



TECHNICAL NOTE 1

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|-----------------|---|-------------------------|------------|
| DATE: | 20 May 2021 | CONFIDENTIALITY: | Restricted |
| SUBJECT: | A14 NMU Routes BN18 and BN22 Safety Reviews | | |
| PROJECT: | A14 NMU Bridges | AUTHOR: | [REDACTED] |
| CHECKED: | [REDACTED] | APPROVED: | [REDACTED] |

1 INTRODUCTION

1.1 Project Background

WSP have been appointed by Cambridgeshire County Council (CCC) to carry out an independent safety review on chicane barriers installed on the approach ramps of two new NMU bridges over the A14 in Cambridge.

CCC have received objections since installing cycle barriers on the ramp approaches to two of the new NMU bridges over the A14 – one near Swavesey (BN18) and the other at Bar Hill (BN22).

The barriers were installed based on findings from a stage 3 safety audit, which raised concerns that:

- cyclists were at risk of entering the carriageway after travelling down relatively steep approaches to the highway and meeting live traffic if they lost control, and
- there is risk of collisions between cyclists and other NMU users on the ramps themselves due to speeds.

Following the outcome of the RSA, Highways England and CCC collaborated to find the best solution to this safety hazard. The barriers were not part of the original design, which instead included installation of removable bollards to prevent non-authorized vehicular access.

Since installation of these barriers (in a chicane arrangement), CCC have received complaints from local cycle groups and cycle enthusiasts on the basis that their presence is contrary to the advice in LTN (Local Transport Note) 1/20.

1.2 Document Purpose

This document provides a safety review of the barriers installed on the approach ramps of the Swavesey and Bar Hill NMU bridges, how they interact with the adjoining road systems, and the risks to NMU users using them.

1.3 Document Scope

This document is intended to be an independent safety review based on the information available and does not constitute a formal Road Safety Audit in accordance with GG119. Only safety issues relating to the provision of the chicane barriers on the two NMU bridges have been considered in this report.

Drawings / Documents considered as part of this review:

| Document Reference | Document Title |
|--|--|
| HA528983-ACJV-HGN-S4_IRSA3-RP-C-0003 | IRSA3 Swavesey and LAR Link (Swavesey to Bar Hill Response Report) |
| HA528983-ACJV-HGN-S4_IRSA3-RP-C-0005 - Bar Hill Resp | Interim RSA3 Bar Hill Junction Response Report |
| | BN18 and BN22 Barrier Locations |
| | S4_BICYCLE-230221 Measurement |
| | Tracking |

The site was visited by [REDACTED] and [REDACTED] on Monday the 26th of April 2020 between 10:30 and 12:00 noon. At the time of the site visit, the weather was fine and the road surface was dry. There were a few cyclists and pedestrians observed using the NMU routes at both Swavesey and Bar Hill.

2. OPTIONS ASSESSED

As part of the safety review, 4 options were considered for each of the four sites. These are:

Option 1 – Remove the barriers

Within this option, it may be necessary to provide other mitigation if the risk of collisions with general traffic or with other users of the NMU route is high. There may be other characteristics of the bridges such as gradients and forward visibility that do not comply with the guidance recommended in LTN 1/20 that cannot be mitigated against without the barriers in place.

Option 2 - Remove one of the double barriers

Removing one of the double barriers at each location would remove the chicane and leaving a narrowing. This could allow cyclists to pass at speed while providing a sheltered waiting space for other users to ensure that the cyclist does not hit them at speed. However, this effectively assigns priority to the cyclist over other users and when opposing cyclists are present, the ambiguity may result in collisions. When cyclists are able to pass the barriers un-opposed by other users, this does not mitigate the risk of cyclists approaching the adjoining route at speed.

Option 3- Retain the barriers and increase the gap between them to 2.5 - 3.0m

The tracking information is provided for a 2.3m tandem and a 2.77m cycle with trailer. Although the tracking shows that longer cycles can get through the barrier, the chicane arrangement may preclude some disabled users, cargo bikes and horse riders. Increasing the gap between the barriers may not sufficiently reduce the speed of cyclists to mitigate the risk, particularly if this forms part of a commuter route where regular cyclists will become accustomed to the layout and the movements are tidal.

