

# **A9 Data Monitoring Report**

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## **1. Overview**

The A9 Safety Group was set up by Transport Scotland in July 2012. The main aim of the group is to work together to positively influence driver behaviour in a way that helps to reduce road casualty figures on the route before and during the A9 dualling programme.

To assess the impact of the A9 average speed camera system it has been agreed to monitor a number of key performance indicators across the route and compare them on an on-going basis with an established baseline comprising of data gathered prior to the introduction of the camera system. More information on these baselines is contained within this report.

This report is structured as a live document to be updated on a regular basis to allow for regular monitoring against the established baseline. It uses established Transport Scotland data sources and does not contain information on the technical performance of the average speed camera system, the operational management of the system or the number of offenders detected. These aspects all fall within the responsibility of Police Scotland.

## **2. Purpose**

The A9 average speed camera system is the largest route based safety strategy in existence in the UK and is one of the principle strategies introduced by the A9 Safety Group to change driver behaviour on the route. The overall aim is to reduce casualties while improving journey time reliability through reduced incident occurrence on the route.

The A9 strategy key deliverables are:

- Casualty Reduction
- Reduction in excessive speeding
- Incident frequency reduction
- Journey time reliability

From these key deliverables an assessment can be made not only on the key casualty reduction indicator but also an identification of improvements in the operational efficiency on the route. Driver attitude is more of a subjective issue and a repeat of the driver survey carried out in May 2014 will be repeated in 2015 to provide a comparative analysis on this subject.

The principle purpose of this report is to provide on-going monitoring of the evidence base emerging from the A9 to support an overall assessment of the impact of the strategy. This will also provide the evidence base for any further supporting engineering or educational measures if required.

### **3. Baseline Statistics from Vehicle Speed and Speed Enforcement Summary Report 2012**

The Vehicle Speed and Speed Enforcement Summary Report 2012 was the primary evidence base for establishing vehicle speeds across the A9 and in respect to the Perth to Inverness section the data has been utilised as the baseline for comparison purposes. This data was gathered during a neutral month to avoid the influence of seasonal variations.

### **4. Casualty Analysis**

The casualty analysis follows established practice for road safety schemes in providing the data for the three years before the introduction of the scheme and the three years after. The casualty classification is also in standard format with the Killed Seriously Injured (KSI) being the key performance indicator.

In respect to the three years after while the scheme was not introduced until October 2014 construction work on the system commenced in March 2014 and immediately impacted on driver behaviour. 2014 has therefore been incorporated within the reporting but is qualified that the system was not fully operational until October.

The Road Accident statistics are compiled from returns made by police forces which follow and agreed national standard known as 'Stats 19'. These returns are subject to a validation process and given the steps involved this effectively means that it can take up to 9 months before accurate statistics are available.

The commencement of the dualling project in late 2015 will create a like for like comparison difficult so an additional comparative spread sheet has been established which identifies the casualties within each of the seven single carriageway sections of the A9 monitored by the average speed cameras. This will cater for comparative analysis within each of these sections as the dualling progresses.

In the longer term the performance of the A9 will also be measured against the casualty reduction targets contained within Scotland's Road Safety Framework to 2020.

## **5. Vehicle Speed Data**

The vehicle speed data has been gathered from existing Transport Scotland infrastructure on the A9 or where this has not been available from mobile data gathering equipment placed on the route. The data gathered is spot speed from the respective counters and not average speed which is assessed by the camera system for enforcement purposes.

Between Perth and Inverness a counter site was identified within each of the seven single carriageway sections and where possible the same counter site used in the 2012 speed survey was utilised. Due to maintenance upgrades and other limitations this was not possible in every section and the closest alternative was used instead.

Between Dunblane and Perth the baseline figure was established in September 2014 using portable equipment positioned near to the then proposed camera sites which had not been constructed at this point. Following construction counter sites positioned close to the original sites were utilised for data collection

To allow for consistency in the analysis data is gathered from all sites during the first week of each month (Mon – Sun). This will allow for seasonal trends to be incorporated within all data sets.

On some occasions data sets were not available from specific sites due to technical reasons. The majority of traffic counter sites are solar powered and prolonged poor weather in winter with limited daylight hours can impact on power availability.

## **6. Incident Frequency & Impact**

The incident frequency data is gathered from Traffic Scotland's incident management database and looks at all incidents on the A9 resulting in a carriageway closure or restriction. It does not include weather related closures (it does include accidents which may happen during weather events) or planned closures such as road works.

