

Safe Junctions for Cycling



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Safe junctions for cycling

When we read the [LCC Dangerous Junctions Report](#), we felt that it would help to have examples of well designed junctions with details of the techniques used and their benefits and limitations. In our examples we will refer to the corresponding sections in the LCC report, referring to it as the LCC-DJR.

In this report, we present some ideas based on a [study in progress of the developing cycle network](#) in Camden and nearby, hoping that they will be useful to other campaigners.

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Acknowledgements

Thanks are due to John Chamberlain and George Coulouris for their many, many suggestions for improvements to this document; and to the Camden officers who have created the cycle routes in our ever-expanding cycle network and the many excellent junctions that hold it together.

Which junctions?

Safe junctions on cycle routes are paramount.

Criterion for the term 'cycle route' in this study: they consist of a continuous set of links on roads:

- with protected cycle lanes where motor traffic levels are high (generally on main roads)
- or on roads with low levels of motor traffic (typically less than 2000 pcu¹/day) including roads through Low Traffic Neighbourhoods (LTNs) – and possibly through parks

Cycle routes can be as long as C6 (Hampstead Heath – Elephant and Castle) and in Camden include:

- C50: planned by TfL as Tottenham Hale to Camden Town but currently only the Camden section which runs through Camden Square is built
- C27: the former Seven Stations route (west of Judd Street) and extending into Westminster
- Cycle routes without official numbers e.g. Prince of Wales Road, York Way, Gray's Inn Road

Some cycle routes (e.g. Goodsway) are quite short but are essential for connecting the network .

The map on [this page](#) shows routes on the Camden Cycle Network as coloured lines and junctions as pins.

LCC-DJR Introduction, page 5: 'When junctions are made safe, the payback is huge – they unlock miles of new cycle routes and make walking, cycling and wheeling safer'.

LCC-DJR Barriers, page 12: '...fixing one bad junction can unlock miles of cycling route ...

¹ pcu - passenger car unit; method of standardisation, e.g. an HGV counts as 2.3 pcu, a motor cycle as 0.4

Why concentrate on the junctions on cycle routes?

Junctions are the key to road safety. Users approaching a junction and continuing on the cycle route will be cycling on roads which either:

- have protected cycle lanes e.g. on the C6 cycle route, in Royal College Street, Pancras Road, Midland Road and Farringdon Road
- or have low traffic levels including those that run through an LTN e.g. C6 runs through the Queen's Crescent LTN and C50 runs through the Camden Square LTN

thus requiring the designer of a safe route to concentrate on providing really safe junctions.

In practice, the second criterion may be a little loose e.g. on C6, Judd Street isn't in an LTN but has very low traffic while other roads e.g. Sidmouth Street may fail the test of fewer than 2000 pcus per day.

Types of junctions on a cycle route

We find it very useful to distinguish between the following types of junction:

'Crossing' where a cycle route crosses over a main road that is not a cycle route e.g. C6 over Camden Road, C6 over Euston Road and C6 over Fleet Street – Ludgate Hill

'Node' where 2 or more cycle routes meet at a junction e.g. C6 meets the Gray's Inn Road cycle route, C50 meets the cycle route on St Pancras Way (Agar Grove / Randolph Road/ St Pancras Way), C6 meets the Goodway cycle route.

'Terminus' where a cycle route comes to a bad end (i.e. there is nowhere safe to go) e.g. on the Gray's Inn Road route at the junction with High Holborn. We don't consider either the southern end of the York Way cycle route or the northern end of the Gray's Inn Road cycle route as a terminus because cyclists can turn off onto a quiet road.

Junctions may be either controlled by signals or be priority junctions (one arm has priority over another). On our [map](#), *crossings* are shown in green and *nodes* in blue with the signalised junctions in the brighter colour. We now discuss signalised junctions for [Crossings in Section 1](#) and for [Nodes in Section 2](#).

We are currently collecting examples of treatments for priority junctions including Tiger crossings² over main roads (that have priority) and the design of continuous footways where protected cycle lanes on a road with priority pass side roads. However we are not yet ready to present these examples.

Components for safe junctions

Low-level signals

All of the schemes we describe below require cyclists to be provided with low-level signals (LLS).

As well as making it possible to have Dedicated signals stages for cycles (Sections [1.1](#) and [2.1](#)) and Early Release for cycles ([Section 2.3](#)), these are more visible than high level signals to cyclists waiting at the stop line, especially where there is no repeater signal for cycles on the opposite side of the junction.

Low level signals



Photo 1: LLS on Sidmouth Street

² Tiger crossing - a parallel zebra crossing for pedestrians and cycles

Two-stage right turn

At some junctions, cycles are not able to safely or comfortably move forward and wait in the carriageway to turn right. The two-stage right turn is an alternative in which cycles pull forward and stop in front of the stopped traffic in the road on their left and wait for a green signal on the other side of the road.

Two stage left turns may also need to be provided on two-way cycle tracks. See [Section 1.2](#).

Waiting place for two-stage right



Photo 2: Two-stage right turn area in front of Southampton Row (N) with Theobalds Road ahead. Needed because Vernon Place has an early release. See [Section 2.4](#)

Critical Failures

LTN 1/20 [DfT: Cycle Infrastructure Design](#) describes a 'Critical Fail' as an aspect of a design that represents unsafe conditions for cycling that must be addressed (or an alternative route found).

