

N2 Rath Roundabout to Kilmoon Cross

Road Safety Audit

Stage F - Part 1

DOC ID: P060602546-ACM-HGN-SW_Z_Z_Z-HS-CH-0002

Revision: P03



Quality information

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Schedule of Revisions

Report Revision Number	Revision Date	Prepared by	Checked by	Approved by	Paragraphs amended
P01	16/11/2020	RL	BMM	EG	
P02	13/01/2021	RL	BMM	EG	
P03	03/12/2021	RL	BMM	EG	

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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:	24/08/2020
Document Reference:	60602546-ACM-HGN-SW_Z_Z_Z-HS-CH-0002
Prepared By:	AECOM
On Behalf Of:	Meath County Council

2 Introduction

This report is the Part 1 of the Stage F Road Safety Audit report undertaken on the proposed N2 Rath Roundabout to Kilmoon Cross scheme. This Part 1 audit is a comparative assessment of the options from a road safety point of view. It is undertaken at the Phase 2 Options Selection stage in accordance with the requirement of TII's Project Management Guidelines PE-PMG-02041.

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

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The terms of reference of the Road Safety Audit are as described in TII GE-STY-01024 Road Safety Audit document. 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.

2.1 Scheme Description and Received Information

2.1.1 Received Information

Drawings of the proposed 4 no. scheme route options which were received for the audit are listed in Appendix A.

2.1.2 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.

2.1.3 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.

