



Briefing Paper: Adams Road and the Cambourne to Cambridge Busway



Adams Road

Executive Summary

Adams Road is part of one of the busiest cycle routes in Cambridge, with over 800 people per hour cycling at peak times, and that usage is expected to grow significantly. The Cambourne to Cambridge busway project team has recently proposed to use Adams Road as part of the busway route, introducing at least 30 buses per hour onto Adams Road, and likely to increase over time. We support all forms of sustainable transport such as walking, cycling and public transport being deployed coherently. However, the mixing of so many buses with such strong flows of people cycling is bound to lead to conflict between buses and cyclists, raising intense risks that experience tells us will not be adequately mitigated. In particular, the volume of heavy motor traffic on Adams Road would be incompatible with safe cycle route design on such a narrow road, even when street parking is removed. The junction of Adams Road and Grange Road poses a particular risk where there would be frequent bus turning movements in conflict with very heavy cycle flows. We have learned from Dutch guidance and case studies that such a high volume of bus traffic cannot safely coexist with the strong existing and expected flows of cycling. Therefore we must oppose the routing of the Cambourne to Cambridge busway on Adams Road.

Background

- Adams Road is part of an important cycle route between the city centre, West Cambridge site, Eddington, and the villages to the west of Cambridge.

- Counts conducted by volunteers have shown a peak of 841 cyclists per hour, making it the busiest peak-time cycle route in Cambridge, and it is easy to observe strong flows of people cycling at many times throughout the day.
- This route is heavily used by students cycling to and from the West Cambridge site and going to lectures elsewhere in bursts throughout the day. There are also many cargo cycles and trailers used for carrying young children. Furthermore, we expect to see more and more usage of a wide variety of cycles adapted for disability as the Cambridge cycle network becomes more accessible to people of all abilities.
- The demand for cycling is expected to sharply increase from today's rates, because: (a) the University has plans and ongoing construction that will double the daytime population of the West Cambridge site, and is committed to channelling that increase into sustainable transport modes, (b) residents of the growing Eddington site in Northwest Cambridge are increasingly using Adams Road as a cycle route, (c) the Greater Cambridge Partnership is expected to build improvements to the cycling infrastructure connecting villages to the west of Cambridge, and (d) the Bourn Airfield development, less than six miles away, has been approved in principle and will add thousands of houses connected via the aforementioned proposed cycling infrastructure to Adams Road.
- At the same time, the Greater Cambridge Partnership is proposing a new busway between Cambourne, Bourn and Cambridge. Camcycle does not have any opinion on the principle of this busway, although we are generally supportive of sustainable transport, which includes public transport. However, Camcycle does take an interest wherever the proposed busway may offer opportunities or pose dangers for people cycling. We believe sustainable transport modes should not be forced into conflict, they should be deployed harmoniously to improve transport opportunities for everyone, support people-friendly urban design, and reduce the problems caused by private motor traffic.
- The Cambourne to Cambridge (C2C) busway offers some opportunities to overcome barriers such as the provision of a new and improved bridge over the M11, and the busway is expected to have a companion cycle route alongside it, similar in principle to the cycle routes alongside the existing Guided Busway, but with improved details including: a buffer between fast-moving vehicles and people, a cross-section that is appropriate in width and layout to the expected level of usage, and junction/crossing designs that are much easier and friendlier to navigate for people of all abilities.
- The C2C busway poses a risk to people cycling wherever buses are expected to mix or cross paths with people cycling; those risks require mitigation through design choices. Prior to summer 2019, the preferred path of the busway appeared to follow the so-called 'Rifle Range route' that passes behind Clare Hall, and would be completely separate from people cycling all the way to Grange Road. Since the summer, however, Adams Road has been seriously considered as a portion of the busway route instead, with the Rifle Range route becoming a proposed cycleway. The initial service proposal shows 30 buses per hour using Adams Road, counting both directions, which greatly increases the exposure to buses of people cycling, and that service level is expected to increase over time.
- Some people cycling may be able to take advantage of the newly proposed cycleway along the 'Rifle Range route' alignment, however it is unclear whether this alternative route can be delivered, and it is unlikely to reduce the numbers of people cycling on Adams Road by much because Adams Road is the shortest and most obvious direct route for cyclists travelling between the city centre and the West Cambridge Site. It could provide a useful route for some journeys especially those to the south, but it would be largely unlit, and suffers from unavoidable lack of natural surveillance, which would reduce its utility on dark winter evenings for half the year.
- The following risks have been identified in relation to Adams Road:

- (A) Sharing of the 8m-wide carriageway by people cycling and motor traffic including buses, lorries and private cars. Similar situations, such as Station Place, have proven problematic with reports of bus drivers making dangerous passing manoeuvres.
- (B) The junction of the Coton Path, Adams Road, Wilberforce Road and the sports ground access road, where the proposed busway would meet the busy cycling flows along Adams Road.
- (C) The junction of Sylvester Road and Adams Road, where a significant number of people cycling turn to access colleges and places south of Adams Road.
- (D) The junction of Adams Road, Burrell's Walk and Grange Road where the buses turn right onto Grange Road or left onto Adams Road. There are strong flows of people cycling in every direction, however the most popular and well-known route is straight between Adams Road and Burrell's Walk.
- (E) Car parking and lorry loading along Adams Road creates obstructions and blind spots.
- (F) People walking have dedicated footways along Adams Road, however they will need to cross the path of buses in some places. It is also important to ensure that the footways are fully accessible and not blocked by parked or loading vehicles.
- (G) Heavy bus traffic will probably cause much more rapid degradation of the carriageway, resulting in potholes and related dangers for people cycling.

