

# Local Plan Technical Report

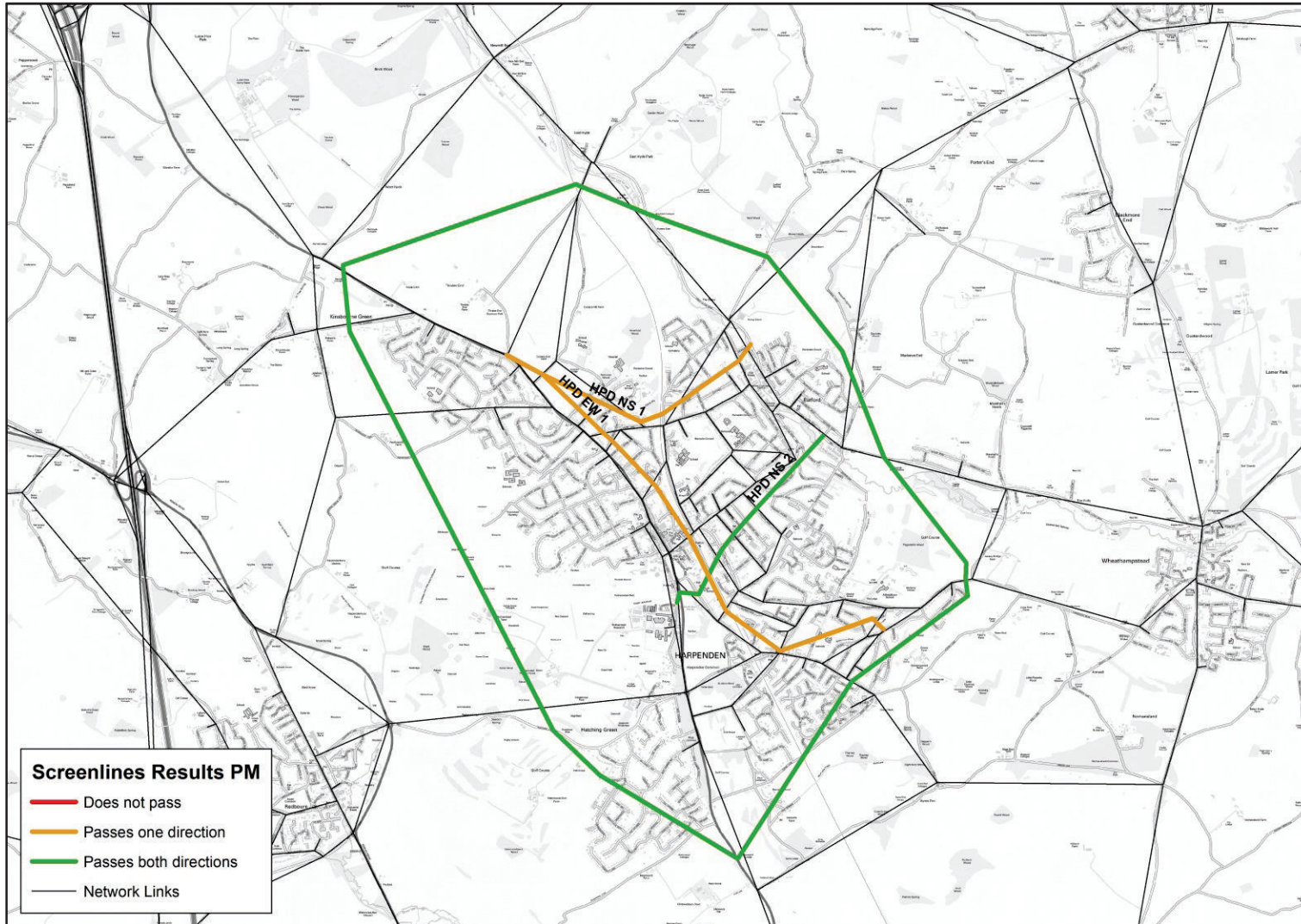
## 2018/2019 Infrastructure Delivery Plan Appendices