Option 4 – Retain the barriers

Although the barriers are not advised within LTN 1/20, they have been installed as a safety mitigation against the risk of cyclists gathering speed on the downhill approaches from the NMU bridges to the highway network.

As discussed in option 1, there may be other characteristics of the bridges such as gradients and forward visibility that do not comply with the guidance recommended in LTN/120 and cannot be mitigated against without the barriers in place.

issues with cycle speeds. The ramps tie in perpendicular to the adjoining NMU. This layout would require cyclists to make an awkward turning manoeuvre and if cyclists did this at speed, it could result in cyclists entering the carriageway or colliding with pedestrians or other cyclists using the adjoining route. The risk of collisions with other cyclist/pedestrians or vehicles at this location is high.

Recommendation:

At this location, it is recommended that the chicane barrier is retained. The chicane barriers are spaced approximately 1.78m from each other and this may preclude other disabled users or cargo cycles. It is unclear from the information provided what proportion of bigger cycles will access this barrier. If the proportion is high, then consideration should be given to increasing the gap between the barriers to accommodate these users. It should be noted however that increasing the gap between the barriers may not sufficiently reduce the speed of cyclists to mitigate the risk, particularly if this forms part of a commuter route where regular cyclists will become accustomed to the layout and the movements are tidal.

3.2 Site 2 – Swavesey South

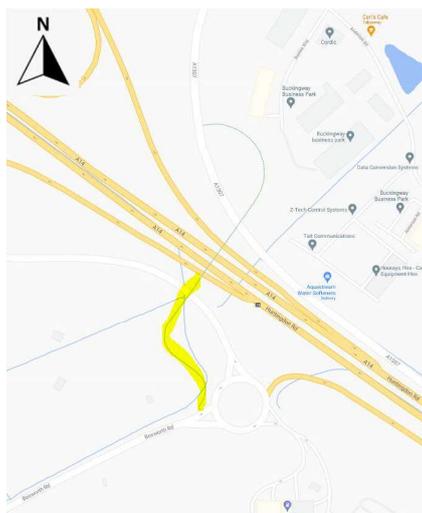


Figure 6- Swavesey South Location Plan

On the Swavesey south route, the gradients are more gentle and the route leads to an uncontrolled crossing via a 90-degree bend. At the tie in to Boxworth Road, there are wayfinding signs for pedestrians, cyclists and horse riders, but the shared signs leading to the NMU bridge is only signed for pedestrians and cyclists. It is therefore unclear whether horse riders are expected to use the bridge.



Figure 7- View looking towards uncontrolled crossing



Figure 8 – Signage on Boxworth Road.

Cyclists descending the ramp at Swavesey south have good visibility to approaching cyclists/ pedestrians and will be slowing down to the crossing due to the 90-degree bend. The risk of collision with other pedestrians/cyclists and vehicles at this location is low.

Recommendation:

It is recommended that the chicane barrier arrangement at this location is removed. It is also recommended that a form of vehicle access control is provided to prevent unauthorised vehicles from accessing the NMU route.

3.3 Site 3 – Bar Hill North

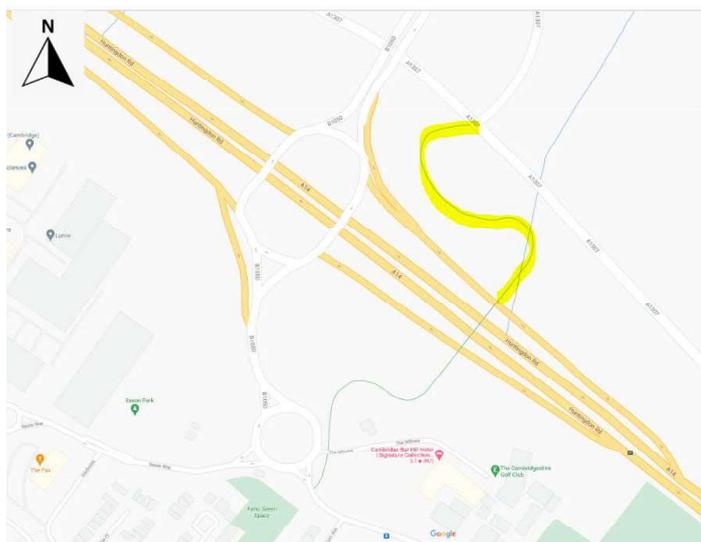


Figure 9 – Bar Hill North Location Plan

The NMU route over the A14 at its northern end joins the existing road (A1307) parallel to the A14 via a controlled crossing.



