Annex D

Option 1: Reinstating a Left Turn Lane without a Cycle Lane

1. ***General Description:*** This option (see **Annex B**) restores the original traffic lane layout, but also retains the cycle track build-out, which addresses the problems cyclists used to face at the pinch-point. The proposal includes a short length of advisory cycle lane beyond the end of the cycle track ramp to give cyclists a degree of protection as they rejoin the carriageway (for at least ten metres beyond the cycle track ramp). **Annex B** also shows the lane widths that are achievable, although both the left turn and right turn lanes approaching the junction would be sub-standard, which would create queues of tightly packed traffic and specific difficulties in accommodating larger vehicles that would be likely to encroach into other traffic lanes.

2. In the original layout, before the changes were implemented, that the left turn lane was only marked out on the carriageway surface for a distance of approximately 22 metres from the advance stop line, although traffic was sometimes able to queue in two lanes as far back as the pinch-point and perhaps on occasion slightly beyond. However, although the road markings would replicate the original layout, this option would also result in a shorter distance being available for left turners than was available previously (given the presence of the cycle track build-out), but as discussed below, would still produce reasonable benefits for traffic flow.

3. ***Advantages:***

- The main advantage of this proposal is that the traffic capacity of the junction would be increased. Between 3 and 4 vehicles would be able to make use of the filter each change of the lights with an additional 2 during the full green. This option restores approximately 55% of the capacity of the left turn filter lane. It would take on average 7 minutes to clear the lights from a vehicle joining the back of the queue on Clifton Bridge, and 5.4 minutes from Westminster Road.

- This layout would still enable cyclists to get reasonably close to the junction via the off-road facilities, and would be protected from traffic at the pinch-point, which was a particular problem for cyclists in the original layout (shown in **Annex A**).

- Because there would be no work required to remove the cycle track build-out, the risk of any damage to the existing water main (which was fractured during the construction of the current scheme and resulted in significant local flooding) would be significantly reduced.

- The short central cycle feeder lane in the original layout served very little practical purpose, as mentioned in paragraph 3 above, and could therefore be omitted. This would allow the traffic lanes to be widened slightly, closer to the junction.

- Retaining the splitter island would provide a benefit to pedestrians crossing the Water End junction mouth for accessing Clifton Green (where there is a gap in the boundary fencing). The splitter island also provides protection for cyclists waiting in the ASL box from vehicles turning right into Water End from Shipton Road.

4. ***Disadvantages:***

After rejoining the carriageway, cyclists would face difficulties and safety issues in moving forward from the build-out to access the ASL. These difficulties would vary depending upon the status of the signals ahead, as discussed below:

- **Whilst the signals are at full red**, traffic queues will be building up or will have already built up. Under these circumstances, cyclists could be blocked by traffic queuing in the left turn lane, or face danger from vehicles moving across their path to reach the left turn lane. In addition, if two traffic lanes have formed beyond any rejoining cyclists, then reaching the ASL would be difficult, either on the nearside of vehicles in the left turn lane, or through the middle of the two lanes of queuing traffic.

- **When the left turn filter is on** cyclists would be able to follow any clearing vehicles in the left turn lane, and either turn left with the traffic, or enter the ASL before the right turn lane gets a green signal. However, the left turn filter signal would only be on for approximately 15 seconds before the full green signal for Water End, which means that any benefits under this circumstance are infrequent and short lived.

- **When there is a full green signal** traffic will be flowing in the right turn lane with some traffic peeling off to enter the left turn lane. During this phase, cyclists rejoining the carriageway would need to avoid any vehicles that may want to turn across them to access the left turn lane, with the potential for dangerous vehicle conflicts. The majority of cyclists would also be attempting to seek a suitable gap in the traffic flow to move across into the right turn lane. This situation is considered to be the most difficult and hazardous for cyclists.

- The limited length of the left turn lane means that the entry to the lane is quite quickly blocked, so that the utilisation of the filter arrow is quite low at only 3 or 4 vehicles for each change of the lights. When the left filter comes on, these vehicles will clear in around 6 to 8 seconds, but there will be other drivers in the main traffic queue wanting to turn left who will see the left filter signal showing, but will be unable to progress forward to use it. This is likely to lead to some frustration and negative reaction to the layout. The Water End approach still has significantly less capacity than pre-scheme. It would require an additional 10 to 15 seconds of extra green time to restore this. Whilst indications are that some of this green is available in off-peak periods, it is not available during the peaks without causing severe adverse effect on other legs of the junction.

5. ***Estimated Costs:*** The costs involved in making the amendments to provide this layout would be relatively low, probably somewhere in the region of £10 to £12k. This includes all of the road marking changes and alterations required to amend the traffic signal equipment, but mainly to plane out the existing advisory cycle lane and reinstate a patch to restore the carriageway surface. Also, because no changes would be required in relation to the cycle track build-out, the risk of damaging the water main would be reduced.

6. The notes associated with the plan in **Annex B** also highlight possible enhancements that could be made to this layout, which would gain a small amount of extra carriageway width. By removing the cobbles and trimming back the hedge, an additional metre could be distributed between the two traffic lanes. This would provide wider traffic lanes that could accommodate larger vehicles more comfortably, and reduce the potential for conflicts between cyclists and other traffic. However, there would also be some drawbacks associated with these enhancements, which are listed below:

    - Traffic in the left turn lane would be positioned much closer to pedestrians on a narrow footway (the cobbles currently provide a buffer strip between pedestrians and cyclists using the cycle lane);

    - Future hedge growth would encroach into the footway area, resulting in even less width for pedestrians;

    - If trimmed back too severely, there is a risk that the hedge could die and would need replacing.

    - The aforementioned enhancements would increase the cost of the scheme to around £30,000.