Bonneagar Iompair Éireann
Transport Infrastructure Ireland

comhairle chontae na mí
meath county council

Cavan
Comhairle Contae an Chabháin
Cavan County Council

N3 Virginia Bypass

Road Safety Impact Assessment
Phase 2: Option Selection

October 2021

BARRY
TRANSPORTATION

An Roinn Iompair
Department of Transport

Tionscadal Éireann
Project Ireland
2040

Document Control Sheet

Client:	Cavan County Council
Project Title:	N3 Virginia Bypass
Document Title:	Road Safety Impact Assessment Phase 2: Option Selection
File Name:	19408-BT-GN-XX-RP-C-00011

Table of Contents *(incl. Y/N)*	**List of Tables** *(incl. Y/N)*	**List of Figures** *(incl. Y/N)*	**Pages of Text** *(No.)*	**Appendices** *(No.)*
Y	N	N	38	2

Document Revision				**Document Verification**			
Issue Date *(DD/MM/YY)*	**Revision Code**	**Suitability Code**	**Author** *(Initials)*	**Checker** *(Initials)*	***Reviewer*** As Per PMP *(Initials)*	**Approver** *As Per PMP (Initials)*	**Peer Review** *(Initials or N/A)*
Add hyperlink to Verification Email on PIM Register for each issue							
06/11/19	P01	S3	TD	EC	PM	TC	N/A
16/01/20	P02	S4	TD	EC	PM	TC	N/A
17/01/20	P03	S4	TD	EC	PM	TC	N/A
29/10/21	P04	S4	EZ	EC	PM	TC	N/A
29/10/21	C01	A2	EZ	EC	PM	TC	N/A

Table of Contents

SECTION 1: INTRODUCTION

1.1 Project Description

The current project proposal sets out to address numerous operational, capacity and safety issues identified on the N3 National Primary Route approaching and though Virginia Town in County Cavan.

The N3 National Primary Route and the M3 motorway form the strategic radial corridor linking Dublin with Cavan and onward to Enniskillen and beyond to the Gateway of Sligo and Letterkenny. The M3 motorway extends from Clonee (at the Co. Dublin / Co. Meath border) to the north side of Kells. From Kells the N3 continues in a northwest direction along a Type 2 Dual Carriageway for approximately 9.5km which terminates at Edenburt / Derver (at the Co. Meath / Co. Cavan border). Refer to Figure 1-1.

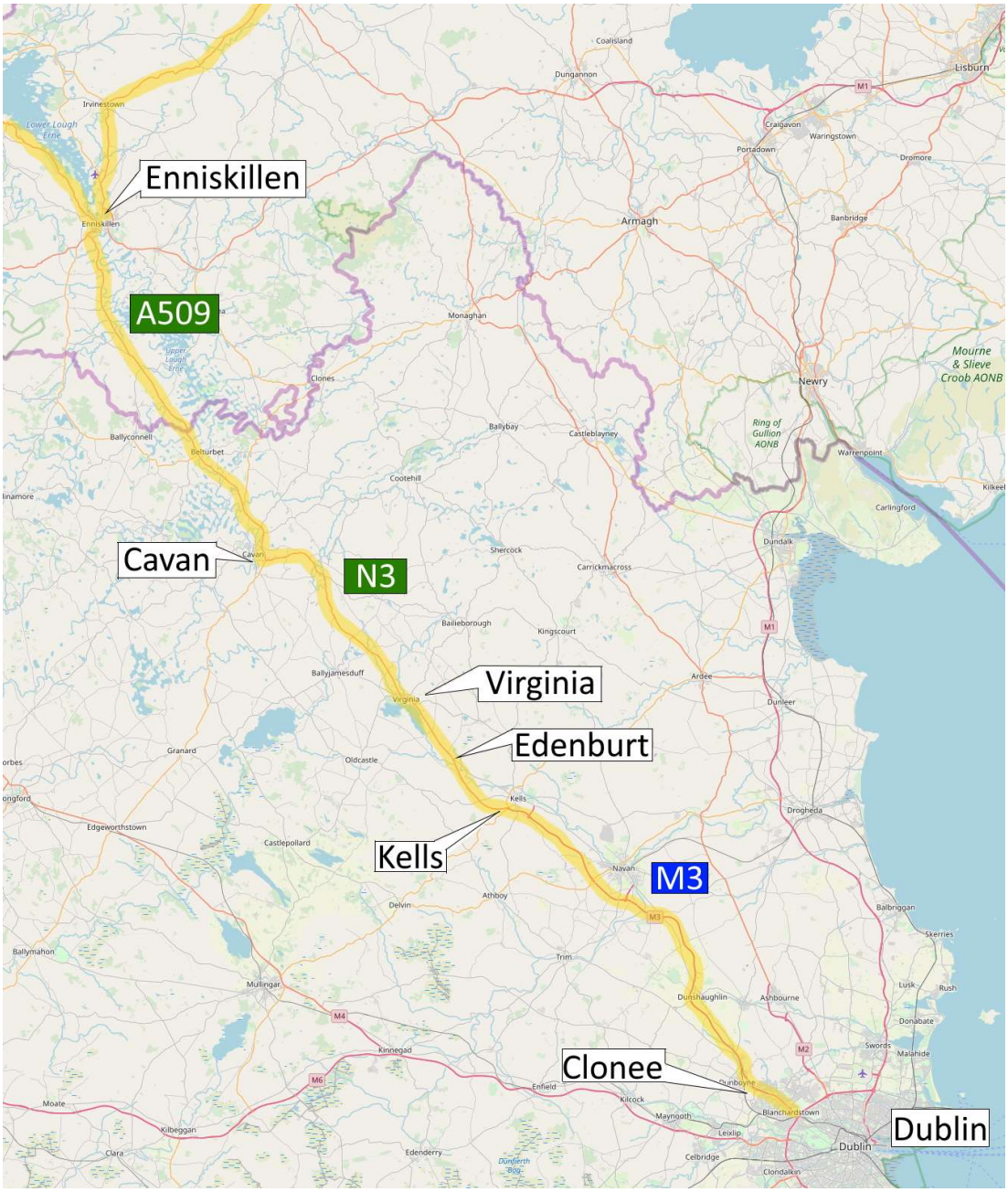


Figure 1-1 N3 National Primary Route

1.2 Area of Influence

The Area of Influence for the scheme commences at the end of the Type 2 Dual Carriageway at Derver, Co. Meath, which is south east of Whitegate Cross, and continues in a north westerly direction to the north side of Lisgrea thus comprising a mainline length of approximately 15.5km along the existing N3. *See* Figure 1-2.

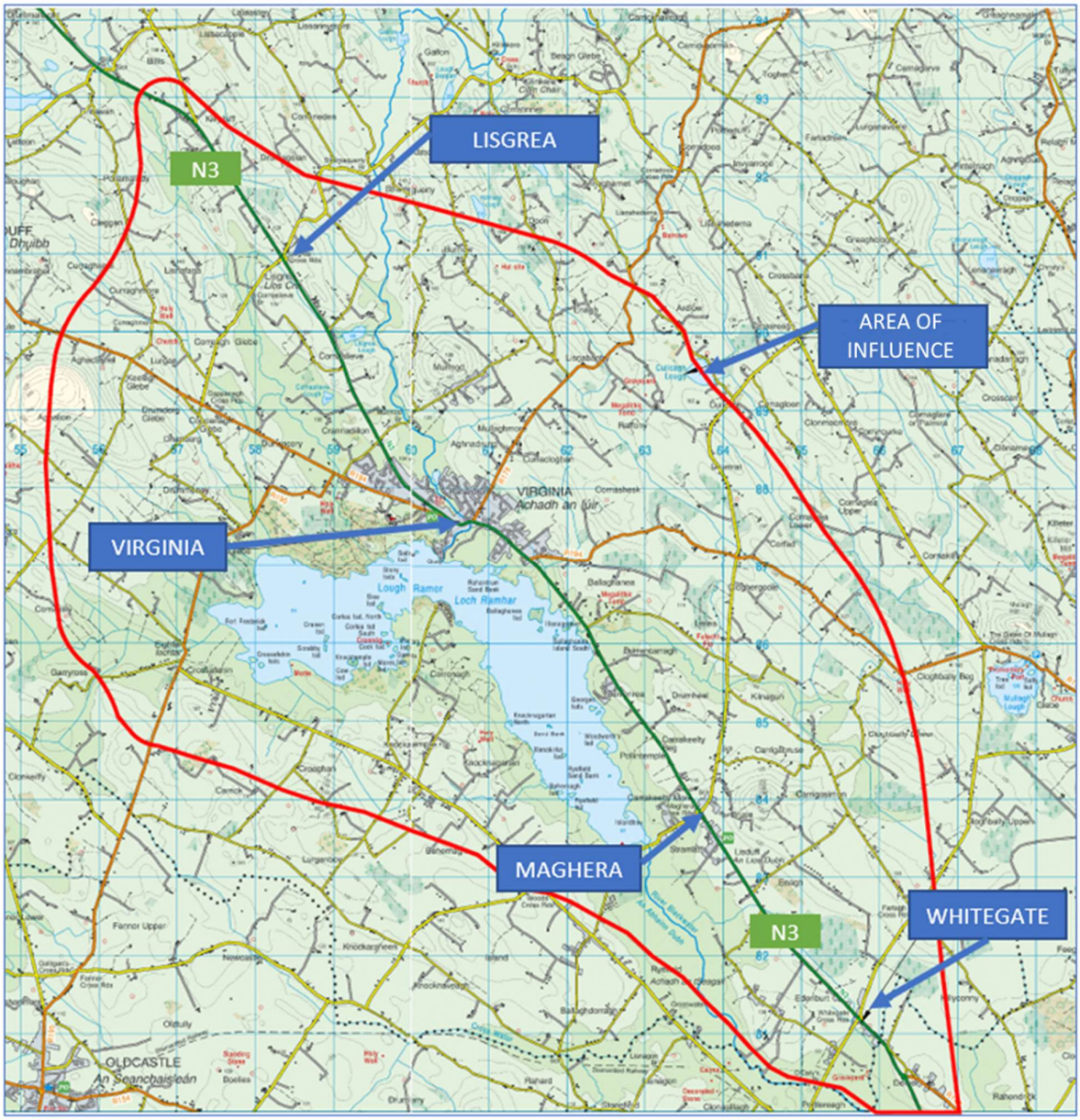


Figure 1-2 Current Area of Influence for the N3 Virginia Bypass Project

1.3 Problem Definition

Virginia is the last remaining town on the N3 National Route from Dublin to the Northern Ireland Border and the only town on the national primary network within a 100km radius of Dublin, which has not been bypassed. According to TII traffic counter (TMU N03 070.0N) which is located between Virginia and Whitegate, 2019 AADT was 12,249 of which 8% were HGVs.

All roads within the Area of Influence have varying single carriageway cross-section with and without hard shoulders, and all have at-grade junctions and direct accesses.

This culminates in problems including:

- Reduced journey time reliability due to bottlenecking and congestion as a result of the N3 aligning through the town of Virginia. There is evidence that there is significant rat running around Virginia Town to avoid the bottlenecks.
- Poor road safety performance on the N3 and adjoining road network within the area of influence.

The road safety history in the area is discussed in further detail in Section 4. The N3 north and south approaches to the urban area of Virginia town, are noted as having a narrow single carriageway, with limited overtaking opportunities, with no hard shoulders and with at-grade junctions and numerous direct accesses. The roadsides are not considered forgiving and are characterised by hazardous features such as utility poles, signs, walls, fences, gates, buildings and parapets. This report will demonstrate that these road sections have a collision rate that exceeds national norms. Additionally, the N3 contains several sites within the area of influence that qualify as High Collision Locations.

1.4 Scheme Objectives

The framing of objectives for the N3 Virginia Bypass Scheme shall be undertaken in accordance with the guidance provided in the TII's Project Appraisal Guidelines Units 2.0 to 9.0 (PAG) for major schemes i.e. schemes of a capital cost greater than €20M. These guidelines include a recommendation that project objectives are established which fall under the criteria included in the Common Appraisal Framework for Transport Projects and Programmes (March 2016, updated October 2020), inter alia:

- Economy
- Safety
- Environment
- Accessibility & Social Inclusion
- Integration
- Physical Activity

The safety objectives are defined as follows:

Table 1-1 Project Objectives – Safety

Scheme Specific Objective	KPI	Measurable
Reduction in potential road traffic collisions in Virginia town through the provision of a safer travel environment for all road users	• Reduction in traffic volumes including HGVs within Virginia by providing a suitable safer alternative	• Quantity of traffic, including HGVs removed from the town
Segregation of strategic traffic from local traffic and VRUs through the town	• Removal of strategic traffic travelling through the town	• Quantity of all traffic types removed
Provide safe overtaking opportunities	• Provide a minimum 50% of safe overtaking opportunity	• Calculate overtaking opportunity
Improve safety conditions at existing junctions and direct accesses	• Minimise junctions and avoid direct access	• Compare the Pre construction number of sub-standard junctions/direct accesses with the proposed number of standard junctions/ direct accesses on the National Road network

To improve safety for vulnerable road users by providing an Active Travel route and provide better environment for vulnerable road users within the study area particularly Virginia town centre	• Provide physical infrastructure	• Calculate length of facilities
To support the RSA Road Safety Strategy 2013-2020, and future strategies, through the provision of a safe, forgiving and consistent standard of improved route.	• Reduce Collision numbers and frequency	• Measure Collisions

SECTION 2: METHODOLOGY

The Road Safety Impact Assessment is conducted in the initial planning stages of the project. This report comprises the Phase 2 (Principal Assessment) as set out in PE-PMG-02005 (Dec 2017).

