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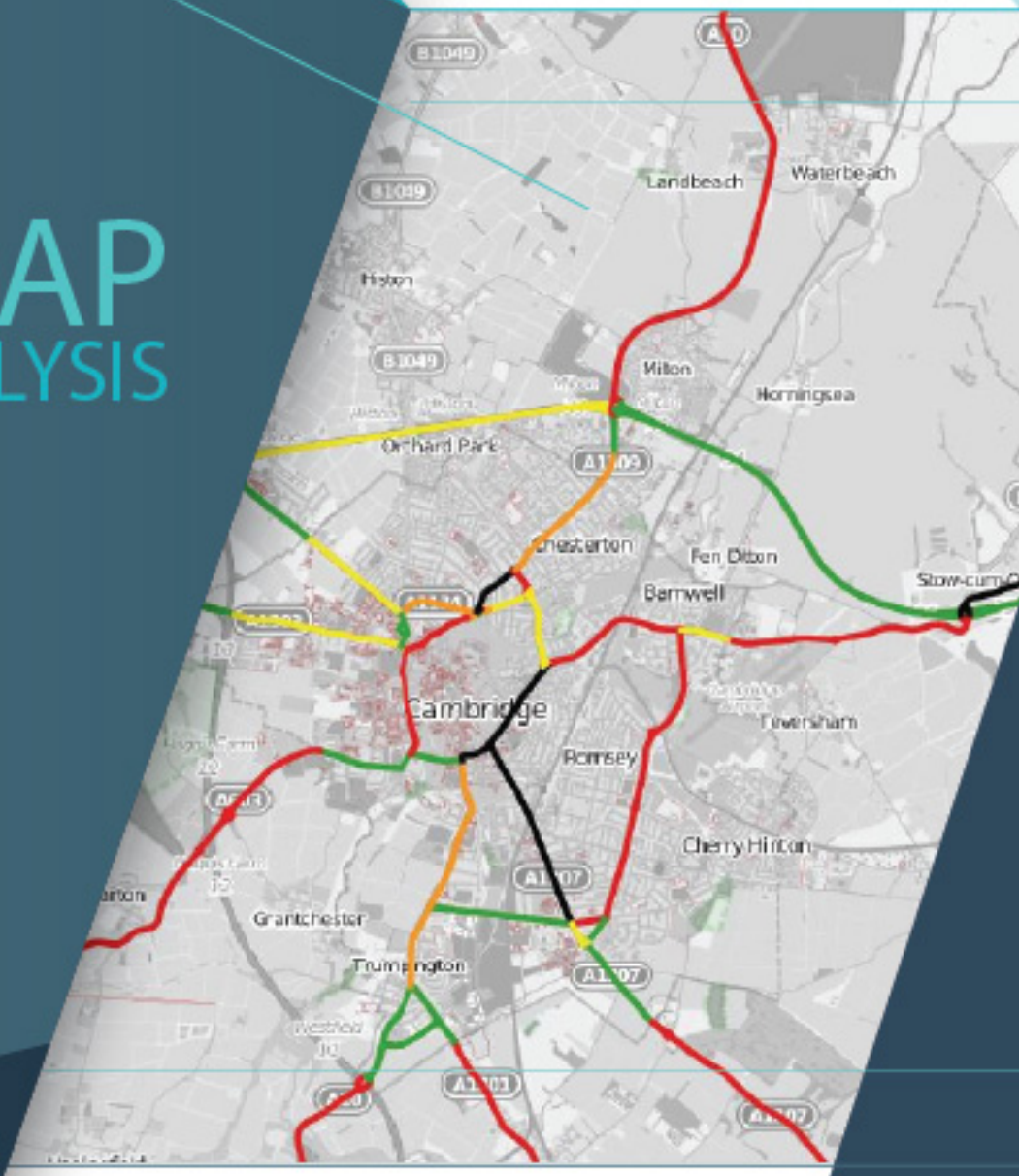
RISKMAP
ROUTE ANALYSIS



ALL MAJOR ROADS

INDEXED RISK

RAPTOR ANALYSIS

2012 - 2016

Cambridgeshire

2017

Cambridgeshire Route Analysis – 2012 to 2016

INTRODUCTION

This analysis looks at collision risk on A-class roads within Cambridgeshire using STATS19 data collected by the police for the period 2012 – 2016 (5 years). Collision data for 2012-2015 was extracted from the MAST Online dataset with 2016 data supplied from Cambridgeshire County Council. Collisions of all severities are included in this analysis.

Risk is assessed in two ways; as collision density, which is the annual average number of collisions on a route per 100 kilometres of road; and as a collision rate, which takes traffic flow in to consideration and is the annual average collisions per million vehicle kilometres. Department for Transport (DfT) traffic count data over the period 2012-2016 was used to inform traffic flow.

The analysis uses a bespoke road network created by Agilysis and derived from the Ordnance Survey Open Roads layer. Links were combined using road number then split at junctions with other A roads and Motorways, as well as significant points along the road, such as the point of entry in to an urban area to create 'routes'. Routes terminate at the boundary of both Cambridge district and Peterborough unitary authority, and therefore each route was allocated to one of three locations; Cambridge, Peterborough and the rest of Cambridgeshire.

Collision density and collision rates on A road routes have been compared to other A road routes within these locations to create index values. Index values are 100-based, so a route with an index value of 50 has a rate half that of the average for A roads in the same area (e.g. Cambridge) and an index value of 200 means a rate of twice the rate of the same area.

