

20MPH SPEED LIMIT TRIALS

Signs only 20mph limits – 3 year monitoring report

Part time 20mph limits using fixed signing - review report

Consideration of the Use of 20mph limits elsewhere



PURPOSE

This report collates and reviews the data gathered during two separate trials that tested the effectiveness of two different approaches to providing 20mph speed limits. It also examines the views on and use of 20mph speed limits elsewhere.

This report sets out and provides some commentary on the data gathered, and provides recommendations on providing 20mph speed limits.

Any queries about the report can be sent to us at:

Department for Infrastructure
Traffic and Development Control Policy Branch
Room 2.11
Clarence Court
10-18 Adelaide Street
Belfast
BT2 8GB

or e-mailed to: RoadsEngineeringServices@infrastructure-ni.gov.uk

This document is also available from the Department at the address given above or by calling 028 9054 1014 or by using our textphone number 028 9054 0022.

Should you require this document in an accessible format such as Braille, audio format/CD, minority ethnic language etc, please contact us by any of the means provided below.

The document is also available for download at

<https://www.infrastructure-ni.gov.uk/>

Contents

1.	Introduction.....	3
2.	20mph Signs Only Speed Limit Trial - 3 Year Monitoring Report	5
3.	20mph Part Time Speed Limit Trial - Monitoring Report	27
4.	Discussion – Signs Only 20mph trial findings	45
5.	Discussion - Part time 20mph trial findings.....	55
6.	Discussion – the Position Elsewhere	57
7.	Discussion – Campaigns and Other Relevant Information.....	61
8.	Findings.....	71
9.	Recommendations.....	74
10.	References.....	76

1. Introduction

- 1.1 Northern Ireland's Road Safety Strategy to 2020 outlines the key challenges to be addressed over its lifespan, with excessive speeding highlighted as an area of particular concern.
- 1.2 The Road Safety Strategy sets out a number of speed related actions, with two specifically related to 20mph speed limits.
- 1.3 The first of these actions is to pilot enforceable 20mph speed limits without traffic calming engineering measures. To date in Northern Ireland, 20mph limits have either been provided in an advisory capacity or used in a mandatory capacity in conjunction with physical traffic calming engineering measures such as road humps, tables and cushions to make the limit 'self-enforcing', these are known as '20mph zones'.
- 1.4 The second action is to develop a programme of part time 20mph speed limits at rural schools on roads where the national speed limit applies and, as part of this programme, to investigate options for more cost effective signing systems as an alternative to those used in the pilots.
- 1.5 This report collates the findings of two recent trials that were undertaken to meet these actions.
- 1.6 The aim of the trials was to gather data to help determine the effectiveness of both possible approaches to reducing speed limits to 20mph.

1.7 This review also compares any data gathered during the trial with data from other 20mph studies.

2. 20mph Signs Only Speed Limit Trial – 3 Year Monitoring Report

- 2.1 Action Measure 6 (AM6) of the 'Northern Ireland's Road Safety Strategy to 2020' commits the Department to test the effectiveness of introducing 'signs only' 20mph zones. See Figure 1.
- 2.2 AM6 reads '*We will pilot 20mph speed limits, without traffic calming engineering measures such as road humps, tables and cushions*'.
- 2.3 To date in Northern Ireland, mandatory permanent 20mph speed limits have tended only to be used in conjunction with physical traffic calming engineering measures such as road humps, tables and cushions in what are generally known as '20mph zones'. These physical engineering measures are used to make the limit 'self-enforcing', by the end of 2019 there were 613 such zones (see Figure 2).
- 2.4 Advisory 20mph speed limits have also been used, and current records indicate there are 33 advisory 20mph speed limits which are mostly in the Belfast area. Green roundel speed limit signs are used to indicate these (see Figure 3). Being advisory, the 20mph limit cannot be enforced.



Figure 1 - 20mph Signs only.



Figure 2 - 20mph zone



Figure 3 – Advisory 20mph

- 2.5 Current policy on the provision of speed limits indicates that signs-only 20 mph speed limits are most appropriate for areas where vehicle speeds are already low. If average speeds are already around 24 mph on a road, introducing a 20 mph speed limit through signing alone, is likely to lead to general compliance with the new speed limit (RSPPG E051 Setting local speed limits in Northern Ireland refers). The Department has generally concentrated on areas where speeds are higher and provided 20mph zones along with other traffic calming features.
- 2.6 During 2015 five sites were identified and introduced for testing the effectiveness of 20mph speed limits using signs only.
- 2.7 The five sites chosen were as follows:
- i. Belfast City Centre (within the Belfast on the Move Project area);
 - ii. Merville Garden Village, Newtownabbey;
 - iii. The Rosses, Ballymena;
 - iv. Whitehall, Ballycastle; and
 - v. Langley Road area, Ballynahinch.
- 2.8 Belfast City Centre comprises a mixture of City Centre streets ranging from main vehicular thoroughfares such as May Street and Chichester Street, to less heavily used streets such as Queen Street. The other four schemes all comprise roads in housing developments, with Merville Garden Village and Langley Road both older social housing areas, and Whitehall and The Rosses both originally private developments.
- 2.9 The sites were chosen for the trial as the mean speeds were at or below 24mph prior to the implementation of the trial; with the

exception of Langley Road, which was 26.4mph (See Table 1: Signs Only Pre Implementation speeds).

Table 1: Signs only Pre Implementation speeds		
Scheme	Division	Pre Implementation Speed (mph)
Belfast City Centre	Eastern	18.3
Merville Garden Village, Newtownabbey	Northern	23.2
The Rosses, Ballymena	Northern	23.9
Whitehall, Ballycastle	Northern	21.6
Langley Road, Ballynahinch	Southern	26.4



Figure 4 The Rosses, Ballymena - Typical 20mph signs only layout.

2.10 In addition to the already low mean speeds, Belfast City Centre was also chosen as a trial site as:

- There are high levels of pedestrian activity and bus movements; and
- A means to reduce the speed differential between motor vehicles and bicycles and as a consequence encourage more cycling in the city centre.

2.11 By the start of 2019 the zones will have been in operation for at least 3 years and this report provides details on the effectiveness of each 'signs only' 20mph zone.

2.12 On 5th January 2015, the Department published a Statutory Rule entitled 'The Roads (Speed Limit) (No. 3) Order (Northern Ireland) 2014' (S.R. 2014 No. 316). Streets in the Whitehall area, subject to a 20mph speed restriction, were named in this order.

2.13 On 27th July 2015, the Department published a Statutory Rule entitled 'The Roads (Speed Limit) (No. 3) Order (Northern Ireland) 2014' (S.R. 2015 No. 293). Streets in the Langley Rd area, subject to a 20mph speed restriction were named in this order.

2.14 On 12th October 2015, the Department published a Statutory Rule entitled 'The Roads (Speed Limit) (No. 3) Order (Northern Ireland) 2015' (S.R. 2015 No. 334). Streets in Belfast City Centre, Merville Garden Village and The Rosses, Ballymena, subject to a 20mph speed restriction, were named in this order.

2.15 The speed limits were signed in accordance with the Traffic Signs Regulations (Northern Ireland) 1997 and the Traffic Signs Manual, Chapter 3 Regulatory Signs.

- 2.16 No road markings were provided at Belfast City Centre, The Rosses, Merville Garden Village or Langley Road as part of the trial.
- 2.17 New 20mph roundel markings were provided to reinforce the 20mph speed limit and existing 'Give Way' markings at the entrance to Whitehall were renewed as part of the trial.
- 2.18 Due to an increase in speeds at Langley Road in recent months, red textured markings are to be provided.
- 2.19 In August 2016, the Police Service for Northern Ireland (PSNI) requested the provision of yellow backing boards of 9 terminal signs in order to increase awareness of the speed limit scheme in Belfast City centre. This work was carried out in September 2016.
- 2.20 The locations where yellow backing boards were added to the 20mph terminal speed limit signs were:
- May Street at Victoria Street;
 - Alfred Street at May Street;
 - Bedford Street at Howard Street;
 - Wellington Place at College Square East;
 - Castle Street at Millfield;
 - North Street at Millfield;
 - York Street at Great Patrick Street;
 - Waring Street at Victoria Street; and
 - High Street at Victoria Street.
- 2.21 Details for each of the five signs only scheme, including location, implementation date and cost, are as shown in Table 2: Signs only 20mph limits – Site details.

Table 2: Signs only 20mph limits – Site Details			
Scheme	Division	Implementation Date	Cost (k)
Belfast City Centre	Eastern	January 2016	£10,000
Merville Garden Village, Newtownabbey	Northern	September 2015	£6,000
The Rosses, Ballymena	Northern	September 2015	£5,000
Whitehall, Ballycastle	Northern	November 2015	£1,900
Langley Road, Ballynahinch	Southern	October 2015	£1,000

Location plans for each scheme are as follows, Figures 5 – 9 refer

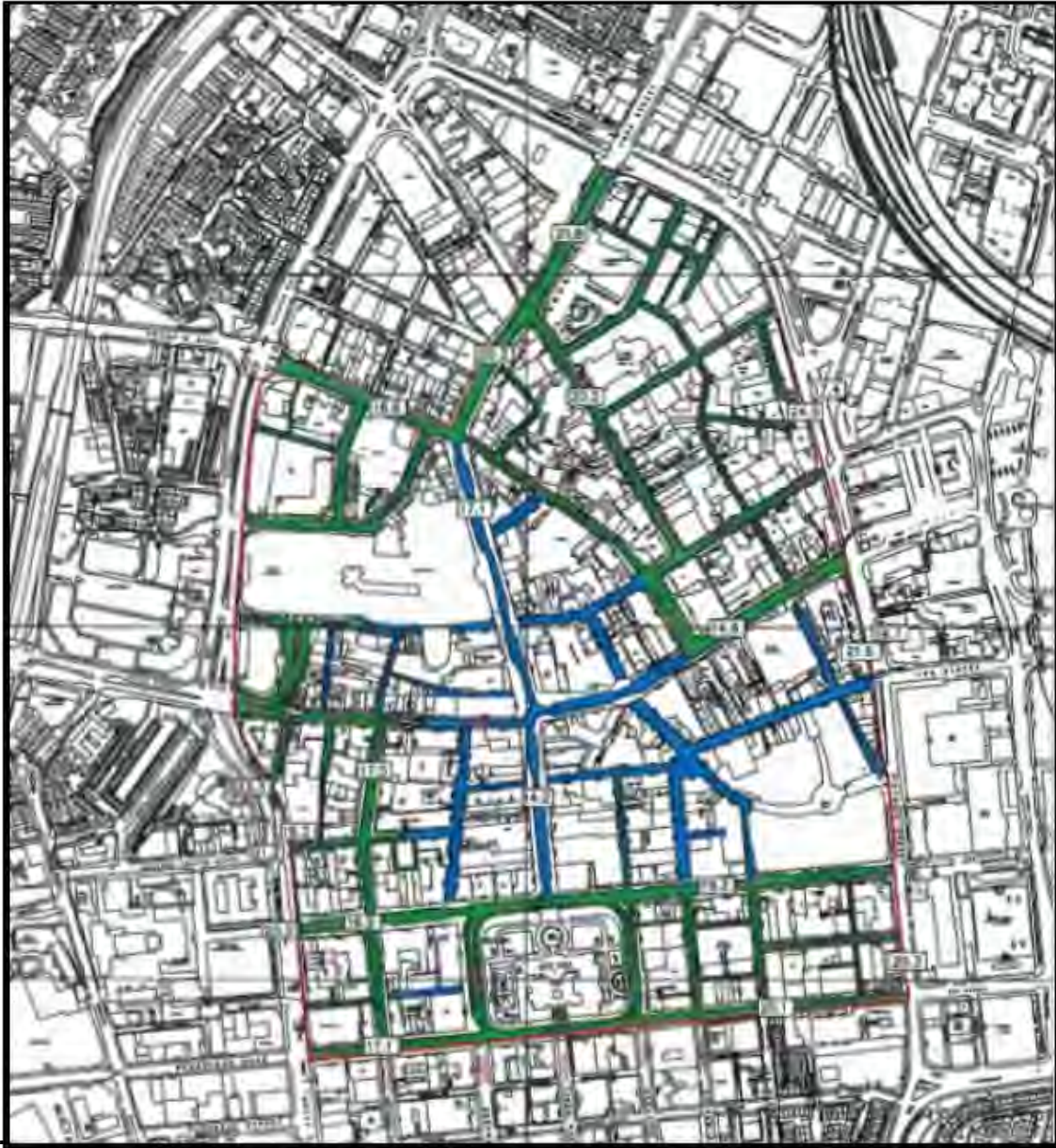


Figure 5 – Belfast City Centre streets with 20mph limits

	Pedestrianised streets – with restricted access to vehicles
	Streets with no access restrictions

