Stirling to Crafers Bikeway Proposal

Bike Adelaide (formerly the Bicycle Institute of SA) is very supportive of this project to link Crafers and Stirling with a safe cycling route. We congratulate both Council and the consultants for the work to date. We understand that the plans provided for our comment are not a detailed design but provide our detailed feedback to assist in the following phase.

We preface our detailed feedback with over-arching comments regarding our strategic philosophy, then the larger design context for the project.

Our network priorities

Cycle planners would be aware of the 'four Cs' of bicycle network planning: Comfortable, Connected, Continuous, and Consistent. However, additional considerations are needed to prioritise routes as part of strategic network planning. Bike Adelaide has adopted the following.

- Connect catchments to destinations – the better that routes connect supply (residential catchments) and demand (destinations), the more they will be used and the more that goals around cycling will be achieved.
- Separated facilities – To attract the most cyclists, cycle routes need to be separated (or mostly separated) from traffic. Further, off-road paths designated for shared use create their own issues with pedestrians, particularly when volumes of walkers and/or cyclists are high, tidal and/or concurrent and cycling speeds generally higher (e.g. due to gradients). Shared paths are a second-best result in these conditions.
- An "8-80" network – this will be achieved in the first instance with a coarser grid of separated routes that can be accessed by low-stress connections, with low speeds in quiet residential streets helping to establish an appropriate local cycling environment, and safe crossings of major roads.
- Practical wayfinding – several wayfinding signage initiatives have been commissioned, installed, won awards, and failed to help users to find their way easily and intuitively. Bike Adelaide favours a system based on Dutch best practice (explained later). Councils and DIT also need to commit to ongoing maintenance.
- Lighting for safety – with lighting being expensive to install, many routes remain dangerously dark. Where lighting is not provided on a local route for cost reasons, we advocate for solar-powered LED cateyes. These provide cheap path delineation and enable other users to be perceived, but have low installation and maintenance costs. Issues of backlighting and hazard delineation are also rarely considered as part of lighting.
- Tourism for all – apart from their economic tourism value, longer-distance tourist routes provide for many local trips. Tourist routes can also help in promoting positive attitudes towards cyclists, and form part of a local 'cyclist lifestyle' package that helps challenge car dependency.

Our feedback and comments are made in line with this strategic philosophy.

Context for the project

The Stirling to Crafers Bikeway has high strategic value as a largely separated cycleway option that provides both local access between Stirling and Crafers, and extends on the Crafers Bikeway to improve commuter cycling conditions. The latter factor also has implications for people cycling for recreational and tourism purposes.

Implications of this project context for the design include:

- The route will be attractive to commuter cyclists because it is shorter and flatter than the Ayres Hill alternative route – and strong, experienced commuters will likely be riding at higher speeds, while local gradients will also promote relatively fast downhill travel
- The route should aim to minimise commuter travel distances to maximise commuter use – noting that increased penetration of e-bikes also has the potential to increase the feasibility of such commuting, and for people of different abilities; and leading to increasing usage over time
- The likelihood of highly tidal and peak cycling, as commuter cycling coincides with walking activity and recreational/tourist cycling with recreational walking – shared use paths may be an option in constrained circumstances, but adequate width and separation will be highly desirable, especially for groups of cyclists
- The desirability of at least delineation (cf illumination) levels of lighting, for likely year-round and evening use
- Connectivity to other cycling routes, in terms of maximising the utility of the route for broader catchments, and for improved crossings and paths to also benefit pedestrians.

These implications have been considered as part of our feedback.

1) Crafers main street bypass

We wish to request that the project marginally expand to include a ramp from the east side of Mt Lofty Summit Road to Sharrad Court, and connecting to the new crossing of Mt Lofty Summit Road. In conjunction with “bicycles excepted” signage for Cox Creek Road, this would create a bypass of Crafers and – more importantly – Piccadilly Road between Main Street Crafers and (roughly) Fairview Drive. This section of Piccadilly Road has little to no road width for cyclists, while the footpath is difficult for cyclist use and not conducive with shared use (being narrow, with a significant gradient and subject to door opening from cars of visitors to the Crafers Garden Centre). Further, the road gradient for those travelling southwest towards Crafers is not conducive to children or less experienced cyclists either on-road or using the footpath.

