



Updated guidance

Separated cycleways at side roads and driveways

TN002

August 2020

1. Considerations at priority-controlled side roads

While separated cycleways feel safer and have been proven to be safer between intersections and driveways, they are generally less safe at intersections and driveways, which are the locations where the risk is highest overall. It is crucial that this risk is mitigated through good design.

This updated guidance covers how to design a priority-controlled cycle crossing of a side road or driveway. This assumes that consideration has already been given to the form of control (give-way, stop, roundabout, or traffic signals). The decision regarding what form of control is to be used may be an iterative process and this updated guidance may be of use in this decision-making process.

There are several factors that should be considered simultaneously when designing crossings for separated cycleways across side roads:

1.1 Possible crossing alignments at side streets

At intersections (and at major driveways that are formed like intersections), there are three options for horizontal alignment of separated cycleways or shared paths relative to the adjacent roadway. Note that some of the advice given here differs from that in [Austroads Guide to Road Design part 4: intersections and crossings](#) (2009).

1.1.1 Bent-in

Bending a cycleway in brings it closer to the adjacent traffic lane and therefore positions cyclists where they are most likely to be seen.

Radii used for the bends should be no less than 30 m. The cycle facility should reach its bent-in alignment some distance prior to the side street; Austroads Guide to Road Design Part 4 (section 9.6.3) recommends for this to be 30 m.

Bent-in layouts may either transition to a cycle lane across the side street (to ensure cycleway users do not have to give way to turning traffic) or involve continued separation up to the side street.

Transition to cycle lane to cross side street

When a cycleway is bent-in towards the adjacent traffic lane, there is the option of terminating the separation device and transitioning the facility to a cycle lane. In this case, the layout should be designed so that traffic crossing the cycleway gives way to cycleway users. The legal situation for this is clear, as the cycle lane is part of the 'roadway' and normal give way rules apply, i.e. turning traffic must give way to people riding in the cycle lane (see section 1.6.1).

A bent-in layout that transitions to a cycle lane is **only** appropriate for one-way cycleways with cycling in the with-flow direction.

Figure 1 illustrates a bent-in layout transitioning to a cycle lane to cross a side street.

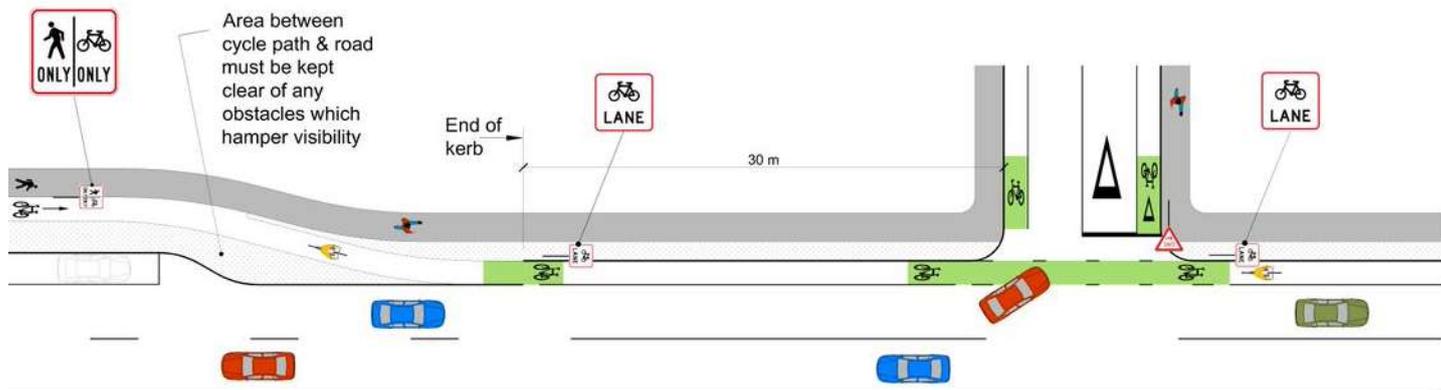


Figure 1: Bent-in cycleway layout (adapted from Austroads Guide to Road Design part 4)

Note that Australian traffic control devices are used; whilst a similar layout may be adopted in New Zealand, signs and markings must conform to the equivalent specifications in the [Traffic Control Devices Manual](#).

Markings and the physical layout should communicate to turning motorists that they are expected to give way to people cycling in the cycle lane and ensure that this occurs at low speeds. If on-road parking is provided on the approach, parked vehicles should not obscure visibility of cyclists to motorists on the approach to a zone of potential conflict.

Green coloured surfacing and cycle logos should be used across the conflict point as shown in Figure 2. Whilst the legal context requires the cycle facility to be 'on the roadway' before turning motorists are obliged to give way to people cycling, there is a balance to be achieved in terms of minimising the length of zone of potential conflict.



Figure 2: Bent-in cycleway layout Ferry Road, Christchurch

For layouts like Figure 1, turning motorists may pull onto the cycle lane when approaching the intersection to reduce the disruption to following through traffic. To avoid this use of the cycle lane as a pseudo deceleration lane, flexiposts could be installed along the right side of the cycle lane. This would reduce the potential for conflict whilst still providing a layout where people in the cycle lane ride directly adjacent to motor traffic at carriageway level. As flexiposts physically separate general traffic, however, they may preclude the cycle lane from the definition of 'roadway'. Therefore, if flexiposts are installed, they should be terminated at least 5 m from the intersection to ensure the layout complies with the intentions regarding the legal context.

Where an auxiliary left turn lane is involved, the point at which vehicles can cross the cycle lane should be restricted. If the auxiliary left turn lane is to the left of the cycle lane, vehicle movements should be restricted to entering at the beginning of the turn lane, as per Figure 3. Again, the legal context requires that the flexiposts be terminated 5 m from the side street.