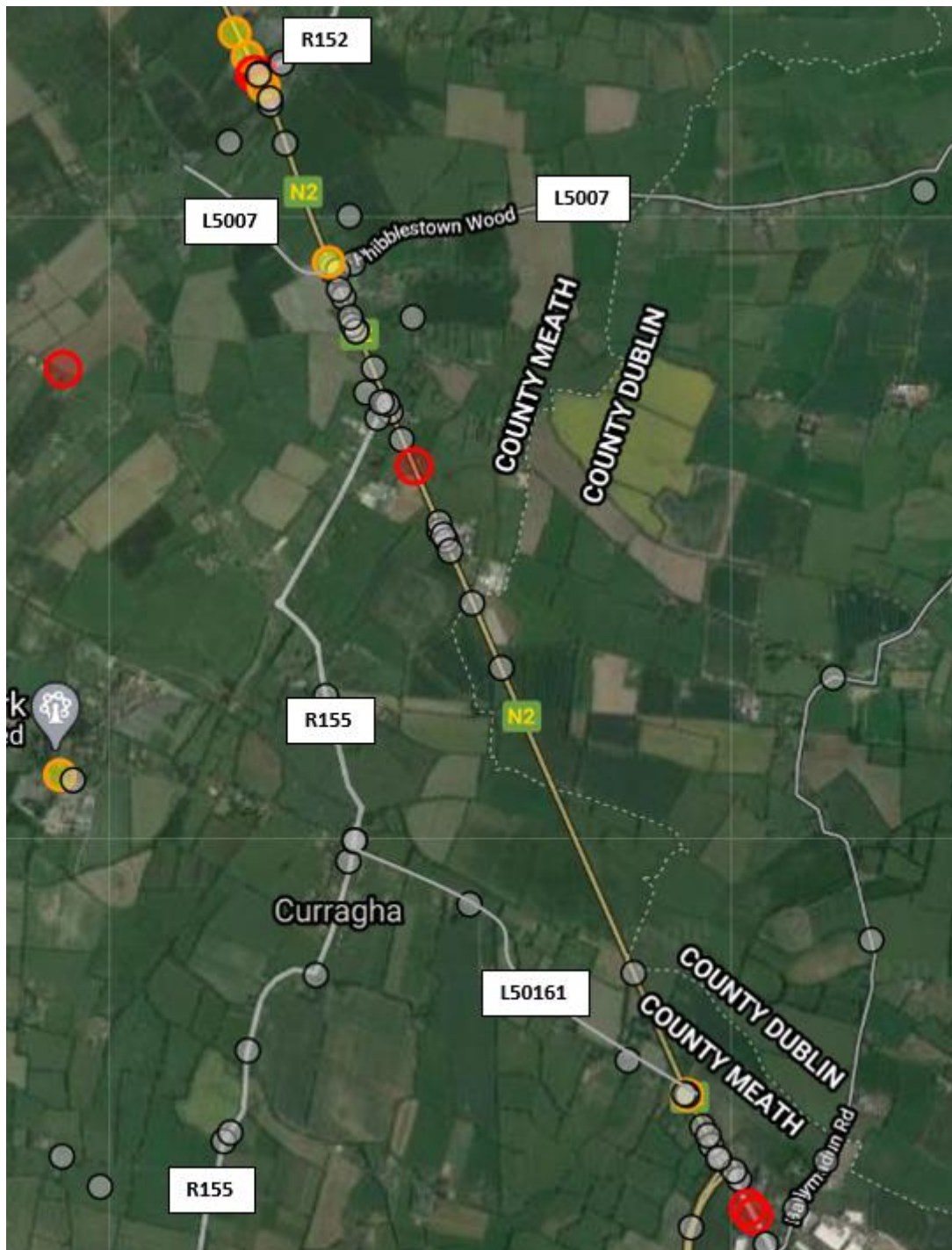


Figure 1 - Locations of Collisions 2005-2016 (RSA)

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 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'.

2.1.4 Scheme Details

The N2 between the Rath Roundabout, north of Ashbourne, and Kilmoon Cross is a 5.5km stretch of single carriageway road 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 the upgrade of this section of the N2 from the Rath Roundabout to Kilmoon Cross. There are four 200m wide route corridor options under consideration as part of the Road Safety Audit, as set out below. The corridors indicate the lands within which a potential road alignment could be developed. These options will be assessed, in addition to alternative options such as the Do Nothing, Do Managed and Public Transport Option, with the aim of identifying an emerging preferred option by the end of the assessment.

At the time of the Road Safety Audit, the junction strategy had not been finalised. It was assumed for the purposes of the assessment that there would be a grade separated dumbbell junction at the southern tie-in of the scheme connecting with the M2, southwest of the Rath Roundabout, to facilitate M2 traffic onto the local road network including the onto the local network including the L50161 and the L5018-16 (Ballybin Road). It was also assumed for the purposes of the assessment that there would be an at-grade roundabout junction at the northern tie-in of the scheme connecting with the existing N2 and R152 near Kilmoon.

Route D1 - Online improvements from Rath Roundabout initially, then an offline section to the east of the existing mainline before tying back into the existing N2 at Kilmoon Cross.

Route E1 – Online improvements from Rath Roundabout initially, then an offline section to the west of the existing mainline before tying back into the existing N2 at Kilmoon Cross.

Route E2 – Online improvements from Rath Roundabout initially, then an offline section to the west of the existing mainline (different to Option E-1 listed above) before tying back into the existing N2 at Kilmoon Cross.

Route F2 – Offline option from Rath Roundabout to the east of the existing N2 before crossing the existing N2 and continuing to the west and tying back into the existing N2 at Kilmoon Cross.

2.1.5 Site Inspection

Site visits of the main N2 route as well as the local surrounding roads were undertaken 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.

These site visits allowed for the assessment of the following:

- Existing Road Network;
- Local Amenities;
- Topography of the area; and
- Existing traffic and Non-Motorised Users.

3 Items Raised at this Stage F Road Safety Audit

3.1 All Route Options - D1, E1, E2 & F2

3.1.1 Differences in Option scheme drawings

Problem

The Alignment drawings and the Plan & Profile drawings for each of the four proposed Route Options differ in the termination proposals at each end of the scheme.

At the northern end of the scheme the 'Alignment' drawings indicate a new roundabout proposed at Kilmoon Cross at the junction with the R152 to connect with the N2 and a grade separated dumb-bell roundabout junction at the southern end of the scheme connecting into the existing M2 motorway. In the 'Plan & Profile' drawings, it is unclear as to the form of junction tie-in with the N2 at M2 at the northern and southern ends of the proposed scheme.

Hazard

The review of scheme safety issues should be undertaken on defined junction layout proposals where the drawings reflect the scheme proposals.

3.1.2 Approach Speeds at New Kilmoon Cross Roundabout

Problem

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.

3.1.3 Congestion at New Kilmoon Cross Roundabout

Problem

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.