2.1 RSIA Assessment Team

The Road Safety Impact Assessment team has been approved by TII (see Appendix 1) and are as follows:

Tristan Dunne	BE MEngSc CEng MIEI RSA Cert
Road Safety Auditor	Barry Transportation,
	Classon House,
	Dundrum Business Park,
	Dundrum Road,
	Dublin 14
Peter Morehan	BE CEng MIEI RSA Cert
Road Design Engineer	Barry Transportation,
	Classon House,
	Dundrum Business Park,
	Dundrum Road
	Dublin 14
Emma Coyle	BA BAI MSc CEng MICE MIEI
Road Design Engineer	Barry Transportation
	Unit 14C,
	N5 Business Park,
	Castlebar,
	Co. Mayo

2.2 Site Visit

A site visit took place on 10th October 2019 which involved a drive-through video survey of the N3 and all adjoining regional roads within the area of influence. It rained for much of the duration of the visit. The main observations from the visit are discussed within relevant sections of the report.

Outlining qualitative and quantitative assessment of the existing road safety conditions and potential future conditions considering information collated through:

- Site Visit.
- Historical collision rates.
- Anticipated traffic patterns and flows.
- Considering options available for improvement (Do nothing, Do minimum, Do Something) and their anticipated benefits.

SECTION 3: EXISTING CONDITIONS

3.1 Existing Infrastructure

During the site visit it was observed that the standard of infrastructure provision varied along the N3 from Whitegate to Lisgrea, with the highest standard infrastructure present at the scheme fringes. It was clear that there is limited safe overtaking opportunities along the length of the N3, and at some locations, forward visibility is poor for drivers.

Existing infrastructure within Virginia itself consists of single carriageway with road-side and footway parking (Figure 3-1), signalised junction for the R178 (to Bailieborough) south of the town, priority junctions with local access roads and the R194 to Ballyjamesduff and the R194 to Mullagh (*see* Figure 3-2). The roadway is characterised by frequent direct accesses and on-street parking which contribute to traffic congestion, which are expected within a town centre, but is not appropriate for a National Primary Road. The current infrastructure does not meet the current design standards applicable to a National Primary Roads and is insufficient to provide an acceptable level of service.

Figure 3-1 N3 in Virginia travelling southbound

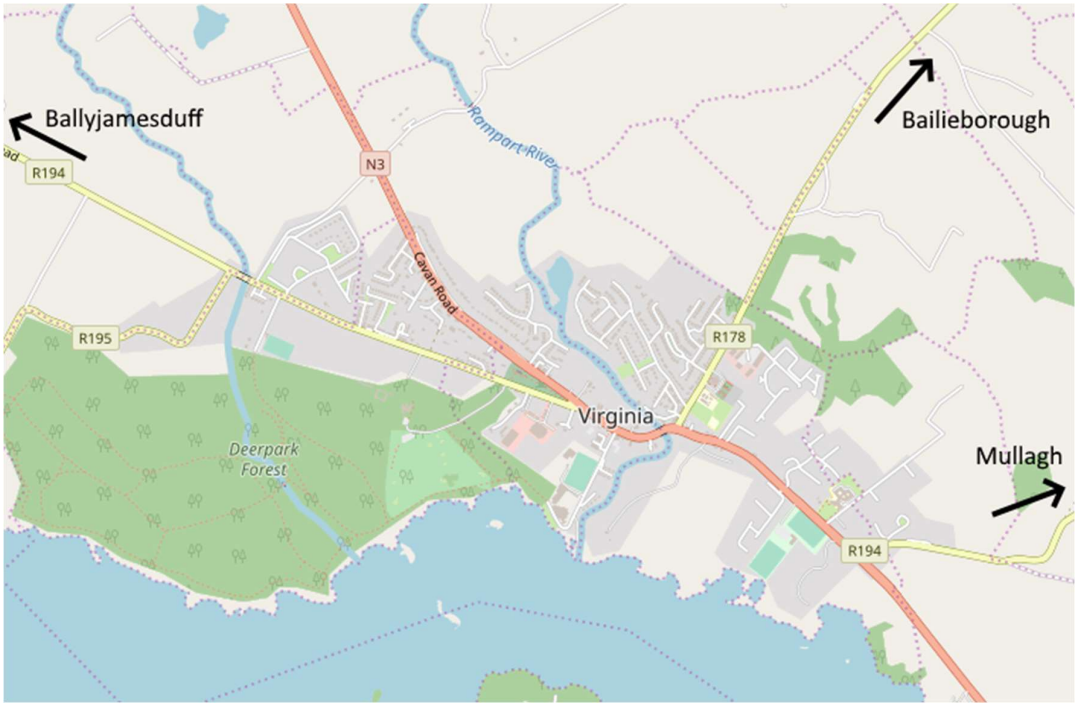


Figure 3-2 Virginia map

As a strategic route between Cavan and Dublin, and also a node on regional routes between other towns (Ballyjamesduff – Mullagh and Bailieborough), it was evident during the site visit that a significant number of commercial vehicles traverse the N3 through Virginia (Figure 3-1). Forward visibility is poor with only one controlled pedestrian crossing (zebra) provided in the middle of the main centre of Virginia (Figure 3-3). The lack of defined pedestrian crossings and poor consideration for pedestrian desire-lines means that pedestrians do not typically cross the N3 at the zebra crossing but have the potential to cross at any location. This increases pedestrian vulnerability when crossing the road, which is exacerbated by the high volume of HGVs and road-side parking, which can obscure driver visibility to pedestrians.

Figure 3-3 N3 Virginia travelling southbound through Virginia on approach to zebra crossing

On the south (Dublin) side of Virginia, the N3 retains a single carriageway cross-section with a speed of 100kph. It is understood that following the latest National Road Speed Limit review, the speed limit between Virginia and Maghera is proposed to be reduced to 80kph. Along its length there is intermittent provision of a hard strip of varying width. The alignment of the existing road is generally straight, the conditions are likely to encourage high traffic speed. The absence of a full hard shoulder between Virginia and Maghera restricts

visibility on bends and at junctions and direct accesses. There is improved road quality south of Maghera with consistent provision of full hard-shoulder.

The N3 south of Virginia has a considerable number of accesses: there are 11 no. junctions, over 40 no. field accesses and greater than 70 no. direct accesses for homes or businesses over an 8km length. The majority of direct accesses are to single private dwellings however there are also direct accesses to significant attractors for traffic:

- Filling station, car wash and convenience store in Whitegate
- Cemetery, east side of Maghera
- Car sales, filling station and convenience store, east side of Maghera
- Filling station, car wash and convenience store, west side of Maghera
- Logistics, transport and warehousing business, west side of Maghera
- GAA club, west side of Maghera
- Industrial milk processing plant at Burreenrea
- Lakeside Manor Hotel
- B&B, restaurant and café a short distance from the start of Virginia's 60kph zone.

Visibility at accesses to the N3 south of Virginia are variable throughout and the absence of hard shoulders and verges from Maghera to Virginia impacts upon safe access onto the N3. All local access roads and routes intersecting with the N3, south of Virginia, outside the 60kph zone and within the area of influence are of rural local road classification, with narrow cross sections and little or no road markings. The junctions of virtually all of the roads and direct accesses within the 80km/h zone are of a poor standard, with obstructions within the visibility splays to the left and right and poor conspicuity, particularly during dark conditions. Apart from at Whitegate and Maghera, there is no provision for right turn manoeuvres within the single carriageway section, resulting in vehicles slowing and stopping in the running lane at junctions, side roads and accesses. Additionally, the milk processing plant at Burreenrea is a large employer in the area and attracts a high volume of trips including heavy commercial vehicles.

Figure 3-4 N3 south of Virginia travelling northbound

The N3 crosses the river Lislea via a stone arch 3-span bridge. The bridge parapets do not have suitable containment and there are no safety barriers on approach to the stone parapets, *see* Figure 3-5.

Figure 3-5 Inadequate parapets on river bridge

Through the villages of Whitegate and Maghera the N3 widens out to provide single lane in each direction and hatched central median, providing for right turn movements in and out of various commercial properties and road junctions. The speed limit through Maghera is 50kph and a 100kph limit is retained through Whitegate. Provision for non-motorised road users is slightly more considered at Maghera, with removal of hard-shoulders and provision of formal footways and a number of uncontrolled pedestrian crossings with central islands.

Figure 3-6 N3 south of Virginia at Whitegate travelling northbound

Figure 3-7 N3 south of Virginia at Maghera travelling northbound

The north side of Virginia mirrors the south side in infrastructure provision, with a large variation in quality of cross-section, alignment, forward visibility and overtaking opportunities. It is understood that following the latest National Road Speed Limit review, the speed limit between Virginia and Cornaslieve is 80kph.

From the 60kph speed limit signs on the northern outskirts of Virginia as far as Lisgrea Lough, a distance of 1.3km, there is a noticeable deterioration in road geometry: no hard shoulder, smaller radii for horizontal and vertical curvature and roadside hazards close to the running edge (*see* Figure 3-8) which has the effect of reducing visibility for drivers accessing the N3.

This part of the N3 also has an high level of direct access: there are 5 no. junctions, 7 no. field accesses and 6 no. direct accesses for homes or businesses over the 1.3 km length.

The section of the N3 from the point where the N3 passes Lisgrea Lough at Cornaslieve as far as the north extent of the area of influence, a distance of 3.7km, is a single carriageway of reasonably high and consistent standard. Full hard shoulders are provided, the horizontal geometry consists of long straights and large radius curvature and the vertical curvature is the most part flat with long radius vertical curves. Visibility at accesses to the N3 in this zone is generally good as a result.

This part of the N3 has a low number of accesses: there are 4 no. junctions, 7 no. field accesses and 13 no. direct accesses for homes or businesses over the 3.7 km length. The restaurant and lounge at Lisgrey is the only direct access that may be considered a significant attractor for traffic.

Figure 3-8 N3 north of Virginia travelling southbound on approach to local road cross-roads

The speed limits between Derver at the Cavan/Meath boundary and the North side of Virginia are inconsistent. These speed limits are described below:

- Derver to Maghera (100 kph speed limit);
- Maghera (≈0.8km, 50 kph speed limit);
- Maghera to Virginia (≈4km, 80kph speed limit);
- Virginia Town (≈2.4km, 50 & 60kph speed limits);
- Virginia to Cornaslieve (≈1.3km, 80kph speed limit);
- N3 north of Cornaslieve (100kph speed limit).

The N3 road network immediately adjacent to Virginia intersects with regional and local roads, which channel traffic through Virginia town, contributing to the congestion.

3.2 Existing Traffic

According to the TII traffic counter (TMU N03 070.0N) which is located between Virginia and Whitegate, 2019 AADT was 12,249 of which 8% were HGVs. Additionally, traffic surveys undertaken in March 2017 recorded daily traffic of 12,300. A traffic survey was carried out in September 2020 (when Level 3 Covid-19 travel restrictions were in place as a result of the Covid 19 pandemic). This showed approximate AADTs of 7,710 north of Virginia, 11,800 in Virginia and 8,940 south of Virginia.

As the N3 aligns through Virginia Town, the town centre is subject to high traffic volumes, resulting in congestion and conflict between local/strategic traffic, as well as creating a poor environment for vulnerable road users. Pedestrian movement was evident during the site visit, which is supported by pedestrian survey data collected in 2019. This is summarised in Table 3-1, with significant pedestrian volumes throughout the town centre, including crossing the N3 itself.

Table 3-1 Pedestrian Survey Data for 24-hour period in 2019 in Virginia

	Location 1	Location 2	Location 3	Location 4 *	Location 5	Location 6
Total No. Pedestrian Movements Observed	378	68	478	1527	1165	640

*The location of a Zebra Crossing

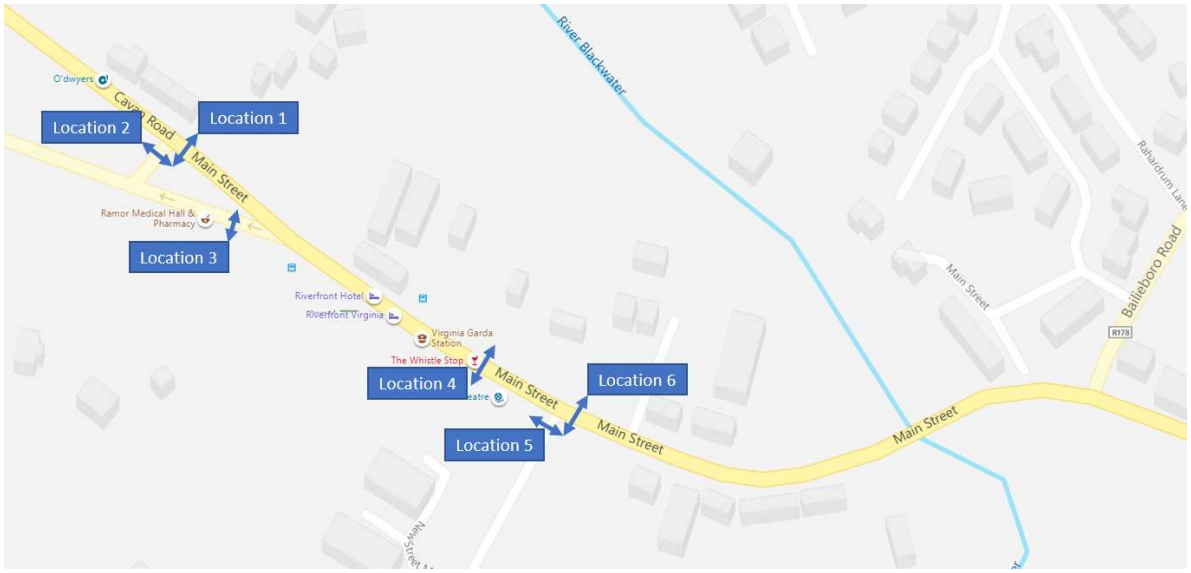


Figure 3-8 Pedestrian and Junction Survey Count Locations in Virginia

Historic junction counts are available at two junctions within the area of influence, i.e. the junctions of the R194 Ballyjamesduff Road with the N3 (junction A) and the R178 Bailieborough Road with the N3 (junction B), in the centre of Virginia, see Figure 3-8.