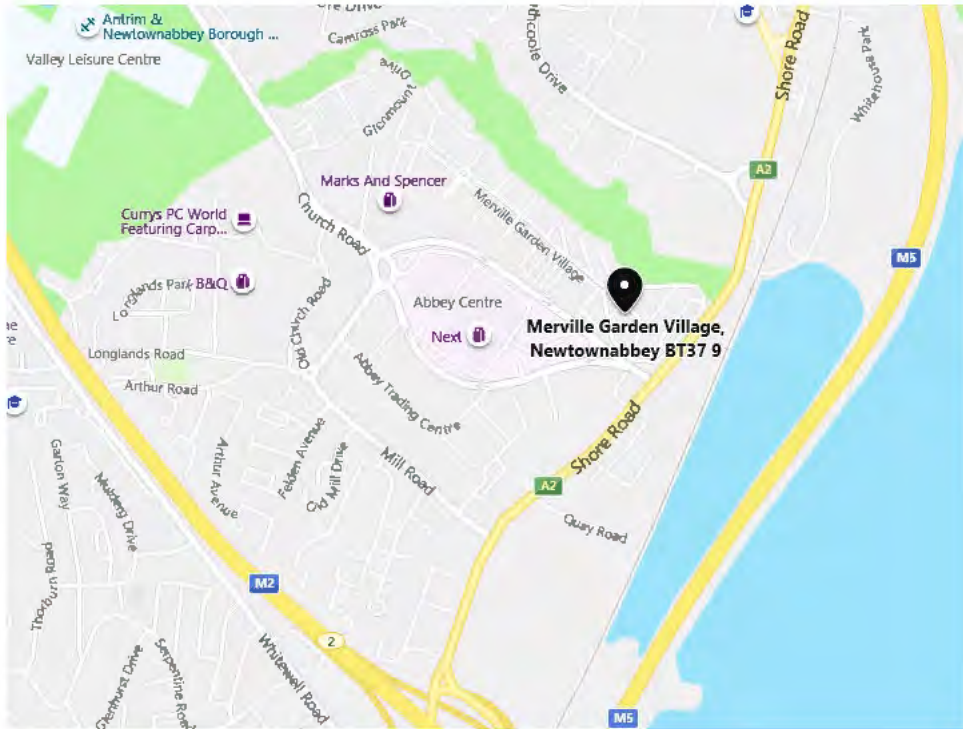


Figure 6 : Merville Garden Village location plan and scheme extent



Figure 7 : The Rosses, Ballymena location plan and scheme extent



Figure 8 : Whitehall, Ballycastle location plan and scheme extent

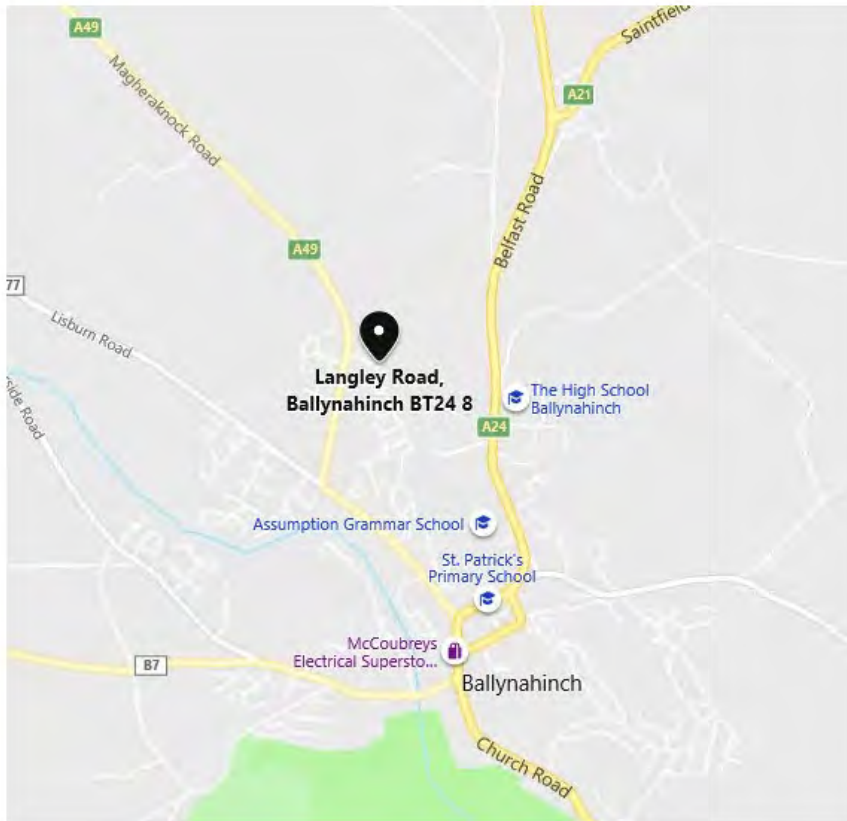


Figure 9 : Langley Road, Ballynahinch location plan and scheme extent

- 2.22 In general these schemes are relatively inexpensive to provide, with costs ranging from £1,000 for the cheapest in Langley Road, Ballynahinch to £10,000 for the scheme in Belfast City Centre.
- 2.23 The relative cost of the different schemes is dictated by the extent of the scheme in the terms of the number of streets encompassed and the resultant number of signs and road markings needed. Langley Road is mostly one main spine road through a 1970's social housing estate measuring just over 800m with 7 minor side roads of it, whereas the Belfast City Centre scheme comprises over 70 individual streets.
- 2.24 The following data has been collated and analysed:
- i. Traffic speed data;
 - ii. Road traffic collision data;
 - iii. Correspondence received;
 - iv. Any available related general statistics; and
 - v. Traffic volume information (Belfast City Centre only).
- 2.25 Departmental staff, using temporary traffic counters, provided the pre-implementation traffic speed data at all locations.
- 2.26 Departmental staff, using temporary traffic counters, provided the post implementation traffic speed data at all locations; with the exception of Belfast City Centre, where Amey Consulting provided the data.
- 2.27 The traffic speed data is collated in Table 3: Signs only 20mph limits – Traffic Speed Data.
- 2.28 Figure 10. Signs Only 20mph limits – speed comparison graph shows speed pre and post implementation.

Table 3: Signs only 20mph limits – Traffic Speed Data							
	Mean speed (mph)				+/- Speed difference (mph)		
	Pre – Implementation	Year 1	Year 2	Year 3	Yr 1	Yr 2	Yr 3
Belfast City Centre	18.3	18.0	N/A	18.1	-0.3	N/A	-0.2
Merville Garden Village, Newtownabbey	23.2	23.8	23.9	--	+0.6	+0.7	--
The Rosses, Ballymena	23.9	23.8	24.4	23.8	-0.1	+0.5	-0.1
Whitehall, Ballycastle	21.6	22.2	20.4	22.0	+0.6	-1.2	+0.4
Langley Road, Ballynahinch	26.4	23.1	22.2	21.1	-3.3	-4.2	-5.3

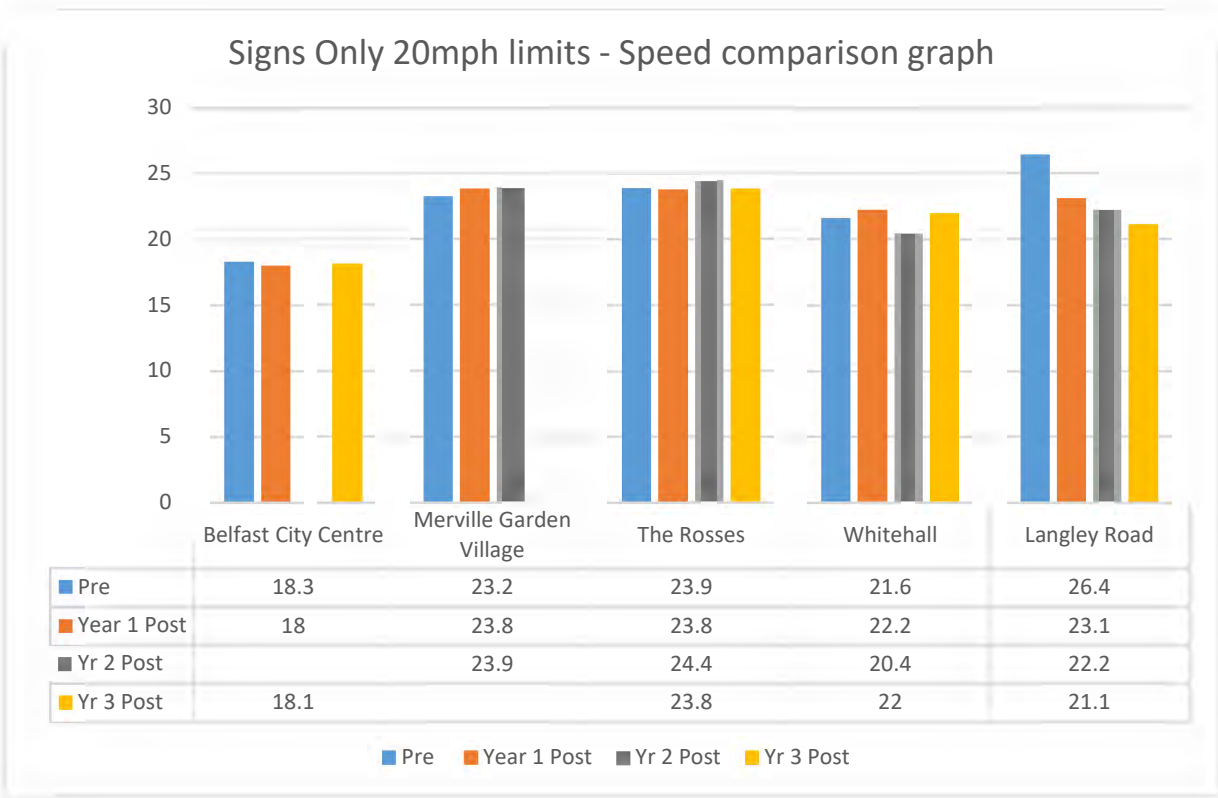


Figure 10. Signs Only 20mph limits – Mean speed comparison graph

2.29 The results for this signs only pilot trial in terms of speed reduction, with the exception of Langley Road, mostly show changes in the measured mean speed of less than 1mph and this varies from a

reduction to an increase without any real consistency or apparent trends.

2.30 Langley Road, Ballynahinch shows the best results in terms of mean speed reduction with a progressive reduction recorded each year. The year 1 results show a 3.3mph reduction in mean speed in comparison to the mean speeds recorded before the scheme was introduced and year 3 showing a 5.3mph reduction.

2.31 Merville Garden Village showed an increase in mean speed over years 1 and 2, of 0.6mph and 0.7mph respectively (no figures were available for year 3).

2.32 The Rosses, Ballymena and Whitehall, Ballycastle both show a mixed set of results in terms of reductions or increases in measured mean speeds.

2.33 Belfast City Centre shows a consistent reduction in measured mean speeds in the region of 0.2 to 0.3mph across the 3 years. See Figure 11.

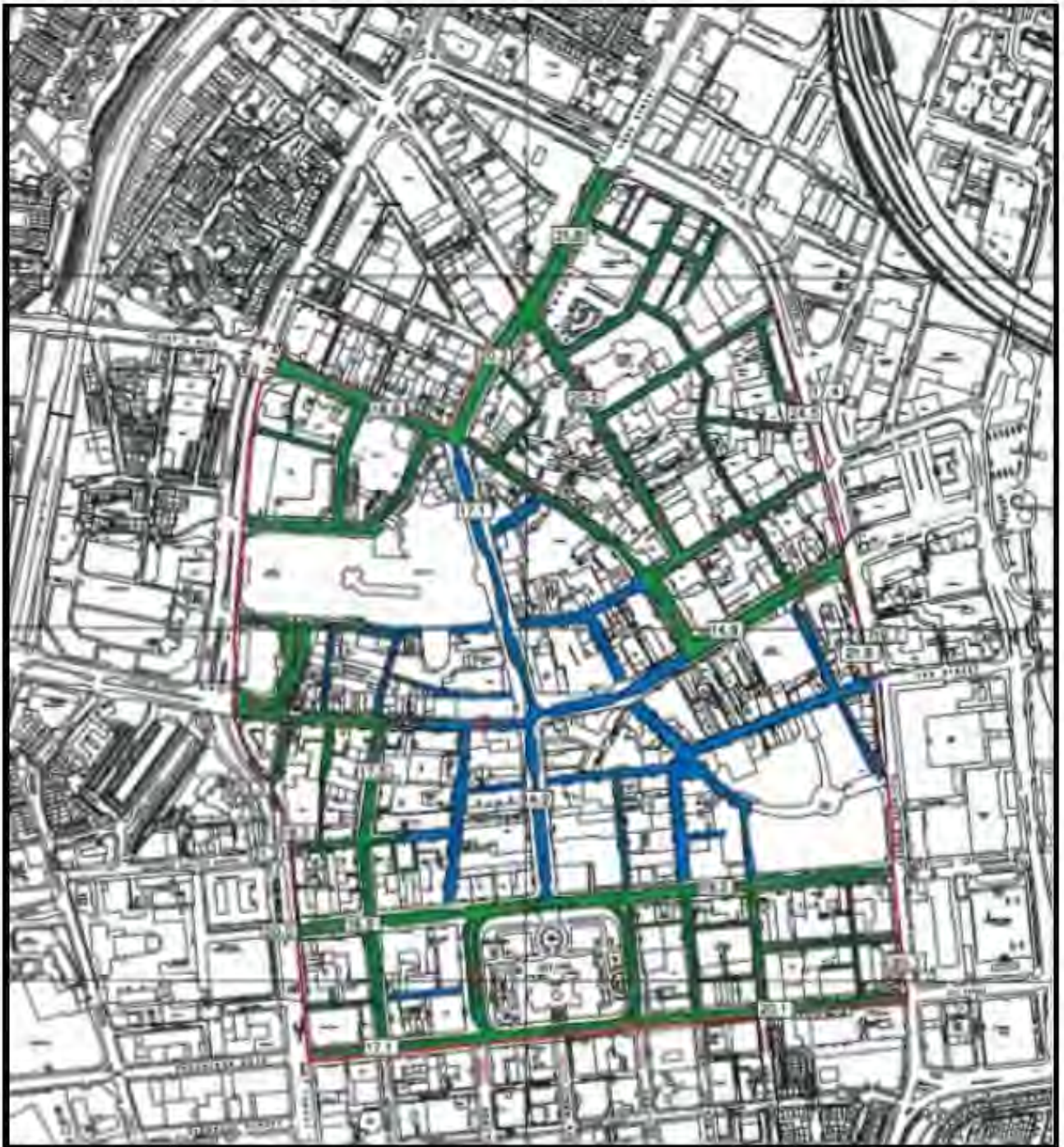


Figure 11. Belfast City Centre – Mean speeds

2.34 Collision data for the last three available years, 2016 – 2019, was collated for all five trial sites and is presented in Table 4: Signs only 20mph limits – Road Traffic Collision Data.

Table 4: Signs only 20mph limits – Road Traffic Collision Data

Site		Number of Road Traffic Collisions				Number of casualties				Number of pedestrian casualties	Number of cyclist casualties
		Total	Slight	Serious	Fatal	Total	Slight	Serious	Fatal		
Belfast City Centre	Pre	56	56	0	0	79	79	0	0	25	1
	Yr 1	44	41	3	0	59	56	3	0	18	2
	Yr 2	44	40	4	0	52	48	4	0	13	2
	Yr 3	44	41	3	0	53	50	3	0	22	3
Merville Garden Village	Pre	2	2	0	0	4	4	0	0	0	0
	Yr 1	0	0	0	0	0	0	0	0	0	0
	Yr 2	0	0	0	0	0	0	0	0	0	0
	Yr 3	0	0	0	0	0	0	0	0	0	0
The Rosses	Pre	0	0	0	0	0	0	0	0	0	0
	Yr 1	0	0	0	0	0	0	0	0	0	0
	Yr 2	1	1	0	0	3	3	0	0	0	0
	Yr 3	1	1	0	0	1	1	0	0	0	0
Whitehall	Pre	0	0	0	0	0	0	0	0	0	0
	Yr 1	0	0	0	0	0	0	0	0	0	0
	Yr 2	0	0	0	0	0	0	0	0	0	0
	Yr 3	0	0	0	0	0	0	0	0	0	0
Langley Road	Pre	0	0	0	0	0	0	0	0	0	0
	Yr 1	1	0	1	0	1	0	1	0	0	1
	Yr 2	0	0	0	0	0	0	0	0	0	0
	Yr 3	0	0	0	0	0	0	0	0	0	0

Definitions of terminology used – source Police Service of Northern Ireland - User Guide to Police Recorded Injury Road Traffic Collision Statistics in Northern Ireland (Updated May 2016) <https://www.psni.police.uk/globalassets/inside-the-psni/our-statistics/road-traffic-collision-statistics/documents/traffic-statistics-user-guide---2016-review---final.pdf>

Injury collision: Collisions involving personal injury occurring on the public highway (including footpaths) in which a vehicle is involved. Collisions are categorised as either 'Fatal', 'Serious' or 'Slight' according to the most severely injured casualty.

Road fatality or person killed: Human casualty who sustained injuries which caused death within 30 days of the collision. Confirmed suicides are excluded.

Serious Injury: An injury for which a person is detained in hospital as an 'in-patient', or any of the following injuries whether or not the person is detained in hospital: fractures, concussion, internal injuries, crushing's, burns, severe cuts and lacerations or severe general shock requiring medical treatment.

Slight Injury: An injury of a minor character such as a sprain, bruise or cut not judged to be severe or slight shock requiring roadside attention.

Casualty: A person who sustains a slight, serious or fatal injury.