3.1.4 Proximity of Commercial Access to Kilmoon Cross Roundabout

Problem

At Kilmoon Cross a new 4-arm roundabout is proposed to connect proposed N2 realignment with the existing N2 north, the R152 and the L5008/L5038. There is an existing petrol station accessed directly off the R152, approximately 100m from the existing N2 junction. Large vehicles utilise the hard shoulders on either side of the R152 to park. The parked vehicles restrict the visibility to and from this petrol station access. On installation of a new roundabout, this existing access will then be located closer to the R152 exit arm of the new Kilmoon Cross roundabout.

Hazard

The location of the petrol station access in such close proximity to the new Kilmoon Cross roundabout exit can result in drivers, which are accelerating from the roundabout, failing to properly anticipate vehicles ahead slowing down to access the petrol station, which may result in rear end shunt collisions.

3.1.5 Capacity of Local Road L5008

Problem

The new Kilmoon Cross roundabout links into the bypassed section of the N2 and the local road network via the local road L5008. The L5008 is a local road to a lower geometric standard with reduced cross section, poor horizontal geometry and substandard forward sightlines along most of its length.

Closure of the existing N2/R155 junction, which facilitates N2 mainline tourist traffic from the north and east to the Tayto Park entertainment centre, will cause an increase in traffic volumes onto the local L5008 road for access to the Tayto Park. The L5008 may not be designed to accommodate high traffic volumes.

Hazard

In its present form, the local L5008 road may not have sufficient capacity to accommodate the additional volume of traffic from/to the N2 and R152. 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.

3.2 Option D1

Option D1 is 6.8km in length with a combination of online and offline sections.

This option provides a continuation of the M2 cross-section carriageway, approximately 400m south west of the existing Rath Roundabout. It bypasses the Rath Roundabout to the west before merging with online improvements to the existing N2 alignment approximately 0.5km north of Rath Roundabout. Online improvements continue northwards for 1.5km, then diverts eastwards off the existing mainline into the offline section for approximately 3.9km before tying back into a proposed roundabout on the existing N2 at the R152 Kilmoon Cross.

3.2.1 Tie-In to Existing M2

Problem

At this stage, the proposed tie-in to the existing M2 at the southern end of the scheme has not yet been defined to a sufficient level of detail to fully access the form of the proposed junction and the form of the connection to the Rath Roundabout.

Hazard

If the form of junctions is not clearly defined this can lead to driver confusion which may result in shunt type or loss of control collisions due to vehicles unexpectedly slowing down.

3.2.2 Direct Accesses

Problem

Within the online section of this option there are currently a number of properties and direct accesses onto the N2. In retaining the existing alignment of the N2 over this section, it is unclear if these accesses will be retained to facilitate direct access on the widened scheme carriageway or if alternative access arrangements will be provided.

Hazard

Uncontrolled direct accesses increase the risk of rear end shunt and side-impact collisions from vehicles accessing from and turning into these locations.

3.2.3 Ballybin Road Local Traffic

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16 (Ballybin Road).

The proposed junction with the Ballybin Road will be in the form of a new roundabout. This will be located approximately 200m from the signalised R135 junction, close to a retail park and industrial area of Ashbourne, in close proximity to existing development accesses. It is unclear from the drawings as to the scale of the proposed roundabout onto the Ballybin Road.

Hazard

Congestion and queuing at this proposed roundabout may cause delays resulting in driver frustration for traffic accessing the existing local developments on the Ballybin Road which can lead to drivers taking unnecessary risks to access the main road network resulting in side impact or head on collisions.

3.2.4 Capacity of Local Road L50161

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16. The L50161 is a local road with reduced cross section and poor horizontal geometry and substandard forward sightlines along most of its length.

Closure of the existing N2/R155 junction, which facilitates N2 mainline tourist traffic from the south and east to the Tayto Park entertainment centre, will cause an increase in traffic volumes onto the local L50161 road.

Hazard

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.

3.2.5 T-Junction L50161 and R155

Problem

The L50161 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.

Hazard

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.

3.2.6 Local Road Bridging

Problem

On the Plan and profile drawing (Sheet 1 of 2), a local road overpass is indicated at approximately chainage 2+550. A height difference between proposed and existing levels of over 1.0m is indicated at this location. No proposed realignment levels of the local road is indicated but should be of sufficient clearance to the proposed N2 realignment to accommodate all vehicles anticipated to use the local road.