A 24-hour junction count was undertaken at the junction of the R194 Ballyjamesduff Road with the N3 (junction A) in September 2019. The volume of turning traffic on the day of the count was:

- From the R194 to N3 (left turn) ≈ 420 vehicles per weekday
- From the R194 to N3 (right turn) ≈ 2000 vehicles per weekday
- From the N3 to R194 (right turn) ≈ 350 vehicles per weekday
- From the N3 to R194 (left turn) ≈ 2500 vehicles per weekday

A 14-hour junction count was undertaken at the junction of the R178 Bailieborough Road with the N3 (junction B) in March 2017. The volume of turning traffic on the day of the count was:

- From the R178 to N3 (left turn) ≈ 60 vehicles per 14 hours on a weekday
- From the R178 to N3 (right turn) ≈ 650 vehicles per 14 hours on a weekday
- From the N3 to R178 (right turn) ≈ 50 vehicles per 14 hours on a weekday
- From the N3 to R178 (left turn) ≈ 650 vehicles per 14 hours on a weekday

Junction turning counts were undertaken in September 2020 as part of a Traffic Data Collection contract. The surveys captured the AM peak (6am to 10am), interpeak period (11am to 3.30pm) and PM peak (4pm to 8pm). The volumes of turning traffic at a number of key junctions within the town are given below:

Table 3-2 Junction Turning Count for the R194 Ballyjamesduff Road with the N3:

Turning Movement	AM Peak	Interpeak	PM Peak	12.5 Hour Total
R194 to N3 (left turn)	48	204	206	458
R194 to N3 (right turn)	199	479	448	1126
N3 to R194 (right turn)	61	204	171	436
N3 to R194 (left turn)	264	643	564	1471

Table 3-3 Junction Turning Count for the R178 Bailieborough Road with the N3:

Turning Movement	AM Peak	Interpeak	PM Peak	12.5 Hour Total
R178 to N3 (left turn)	274	284	198	756
R178 to N3 (right turn)	330	488	387	1205
N3 to R178 (right turn)	177	236	231	644
N3 to R178 (left turn)	270	438	504	1212

Table 3-4 Junction Turning Count for the R194 Mullagh Road with the N3:

Turning Movement	AM Peak	Interpeak	PM Peak	12.5 Hour Total
R194 to N3 (left turn)	40	37	37	114
R194 to N3 (right turn)	143	179	166	488
N3 to R194 (right turn)	20	14	47	81
N3 to R194 (left turn)	107	176	238	521

SECTION 4: COLLISION DATA

4.1 Collision Statistics

The Road Safety Authority collision database was reviewed to understand the collision history within the Area of Influence (rsa.ie). Figure 4-1 shows how collisions are dispersed within the Area of Influence for the 5-year period between 2012 and 2016 under consideration. Figures 4-2, 4-3 and 4-4 illustrate collisions at three potential cluster sites: at Crannadillon, the town of Virginia and at Whitegate.

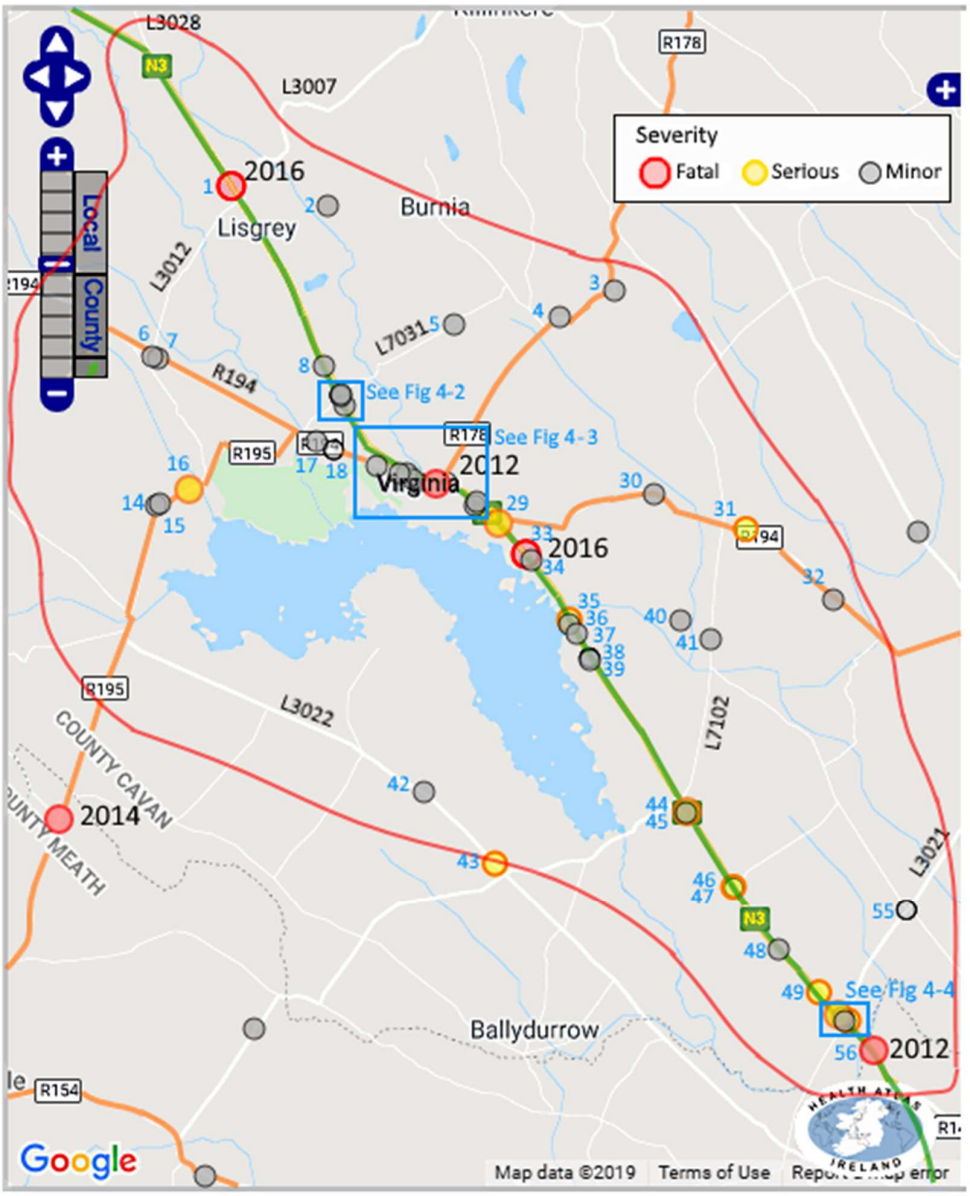


Figure 4-1 Collisions 2012 to 2016 within the Area of Influence

A cluster site was identified at Crannadillon, north of Virginia on the N3 at a crossroads with the L7031 and the L7032, known locally as Murmod Cross, as per Figure 4-2. Five minor collisions occurred here for 2012-2016. Four of the collisions were located on the cross-roads and one single-vehicle motorcycle incident was recorded just south of the junction. Two of the collisions involved cars, one involved a goods vehicle, one involved a motorcycle and one was undefined. All of the circumstances recorded for the four collisions at

the cross-roads suggest the incidents related to turning movements: “angle, both straight” x3 and “rear-end straight”.

Collision history within the town of Virginia warranted further analysis to determine if clustering was prevalent in the town. A dispersed positioning of collisions does not suggest the presence of any cluster sites. *See* Figure 4-3.

With two serious and three minor collisions recorded at the staggered junction at Whitegate, this could be considered a cluster site. *Refer to* Figure 4-4. Two of the incidents involved good vehicles and three involved cars. The collision circumstances recorded show some variability, however two of the incidents are likely to be directly attributed to turning movements at the junction. The 2013 serious car incident is noteworthy in that it involved 7 injured parties. As the collision circumstances was recorded as a rear-end collision, this incident could have involved a vehicle slowing down on the N3 to turn onto one of the side roads.

Figure 4-2 Collisions 2012 to 2016 at Crannadillon

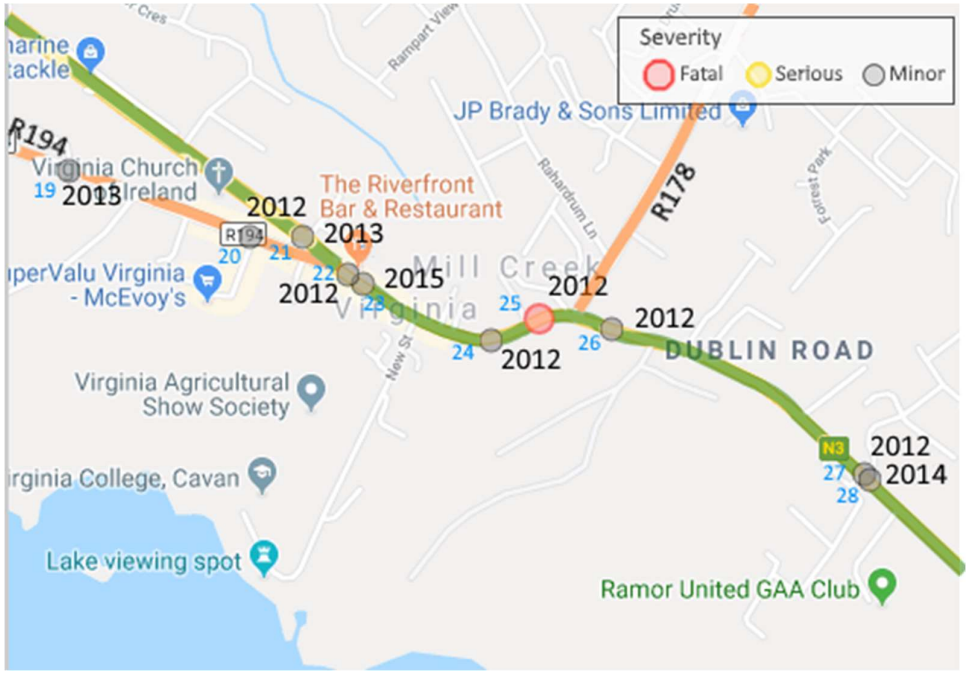


Figure 4-3 Collisions 2012 to 2016 within the Virginia urban area

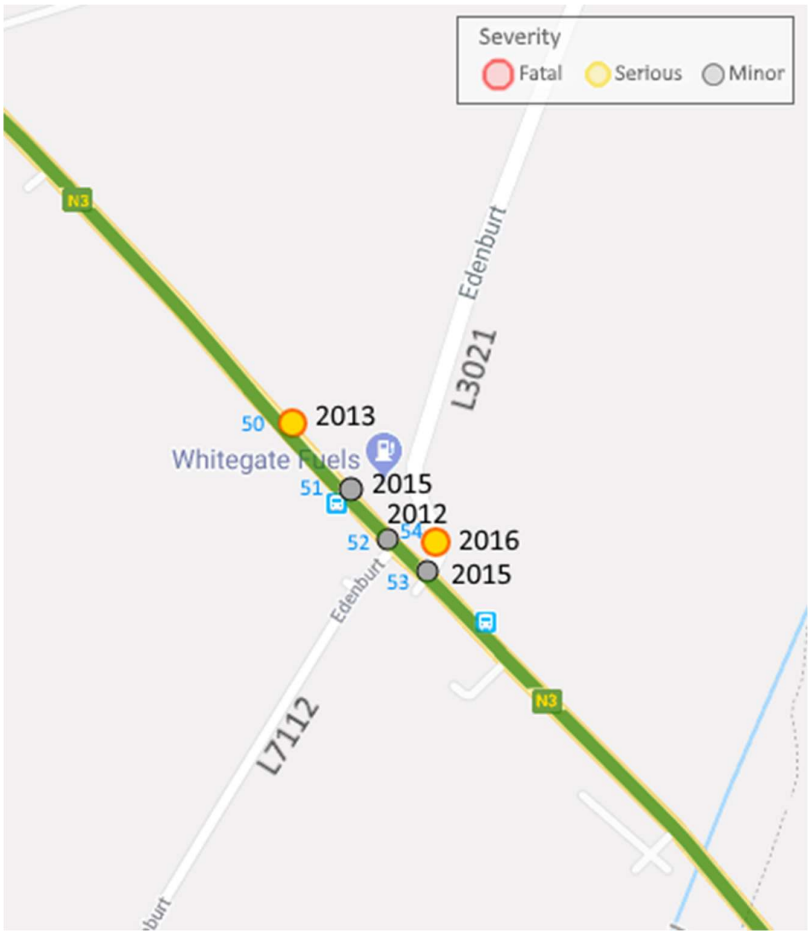


Figure 4-4 Collisions 2012 to 2016 at Whitegate

Table 4-1 lists details of 56 no. collisions between the period 2012 to 2016 and for all roads within the conceptual Area of Influence.

- 4 collisions were fatal, 10 were serious and 42 were minor.
- Details of the fatal collisions are:
  - 1 pedestrian killed by a goods vehicle in 2016 on the N3 north of Virginia at Lisgrea House in a 100kph zone at a location coincident with bus stops on both sides of the road.
  - Single vehicle car incident on a bend in the town of Virginia in 2012 during hours of darkness.
  - Head-on collision involving a car and presumably another vehicle on a straight section of the N3 south of Virginia in 2016 in a 100kph zone. One fatality.
  - Single vehicle car incident on the L28245 in 2012 at a confluence of two T-junctions at the N3 south of Virginia during hours of darkness. The incident involved one fatality and three minor injuries. The L28245 junction with the N3 is now closed off at this location.
- 8 collisions occurred on local or unclassified roads, 13 on regional roads and 35 on the N3.
- 40 collisions involved a car and of those eight were single-vehicle incidents.
- 11 collisions involved goods vehicles, three of which were single-vehicle.
- There were two incidents involving motorcyclists: and one collision was minor and the other serious in nature.

Refer to Appendix 2 for a graphical representation of the collision data.

.