Discussion

Risk (A)

Without the busway, the Dutch approach here would probably be the designation of Adams Road as a Cycle Street (fietsstraat). There are several possible layouts for a Cycle Street, however the most important feature is at the network level: the reduction of motor traffic on the Cycle Street. Dutch guidance broadly suggests that (1) the amount of cycle traffic has to be double the amount of motor traffic, and (2) for two-way roads, the intensity of motor traffic must be reduced to less than 2,500 'passenger car units' (PCU) per day (a private car counts as 1 PCU, a bus or lorry counts as 3 PCUs). However, it must be kept in mind that the quality of the Cycle Street degrades rapidly and unpredictably as motorised traffic intensity approaches the threshold, and the nature of the motor traffic makes a big difference too; larger vehicles pose a disproportionate threat to safety. Other requirements include: (3) the speed limit must be 20mph or lower, and (4) drivers are asked to stay behind cyclists and pass only if they can do so in the most careful way, if it is completely clear. If there is any (5) car parking on the street then it is expected to be kept off the carriageway or arranged such that there is a safe 'door zone' that protects people cycling from crashes caused by car occupants opening doors without due care. (CROW 2006)



Platolaan, a Cycle Street in Utrecht

The overall goal of a Cycle Street is to create a street where people feel safe to cycle without (6) intimidation from motor traffic. Cycle Streets are often designated where the number of people cycling would overwhelm a cycle lane, and are meant to encourage sociable side-by-side cycling for people travelling together in groups. Cycle Streets should have dedicated footways for people walking along the street, especially wherever there are properties or significant flows of people walking.

The UK does not have an official road designation for Cycle Street, although most of the features can be replicated, but it is unclear to what extent that can successfully occur on Adams Road.

- (1) OK. The amount of cycle traffic is easily more than double the amount of motor traffic, and will be in the foreseeable future.
- (2) Questionable. Adams Road benefits from some nearby traffic filters that reduce the number of motor vehicles using it. However, Adams Road is currently used as a car park for commuters and college visitors, which brings a lot of motor traffic into the street hunting for parking spaces. The sports ground is very large and instigates significant regional car traffic flows before and after events. Several of the college buildings are serviced by heavy lorries at times during the day. Thirty buses per hour translates to 90 PCUs per hour, ie. at least 1,100 PCUs over the 12 busy service hours from 7am to 7pm; already close to half the maximum motor traffic intensity without accounting for other cars or lorries. Furthermore, the Dutch guidance for routes like this proposal with high bus frequency and strong cycling flows is always to separate the bus traffic from the cycle traffic, because buses are much heavier and wider than people cycling (CROW 2006, SWOV 2018). The following quote is from a research paper that has informed recent Dutch guidance on Cycle Streets (more quotes can be found in the appendix below):

Public transport should not be present on a bicycle street, since the mass difference with cyclists is rather high. The presence of large vehicles such as buses does not contribute to the comfort and feeling of traffic safety on the bicycle street. (Delbressine 2013)

- (3) OK. The speed limit is already 20mph.
- (4) Questionable. We lack precedents for this, but it is conceivable albeit questionable that a Traffic Regulation Order could be constructed along these lines, and it is possible that bus driver behaviour can be monitored for compliance, although that has not occurred in other places where buses are supposed to share space with people cycling.
- (5) Probably OK. The street must be designated as a no-parking zone as soon as possible. Some of the reclaimed space may be used for trees and planting, interspersed with loading bays for deliveries or blue-badge holders, provided the design does not pose a hazard to people cycling or walking.
- (6) Questionable. Bus drivers are under considerable pressure to keep to schedule. The nature of busy cycling traffic on Adams Road, though, would lead to extreme uncertainty in traversal time for buses. When cycle traffic levels are low, it is possible for a bus to transit Adams Road in about 1 minute at 20mph. When cycle traffic levels are elevated, it is likely that buses would have to follow behind people cycling and that may easily cause the transit time to increase by 100%, to 2 minutes or more. Managers would face a conflict of interest: the profit and good service motives require them to achieve reliable trip times down Adams Road, however the interest of other people's safety requires them to accept considerable variability in trip time. The Cycle Street treatment weakens considerably with high levels of motor traffic. For example, Prins Hendriklaan, a Cycle Street in Utrecht, has over 14,000 people cycling per day, but also about 3,000 motorised PCUs, and is therefore considerably less comfortable and safe than it should be. (Treasure 2014)