The analysis of this data is based on restriction time with the output given in hours. The analysis does not consider anything which may have impacted on the closure times.

The data output does provide an overall comparison in terms of the operational efficiency of the route and the subsequent journey time reliability.

## **7. Journey Time Analysis – Perth to Inverness**

Journey Times on the A9 are measured using Bluetooth technology and the available data is sourced from Transport Scotland's established journey time stations immediately north of Inveralmond Roundabout, Perth and immediately south of the A96 Raigmore junction, Inverness. The data is gathered in a similar fashion to the speed data in that it comprises of the first week of each month. A further filter has also been applied to use only the time period 07:00 to 19:00 each day which provides a more realistic picture of travel time during normal traffic conditions.

Roadworks can significantly impact on journey times and while routine maintenance on the route is to be expected where there have been significant projects leading to delays these are qualified along with an estimation of the delay.

## **8. Parallel Route Running**

There has been unsubstantiated comment that a significant number of drivers have sought to use alternative parallel routes to the A9 to avoid the average speed camera system. These comments refer to three routes in particular:

- B9152 - Kingussie to Aviemore
- B9153 - Aviemore to Carrbridge
- B9154 – Loch Moy

Following discussions with Highland Council it was agreed to undertake a short term monitoring programme to try and establish the authenticity of these claims. Only limited historical data in relation to traffic volumes is held by Highland Council for these routes and this limited the ability to evaluate against an established baseline. To overcome this the available data was used along with a comparison of traffic using the A9 during the monitoring period.

The methodology employed was to use portable Bluetooth stations at key locations which would allow an assessment of:

- Local Journeys
- Through journeys with stops
- Through journeys without stops

In addition, a number of mobile vehicle counting stations were deployed to provide the overall traffic volume figures for the route.

The monitoring programme was undertaken in January 2015 for 7 consecutive days to provide a similar data gathering period as that for other A9 data categories.

## **9. Traffic Volumes**

To allow for a comparison of traffic volumes on the A9 between Perth & Inverness data has been taken from three counting stations on this stretch of the route to provide an overview of activity. The current baseline shown will be expanded with each month to provide the comparative analysis year on year.

The figures represent the seven day annual average daily flow which is the standard reporting format for this type of data.

Appendix A Accident & Casualty Analysis – Dunblane to Perth

DUNBLANE TO PERTH											
3 YEARS BEFORE						3 YEARS AFTER					
ACCIDENTS - DUNBLANE TO PERTH						ACCIDENTS - DUNBLANE TO PERTH					
Year	Fatal	Serious	KSI	Slight	Total	Year	Fatal	Serious	KSI	Slight	Total
01 January 11 - 31 December 11	1	3	4	14	18	01 January 14 - 31 December 14					
01 January 12 - 31 December 12	0	5	5	20	25	01 January 15 - 31 December 15					
01 January 13 - 31 December 13	1	3	4	19	23	01 January 16 - 31 December 16					
Total	2	11	13	53	66	Total					
Average Annual	0.7	3.7	4.3	17.7	22.0	Average Annual AFTER					
						Average Annual BEFORE					
						Average Annual DIFFERENCE					
						Percentage DIFFERENCE					
CASUALTIES - DUNBLANE TO PERTH						CASUALTIES - DUNBLANE TO PERTH					
Year	Killed	Seriously Injured	KSI	Slightly Injured	Total	Year	Killed	Seriously Injured	KSI	Slightly Injured	Total
01 January 11 - 31 December 11	1	3	4	20	24	01 January 14 - 31 December 14					
01 January 12 - 31 December 12	0	5	5	25	30	01 January 15 - 31 December 15					
01 January 13 - 31 December 13	1	3	4	33	37	01 January 16 - 31 December 16					
Total	2	11	13	78	91	Total					
Average Annual	0.7	3.7	4.3	26.0	30.3	Average Annual AFTER					
						Average Annual BEFORE					
						Average Annual DIFFERENCE					
						Percentage DIFFERENCE					