Table 4-1 Collision Data 2012 to 2016 within the Area of Interest

Collision No.	Severity	Year	Route	Vehicle	Circumstances	Day	Time	Casualties	N3 Speed Limit Zone
1	Fatal	2016	N3	Goods vehicle +	Pedestrian	Monday	0700-1000	1	> 60kph
2	Minor	2014	Unclassified	Car +	Angle, both straight	Tuesday	1000-1600	1	
3	Minor	2015	R178	Car	Single vehicle only	Sunday	1000-1600	1	
4	Minor	2015	R178	Car +	Head-on conflict	Friday	1000-1600	2	
5	Minor	2015	L7031	Car +	Angle, both straight	Friday	1000-1600	1	
6	Minor	2012	R194	Goods vehicle +	Head-on conflict	Friday	1600-1900	2	
7	Minor	2013	R194	Goods vehicle	Single vehicle only	Saturday	1000-1600	1	
8	Minor	2014	N3	Car	Single vehicle only	Monday	2300-0300	2	> 60kph
9	Minor	2016	N3	Undefined	Angle, both straight	Wednesday	1600-1900	1	> 60kph
10	Minor	2015	N3	Car +	Angle, both straight	Wednesday	1900-2300	1	> 60kph
11	Minor	2013	N3	Car +	Angle, both straight	Saturday	1000-1600	2	> 60kph
12	Minor	2012	N3	Goods vehicle +	Rear end, straight	Tuesday	1900-2300	1	> 60kph
13	Minor	2015	N3	Motorcycle	Single vehicle only	Friday	1600-1900	1	> 60kph
14	Minor	2015	R195	Car +	Head-on conflict	Monday	1600-1900	3	
15	Minor	2013	R195	Car	Single vehicle only	Sunday	1000-1600	4	
16	Serious	2015	R195	Car +	Angle, right turn	Wednesday	1600-1900	2	
17	Minor	2012	R194	Car +	Rear end, straight	Friday	1900-2300	1	
18	Minor	2016	R194	Car +	Rear end, straight	Friday	1000-1600	1	
19	Minor	2013	R194	Car	Other	Tuesday	1600-1900	1	
20	Minor	2012	R194	Car +	Head-on right turn	Thursday	1600-1900	1	

Collision No.	Severity	Year	Route	Vehicle	Circumstances	Day	Time	Casualties	N3 Speed Limit Zone
21	Minor	2013	N3	Car +	Head-on conflict	Tuesday	1600-1900	1	≤ 60kph
22	Minor	2012	N3	Car +	Rear end, straight	Friday	1600-1900	2	≤ 60kph
23	Minor	2015	N3	Car	Pedestrian	Sunday	0300-0700	1	≤ 60kph
24	Minor	2012	N3	Car +	Rear end, straight	Friday	1600-1900	2	≤ 60kph
25	Fatal	2012	N3	Car	Single vehicle only	Sunday	2300-0300	1	≤ 60kph
26	Minor	2012	N3	Car +	Rear end, straight	Saturday	1000-1600	3	≤ 60kph
27	Minor	2012	N3	Goods vehicle +	Rear end, straight	Sunday	0300-0700	2	≤ 60kph
28	Minor	2014	N3	Car	Other	Wednesday	0300-0700	1	≤ 60kph
29	Serious	2012	N3	Car +	Angle, both straight	Friday	1000-1600	2	≤ 60kph
30	Minor	2013	R194	Car	Other	Wednesday	1000-1600	1	
31	Serious	2015	R194	Car +	Angle, both straight	Friday	1000-1600	1	
32	Minor	2012	R194	Goods vehicle	Single vehicle only	Wednesday	1000-1600	1	
33	Fatal	2016	N3	Car +	Head-on conflict	Wednesday	1000-1600	1	> 60kph
34	Minor	2013	N3	Car +	Rear end, straight	Friday	1600-1900	2	> 60kph
35	Serious	2016	N3	Car	Single vehicle only	Sunday	0300-0700	3	> 60kph
36	Minor	2014	N3	Car +	Rear end, straight	Friday	1000-1600	4	> 60kph
37	Minor	2012	N3	Car +	Head-on conflict	Sunday	2300-0300	2	> 60kph
38	Minor	2016	N3	Car +	Rear end, straight	Friday	1600-1900	1	> 60kph
39	Minor	2012	N3	Goods vehicle +	Head-on conflict	Friday	1000-1600	2	> 60kph
40	Minor	2012	Unclassified	Car +	Head-on conflict	Tuesday	1000-1600	1	
41	Minor	2014	L7102	Car	Unknown	Friday	1600-1900	1	

Collision No.	Severity	Year	Route	Vehicle	Circumstances	Day	Time	Casualties	N3 Speed Limit Zone
42	Minor	2013	L3022	Car	Single vehicle only	Tuesday	1600-1900	1	
43	Serious	2016	L3022	Car	Other	Tuesday	1900-2300	3	
44	Minor	2013	N3	Goods vehicle	Other	Sunday	1600-1900	2	≤ 60kph
45	Serious	2015	N3	Car	Pedestrian	Wednesday	1600-1900	1	≤ 60kph
46	Serious	2016	N3	Goods vehicle	Other	Monday	0700-1000	1	> 60kph
47	Minor	2016	N3	Car +	Head-on right turn	Wednesday	1000-1600	2	> 60kph
48	Minor	2014	N3	Car	Single vehicle only	Wednesday	0300-0700	1	> 60kph
49	Serious	2016	N3	Motorcycle	Rear end, straight	Sunday	1000-1600	1	> 60kph
50	Serious	2013	N3	Car +	Rear end, straight	Sunday	0700-1000	7	> 60kph
51	Minor	2015	N3	Car +	Head-on conflict	Saturday	1600-1900	1	> 60kph
52	Minor	2012	N3	Goods vehicle	Other	Monday	1000-1600	1	> 60kph
53	Minor	2015	N3	Car +	Angle, right turn	Thursday	0700-1000	2	> 60kph
54	Serious	2016	L3021	Goods vehicle	Single vehicle only	Friday	1600-1900	1	
55	Minor	2016	L3021	Car	Other	Thursday	1900-2300	1	
56	Fatal	2012	L28245	Car	Single vehicle only	Saturday	2300-0300	4	

4.2 Personal Injury Collision (PIC) Rate

Using the collision statistics in Table 4-1 and traffic flow information, the Personal Injury Collision (PIC) rate for the N3 was calculated. This rate is an indicator for the road safety performance of the N3 within the area of influence, based on collision numbers, traffic data, link length, speed limit and road type/cross-section. The PIC was then compared to the expected PIC rate as per PAG Unit 6.11 (National Parameters Value Sheet) Table 23.

For the PIC calculations, AADT information was taken from the TII traffic counter located south of Virginia on the N3 for the year 2016. To conduct the calculations, the route was split up into sections relating to the respective speed limits and further sub-divided based on road characteristics, as shown in Figure 4-5.

Figure 4-5 – N3 Speed Limit Zones

Table 4-1 lists the collision rates calculated for each of the defined sections of the N3 and compares these rates to expected PIC rates from the PAG. Figure 4-6 provides a graphical illustration of this check.

While the two sub-60kph speed limit zones of Maghera and Virginia town (Sections 2 and 4 respectively) have a below average collision rate when compared to national norms, the national speed limit sections

north and south of Virginia have above average collision rates. Maghera to Virginia (Section 3) has a collision rate 20% greater than expected, while the N3 north of Virginia over twice above average (Section 5). The N3 between Maghera and the southern tie-in (Section 1) has, despite a good standard of geometry and cross-section, an above average collision rate at approximately 35% higher than the expected value in TII PAG Unit 6.11, with 4 of the collisions in this Section attributed to the staggered junction at Whitegate. With only one collision in the 5-year period for the 4km section of the N3 south of Lisgrea (Section 6), a very low collision rate results and correlates to the good quality level of service of the roadway in terms of geometry and cross-section.

When the calculated collision rates are compared to the expected rates set out in the TII PAG Unit 6.11 for the periods 2012-2014 and 2014-2016, it is evident that Sections 1, 3, 5 and 6 all have collision rates above that expected. This equates to approximately 8.5km of road length on the N3 within the area of influence (53% of the length assessed).

Table 4-1 Collision Rate along N3 between Derver and north of Lisgrea, 2012-2016

Section	Speed Limit / kph	Collision Frequency / No. of Collisions	Length / km	Collision Rate / collisions per million vkm[1]	Expected PIC rate as per PAG Unit 6.11 Table 23	Comparison of collision rate to expected
Section 1: south tie-in to Maghera	> 60	8	3.603	0.108	0.080	Above Expected
Section 2: Maghera	≤ 60	2	0.852	0.115	0.213	Below Expected
Section 3: Maghera to Virginia	> 60	7	3.472	0.098	0.080	Above Expected
Section 4: Virginia	≤ 60	9	2.663	0.165	0.213	Below Expected
Section 5: Virginia to south of Lisgrea	> 60	6	1.520	0.193	0.080	Over Twice Above Expected
Section 6: south of Lisgrea to north tie-in	> 60	1	4.104	0.012	0.080	Over Twice Below Expected

[1] Collision Rate based on an AADT of 11217 veh and 5 years / 1826.25 days period of analysis

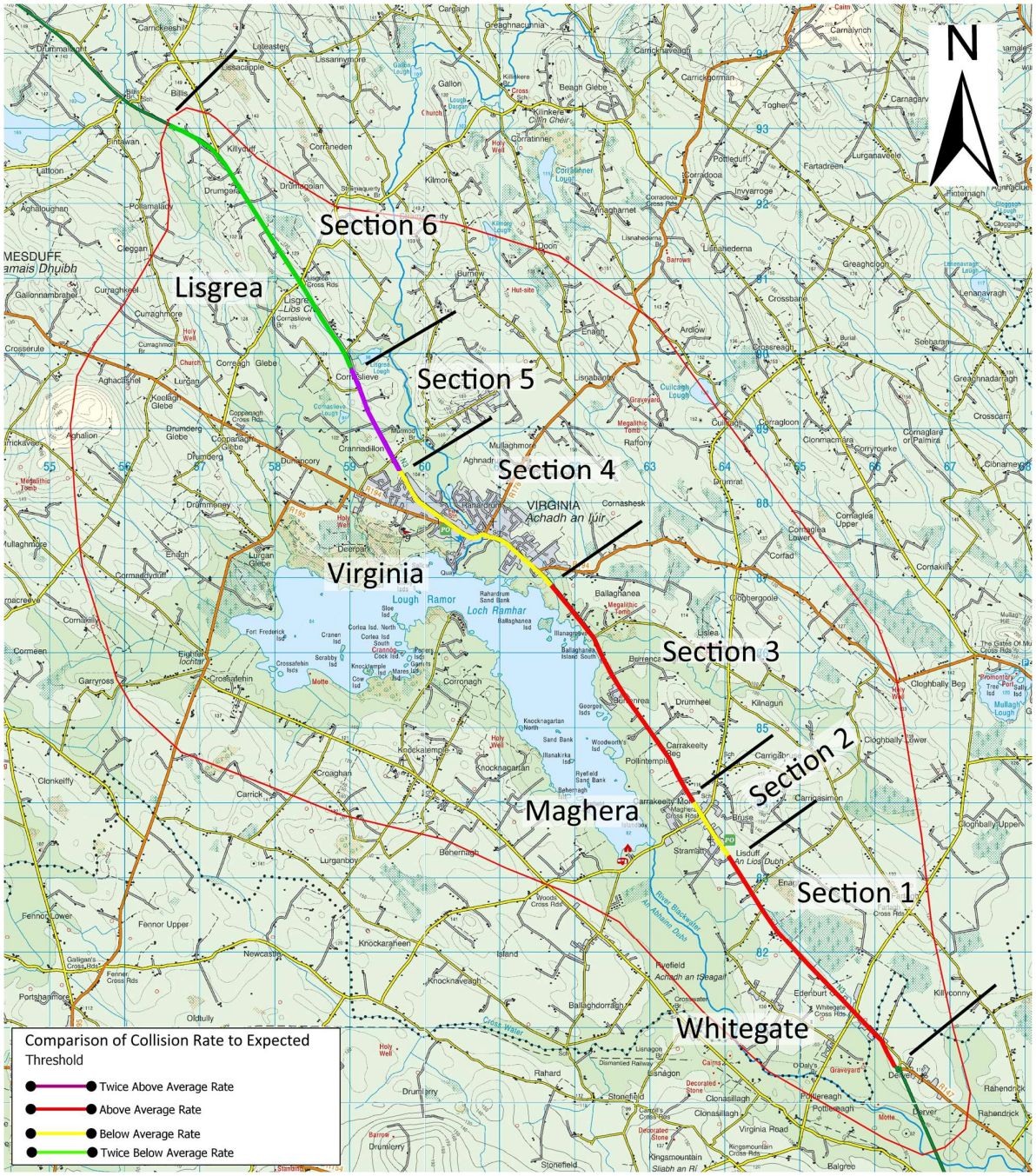


Figure 4-6 Collision Rate along N3 between Derver and north of Lisgrea, 2012-2016

4.3 Network Safety Ranking

Network Safety Ranking is the process of using collision data to rank the safety of the national road network and to identify high collision locations. Collision data used for this process is collected by the Road Safety Authority. The average collision rates on the various road types (motorway, rural and urban dual carriageway, and rural and urban two-lane) are available on the website https://data.gov.ie/organization/transport-infrastructure-ireland. Based on the collision rates for 2012 to 2014 and 2014 to 2016, the national routes are categorised into 4 groups and represented by colour as shown in Figures 4-7 and 4-8.

The figures demonstrate that there is considerable variability along the N3 within the Area of Influence in terms of correlation with the national trend with results varying between the extremes of “twice below” and “twice above” national averages evident. There is also variability between the 2012 to 2014 and 2014 to 2016 periods:

- The N3 at Lisgrea shows a swing from “twice below” to “twice above” national average.
- Virginia town centre (N3) shows a swing from “twice above” to “below” national average.
- N3 southern approach to Virginia has two zones that experience one-step reduction in collision rates.

It is also evident that there are zones that show consistently high collision rates between the 2012 to 2014 and 2014 to 2016 periods:

- At the transition from urban to rural on the N3 north and south of Virginia.
- On the N3 south of Virginia on a stretch centred at Whitegate Cross.