- 2.35 The collision data gathered as part of the trial reveals a relatively low level of collisions in the 4 housing development schemes.
- 2.36 Both Merville Garden Village and Whitehall show no recorded collisions during the trial period.
- 2.37 The data for the Rosses shows one recorded collision in each of years 2 and 3, with 3 and 1 slight casualties recorded in the respective years.
- 2.38 One collision was recorded in Langley Road in year 1 of the trial, when an injury to a cyclist was recorded as serious.
- 2.39 The recorded number of collisions in Belfast is much higher, which reflects the greater numbers of roads, the higher volumes of traffic and the different driving environment, i.e. busy city centre roads as opposed to the much quieter housing development roads.
- 2.40 In terms of both the number of road traffic collisions and the number of casualties, the recorded figures for the 3 years following implementation of the scheme have all seen a decrease in numbers.
- 2.41 The recorded number of road traffic collisions has decreased from 56 in the year before implementation to an average of 44 (it was 44 in each year) representing a 22% reduction in recorded collisions.
- 2.42 The recorded number of casualties has decreased from 79 in the year before implementation to at worst 59 in year 1 to at best 52 in year 2. The higher figure represents a 25% reduction in the number of casualties.

- 2.43 The three year period after implementation did, however, have 10 road traffic collisions recorded as serious, and 10 casualties recorded as serious as opposed to the year before which had no (zero) road traffic collisions, or casualties recorded as serious on the streets within the 20mph limit.
- 2.44 Traffic volume data was also collected for the Belfast City Centre scheme to identify whether the introduction of a 20mph limit has had any impact on the number of vehicles using the area.
- 2.45 Data was not collected for the other four schemes as it was felt that the imposition of a 20mph limit would not adversely impact the numbers of vehicles coming into these four discrete housing areas.
- 2.46 Pre-implementation traffic survey data was obtained from DfI Eastern Division in house system, C2 – Cloud Traffic Programme. The most recent data at that time ranged from surveys carried out from 2011 to 2014. The data was collected for 12 sites shown in Table 5.
- 2.47 Amey was commissioned to organise post-implementation traffic surveys at the 12 locations in Belfast city centre.
- 2.48 Automatic Traffic Count (ATC) tube surveys in Belfast city centre were carried out:
- for Year 1 from Monday 20 March 2017 to Sunday 26 March 2017; and
 - for Year 3 from Friday 11th October to Thursday 17th October 2019.

2.49 No data was gathered for Year 2 Post implementation due to constraints on budgets. The ATC's recorded vehicle classifications, speeds and volumes at all locations. Table 5 below presents the 5 day mean daily flow.

Table 5 : Signs only 20mph limits – Automatic Traffic Count Data Belfast City Centre				
	Traffic Volume (5 day mean daily flow)			% Change between pre- implementation and year 3
Site	Pre Implementation (Veh (year))	Year 1 - 2017 (Veh)	Year 3 - 2019 (Veh)	%
Chichester Street	10,273 (2013)	9,528	7,433*	-27%
Donegall Place	2,399 (2013)	2,380	1,509	-37%
Donegall Street	9065 (2014)	7,726	7,918	-12%
High Street	13,544 (2014)	10,444	9,382	-30%
Howard Street	10,893 (2013)	9,737	10,073	-7%
May Street	9,316 (2013)	7,735	9,338	0
North Street	8040 (2014)	6,801	6,919	-14%
Queen Street	1,779 (2013)	1,780	1,462	-17%
Royal Avenue South	2,306 (2013)	1,725	1,274	-45%
Royal Avenue North	6,801 (2014)	6,119	5,241	-23%
Wellington Place	12,906 (2013)	9,952	10,582	-18%
York Street	7,532 (2014)	6,878	5,437	-27%
Total	94,854		76,568	-19%

- 2.50 Table 5 shows that recorded numbers of vehicles using the city centre have decreased since the previous vehicle count data was recorded in 2013/2014. The change has ranged from no change in May Street to a 45% reduction in Royal Avenue South.
- 2.51 A limited amount of correspondence has been received specifically in relation to 'signs only' 20mph schemes. Two letters were received about the Belfast City Centre scheme in the month following implementation. One letter requested that the times of the speed limit be changed to the same as the bus lanes, which was not done as it felt there was still merit in operating the speed limit full-time, and the other complained about the speed limit scheme as a whole. No other specific correspondence about 'signs only' 20mph schemes has been received.
- 2.52 Since the resumption of the Northern Ireland Assembly there have been 2 written Assembly questions and 2 letters from Assembly members on the matter of reducing speed limits in housing developments and asking about the trials.
- 2.53 In terms of public attitudes, the Continuous Household Survey (CHS) report, 'Road Safety Issues in Northern Ireland 2018/19', was published on 20 February 2020. The CHS is considered to be a representative sample of the population of Northern Ireland at household level.
- 2.54 For the Road Safety relevant topics in 2018/19, questions were asked on the attitudes, awareness and behaviours of respondents in relation to specific road safety issues. The topics included were 20mph speed limits, speeding and a set of questions regarding mobile phone usage while driving.

2.55 In relation to 20mph speed limits:

- The majority of respondents (53%) thought that a 20mph speed limit should be more widely used. See Figure 12: Should 20mph speed limit be used more widely?

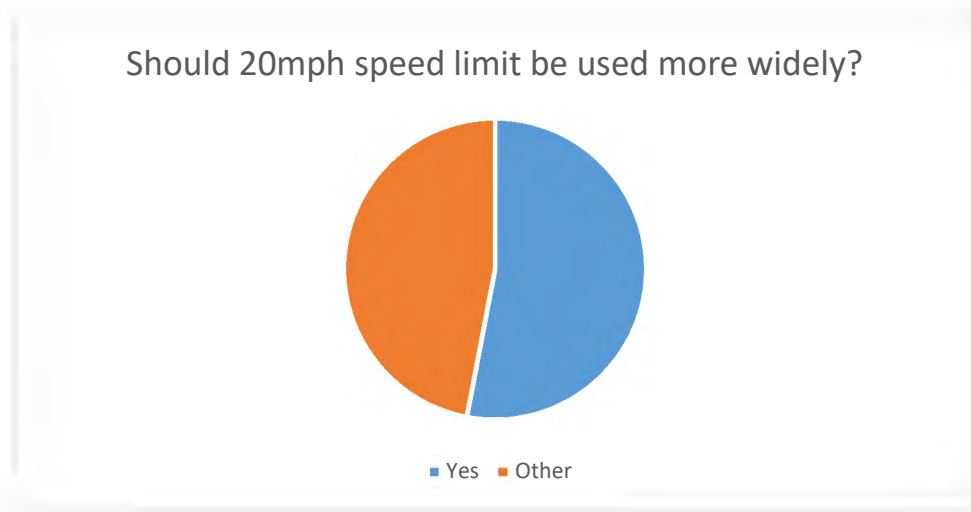


Figure 12: Should 20mph speed limit be used more widely?

Approximately four fifths (82%) of respondents thought a 20mph speed limit should be applied outside schools and three quarters (76%) thought it should be applied to an area where children play. See Figures 13 & 14: Where should 20mph speed limits be applied?

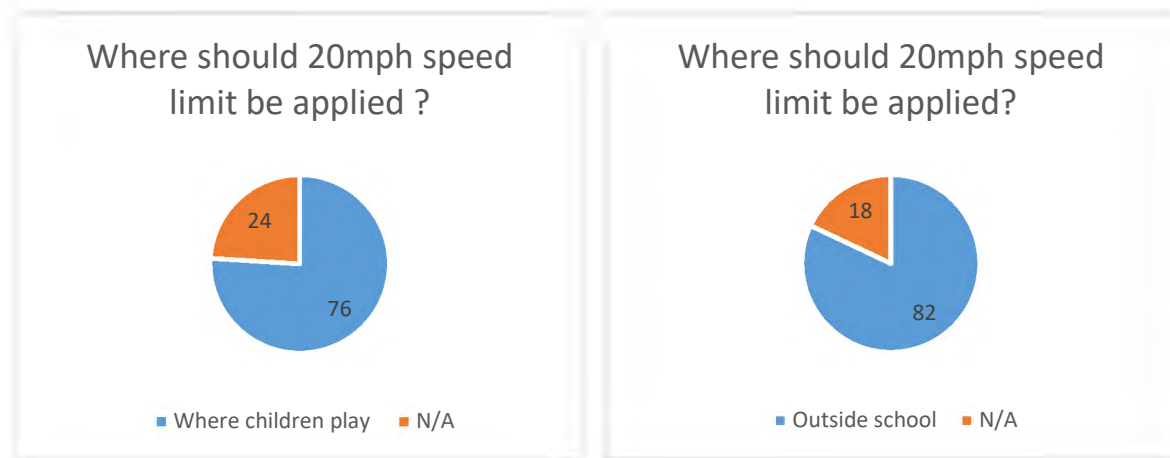


Figure 13 & 14: Where should 20mph speed limits be applied?

- 40% of respondents indicated that they felt 20mph should apply in residential streets. See Figure 15: Continuous Household Survey Infographic



Figure 15: Continuous Household Survey Infographic

3. 20mph Part Time Speed Limit Trial – Monitoring Report

3.1 The use of part time 20mph speed limits at schools was initially piloted at three schools around 2008. These pilots used electronic signs to display the reduced speed limit (Figure 16). While effective at reducing speeds, the electronic signs are expensive to provide and maintain and add an additional burden on an already stretched maintenance budget.



Figure 16 – 20mph sign used in original 2010 Pilot Scheme



Figure 17 – 20mph signing arrangement used in 2019 trial

3.2 The electronic signs used in the original pilot (Figure 16) only displays information when the part time 20mph speed limit is operational, otherwise the sign showed a blank black face. The signing arrangement used in the 2019 trial comprised a fixed arrangement of signs which does not change throughout the day apart from a set of flashing amber lights (commonly known as ‘wig-wags’) which operate when the 20mph limit applies (Figure 17).

- 3.3 The Department's policy '*Setting Local Speed Limits in Northern Ireland*' encourages and supports 20mph limits and zones to provide a safer road environment outside schools.
- 3.4 Action Measure 4 (AM4) and Action Measure 7 (AM7) of the Department's Northern Ireland's Road Safety Strategy to 2020 commits the Department to develop a programme of part time 20mph speed limits at rural schools where vulnerable road users, such as children, are frequently crossing roads where the national speed limit applies.
- 3.5 AM4 reads '*Following the successful installation of pilot schemes at two primary schools and, subject to available funding, we will develop a programme of part time 20mph speed limits at rural schools on roads where the national speed limit applies. We will investigate options for more cost effective signing systems as an alternative to those used in pilots*'.
- 3.6 AM7 reads '*We will continue to target traffic calming measures in those areas where vulnerable road users, such as children, are frequently crossing the road*'.
- 3.7 On 18th September 2018, the Department published a Statutory Rule entitled "*The Schools (Part Time 20mph Speed Limit) Order (Northern Ireland) 2018*", (S.R. 2018 No. 156). The seven school sites listed below were included in the named order :-
- i. Culcrow Primary School, 129 Curragh Road, Aghadowey Coleraine;
 - ii. Carrowreagh Primary School, Finvoy Road, Ballymoney, Co. Antrim;

- iii. Woods Primary School, Oaklee Road, Magherafelt;
- iv. St Mary's Primary School, Derrymore – Gawleys Gate, Lurgan;
- v. Bronte Primary School, 39 Ballyinaskeagh Road, Loughbrickland, Banbridge;
- vi. Ballyvester Primary School, 244 Killaughey Road, Donaghadee; and
- vii. Carrickmannon Primary School, 77 Carrickmannon Road, Ballygowan.

3.8 By the start of 2020 the zones will have been in operation for at least 1 year and this report provides details on the effectiveness of each part time 20mph zone.

3.9 The speed limits were signed in accordance with the Traffic Signs Regulations (Northern Ireland) 1997, the Traffic Signs Manual, Chapter 3 Regulatory Signs and RSPPG E070 'Road safety at schools'.



Fig 18: Part time 20mph layout at Culcrow Primary School, Coleraine



Figure 19: Part time 20mph layout at Carrowreagh Primary School, Ballymoney.



Figure 20: Part time 20mph layout at Woods Primary School, Magherafelt.



Figure 21: Part time 20mph layout at St Mary's Primary School.



Figure 22: Part time 20mph layout at Bronte Primary School.



Figure 23: Part time 20mph layout at Carrickmannon Primary School.



Figure 24: Part time 20mph layout at Ballyvester Primary School.

3.10 No road markings were provided at Culcrow, Carrowreagh or Woods primary schools as part of the trial; however, existing road markings were retained.

3.11 New road markings were provided at St Mary's, Bronte, Ballyvester and Carrickmannon primary schools as part of the trial. It should be noted that the markings differ throughout the sites which is likely due to each site having its own characteristics in terms of layout, geometry etc.

3.12 The details for each scheme, including location, implementation date and cost, are as detailed in Table 6 Part time 20mph speed limits – Site details.

Table 6: Part time 20mph speed limits – Site details						
School	Road/ Location	Route/ Class	Division	Implementation Date	Approximate Cost (k)	Road Markings
Culcrow Primary School	129 Curragh Road, Coleraire	A54	Northern	18 September 2018	£16k	No.
Carrowreagh Primary School	Finvoy Road, Ballymoney	B62	Northern	18 September 2018	£15k	No.
Woods Primary School	Oaklee Road, Magherafelt	U 2226	Western	November 2018	£17k	No.
St Mary's Primary School	Derrymore Road, Gawleys Gate, Lurgan	B156	Southern	October 2018	£20k	'SCHOOL AHEAD' & Edge of carriageway
Bronte Primary School	39 Ballynaskeagh Road, Banbridge	B3	Southern	September 2018	£25k	'SCHOOL' with red surfacing
Ballyvester Primary School	244 Killaughey Road, Donaghadee	U 283	Southern	30 October 2018	£35k	'SCHOOL AHEAD' with red surfacing
Carrickmannon Primary School	77 Carrickmannon Road, Ballygowan	C272	Southern	27 October 2018	£20k	'SLOW' & Edge of carriageway