From Fairview Drive northeast, a separated footpath + some road width exists on Piccadilly Road and provides for onwards travel. Hence the lack of a ramp forms a significant impediment to use of Cox Creek Road as the “missing link” in a safe cycling network – despite which a “goat track” exists between Sharrad Court and Mt Lofty Summit Road, indicating the desirability of the route for both pedestrians and cyclists.

This route extension would add greatly to the utility of the Stirling to Crafers Bikeway for those whose origin/destination is along Mt Lofty Summit Road and is in line with the strategic aim of maximising connections to catchments. In particular, this would extend the benefit of the project to students of Crafers Primary School. It also provides access to the Crafers Bikeway and would extend the Bikeway environment to at least Piccadilly Road.

2) Roundabout design

Given a lower speed environment for Main Street Crafers, we would like to see the roundabout at Main Street Crafers/Mt Lofty Summit Road redesigned from a tangential design base to a radial design base. Radial design has been demonstrated to be safer for cyclists.

This is also desirable for the roundabout at Waverly Ridge Road/Crafers Interchange ramp, on the southern side of the freeway; and the end of the route at Avenue Road in Stirling.

(Bike Adelaide notes that our principal engineer, Fay Patterson, has recently submitted a PhD that has found previously unidentified safety benefits of radial design for cyclists. The PhD is currently being examined.)

3) Use of Waverley Court

The use of Waverley Court as part of the concept layouts (red route in the diagram following) introduces a number of compromises for cyclists. The greatest of these is that it is a detour along Waverley Ridge Road and back up along Waverley Court. This is some 280m, compared to 155m for a route on the southern side of the slip lane from the Princes Highway (dashed blue line in the diagram). This extra distance also incorporates a grade climb.

Other implications are shown in Sheet 4 in particular: the path/s provided cannot be maintained at 3.0m in width, with a 1.8m path used to access Waverley Court off Waverley Ridge Road. (See Sheet 4 comments). This is a significant constraint in terms of the quality of the facility provided, especially coming on top of constraints imposed by the bridge crossing of the Princes Highway.

A more direct route still could be provided by crossing the slip lane from the Princes Highway at a location with good visibility and as an alternative to two crossing points at Waverley Ridge Road (green route). Pros and cons are arguable with this option, in regard to safety.

Design feedback

Our comments on the concept proposal follow, by sheets.

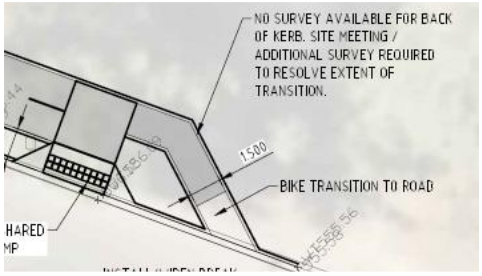
Sheet 1

a) Shared path, southern side – We note the covering email comment that this design is being reconsidered but provide our feedback on what is available to us. We would have concerns with a two-directional shared path provided on one side of Main Street.

   In this case, the path doesn't cross side streets or driveways and the safety issues related to traffic yielding to cyclists at these do not exist. However, eastbound cyclists exiting at Station Road will face this risk from drivers at Station Road who are not expecting traffic from their left. Additionally, these eastbound cyclists will next find themselves facing on-coming traffic on Main Street Crafers and we would need to see an excellent treatment for the onwards travel of these cyclists before we could support the treatment for two-way travel.

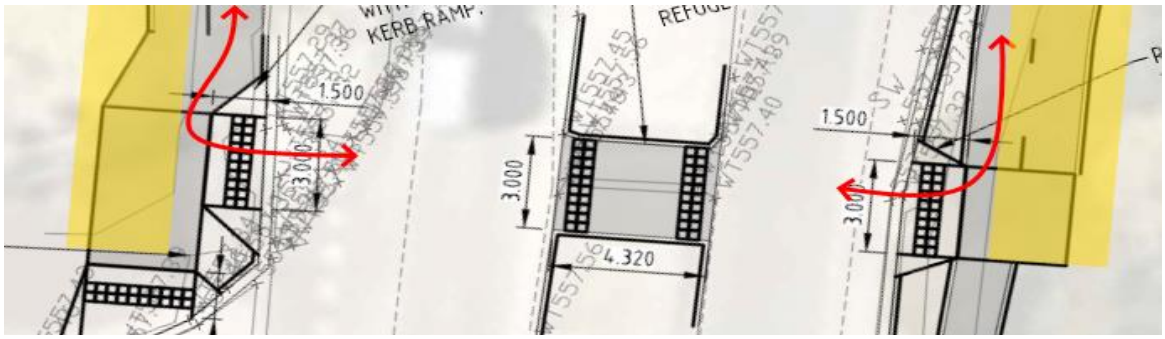
   We could support a two-way pedestrian footpath separated from a one-way cyclist path, particularly as Main Street Crafers can be subject to quite high pedestrian demand. If separated paths are provided, the path design needs to very strongly reinforce the different paths, as interstate and overseas evidence points to poor compliance when pedestrian and cycle paths are at the same grade with no separation strip between the two.