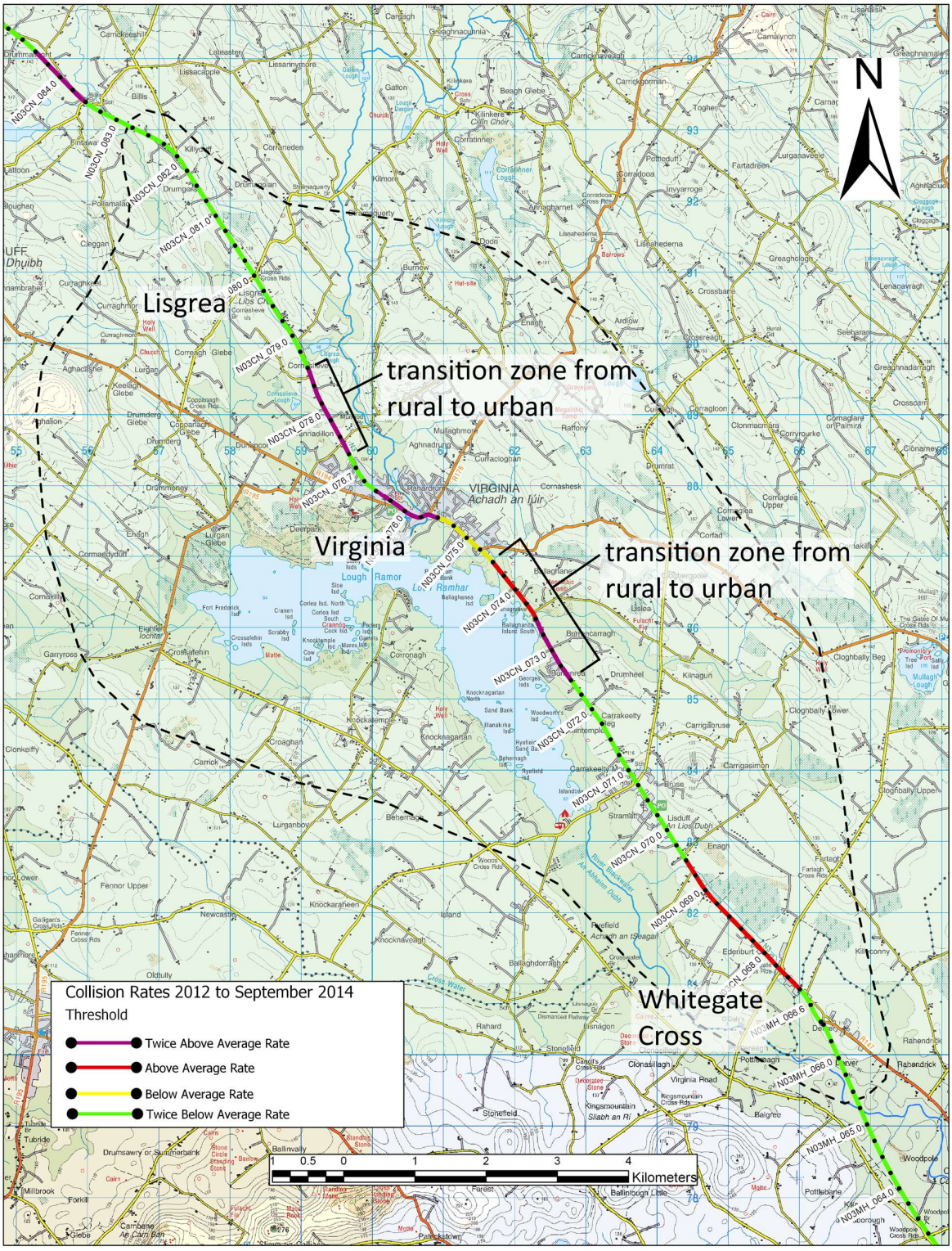


Figure 4-7 Network Safety Ranking 2012 – 2014 data

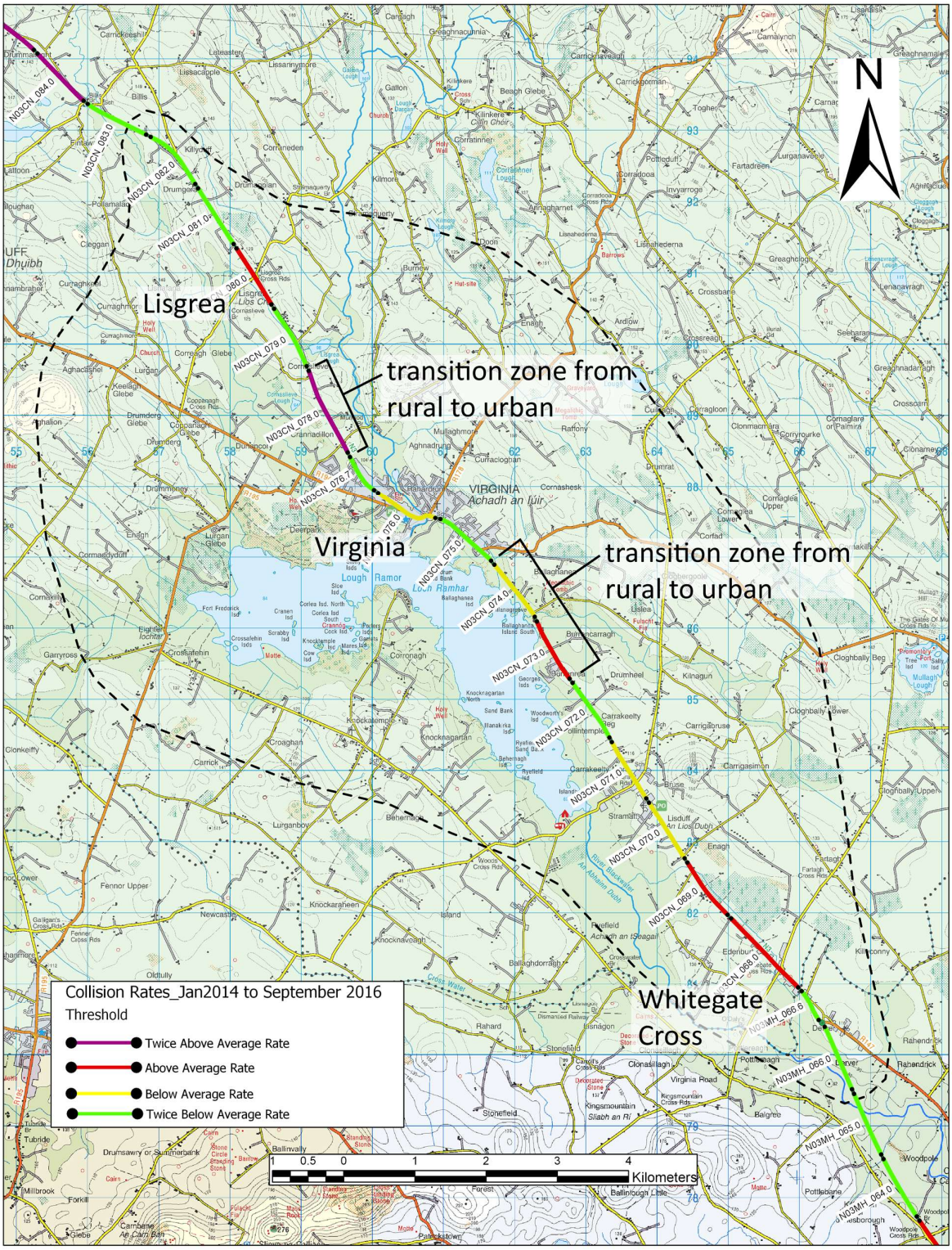


Figure 4-8 Network Safety Ranking 2014 – 2016 data

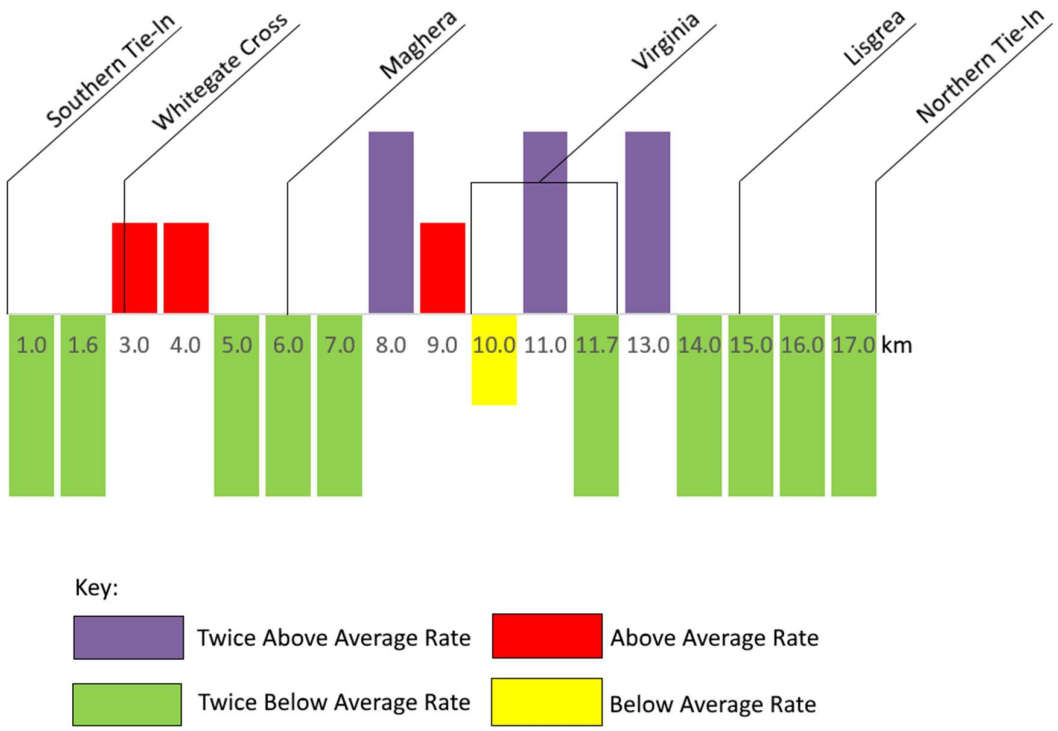


Figure 4-9 Network Safety Ranking 2012 – 2014 data

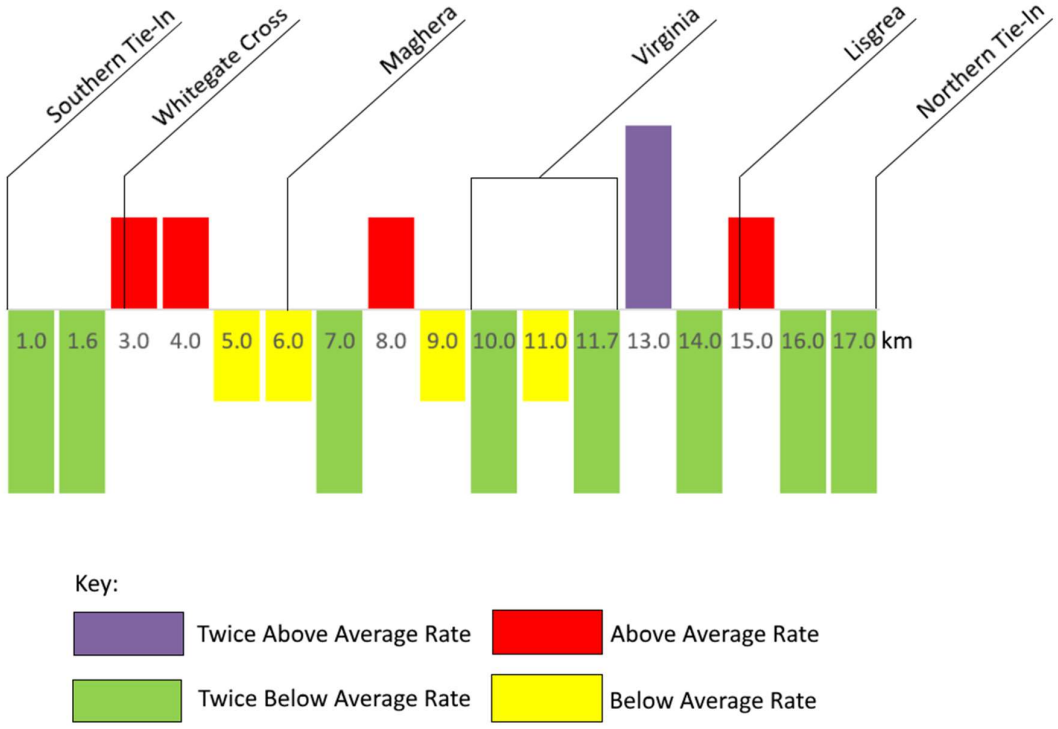


Figure 4-10 Network Safety Ranking 2014 – 2016 data

4.4 GE-STY-01022 Sites

A number of locations on the N3 and within the area of influence have been identified by the TII as part of their GE-STY-01022 assessments to ascertain those parts of the national network that are High Collision Locations and candidates for remedial improvement works.

A section of the N3 in the townland of Burrenrea (in vicinity of Glanbia Ingredients Ireland Ltd) has a high collision rating and has been identified by the TII as a high collision location (site ID N03CN_073.0 – 2012 to 2014 assessment) noting the following potential safety concerns:

- Vehicle Speeds;
- Overtaking Manoeuvres; and
- Right turn movements into businesses.

Additional high collision locations include Site ID N03CN_076.0 Virginia Main Street for the period 2012-2014 and Site ID N03CN_078.0 Murmod Cross (Crannadillon).

4.5 Road Safety Inspections

A Road Safety Inspection, to TII Publications (Standards) AM-STY-06044 has been prepared for the N3 extending between Section IDs (Meath) N03MH_056.6 & N03MH 066.6, (Cavan)_N03CN_068.0 & N03CN_120.4 and (Donegal) N03DL_124.0 & N03DL_128.7.

The RSI was completed by Mouchel/PMCE in January 2013 and a review took place between June 2016 and February 2017.