RESULTS

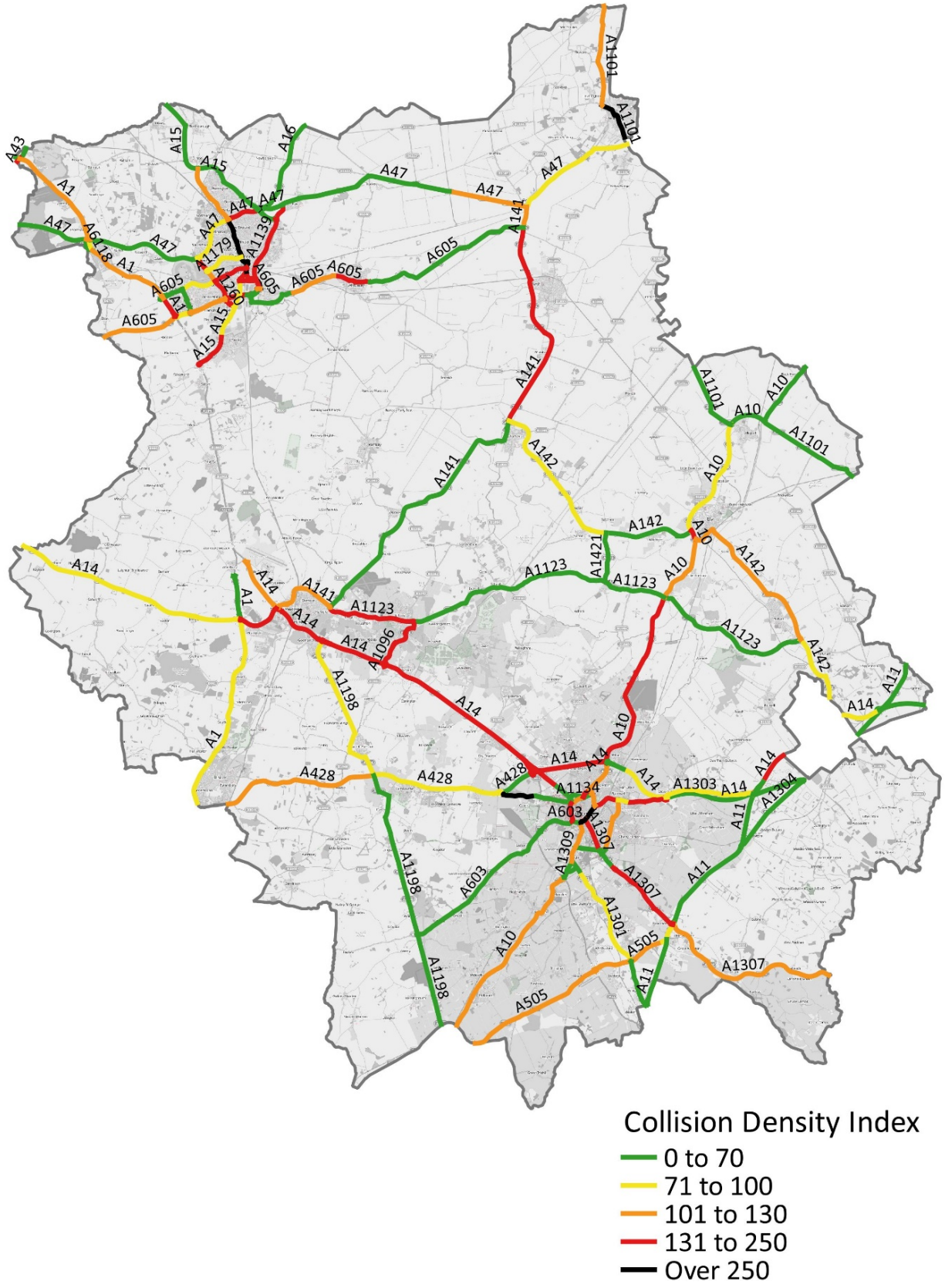
The full results for all routes has been provided to Cambridgeshire County Council as a digital shapefile suitable for analysis and mapping within GIS software. This following analysis reviews the results in more detail.

COLLISION DENSITY

Figure 1 shows collision density on Cambridgeshire's A roads. The map is thematically coloured using the index value. The higher the value the higher the collision density compared to other A roads within either Cambridge, Peterborough or the rest of Cambridgeshire.

Unsurprisingly, the routes with the highest collision density are found within urban areas where roads will generally be busier, particularly Peterborough and Cambridge but also through Wisbech. There is also higher collision density on the A14 between Cambridge and Huntingdon, the A10 between Cambridge and Ely and the A141 from Chatteris to March.