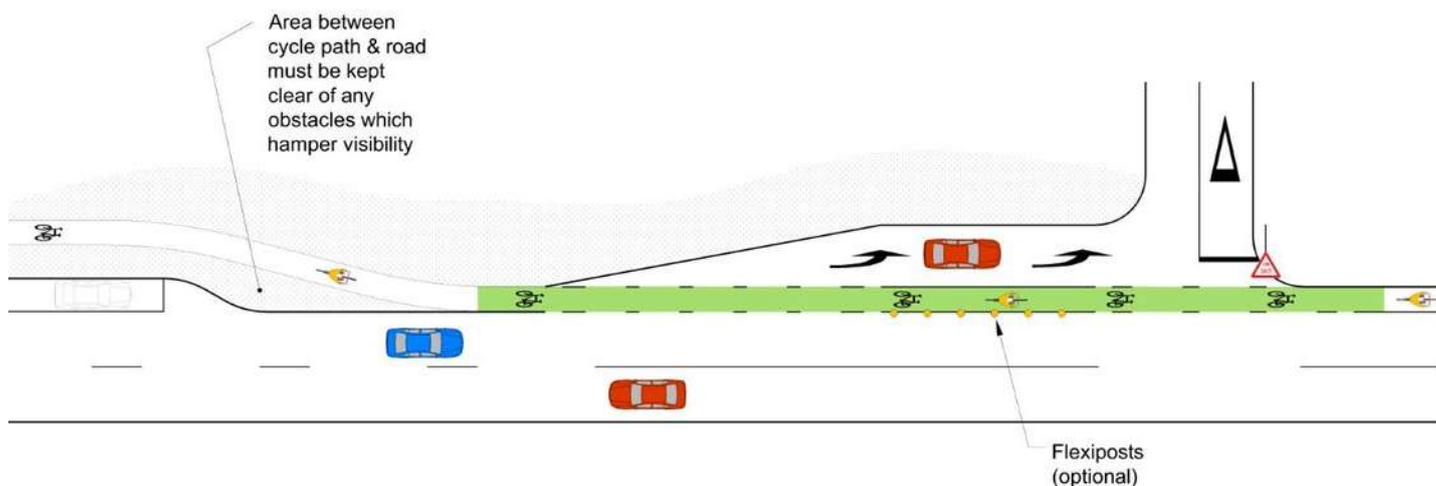


Figure 3: Auxiliary left turn lane to left of cycle lane

An alternative to providing a separate left turn lane and cycle lane (especially where the roadway width is limited) is a mixing lane, shared by cyclists heading straight ahead and motorists turning left. This requires the cycle lane to terminate and use of sharrows to indicate the intended positioning of cyclists. As all road users must comply with all road markings, left turn arrows cannot be marked in such a mixing lane; this would preclude people on bikes to legally proceed straight ahead. This is illustrated in Figure 4.

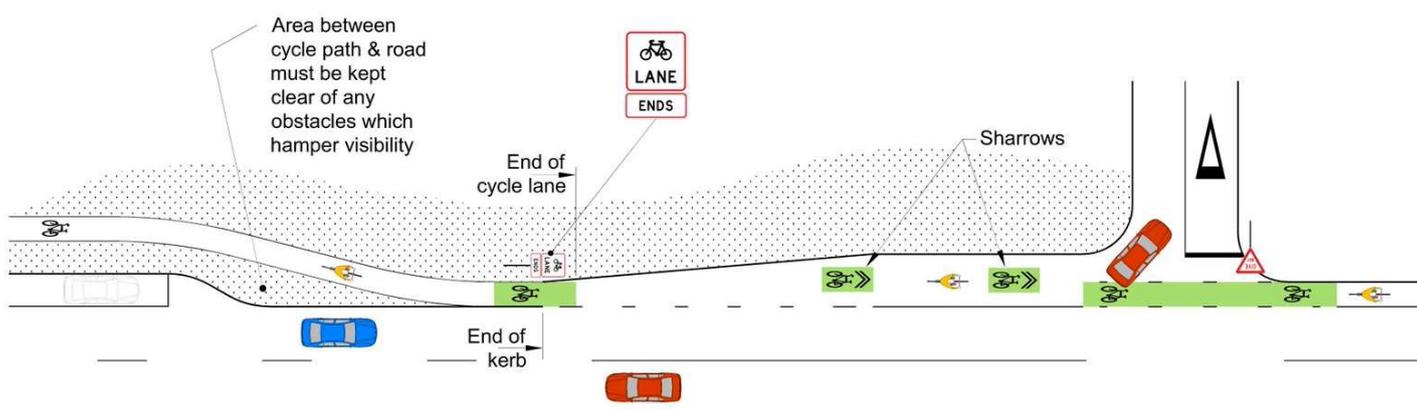


Figure 4: Mixing lane for cyclists and left turning traffic.

Separation continued up to side street

A bent-in layout does not necessarily have to transition to a cycle lane on the approach to the side street, rather the separation device may be continued up to the side street. In this case, the legal situation is different, and more traffic control devices are required to establish and communicate who gives way to whom. More extensive physical crossing treatments should also be considered so that the layout emphasises the intended precedence.

These treatments are appropriate for both T and X intersections.

1.1.2 Straight

Keeping a separated cycleway in a straight alignment on the approach to a side street can accommodate crossing layouts where drivers give way to cycleway users, or where cycleway users give way to the side street traffic. This layout can be used for both one-way and two-way cycleways, and with modifications to the traffic control devices depending on which users are assigned precedence (see section 1.4.3). The considerations discussed here may also apply to shared path crossings with straight alignments.