3.13 Location plans for each scheme are as follows, Figures 25 – 31 refer.

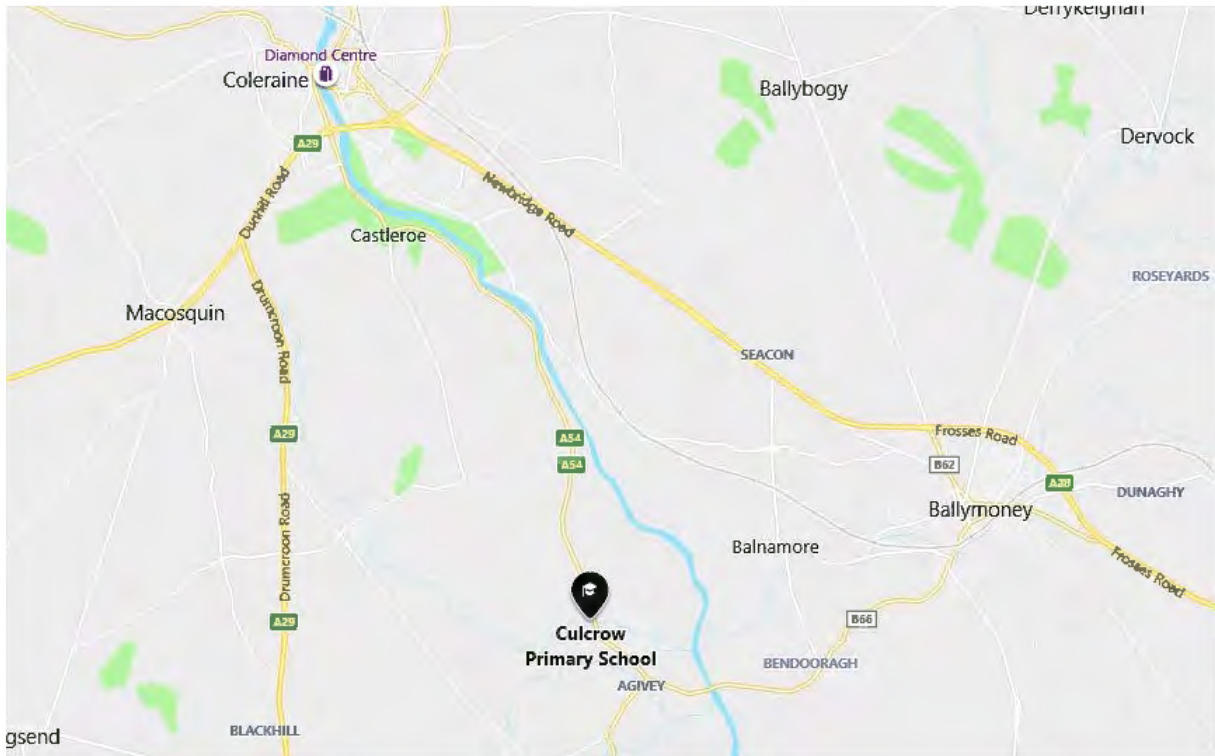


Figure 25 : Culcrow Primary School location plan

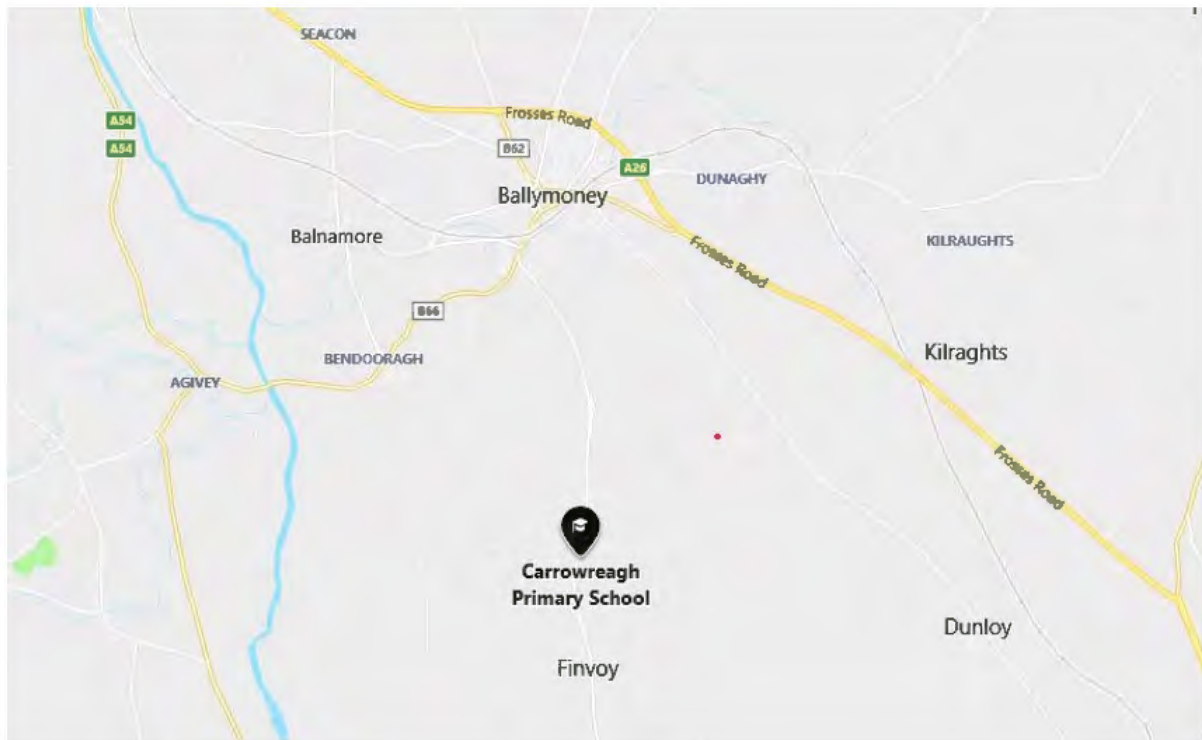


Figure 26 : Carrowreagh Primary School location plan



Figure 27 : Woods Primary School location plan

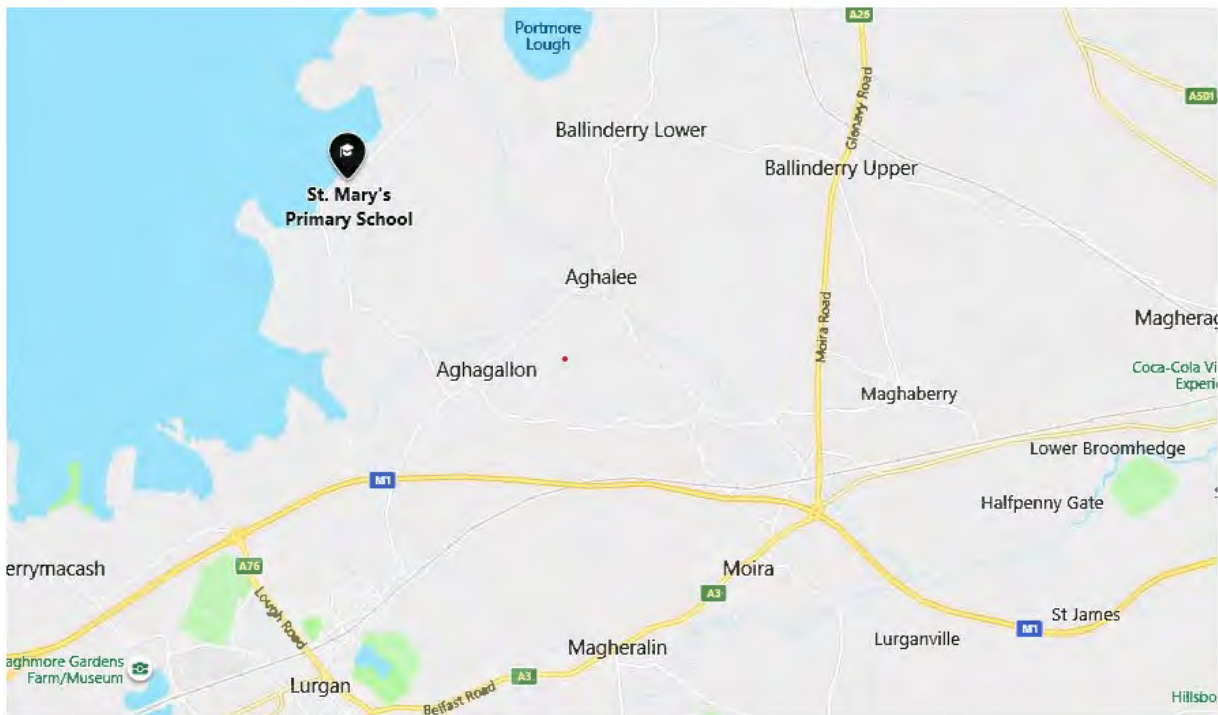


Figure 28 : St. Mary's Primary School location plan

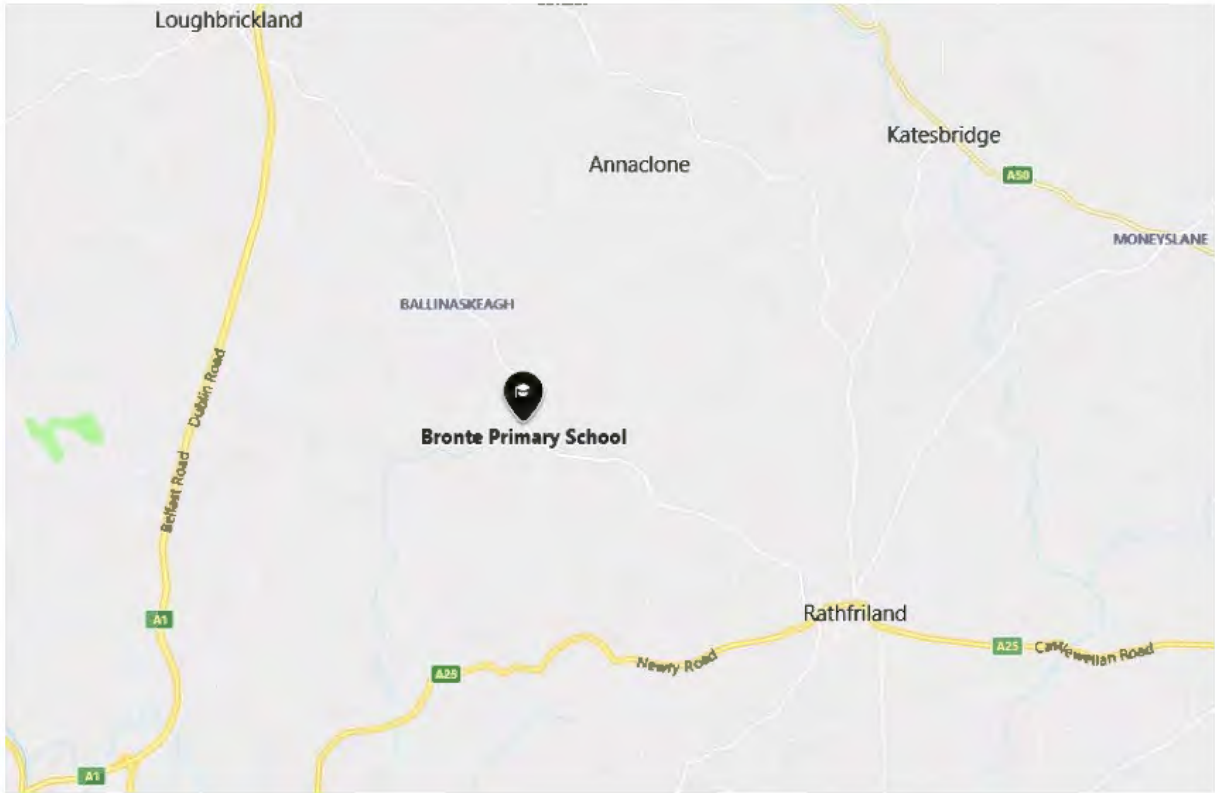


Figure 29 : Bronte Primary School location plan

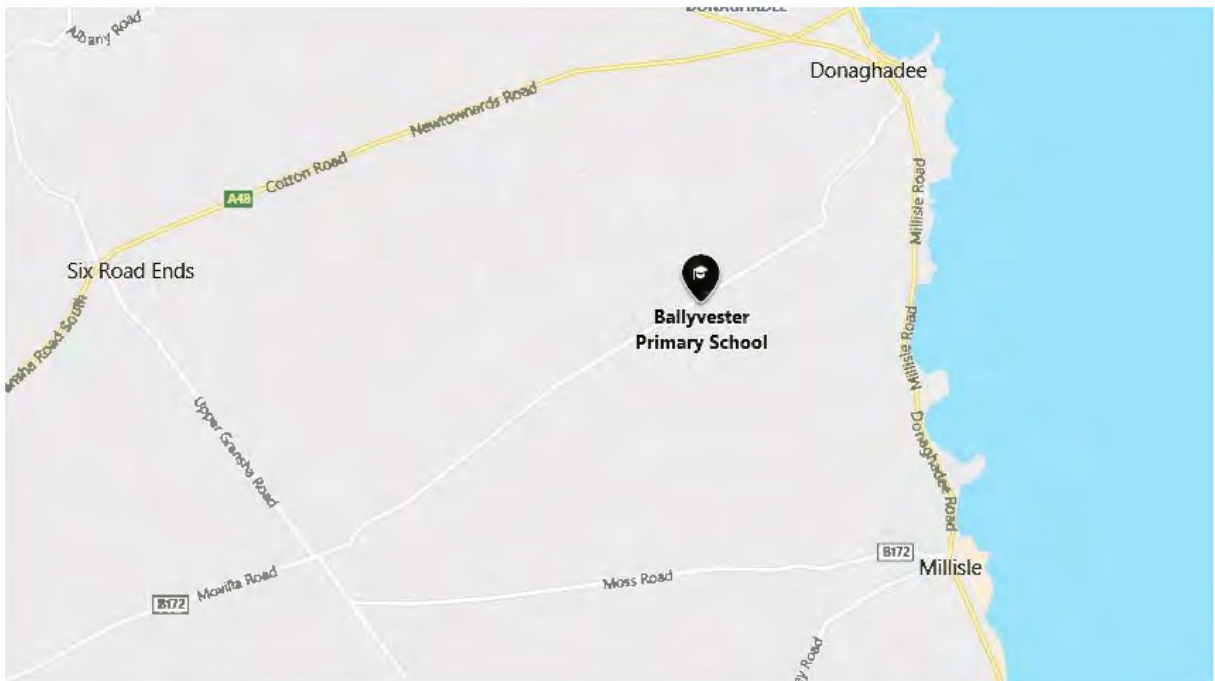


Figure 30 : Ballyvester Primary School location plan



Figure 31 : Carrickmannon Primary School location plan

3.14 The cost per site ranges from £15,000 for Carrowreagh Primary School to £35,000 at Ballyvester Primary School. This is primarily due to the number of signs required throughout the school zone, locations with more adjacent side roads feeding in to the site need more signs and are more expensive to provide.

3.15 The following data has been collated and analysed:

- i. Traffic speed data;
- ii. Road traffic collision data;
- iii. Correspondence received; and
- iv. Any available related general statistics.

3.16 Departmental staff using temporary traffic counters provided the pre and post implementation traffic speed data at Culcrow, Carrowreagh and Woods primary schools.

3.17 AMEY Consulting provided the pre and post implementation speed data at St Mary’s, Bronte, Ballyvester and Carrickmannon primary schools.

3.18 Table 7: Part time 20mph speed limits – Traffic Speed Data presents the measured post implementation mean speeds for the periods when the flashing amber lights were operational and the 20mph speed limit in force.