Figure 1 - Cambridgeshire A roads: Collision Density



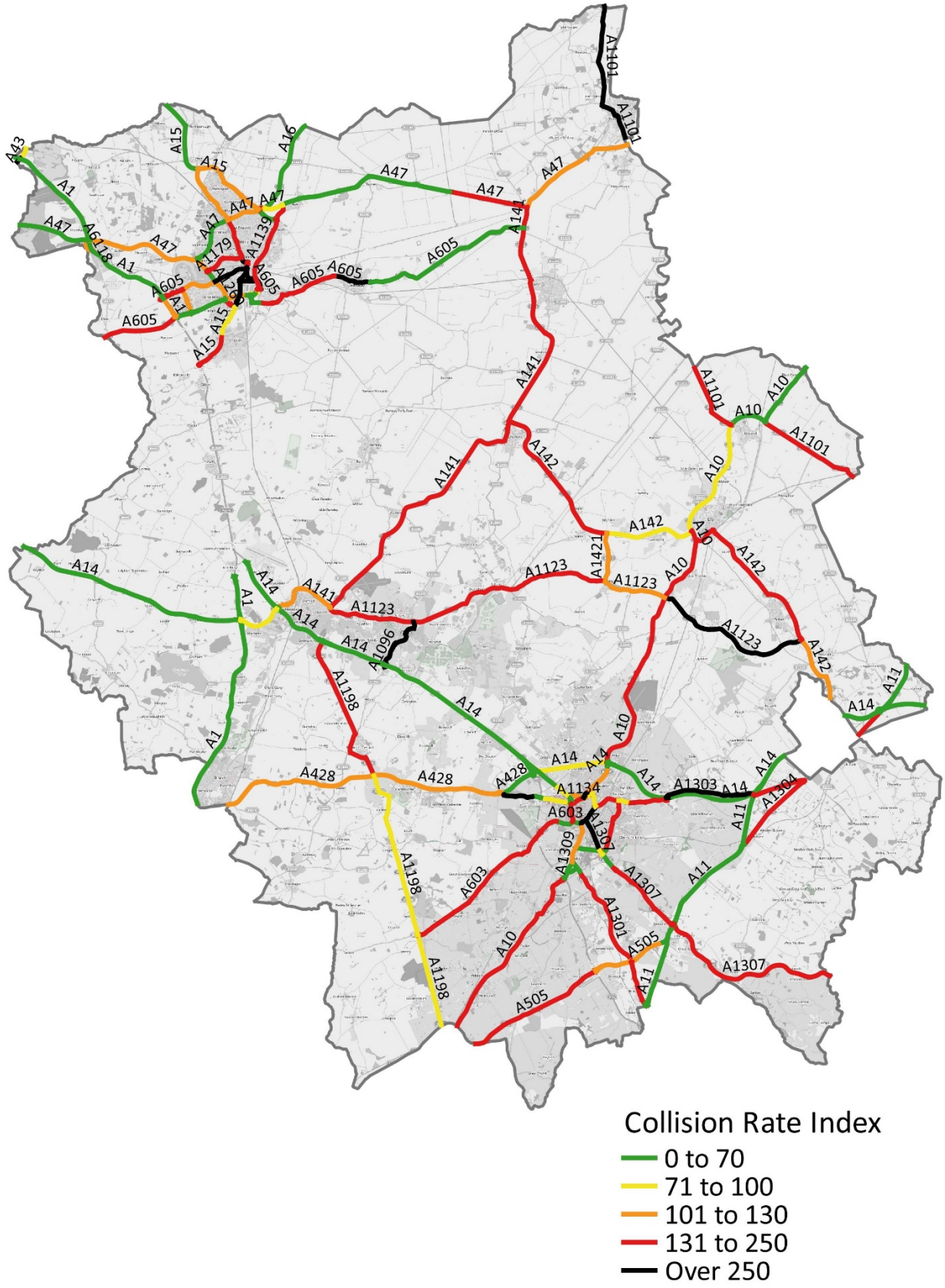
COLLISION RATE

Figure 2 shows annual average collisions per 100 million vehicle kilometres compared to other A roads, represented as a 100-based index value. The highest risk routes are still mostly located within Cambridge and Peterborough but also on the A1101 through Wisbech and the A1096 to the east of Huntingdon. Despite being a relatively low risk road when assessing risk on collision density, the A1123 between Stretham and Soham is one of the highest risk roads when traffic flow is taken in to consideration. The A14 across the county displays much lower risk when traffic flow is taken in to account, which suggests that collision numbers are only high along this stretch due to the higher volume of traffic. The A11 is low risk based on both collision density and collision rate.

Table 1 – The twenty routes with the highest collision rate index value

Site ID	Description	Road	Length (km)	Location	Collisions (2012-2016)	Index (Density)	Index (Traffic)
Site_044	Wisbech - County boundary to B1169	A1101	3.30	Cambridgeshire	77	515	763
Site_010	The Fen Causeway to Hills Road	A603	0.47	Cambridge	67	645	743
Site_040	B1092 to A1129	A605	0.95	Peterborough	30	359	683
Site_032	A1129 to A605	A15	0.95	Peterborough	15	179	552
Site_083	J35 A14 to A11 bridge	A1303	6.99	Cambridgeshire	28	88	546
Site_033	Glebe Road to Hawkshill Way	A15	0.28	Peterborough	10	408	487
Site_039	A1139 to A15	A605	1.12	Peterborough	22	222	471
Site_054	Whittlesey	A605	2.98	Cambridgeshire	32	237	421
Site_024	A1260 to A15	A605	2.66	Peterborough	55	235	417
Site_038	A15 to A1139	A1129	1.30	Peterborough	16	140	415
Site_053	A1260 to A1129 High Street	A15	2.34	Peterborough	20	97	394
Site_116	A427 nr Madingley to Cambridge Road, Coton	A1303	2.36	Cambridgeshire	30	280	390
Site_018	County boundary to A1	A43	0.34	Peterborough	4	134	374
Site_142	A1307 to A1134 Newmarket Road	A603	1.29	Cambridge	78	273	330
Site_035	Bishop's Road Rbt to A1179 Thorpe Road	A15	0.80	Peterborough	28	397	311
Site_011	A10 Stretham to A142 Soham	A1123	12.14	Cambridgeshire	33	60	301
Site_108	A1303 Chesterton Road to A1309 Milton Road	A1134	0.83	Cambridge	26	142	295
Site_104	A1134 Long Road to A603 Gonville Place	A1307	2.52	Cambridge	111	199	279
Site_043	B1169 Wisbech to County boundary north	A1101	7.47	Cambridgeshire	38	112	256
Site_139	J26 A14 to A1123 St Ives	A1096	5.22	Cambridgeshire	48	203	256

Figure 2 - Cambridgeshire A Roads: Collision Rate based on traffic flow



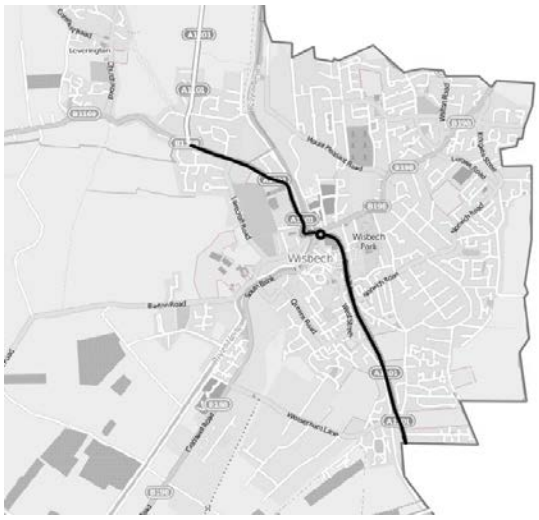
PREDICTIVE ANALYSIS

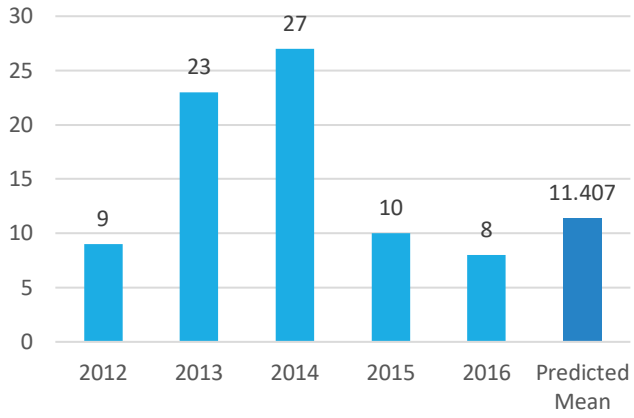
Table 1 shows the twenty routes with the highest collision rate index value along with information about these routes. All routes in the analysis have undergone predictive analysis using Newcastle University's RAPTOR[1] Hotspot ID tool. The top ten routes in Cambridge and Cambridgeshire are detailed in the following section and the 6 Peterborough routes in the top 10 are detailed at the end of the report. By comparing performance against other sites an accurate estimate of trend can be calculated. RAPTOR then uses a full Bayesian simulation to estimate the effect of RTM and trend to produce a central estimate (mean) prediction for the next year in the series (2017). In this section, the extent of each of the ten routes is shown along with its five-year collision trend and predicted mean.

