

N2 Rath Roundabout to Kilmoon Cross

Road Safety Audit

Stage F - Part 2

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Quality information

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Prepared for:

MEATH COUNTY COUNCIL



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1 Project Details

1.1 Project Details

Report Title:	N2 Rath Roundabout to Kilmoon Cross, Stage F Road Safety Audit
Date:	15/12/2021
Document Reference and Revision:	60602546-ACM-HGN-SW_Z_Z_Z-HS-CH-0003
Prepared By:	AECOM
On Behalf Of:	Meath County Council

2 Introduction

This report is the Stage F Part 2 Road Safety Audit report undertaken on the proposed N2 Rath Roundabout to Kilmoon Cross scheme. This Part 2 audit is an assessment of the Preferred option from a road safety point of view. It is undertaken at the Phase 2 Options Selection stage in accordance with the requirement of TII GE-STY-01024 December 2017.

The Road Safety Audit Team which are independent of the design team, was as follows:

Team Leader: R Lyons BEng (Hons) CEng, MIEI, MSoRSA
Principal Engineer, AECOM
(Certificate of Competency in Road Safety Audit)

Team Member: Brian McMahon BE MSc CEng MIEI
Associate Director, AECOM
(Certificate of Competence in Road Safety Audit)

This Safety Audit represents the response of an independent Audit Team to various aspects of the scheme. The recommendations contained therein are the opinions of the Audit Team and are intended as a guide to the designers on how the scheme as designed can be improved to address issues of road safety.

The terms of reference of the Road Safety Audit are as described in TII GE-STY-01024 December 2017. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

3 Scheme Description and Received Information

3.1 Received Information

Drawings of the emerging preferred option which were received for the audit are listed in Appendix A.

3.2 Scheme Details

The N2 between the Rath Roundabout, north of Ashbourne, and Kilmoon Cross, is a 5.5km stretch of single carriageway subject to a 100kph speed limit with hard shoulders of varying width. The proposed road scheme is located immediately north of Ashbourne, County Meath and forms part of the N2 National Primary route which links Dublin to Derry.

The scheme proposes a new link, starting from near the existing Rath Roundabout where the M2 Motorway currently terminates, to an end point in the vicinity of the existing Kilmoon Cross priority junction, at the intersection with the R152 Regional Road. It should be noted that the junction strategy for the scheme has not been confirmed as the final design solution and will be subject to further design refinement and optioneering at Phase 3.

The option selected follows the existing N2 from Rath Roundabout, then diverts westwards before crossing eastwards to tie back into the existing N2 alignment in the vicinity of Kilmoon Cross. The junction in the vicinity of the Rath Roundabout is proposed to facilitate M2 traffic onto the local network including the L50161, R135 and the existing N2. The proposed junction to the north of the scheme connects with the N2 and the R152 which facilitates connection with the local road network in this area. It should be noted that the side road strategy has not been confirmed as the final design solution and will be subject to further design refinement and optioneering at Phase 3.

3.3 Traffic Flow Information

The section of the N2 between the Rath roundabout to Kilmoon Cross is a single carriageway which is currently above capacity during peak periods on this corridor with circa 16,226 annual average daily traffic (AADT) in 2019 on the section between the R155 (Primatestown junction) and the Rath roundabout, with maximum daily flow reaching 19,970 in June 2019 (TII Traffic monitoring unit TMU 1023). Approximately 8% of this traffic is classified as Heavy Goods Vehicles.

3.4 Collision Information

Collision Data from 2005 to 2016 obtained from the Road Safety Authority's (RSA) collision database was provided to the Audit Team by the scheme Designer. This data indicates that there have been 52 collisions along the N2 between the years 2005 – 2016, three of which were fatalities which all occurred during the period 2001 to 2011.