Two examples of unsafe conditions are the risk of:

- 'left hook' where a left turning motor vehicle conflicts with a cyclist going straight ahead;
- 'right turn across cyclist path' a right turning motor vehicle coming from the other direction conflicts with a cyclist going straight ahead.

LCC-DJR *Turning risk*, page 16: 'For cyclists, the classic 'left hook' risk is arriving at traffic lights showing green signal'.

Junction Assessment Tool (JAT)

This is described in Appendix B of LTN 1/20. It is a standard way to evaluate the cycling safety of a junction by categorising all of the movements from each of the arms of a junction as either suitable for all cyclists, suitable for 70% of cyclists or a critical failure. We refer to several of our JAT assessments of the junctions described below.

LCC-DJR: *Why doing good junctions isn't easy*, page 20, 'It doesn't have to be that way, however. London is increasingly learning how to deliver safer junctions'.

In the remainder of this report we provide many examples of safer junctions

1. Crossings – signalised

When a cycle route crosses a main road the treatment should be like a ‘bridge’ in getting the users of the cycle route safely over the main road. We assume that cycling is safe both on approach to and on leaving the junction.

The traffic signals are used to ensure that while cyclists are crossing the junction, they will not conflict with motor vehicles or with pedestrians. We discuss two approaches.

1.1. A dedicated signal stage³ for cycles (not mentioned in LCC-DJR)

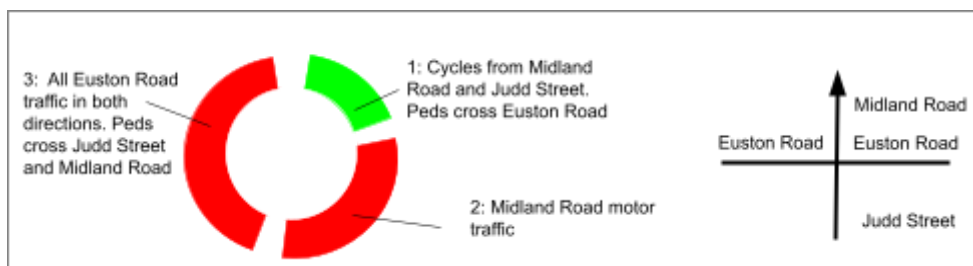
Cyclists must be in a lane separated from motor traffic by a kerb as they approach the junction and be provided with their own *low-level signals* (to their left). The signals for the motor traffic are on the separating kerb. There is no ASL box but the stop line for motor vehicles is set back. We use as an illustration the junction of Euston Road/Midland Road on the C6 cycle route. [Google Maps](#).



Photo 3: C6 southbound on Midland Road meets Euston Road

Southbound and northbound cycles get a green signal at the same time while all motor traffic is held. This provides a guarantee that both south and northbound cycles can cross the junction without coming into conflict with motor vehicles.

In the example above, cycles can also turn left or right into Euston Road without coming into conflict with motor vehicles which is a valuable addition to the provisions of the crossing and will be essential when we get protected cycle lanes on Euston Road! The traffic signal stages are shown here (Judd Street is closed to motor traffic):



How the time in one round of the signals is shared at Midland – Judd / Euston Road

The cycle stage (Stage 1, about 12 secs) is generous but pedestrians get a very poor provision here because they have to stop in the middle when crossing Euston Road although they can cross over Midland Road in Stage 3 and Judd Street in Stages 2 and 3.

See [Further Example 1](#) for another example of using a dedicated cycle signal to create a crossing and [Further Example 2](#) for an example of a cycle crossing that manages without LLS.

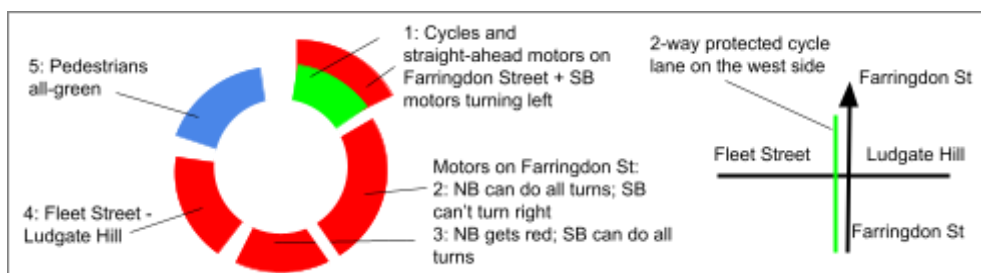
³ Stage - a share of the time during each round of the signals

1.2. Hold the left (LCC-DJR page 22)

This scheme was devised by TfL and put in use on the two-way cycle track on the C6 route on Farringdon Street and Blackfriars Road in 2016. To avoid potential collisions between cyclists going straight ahead and turning motor vehicles, the signals ensure they are separated. Cyclists wait while motor vehicles are turning left (or right), then they go at the same time as ahead motor traffic. *Photo 4.*



Photo 4. C6 northbound with Fleet Street on the left



How the time in one round of the signals is shared at Farringdon St – Fleet / Ludgate Hill

In this version of *hold the left*, the cycles on the two-way cycle lane proceed in parallel with the motor vehicles in both directions, which avoids providing a dedicated signal stage for cycles and allows time for an all-green for pedestrians. This provides a *safe overlap* in time between cycles and motor vehicles. It also provides a longer green period for cycles than does the dedicated signal stage.