A1101 – County boundary to B1169, Wisbech

This 3.3km stretch from the border with Norfolk through Wisbech to the junction with the B1169 has an index value of 763, meaning it's collision rate is 663% higher than the collision rate across all A roads in Cambridgeshire (excluding Cambridge and Peterborough). Over the five-year period 2012 to 2016, there have been an average of 15 collisions per year, with a high of 27 collisions in 2014.

Figure 3 - Site_044 extent, collision trend and predicted mean



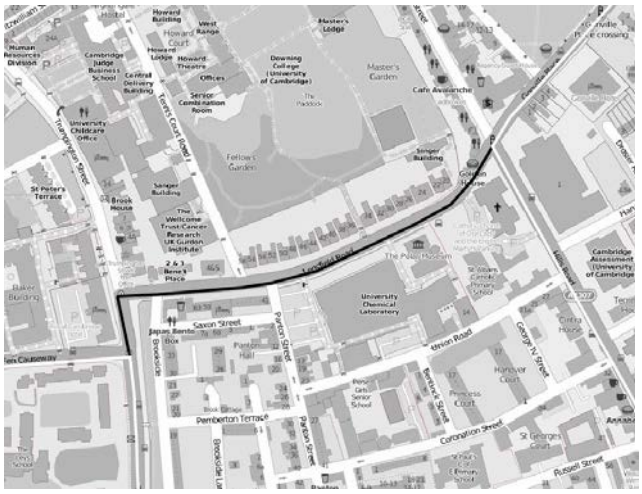


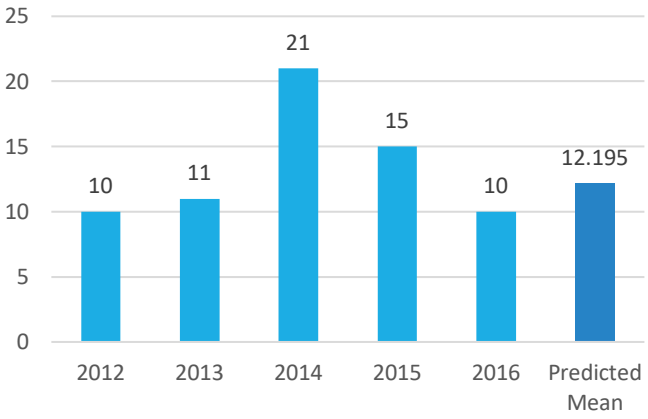
A603 – The Fen Causeway to Hills Road, Cambridge

This section of the A603 in Cambridge is just short of half a kilometre and runs from The Fen Causeway to Hills Road. It has an index value of 743 and there were 67 collisions over the most recent five-year period (2012-2016).

[1] http://roadsafetyanalysis.org/raptor/

Figure 4 - Site_010 extent, collision trend and predicted mean

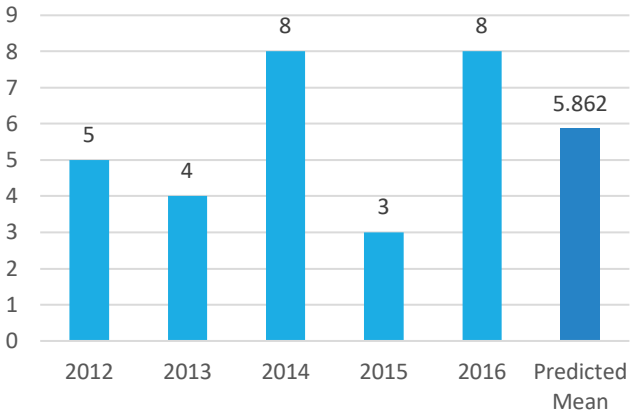




A1303 – Jct 35 of A14 to A11 bridge

This 7-kilometre section of the A1303 runs parallel to the A14 from junction 35 to the crossing over the A11 as it meets the A14. Looking at collision density this route has an index value of 88, meaning it's collision density rate is 12% less than the rate for all A roads in Cambridgeshire. However, when traffic flow is taken in to account it has an index value of 546, suggesting that traffic flow is lower here than other A roads.

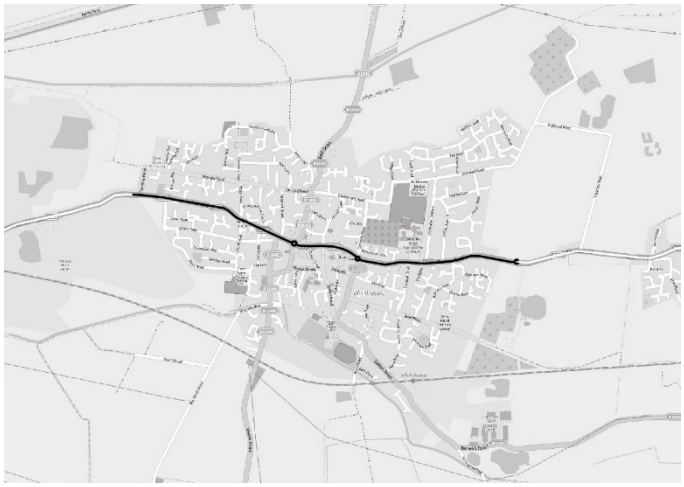
Figure 5 - Site_083 extent, collision trend and predicted mean