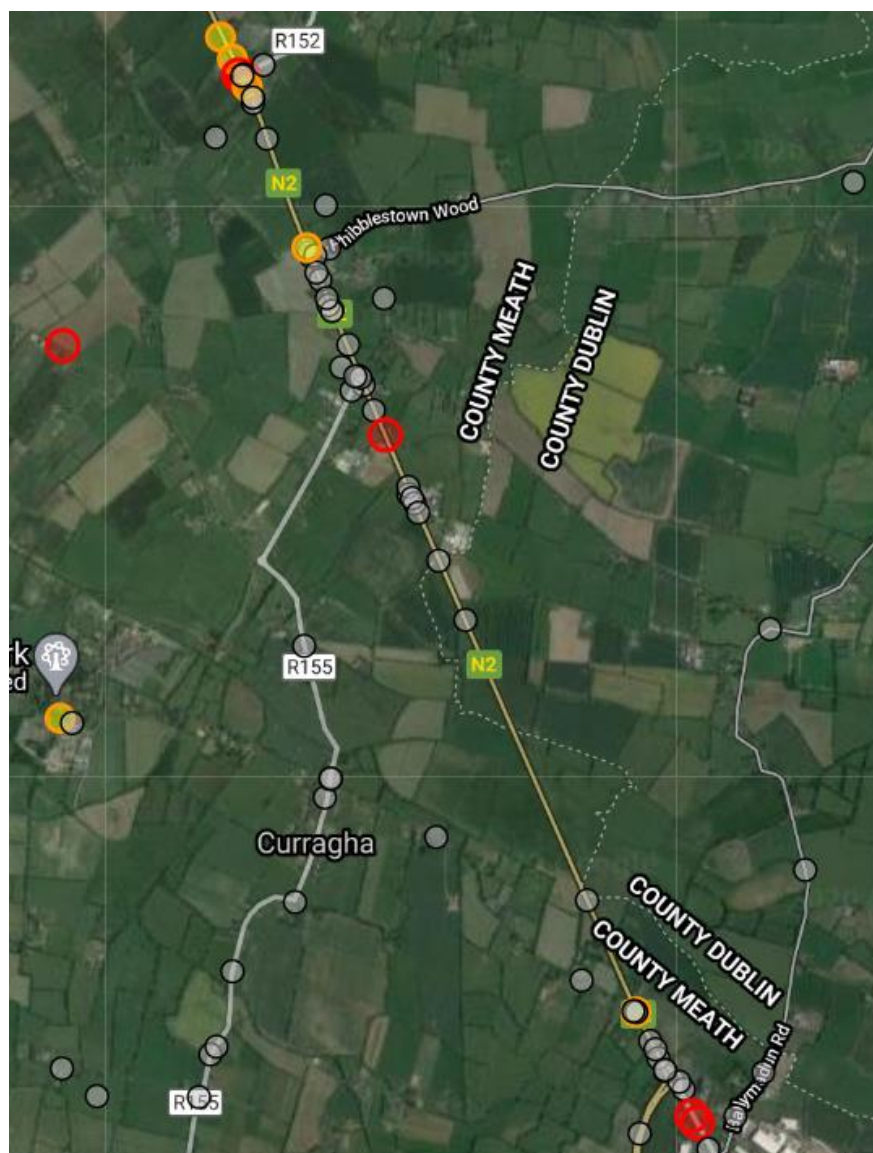


Figure 1 - Locations of Collisions 2005-2016 (RSA)

Collision data analysis showed that there are 6 collision hotspots of 4-8 collisions within 0.5km radius on the section of the N2 under consideration.

These collision hotspots shown in Figure 5 are at:

- Rath Roundabout – A concentration of 5 Minor collisions have occurred on the approach to the Rath Roundabout travelling southeast on the N2, (2 no. of which were rear-end shunt collisions, 2 no. were single vehicle and 1 no. involved a motorcycle);
- L50161 – A concentration of between 4 collisions have occurred at the junction of the local road L50161 and the N2, 1 no. Serious and 3 no. Minor collisions, (3 no. of which involved turning manoeuvres);
- Petrol Station – A concentration of 6 Minor collisions have occurred in the vicinity of the petrol station located on the eastern side of the N2, south of the Primatestown (R155) junction, (2 no. of which were rear-end shunt collisions, 2 no. were single vehicle and 1 no. involved a motorcycle);