b) We really like this design detail. It is so rarely the case that cyclists are given a convenient way to access the road, and the opposite method (a plain kerb ramp) creates an "S" shaped travel path, with a very poor alignment with road traffic.



c) Roundabout path connections should link at least to the back of the kerb ramp and desirably be set some 0.5m back from the back of the kerb ramp, with at least a 6m transition to this point.

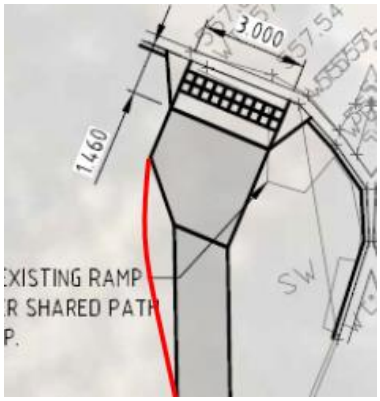
   As shown in the following diagram (at left, red line = travel line), a path that connects more suddenly into the side of the kerb ramp creates a tight, compound travel line for cyclists travelling on the inside curve. Locating the path in the yellow area, with a radius from the kerb ramp wing, would give a much better travel line.



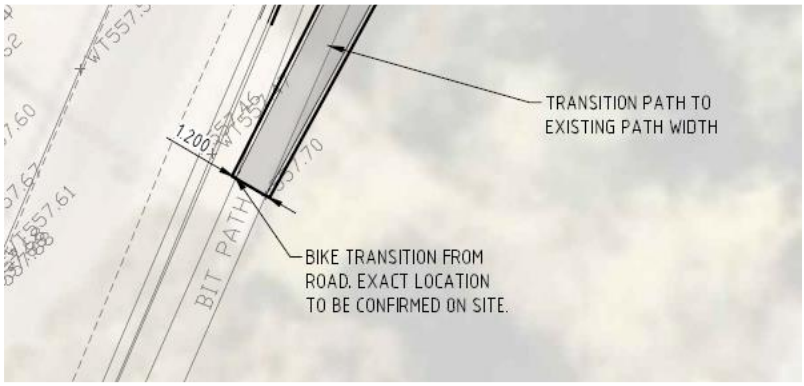
Even where the path connects to the rear of the kerb ramp, a cyclist on the inner curve is following quite a tight turn (as in the diagram at the right side; red line = travel line).

A tight travel line is taxing/difficult for cyclists, and also makes it harder for a cyclist to be properly aligned at the kerb to be able to look for and yield to traffic. This is not conducive to cyclist safety. The Austroads Guide for paths advises that the minimum radius of curvature for cyclist paths is 2.0m. Locating the path some 0.5m from the kerb ramp (as per the yellow area) would enable this radius to be provided, including enabling an inside curve radius to be provided from the kerb ramp wing rather than the un-radiused, 'square' connection that occurs when the path connects to the kerb ramp at its side or immediate rear.

d) Path transition, western side – We would like to see a smoother transition from the shared path width to the footpath width, to help facilitate passing if required.



e) Path width, eastern side – Rather than transitioning to the existing path width (apparently 1.2m), we suggest widening this section of path as much as possible, noting that the continuation on Sheet 2 is 1.5m wide. While 1.5m is narrow for shared use, this is acceptable for one-way travel given a bike lane exists on the other side of the kerb, and given that a path separated from the road is necessary to cater for children.



We also note a comment provided on this sheet about transitioning to the road. As per our previous treatment, we support this as a concept and look forward to seeing the design detail.

f) Median narrowing – the central median over the bridge is wide at over 4m for most of its length. We strongly urge that this be narrowed to enable wider paths over the bridge. There are retro-fit path materials that would allow drainage to be maintained while providing wider paths. It appears that the western footpath is narrower than the eastern one and this footpath would therefore have the greatest priority for widening.

Sheet 2

This sheet provides little additional detail. Comments as per Sheet 1 apply.