3.19 Figure 32. Part time 20mph speed limits - Speed Comparison graph shows speed pre and post implementation.

Table 7: Part time 20mph speed limits – Traffic Speed Data				
Scheme	Class of Road	Mean speed (mph)		+/- speed difference (mph)
		Pre – Implementation	Year 1 – Post	
Culcrow Primary School	A	48.1	41.9	- 5.6
Carrowreagh Primary School	B	60.6	50.1	- 10.5
Woods Primary School	U	49.0	45.0	- 4.0
St Mary’s Primary School	B	27.0	25.8	- 1.2
Bronte Primary School	B	38.6	37.4	- 1.2
Ballyvester Primary School	U	44.7	29.7	- 15.0
Carrickmannon Primary School	C	45.8	37.0	- 8.8

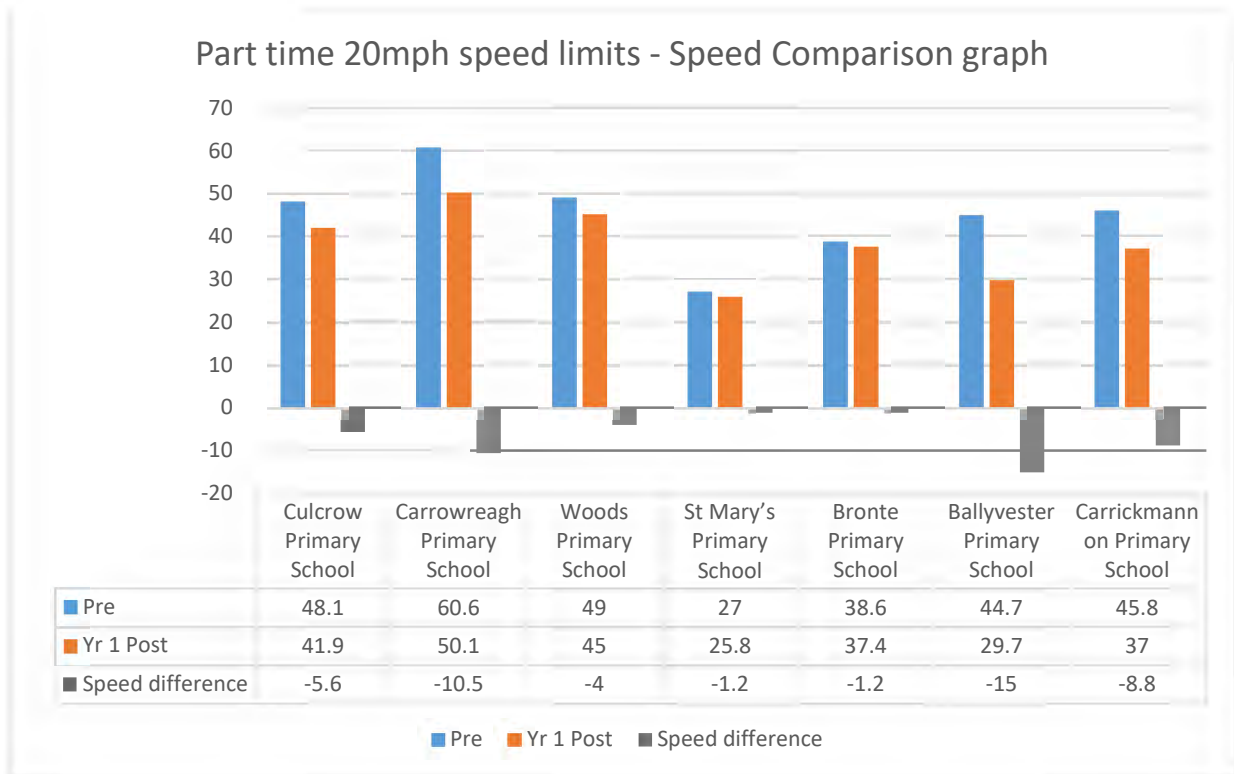


Figure 32. Part time 20mph speed limits – Speed Comparison graph

3.20 Table 7 shows a range of pre and post implementation measured mean speeds, which is likely to be dependent on the different site characteristics found at each school in terms of the traffic volumes and the type of traffic using the road, for example, commuter traffic is likely to be travelling more quickly than local traffic.

3.21 The results for this part time 20mph speed limit pilot in terms of speed reduction show that the post implementation measured mean speed was less than pre implementation speed at all locations.

3.22 The measured mean speed is still significantly higher than 20mph at all locations, with the exception being St Mary's Primary School which measured 25.8mph, although this has only reduced from a pre-implementation measured speed of 27mph.

- 3.23 The post implementation measured mean speed ranges from the lowest recorded 25.8mph at St Mary's Primary School to the highest recorded 50.1mph at Carrowreagh Primary School.
- 3.24 Ballyvester Primary School shows the best results in terms of speed reduction with a reduction of 15.0mph in the reporting period. The measured mean speed at Ballyvester has reduced from 44.7mph to 29.7mph.
- 3.25 Carrowreagh Primary School shows a decrease of 10.5mph in measured mean speed, the measured mean speed reducing from 60.6mph to 50.1mph.
- 3.26 St Mary's & Bronte Primary School recorded the lowest speed reductions, measuring 1.2mph at both locations.
- 3.27 Collision data for the last available year, 2018 – 2019, was collated for all seven trial sites and is presented in Table 8: Part time 20mph limits – Road Traffic Collision Data.

Table 8: Part time 20mph speed limits – Road Traffic Collision Data

Site		No of RTCs Pre/Year 1 Post				No. of Casualties Pre/Year 1 Post				Number of Pedestrian Casualties	Number of Cyclist Casualties
		Total	Slight	Serious	Fatal	Total	Slight	Serious	Fatal		
Culcrow Primary School (up to March 2019)	Pre	0	0	0	0	0	0	0	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0
Carrowreagh Primary School (up to March 2019)	Pre	1	0	1	0	2	0	2	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0
Woods Primary School	Pre	1	0	1	0	4	3	1	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0
St Mary's Primary School	Pre	0	0	0	0	0	0	0	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0
Bronte Primary School	Pre	1	1	0	0	1	1	0	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0
Ballyvester Primary School	Pre	2	2	0	0	3	3	0	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0
Carrickmannon Primary School	Pre	0	0	0	0	0	0	0	0	0	0
	Post	0	0	0	0	0	0	0	0	0	0

Definitions of terminology used – source Police Service of Northern Ireland - User Guide to Police Recorded Injury Road Traffic Collision Statistics in Northern Ireland (Updated May 2016) <https://www.psni.police.uk/globalassets/inside-the-psni/our-statistics/road-traffic-collision-statistics/documents/traffic-statistics-user-guide---2016-review---final.pdf>

Injury collision: Collisions involving personal injury occurring on the public highway (including footpaths) in which a vehicle is involved. Collisions are categorised as either 'Fatal', 'Serious' or 'Slight' according to the most severely injured casualty.

Road fatality or person killed: Human casualty who sustained injuries which caused death within 30 days of the collision. Confirmed suicides are excluded.

Serious Injury: An injury for which a person is detained in hospital as an 'in-patient', or any of the following injuries whether or not the person is detained in hospital: fractures, concussion, internal injuries, crushing's, burns, severe cuts and lacerations or severe general shock requiring medical treatment.

Slight Injury: An injury of a minor character such as a sprain, bruise or cut not judged to be severe or slight shock requiring roadside attention.

Casualty: A person who sustains a slight, serious or fatal injury.

- 3.28 The pre implementation collision data gathered as part of the trial reveals a relatively low number of collisions in all schemes.
- 3.29 There was 1 recorded road traffic collision in the year before the trial at 3 of the primary schools, Carrowreagh, Woods, and Bronte, and 2 recorded road traffic collisions at Ballyvester Primary School, making a total of 5 recorded road traffic collisions.
- 3.30 In the year before the trial, 10 casualties were recorded as result of the 5 recorded road traffic collisions. 3 of these were recorded as serious, and 7 recorded as slight.
- 3.31 There were no recorded collisions during the year before the trial at Culcrow, St Mary's and Carrickmannon Primary Schools.
- 3.32 During the trial, there were no recorded collisions at any of the 7 locations and consequently no recorded casualties.
- 3.33 There have been no recorded collisions or casualties involving pedestrian or cyclist traffic either before or during the trial period.
- 3.34 There has been a demand for part time 20mph speed limits outside schools since the initial pilots in 2008 so there has been a considerable amount of correspondence in the intervening period.
- 3.35 The level of interest is being sustained and, since the resumption of the Northern Ireland Assembly, there have been written Assembly questions and correspondence from Assembly members on the matter of reducing speed limits outside schools and asking about the trial in general.
- 3.36 In general, the part time 20mph speed limit trials have been well received by the schools and elected representatives. Each

Division has received some requests in the past year, from other school principals and parents, for part time 20mph speed limits to be introduced at other schools

3.37 One of the schools involved with the trial, Carrowreagh Primary School, has written to the Department and said they are happy to have been provided with the temporary speed restriction signs and that they feel these are necessary to ensure the safe running of the school, especially the management of the children's arrival and departure from school.

3.38 However, Carrowreagh did raise concerns that the temporary flashing lights speed restriction signs are not sufficiently attention grabbing and would ask, for the safety of the pupils, that the Department consider a more attention seeking system to be put in place. Some of their proposals are for additional flashing lights, provision of higher lights, coloured lights and/or larger signage.

3.39 The general public attitudes are similar to those already expressed about 20mph limits in general.

3.40 The Continuous Household Survey (CHS) report, 'Road Safety Issues in Northern Ireland 2018/19', published on 20 February 2020, reporting that:

- The majority of respondents (53%) thought that a 20mph speed limit should be more widely used; and
- Approximately four fifths (82%) of respondents thought a 20mph speed limit should be applied outside schools and three quarters (76%) thought it should be applied to an area where children play. See Figure 33.

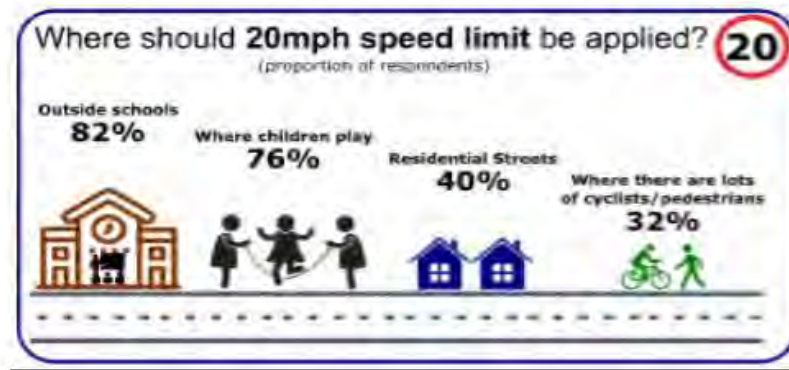


Figure 33 : Continuous Household Survey Infographic

4. Discussion – Signs only 20mph trial findings

- 4.1 The measured mean speeds recorded as a result of the 'signs only' trial, apart from one notable exception, are generally less than 1mph different to those speeds measured before the schemes were implemented. As noted earlier in this report, these recorded values vary from reductions to increases without any consistency or apparent trends.
- 4.2 The notable exception mentioned in the previous paragraph being the speeds measured for the Langley Road scheme in Ballynahinch, which show a maximum mean speed reduction of 5.3mph measured in year 3 and a mean speed reduction of 4.3mph across the 3 years of the trial.
- 4.3 The 20mph signs have been in place in the Langley Road scheme for over 4 years and complaints are now being received regarding increased speeds. The Department has arranged to provide red textured banding and speed roundels on the carriageway in summer 2020 to reinforce the 20mph speed limit at both entrances to the estate. Further monitoring will be carried out to assess if this had any impact on reducing mean speeds.
- 4.4 Further monitoring will be carried out to assess if the provision of the red textured banding has had an impact on reducing the increase in speeds.
- 4.5 The slight change in measured speeds in the other four schemes is however consistent with results recorded elsewhere and, in particular, the results of the Department for Transport (DfT) in-depth long term research into 20mph (signs only) limits carried out

on behalf of DfT by the engineering consultancy Atkins which was published in November 2018.

4.6 In its 'Roads Safety Statement 2019 – A Lifetime of Road Safety' DfT referred to the Atkins work stating that, '*Overall the introduction of 20 mph limits led to a small reduction in median speed (less than 1mph)*' but went on to say that '*vehicles travelling at higher speeds before the change of speed limit reduced their speed more than those already travelling at lower speeds*'.

4.7 The DfT statement can be found at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/817695/road-safety-statement-2019.pdf

4.8 The Atkins study 20mph Research Study Process and Impact Evaluation Headline Report, November 2018 - Report by Atkins, AECOM, and Professor Mike Maher (UCL) along with all supporting technical data can be found at:

<https://www.gov.uk/government/publications/20-mph-speed-limits-on-roads>

4.9 The Atkins study was commissioned by the Department for Transport in 2014 to address a gap in the evidence available on the effectiveness of 20mph speed limit (signs only) schemes. Twelve case study schemes were studied, from a variety of area types, road types and scale and the research concluded that:

- *"20mph limits are supported by the majority of residents and drivers;*

- *there has been a small reduction in mean (median) speed - less than 1mph; and*
- *vehicles travelling at higher speeds before the introduction of the 20mph limit have reduced their speed more than those already travelling at lower speeds.*

There is not enough evidence to conclude that that there has been a significant change in collisions and casualties following the introduction of 20mph limits in residential areas”.

4.10 The results are also consistent with previously published TRL findings which referred in turn to previous research that indicated that *“the use of 20mph speed limit signs alone, without traffic calming features is likely to lead to only small speed reductions of about 1mph”*. The report also said that *“on average, each 1mph speed reduction in speed is expected to reduce the injury accident frequency by about 5%”*. The research ‘Review of 20mph Zones in London Boroughs, by DC Webster & RE Layfield, published Report PPR 243, June 2003 found that the mean speed reduced by 9mph in 20mph zones with traffic calming measures.

<http://content.tfl.gov.uk/review-of-20mph-zones-in-london-boroughs-full-report.pdf>

4.11 The results are also consistent with the findings presented in the Royal Society for the Prevention of Accidents (ROSPA) document ‘A Guide to 20mph Limits’, March 2019, which again showed that *‘20mph limits are most likely to be effective if they are implemented on roads that already have relatively low traffic speed’*. In terms of speed reduction, the ROSPA report shows that *‘the introduction of 20mph limits led to a small reduction in median*

speed (0.7mph in residential areas and 0.9mph in cities’.

<https://www.rospa.com/rospaweb/docs/advice-services/road-safety/employers/guide-to-20mph-limits.pdf>

- 4.12 In terms of safety the ‘signs only’ schemes show a noticeable difference in the numbers of recorded collisions and casualties in the housing development areas and Belfast City Centre.
- 4.13 The relatively low numbers of collisions and casualties in the 4 housing areas means that it is difficult to identify any trends or draw any conclusions. For example, the recorded collision data for Merville Garden Village shows 4 slight collisions, with 4 slight casualties, before implementation but nothing recorded during, and both Langley Road and the Rosses had no recorded collisions before implementation and 1 and 2 recorded collisions respectively during the trial when the speed limit was reduced.
- 4.14 By comparison however, the Belfast City Centre scheme shows a significant reduction in the both the numbers of recorded collisions and casualties.
- 4.15 The recorded number of road traffic collisions in the Belfast City Centre scheme has decreased from 56 in the year before implementation to an mean of 44 (it was 44 in each year) representing a 22% reduction in the number of recorded collisions.
- 4.16 The recorded number of casualties in the Belfast City Centre scheme has decreased from 79 in the year before implementation to at worst 59 in year 1, to at best 52 in year 2. The higher figure represents a 25% reduction in the number of casualties.

- 4.17 During the three year period after implementation however there were 10 road traffic collisions recorded as serious, and 10 casualties recorded as serious as opposed to the year before which had no (zero) road traffic collisions or casualties recorded as serious on the streets within the 20mph limit.
- 4.18 The number of recorded pedestrian casualties in the Belfast City Centre scheme decreased from 25 in the year before implementation to a mean of 18 per year in the 3 years of the pilot, representing an average decrease in the region of 28%.
- 4.19 Recorded cyclist casualties did however see a rise from the pre-implementation figure of 1 to 2 in years 1 and 2, and 3 in year 3.
- 4.20 The increase in recorded cyclist casualties may be as a result of an increase in cyclist traffic. Data collected from the Belfast Cordon Surveys in 2013 & 2018 shows that the total number of cyclists increased from 509 in 2013 to 634 cyclists in 2018. This represents an increase of 125 in the number of cyclists (25%).
- 4.21 The volume of pedestrian traffic also increased from 4,490 people in 2013 to 4,770 in 2018. This represents an increase of 280 pedestrians (6%). See Figure 34 – Number of people per mode 2013 - 2018 comparison.