### **Part 9B**: Transport – Hertfordshire County Council

#### Appendix 30 (Part B)

# St Albans Screenlines

## PM Harpenden



# Post Matrix Assignment Results

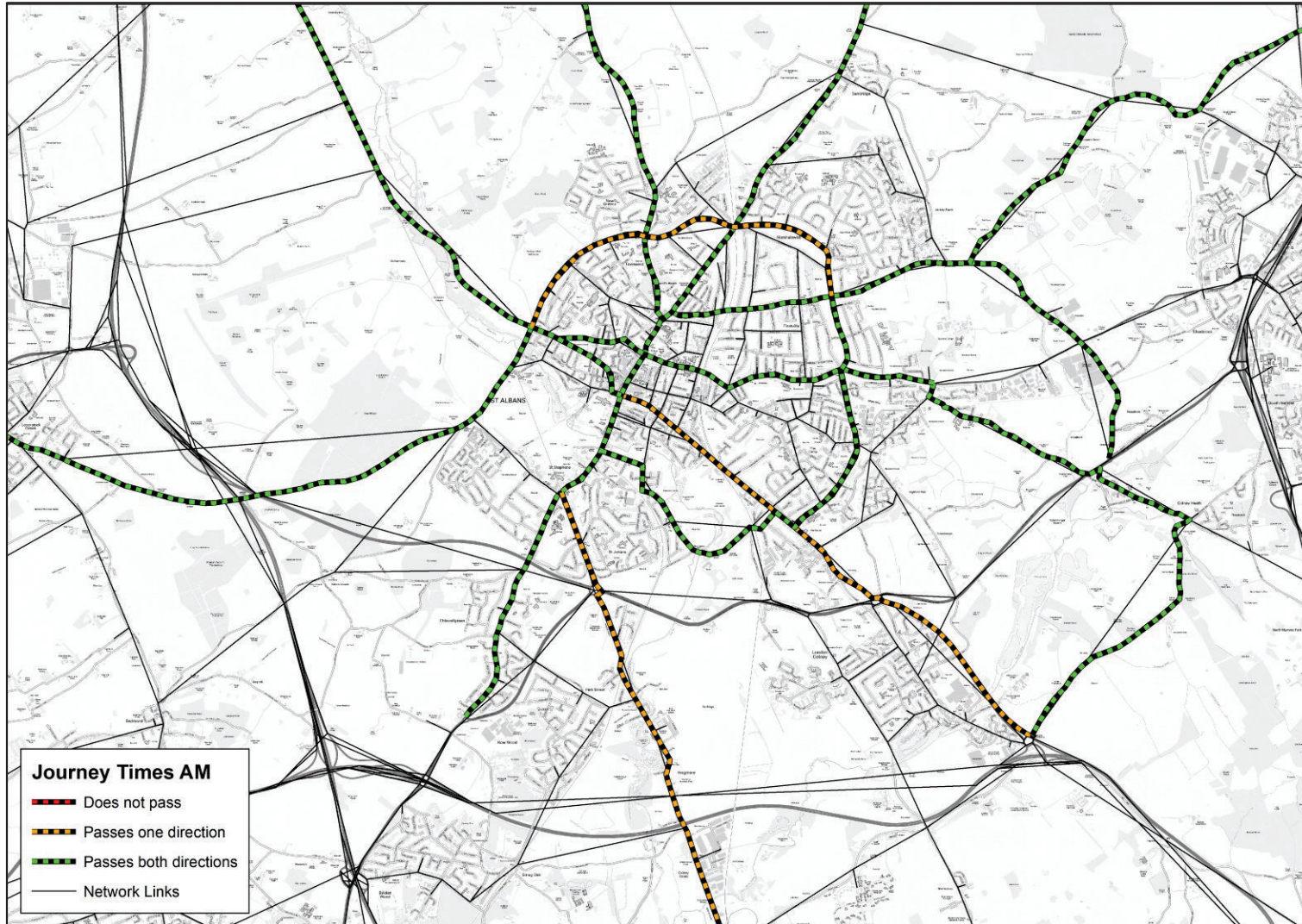
## Journey Times - St Albans Area

Journey time routes passing WebTAG criteria: AM 84%, IP 89%, PM 84%

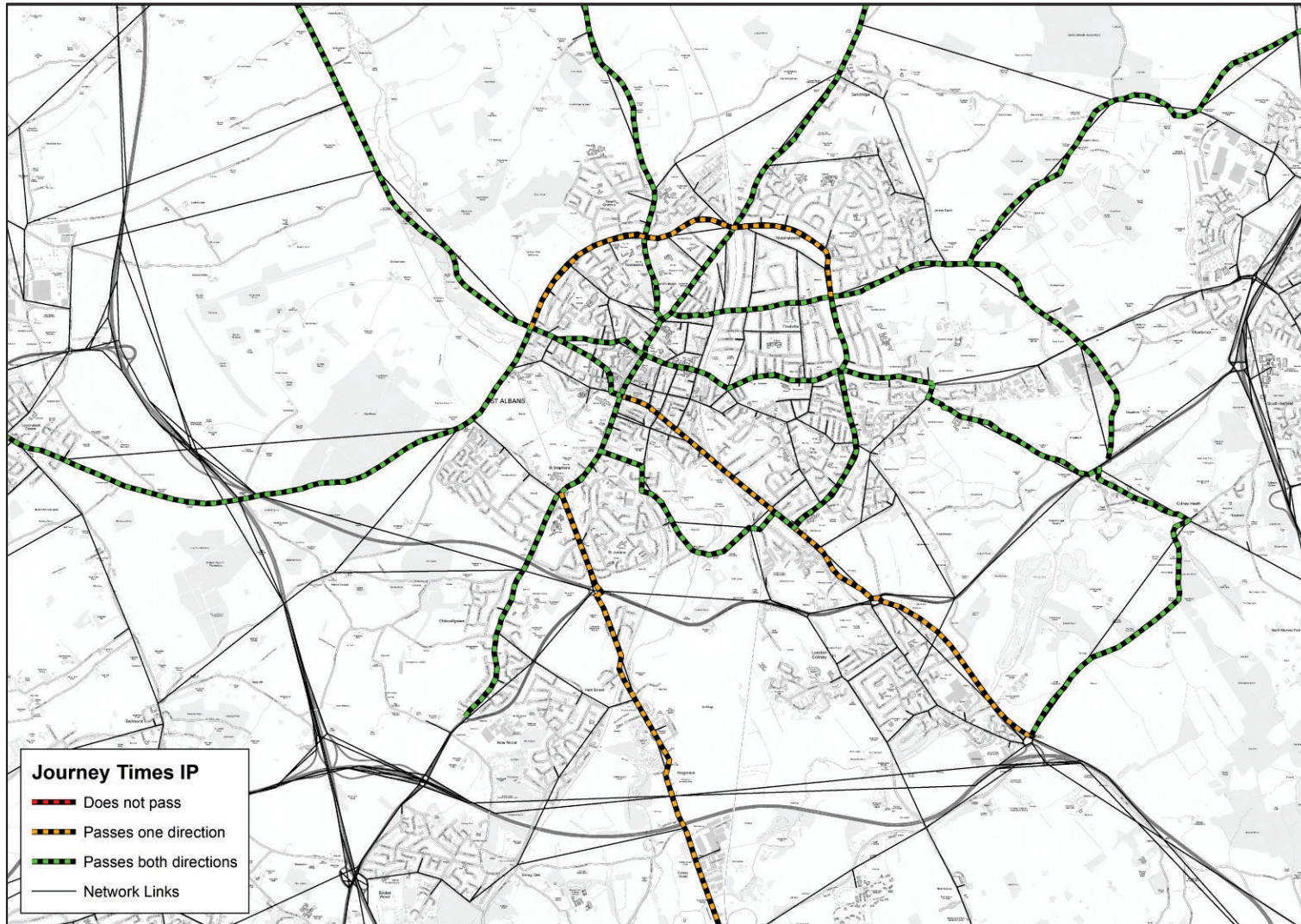
Route	Direction	Observed			Modelled			Difference			% Difference			WebTAG Compliant?		
		AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM
STA 1: St Albans Road - Northbound	Northbound	538	496	516	564	535	527	26	39	10	5%	8%	2%	YES	YES	YES
STA 1: St Albans Road - Southbound	Southbound	675	532	512	600	524	537	-75	-8	25	-11%	-2%	5%	YES	YES	YES
STA 10: A5183 - Northbound	Northbound	710	545	646	792	478	718	82	-67	72	12%	-12%	11%	YES	YES	YES
STA 10: A5183 - Southbound	Southbound	404	428	485	456	469	493	52	41	8	13%	10%	2%	YES	YES	YES
STA 6: A513 - Northbound	Northbound	484	423	686	760	546	782	276	123	96	57%	29%	14%	NO	NO	YES
STA 6: A513 - Southbound	Southbound	463	424	454	477	405	430	14	-19	-24	3%	-5%	-5%	YES	YES	YES
STA 11: Coopers Green Lane - Northbound	Northbound	338	338	484	353	337	396	15	-1	-88	4%	-0%	-18%	YES	YES	NO
STA 11: Coopers Green Lane - Southbound	Southbound	339	319	347	344	330	342	5	11	-5	1%	3%	-1%	YES	YES	YES
STA 2: Ring Road St Albans - Northbound	Northbound	1,548	1,369	1,377	1,559	1,423	1,403	12	54	26	1%	4%	2%	YES	YES	YES
STA 2: Ring Road St Albans - Southbound	Southbound	1,412	1,297	1,335	1,629	1,475	1,442	217	178	108	15%	14%	8%	YES	YES	YES
STA 2A: Marshalswick Lane - Westbound	Westbound	638	530	551	682	591	569	45	61	18	7%	11%	3%	YES	YES	YES
STA 2A: Marshalswick Lane - Eastbound	Eastbound	599	529	594	773	691	651	174	162	57	29%	31%	10%	NO	NO	YES
STA 2B: CottonMill Lane - Northbound	Northbound	910	840	825	877	833	834	-33	-7	8	-4%	-1%	1%	YES	YES	YES
STA 2B: CottonMill Lane - Southbound	Southbound	813	767	741	856	784	791	43	16	50	5%	2%	7%	YES	YES	YES
STA 3: A1081 - Northbound	Northbound	846	754	819	718	649	600	-128	-105	-219	-15%	-14%	-27%	YES	YES	NO
STA 3: A1081 - Southbound	Southbound	613	563	631	775	680	754	162	117	123	26%	21%	19%	NO	NO	NO
STA 3A: A1081 North - Northbound	Northbound	694	665	779	741	734	897	47	69	118	7%	10%	15%	YES	YES	YES
STA 3A: A1081 North - Southbound	Southbound	882	757	803	829	730	819	-52	-27	16	-6%	-4%	2%	YES	YES	YES
STA 4: A4147 - Westbound	Westbound	504	451	534	530	449	574	26	-2	40	5%	-0%	8%	YES	YES	YES
STA 4: A4147 - Eastbound	Eastbound	616	455	667	642	443	478	26	-12	-189	4%	-3%	-28%	YES	YES	NO