Sheet 3

3m shared paths on both sides of the road are positive, however are not matched by general path widths along the route before or after this section. Comments regarding the inside curve radius at connections to kerb ramps also apply here.

Sheet 4

The context for the decision to use Waverley Court, as shown on this sheet, is difficult to appreciate or support.

The shared footpath/bike paths on either side of the road narrow considerably on this sheet. A one-way couplet flow would have to be generally assumed – which would be compatible with the conditions on the bridge over the Freeway. That is, cyclists would use the footpaths as if these were an extension to the left-hand side of the road, with northwest-bound cyclists generally using the south-western footpath and southeast-bound cyclists using the north-eastern footpath.

We interpret the driving factor for other design details being use of an existing concrete ramp to provide access to Waverley Court, however this is only 1.8m wide, has a high wall on one side and rail on the other, and a relatively tight radius at the end. The restrictions on either side of the path reduce the effective width for cyclists to perhaps 1.2-1.5m and this extends for some 15m, with potentially poor visibility, particularly as no night-time lighting is indicated. We have some concerns about cyclists being able to pass either cyclists or pedestrians using such a narrow path, and greater concerns about the suitability of the route formed for commuter and tourist cyclists.

If our preferred alternative route cannot be developed, Google maps/Street View shows the remnants of a previous connection of Waverley Court to Waverley Ridge Road. We would query whether this could be reinstituted sufficiently to provide an alternative access point, even if this were only for cyclists exiting to Waverley Court (given the grade difference between Waverley Court and Waverley Ridge Road.) A median opening on Waverley Ridge Road at this point would then be desirable.

In any case, lighting of the concrete ramp is desirable.

Sheet 5

There is little detail on this sheet. Given the width of Waverley Court, sharrows should be provided in the centre of the carriageway. We draw attention to the State government's *Operational Instruction 9.4 (Advisory Bicycle Pavement Marking: Shared Lane Marking (Sharrow))*, which provides for marking in the centre of the lane. However, our preferred route would involve a new path rather than using Waverley Court for most of this section of the route.

Solar LED cateyes should be installed at the edge of the carriageway.

Sheet 6

As for Sheet 5, sharrows should be provided in the centre of the carriageway. While the width of Howard Drive appears to be greater than Waverley Court, the sharrows again appear to be marked close to the kerb. Central lane sharrow marking assists in indicating the legitimate use of a quiet street by cyclists, but sharrows close to the kerb can indicate to drivers that cyclists should ride at

the edge of the carriageway. This potentially leads to conflict if cyclists do not comply. There is a particular problem in Howard Drive as no footpath exists on the southern side, hence rubbish bins are left adjacent to the kerb for rubbish pick-up, in the area indicated by sharrows.

Solar LED cateyes should be installed at the edge of the carriageway.

Sheet 7

As per Sheet 6.

Sheet 8

As per Sheets 6 and 7 for the on-road section.

While 1.5m one-way cyclist access paths can be acceptable for short distances as in this sheet, clearance to vertical obstructions need to be maintained. Clearance appears to exist on the southern access, to the stobie pole, but the bollard shown at the northern access is immediately adjacent to the path and should be set back to provide at least 0.3m clearance in addition to the nominal path width. (The splitter island does not present a vertical obstruction.)

The light is appreciated.

Sheet 9

We are concerned with the 2.5m wide path shown. The existing gravel path is well used by pedestrians, for which reason the original AHC Bike Plan suggested building a new bicycle path adjacent to but separate from the gravel path. Conflict between drivers and cyclists has been an issue in the Adelaide Hills and we would prefer that this does not extend to cyclist conflicts with pedestrians.

If a shared use path rather than separated path is provided, it should have a minimum width of 3.0m + shoulder, and desirably 3.5-4.0m. This would cater for heavy use by both pedestrians and cyclists in tidal flow conditions and/or in groups, and allows for local gradients plus the likelihood of unusable surface due to tree litter. Even a separated path adjacent to the pedestrian path would desirably have a width of 3.0m to allow cyclists to pass each other safely.

The amount of clearance provided to fences for the path proposed is not obvious from the concept plans but does not appear generous. A lack of clear shoulder means that cyclists or pedestrians could not move off the path to give passing room if required – for example, if the pedestrian is walking with a dog.