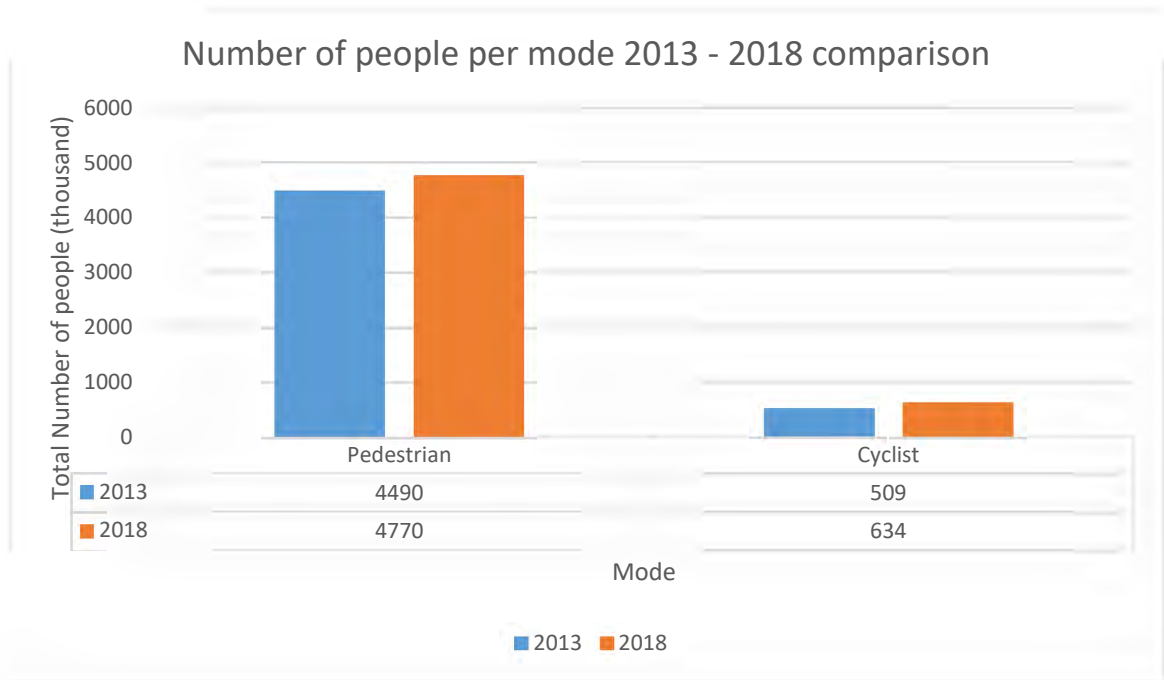


Figure 34 : Number of people per mode 2013 - 2018 comparison.

4.22 While the reductions in recorded collisions in the Belfast City Centre scheme are consistent across the 3 years of the trial, it is difficult to conclude whether these are as a result of the newly imposed speed limit or whether this reduction is due to other factors.

4.23 The relative difference in costs between a 'signs only' scheme and a traffic calming scheme for the same area equates to a saving of over £20,000 per scheme, as shown in Table 9: Signs Only/Traffic calming scheme cost comparison. However, the physical measures will impel drivers to travel less quickly, previous studies show a 9mph in mean speed reduction with traffic calming measures as opposed to 1mph when only signs are used.

Table 9: Signs only/Traffic calming scheme cost comparison

Scheme	Cost Signs Only (k)	Indicative Cost of a Traffic Calming scheme in the area (k)
Belfast City Centre	£10,000	N/A
Merville Garden Village, Newtownabbey	£6,000	£32,000
The Rosses, Ballymena	£5,000	£31,600
Whitehall, Ballycastle	£1,900	£29,900
Langley Road, Ballynahinch	£1,000	£23,200

4.24 The findings of research undertaken by Queen’s University Belfast, which conducted a review of current evidence, concluded that ‘20mph zones’ (introduced with physical engineering measures) are effective in reducing the number and severity of road user collisions and casualties but that there is insufficient evidence for 20 mph ‘limits’ and the reduction in numbers and severity of collisions/casualties.

4.25 Similarly, going back to the DfT ‘Roads Safety Statement 2019 – A Lifetime of Road Safety’ it also said of the study undertaken by Atkins ‘*The study found insufficient evidence to conclude that in residential areas the introduction of 20 mph limits had led to a significant change in collisions and casualties. However, one city centre case study did show a significant reduction in collisions and casualties. Overall, there was a small but statistically significant improvement in reported levels of cycling and walking*’. Which generally reflects what the findings are from this trial.

4.26 The Queen’s University Belfast (QUB) research which was published in the Journal of Transport and Health in October 2019 provides important evidence to support the implementation of 20mph speed zones across the UK and Europe. The QUB lead in article can be accessed via the following link <https://www.qub.ac.uk/corporate-plan/research/News/QueensUniversityBelfastresearchersshow20mphzoneseffectiveinreducingroadcasualties.html> and the article itself via <https://www.sciencedirect.com/science/article/pii/S2214140519301859?via%3Dihub>

4.27 The Belfast City Centre traffic volumes produced in Table 5 for before and during the trial indicate an average reduction of traffic volumes coming into the city centre in the region of 19%, which may on balance be a greater influencing factor on the numbers of recorded collisions than the reduction of speed. The ‘Belfast on the Move’ project introduced a number of traffic management changes in 2013 which has resulted in more people walking, cycling and using public transport for their journey into the city centre in the morning peak and in 2016 recorded that for the first time less than half of people are travelling in by private car. See Figure 35 – ‘Belfast on the Move’ Schematic.

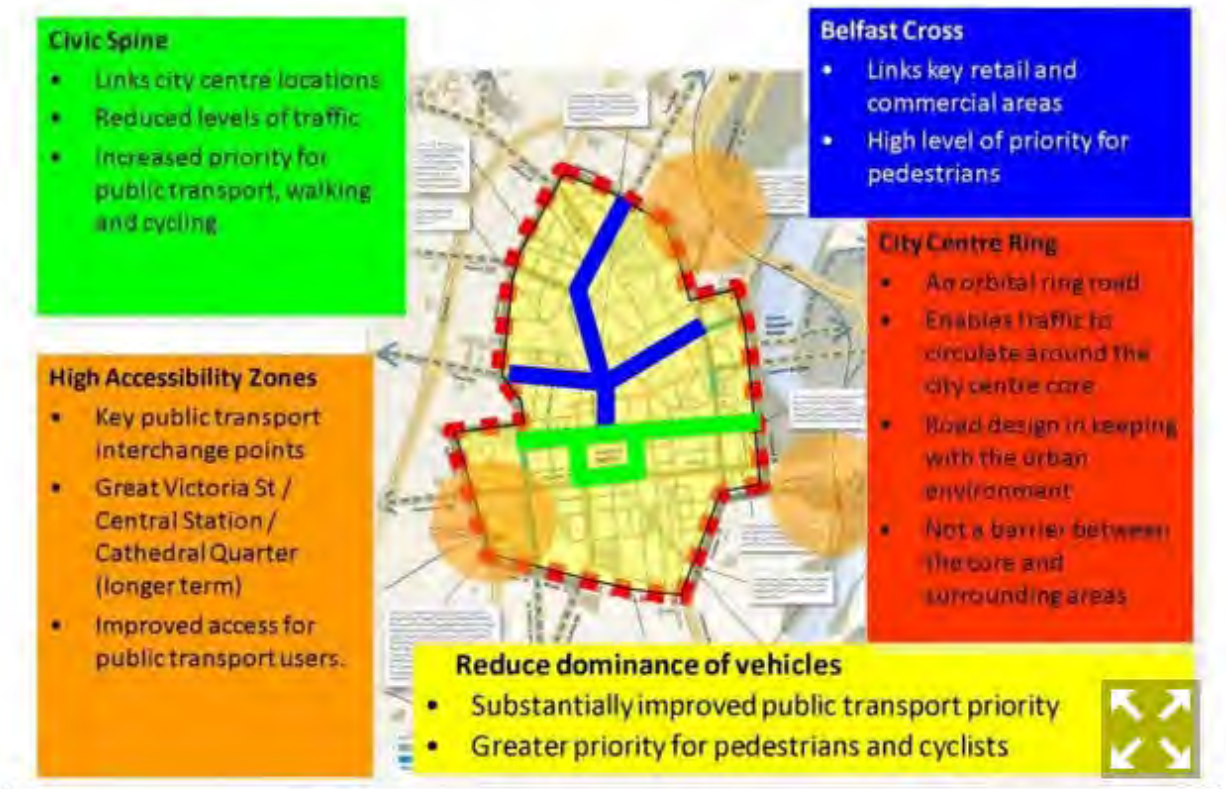


Figure 35. Belfast on the Move Schematic

4.28 Each collision or injury has an equivalent cost, so each one prevented has an equivalent cost saving. The Department for Transport produces accident and casualty costs data with the latest data published in September 2019. See Figure 36 'Mean value of prevention per reported casualty and per reported road accident' – the mean value of preventing a casualty being £70,791 and accident £98,232.

Department for Transport statistics

<https://www.gov.uk/government/publications/reported-road-casualties-great-britain-annual-report-2018>

RAS60001

Average value of prevention¹ per reported casualty and per reported road accident²: GB 2018

Accident/casualty type	Cost per casualty	Cost per accident
Fatal	1,958,303	2,196,534
Serious	220,058	251,458
Slight	16,964	26,087
Average for all severities	70,791	98,232
Damage only	-	2,344

1 The costs were based on 2018 prices and values

2 The number of reported road accidents were based on 2018 data

Source: STATS19, Transport Analysis Guidance - WebTAG

The figures in this table are National Statistics

Last updated: 26 September 2019

Next update: September 2020

Telephone: 020 7944 6595

Email: roadacc_stats@df.gov.uk

[Notes & Definitions](#)

For further information on Transport Analysis Guidance - WebTAG, see: <https://www.gov.uk/government/publications/tag-data-book>

For more information on the accident and casualty analysis, see the chapter in the 2012 Annual Report:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244913/rrcgb2012-02.pdf

Figure 36 'Mean value of prevention per reported casualty and per reported road accident'

4.29 Based on the findings of this trial, a cost saving could be calculated for the collision and injury reductions for the city centre. However, since it is undetermined whether the reductions are a result of the 20mph limit or the other traffic management initiatives introduced as part of Belfast on the Move, it is not deemed appropriate in this report to calculate any possible savings. The recorded collision data from the other 'signs only' trial sites and the 'part-time 20s' trial sites is not considered statistically significant enough to allow costing.

4.30 The Department for Transport accident and casualty costs data can be accessed via the following link:

<https://www.gov.uk/government/statistical-data-sets/ras60-mean-value-of-preventing-road-accidents>

5. Discussion – Part time 20mph speed limit trial findings

- 5.1 The measured speed reductions from the part time 20mph trial range from the lowest recorded reduction of 1.2mph at St Mary's Primary School and Bronte Primary School to a highest recorded reduction of 15mph at Ballyvester Primary School.
- 5.2 The two lowest reductions from the part time 20mph trial were recorded at the schools where the pre-implementation measured speeds were lowest - 27mph at St Marys Primary School and 38.6mph at Bronte Primary School.
- 5.3 In comparison, the results for the trial of the original fully electronic part time 20mph signing arrangements at Hezlett Primary and Kilmoyle Primary Schools saw reductions in mean speeds of between 19 and 22mph at Hezlett and between 18 and 25mph at Kilmoyle. In both cases these reductions would have brought the mean speeds down to the low 20s during the period when the signs are operational and the speed limit is 20mph.
- 5.4 The Department for Regional Development Roads Service Northern Division report '20mph Part time Speed Limits – Report on Pilot Studies February 2010 recorded and reported on findings.
- 5.5 From the results, it would appear that the fully electronic signs used in the original pilots were more effective in reducing speeds.
- 5.6 The report on the original pilots did record that '*The high profile presence of the police, followed up by regular visits to carry out enforcement action, as well as positive coverage in the local and national press ensured that the local community were well*

informed of the limit and how it operated and the vast majority of drivers have been shown to slow down when the signs operate’.

- 5.7 This trial was probably not as high profile as the 2010 pilots and the engineers inspecting the trial sites did notice a marked difference in driver behaviour between when they drove the stretch of road and when they stopped to observe traffic from the road side – the presence of personnel in high visibility jacket had a noticeable impact on the speed of traffic and compliance with the speed limit.
- 5.8 A limited amount of enforcement has been undertaken during the trial period with the police working with schools when requests for attendance were received. While a small number of penalties were handed down during the period, PSNI officers generally took a “light-touch” approach and used the opportunity to raise awareness and encourage compliance.
- 5.9 Compliance with any speed limit will improve if it is rigorously enforced, however, in the longer term it is felt that a behavioural change is needed among some drivers. A point expanded upon later in this report when Living Streets is discussed.
- 5.10 In terms of indicative costings, the average cost of the original electronic signs used at Hezlett Primary and Kilmoye Primary Schools was in the region of £65,000, which would be a value closer to £80,000 today. The cost of the 7 trial schemes average around £21,000 each which is approximately a quarter of the cost of the original fully electronic sign arrangement. So for the cost of one original scheme, almost 4 schemes could be provided using the new arrangement.

5.11 Maintenance and other running costs will also be greatly reduced. The fully electronic signs have a limited life span of 7-10 years and it is estimated the cost to replace the signing unit itself would be in the region of £12,000 at today's prices. In comparison the new signing arrangement comprises mainly a fixed sign, which will only need replaced in the 20 years or so if damaged or vandalised, and are relatively cheap to replace at a cost of roughly £200. The only electronic element being the flashing amber lights (wig-wags), which are in comparison relatively inexpensive to replace at less than £1,000 a set, but would be considered more durable than the fully electronic signs used in the original pilots.

6. Discussion – the Position Elsewhere

- 6.1 The approach elsewhere in England, Scotland and Wales is that individual local authorities are responsible for setting speed limits on the roads in their locality. Guidance is provided in the Department for Transport Circular 01/2013 'Setting Local Speed Limits'. This indicates that 20 mph speed limits (signs only) should be used where mean speeds are already below 24 mph, and recommends that 20mph zones (with calming measures) in places where 20 mph speeds are desired but where mean speeds are 24 mph or above. The same approach is used in Northern Ireland.
- 6.2 Evidence would suggest that many cities in the UK have already adopted a 20mph limit for most of their streets. However, there are calls for 20mph to become the default speed limit on residential and urban streets.

- 6.3 The Welsh government announced in 2019 that it believes 20mph zones should be the default speed limit for residential areas and has formed a task group to investigate. However, no evidence was found to suggest that the task group has concluded its deliberations.
- 6.4 Dublin City Council has in recent years progressively rolled out a 30km/h speed limit to many areas of the city and the latest proposal will see the city extensively covered by a 30km/h limit. The Council has also used part time 30km/h limits outside schools. See Figure 37 – Dublin 30km/h limits.