STA 5: Sandpit lane - Northbound	Northbound	774	557	629	698	583	667	-76	27	38	-10%	5%	6%	YES	YES	YES
STA 5: Sandpit lane - Southbound	Southbound	660	562	618	646	595	663	-14	33	45	-2%	6%	7%	YES	YES	YES
STA 7: Colney Health Lane - Northbound	Northbound	626	519	638	563	554	561	-62	35	-77	-10%	7%	-12%	YES	YES	YES
STA 7: Colney Health Lane - Southbound	Southbound	508	504	533	515	512	521	7	7	-13	1%	1%	-2%	YES	YES	YES
STA 8A: A1057 (Centre) - Westbound	Westbound	800	715	850	790	739	765	-9	24	-85	-1%	3%	-10%	YES	YES	YES
STA 8A: A1057 (Centre) - Eastbound	Eastbound	792	761	756	723	719	855	-69	-42	99	-9%	-6%	13%	YES	YES	YES
STA 9: A5183 - Northbound	Northbound	429	436	453	484	469	499	55	33	46	13%	7%	10%	YES	YES	YES
STA 9: A5183 - Southbound	Southbound	558	481	521	493	475	443	-65	-6	-79	-12%	-1%	-15%	YES	YES	YES
HPD 1: A181 Luton Road - Northbound	Northbound	520	556	589	519	514	581	-1	-42	-8	-0%	-8%	-1%	YES	YES	YES
HPD 1: A181 Luton Road - Southbound	Southbound	623	502	485	531	504	531	-91	3	45	-15%	0%	9%	YES	YES	YES
HPD 2A: B653 Lower Luton road - Northbound	Northbound	628	551	617	582	576	596	-46	25	-22	-7%	5%	-3%	YES	YES	YES
HPD 2A: B653 Lower Luton road - Southbound	Southbound	662	545	582	468	437	455	-193	-108	-127	-29%	-20%	-22%	NO	NO	NO
HPD 2B: B653 Lower Luton road - Northbound	Northbound	342	329	361	359	357	405	16	28	45	5%	8%	12%	YES	YES	YES
HPD 2B: B653 Lower Luton road - Southbound	Southbound	440	340	355	554	359	371	114	19	16	26%	6%	5%	NO	YES	YES
HPD 3: B652 - Northbound	Northbound	691	627	613	643	625	640	-49	-1	28	-7%	-0%	5%	YES	YES	YES
HPD 3: B652 - Southbound	Southbound	765	711	711	565	560	565	-200	-151	-146	-26%	-21%	-21%	NO	NO	NO
HPD 4: Wheathampstead - Westbound	Westbound	305	276	272	271	266	269	-34	-10	-4	-11%	-4%	-1%	YES	YES	YES
HPD 4: Wheathampstead - Eastbound	Eastbound	279	255	261	277	279	278	-2	24	17	-1%	9%	6%	YES	YES	YES
HPD 5: Station Road - Northbound	Northbound	544	507	503	513	497	521	-31	-10	19	-6%	-2%	4%	YES	YES	YES
HPD 5: Station Road - Southbound	Southbound	549	484	525	588	495	592	39	12	66	7%	2%	13%	YES	YES	YES
HPD 6A: Grove Road - Northbound	Northbound	552	486	462	489	449	454	-63	-37	-9	-11%	-8%	-2%	YES	YES	YES
HPD 6A: Grove Road - Southbound	Southbound	484	472	475	479	473	476	-5	0	2	-1%	0%	0%	YES	YES	YES
HPD 6B: B487 - Eastbound	Eastbound	408	319	365	323	280	306	-84	-39	-59	-21%	-12%	-16%	NO	YES	YES
HPD 6B: B487 - Westbound	Westbound	319	319	365	320	272	292	1	-47	-73	0%	-15%	-20%	YES	YES	NO