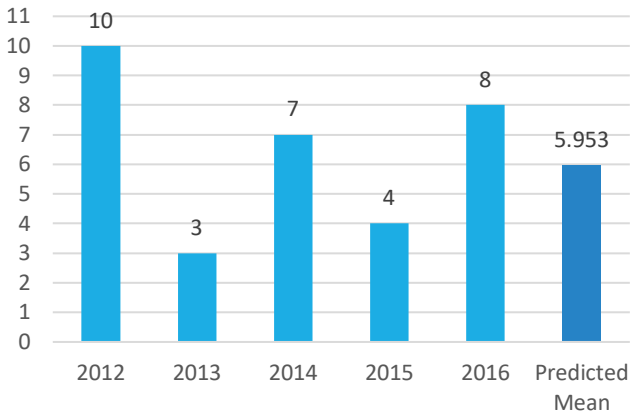


A605 – Whittlesey

This 3-kilometre section of the A605 through Whittlesey has a collision rate 321% higher than the rate for all A roads in Cambridgeshire. There were 10 collisions on this section in 2012 but there has been an average of 6 per year over the most recent five-year period (2012-2016).

Figure 6 - Site_054 extent, collision trend and predicted mean

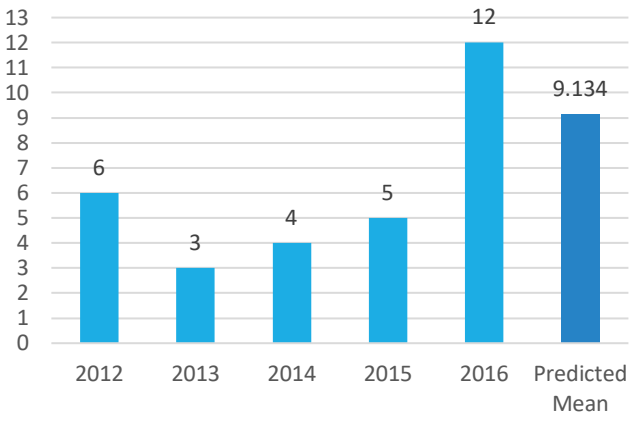




A1303 – A427 near Madingley to Cambridge Road, Coton

Collisions on this route increased sharply in 2016, up to 12 from 5 the previous year. The collision rate on this route is 290% higher than the rate for all A roads in Cambridgeshire.

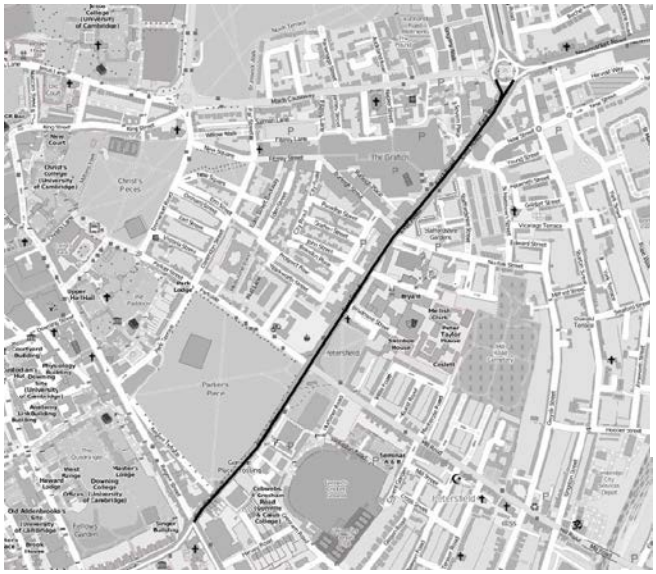
Figure 7 - Site_116 extent, collision trend and predicted mean

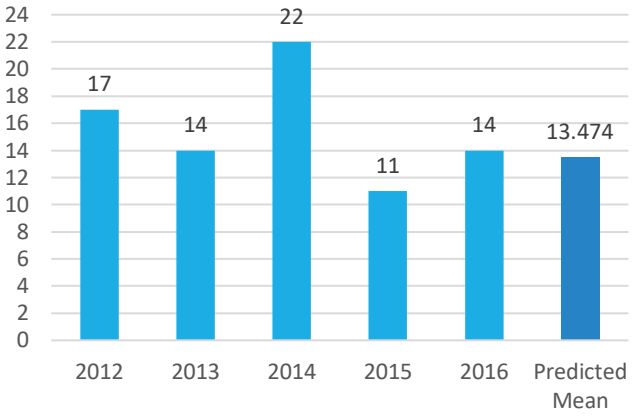


A603 – A1307 to A1134 Newmarket Road, Cambridge

This route through Cambridge has a rate 230% higher than the rate for A roads in Cambridge. Overall collision numbers are high compared to other higher risk routes due to the urban location.

Figure 8 - Site_142 extent, collision trend and predicted mean

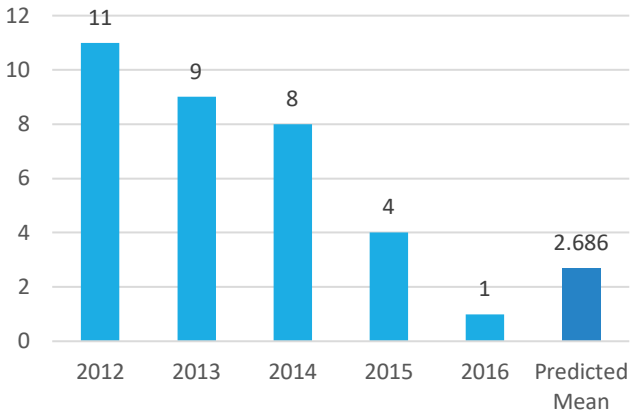




A1123 – A10 Stretham to A142 Soham

This 12-kilometre section from Stretham to Soham has a collision rate 201% higher than the rate for A roads in Cambridgeshire. If traffic flow is not considered, this route has a collision density rate 40% lower than the rate for Cambridgeshire. There were 33 collisions along this route between 2012 and 2016, with a third of these occurring in 2012 alone. There was only 1 collision on this route in 2016.