Figure 5 illustrates a two-way cycleway with a straight layout to cross a side street.

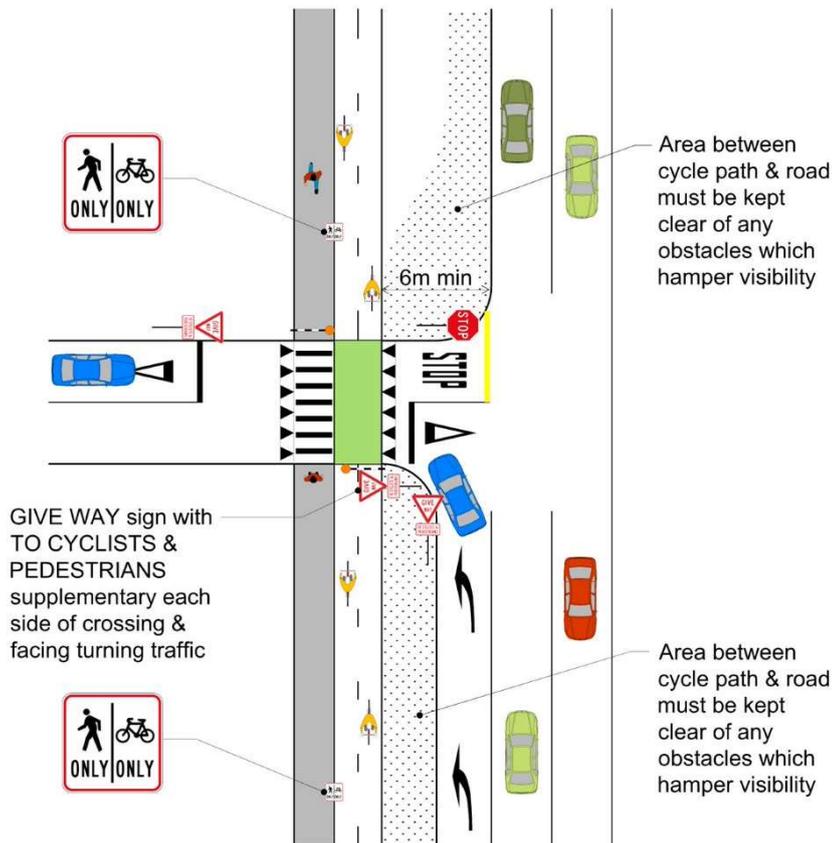


Figure 5: Straight cycleway layout (adapted from Austroads Guide to Road Design part 4)

Note that Australian traffic control devices are used; whilst a similar layout may be adopted in New Zealand, signs and markings must conform to the specifications in the Traffic Control Devices Manual and should be in-line with the relevant sections in this guidance.



Figure 6: Straight through cycleway, Antigua Street Christchurch (separator stops short of intersection)

As discussed for the separated cycleways options tool (Technical Note TN001), where contra-flow cycling is involved, the importance of speed control is increased.

The busier the side street, the more operationally advantageous it is to provide at least a 6 m offset between the cycleway crossing and the main limit line, as is shown in Figure 5. This allows one car-length between the limit line and the cycleway crossing, so that it is possible for a vehicle to queue at the limit line without overlapping the crossing or obstructing cycleway users (subsequent vehicles in the queue should wait until there is space available downstream of the crossing before driving over it). It may be necessary to bend the cycleway out to provide this offset. A 6 m offset is not enough for heavy vehicles so is not suitable in bus routes or where longer vehicles are common. In such cases a bent-in, or bent-out design with a large offset, is better.

If an offset is used and the cycleway has precedence, two limit lines will be required on the side street – the first where drivers give way to cycleway traffic, and the second where they give way to main road traffic. Figure 7 shows an alternative design approach, where only a minimal offset is provided, and the side street limit line is prior to the cycleway. This requires side street traffic to give way to both cycleway users and cross street traffic from the same location and is possible because there is good visibility of both cycleway users and the cross street in this location.



Figure 7: Straight layout with minimal offset

Note that the transition between the cycleway and the crossing shown in Figure 7 has a drainage channel, which is an effective measure for reducing cycling speeds, but in this case may not be apparent to approaching cyclists. If it is necessary to slow cyclists, it is more appropriate to use a ramp, as described in section 1.6.1. The use of central bollards to slow riders (previously used in this situation) should be avoided where possible and, where they are necessary, the guidance regarding design, placement and additional markings of central bollards should be followed.

1.1.3 Bent-out

Bending a cycleway out gives an offset between the cycleway and the main road. This layout can be applied to one-way and two-way cycleways, and the considerations discussed here may also apply to shared path crossings with bent-out alignments. Figure 8 illustrates a two-way cycleway with a bent-out crossing alignment at a side street:

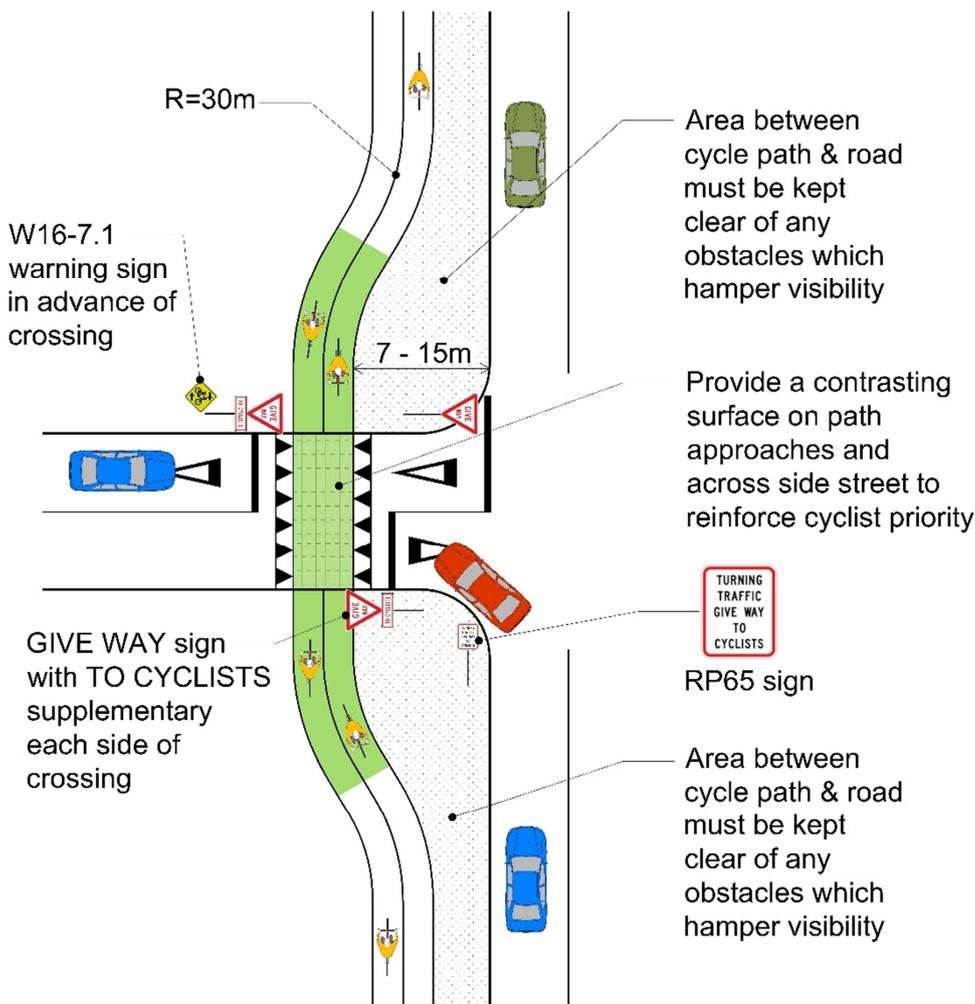


Figure 8: Bent-out cycle path layout (adapted from Austroads Guide to Road Design part 4)

The offset should be determined by the largest size vehicle that is likely to cross here, with a minimum offset of 6 m (note that the appropriate offset as determined by this approach may differ from the specific range given in Figure 8). Bending out is particularly important when large vehicles cross the cycleway as drivers of large vehicles turning left from the crossroad will only gain full vision of cycleway users once their vehicle is nearly perpendicular to the cycleway. This is illustrated in Figure 9, where the bus driver would have difficulty seeing users on the cycleway across the lane the bus is turning into.



Figure 9: Bent-out crossing on busy bus route with offset too short for buses (photo: Axel Wilke)

Note that Australian traffic control devices are used; whilst a similar layout may be adopted in New Zealand, signs and markings must conform to the specifications in the Traffic Control Devices Manual and should be in-line with the relevant sections in this guidance.



Figure 10: View of offset that is insufficient for bus drivers on busy bus route (photo: Axel Wilke)

Bends in the cycleway should have 30 m radii.

It is important to have clear intervisibility between the various road and cycleway users. This requires clear lines of sight (i.e. not restricted by trees, street furniture, etc.). Furthermore, where heavy vehicles are involved such as in Figure 9 and Figure 10, and especially where it is intended that road traffic gives way to cycleway traffic, there should be a straight section of path on the approach side(s) of the crossing before the bend(s) in the path. If the bend in the path is too close to the crossing approaching cyclists will be positioned behind a driver of a vehicle waiting at the limit line, and may not be seen, especially for buses and trucks where the vehicle itself limits the driver's field of vision. Choosing the right design vehicle and ensuring that driver visibility from that vehicle is appropriate, is a critical design task.

Note that New Zealand guidance differs to Austroads, which states that bent-out treatments are not suitable for shared paths due to legal problems. Designers may use a [dual crossing](#) on a raised platform. However, the New Zealand Traffic Control Devices Rule provides for use of a standard give way control in conjunction with a raised platform. See the sections on [physical crossing treatments](#) and [road traffic gives way to cycleway](#) on how to design these.

1.2 Directional nature of cycleway

As is further explained under separated cycleways in the CNG planning section, there can be different cycling directions:

- One-way, in the direction of the adjacent traffic (i.e. with-flow)
- One-way, in the opposite direction of traffic in the nearest lane (i.e. contraflow)
- Two-way, i.e. involving both with-flow and contraflow cycling.

Contraflow facilities, i.e. those that are one-way in the opposite direction, or those that are two-way, especially require careful design due to the risks associated with motorists not expecting cyclists travelling in the contraflow direction. The separated cycleway options tool ([SCOT](#)) can assist with the decision whether to consider contraflow facilities along a given route.

It is not recommended to assign precedence to cyclists on two-way cycleway crossings (or one-way contra-flow cycleway crossings) unless the crossing point is sufficiently offset from the intersection. That is, a bent-in crossing alignment should not be used for two-way cycleways, rather a bent-out crossing or a straight crossing with a suitable offset could be considered. In this case, drivers are facing the crossing and the situation is more like a midblock than an intersection.

1.3 Gradient of cycleway

Gradient has a significant effect on the speed at which people can cycle. Figure 11 shows the average cyclist speed at different cycle facility gradients from [Parkin and Rotheram \(2010\)](#).