The sections of the N3 within the area of influence for the N3 Virginia Bypass scheme includes:

- (Meath) N03MH_064.0 & N03MH 066.6; and
- (Cavan) N03CN_068.0 & N03CN_083.0.

The RSI recorded 30 hazard locations along the N3 within the area of influence, with the majority of issues identified being maintenance issues relating to traffic signs and road markings. Figure 4-11 below includes an extract of the hazard locations and hazard priority along the section of the N3 under consideration with hazard priority (rating of 1 to 8):

- Priority 5 @ 14 locations;
- Priority 6 @ 2 locations;
- Priority 7 @ 3 locations; and
- Priority 8 @ 11 locations.

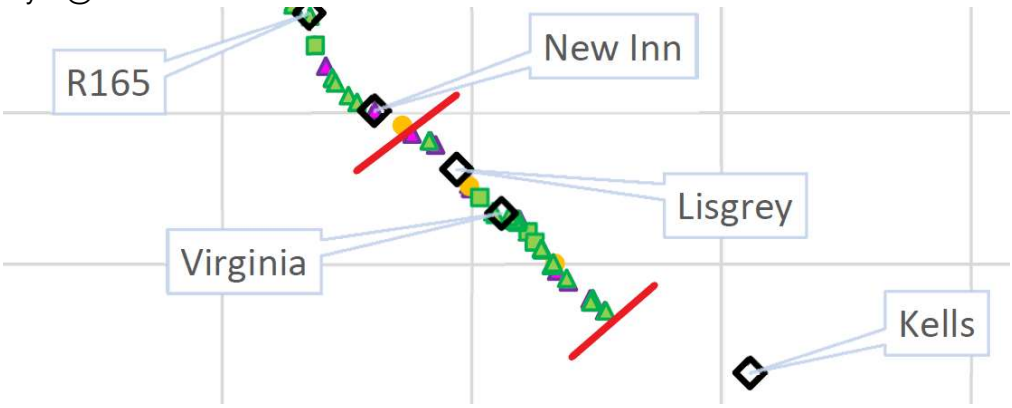


Figure 4-11 - Hazard Location by Priority (N3 RSI extract within N3 Virginia Bypass Area of Influence)

4.6 Summary of Road Safety Issues

Sections 3 and 4 of this report have outlined the existing infrastructure conditions on the N3 within the area of influence and reviewed the collision history. Overall, there have been 56 collisions over the 5-year data period, 4 of which were fatal and 10 serious. Further review of the collisions highlights that the collision rate (based on year 2016 AADT from the ATC south of Virginia) within Virginia town itself is lower than would be expected. The sub-standard sections of the N3 to the north and south of Virginia and the section of the N3 through Whitegate junction, all show higher than expected collision rates, with the highest collision rate occurring on the N13 north of Virginia to the south of Lisgrea. Plotting of Network Safety Ranking data for the periods 2012-2014 and 2014-2016 illustrated a correlation to the calculated collisions rates.

SECTION 5: OPTIONS CONSIDERED

5.1 General

Currently the project is at Phase 2 (Options Selection) as defined in the TIIs Project Management Guidelines, PE-PMG-02041 (Jan 2019).

5.2 Do – Nothing

A Do Nothing option was considered as part of the Phase 1 RSIA. This Option has not been brought forward to the shortlist of options being considered for implementation on the project in Phase 2.

5.3 Do – Minimum

A Do Minimum option was developed for consideration at the outset of Phase 2 which comprised online, traffic management intervention to the existing N3. It was determined that this option did not meet the objectives of the scheme and therefore was not taken forward for Multi-Criteria Analysis. However, an additional Do Something option was developed, which comprises a combination of online improvements to the N3 north and south of Virginia town and an offline bypass around Virginia town, which better meet the safety objectives of the scheme. This option is Option A.

5.4 Do – Something

There are 5 No. Do – Something options being assessed within this RSIA as follows:

- Option A
- Option B
- Option C
- Option D
- Option E

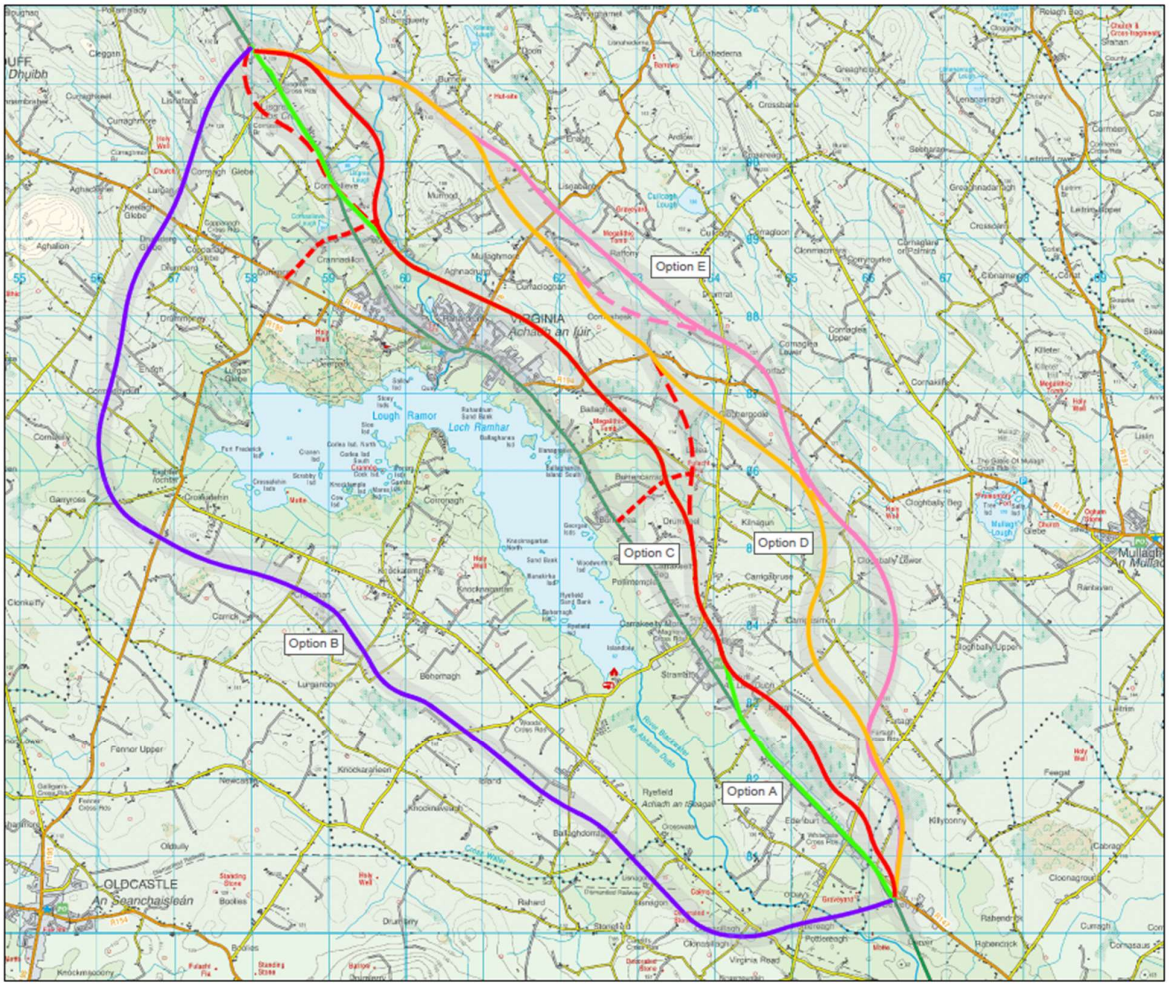


Figure 5-1 – Options Considered

SECTION 6: ROAD SAFETY IMPACT ASSESSMENT OF OPTIONS

6.1 Road User Assessment

The aim of any preferred solution is to carefully balance the demands and needs of all road users, improving road safety and increasing accessibility and efficiency for all. This part of the report will review options in terms of anticipated road user effects.

Do - Nothing

Table 6-1 Do Nothing Road User Assessment

Road User	Anticipated Effects
Car Driver	Car drivers using the N3 for strategic journeys experience numerous conflict points with other road users within the Area of Influence. These conflict points occur with vehicles at junctions throughout, and along road edges within Virginia itself, with the route being characterised by a high level of poor at-grade junctions and multiple direct accesses. The mix of strategic and local traffic results in car drivers not reaching desired speeds and can increase driver frustration. This has the potential to result in dangerous manoeuvres and risk taking: 16 of the 55 collisions being identified as *Head-on conflict and angle, both straight*. Car drivers also experience conflict with pedestrians in Virginia. With one Zebra crossing present within the centre of the town, the desire-lines of pedestrians are not satisfied safely, increasing the likelihood of pedestrians crossing unexpectedly. The substandard cross-section and alignments on the N3 north and south of Virginia do not provide sufficient overtaking opportunities and poor forward visibility. This is exacerbated by the number of HGVs on this part of the network (8% in 2019 according to TII counter TMU N03 070.0N). A Do – Nothing solution will retain all of these issues for car drivers and result in no perceptible improvement in their driving experience or road safety.
Goods Vehicle/Bus Driver	Goods vehicle/bus drivers using the N3 for strategic journeys experience numerous conflict points with other road users within the Area of Influence. These conflict points occur with vehicles at junctions throughout, and along road edges within Virginia itself, with the route being characterised by a high level of poor at-grade junctions and multiple direct accesses. The mix of strategic and local traffic results in goods vehicle/bus drivers not reaching desired speeds, having an impact on the service being provided and in driver frustration. The poor infrastructure provision north/south of Virginia is likely to result in lower average speeds for these road users. As there is insufficient overtaking opportunity, any car users that attempt to overtake goods vehicles/buses could result in unexpected braking for these road users, increasing the risk of a loss of control type incident. Goods vehicle/bus drivers also experience conflict with pedestrians in Virginia. With one Zebra crossing present within the centre of the town, the desire-lines of pedestrians are not satisfied safely, increasing the likelihood of pedestrians crossing unexpectedly. A Do – Nothing solution will retain all of these issues for good vehicle/bus drivers and result in no perceptible improvement in their driving experience or road safety.
Pedestrian	Virginia town centre has numerous facilities including schools, medical centres, sports pitches, shops, banks etc. As such there is anticipated to be a present demand for pedestrian facilities. Currently, pedestrian provision consists of footways on each side of the N3 which aligns through the town centre, with one controlled zebra crossing at the centre of the town. This crossing is remote of many of the town facilities including schools, banks etc. This minimal provision is exacerbated by the on-street parking which occurs in the town centre, further increasing the risk for pedestrians wishing to cross along their desire lines. Outside of the town limits, the lack of pedestrian provision/NMU provision increases the road safety risk experienced by these users. Of the 4 fatal collisions occurring during in the 5-year data, 2 of these involved pedestrians outside of town limits.

Road User	Anticipated Effects
Cyclist	There are no dedicated/segregated cycle facilities in the Area of Influence examined, however given the nature of Virginia and the facilities provided, there is the potential that cyclists will use the road network for local trips. As such, any cyclists using the network will be sharing the carriageway width with motorised vehicles, making local and strategic trips. This vulnerability is increased by the lack of forward visibility for vehicles to safely overtake cyclists on the N3 and the inconsistent provision of hard-shoulders.

Do – Something

All Do Something options would have a positive impact on the road user experience and overall safety in comparison to a Do Nothing and Do Minimum scenario.

Table 6-2 Do Something Road User Assessment

Road User	Option A	Option B	Option C	Option D	Option E
Car Driver	Provision of alternative route to the existing N3 provides an engineered road alignment with associated safety benefits such as reduced conflict points, sufficient cross-sectional width, increased safe overtaking opportunity and visibility when compared to the existing conditions. There are significantly reduced conflict points with pedestrians and vulnerable road users as less vehicles navigate Virginia town centre.				
	Option A provides online improvements with new offline alignment over a shorter length than the other options. There is a significant length of parallel access roads to be provided, with a slightly lesser benefit arising as a result.		Option C results in the greatest reduction in traffic through Virginia, improving the experience for car drivers in Virginia and on the new Mainline		
Goods Vehicle/Bus Driver	Provision of alternative route to the existing N3 provides an engineered road alignment with associated safety benefits such as reduced conflict points, sufficient cross-sectional width, increased safe overtaking opportunity and visibility when compared to the existing conditions. There are significantly reduced conflict points between Goods Vehicles and pedestrians/vulnerable road users as less Goods Vehicles will have to navigate Virginia town centre.				
	Option A provides slightly lesser benefit than other options in this regard as it incorporates a lot of online intervention		Option C results in the greatest reduction in traffic through Virginia, improving the experience for Goods vehicle/bus drivers in Virginia and on the new Mainline		

Road User	Option A	Option B	Option C	Option D	Option E
Pedestrian	Provision of a separate, designed facility on the new mainline options provides an increase in infrastructure for non-motorised users. A reduction in traffic through Virginia town centre has a consequential benefit of improved environment for pedestrians within the town centre.				
			Option C results in the greatest reduction in traffic through Virginia, improving the experience for pedestrians Virginia town centre. This option can also link with existing footways in Virginia and Maghera, and has the most potential for links to other walking routes.		
Cyclist	Provision of a separate, designed facility on the new mainline options provides an increase in infrastructure for non-motorised users. A reduction in traffic through Virginia town centre has a consequential benefit of improved environment for pedestrians within the town centre.				
			Option C results in the greatest reduction in traffic through Virginia, improving the experience for cyclists Virginia town centre		

6.2 Potential for Collision Savings

An analysis of potential collision saving benefits has been undertaken using CoBALT software. The results of this assessment are shown

Table 6-3 CoBALT results for each Option

	Option A	Option B	Option C	Option D	Option E
Benefits in €000's	≈21,383	€31,175	€36,355	€28,455	€27,692
Fatal Accident Reductions	≈13	18	21	17	17
Serious Accident Reductions	≈41	65	75	57	56
Slight Accident Reductions	≈198	336	392	270	266

6.3 Road Safety Engineering Assessment

6.3.1 Effects on Traffic Patterns

Do – Nothing

A Do-Nothing scenario will result in a continuation of the existing conditions on the N3 and regional roads connecting to it, with high percentage of Goods Vehicles and strategic traffic travelling through Virginia, increasing potential for conflict points as traffic volumes increase.