Hazard

If insufficient clearance is not provided at underpasses there is the possibility of vehicle strikes with the overhead structure resulting in vehicle collisions and damage to a road structure.

3.3 Option E1

Option E1 is 6.8km in length of online and offline sections.

This option provides a continuation of the M2 cross-section carriageway, approximately 400m south west of the existing Rath Roundabout. It bypasses the Rath Roundabout to the west before merging with online improvements to the existing N2 alignment approximately 0.5km north of Rath Roundabout. Online improvements continue northwards for 0.75km, then diverts westwards off the existing mainline into the offline section for approximately 4.2km before tying back into the N2 for approximately 500m onto a proposed roundabout on the existing N2 at the R152 Kilmoon Cross.

3.3.1 Tie-In to Existing M2

Problem

At this stage, the proposed tie-in to the existing M2 at the southern end of the scheme has not yet been defined to a sufficient level of detail to fully access the form of the proposed junction and the form of the connection to the Rath Roundabout.

Hazard

If the form of junctions is not clearly defined this can lead to driver confusion which may result in shunt type or loss of control collisions due to vehicles unexpectedly slowing down.

3.3.2 Direct Accesses

Problem

Within the online section of this option there are currently a number of properties and direct accesses onto the N2. In retaining the existing alignment of the N2 over this section, it is unclear if these accesses will be retained to facilitate direct access on the widened scheme carriageway or if alternative access arrangements will be provided.

Hazard

Uncontrolled direct accesses increase the risk of rear end shunt and side-impact collisions from vehicles accessing from and turning into these locations.

3.3.3 Ballybin Road Local Traffic

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16 (Ballybin Road).

The proposed junction with the Ballybin Road will be in the form of a new roundabout. This will be located approximately 200m from the signalised R135 junction, close to a retail park and industrial area of Ashbourne, in close proximity to existing development accesses. It is unclear from the drawings as to the scale of the proposed roundabout onto the Ballybin Road.

Hazard

Congestion and queuing at this proposed roundabout may cause delays resulting in driver frustration for traffic accessing the existing local developments on the Ballybin Road which can

lead to drivers taking unnecessary risks to access the main road network resulting in side impact or head on collisions.

3.3.4 Capacity of Local Road L50161

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16. The L50161 is a local road with reduced cross section and poor horizontal geometry and substandard forward sightlines along most of its length.

Closure of the existing N2/R155 junction, which facilitates N2 mainline tourist traffic from the south and east to the Tayto Park entertainment centre, will cause an increase in traffic volumes onto the local L50161 road.

Hazard

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.

3.3.5 T-Junction L50161 and R155

Problem

The L50161 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.

Hazard

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.

3.4 Option E2

Option E2 is 6.8km in length of online and offline sections.

This option provides a continuation of the M2 cross-section carriageway, approximately 400m south west of the existing Rath Roundabout. It bypasses the Rath Roundabout to the west before merging with online improvements to the existing N2 alignment approximately 0.5km north of Rath Roundabout. Online improvements continue northwards for 2.1km, then diverts westwards off the existing mainline into the offline section for approximately 2.5km before tying back into the N2 for approximately 500m onto a proposed roundabout on the existing N2 at the R152 Kilmoon Cross.

3.4.1 Tie-In to Existing M2

Problem

At this stage, the proposed tie-in to the existing M2 at the southern end of the scheme has not yet been defined to a sufficient level of detail to fully access the form of the proposed junction and the form of the connection to the Rath Roundabout.

Hazard

If the form of junctions is not clearly defined this can lead to driver confusion which may result in shunt type or loss of control collisions due to vehicles unexpectedly slowing down.

3.4.2 Direct Accesses

Problem

Within the online section of this option there are currently a number of properties and direct accesses onto the N2. In retaining the existing alignment of the N2 over this section, it is unclear if these accesses will be retained to facilitate direct access on the widened scheme carriageway or if alternative access arrangements will be provided.

Hazard

Uncontrolled direct accesses increase the risk of rear end shunt and side-impact collisions from vehicles accessing from and turning into these locations.

3.4.3 Ballybin Road Local Traffic

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16 (Ballybin Road).

The proposed junction with the Ballybin Road will be in the form of a new roundabout. This will be located approximately 200m from the signalised R135 junction, close to a retail park and industrial area of Ashbourne, in close proximity to existing development accesses. It is unclear from the drawings as to the scale of the proposed roundabout onto the Ballybin Road.