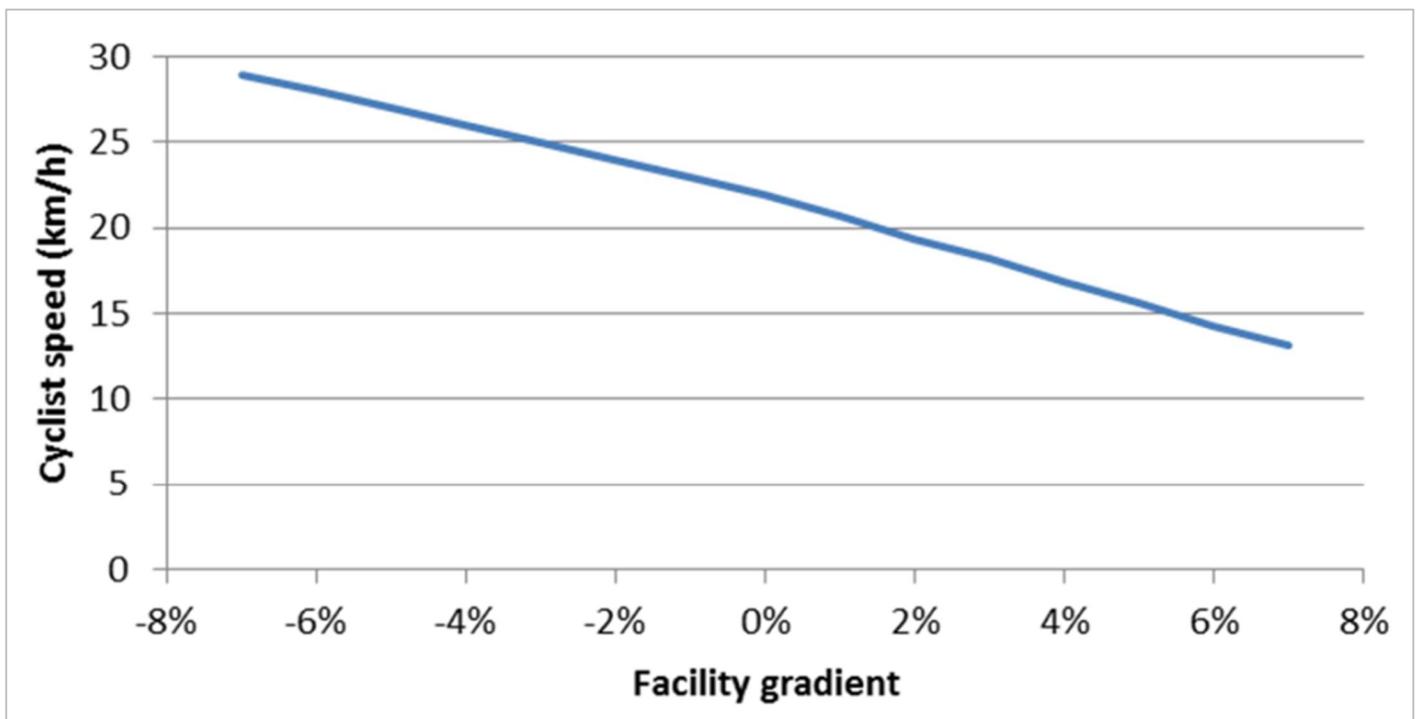


Figure 11: Effect of gradient on cyclist speed (Parkin and Rotheram, 2010)

The data given in Figure 11 are from Leeds, Britain and involve commuting cycle trips. Unpublished research in New Zealand of commuting cyclist speeds gave an average cycling speed similar to the average given by Parkin and Rotheram for a gradient of 0%, therefore it seems reasonable to use Figure 11 as a base reference. If the cyclist speed at a gradient of zero does not accord with that expected from the chosen target audience of a facility, these values in the figure above could be adjusted proportionately. For example, a high proportion of interested but concerned cyclists would reduce the average speed experienced on a facility, whilst a high proportion of long-distance commuters would increase the speed. Uphill gradients have relatively little effect on e-bike users.

It is well known that contraflow cyclists experience a higher crash rate. As the speed of contraflow cyclists (i.e. on a two-way cycleway, or a one-way contraflow cycleway) increases, it becomes less appropriate to assign precedence to the cycleway. For this reason, a contraflow facility in the uphill direction is generally preferable to one in a downhill direction.

1.4 Deciding who gives way to whom

Several different factors can influence the decision whether general traffic gives way to cycleway users at a crossing, or cycleway users give way to general traffic.

1.4.1 In relation to geometry

The choice of whether the cycleway users or general traffic gives way is strongly inter-related with geometric factors such as the [crossing alignment](#), [directional nature](#) and [gradient](#).

It may be that a strategic decision has been made that the general traffic on the roadway should give way to cycleway users, in which case this dictates the type of layout that is acceptable, as per the considerations outlined for crossing alignments. Conversely, the site geometry may govern the type of layout that can be accommodated, which in turn directs the precedence to be assigned. As noted regarding the directional nature of the cycleway, two-way cycleways have particular constraints on the appropriateness of different layouts.

Furthermore, there may be geometric constraints that limit the available options. The amount of land available for cycleway and crossing construction may be limited due to property boundaries, buildings or natural features. Vertical features such as trees, street furniture, buildings or the gradient of the side road may limit sight lines and therefore preclude certain options.

1.4.2 Relative user volumes / hierarchies

When one user group is required to give way to another, the situation should feel somewhat “natural” to users within the context of their experience of the road.