However it is only safe if cyclists are not allowed to make turns across the motor traffic with the effect that:

- right turns for northbound cycles and left turns for southbound cycles must be done in two stages which is not convenient for anyone needing to make those turns; two-stage left turns are unfamiliar for most cyclists, many of whom are observed not to wait for the signal opposite.

In addition:

- two motor lanes are required on both north and southbound approaches, with traffic islands that can require significant space;
- we haven't seen this method deployed with one way cycle lanes e.g. further north on Farringdon Road. We discuss a different variant of hold the left in [Section 2.5](#).

But viewed simply as a *crossing* over a main road, this method works very well.

2. Nodes – signalised

We call junctions at which two or more cycle routes cross *nodes*. At a **node**, cyclists must be able to make all possible turns between the two or more cycle routes that meet there. For example, where the cycle routes are on all four arms of a cross-road junction they must be able to turn left, go ahead and turn right from any arm safely and without delay.

We first consider the issues in the context of the junction of Gray's Inn Road / Sidmouth Street – Ampton Street ([Google Maps](#)) making the assumption that a pedestrian all green stage will be provided. We show that although the dedicated signal stage for cycles is excellent, other solutions are often used (in various locations). We discuss dedicated cycle stages, [early release](#), [cycle gates](#) and [another variant of hold the left](#), with examples.

2.1. Dedicated signal stage for cycles (not mentioned in LCC-DJR)



At the junction of Gray's Inn Road / Sidmouth Street – Ampton Street, where the C6 route crosses the cycle route on Gray's Inn Road (GIR), a dedicated signal stage for cycles is provided at Sidmouth Street (Photo 5) and, concurrently, at Ampton Street opposite, guaranteeing that both east and westbound cycles can cross the junction without coming into conflict with other motor vehicles. They can also turn left or right into Gray's Inn Road without coming into conflict with other motor vehicles, joining the GIR route in either direction. (Note: motor traffic cannot enter or leave Ampton Street).



Photo 5. Sidmouth Street approach to GIR – a dedicated signal stage.

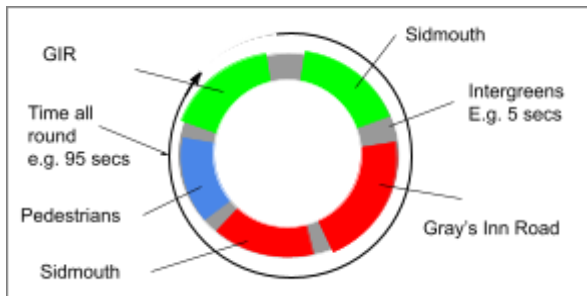
Note: cycles need no ASL box and the motor vehicle stop line is set back relative to the cycle stop line.

2.2. Why aren't dedicated cycle stages provided on all arms of this junction?

Although Camden has provided a dedicated signal stage for cyclists on C6 (Sidmouth Street and Ampton Street), traffic modelling (requiring approval from TfL as traffic signals authority) judged that there wasn't sufficient capacity in the junction to provide one on the Gray's Inn Road arms as well.

We will now attempt to convince ourselves that this is the case.

There has to be some time added to the end of each signal stage to allow the junction to clear, these are



called *intergreen* times. So an additional signal stage implies an additional intergreen time. The actual times can vary, but for sake of argument let's assume they are 5 seconds and also assume that the total time for one round is 96 seconds⁴. That leaves us 71 seconds to be shared between 5 stages. Cycle stages are usually at least 7 seconds and pedestrian all-greens about 15 seconds, leaving about 40 seconds for the motor traffic. Sidmouth Street doesn't produce much motor traffic and

nothing comes out of Ampton Street opposite; perhaps it could manage with 20 seconds? But we know that Gray's Inn Road is a busy main road and bus route and when we were there at about noon, pedestrians were pressing the buttons for the all green almost all the time.

Why not set a longer time all round? Some junctions do use longer times, but any user (including pedestrians) arriving at a red signal would have to wait longer to get their turn⁵.

Designers need to find a way of introducing overlap between the signal stages as they did in our example in [Section 1.2](#). We will discuss *early release for cycles*, *cycle gates* and *hold the left*.

Another proposed solution is the *green scramble* in which the cyclists on all arms go in the same signal stage. However the DfT does not permit green scrambles. There are many in the Netherlands, for example in Groningen where cycles not only cross the arms of the junction but also cross on diagonals from all four corners of the junction. See [this video](#). That junction covers a much wider area than most of the examples in Camden, giving more room to avoid collisions between cyclists. Also the time allocated to cycles was much greater and the motivation was related more to increasing the throughput and reducing delays for cycles which is different from trying to squeeze them all into a very short period of time. **LCC-DJR**, *Innovation*, page 11 is more positive about the possible benefits of green scrambles.

We have not discussed cycle circulating junctions such as the Cyclops junctions in Manchester and Cambridge and another variant in Waltham Forest as we have no experience of these in Camden and where few junctions are on a scale where this scheme would fit in. See LTN 1/20 Section 10.6.21-24.

LCC-DJR, *Circulating Cycle Stage*, page 25 provides a really useful introduction to the similarities and differences of the CYCLOPS, Dutch Circulating junctions and the Waltham Forest approach. LCC-DJR also includes a case study of the junction Lea Bridge Road / Argall Way / Orient Way on page 26.