# Journey Time Routes

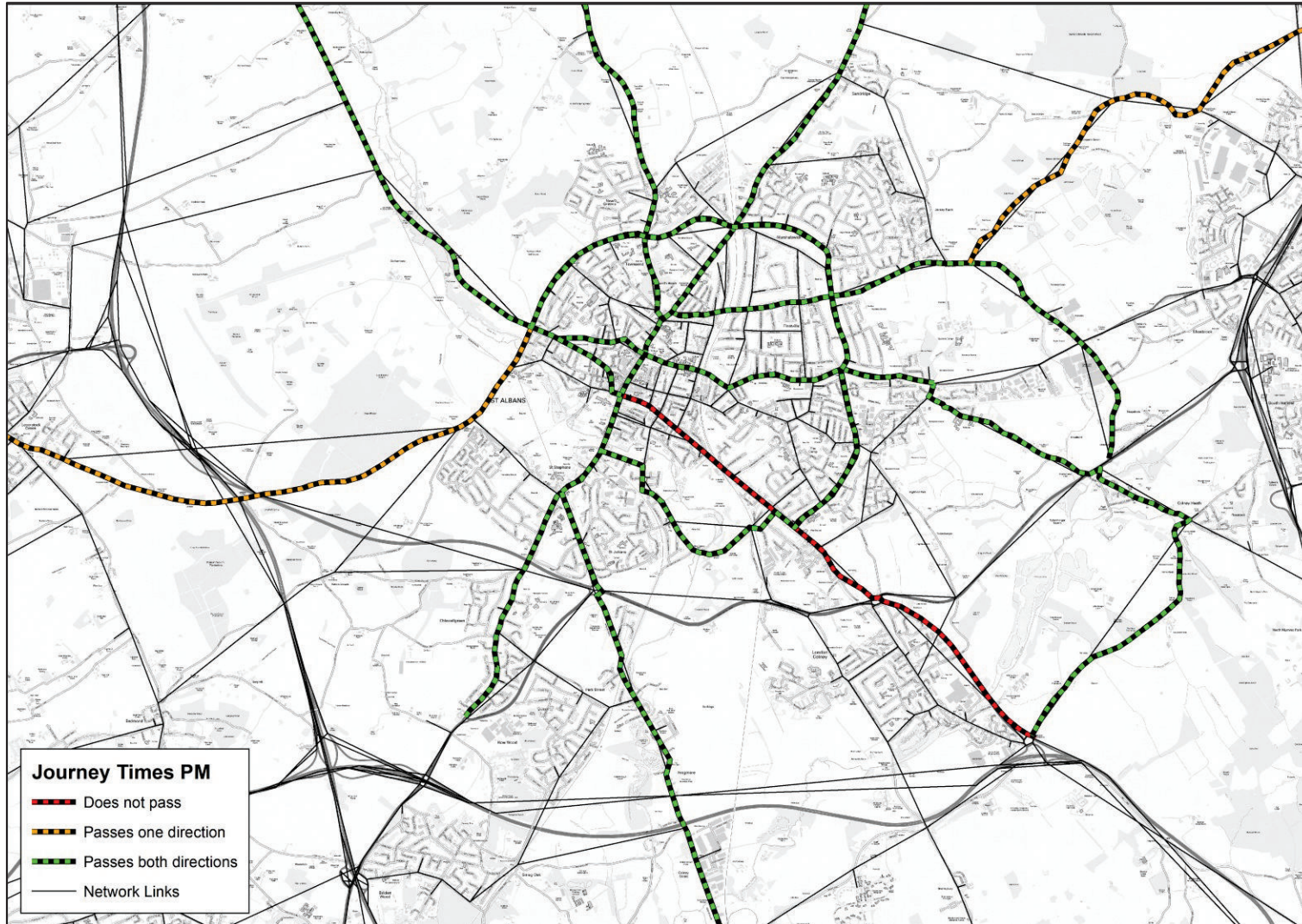
## AM St Albans



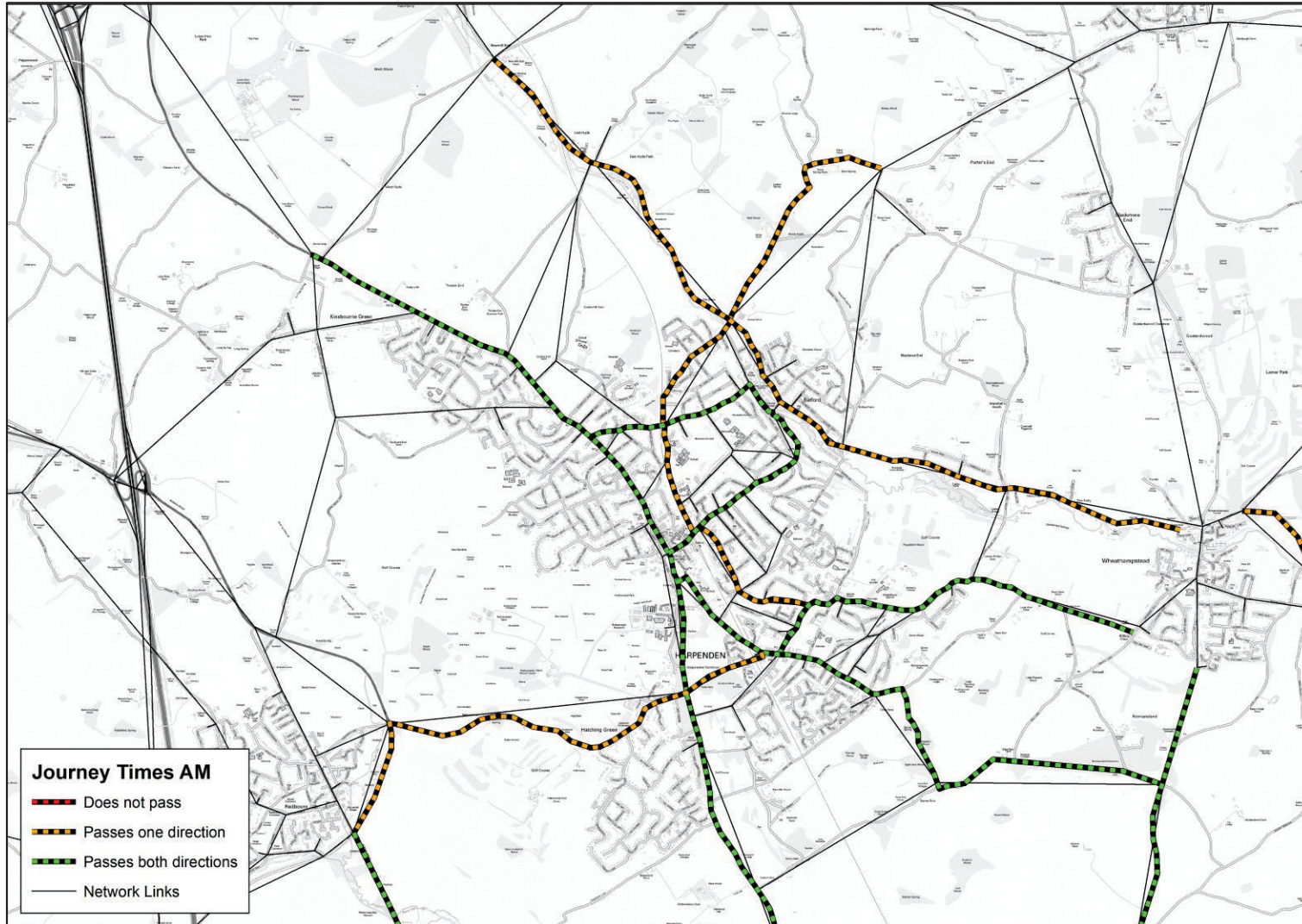
# Journey Time Routes IP St Albans



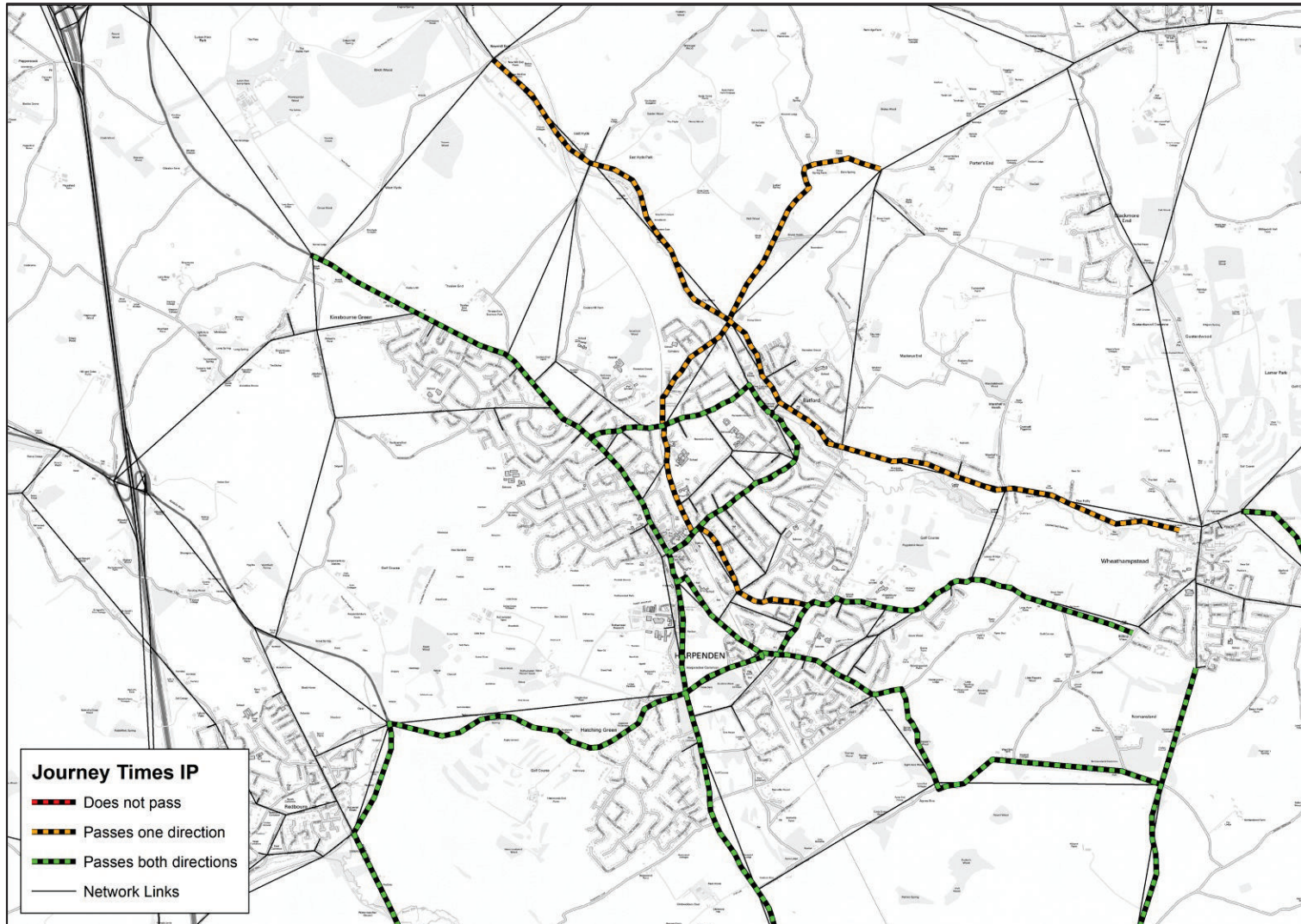
