

"Re-making the path rather than patching up the cracks (making it just as dangerous) and clearing debris. A friend of mine slipped on debris along the Lyndoch-Tanunda section and broke his cheekbone, eye socket and finger."

"Continue rail trail to Gawler Central Station to eliminate high traffic Calton Road and also steep section of Calton Road leaving Gawler."