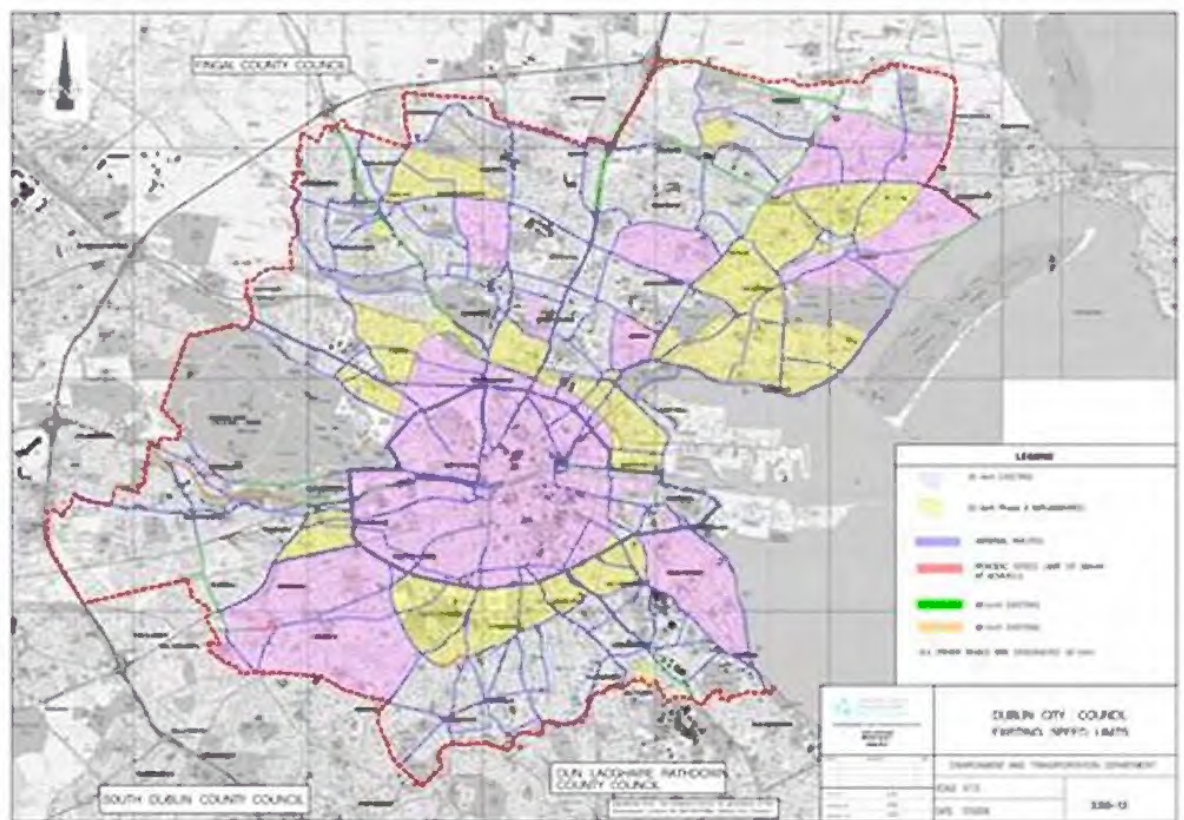


Figure 37. Dublin – 30km/h limits

- 6.5 Elsewhere there is a strong desire to make 20mph (30km/h) the default speed limit on all urban and residential roads.

- 6.6 At the start of the year several EU states have signed up to the Stockholm Declaration, which commits to reducing speed limits to 20mph (30km/h) where vulnerable road users and vehicle traffic mix.
- 6.7 On 20th February 2020 Global Road Safety Experts and Ministers from 130 countries met at the 3rd Global Ministerial Conference on Road Safety in Stockholm. The conference was hosted by the Swedish Government, in collaboration with the World Health Organization. Its aim is to link worldwide road safety collaboration to sustainability challenges in the 2030 Agenda for Sustainable Development. Throughout the conference reducing the speed of vehicles in the presence of people walking and cycling was referenced as a key intervention for reducing collisions. In particular, speed in urban and village areas was recognised as a key factor in collisions not being avoided, and casualty severity not being mitigated.
- 6.8 The outcome of the conference was the “Stockholm Declaration” – a list of promised action steps – which had been through extensive consultation with WHO Member States via permanent representatives in Geneva and a transparent and inclusive public consultation open globally. The text follows recommendations of the Academic Expert Group with independent and scientific assessments of progress made during the Decade of Action for Road Safety 2011-2020 and directions for the future. Of the 18 resolutions which were “declared”, resolution 11 was on Speed Management and specifically mandated the global and universal use of 30km/h or 20mph limits.

6.9 The declaration mandates 20mph and 30km/h as a key action for global best practice:

“We, Ministers and Heads of Delegations as well as representatives of international, regional and sub-regional governmental and nongovernmental organizations and the private sector gathered in Stockholm, Sweden, on 19 and 20 February 2020 for the Third Global Ministerial Conference on Road Safety;..... we hereby resolve to;.....

- 1. Focus on speed management, including the strengthening of law enforcement to prevent speeding and mandate a maximum road travel speed of 30 km/h in areas where vulnerable road users and vehicles mix in a frequent and planned manner, except where strong evidence exists that higher speeds are safe, noting that efforts to reduce speed in general will have a beneficial impact on air quality and climate change as well as being vital to reduce road traffic deaths and injuries;”*

6.10 The declaration seeks 30km/h (20mph) limits where vulnerable road users and vehicles mix - for safety, air quality and climate action.

6.11 Rod King MBE, Founder and Director of 20's Plenty for Us who was in Stockholm speaking at a WHO event said: *“This really gives the lie to the idea that the UK's 30mph (or 50km/h in other countries) default speed limit in towns or villages is either safe or sustainable. Our current 30mph limits are killing and maiming people and fail to meet our 21st century mobility needs.*

The declaration sets a clear and unambiguous message that adoption of 20mph or 30km/h limits as a default is necessary on urban and village streets where people live, work, play and shop. Local and national governments must now expedite the setting of urban and village speed limits to 20mph or 30km/h wherever motorised vehicles mix with cyclists and pedestrians with exceptions only where it can be proven that higher speeds are safe. Wales is already doing this. We expect Under-Secretary of State for Transport Baroness Vere of Norbiton who represented the UK, to quickly adopt this recommendation so that the UK is in the forefront of such proven global best practice.”

7. Discussion – Campaigns and Other Relevant Information

- 7.1 The National Institute for Health and Care Excellence (NICE) reviews evidence on health policies. NICE published guidance entitled ‘Air pollution: Outdoor air quality and health in June 2017’ which strongly supports 20mph limits for smooth driving and speed reduction saying that *20mph limits without physical measures in urban areas help “avoid unnecessary acceleration and deceleration”* and adds that 20mph limits are increasingly recognised as an affordable tool to tackle air quality action areas.
- 7.2 The NICE guidance adds that Edinburgh, Glasgow, Hammersmith and Fulham and others have justified their area wide 20mph limits both on health grounds from fewer casualties and due to reduced acceleration. These areas have also see an encouraging shift

away from car use towards non-polluting methods like walking and cycling – which all improve air quality.

7.3 Rod King MBE, Founder of 20's Plenty for Us said:

“Many authorities recognise that 20mph helps them to both meet their air quality as well as ‘duty of care’ responsibilities to the vulnerable. In fact switching to a 20mph limit makes a significant reduction in the most dangerous NOx and PM10 emissions. It is entirely appropriate for NICE to make this recommendation to direct local authorities in their statutory duty to improve air quality and public health.”

7.4 The NICE guidance would appear to correlate with Research completed by Imperial College, London that shows sharp acceleration and braking can as much as double the amount of nitrogen oxides emitted by vehicles, which leads to poorer air quality, particularly in urban areas.

7.5 More recently the Royal College of Paediatrics and Child Health State of Child Health 2020 report launched on Wednesday 4 March 2020 and the following extract comes directly from its Northern Ireland summary report: See Figure 38: State of Child Health 2020.

Policy recommendations for Northern Ireland:

- The Department of Infrastructure should continue to provide safer environments for children and young people to walk, play and travel. Including:
 - Expansion of 20mph zones within built up / urban areas;
 - Implementation of the 'Bicycle Strategy for Northern Ireland';
 - Creation of more pedestrian zones and implementation of 'Exercise – Explore – Enjoy: A strategic plan for greenways';
 - Monitor and measure of the population's exposure to air pollution, particularly in urban areas and near schools.

Policy recommendations for Northern Ireland:

- Department of Infrastructure should prioritise publication of a successor strategy to the Road Safety Strategy to 2020.
- We welcome the 2018 Statutory Rule – The Schools (Part-time 20mph Speed Limit) Order, which introduced a part-time speed limits on a select number of roads where primary schools are located and the ongoing expansion of 20 mile per hour areas generally. This should be expanded to cover more built up / urban areas where there is a significant presence of vulnerable road users.
- The Department of Infrastructure should continue to provide safer environments for children and young people to walk, play and travel. Including:
 - Implementation of the 'Bicycle Strategy for Northern Ireland';
 - Creation of more pedestrian zones and implementation of 'Exercise – Explore – Enjoy: A strategic plan for greenways';

See Figure 38: State of Child Health 2020

The first extract coming from its commentary on mortality and the second from its commentary on injury prevention. The full report can be access via the attached link.

https://stateofchildhealth.rcpch.ac.uk/wp-content/uploads/sites/2/2020/03/RCPCH_SOCH-NORTHERN-IRELAND-2-04.03.20.pdf

- 7.6 The studies from the Atkins November 2018 report mentioned earlier states, existing research suggests that 20mph limits (signs

only) have the potential to affect vehicle emissions and air quality, reduce CO2 emissions and reduce noise levels. This is due to mean speed reduction and more consistent driving speeds.

- 7.7 The Atkins report adds that existing research suggests that 20mph limits (signs only) have the potential to improve health and wellbeing and reduce pressure on the NHS, as a result of an overall increase in use of active travel modes, and an overall reduction in injuries from vehicle collisions as a result of a reduction in speed. However, Atkins could not confirm this based on their collected data.
- 7.8 The Atkins report also adds that there is the potential for some health benefits to be offset as a result of an increase in collisions involving pedestrians and cyclists and increased exposure to vehicle emissions. However, Atkins could not confirm this based on their collected data
- 7.9 The Atkins report also shows that 20mph speed limits are supported by and beneficial for residents. From the case studies they completed the majority of residents (70%) agreed that the 20mph speed limit is beneficial for residents. The proportion is higher in area-wide residential areas (74%), and amongst non-drivers (74%).
- 7.10 A study by the National Institute for Health Research (NIHR) sought to establish whether there was a reduction in collisions and casualties in 20mph speed zones and in areas just marked with 20mph limit signs, and if there was any difference in effectiveness. The NIHR study was a systematic review and narrative analysis of 'quasi-experimental studies' looking at the impact of 20mph speed

zones or limits on a range of public health outcomes.

<https://evidence.nihr.ac.uk/alert/twenty-mph-speed-zones-reduce-the-danger-to-pedestrians-and-cyclists/>

- 7.11 The NIHR study found the introducing 20mph zones (with physical measures) appeared effective at reducing the number and severity of collisions and casualties but that the evidence on whether 20mph limits were effective was inconclusive, coming from just two studies.
- 7.12 The NIHR study also found that there were few studies on the impact of 20mph zones or limits on other public health outcomes; such as walking, cycling, perceived safety, neighbourhood pleasantness, time spent outside, physical activity, air quality and health inequalities.
- 7.13 Focus group participants also tended to see the 20mph limits as a positive change.
- 7.14 Living Streets is a charity which promotes every day walking. Living Streets wants a nation where walking is the natural choice for everyday local journeys and is campaigning for 20mph speed limits.
- 7.15 Living Streets '*state that urban areas need more 20mph speed limits to create safer streets, and more vibrant communities where people live, work and shop, indicating that if a pedestrian is struck by a vehicle at 20mph they have a 97% chance of survival. Just 10mph faster the chances of survival drops to 92% - all for the sake of arriving somewhere slightly earlier. They are campaigning for 20mph speed limits on streets*'.

- 7.16 Living Streets are calling for area-wide default 20mph speed limits that include main roads and high streets where many people live work, shop, and play.
- 7.17 Living Streets Scotland has been working on a project in five communities across Scotland, supporting communities and local authorities to introduce 20mph areas. The conclusions are that although engineering solutions are important and have their place to play, behaviour change is equally vital to the success of any project. Behavioural change – whether driving more slowly or ditching the car and becoming more active – doesn't happen by itself, there needs to be a focus on messaging, campaigning and other interventions alongside signage or other engineering solutions.
- 7.18 The Northern Ireland Road Safety Partnership also provides commentary on the impact of traffic speeds. The Partnership includes representatives of the Department of the Environment, Department for Infrastructure (DfI), The Police Service of Northern Ireland, The Northern Ireland Courts and Tribunal Service and the Department of Justice.
- 7.19 The aim of the Partnership is to support the Road Safety Strategy for Northern Ireland 2010 – 20 by :-
- reducing speeding and the number of injury collisions on the roads of Northern Ireland by targeted enforcement using a range of approved safety camera technology;
 - delivery of educational Campaigns, initiatives and direct interventions; and

- changing attitudes towards speeding. It also aims to reduce the number of road traffic casualties through education and by detecting speed at locations with a history of collisions and where there is evidence of speeding.

https://www.psni.police.uk/advice_information/roads-and-driving/northern-ireland-road-safety-partnership/

7.20 On its NIDirect entry the Partnership shows the correlation between child survival rates and vehicle speed indicating that research shows that the survival rate of a child hit by a vehicle at 20mph is nearly double the survival rate of being hit by a vehicle at 30mph, it asks that people be aware that:

- at 20 mph a child hit by a vehicle has a 90 per cent chance of survival;
- at 30 mph a child hit by a vehicle has a 50 per cent chance of survival; and
- at 40 mph a child hit by a vehicle has a 10 per cent chance of survival.

<https://www.nidirect.gov.uk/articles/speed-limits-and-penalties-breaking-them>

7.21 The information presented below derives from the 2018/2019 Continuous Household Survey (CHS) in relation to the attitudes, awareness and behaviours of respondents to specific road safety issues. The topics included 20mph speed limits, speeding and mobile phone usage. The CHS is considered to be a representative sample of the population at household level.

7.22 The 2018/19 CHS was based on a random sample of 9,000 domestic addresses provided by Land and Property Services and interviews were sought with all adults aged 16 and over in these households with the final dataset containing the records for 2,948 adults. These people were asked questions relating to 20 mph speed limits, speeding and mobile phone usage, and 2,932 adults provided a response to the questions.

7.23 The Department for Infrastructure (DfI) and its Road Safety Partners are committed to promoting improved road safety. The Analysis, Statistics and Research Branch (ASRB) of the Department for Infrastructure (DfI) undertakes an annual programme of research and statistical investigations into road safety problems in Northern Ireland, developed and implemented in collaboration with Road Safety policy side. The results from this report form part of that research programme.

7.24 The majority of respondents (53%) thought that a 20mph speed limit should be more widely used. See Figure 39: Should 20mph speed limit be used more widely?

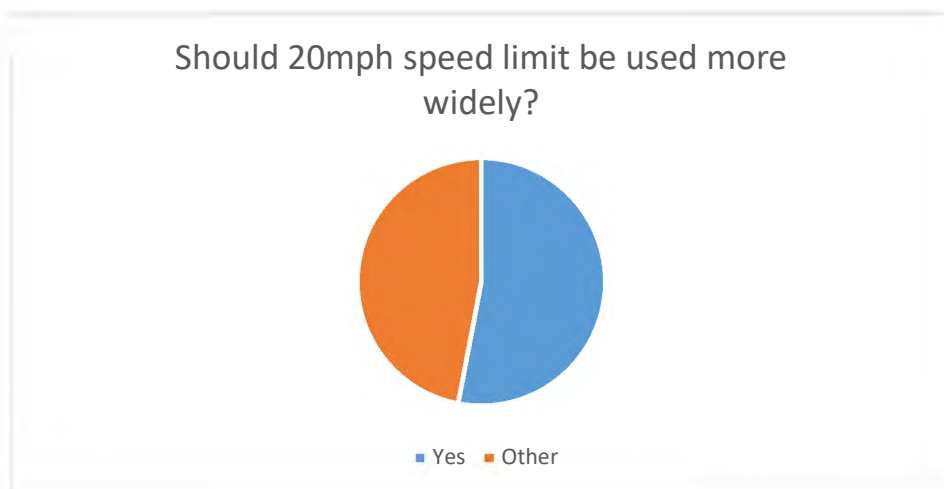


Figure 39: Should 20mph speed limit be used more widely?