**Appendix B - Accident & Casualty Analysis – Perth to Inverness**

PERTH TO INVERNESS											
<b>3 YEARS BEFORE</b>						<b>3 YEARS AFTER</b>					
<b>ACCIDENTS - PERTH TO INVERNESS</b>						<b>ACCIDENTS - PERTH TO INVERNESS</b>					
Year	Fatal	Serious	KSI	Slight	Total	Year	Fatal	Serious	KSI	Slight	Total
01 January 11 - 31 December 11	6	5	11	29	40	01 January 14 - 31 December 14					
01 January 12 - 31 December 12	5	8	13	30	43	01 January 15 - 31 December 15					
01 January 13 - 31 December 13	4	10	14	22	36	01 January 16 - 31 December 16					
Total	15	23	38	81	119	Total					
Average Annual	5.0	7.7	12.7	27.0	39.7	Average Annual AFTER					
						Average Annual BEFORE					
						Average Annual DIFFERENCE					
						Percentage DIFFERENCE					
<b>CASUALTIES - PERTH TO INVERNESS</b>						<b>CASUALTIES - PERTH TO INVERNESS</b>					
Year	Killed	Seriously Injured	KSI	Slightly Injured	Total	Year	Killed	Seriously Injured	KSI	Slightly Injured	Total
01 January 11 - 31 December 11	8	16	24	60	84	01 January 14 - 31 December 14					
01 January 12 - 31 December 12	8	16	24	91	115	01 January 15 - 31 December 15					
01 January 13 - 31 December 13	6	17	23	39	62	01 January 16 - 31 December 16					
Total	22	49	71	190	261	Total					
Average Annual	7.3	16.3	23.7	63.3	87.0	Average Annual AFTER					
						Average Annual BEFORE					
						Average Annual DIFFERENCE					
						Percentage DIFFERENCE					



**Appendix C - Accident & Casualty Analysis – Perth to Inverness - Single & Dual Carriageway Separation**

PERTH TO INVERNESS											
3 YEARS BEFORE						3 YEARS AFTER					
<b>Single Carriageway All Purpose</b>											
<b>ACCIDENTS - PERTH TO INVERNESS</b>						<b>ACCIDENTS - PERTH TO INVERNESS</b>					
Year	Fatal	Serious	KSI	Slight	Total	Year	Fatal	Serious	KSI	Slight	Total
01 January 11 - 31 December 11	5	4	9	24	33	01 January 14 - 31 December 14					
01 January 12 - 31 December 12	4	6	10	24	34	01 January 15 - 31 December 15					
01 January 13 - 31 December 13	2	8	10	13	23	01 January 16 - 31 December 16					
Total	11	0	29	0	90	Total					
Average Annual	3.7	6.0	9.7	20.3	30.0	Average Annual AFTER					
						Average Annual BEFORE					
						Average Annual DIFFERENCE					
						Percentage DIFFERENCE					
<b>Dual Carriageway All Purpose</b>											
<b>ACCIDENTS - PERTH TO INVERNESS</b>						<b>ACCIDENTS - PERTH TO INVERNESS</b>					
Year	Fatal	Serious	KSI	Slight	Total	Year	Fatal	Serious	KSI	Slight	Total
01 January 11 - 31 December 11	1	1	2	5	7	01 January 14 - 31 December 14					
01 January 12 - 31 December 12	1	2	3	6	9	01 January 15 - 31 December 15					
01 January 13 - 31 December 13	2	2	4	9	13	01 January 16 - 31 December 16					
Total	4	0	9	0	29	Total					
Average Annual	1.3	1.7	3.0	6.7	9.7	Average Annual AFTER					
						Average Annual BEFORE					
						Average Annual DIFFERENCE					
						Percentage DIFFERENCE					

**Appendix D - Vehicle Speed Data – Dunblane to Perth**

<b>SPEED ANALYSIS DUNBLANE - PERTH (SPOT SPEED)</b>																
<b>Sites</b>	<b>SEPTEMBER 2014</b>				<b>OCTOBER 2014</b>				<b>NOVEMBER 2014</b>				<b>DECEMBER 2014</b>			
	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90
Dunblane N/B	32.70%	29.21%	3.49%	0.00%					NOT AVAILABLE				5.99%	5.67%	0.24%	0.08%
Crieff N/B	28.47%	25.10%	3.37%	0.00%					4.36%	4.26%	0.10%	0.00%	NOT AVAILABLE			
Auchterarder N/B	29.44%	25.42%	3.71%	0.31%					4.94%	4.73%	0.19%	0.02%	NOT AVAILABLE			
Broxden S/B	27.74%	25.73%	2.01%	0.00%					7.57%	7.35%	0.19%	0.03%	7.63%	7.45%	0.16%	0.02%
Dunning S/B	33.28%	28.87%	4.04%	0.37%					8.65%	8.33%	0.29%	0.03%	9.59%	9.27%	0.28%	0.04%
Blackford S/B	24.81%	21.68%	2.89%	0.24%					4.01%	3.93%	0.06%	0.02%	5.47%	5.36%	0.10%	0.01%
<b>Sites</b>	<b>JANUARY 2015</b>				<b>FEBRUARY 2015</b>				<b>MARCH 2015</b>				<b>APRIL 2015</b>			
	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90
Dunblane N/B	NOT AVAILABLE															
Crieff N/B	NOT AVAILABLE															
Auchterarder N/B	NOT AVAILABLE															
Broxden S/B	NOT AVAILABLE															
Dunning S/B	NOT AVAILABLE															
Blackford S/B	NOT AVAILABLE															
<b>Sites</b>	<b>MAY 2015</b>				<b>JUNE 2015</b>				<b>JULY 2015</b>				<b>AUGUST 2015</b>			
	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90	>70	70 - 80	80 - 90	>90
Dunblane N/B																
Crieff N/B																
Auchterarder N/B																
Broxden S/B																
Dunning S/B																
Blackford S/B																