⁴ When we visited at noon the time for one round of signals was 96 seconds (including the pedestrian stage)

⁵ In [Section 2.6](#), we describe an example of a junction with two dedicated signal stages

2.3. Early release for cycles (LCC-DJR page 21)

We illustrate early release with the same junction as above – where C6 meets the GIR cycle route.

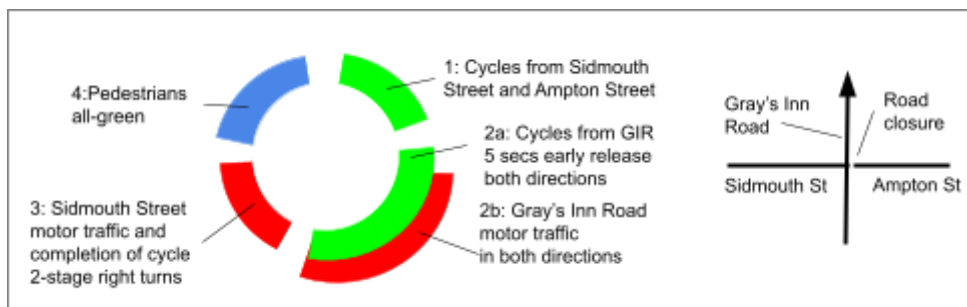


Early release ('ER') refers to an arrangement in which cycles get a green signal before the motor traffic (usually 4 secs). *Photo 6* shows the four seconds during which cycles have a green signal (on the low level signals) while motor vehicles are still on red.

ER can be used at any junction but is often a poor choice and mostly not very safe.

Photo 6. Gray's Inn Road (S) approach to Sidmouth Street - ER for cycles (Stage 2a)

With early release, a 5m deep ASL is provided⁶ for cyclists that arrive while the signals are red: these cyclists have a 5m and 4 secs start over the motor vehicles. They should be able to clear the junction or turn right into Ampton Street in a single stage.



An illustration of the signal stages showing the early release and subsequent overlap (Stage 2b)

In Stage 2b, cyclists arriving while the main signal is on green have to share the space inside the junction:

- Northbound cyclists on GIR who arrive during Stage 2b are at risk of a left hook from motor vehicles turning left into Sidmouth Street.
- Most right-turning cyclists arriving on green will need to make turns onto C6 in two stages using the areas indicated in front of the pedestrian crossings over Sidmouth and Ampton Streets.

At this junction the proportion of motor vehicles turning left is small and the speed limit is 20 mph, so although this example of early release is not suitable for all users, we suggest that it is not a critical failure⁷.

Camden has provided a Trixi mirror to enable drivers (particularly HGVs) to see cyclists coming up on their left side.



Photo 7: Trixi mirror GIR (S) approach to Sidmouth Street

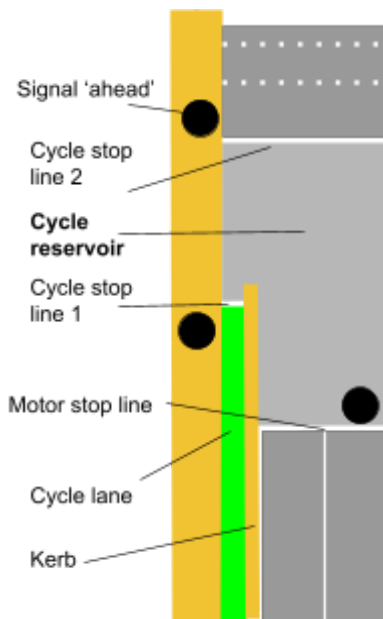
We have carried out [a score for this junction](#) using JAT. See also [Further Example 3](#) for a more detailed evaluation.

⁶ ASL boxes can be deeper e.g. 7m.

⁷ For example, early release southbound on Midland Road ([Section 1.1](#)) would definitely be a critical failure.