7.25 Approximately four fifths (82%) of respondents thought a 20mph speed limit should be applied outside schools and three quarters (76%) thought it should be applied to an area where children play. Figure 40 & 41: Where should 20mph speed limit be applied?

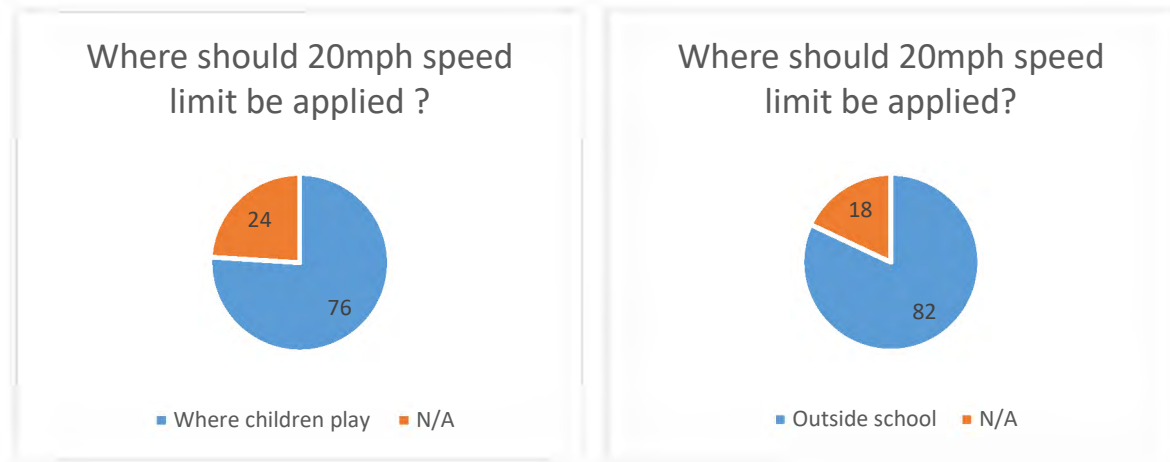


Figure 40 & 41: Where should 20mph speed limit be applied?

7.26 Half of all drivers (50%) reported they never normally exceed the speed limit; however, 42% of drivers stated they exceed the speed limit on motorways; this was followed by 23% on dual carriageways, 8% on rural roads and 4% for roads in 'built-up' urban areas. Figure 42: Where do people speed?

Where do people speed?

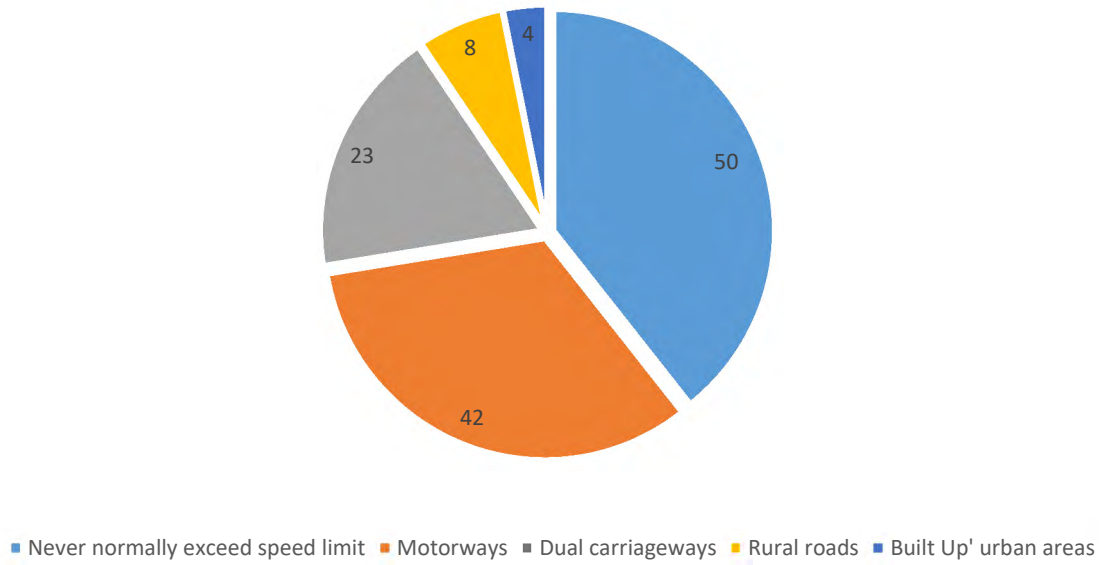


Figure 42: Where do people speed?

8. Findings

- 8.1 This trial finds that the use of 'signs only 20mph schemes' only has a small impact on the speed of traffic using the road, which is broadly consistent with findings from elsewhere.
- 8.2 This trial finds that the use of a simpler arrangement of traffic signing using fixed signs and flashing amber lights for introducing part time 20mph speed limits can result in a reduction in mean speeds. In comparison with the originally used fully electronic signs, the results would not appear to be as good but the variation of results from site to site would make the authors hesitant to say whether this is down to the different signing arrangements or the different site considerations found at each school.
- 8.3 The new part time 20s signing arrangement is on average just over a quarter of the cost of the original fully electronic arrangement.
- 8.4 This trial did not find any evidence to suggest that collision numbers reduced as a result of introducing 20mph limits either on a full or part time basis - though it has to be stressed that most of the sites evaluated had good safety levels recorded to begin with.
- 8.5 The pilot signs-only 20mph scheme in the Belfast city centre does show promising results in terms of collision reduction though this may be more a result of the reduction in traffic volumes in the city centre due to other traffic management initiatives introduced under Belfast on the Move.
- 8.6 The trial however does find that the need or desire for 20mph goes beyond simply measuring speeds and collision numbers.

- 8.7 The research for this pilot concludes that there is significant support for more 20mph speed limits in Northern Ireland. As detailed in the Continuous Household Survey, there is a higher demand for 20mph speed limits at schools, where children play and residential streets.
- 8.8 The Atkins study 20mph Research Study Process and Impact Evaluation Headline Report, November 2018 also indicates that 20mph limits are supported by and viewed as beneficial for residents. From the case studies Atkins completed, the majority of residents (70%) agreed that the 20mph speed limit is beneficial for residents. This trial did not replicate any local case studies but could find no evidence that residents here would have a different outlook.
- 8.9 Health can also be seen as a primary driver. Beyond the simple fact that the severity of injuries will be reduced if a vehicle is travelling slower, coherent arguments are being made that the lower speeds will produce less air pollution.
- 8.10 The National Institute for Health and Care Excellence (NICE) guidance says that Edinburgh, Glasgow, Hammersmith and Fulham and others have justified their area wide 20mph limits both on health grounds from fewer casualties and due to reduced acceleration.
- 8.11 The Royal College of Paediatrics and Child Health *State of Child Health 2020* report recommends more 20mph zones in built-up areas under its commentary on mortality and an expansion of the part time 20s scheme to include more schools in areas where

there are likely to be more vulnerable road users in its commentary on injury prevention.

- 8.12 From an environmental perspective, the NICE guidance also strongly supports 20mph limits for smooth driving and speed reduction saying that *20mph limits without physical measures in urban areas help “avoid unnecessary acceleration and deceleration”* and adds that 20mph limits are increasingly recognised as an affordable tool to tackle local air quality issues.
- 8.13 The consistency of the results in terms of speed reduction and the fact that drivers are still not complying with the posted speed limit has led for calls for more enforcement, however, it could be argued that in the longer term behaviour change is possibly more important than engineering measures and enforcement to improving road safety. To affect changes in behaviour there needs to be a focus on messaging, campaigning and other interventions alongside signing or other engineering solutions such as providing and signing more 20mph limits – which in itself may help reinforce the message and heighten driver awareness.

9. Recommendations

- 9.1 Given the public support for providing 20mph outside schools (Continuous Household Survey report, 'Road Safety Issues in Northern Ireland 2018/19 indicating that approximately four fifths, 82%, of respondents thought a 20mph speed limit should be applied outside schools) and the level of demand for such schemes from both schools and public representatives this reviews recommends that the introduction of part time 20mph at schools be prioritised.
- 9.2 There would be sufficient evidence to suggest that the new simpler arrangement of signs would be an effective way of doing this.
- 9.3 This review would also recommend that the roll out of any programme of part time 20s include all eligible schools and not just focus on rural schools where the national speed limit applies.
- 9.4 In terms of providing 20mph speed limits using signs only the findings are not as clear cut. The results from the Belfast scheme are promising though these may have been a result of the reduction in traffic volumes in the city centre due to other traffic management initiatives introduced under Belfast on the Move. This review would however still suggest that requests for such limits in other town and city centres be given due consideration.
- 9.5 In terms of providing 20mph speed limits in residential areas this review would recommend that the Department continues with its approach to providing 20mph zones (i.e. with traffic calming). It would also suggest that consideration be given to requests for providing 20mph limits using signs only but only in line with current

guidance i.e. in areas where mean speeds are already low, 24mph or less. This review does recognise that the ability in the short term to do this will however be impacted by the priority given to the roll out of part time 20s at schools.

Department for Infrastructure

August 2020

References

1. Northern Ireland's Road Safety Strategy to 2020: DoE, DRD, PSNI; (March 2011) <https://www.infrastructure-ni.gov.uk/publications/northern-ireland-road-safety-strategy-until-2020>
2. Setting local speed limits in Northern Ireland RSPPG E051 <https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/setting-local-speed-limits-in-northern-ireland-rsppg-e051.pdf>
3. Guide to Police Recorded Injury Road Traffic Collision Statistics in Northern Ireland: Police Service of Northern Ireland, (Updated May 2016) <https://www.psni.police.uk/globalassets/inside-the-psni/our-statistics/road-traffic-collision-statistics/documents/traffic-statistics-user-guide---2016-review---final.pdf>
4. 'Road Safety Issues in Northern Ireland 2018/19', Department for Infrastructure; 20 February 2020 <https://www.infrastructure-ni.gov.uk/publications/road-safety-issues-northern-ireland-201819>
5. Traffic Signs Regulations (Northern Ireland) 1997, Northern Ireland Statutory Rule – 1997 No 386, HMSO 1997 <https://www.legislation.gov.uk/nisr/1997/386/contents/made>
6. The Traffic Signs Manual, Chapter 3 Regulatory Signs 2019, TSO 2019 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/782724/traffic-signs-manual-chapter-03.pdf

7. RSPPG E070 'Road safety at schools' Department for Infrastructure October 2018 <https://www.infrastructure-ni.gov.uk/publications/road-safety-schools-rsppg-e070>
8. 'Roads Safety Statement 2019 – A Lifetime of Road Safety' DfT https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/817695/road-safety-statement-2019.pdf
9. '20mph Research Study Process and Impact Evaluation Headline Report', November 2018 - Report by Atkins, AECOM, and Professor Mike Maher (UCL) along with all supporting technical data can be found at: <https://www.gov.uk/government/publications/20-mph-speed-limits-on-roads>
10. 'Review of 20mph Zones in London Boroughs, by DC Webster & RE Layfield, published Report PPR 243, June 2003 found that the mean speed reduced by an mean of 9mph in 20mph zones with traffic calming measures. <http://content.tfl.gov.uk/review-of-20mph-zones-in-london-boroughs-full-report.pdf>
11. Royal Society for the Prevention of Accidents (ROSPA) <https://www.rospa.com/rospaweb/docs/advice-services/road-safety/employers/guide-to-20mph-limits.pdf>
12. 'Belfast Cordon Surveys 2013', AMEY Consulting, April 2014.
13. 'Belfast Cordon Survey 2018 – Draft Survey Report', AECOM, April 2019.
14. 'Effects of 20 mph interventions on a range of public health outcomes: A meta-narrative evidence synthesis' Queen's University Belfast (QUB) October 2019. The QUB lead in article can be accessed via the following link <https://www.qub.ac.uk/corporate->

plan/research/News/QueensUniversityBelfastresearchersshow20mphzoneseffectiveinreducingroadcasualties.html and the article itself via <https://www.sciencedirect.com/science/article/pii/S2214140519301859?via%3Dihub>

15. 'Accident and casualty costs data', Department for Transport , link: <https://www.gov.uk/government/statistical-data-sets/ras60-mean-value-of-preventing-road-accidents>
16. '20mph Part-time Speed Limits – Report on Pilot Studies; Department for Regional Development Roads Service Northern Division, February 2010
17. Department for Transport Circular 01/2013 'Setting Local Speed Limits' <https://www.gov.uk/government/publications/setting-local-speed-limits/setting-local-speed-limits>
18. 20mph default speed limit in wales
<https://www.bbc.co.uk/news/uk-wales-politics-44876118>
19. Dublin plans for 30kph limits:
<https://www.irishtimes.com/news/environment/speed-limits-to-be-cut-to-30km-h-across-dublin-1.4101089>
<https://irishcycle.com/2019/08/16/30km-h-to-be-across-dublin-city-by-end-of-2020/>
20. Stockholm Declaration 'EU states have signed up to the **Stockholm Declaration** which commits to reducing speed limits to 20mph (30km/h) where vulnerable road users and vehicle traffic mix'

http://www.20splenty.org/global_ministers_mandate_20mph and PDF

https://d3n8a8pro7vhmx.cloudfront.net/20splentyforum/pages/481/attachments/original/1582496641/global_ministers_mandate_20mph.pdf?1582496641

21. National Institute for Health and Care Excellence (NICE) reviews evidence on health policies. NICE published guidance entitled 'Air pollution: Outdoor air quality and health in June 2017'

http://www.20splenty.org/nice_20mph_for_air_quality and NICE smooth driving and speed reduction guidance

<https://www.nice.org.uk/guidance/ng70/chapter/Recommendation#smooth-driving-and-speed-reduction>

22. Research from Imperial College London

<http://www.imperial.ac.uk/news/167897/the-broader-problem-diesel-emissions/>

<https://www.imperial.ac.uk/news/188206/imperial-researchers-show-world-leaders-tackle/>

23. Royal College of Paediatrics and Child Health State of Child Health 2020 Northern Ireland summary report

https://stateofchildhealth.rcpch.ac.uk/wp-content/uploads/sites/2/2020/03/RCPCH_SOCH-NORTHERN-IRELAND-2-04.03.20.pdf

24. National Institute for Health Research (NIHR)

<https://evidence.nihr.ac.uk/alert/twenty-mph-speed-zones-reduce-the-danger-to-pedestrians-and-cyclists/>

25. Living Streets campaign calling for area-wide default 20mph speed limits <https://www.livingstreets.org.uk/policy-and-resources/our-policy/20mph> and Living Streets Scotland communities trials <https://www.livingstreets.org.uk/products-and-services/projects/lower-speed-communities>
26. Continuous Household Survey (CHS) 'Road Safety Issues in Northern Ireland 2018/19', published on 20 February 2020 <https://www.infrastructure-ni.gov.uk/publications/road-safety-issues-northern-ireland-201819> and infographic <https://www.infrastructure-ni.gov.uk/system/files/publications/infrastructure/road-safety-issues-in-northern-ireland-2018-19-infographic.pdf> and Analysis, Statistics and Research Branch (ASRB) press release <https://www.infrastructure-ni.gov.uk/news/statistical-press-release-publication-road-safety-issues-northern-ireland-201819>
27. The Northern Ireland Road Safety Partnership https://www.psni.police.uk/advice_information/roads-and-driving/northern-ireland-road-safety-partnership/
<https://www.nidirect.gov.uk/articles/speed-limits-and-penalties-breaking-them>