Appendix E - Vehicle Speed Data – Perth to Inverness

<b>SPEED ANALYSIS PERTH - INVERNESS (SPOT SPEED)</b>																	
Sites	MARCH 2012				MAY / JUNE 2014				JULY / AUGUST 2014				NOVEMBER 2014				
	>60	60-70	70-80	>80	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	
Bankfoot	27.60%	24.03%	3.23%	0.34%	6.07%	5.60%	0.37%	0.10%	12.40%	11.40%	1.00%	0.00%	5.12%	4.78%	0.30%	0.04%	
Biram	14.10%	12.62%	1.31%	0.17%	9.40%	8.70%	0.60%	0.10%	8.50%	7.90%	0.50%	0.10%	1.80%	1.72%	0.07%	0.01%	
Faskally	NOT AVAILABLE				2.00%	1.60%	0.40%	0.00%	NOT AVAILABLE				2.56%	2.50%	0.06%	0.00%	
Killiecrankie	33.85%	27.41%	5.63%	0.81%	22.90%	19.90%	2.50%	0.50%	16.50%	14.46%	1.81%	0.23%	5.92%	5.66%	0.23%	0.03%	
Dalwhinnie	37.39%	28.32%	7.53%	1.54%	27.73%	22.80%	4.20%	0.73%	21.02%	17.56%	2.93%	0.53%	6.15%	5.87%	0.26%	0.02%	
Kingussie	34.27%	26.95%	6.16%	1.16%	19.49%	16.41%	2.64%	0.44%	19.39%	16.79%	2.36%	0.24%	3.61%	3.40%	0.19%	0.02%	
Moy	42.25%	34.22%	7.08%	0.95%	25.18%	22.66%	2.30%	0.22%	8.40%	4.40%	4.00%	0.00%	3.67%	3.54%	0.12%	0.01%	
Sites	DECEMBER 2014				JANUARY 2015				FEBRUARY 2015				MARCH 2015				
	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	
Bankfoot	6.06%	5.65%	0.37%	0.04%	NOT AVAILABLE												
Biram	2.04%	1.93%	0.08%	0.03%	1.99%	1.91%	0.07%	0.01%									
Faskally	3.12%	3.02%	0.10%	0.00%	NOT AVAILABLE												
Killiecrankie	6.86%	6.57%	0.26%	0.03%	8.69%	8.21%	0.45%	0.03%									
Dalwhinnie	6.49%	6.17%	0.28%	0.04%	6.33%	6.07%	0.24%	0.02%									
Kingussie	4.22%	3.93%	0.25%	0.04%	NOT AVAILABLE												
Moy	3.38%	3.32%	0.06%	0.00%	NOT AVAILABLE												
Sites	APRIL 2015				MAY 2015				JUNE 2015				JULY 2015				
	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	>60	60 - 70	70 - 80	>80	
Bankfoot																	
Biram																	
Faskally																	
Killiecrankie																	
Dalwhinnie																	
Kingussie																	
Moy																	

**Appendix F - Incident Analysis – Dunblane to Inverness**

<b>INCIDENTS</b>						
	<b>Perth - Inverness</b>		<b>Dunblane - Perth</b>		<b>A9 Total</b>	
	Incidents	Restriction	Incidents	Restriction	Incident	Restriction
Q1 2013	31	98	20	41	51	139
Q2 2013	23	37	20	28	43	65
Q3 2013	22	46	14	21	36	67
Q4 2013	41	101	14	31	55	132
2013 Baseline	135	282	49	121	185	403
Q1 2014	14	40	22	38	36	78
Q2 2014	10	22	22	30	32	52
Q3 2014	16	25	25	26	41	51
Q4 2014	22	37	21	26	43	63
2014 Total	62	124	90	120	152	244
Q1 2015						
Q2 2015						
Q3 2015						
Q4 2015						
2015 Total						

Incident data is drawn from the Traffic Scotland Control Centre Incident Logs. Only data involving physical restriction or closure of network is incorporated. Road works data is not included.