# Journey Time Routes PM St Albans



# Journey Time Routes AM Harpenden

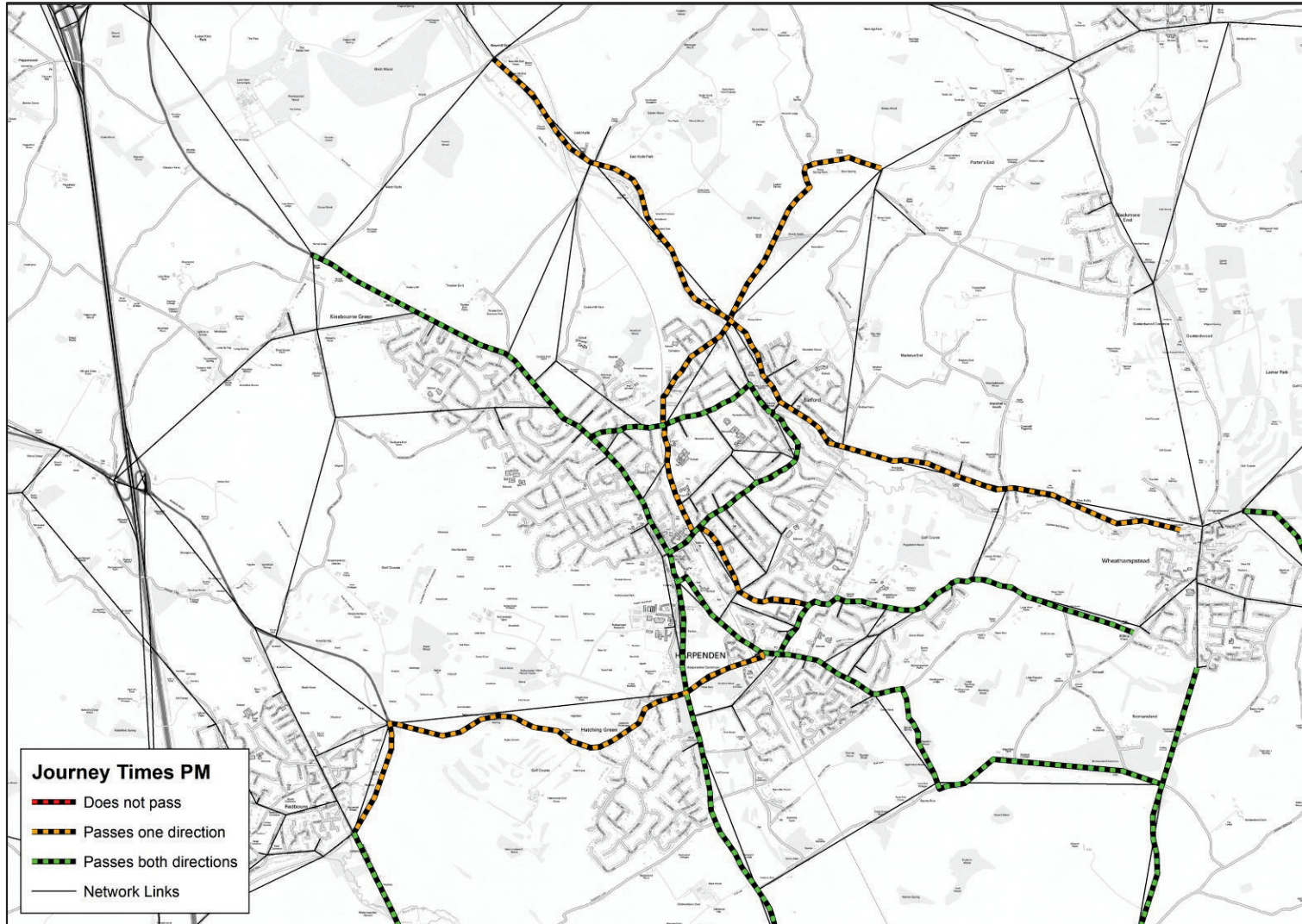


# Journey Time Routes IP Harpenden





# Journey Time Routes PM Harpenden



## Journey Time Routes Summary

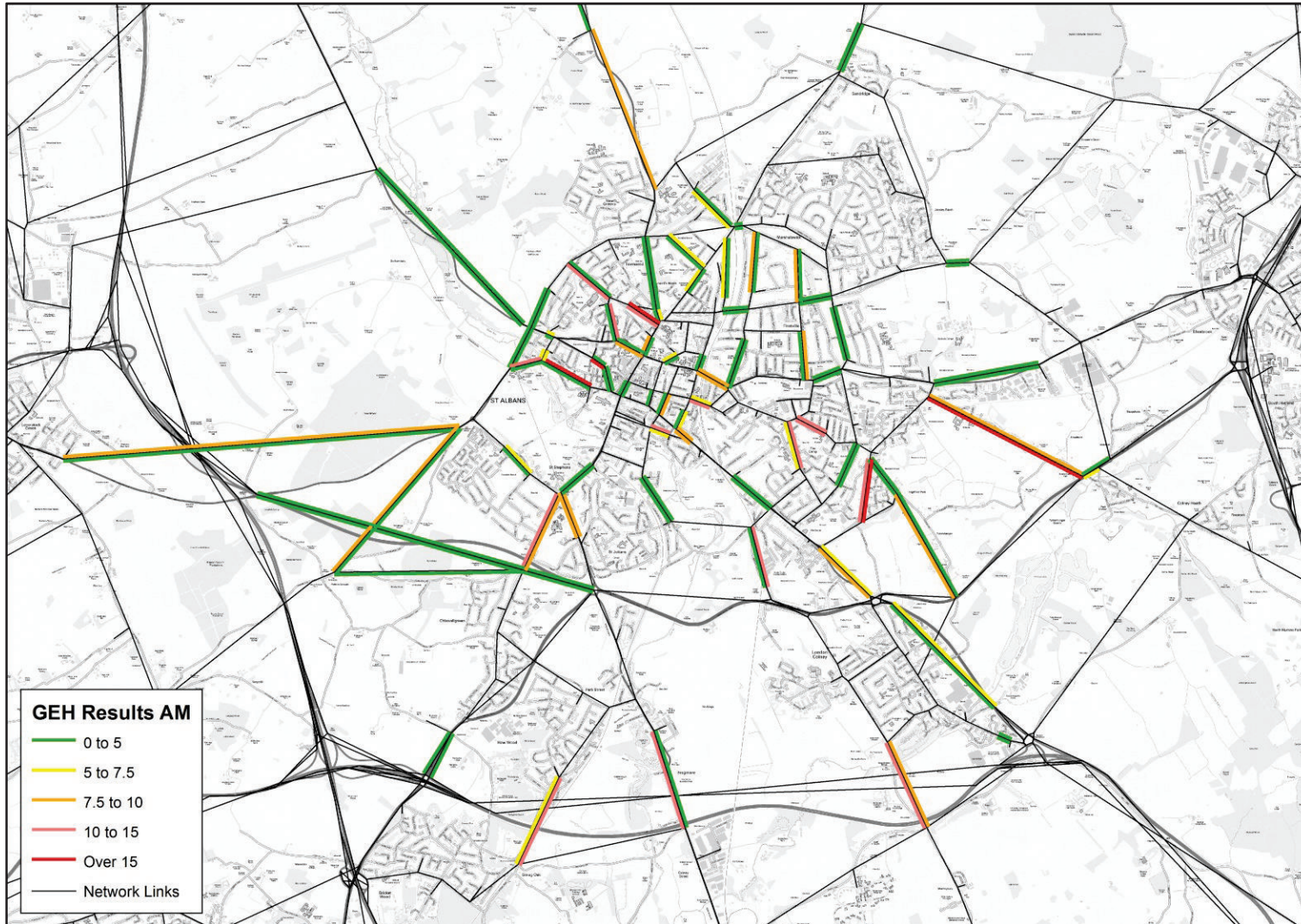
Results from the journey times in St Albans and Harpenden provide confidence in the results seen. The journey times cover all key routes in, through and around the towns and ensure traffic conditions are accurately represented.