Drivers, including those of goods vehicles and buses, will continue to experience unreliable journey times affected by all other road users, and the existing infrastructure and future traffic volumes will continue to be unattractive for non-motorised road users.

Do – Something

All Do Something options will move traffic from the existing N3 and the existing residual road network to the new mainline alignment, thereby providing a reduction of traffic volumes through Virginia town centre.

In reviewing available traffic data, it's clear that Option C results in the biggest transfer of traffic away from Virginia town centre which will have a positive impact for the N3 in this location. Option B has the highest overall traffic level on the mainline of any option, which may be attributed to Option B capturing additional traffic from Ballyjamesduff that do not transfer to the other options.

	Min Predicted AADT range for mainline 2028	Max AADT in Virginia town centre
Option A	8724	2309
Option B	9015	6323
Option C	8724	2309
Option D	7758	6383
Option E	7509	6696

6.3.2 Geometric Features

Option A has the highest gradient of 5.4%, occurring at a section where an online upgrade is proposed. This exceeds the desirable maximum gradient for this cross-section type. Option A also has the highest number of junctions on the mainline. Option C has the lowest gradient of all options.

Table 6-4 Key Geometric Characteristics of each option

	Length of Mainline (m)	Max. Gradient %	No. Junctions on Mainline
Option A	13,960	5.4	6
Option B	18,527	5.1	4
Option C	14,729	4.31	5
Option D	15,196	5.0	4
Option E	15,490	5.0	4

6.3.3 Options Impact on Collision Locations

Collision Locations include:

- Whitegate Cross
- Site ID N03CN_073.0 Burrenrea (in the vicinity of Glanbia Ingredients Ireland Ltd)
- Site ID N03CN_076.0 Virginia Main Street
- Site ID N03CN_078.0 Murmod Cross
- Lisgrea Cross

Option A

Option A will result in the closure of the existing crossroads at Whitegate Cross. Traffic will be re-routed to the existing junction at Derver via parallel access roads. Traffic flows at Burrenrea will be reduced by approximately 90% at the year of opening (from 11,500 AADT down to 975 AADT). Traffic flows through Virginia town centre will be reduced by approximately 60% (from 15,110 AADT down to 2,310 AADT). Traffic flows at Murmod Cross will be reduced by approximately 85% of AM and PM peak hour flows at the year of opening. The northern junction location will aim to remove the staggered crossroads at Lisgrea Cross and realign the existing local roads into the proposed junction.

Option B

Option B will result in a reduction in traffic flows at Whitegate Cross of approximately 60% at the year of opening (from 12,870 AADT down to 5,265 AADT). At Burrenrea traffic flows will be reduced by approximately 70% (from 11,500 AADT down to 3,395 AADT). Traffic flows through Virginia town centre will be reduced by approximately 60% (from 15,110 AADT down to 6,320 AADT). Traffic flows at Murmod Cross will be reduced by approximately 76% of AM and PM peak hour flows at the year of opening . The northern junction location will result in the removal of strategic traffic from the staggered crossroads at Lisgrea Cross.

Option C

Option C will result in a reduction in traffic flows at Whitegate Cross of approximately 70% at the year of opening (from 12,870 AADT down to 3,675 AADT). At Burrenrea traffic flows will be reduced by approximately 90% (from 11,500 AADT down to 975 AADT). Traffic flows through Virginia town centre will be reduced by approximately 85% at the year of opening (from 15,110 AADT down to 2,310 AADT). Traffic flows at Murmod Cross will be reduced by approximately 94% of AM and PM peak hour flows at the year of opening. The northern junction location will result in the removal of strategic traffic from the staggered crossroads at Lisgrea Cross.

Option D

Option D will result in a reduction in traffic flows at Whitegate Cross of approximately 55% at the year of opening (from 12,870 AADT down to 5,610 AADT). At Burrenrea traffic flows will be reduced by approximately 65% (from 11,500 AADT down to 4,130 AADT). Traffic flows through Virginia town centre will be reduced by approximately 60% at the year of opening (from 15,110 AADT down to 6,380 AADT). Traffic flows at Murmod Cross will be reduced by approximately 85% of AM and PM peak hour flows at the year of opening. The northern junction location will result in the removal of strategic traffic from the staggered crossroads at Lisgrea Cross.

Option E

Option E will result in a reduction in traffic flows at Whitegate Cross of approximately 55% at the year of opening (from 12,870 AADT down to 5,840 AADT). At Burrenrea traffic flows will be reduced by approximately 65% at the year of opening (from 11,500 AADT down to 4,240 AADT). Traffic flows through Virginia town centre will be reduced by approximately 55% at the year of opening (from 15,110 AADT down to 6,700 AADT). Traffic flows at Murmod Cross will be reduced by approximately 80% of AM and PM peak hour flows at the year of opening. The northern junction location will result in the removal of strategic traffic from the staggered crossroads at Lisgrea Cross.

6.4 Road Safety Objectives

The Road Safety Objectives for the scheme are outlined in Section 1.4. All Do Something Options work towards achieving the project Road Safety Objectives and would be a significant improvement in terms of safety in comparison to a Do Nothing option.

Option C has a better performance on this criterion than the other options as this option results in the most significant reduction of AADT within Virginia Town Centre. This puts Option C slightly ahead of other options on Objective 5: *"To improve safety for vulnerable road users by providing an Active Travel route and provide better environment for vulnerable road users within the study area particularly Virginia town centre."*

SECTION 7: COMPARISON OF PHASE 2 OPTIONS

A total of 5 No. Do Something Options were reviewed as part of the Phase 2 Road Safety Impact Assessment. Option Variations are not reviewed as part of this RSIA as they will have similar impacts on road safety and road users as per the main options reviewed. All Do Something Options, including Option Variations will provide a significant benefit in terms of road safety in comparison to the Do Minimum and Do-Nothing Options.

All Do Something Options will provide improved infrastructure and reduced conflict points for all motor vehicle users and reduce the amount of traffic on the existing N3 and within Virginia town centre. This will drive a consequential benefit of improved road experience for non-motorised users within the town, while also incorporating new segregated infrastructure for pedestrians/cyclists on the new mainline.

All Options aligning to the east of Virginia align with expected “desire lines” of N3 strategic traffic. Option A includes a combination of online upgrade with associated link roads and an offline realignment. It is the shortest of all options (13.96km) and has the most junctions along its length (6), generating the most conflict points of all Do Something options. The level of infrastructure provision on this option will be constrained compared to other options due to part of the route being online.

Options D and E align furthest to the east. Both have similar lengths (15.2km and 15.5km respectively) and similar COBALT Values, and both Options have 4 junctions along the mainline. Although Options D and E intercept the R178 and R194 roads to the east of Virginia, neither option has a link to the R194 Ballyjamesduff Road meaning there is a greater likelihood for traffic to/from Ballyjamesduff to have to utilise existing residual road network.

Conversely, Option B to the West of Virginia performs in a different way to the rest of the routes. This route is the longest (18.5km), and generates the most traffic on the mainline, after Options A and C, which could be attributed to the use it will receive from Ballyjamesduff traffic. It performs similarly to Options D and E in terms of future traffic volumes in Virginia (Link 25, in the centre of Virginia town ~AADT 6300). Option B intercepts the R194 and R195 to the west of Virginia, but provides no connection from / to the regional roads on the east of Virginia (R178 Bailieborough or R194 Mullagh), forcing traffic to utilise existing residual road network.

Option C aligns to the east of Virginia and is closest to the town itself, giving some potential for severance of communities at Maghera, Virginia etc. This option has the most significant reduction of traffic through Virginia town centre (Link 25 , in the centre of Virginia town ~2300) compared with the other options, giving higher potential for improved environment for road users, including NMUs in Virginia. As the option aligns to the east of Virginia, it intercepts the R178 and R194 roads. It also includes a link to the R194 Ballyjamesduff Road, all of which help reduce likelihood of traffic using the residual road network. However, this Option also has 5 junctions along it’s 14.7km length whereas Options B, D and E all have 4 junctions over a longer length. This shortens the weaving distances available to traffic on the Type 2 dual carriageway and increases the potential for the mainline to be used for local trips, resulting in mixing of strategic and local traffic.

However, this additional junction is in place to facilitate the inclusion of link roads north and south of Virginia (i.e. the Burrencarragh Link Road and the Ballyjamesduff Link Road) in Options A and C. The Design team have highlighted that these link roads offer the potential for the implementation of a HGV / Axle ban within Virginia town centre with the only permitted HGV access to the town being for deliveries within the town. The safety benefits brought about by a HGV ban are likely to offset the negative impact of the additional junction on the mainline in comparison to the other options. Similar link roads are not proposed for Options B, D and E, due to the topography of the region and the distances involved. Therefore, there is no potential for implementing a HGV / Axle ban in Virginia for these options as HGVs associated with logistics and industrial facilities in the region would otherwise have to travel long distances to access the bypass.

SECTION 8: CONCLUSIONS AND SUMMARY

This report has defined the existing operational and safety problems on the N3 and adjoining links in the vicinity of Virginia, Co. Cavan and compared the Phase 2 Options being considered in terms of their Road Safety Impact.

All Do Something options A to E provide a significant safety benefit to the road network in the area in comparison to the Do Nothing or Do Minimum Options. All Options provide an engineered transport corridor catering for vehicular and non-vehicular traffic and will reduce the amount of strategic traffic travelling on the existing N3 and through Virginia town centre. This will provide a consequential benefit of improved environment for vulnerable road users in the town and a reduction in conflicts between strategic /local traffic, and vehicular / non vehicular traffic on the residual road network.

The RSIA team ranking of Phase 2 options is as follows:

	Ranking
Option A	5
Option B	2
Option C	1
Option D	2
Option E	2

Appendix 1: Road Safety Impact Assessment Team Approval

From: De Beer Alastair <Alastair.DeBeer@tii.ie>
Sent: Friday 20 September 2019 08:33
To: Eamon Daly <edaly@jbbarry.ie>
Cc: 'lcurtis@kerry.nrdo.ie' <lcurtis@kerry.nrdo.ie>; Kennedy Bryan <Bryan.Kennedy@tii.ie>
Subject: RE: Road Safety Impact Assessment - N3 Virginia - RSIA Team Approval

Eamon,

I have studied the CVs for the proposed team, and I confirm that the following individuals meet with the qualification requirements for PE-PMG-02001, as follows:

Peter Morehan is suitable qualified in accordance with PE-STY-02003 to fulfil the role of Road Design Engineer for N3 Virginia Bypass

Tristian Dunne is suitable qualified in accordance with PE-STY-02003 to fulfil the role of Road Safety Auditor for N3 Virginia Bypass

Emma Coyle is suitable qualified in accordance with PE-STY-02003 to fulfil the role of Road Design Engineer but not the role of Road Safety Auditor for N3 Virginia Bypass.

The team is approved to carry out the Road Safety Impact Assessment (RSIA) for the N3 Virginia Bypass.

Regards,

Alastair

Alastair de Beer

Chartered Engineer

Head of Roads Safety

Transport Infrastructure Ireland

Tel: +353 (0)1 646 3639

Mobile +353 (0)86 8320303

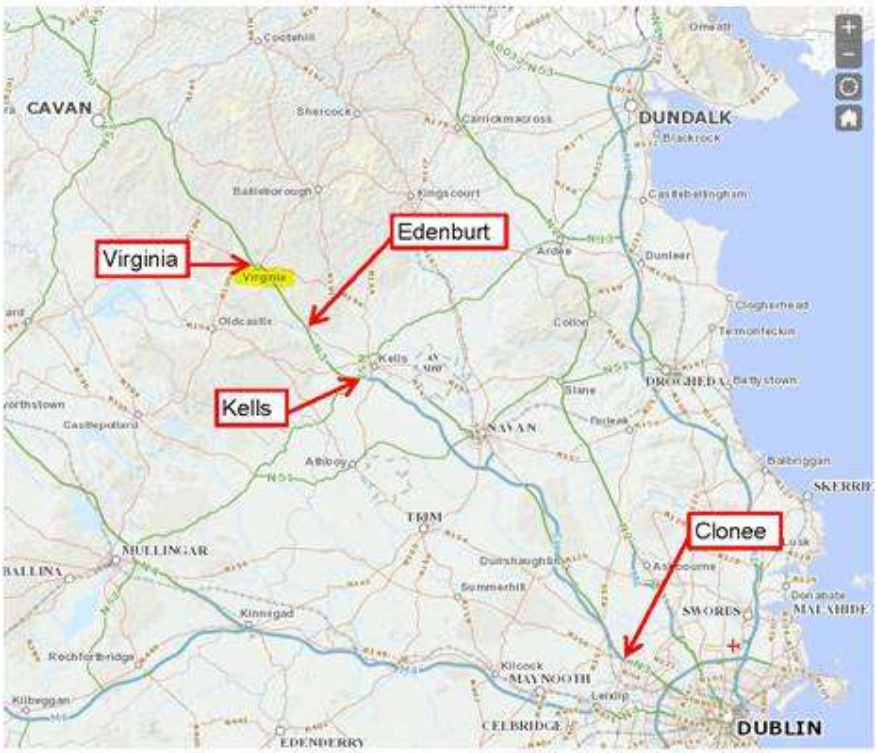
From: Eamon Daly <edaly@jbbarry.ie>
Sent: Monday 16 September 2019 13:03
To: De Beer Alastair <Alastair.DeBeer@tii.ie>
Subject: Road Safety Impact Assessment - N3 Virginia - RSIA Team Approval

Alastair,

Barry Transportation have been appointed to develop the N3 Virginia Bypass through Phases 1 to 4 of the TII Project Management Guidelines.

We are currently working on the Concept and Feasibility stage.