Figure 10 – View looking at controlled crossing



Figure 11 - View of forward visibility along route

The slope on the northern approach ramp is gentle and unlikely to encourage higher cyclist speeds. The visibility to other approaching cyclists/ pedestrians is generally good. There is a wide verge serving as a buffer zone between the NMU route and the carriageway. The risk of speed and collisions with other pedestrians/cyclists or vehicles at this location is low.

Recommendation:

It is recommended that the chicane barrier arrangement at this location is removed. It is also recommended that a form of vehicle access control is provided to prevent unauthorised vehicles from accessing the NMU route.

3.3 Site 4 – Bar Hill South

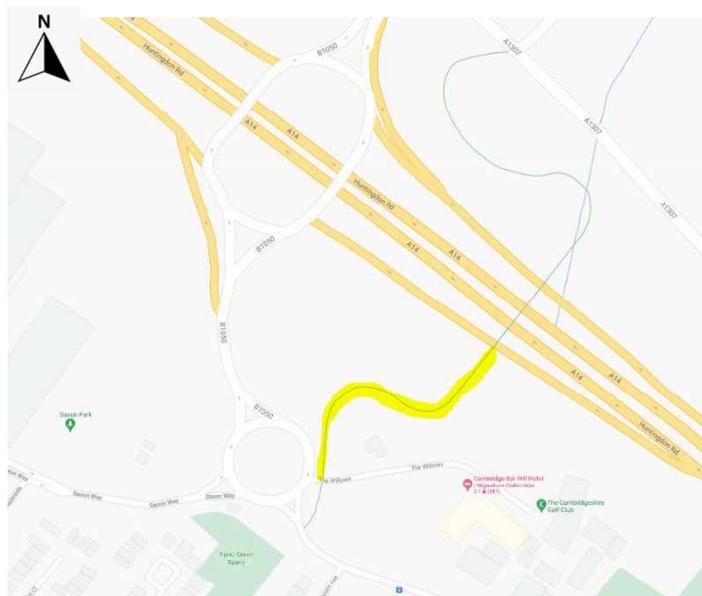


Figure 12 – Bar Hill South Location Plan

South of the NMU bridge, the alignment of the route follows a series of horizontal curves and gradients along this section appear to be steep (LTN 1/20 recommends a desirable maximum length of 30m for a 5% gradient). The edge of the NMU route is protected by a high fence infilled with mesh. Visibility along this section of the route is restricted by the horizontal curvature and fence. There is no visibility to other approaching cyclists/pedestrians or horse riders and there is an increased of conflict between cyclists and pedestrians/other cyclists and horse riders. Any conflicts between cyclists/pedestrians/horse riders is likely to occur within this section.



Figure 9: View of obstructed visibility



Figure 10: View of obstructed visibility

Visibility as the route approaches the Willows is generally good although it is partially obstructed by a large sign and overgrown vegetation in the northern verge of The Willows.



Figure 11 – View from route looking towards The Willows.

At the location of the southern barrier, cyclists will generally have good forward visibility to traffic however visibility to vehicles exiting The Willows is obstructed by the hotel sign and overgrown vegetation. Risk of collision with vehicles or other cyclists/pedestrians is low.

Recommendation:

It is recommended that:

- The chicane barrier arrangement is removed.
- A form of vehicle access control is provided to prevent unauthorised vehicles from accessing the NMU route.
- The hotel sign in the northern verge of The Willows is set further back and overgrown vegetation cut back to improve visibility to vehicles exiting The Cambridge Bar Hotel.
- Cycle logos are installed on the outside of the bend on the downward grade where visibility is poor to encourage cyclists to keep to the edge of the NMU route thereby minimising conflict with other users.