2.4. Cycle gates (LCC-DJR page 21)

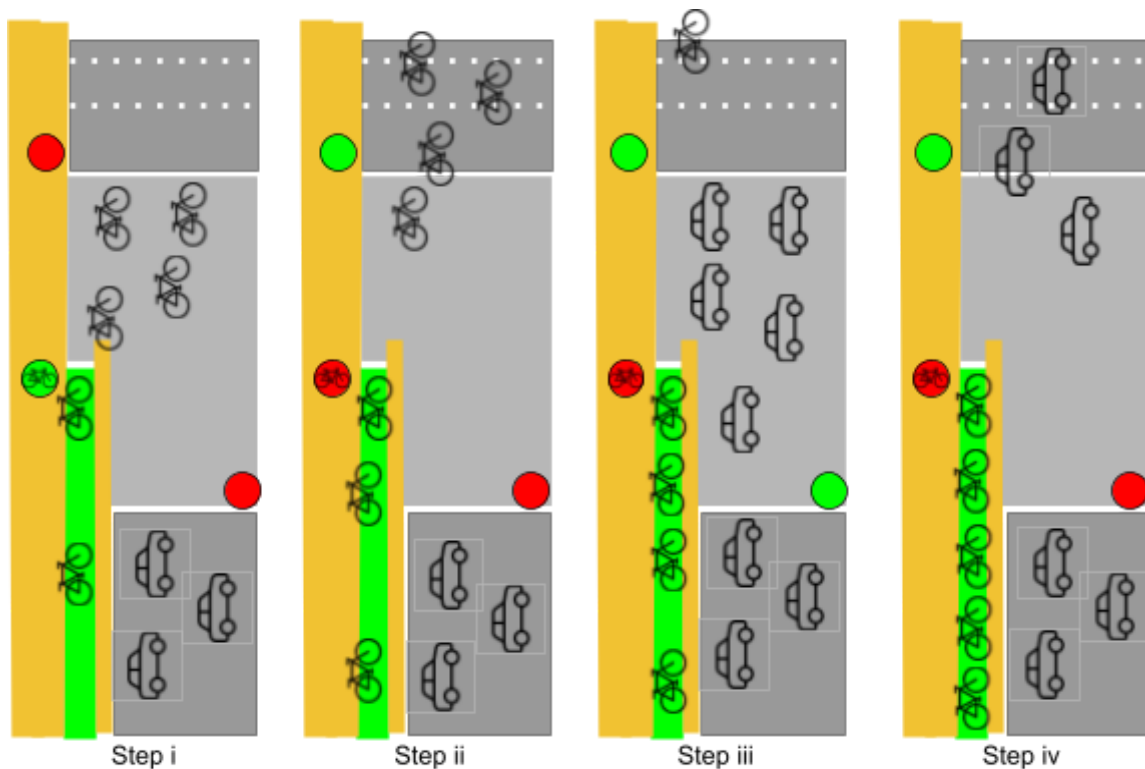
A cautious cyclist on approaching an ASL when the signal is already on green might choose to stop and wait until the next red signal so as to benefit from a head start from the ASL box.



Cycle gate is a design that allows only that behaviour, stopping cyclists further back (at cycle stop line 1 in our diagram), whenever there's a green signal 'ahead'. A cycle gate involves two cycle signals, one of which is always red when the other is green. These are the *steps*:

- i) When the signal 'ahead' turns red, cyclists at cycle stop line 1 move into the *cycle reservoir* which is much deeper than an ASL box (minimum of 18m). Meanwhile, motors have a red signal at the base of the cycle reservoir (at the motor stop line).
- ii) When the signal 'ahead' turns green, cyclists in the reservoir move into the junction, while the cyclists in the cycle lane must stop at cycle stop line 1.
- iii) The motor vehicles get a green at the motor stop line and follow the cycles out into the junction (e.g. 5 secs after step ii).
- iv) The motor vehicles stop and wait at red at their stop line.

See LTN 1/20 Section 10.6 for full details of the signals.



The four steps of a cycle gate

Camden has used a cycle gate on Southampton Row (N) in the new design for the junction of Southampton Row/Theobalds Road which has just been completed ([Google Maps](#)). See the [consultation and drawings](#). Our analysis and JAT assessment of the junction before and after the new design is [here](#). The implementation was expedited after Marta Krawiec, a childrens' doctor cycling on Southampton Row, was killed in a collision with a lorry turning left into Theobalds Road on 4th August 2021.

The cyclist in *Photo 8* is at the front of the reservoir and will get a $25\text{m}^8 + 5 \text{ secs}$ start over the motor vehicles behind and will clear the junction before they catch up. In this case there is a heavy load of left turning vehicles turning left into Theobalds Road and a cycle gate seems very appropriate. Early release is used on Vernon Place and Southampton Row (S) where motor vehicles are not allowed to turn left.