Hazard

Congestion and queuing at this proposed roundabout may cause delays resulting in driver frustration for traffic accessing the existing local developments on the Ballybin Road which can lead to drivers taking unnecessary risks to access the main road network resulting in side impact or head on collisions.

3.4.4 Capacity of Local Road L50161

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16. The L50161 is a local road with reduced cross section and poor horizontal geometry and substandard forward sightlines along most of its length.

Closure of the existing N2/R155 junction, which facilitates N2 mainline tourist traffic from the south and east to the Tayto Park entertainment centre, will cause an increase in traffic volumes onto the local L50161 road.

Hazard

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.

3.4.5 T-Junction L50161 and R155

Problem

The L50161 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.

Hazard

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.

3.5 Option F2

Option F2 is 7.2km in length of offline sections.

This option provides a continuation of the M2 cross-section carriageway, approximately 400m south west of the existing Rath Roundabout. It crosses the N2 approximately 100m north of the Rath Roundabout continuing offline to the east of the N2 for approximately 3km then crossing back over to the western side of the N2 offline before tying back into the N2 for approximately 500m onto a proposed roundabout on the existing N2 at the R152 Kilmoon Cross.

3.5.1 Tie-In to Existing M2

Problem

At this stage, the proposed tie-in to the existing M2 at the southern end of the scheme has not yet been defined to a sufficient level of detail to fully access the form of the proposed junction and the form of the connection to the Rath Roundabout.

Hazard

If the form of junctions is not clearly defined this can lead to driver confusion which may result in shunt type or loss of control collisions due to vehicles unexpectedly slowing down.

3.5.2 L5018-16 Ballybin Road Local Traffic

Problem

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local L5018-16 (Ballybin Road) at Ashbourne.

The proposed junction with the Ballybin Road will be in the form of a new roundabout. This will be located approximately 200m from the signalised R135 junction, close to a retail park and industrial area of Ashbourne, in close proximity to existing development accesses. It is unclear from the drawings as to the scale of the proposed roundabout onto the Ballybin Road.

L50161

Hazard

Traffic wishing to access the local L05161 road must also use the Ballybin Rd. This increases further the volume of traffic at this proposed roundabout junction and also at the existing signalised junction of the Ballybin Road and the R135. The L05161 may not have sufficient capacity to safely accommodate the additional volume of traffic from/to the M2 to/from the regional road.

Additional traffic causing congestion and queuing at this proposed roundabout and at the signalised junction may cause delays resulting in driver frustration for traffic accessing the existing local developments on the Ballybin Road which can lead to drivers taking unnecessary risks to access the main road network resulting in side impact or head on collisions.

4 Preference of Design Options

Following on from the safety concerns outlined in the previous section, this is a summary of the main points/issues identified for each option, *excluding those issues that are applicable to all Options, as outlined in Section 2.2.*

4.1 Route Option - D1

Option D1 is 6.8km in length with a combination of online and offline sections. No direct accesses will be maintained for the online widening sections and side roads will be provided to tie them back into the existing road network at another location.

Option D1 proposes to tie-into the existing M2 south of the Rath roundabout.

A grade separated dumb bell junction is proposed off the M2, southwest of the Rath Roundabout to facilitate M2 traffic onto the local network L50161 and the L5018-16 (Ballybin Road).

It will then bypass the Rath roundabout to the west and utilise a 1.5km section of the current N2 alignment, north of the Rath Roundabout, before moving offline eastwards for approximately 3.9km.

It connects to the N2 at the northern end of the scheme at a new roundabout at the N2/R152 junction at Kilmoon Cross.

4.2 Route Option - E1

Option E1 is 6.8km in length with a combination of online and offline sections. No direct accesses will be maintained for the online widening sections and side roads will be provided to tie them back into the existing road network at another location.

Option E1 proposes to tie-into the existing M2 south of the Rath roundabout.

A grade separated dumb bell junction is proposed off the M2 tie-in to facilitate M2 traffic onto the local network L50161 and the L5018-16 (Ballybin Road).

It then bypasses the Rath roundabout to the west and utilises a 0.75km section of the current N2 alignment, north of the Rath Roundabout, before moving offline westwards for approximately 4.2km.