- Primatestown R155 – A concentration of 6 Minor collisions have occurred on the approach to the R155 Primatestown junction on the N2. The majority of collisions appear to involve rear-end straight collisions, 5 of the 6, on the N2 approaches to the Traffic Lights, particularly the northbound approach;
- L5007 – There is another small cluster of 6 no. Minor collisions at and to the south of the L5007/N2 junction. Many of which were a result of rear-end collisions and 1 no. being a head-on collision.
- Cushinstown (R152) – The largest proportion of collisions occurred at the junction with the R152. 2 no. Fatal collisions occurred at this junction in 2007 and 2008. One of the collisions was a rear-end and the other was classified as undefined. There was a total of 9 no. casualties resulting from these 2 no. collisions, ranging in fatal, serious and minor. 3 no. Serious collisions also occurred at/near this junction in 2005 and 2008, resulting in 3 no. serious and 1 no. minor casualties. 8 no. Minor collisions occurred with 2 no. head-on, 1 no. rear-end collision and 1 no. angled right-turn. The others were classified as 'other'.

3.5 Site Inspection

The audit team visited the site in January and May 2020. The weather conditions during the visits were variable, ranging from dry with clear sky to light showers. Traffic was generally free flowing with minor queuing at the Primatestown signalised junction and on the southbound approach to the Rath Roundabout.

The report indicates each of the problems identified together with recommendations to solve or mitigate the problems, the Audit Team Statement and a schedule of documents reviewed.

Any recommendations included within this report should not be regarded as being prescriptive design solutions to the problems raised. They are intended only to indicate a proportionate and viable means of eliminating or mitigating the identified problem, in accordance with GE-STY-01024, and in no way imply that a formal design process has been undertaken. There may be alternative methods of addressing a problem which would be equally acceptable in achieving the desired elimination or mitigation and these should be considered when responding to this report.

Where applicable, the locations of problems are shown in conjunction with the scheme proposals in Appendix B where the reference numbers relate to the problems identified in this report.

4 Items Raised at the previous Stage F Part 1 Road Safety Audit

A Stage F Part 1 Road Safety Audit was carried out by AECOM in October 2020.

The RSA team determined that the following previously noted problem is still relevant to the current scheme from the Stage F Part 1 Road Safety Audit, report reference: P060602546-ACM-HGN-SW_Z_Z_Z-HS-CH-0002. For ease of reference to this audit, the problem number is retained below.

Problem 4.1.2 Approach Speeds at New Kilmoon Cross Roundabout

All four of the proposed Route Options terminate at the northern end of the scheme at Kilmoon Cross at a new 4-arm roundabout, which will connect with the proposed N2 realignment with the existing N2 north, the R152 and the L5008/L5038.

The collision data shows that the largest proportion of collisions occurred at the junction with the R152. Two fatal collisions occurred at this junction in 2007 and 2008. One of the collisions was a rear-end and the other was classified as undefined. The collision data also showed a concentration of 5 Minor collisions on the southbound approach to the Rath Roundabout on the N2, (2 no. were single vehicle collisions).

Rear end shunt and single vehicle loss of control collisions indicates that there are excessive speeds in the vicinity on the approach to the existing Rath roundabout.

Hazard

With an improved road alignment and surfacing, high approach speeds to the proposed roundabout at Kilmoon Cross may be developed, which can lead to sudden braking leading to rear end shunt collisions on the approach to the yield line, vehicles overshooting the yield line at the roundabout resulting in side impact collisions on the circulatory or loss of control incidents.

Problem 4.1.3 Congestion at New Kilmoon Cross Roundabout

All four of the proposed Route Options terminate at a new 4-arm roundabout at the northern end of the scheme on the existing N2 at Kilmoon Cross.

Collision data at the Rath roundabout showed a concentration of minor collisions on the southbound approach to the roundabout. Congestion on the approach to a roundabout can lead to rear end shunt collisions as a result of excessive speeds and vehicle driver inattention.

Hazard

The proposed road improvements on the approach to the proposed northern roundabout may encourage high approach speeds and combined with localised queuing and congestion on the approach to the Roundabout can lead to sudden braking resulting in rear end shunt collisions.

All other problems raised at Stage F Part 1 RSA have been addressed or superseded.