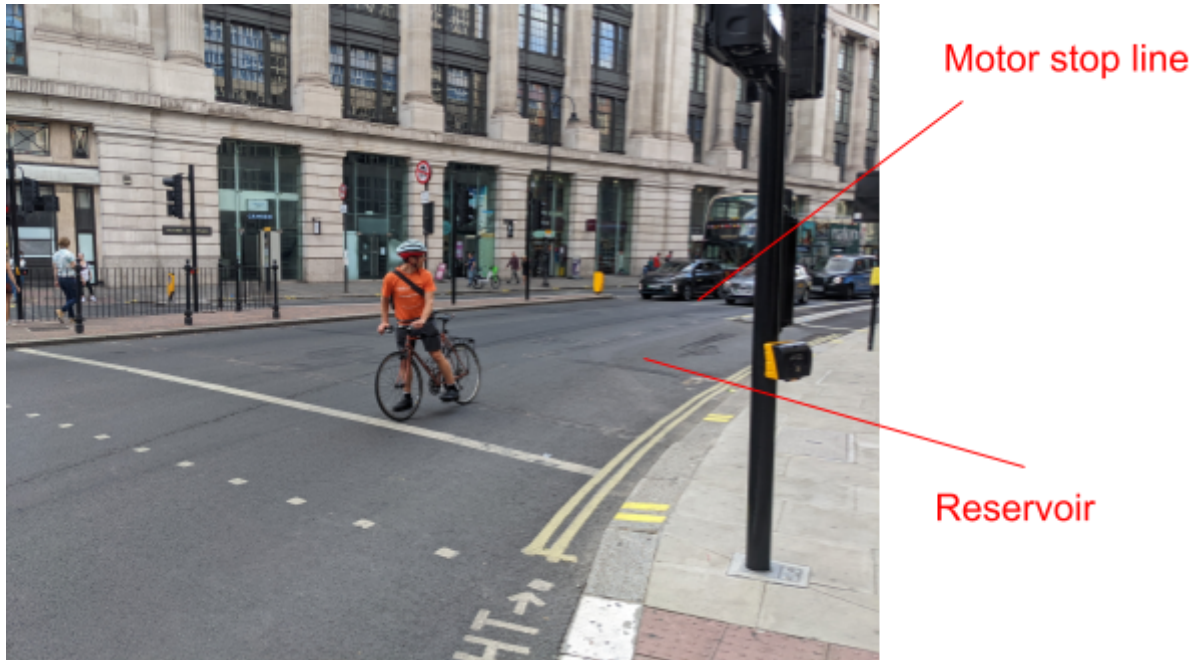


Photo 8. Cycle gate on Southampton Row looking north – step i

Limitations of cycle gates

Red signals: Every cyclist using a cycle gate will have to wait for at least one red signal. For example, anyone arriving at cycle stop line 1 in step ii, iii or iv will have to wait at both stop lines for a total time of up to the length of the round of signals (e.g. 96 secs). But if they arrive at the same stop line in step i when its signal is green, they only have to wait at cycle stop line 2 for up to about half the time for the round of signals.



Junction of Southampton Row/ Theobalds Road/Vernon Pace

⁸ This reservoir is 25 m deep

Two-stage right turns: there should be a cycle early release of about 4 secs from the road on the opposite side of the junction. Is this sufficient time for a cyclist leaving the cycle gate to complete a right turn in a single stage before the opposing motor traffic has moved into the junction (e.g. turn right from Southampton Row (N) into Vernon Place)? This situation is different from when cyclists have a dedicated stage in the signals ([Sections 1.1](#) and [2.1](#)) because there is no intergreen after the early release. Two-stage right areas are provided at the Southampton Row/ Theobalds Road junction.

Can a cycle gate be designed to guarantee a safe single stage right turn? This is an important question if they are to be deployed at nodes in the cycle network where right turns are frequent. Does this depend on the shape and size of the junction?

Conflict with right turning motors opposite: as above, with a cycle early release of about 4 secs from the road on the opposite side of the junction there is a risk that right turning motor vehicles may conflict with the later cyclists emerging from the gate. At the Southampton Row/ Theobalds Road junction only local buses can turn right from Southampton Row (S).

When are cycle gates useful? They are very useful when cyclists need to be protected from a heavy stream of left turning motor traffic as is the case southbound on Southampton Row at the junction with Theobalds Road but there is not judged to be enough signal time to provide a dedicated cycle stage.

2.5. Hold the left (LCC-DJR page 22)

In this example we show how the [original 'hold the left' design](#) was applied at the junction of Pancras Road / Midland Road where the C6 route meets the cycle route along Goodsway⁹; with some modifications to suit local conditions. The design developed by Camden in 2015-16 took into account:

- Midland Road is one way southbound for motor traffic
- the width of the cycle lanes approaching on any arm of the junction:
 - The only arm with room for 2 lanes is northbound on Midland Road (see photo 8) allowing straight ahead and right turns to be separated and potentially have separate signals.
 - In the southbound lane (Pancras Road), when cycles get green they can go ahead and turn left; and in the westbound lane (Goodsway), when cycles get green they can turn left or right.

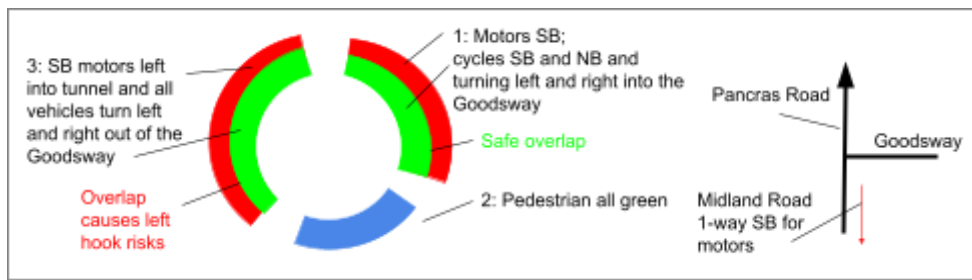


Photo 8. Northbound approach on Midland Road

Camden made the following modifications to [the original scheme](#):

- pedestrians were given an all-green stage in the signals
- The left and right turns were merged into a single stage in which
 - Motor vehicles southbound on Pancras Road turn left
 - Motor vehicles and cycles on Goodsway turn left and right.

⁹ To avoid confusion, we call the eastbound arm Goodsway although that name only applies further east



The three stages for the T-junction at Pancras Road - Midland Road (as built)



In Stage 1, the risk of left hook collisions for southbound cycles is eliminated by 'holding the left turn'. This allows the same green time for cycles as for southbound motors (about 15 secs), more than would be allowed at most dedicated signal stages. Southbound cycles can also turn left in Stage 1. Northbound cycles on Midland Road (photo 8) can go straight ahead or turn right from the waiting area, completing the right turn during the following intergreen.

Photo 9: Stage 1 – left turning motors have a red signal while cycles go straight

The signal for northbound cycles (photo 8) was originally designed to allow straight ahead except during the pedestrian all green stage while right turning cycles were only allowed to go in Stage 1. But there wasn't room to provide protection on the straight ahead cycle lane and it was deemed unsafe to allow them to use it while vehicles were turning right out of Goodsway.