In most cases where an existing street has a give way or stop control at an intersection and a cycleway crossing is added across this street, it will be appropriate that the side road traffic gives way to cycleway traffic. As drivers on the side road are already expecting to give way to the main road, it will feel natural to them to give way to the cycleway, which is parallel to the main road. This is appropriate where traffic volumes on the road where the crossing is located are up to

3,000 veh/day, and may work for up to 5,000 veh/day; beyond this, the volume of motor vehicles is likely to be excessively disproportionate to the volume of cycleway users, and this it no longer feels “natural” for the former group to give way to the latter.

The relative hierarchies of the side road and the cycleway could also be compared. This may not be a straightforward exercise, depending on the degree of linkage between the cycle network and the road network classification systems. It should be noted that a significant level of capital works is required to install separated cycleways, which suggests that any cycle route involving this type of infrastructure is of high importance and therefore the road traffic should give way to the cycleway users. In the short term, a separated cycleway may extend over the short distance only, and user volumes can be expected to be low. In that case, it may be appropriate to impose give way control against cycleway users. In the longer term, as the network is implemented, the same facility may form part of a much longer route, with user volumes thus much higher. If further physical changes can be implemented (e.g. put the cycleway on a raised platform across the side street), the give way control could then be changed, with drivers giving way to users of the cycleway.

1.4.3 Public familiarity with cycle crossings

Cycle crossings of the forms discussed here are still relatively rare in New Zealand, and separated cycleways are only just starting to be a prominent facility type in the cycle network toolkit. Transport users, motorists and cyclists alike, are not yet familiar with precedence crossings for cyclists.

The cycle networks currently being planned and developed are expected to influence significant increases in the number of people choosing to cycle. This will induce a ‘safety in numbers effect’, whereby the crash risk per person cycling reduces due to an increased public awareness of people cycling. However, some time may be required to achieve this critical mass of cyclists.

Furthermore, the legal context is somewhat complicated; rule changes have been investigated and may be progressed in the near future.

Therefore, when assigning precedence, Road Controlling Authorities may choose to err on the side of caution and, during this time of growth and familiarisation, require cycleway users to give way to road traffic at precedence crossings. If such a staged approach is chosen, though, it must be recognised that road users will have become familiar with the interim control. Therefore, a change of give way control needs to be supported by physical changes to the crossing point.

1.4.4 Speed environment

At most intersections, the speed environment for a side street crossing would be appropriate. Turning traffic is slow due to the geometry, and traffic entering from the side street is required to give way to the main street. Interventions (e.g. physical calming devices) may be necessary when large corner radii allow high turning speeds, or where there is open visibility on the side street approach. An alternative to such interventions is to require cycleway traffic to give way.

1.5 Physical crossing treatments

It is also important that the physical design influences users to travel at the intended speeds and supports the chosen give way designation.

To ensure that both motorists and people on bikes travel at appropriate speeds when approaching and travelling across a crossing point, speed reduction measures should be used on the approaches. Vertical elements are the most effective in reducing speeds and it is recommended that a raised platform should be used.

Where it is expected that drivers give way to cycleway users the platform should be designed so that motor vehicles must negotiate it at 20 km/h or lower. Where it is expected that cycleway users give way to road traffic, the speed of motor vehicles should still be considered; if motor vehicles are travelling too fast, it can be difficult for people on bikes to judge crossing opportunities appropriately and the consequences of crashes that do occur are more severe at higher impact speeds. Thus, even where the cycleway gives way, it is beneficial to highlight the conflict location and use speed-reduction treatments on the road as well, to achieve a suitable approach speed for motor vehicles.

It is also important to control the speed of people on bikes. The best method is to raise the cycleway across the side street, with ramps that can be seen in advance and obviously require slower negotiation speeds. It is important that these ramps are comfortable to ride over when travelling at the intended slow negotiation speed. Chicanes, central bollards, and path narrowings are generally not suitable treatments to slow people on bikes at road crossings. While drainage channels may have a slowing effect, they need to be suitably differentiated from the adjacent road/path surfaces so they are visible from a distance. Awareness of a conflict point is also important. Rumble strips may be of value but need to be sufficiently far in advance for a rider to have time to react and assess their surroundings before reaching the conflict point.

[Schepers](#) found that even where road traffic is expected to give way to cycleway users, the cycle crash rate can increase if cyclists are able to approach the crossing point at speed. Therefore, these crossings should also involve ramps for cyclists.

As both give way scenarios involve a similar physical treatment (i.e. ramps for cyclists and motorists), other treatments should be employed to avoid ambiguity and give distinction between the two scenarios. Green surfacing should be painted across the cycle crossing in locations where the road traffic gives way to the cycleway users, but not in the situation where the cycleway users give way to the road traffic. Use of the appropriate traffic control devices will also emphasise the intended give way message.

1.6 Traffic Control Devices for indicating who gives way

1.6.1 Road traffic gives way to cycleway users

In the current legal context, traffic turning across an on-road cycle lane is required to give way to cyclists. Therefore, there are no complications in terms of requiring turning drivers to give way to cyclists on a one-way cycleway that transitions to a cycle lane prior to the intersection.

Where the cycleway separation continues right up to the side street as shown in (i.e. for bent-in cycleways that do not transition to a cycle lane, straight cycleways and bent-out cycleways) cycleway users are not legally considered to be on the 'roadway', and the legal situation is less clear. Technically, cycleway users 'enter the roadway' at the side street, and under the [Road User Rules](#) and common law, they would be required to give way to all traffic entering the intersection, even if that traffic is coming from a side road controlled by a give way sign. This is despite the general expectation that turning traffic should give way to cyclists travelling straight ahead. A potential approach to resolve ambiguity on cycleway crossings is to use signage and markings.