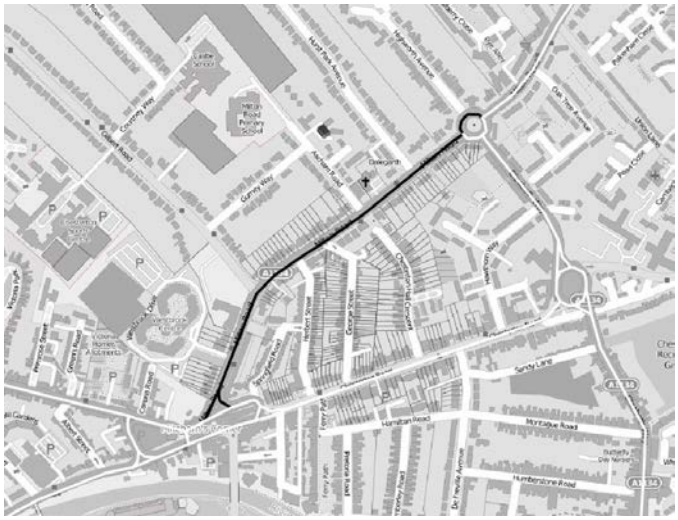
Figure 9 - Site_011 extent, collision trend and predicted mean

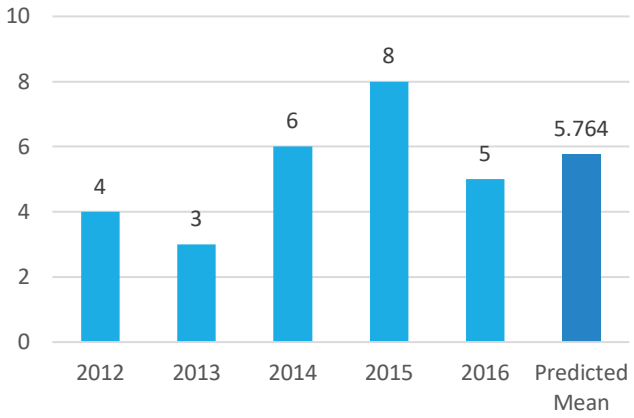


A1134 – A1303 Chesterton Road to A1309 Milton Road

This short section of the A1134 in Cambridge has a collision rate 195% higher than the rate for A roads in Cambridge. Collision numbers have ranged from 3 in 2013 to 8 in 2015 over the most recent five-year period (2012-2016).

Figure 10 - Site_108 extent, collision trend and predicted mean

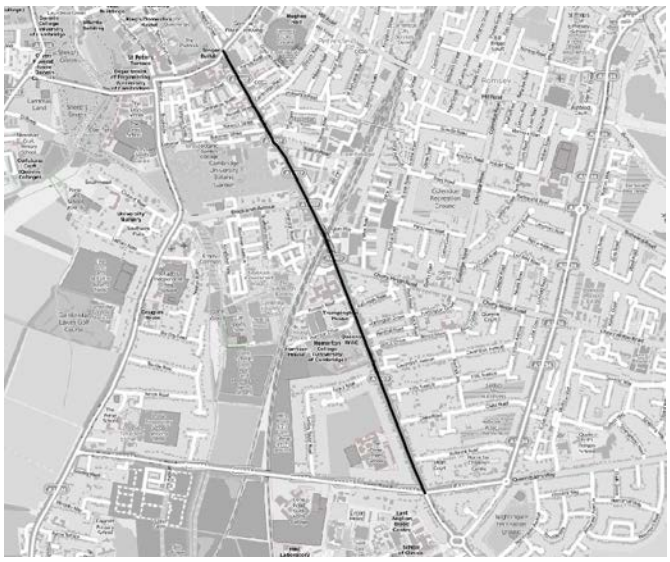


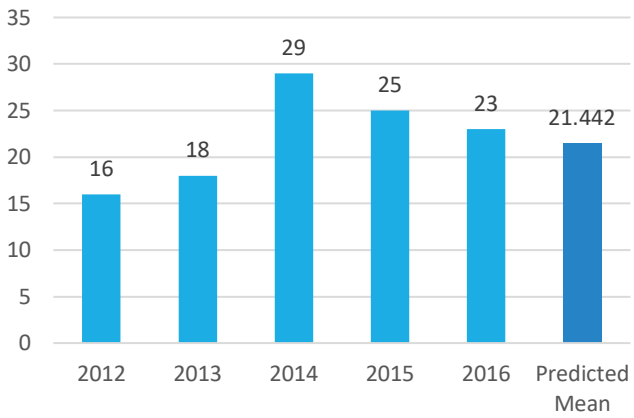


A1307 – A1134 Long Road to A603 Gonville Place, Cambridge

This 2 and a half kilometre stretch of the A1307 in Cambridge has a collision rate 179% higher than the rate for all A roads in Cambridge. There have been 111 collisions along this route over the past five years (2012-2016) and RAPTOR predicts that there will be 21 in 2017.

Figure 11 - Site_104 extent, collision trend and predicted mean

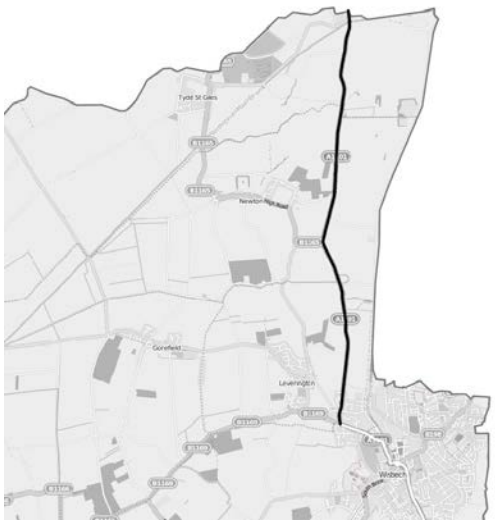


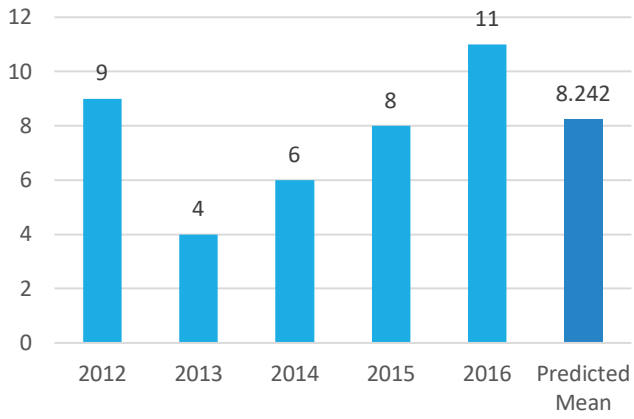


A1101 – B1169 Wisbech to county boundary

There have been 38 collisions on this route over the most recent five-year period (2012-2016). The collision density rate is only 12% higher than the rate for A roads in Cambridgeshire but when traffic flow is taken in to account the rate is 156% higher than it is across Cambridgeshire.