Photo 8 shows a bag over the extra signal head. The covered signal head showed a green filter arrow allowing cycles to go ahead. It is interesting that as there are no northbound motor vehicles, the cycles can use motor signals including filters.

Goodsway has protected cycle lanes; and the westbound lane has an ASL box but no early release.

In Stage 3,

- southbound motor vehicles turn left into Goodsway (see Photo 10)
- All vehicles exiting Goodsway (motor vehicles and cycles) turn left or right out of Goodsway, causing a **critical failure** because right turning cycles are at risk of left hook from left turning motor vehicles.



Photo 10: Stage 3 – motor vehicles turn left and cycles wait

Camden officers did an enormous amount of work at the time including ideas such as a cycle filter but they were unable to find a solution. Cyclists' early release would make little difference. But we now think that a right filter for motor vehicles might help: the cyclists would turn left and right out of Goodsway while the left turning motor vehicles are held.

Here is our [JAT assessment](#) In which the red arrow indicates a *critical failure*.

2.6. A junction with dedicated cycle signals on all four arms

This is the junction where the C50 cycle route intersects the cycle route on St Pancras Way (which is one way southbound for motors with a cycle contraflow south of Agar Grove). [Google Maps](#).



This junction was redesigned and implemented as part of the C50 cycle route improvements completed in summer 2022 – [see our report](#).

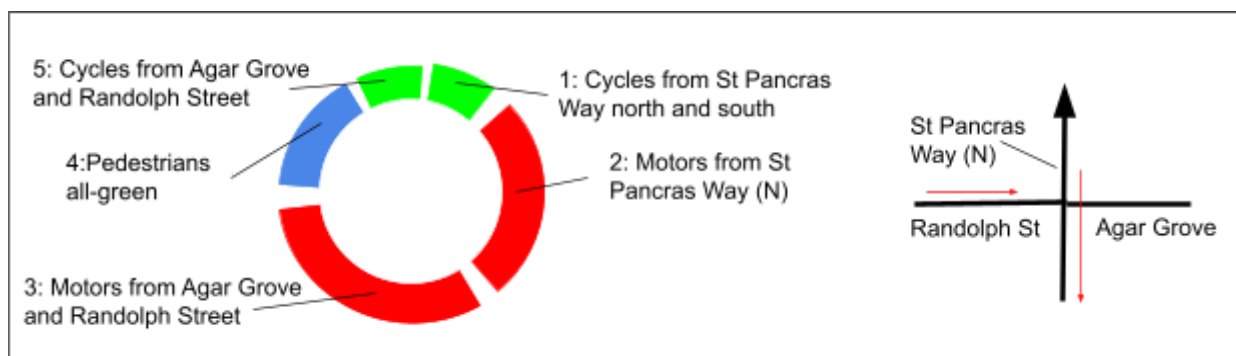
Three of the arms are one-way for motor vehicles, which reduces the number of possible turns e.g. motor traffic from Agar Grove can only turn left.

There is a signal-controlled pedestrian crossing over St Pancras Way (NW) whenever the traffic on St Pancras Way (NW) has a red signal; and another over Randolph Street whenever the motor traffic on St Pancras Way (NW) has a green signal.

With these free (not requiring a separate signal stage) pedestrian crossings which generally give more than the standard green time of about 15 secs it appears that the all green stage is seldom called.



Photo 11: Randolph Road at St Pancras Way



The signal stages at the St Pancras Way/Agar Grove Randolph Street junction

See our [JAT assessment of this junction](#).

Further examples

Example 1

A second example of the use of a dedicated signal stage for cycles on a 'crossing' is where the C6 cycle route on Royal College Street crosses Camden Road. [Google maps](#).



Photo 12: SB approach to Camden Road



Photo 13: NB approach to Camden Road

Royal College Street is one way northbound for motor vehicles and has with-flow and contraflow protected cycle lanes. *Photo 12* shows the southbound approach where cyclists have their own signals – the motor traffic faces the other way and needs no signals. *Photo 13* shows the northbound approach with a stepped track leading right up to the stop line. The signal for the motor vehicles is on an island to the right.

Camden Road is a Red Route (TfL) and the pedestrians aren't offered an all-green signal stage but are 'fitted in'. I.e. they cross straight over Camden Road in the same signal stage as the cycles who get 14 secs – much more than usual. The crossing to the left of *Photo 12* is set back from the junction; but the one on the left of *photo 13* is close to the junction, hence southbound cycles can't legally turn right (photo) while northbound cycles can't legally turn left (except from the main traffic lane).

Example 2

A 'historic' example of a dedicated cycle signal is at the junction of [Royal College Street and Crowndale Road](#). It was installed long before low level signals were available and still functions well without them.



Photo 14 shows the southbound approach and as Royal College Street is one way northbound for motor vehicles these signals are seen only by cyclists.

The northbound approach from Goldington Crescent is through a 'road closure' and the only users are cyclists.

Of course, it would be good to have some LLS but they are not essential. Note that there is a repeater signal opposite (*Photo 14*) for cyclists who are waiting for the green.