Data reflects number of individual incidents and cumulative time in hours.

## Appendix G - Journey Time Analysis – Perth to Inverness

### JOURNEY TIMES

#### PERTH - INVERNESS

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Jun-13 N/B	116	116	115	117	120	111	109
Jun 13 S/B	115	118	118	116	124	114	110
Jun-14 N/B	120	122	120	121	118	112	112
Jun -14 S/B	121	123	124	122	120	115	113
Nov 14 N/B	124	128	128	128	124	116	115
Nov 14 S/B	127	130	131	130	127	122	121
Dec-14 N/B	131	131	132	128	124	116	124
Dec-14 S/B	134	133	135	134	131	118	127
Jan-15 N/B	125	126	126	126	124	123	120
Jan-15 S/B	127	132	129	129	125	125	119

#### VARIATION

Jun-14 N/B	4	6	5	4	-2	1	3
Jun 14 S/B	6	5	6	6	-4	1	3
Nov 14 N/B	8	12	13	11	4	5	6
Nov 14 S/B	12	12	13	14	3	8	11
Dec-14 N/B	15	15	17	11	4	5	15
Dec-14 S/B	19	15	17	18	7	4	17
Jan-15 N/B	9	10	11	9	4	12	11
Jan-15 S/B	12	14	11	13	1	11	9

The journey times are drawn from the TS system and utilise Journeys 178 (N/B) and 179 for the data. The journey time in minutes is the average over the 07:00 - 19:00 period daily on the first week of each month. They are the actual times from the system and not the projected journey times.

The June 13 journey times are the baseline times for evaluation purposes. The times do not take cognisance of traffic volume levels or road works on the route (see speed data for volume information).

Appendix I – Traffic Volumes Perth to Inverness

Traffic Volume Figures - 7 Day Annual Average Daily Flow (Two Way)												
	January	February	March	April	May	June	July	August	September	October	November	December
<b>Birnam</b>												
2013	N/A	N/A	N/A	12,252	15,000	N/A	15,902	17,710	15,493	14,510	12,606	10,348
2014	10,212	11,433	12,708	13,989	14,849	14,799	16,460	17,768	15,896	14,726	12,071	10,799
% Increase/Decrease	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>14.2%</b>	<b>-1.0%</b>	<b>N/A</b>	<b>3.5%</b>	<b>0.3%</b>	<b>2.6%</b>	<b>1.5%</b>	<b>-4.2%</b>	<b>4.4%</b>
<b>Birnam Average</b>	<b>2.7%</b>											
<b>Dalwhinnie</b>												
2013	5,639	7,010	7,499	8,880	9,626	10,121	11,169	11,780	9,896	9,449	7,517	6,262
2014	N/A	7,630	7,564	9,514	9,759	10,052	11,075	11,904	10,101	9,747	7,495	6,536
% Increase/Decrease	<b>N/A</b>	<b>8.8%</b>	<b>0.9%</b>	<b>7.1%</b>	<b>1.4%</b>	<b>-0.7%</b>	<b>-0.8%</b>	<b>1.1%</b>	<b>2.1%</b>	<b>3.2%</b>	<b>-0.3%</b>	<b>4.4%</b>
<b>Dalwhinnie Average</b>	<b>2.5%</b>											
<b>Moy</b>												
2013	6,309	7,380	7,793	8,897	9,567	9,933	10,930	11,605	9,906	9,334	8,074	7,160
2014	6,901	7,603	7,997	9,452	9,860	10,150	11,020	11,820	10,385	9,781	7,790	7,152
% Increase/Decrease	<b>9.4%</b>	<b>3.0%</b>	<b>2.6%</b>	<b>6.2%</b>	<b>3.1%</b>	<b>2.2%</b>	<b>0.8%</b>	<b>1.9%</b>	<b>4.8%</b>	<b>4.8%</b>	<b>-3.5%</b>	<b>-0.1%</b>
<b>Moy Average</b>	<b>2.9%</b>											