Note that, under the New Zealand [Road User Rule](#), drivers are not obliged to give-way to people cycling across (or waiting to cycle across) a "zebra" pedestrian crossing. Therefore, it should not be expected that a zebra crossing can also function as a crossing for cyclists. If a cycle crossing is required in conjunction with a zebra crossing, this should follow the guidance for a [dual crossing](#).

1.6.2 Cycleway users give way to road traffic

Where cycleway users are expected to give way to traffic on the road before crossing, give way signs of suitable size and placement should be used on the cycleway, along with limit lines. To emphasise the relative precedence, it is recommended that kerbs are shaped to provide continuity for the roadway rather than the cycling route.



Figure 12: Straight through cycleway where cycleway users are to give-way to motor traffic

2. Considerations at driveways

A cycleway crossing a driveway has similar conflicts to a side road crossing. Whilst the law is clear that drivers entering or leaving a driveway must give way to cycleway users, the context still relies heavily on human judgement and involves potential for conflict. [Koorey and McCrostie \(2015\)](#) found that 35% of drivers are not aware that they must give way to pedestrians on the footpath when entering or exiting driveways (let alone other users such as e-scooter riders). Therefore, driveways must be designed with care. The following considerations for separated cycleways at driveways build on from those discussed for side road crossings and should also follow the guidance in '[High-use Driveway Treatment for Cycle Paths and Shared Paths, Design Guidance note](#)':

2.1 Driveway crossing alignment

Any of the three alignments discussed for side roads could be applied for a separated cycleway crossing a driveway. However, in most cases a straight alignment will be the most practical and will suffice. It may be appropriate to consider busy commercial driveways mostly used by cars as side roads and therefore explore the possibility of using a bent-in layout transitioning to a cycle lane. If there are lots of heavy truck movements, then the bent-in layout is not appropriate.

2.2 Directional nature of cycleway

Cycling in the contraflow direction is more hazardous for separated cycleways at driveways, especially for cycleways located close to the roadway, where drivers base their expectations for cyclists' direction of travel on the adjacent traffic lane. The decision whether to enable contraflow cycling should not be treated lightly, and careful consideration be given to all the possible alternatives. Refer to the earlier discussion in section 1.2

2.3 Gradient

Contraflow cycling is not appropriate where contraflow cyclists travel on a downhill gradient steeper than approximately 3% - see Figure 11 for an indication of the effect of gradient on cyclist speed.

2.4 Type of driveway

Different types of driveways have different levels of risk for people on bikes.

2.4.1 Base case driveway

The **base case** to consider is described as follows:

- A residential driveway,
- With-flow cycling only,
- light vehicle movement only, and
- a separated cycleway without adjacent parking.

For the base case, it is recommended to restrict vehicle turning speeds by minimising the width of the opening in the cycleway separation device. In addition, a cycle symbol may be painted on the cycleway facing drivers exiting a driveway.



Figure 13: Separated uni-directional cycleway without adjacent parking at a residential driveway



Figure 14: Separated bi-directional cycleway without adjacent parking at a residential driveway



Figure 15: Separated bi-directional cycleway with adjacent parking at a commercial driveway

2.4.2 Increased risks

The [separated cycleway options tool \(SCOT\)](#) has been developed as an input to deciding between having a pair of one-way cycleways or a single two-way cycleway. SCOT includes a series of 'risk factors', i.e. aspects that involve a higher risk of conflict compared to the base case. The risk factors included in SCOT are:

- Occupancy of adjacent parking;
- If the facility includes contraflow cycling;
- If the driveway is non-residential (a proxy for more drivers being less familiar with the cycleway); and
- The extent to which it is used by heavy vehicles (i.e. trucks or buses).

The operating speed of the cycleway, which is a function of gradient, is an additional risk factor not currently included in SCOT. As cycling speeds increase, so do the likelihood and consequences of conflict. If a layout involves any of this or other factors, it is necessary to compensate for the increased risks.

Also, whilst SCOT includes traffic volumes, it does not go as far as to account for congestion. People cycling to the left of a slow moving or stationary queue of traffic can be exposed to dangerous situations. This is because drivers may leave a gap

to allow opposing right turning vehicles to turn through the queue and these turning drivers may not think to look for cyclists, and their intervisibility is restricted by the vehicles in the queue. At the very least, coloured surfacing of the cycleway should be placed across high-risk locations to help prompt drivers to check before crossing (and alert cyclists to the risk of conflict).

2.5 Parked vehicles

Parked vehicles between a cycleway and the general traffic lane can significantly restrict intervisibility between cycleway users and motorists turning across the cycleway from the roadway to access a driveway. It is very difficult to compensate for this lack of intervisibility other than by restricting parking on the approach to a driveway. The more critical case for this is cyclists and motorists travelling in the same direction, i.e. the motorist turning left into the driveway. The effect of parking on visibility for traffic turning right into the driveway is less critical. It is not simply the setback of parked vehicles from the driveway that must be considered, but also the parking occupancy on the approach to the driveway. The following setbacks in Table 1 are based on the parking provision on the approach to the driveway apply:

Table 1: Parking setbacks based on parking provision

Number of effective parking spaces on approach to driveway*	Required setback of first parking space from driveway
1-2	3 m **
3-4	5 m
> 4	8 m

* Note that there must be a gap of at least 5 m to any previous vehicles parked upstream, with it not being possible to park there because of the presence of a driveway or a kerb extension.

** Note also that the specification of 3 m for the case where only 1 or 2 parking spaces are provided is based on the space required to manoeuvre without crossing the centre of the roadway.

For a one-way cycleway with cycling in the with-flow direction, the setback of parking on the downstream side of the driveway is less critical, but still important to avoid conflict – a minimum setback of 3 m is recommended.