5 Items Raised at this Stage F2 Road Safety Audit

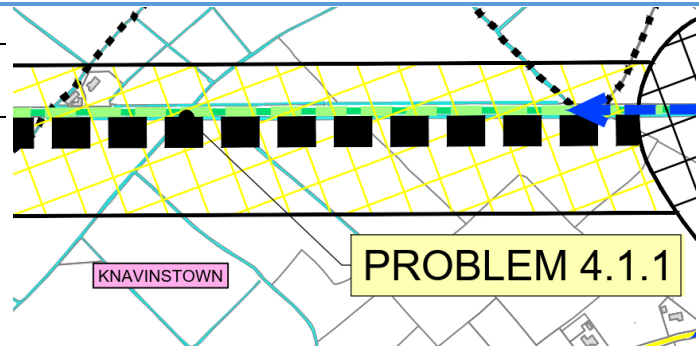
5.1 Local Alignment

Problem: 4.1.1

Location(s): M2 / N2 Main alignment

Drawing(s): 60602546-ACM-HGS-
SW_Z_Z_Z-DR-CH-0201

Summary: Direct see-through line of sight may lead to rear end shunt type collisions.



Description:

It is proposed to provide the motorway adjacent to the old N2 alignment. Drivers, particularly at night may get confused with the old alignment or the glare from headlights may dazzle a driver, which could result in a collision.

Recommendation:

Ensure that there is appropriate screening between the new motorway and the old N2 alignment.

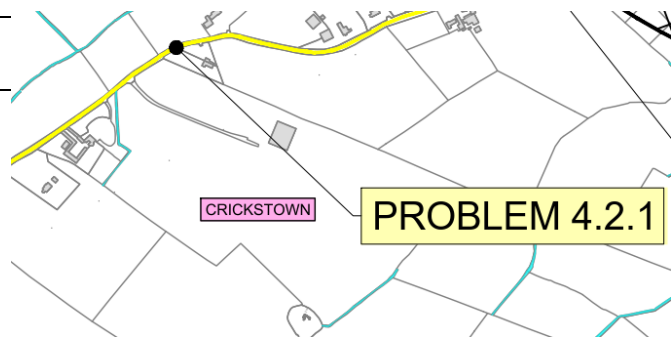
5.2 Junctions

Problem: 4.2.1

Location(s): L50161 Local Road

Drawing(s): 60602546-ACM-HGS-SW_Z_Z_Z-DR-CH-0201

Summary: Limited capacity of Local Road L50161 may lead to side swipe collisions.



Description:

Provision of a new junction from the M2 may encourage tourists from the south travelling to Tayto Park entertainment centre to utilise this junction and the L50161 to access Tayto Park. This may cause an increase in traffic volumes onto the local L50161 road.

In its present form, the local L50161 road is of a lower geometric standard than the R155 and may not have sufficient capacity to safely accommodate the additional volume of traffic from/to the M2 to/from the regional road. This can lead to an over capacity on this local road which may result in side impact, head-on or shunt type collisions along its length.

Recommendation:

Ensure adequate Advanced Directional Signage is provided on the M2 to direct northbound traffic onto the appropriate route to major attractors such as Tayto Park, and/or undertake a review and analysis to determine requirements to upgrade the geometry of the L50161 to accommodate additional traffic volumes.

Problem: 4.2.2

Location(s): L50161 Local Road

Drawing(s): 60602546-ACM-HGS-SW_Z_Z_Z-DR-CH-0201

Summary: Limited forward visibility at junction with R155.



Description:

The L50161 (Old Curragha Road) currently links to the R155 regional road at a priority T-junction. The L50161 is the minor road at this junction. Due to the current vertical and horizontal geometry of the L50161, there is limited forward visibility of the T-junction on the northbound approach to the R155.

An increase in traffic volumes at this approach may further exacerbate the problem with forward visibilities restricted by vehicle volumes. A lack of sufficient forward visibility can lead to sudden braking resulting in loss of control or rear end shunt type collisions on the northbound approach to the T-junction.

Recommendation:

Ensure adequate Advanced Directional Signage is provided on the M2 to direct northbound traffic on the appropriate route to major attractors such as Tayto Park, else undertake a review and analysis to determine requirements to upgrade the geometry of the L50161 to accommodate additional traffic volumes.