Figure 12 - Site_043 extent, collision trend and predicted mean



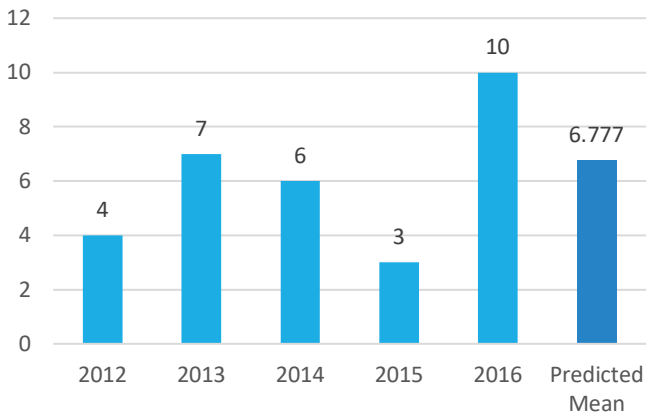


PETERBOROUGH ROUTES

A605 – B1092 to A1129, Peterborough

There have been relatively few collisions per year on this section of the A605 in Peterborough, although there was an increase to 10 in 2016. RAPTOR is predicting a reduction back in line with the overall trend in 2017.

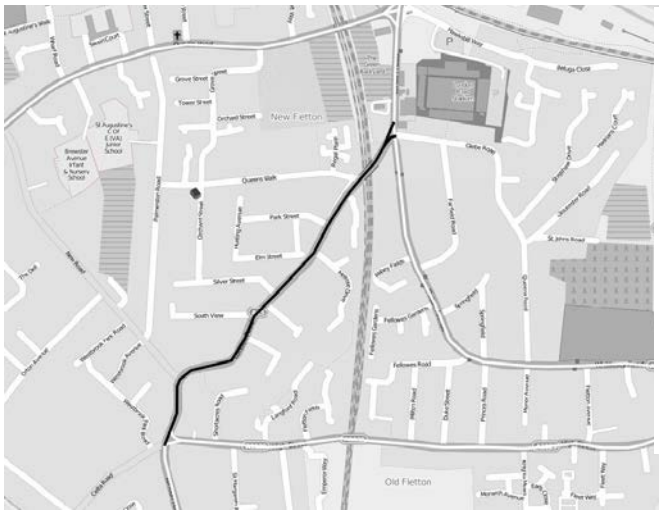
Figure 13 - Site_040 extent, collision trend and predicted mean

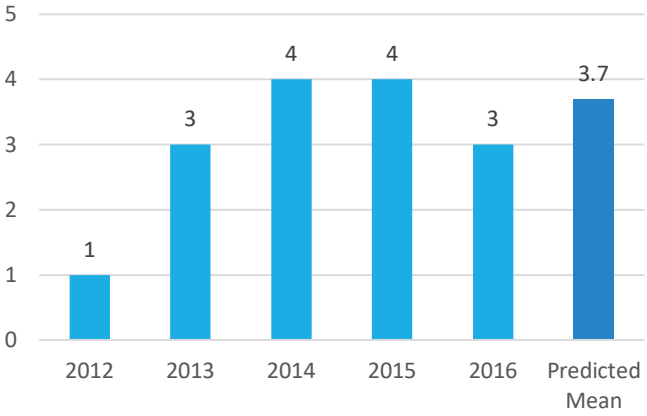


A15 – A1129 to A605, Peterborough

There has been an average of 5 collisions per year (2012-2016) on this one-kilometre section of the A15 through Peterborough. Although collision numbers are lower than other high risk roads this section has an index value of 552 due to lower traffic volume than many other A roads in Peterborough.

Figure 14 - Site_032 extent, collision trend and predicted mean

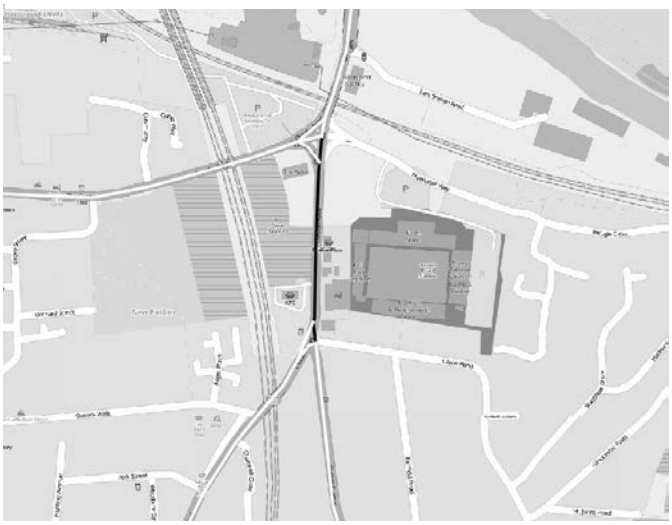


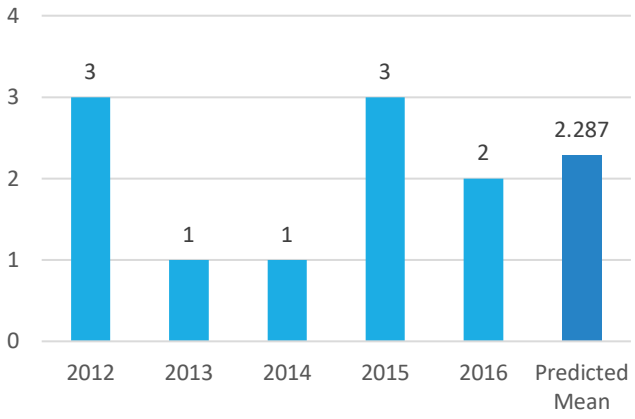


A15 – Glebe Road to Hawkshill Way, Peterborough

This short section alongside the London Road stadium has only had 10 collisions on it over five years. However, when traffic flow is factored in the risk is 387% higher than for all A roads in Peterborough.