It re-joins the N2 alignment for approximately 0.5km before connecting at the northern end of the scheme at a new roundabout at the N2/R152 junction at Kilmoon Cross.

4.3 Route Option – E2

Option E1 is 6.8km in length with a combination of online and offline sections. No direct accesses will be maintained for the online widening sections and side roads will be provided to tie them back into the existing road network at another location.

Option E1 proposes to tie-into the existing M2 south of the Rath roundabout.

A grade separated dumb bell junction is proposed off the M2 tie-int to facilitate M2 traffic onto the local network L50161 and the L5018-16 (Ballybin Road).

It then bypasses the Rath roundabout to the west and utilises a 2.1km section of the current N2 alignment, north of the Rath Roundabout, before moving offline westwards for approximately 2.5km.

It re-joins the N2 alignment for approximately 0.5km before connecting at the northern end of the scheme at a new roundabout at the N2/R152 junction at Kilmoon Cross.

4.4 Route Option – F2

Option F2 is the longest route. Option F2 is 7.2km in length. All of which is offline.

Option F2 proposes to tie-into the existing M2 south of the Rath roundabout.

A grade separated dumb bell junction is proposed off the M2 tie-int to facilitate M2 traffic onto the local L5018-16 (Ballybin Road). There is no direct linkage to the west of the N2 from this access.

It crosses the N2 approximately 100m north of the Rath Roundabout continuing offline to the east of the N2 for approximately 3km then crossing back over to the western side of the N2 offline for a further 2.5km.

It re-joins the N2 alignment for approximately 0.5km before connecting at the northern end of the scheme at a new roundabout at the N2/R152 junction at Kilmoon Cross.

4.5 Ranking of Route Options

The Audit Team carried out a full review of all relevant drawings and documents in relation to the proposed options.

The main safety considerations in comparing the routes at this stage included tie-in arrangements, impact on local road network and junctions, and connection to existing accesses and services.

A summary of some of the comparative items reviewed is given in Table 4.1 below.

- i. Options with the shortest length are preferable,
- ii. Options which minimise the number of direct accesses onto the N2 are preferable,
- iii. Options with geometry to higher design standards are preferable,
- iv. Options with increased capacity for dispersal of traffic volumes onto the adjacent local road network are preferable, and
- v. Options which include proposed junctions in very close proximity to existing commercial accesses are not preferred.

OPTION	Length (km) (Online)	Rank	Minimum Horizontal Radius	Rank	Linkages to Existing Network	Rank	Total
D1	6.8 (1.5)	1	1020m	1	4	1	3
E1	6.8 (1.25)	1	1020m	1	4	1	3
E2	6.8 (2.6)	1	720m	2	4	1	4
F2	7.2 (0.1)	2	720m	2	3	2	6

Table 4.1 Comparative advantages/disadvantages

The Audit Team conclude that the route options, as provided, rank as shown in Table 4.2 below in terms of road safety. The ranking shown in the table below is a relative grading of the options with respect to each other.

Option	Rank
Route D1	1
Route E1	1
Route E2	3
Route F2	4

Table 4.2 Option Ranking

5 Audit Team Statement

5.1 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



BEng (Hons) CEng, MIEI

Principal Engineer

AECOM

Date

24 August 2020

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Road Safety Audit Team Member:

Brian McMahan

Signed



BE MSc CEng MIEI

Associate Director

AECOM

Date

24 August 2020

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Schedule of Documents Used

1. List of documents and drawings considered		
Documents		
Reference	Title	Date
60602546-ACM-GEN-SW_Z_Z_Z-MO-CH-0009	Stage 2 Assessment Methodology	29/06/20
60602546-ACM-GEN-SW_Z_Z_Z-MO-CH-0011	Stage 2 Assessment - Definition of Alternatives	24/06/20
Drawings		
Reference	Title	Date
60602546-ACM-HGN-SW_Z_Z_Z-DR-CH-0024	Route D1	29/06/20
60602546-ACM-HGN-SW_Z_Z_Z-DR-CH-0025	Route E1	
60602546-ACM-HGN-SW_Z_Z_Z-DR-CH-0026	Route E2	
60602546-ACM-HGN-SW_Z_Z_Z-DR-CH-0027	Route F2	