If the path width is constrained by local conditions, narrow sections of 2.5m shared path could be acceptable for short lengths of up to around 25m, as long as sight distance is available along each length and the transitions from a standard path width are clearly indicated, including with solar LED cateyes or other lighting. (Such narrow points would more normally apply as squeeze points, for example where the path passes a tree. Solar LED cateyes may generally function as RRRPMs where sunlight is not generous, but presenting added delineation available in certain conditions/seasons. This needs to be assessed on site, with reference to seasonal environmental conditions.)

We also wonder whether an alternative access would be preferable, being between the end of Howard Drive and the end of Melrose Avenue – a distance of some 95m – e.g. through a land agreement (as per the Heysen Trail), or by establishing an easement of access. If so, this would remove shared use path conflict and would also significantly reduce the amount of path-building required.

Solar LED cateyes should be installed at the edge of the carriageway.

Sheet 10

Our comments regarding path width and a possible alternative route are as for Sheet 9.

In this section, the shared use path veers off the existing gravel path. We would strongly recommend that the gravel path be sealed at a minimum 1.5m width plus shoulders, creating a split path that then meets path width requirements. Even here, 1.5m is narrow for a cyclist to pass a pedestrian or another cyclist and two 2.0m sealed path sections would be preferable, with a squeeze point for the uphill path between tree trunks as required.

Solar LED cateyes should be installed at the edge of the path, particularly to delineate transitions and hazards.

Sheet 11

The western section of path leading to Braemar Terrace is currently quite steep, potentially leading to speed/visibility problems at Melrose Avenue. We query whether the path could be further 'hooked' to create greater length and reduce grade, and/or designed such that the grade is flattest closer to Melrose Avenue, plus a more perpendicular approach to Melrose Avenue be provided to give cyclists better sight distance to cars and potentially pedestrians in this area. (If Melrose Avenue were used as an alternative route, this hazard would be removed.)

Along Braemar Terrace, the new path varies in width from 1.5m to 1.2m and is therefore a footpath. While we support provision of a footpath for pedestrians, and perhaps for child cyclists, this is not an adequate facility for adult cyclists. Notwithstanding the desire for separation, we suggest that cyclists should travel on-road. A small section of contrasting pavement plus "bike crossing" signage might be appropriate just north of the path – we agree that traffic volumes are low, but traffic could be travelling relatively fast given the downhill gradient. Sharrows should then be marked as in other sections of the route and solar LED cateyes installed at the edge of the carriageway/footpath.

Central bollards should not be used to control cyclist speeds, with any required path terminal treatment instead complying with appropriate Austroads guidelines. Some vegetation maintenance will probably be required to ensure that adequate sightlines are achieved.

Sheet 12

A kerb and/or line-marking should be provided from Braemar Terrace to the new section of 2.5m path. (Central bollards should not be used, with any required path terminal treatment instead complying with appropriate Austroads guidelines.)

Our feedback regarding a 2.5m path is as per Sheet 9. In this case, it appears that the path is constrained by the property boundaries, but could be widened to abut the edge of the retaining wall, even if narrower sections are provided.

Solar LED cateyes should be installed at the edge of the path.

Sheet 13

While we understand the reasons for the path narrowing to 1.2m past tree trunks, this is inadequate for this type, level and likely use of cyclist route. The obvious and best option would be building up the ground level to the north-eastern side, allowing the path to be widened past what is currently a fence line with a small drop to this side.

If this is not possible in the short-term, we would at least like to see a wider path provided, with tree locations treated as individual hazards within this path corridor – as shown in the following diagram.

Compared to the concept proposal, this would allow at least pedestrians to pass between the retaining wall and tree trunks at locations A and C, with a path width of some 0.9m (red shading). Cyclists travelling south-eastwards might elect to stay adjacent to the fence on a straight-through travel line with a minimum path width of 1.2m at point B – equivalent to the width on the other side of this trunk proposed by the concept plan, and noting that downhill cyclists would have the benefit of gravity to assist with maintaining low-speed stability through this narrow point.

While far from ideal, this design approach would replace a section of sustained narrow and winding path with a path having shorter narrow points, generally greater width at those points, and some options for passing despite these narrow points. Transitions and hazards should be well indicated with line-marking and solar LED cateyes.

In this case, if some building up of the ground level could occur, a width of 1.5-2.0m past point B and continued past point C would alleviate the worst impacts of the path narrowing.

Sheet 14

Path width comments as per Sheet 9.

We query whether there is some ability to widen the kerb ramp at the southern side of the roundabout connection and provide space for cyclists to stop adjacent to the reserve.