Photo 14: RCS southbound at Crowndale Road

Example 3

When we must aim higher – by trying harder to get dedicated cycle signals on all arms at a node

In [Section 2.3](#) we presented the design for the junction at Sidmouth Street/Gray's Inn Road/Ampton Street in which east-west cycles on C6 have dedicated signal stages while north-south cycles have early release. With early release on a busy road, cyclists arriving while the signal is green will need to use two-stage right turns to be safe. This requires waiting until the next signal stage, which is a waste of time and is often ignored. In addition at this junction there is also a mild risk of left hook for northbound cycles.

Camden and Islington Councils share an ambition to join the cycle routes on York Way and Gray's Inn Road with a safe crossing over Euston Road. Once this is done, Gray's Inn Road will be supporting a larger number of cyclists of all types. This junction will be a major interchange with the C6 cycle route and will involve many right turns, making it essential that dedicated cycle stages be provided on Gray's Inn Road as well as Sidmouth Street–Ampton Street. This may require limiting options for motor traffic such as banning the right turn into Sidmouth Street or closing Sidmouth Street to through motor traffic.

Example 4

Hold the left. The original scheme was designed to introduce parallelism between the movements of pedestrians, cycles and motor vehicles. i.e. in stage 1, all modes go N-S and S-N ; in stage 2 N-S all modes turn left while E-W all modes turn right etc.



Photo from the Evening Standard on 6th November 2013

As can be seen in the photo of Stage 1:

- a large number of lanes and kerbs and signals are required.
- therefore this could only work in the context of a junction involving wide roads.
- It was unclear how cycles turn left - are they trusted not to run into pedestrians?
- cycle right turns are done in two stages.

This scheme didn't face up to the fact that left turning cycles would be in conflict with pedestrians crossing the side road. The idea of pedestrians crossing in parallel with motor vehicles and cycles has been rejected in all of the schemes that we have seen. Although pedestrians would have a longer time to cross if running in parallel with vehicles, it seems that they prefer the all-green because no vehicles are moving across the junction at the same time.

LTN 1/20 Section 10.6.25 and Figure 10.27 discuss a simpler version with *hold the left* which is applied to one of the roads across the junction (like our *crossings*) with protected one-way cycle lanes on both sides of the road. They state that:

- When cyclists get a green signal, both the *left turn and also any opposing right turn* – are held on a red signal.
- Cyclists have to do their right turns in two-stages.
- Pedestrians are provided with an all green stage.

LTN 1/20 Figure 10.27 is ambiguous: the plan shows lanes for left turning and ahead motor vehicles but the accompanying signal stages show cycles going straight ahead while opposing motor traffic is turning right (the opposing right turns are not being held!).

LCC-DRG, *Hold the left*, page 22 gives an assessment based on earlier versions of this scheme, not acknowledging the potential of this method, particularly as deployed by TfL on C6.

Variations on the hold the left idea have been used in two of our examples, in [Section 1.2](#) we described TfL's scheme for two-way cycle tracks on a *crossing* and in [Section 2.5](#), we describe Camden's scheme for a T-junction at a *node* in the cycle network. At T-junctions, the scheme is simpler as there are only two possible turns from each arm and cycles can turn right in a single stage.

Example 5

Cycle bypass at T-junctions. Ideally, cyclists going straight ahead on the road opposite the side arm of T-junction should not need to stop except when pedestrians are crossing. This has been achieved at a 'Crossing' junction where the *York Way* cycle route passes *Freight Lane*. [Google Maps](#).

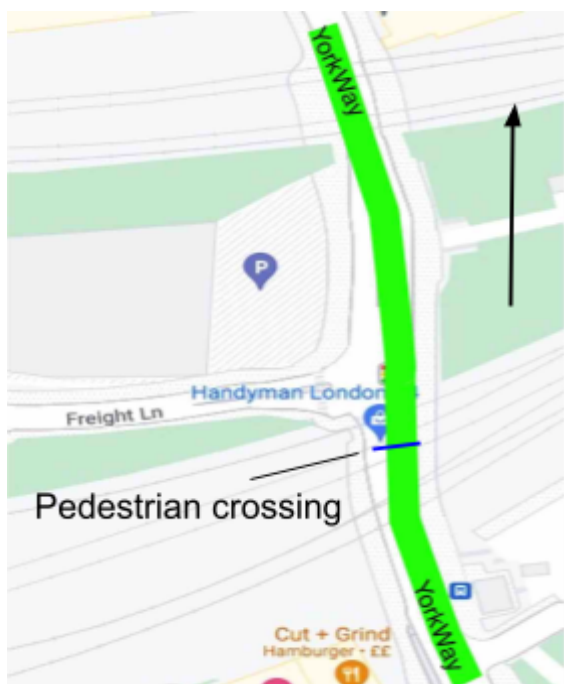


Photo 15. York Way southbound passes Freight Lane

As is shown in Photo 15, cycles opposite the side road (southbound cycles in this case) are provided with two separate approach lanes:

- A protected straight-on lane which bypasses the signals at the side road and has a second signal further ahead by the pedestrian crossing.
- The right-turn-lane which goes to an ASL with early release for the occasional cyclist that might want to enter Freight Lane which is a no through road that loops past a variety of depots including a concrete plant (see the cement mixer lorry in Photo 15)

When a cycle route goes straight on at a T-junction (or turns left at any sort of junction), allowing cycles to bypass the traffic signals, stopping only when they will conflict with pedestrians is always going to be beneficial to cyclists although it is not a safety issue.