Problem: 4.2.3

Location(s): Existing Kilmoon Cross Junction

Drawing(s): 60602546-ACM-HGS-SW_Z_Z_Z-
DR-CH-0201

Summary: Existing safety issues at the junction including a diverge taper



Description:

This junction has a high number of collisions recorded over a 12-year period. The existing junction has a left diverge lane, which is located behind the minor arm's STOP line. A vehicle exiting left from the main road carriageway in the diverge lane will impede the visibility of a motorists turning out from the minor arm. If a motorist's visibility is impeded, they may enter the main road carriageway without seeing the vehicle which is travelling straight through, resulting in a collision.

Recommendation:

The nearside diverge taper should be removed, as per current design standards.

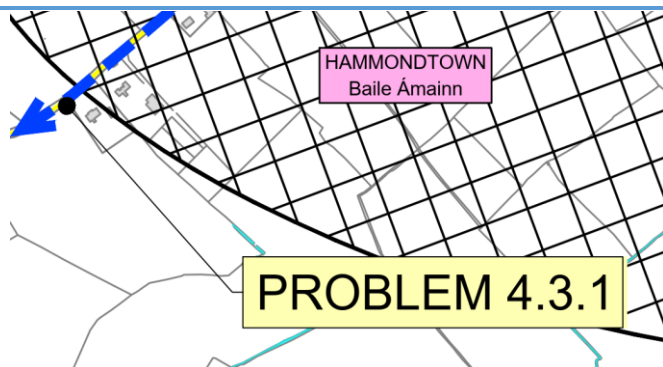
5.3 Non-Motorised Users (NMU)

Problem: 4.3.1

Location(s): N2 & L50161 Local Road

Drawing(s): 60602546-ACM-HGS-SW_Z_Z_Z-DR-CH-0201

Summary: Limited linkage for NMU users.



Description:

The provision of the new section of M2 may dissect the current direct linkage from R135 (Ashbourne) to the local road L50161 (Old Curragha Road) for non-motorised users, i.e. cyclists or pedestrians. This class of road users from the western side of the M2 would have to negotiate the new grade separated junction in order to access Ashbourne.

If inappropriate provision of facilities were not provided for non-motorised user to retain current access routes this may lead to NMUs undertaking risky behaviours by walking on the grade separated junction linkages or narrow hard shoulders or verges which could lead to vehicle/pedestrian or vehicle/cyclist collisions.

Recommendation:

Ensure appropriate and safe linkage is provided to maintain current non-motorised user routes for all expected users.

End of problems / recommendations raised in this Stage F2 Road Safety Audit.

6 Audit Team Statement

We certify that this Road Safety Audit has been carried out in the accordance with GE-STY-01024 guidelines.

Road Safety Audit Team Leader:

Rowan Lyons

Signed



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Appendix A - Schedule of Documents Used

1. List of included documents and drawings		
Documents		
Drawings		
Reference	Title	Date
60602546-ACM-HGS-SW_Z_Z_Z-DR-CH-0201	Road Safety Audit Stage F Problem Locations	15/12/21

Appendix B - Location of Problems Plan

Appendix C – Road Safety Audit Feedback Form


Scheme Details

Scheme Name	N2 Rath Roundabout to Kilmoon Cross		
Audit Stage:	F	Route Number	E2
Date of Audit:	20/01/2021		

Designers Response Stage F – Part 2

To be completed by the Designer			To be completed by the Audit Team leader	
Paragraph Number from Road Safety Audit Report	Problem Accepted (Yes/No)	Measure Accepted (Yes/No)	Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted	Alternative measures or reasons accepted by auditors (yes/no)
Problem 4.1.1	Yes	Yes	-	
Problem 4.2.1	Yes	Yes	-	
Problem 4.2.2	Yes	Yes	-	
Problem 4.2.3	Yes	Yes	-	
Problem 4.3.1	Yes	Yes	-	

Signed  Designer Rufus Bevan Date 15/12/2021

Signed  Audit Team Leader Rowan Lyons Date 15/12/2021