Figure 16 illustrates the various parameters discussed above and is demonstrated in Figure 17.

In many cases, the clear space provided by the setbacks could be intermittently used for placing wheelie bins in rubbish collection days (markings can be provided to denote these spaces if required), or for low level landscaping to enhance the street amenity and the attractiveness of the cycleway.

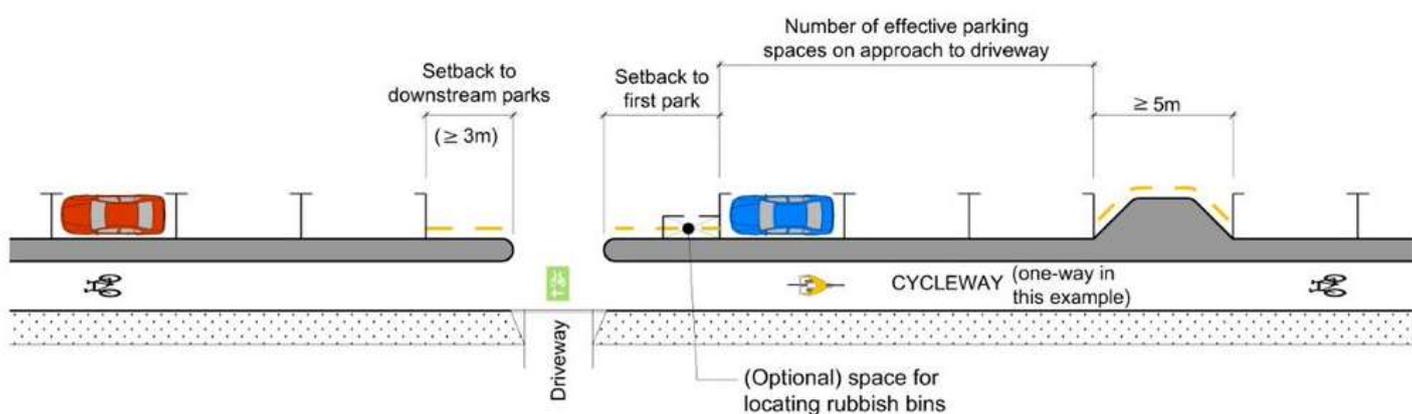


Figure 16: Setbacks for parking at driveways along separated cycleways



Figure 17: Applying setbacks for parking at driveways along separated cycleways, Strickland St, Christchurch

2.6 Mitigation measures

Mitigation measures that can be employed work on the basis that they either increase drivers' awareness, or they reduce their operating speed, or both. Those measures include:

- Increase the offset between the cycleway and the roadway - see the discussion on offsets in 1.1.2. Note that this is not likely to improve visibility for heavy vehicle drivers making left turns from the roadway across the cycleway, unless the offset is so large that the heavy vehicle is nearly perpendicular to the cycleway prior to crossing it. As there would be few situations with sufficient room for enough offset, this measure is mostly appropriate only where heavy vehicles are rare.
- Reduce the width of the driveway gap in the separator. This will limit the speed at which vehicles can turn into or out of the driveway. In some cases, it may be necessary to restrict the type of vehicle that can enter the driveway. For example, it may be suitable to assume that residential driveways only need to provide for the 95th percentile car; larger vehicles that access the driveway occasionally (for example furniture removal trucks) may have to cross the centre line to undertake the turning manoeuvre, and this is acceptable if it happens only on a rare basis. Note that the design of the separator end pieces may need to be reviewed to minimise ongoing damage to them e.g. using tapered noses.
- Use additional [road markings and signage](#). The treatment in Figure 18 has been found to improve safety by achieving more consistent and slower speeds as well as improved stopping behaviour and reductions in near misses. The '[High-use Driveway Treatment for Cycle Paths and Shared Paths, Design Guidance note](#)' provides advice on treatment solutions for commercial and high use access points on cycleways and shared paths.

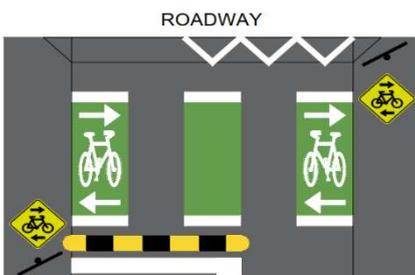


Figure 18: Driveway treatment solution

The access treatment in Figure 18 is appropriate for the scenarios below.

- **Accessway width:** Is 3.1 metres (or more).
- **Area wide treatment:** Consider based on land use, especially where there are multiple commercial (or high use) access points, or where there may be a higher number of novice riders, e.g. near schools.
- **Single use treatment:** High use accesses, including commercial, recreational or residential (e.g. locations with more than 10 residential properties accessing the same driveway). Consideration should also be given to higher risk accesses, e.g. those with poor sightlines.

For typical residential or other low use / low risk accesses consider marking a two-way cycleway with the cycle symbol with arrows on a single block of green paint as shown in Figure 19. Where the cycleway is one-way (with the flow of traffic) a marking might not be necessary at a low-use residential driveway.

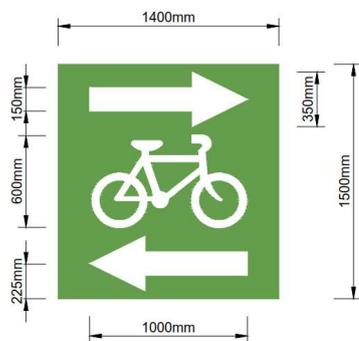


Figure 19: Symbol for two-way cycleway at narrow driveway for a two-way cycleway (i.e. <3.1 m wide)