The scheme study area, while still to be finalised, will extend from the Edenburt / Derver area in the vicinity of the Cavan / Meath border, where the existing N3 changes cross section from a Type 2 dual carriageway to a single carriageway, bypassing Virginia and will connect back to the existing N3 in the vicinity of Lisgrea approximately 2 to 3 km to the north of Virginia. The scheme location is shown below and on the attached.



As part of the Feasibility Stage we will be undertaking a Road Safety Impact Assessment (RSIA). At this stage we do not have any options developed. The RSIA will be refined / updated at Route Selection Stage when we have developed Route Options including the Do Nothing and Do Minimum proposals.

In compliance with the requirements of PE-PMG-02001, PE-STY-02003 and PE-PMG-02005 we propose the following RSIA team for approval.

- Tristan Dunne – Road Safety Auditor
- Peter Morehan – Road Design Engineer

We are also proposing that Emma Coyle is part of the team. Emma is a Chartered Road Design Engineer with a Masters Degree and 7 years post graduate experience.

I attach CV's for Peter, Tristan and Emma.

Can you please revert with approval of the proposed RSIA team or contact me if you have any queries.

Regards

Eamon Daly, Director

Barry Transportation

Unit 14C, N5 Business Park, Moneen Rd, Castlebar, Co. Mayo, F23 YY39

Phone: +353 (0) 94 906 8950, DD: +353 94 906 8951, mobile: +353 87 948 3556

email: edaly@jbbarry.ie website: www.barrytransportation.ie

JB Barry Transportation Limited, trading as Barry Transportation, is registered in Ireland #322785

Appendix 2: Collision Statistics

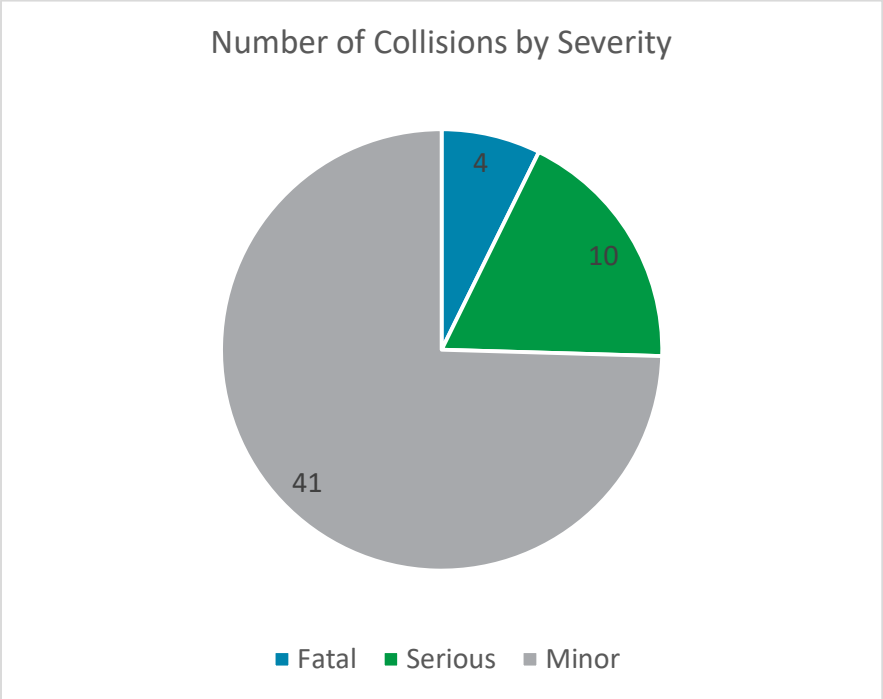


Figure A2-1

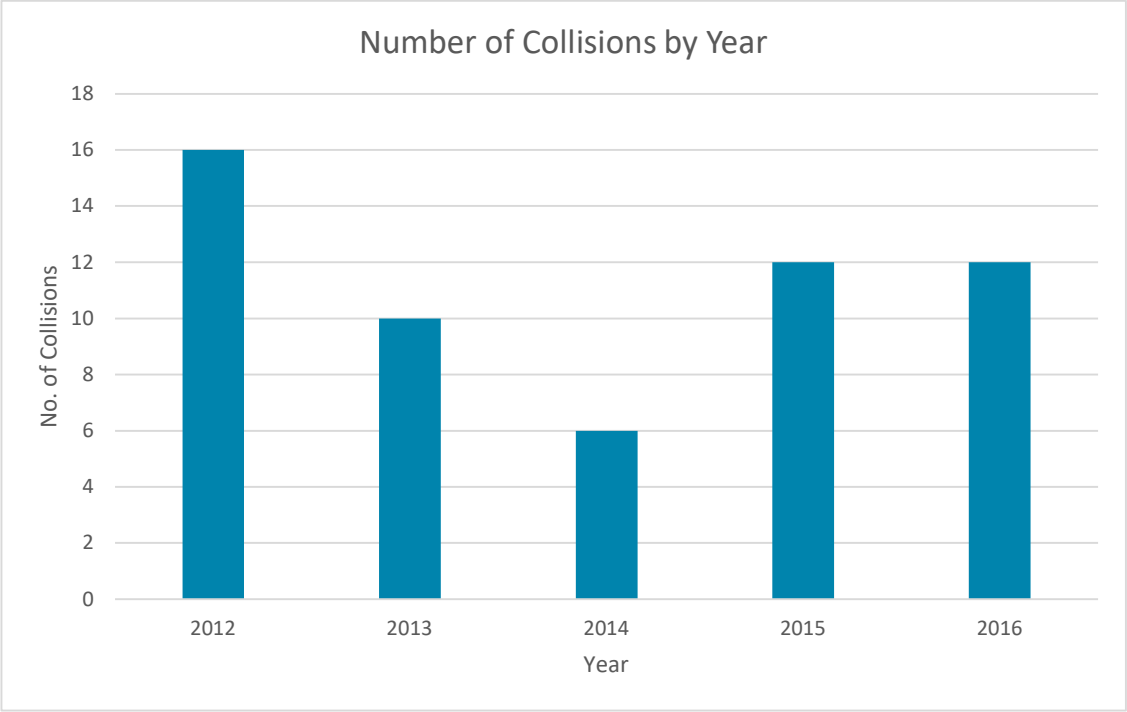


Figure A2-2

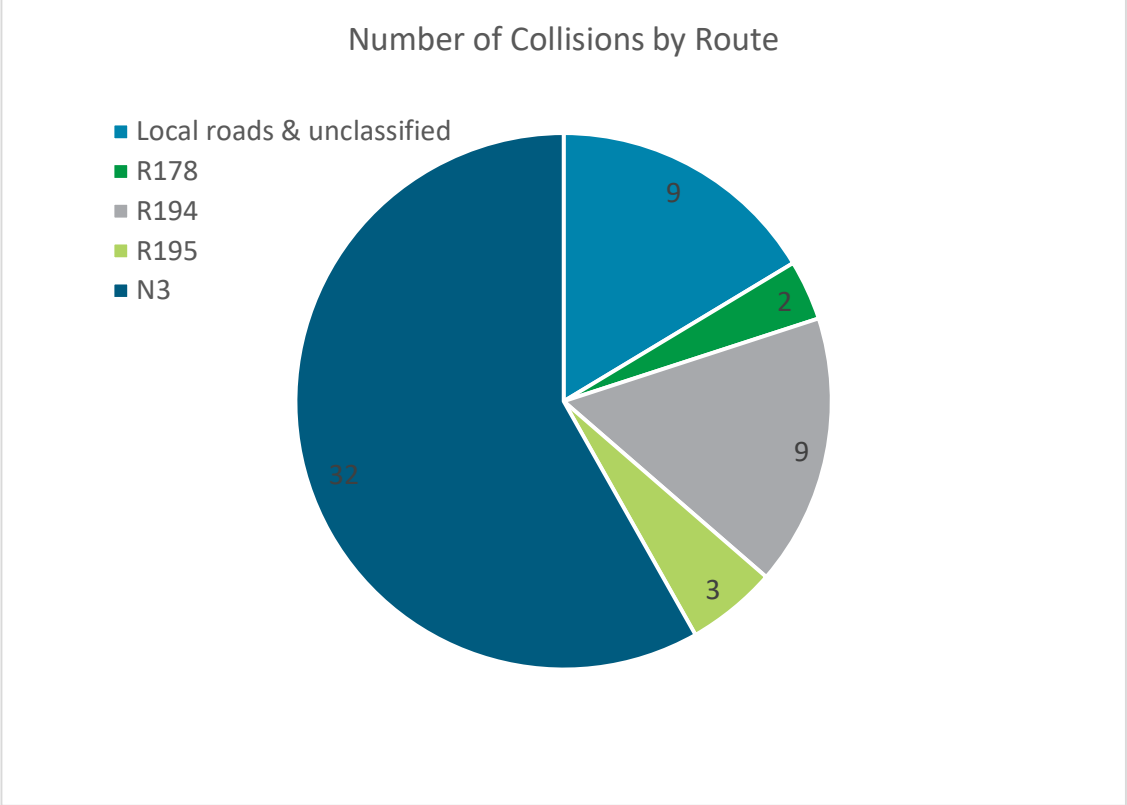


Figure A2-3

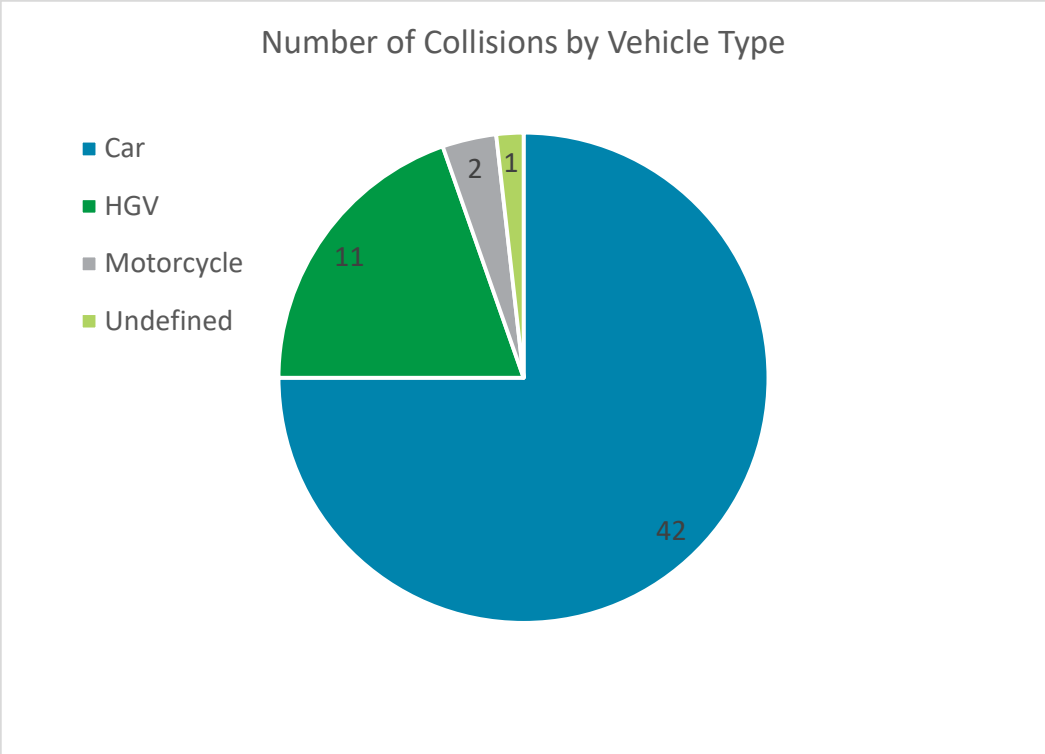


Figure A2-4

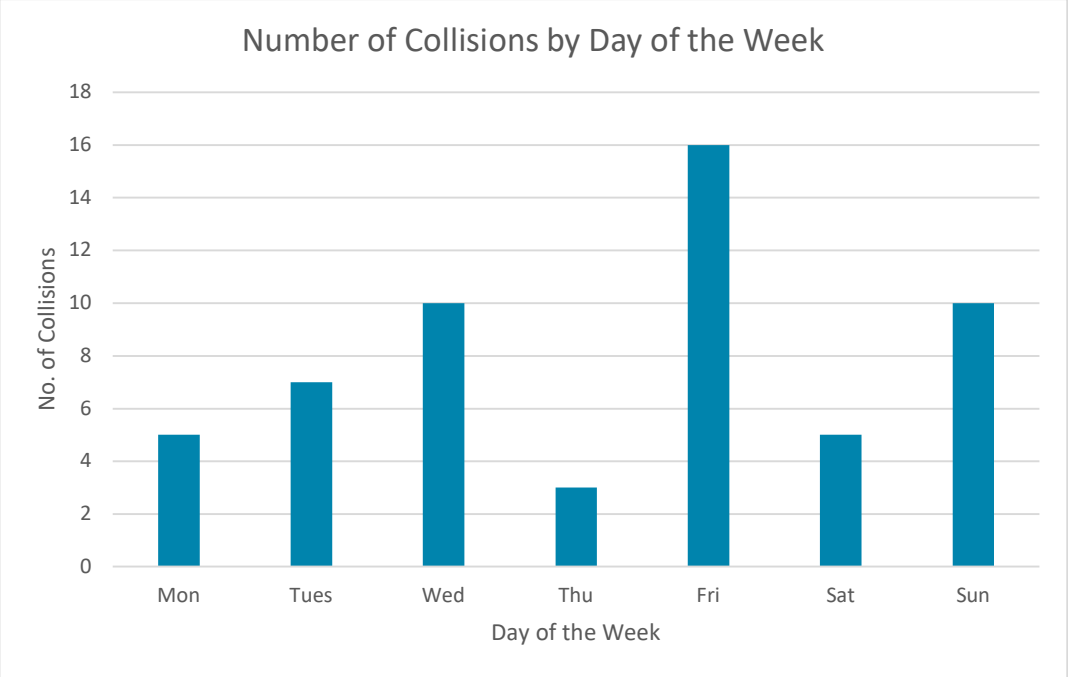


Figure A2-5