Figure 15 - Site_033 extent, collision trend and predicted mean

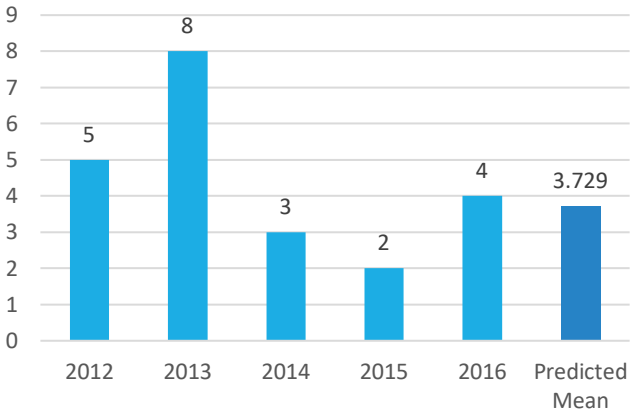




A605 – A1139 to A15, Peterborough

There was an average of 4 collisions per year between 2012 and 2016 on this section of the A605 in Peterborough, with the most collisions occurring in 2013 (8).

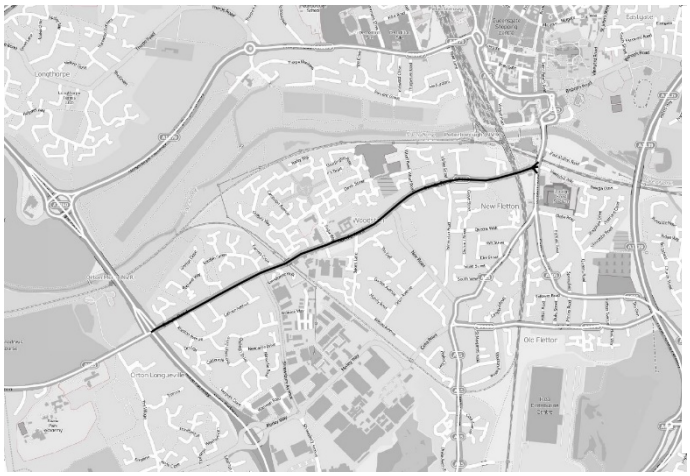
Figure 16 - Site_039 extent, collision trend and predicted mean

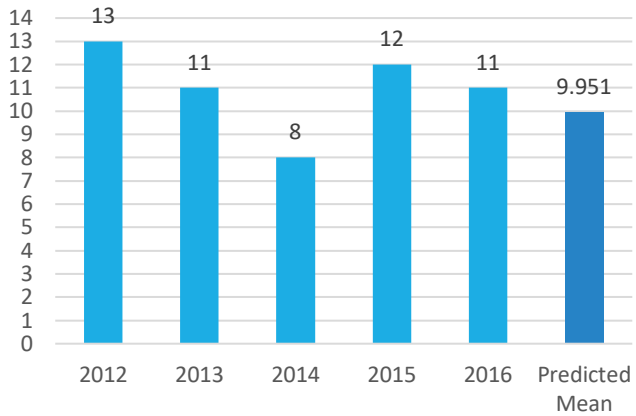


A605 – A1260 to A15, Peterborough

There has been an average of 11 collisions per year on this section of the A605, from the A1260 to the A15 in Peterborough. RAPTOR predicts that this will stay roughly the same in 2017.

Figure 17 - Site_024 extent, collision trend and predicted mean

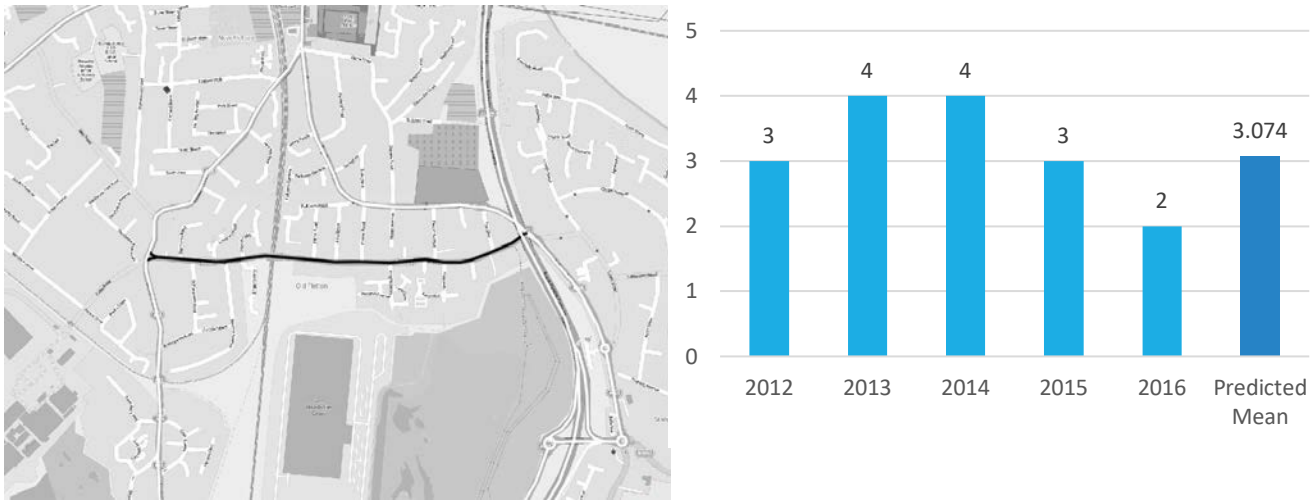




A1129 – A15 to A1139, Peterborough

Collision numbers are low in comparison to other high risk roads in Peterborough, however, the collision rate is 315% higher than the rate for A roads in Peterborough. There have been between 2 and 4 collisions every year over the past five years (2012-2016).

Figure 18 - Site_038 extent, collision trend and predicted mean18



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