Prins Hendriklaan, Utrecht (Photo: Mark Treasure)

Risk (B)

Prior to the 5th November workshop, all the junction designs shown involved disruption of the cycle route between the Coton Path and Adams Road, in some cases involving very severe sharp turns and multiple losses of priority. At the workshop, the first option shown had priority for cycling over most motor traffic, and avoided the conflict of forcing cyclists to cross the path of buses by proposing a new Coton Path design with one-way cycle tracks on either side of the busway. This pushed the problem of designing a crossing away from this junction and further to the west, where there is more space to provide a safe treatment. Importantly, the cycle tracks tapered onto Adams Road with protection, reducing the risk of multiple conflicts at the same point. The trade-off was that the busway would pinch to a single lane, however, this is acceptable because it also marks the point where the busway speed limit decreases to 20mph. Details such as cycle track width and the design of the crossing to the west remain to be refined, however in principle it could work.

Risk (C)

This is largely the standard risk posed by junctions where people make permissive right turns. Bus drivers may find themselves stuck behind cyclists who are waiting to make a right turn. Bus drivers would have to be very careful if attempting to pass cyclists near this junction. For both drivers and cyclists who are attempting to join Adams Road from Sylvester Road, there is currently very poor visibility. This may be improved by the removal of car parking along Adams Road, and perhaps with the addition of careful landscaping at the corners to open up better lines of sight.

Risk (D)

Buses coming from Adams Road will probably be making a right turn onto Grange Road, although we have also been told that some may make left turns in the future. People cycling and attempting to access the Advance Stop Line on Adams Road may have difficulty safely navigating around the bus in the confined space. Buses coming from Grange Road (heading north) will be making a left turn onto Adams Road. The corner there has already been increased in radius at some time in the past, perhaps to enable lorry turning movements. Nonetheless, people cycling north on Grange Road, and east on Adams Road, will potentially be put in a position of danger as buses swing around to turn left. Grange Road is also a very busy cycling route and suffers from higher motor traffic flows. Buses turning onto and off Grange Road pose a risk to people cycling, especially if the new three-axle buses are used, because they have a much larger kick-out of their rear end (with rear-axle steer their swept path may be 'unexpected').

Risk (E)

As mentioned earlier, car parking along Adams Road must be removed for safety, with cycling-friendly traffic calming measures put in place to keep motor traffic speeds in check. However, lorry deliveries are unavoidable. Therefore we propose landscaping and planting along Adams Road with interspersed loading bays. Where there is off-road loading, such as at Robinson College, steps should be taken to ensure that the road design improves the safety of the driveway.

Risk (F)

The dedicated footways on either side of Adams Road must continue to be provided or even improved. Steps to prevent pavement parking should be given strong consideration. At the junctions, there should be fully accessible crossings and steps taken to increase the priority of pedestrians.

Risk (G)

If buses operate frequently along Adams Road then steps must be taken to reinforce the carriageway and ensure a smooth and safe surface. We note that in other places in Cambridge where there are frequent buses, the carriageway is often in battered or very poor condition within a relatively short timespan, which causes considerable hazard for people cycling. Therefore it is likely that the same would happen to Adams Road, especially at junctions, if it were not properly reinforced. This may require a wholesale rebuild of the road layers from the subbase upwards, which is a cost that has to be factored into the overall project. The same issue applies to Grange Road and Charles Babbage Road.

Conclusion

On Adams Road, there are numerous unaddressed risks to people cycling as a result of heavy bus traffic being introduced. There are several steps that can be taken now to improve safety, such as the removal of car parking along the street. However, it remains unclear how such a high volume of bus traffic could safely coexist with the strong existing and expected flows of cycling. Cycling provision on the Rifle Range route would be useful for some journeys but it does not adequately replace Adams Road as a direct link between the city centre (via Burrell's Walk) and the West Cambridge Site. Adams Road will remain a very busy cycling route, and therefore on safety grounds we must oppose the routing of the C2C busway on Adams Road.

Bibliography

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Appendix

Rick Delbressine surveyed road authorities in Alkmaar regarding Frieseweg, a fietsstraat (Cycle Street) that also carries eight buses per hour (answers were machine-translated from the original Dutch):

Q: Does the [combination of buses and bikes] lead to bottlenecks and, if so, which ones?

A: Yes, buses have a tendency to get stuck on the Cycle Street. There are conflicts due to the difference in mass and speed with the main cycle routes. Buses cause a feeling of insecurity.

Q: Do you have any further experiences with the bicycle street that you want to share?

A: The use of the Cycle Street by buses is by no means desirable, but sometimes unavoidable from a political point of view. Furthermore, the layout as a Cycle Street alone seems to deter motorists and car intensities reduce. The replacement of the block paving with an [artistically patterned] asphalt surface does not seem to have any effects on the speed driven, the V85 [85th percentile speed] has remained the same.