## Flow Analysis

The following slides provide background to the flow validation results. GEH and RSD (Relative Standard Deviation) plots were prepared. GEH provides a measurement of how modelled flows compare to actual flows. RSD represents the variation in traffic flow data used. Roads forming the cordons and screenlines are mapped.

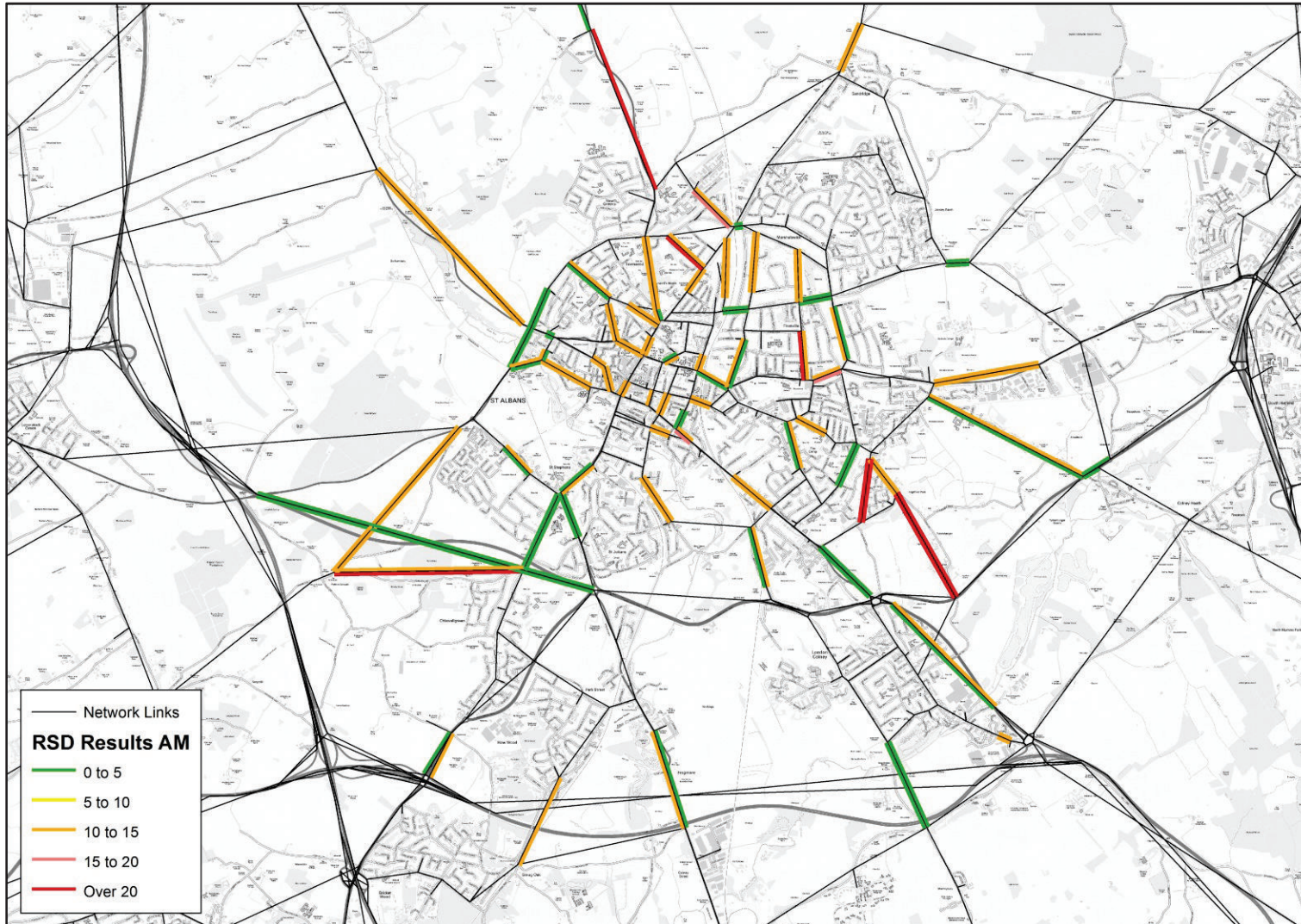
# Post Matrix Assignment Results

## GEH AM St Albans



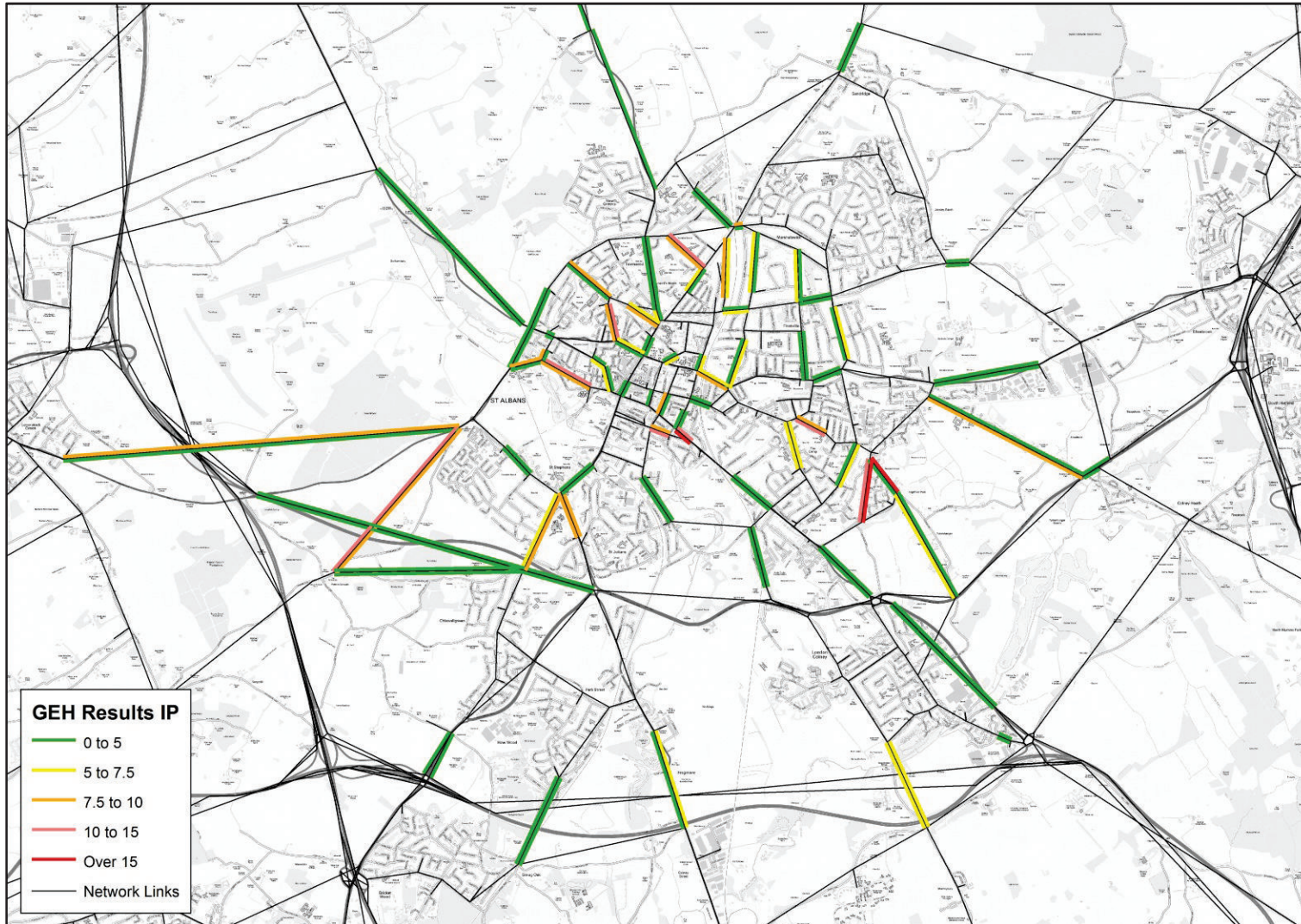
# Traffic Count Data – RSD Values

## AM St Albans



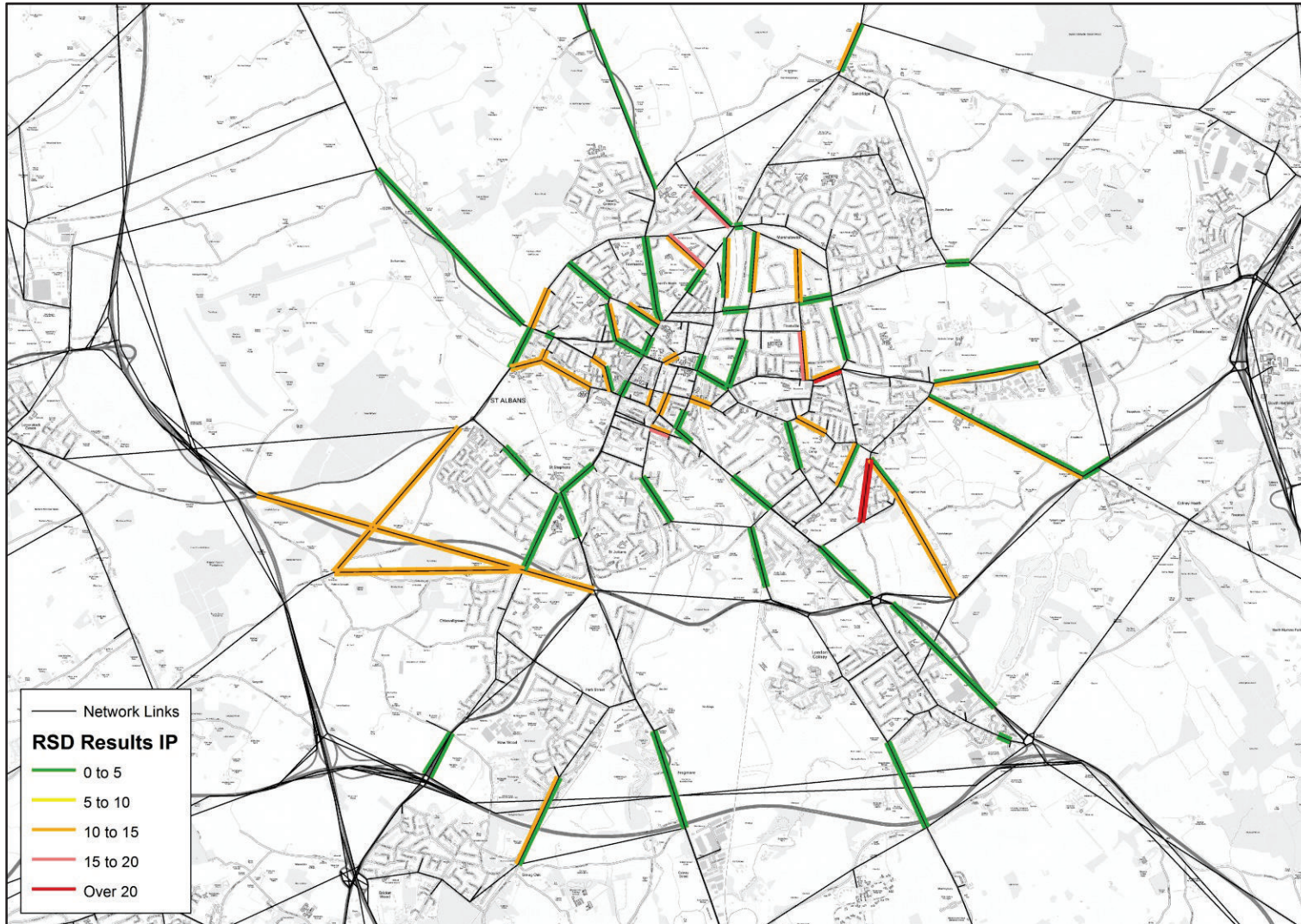
# Post Matrix Assignment Results

## GEH IP St Albans



# Traffic Count Data – RSD Values

## IP St Albans



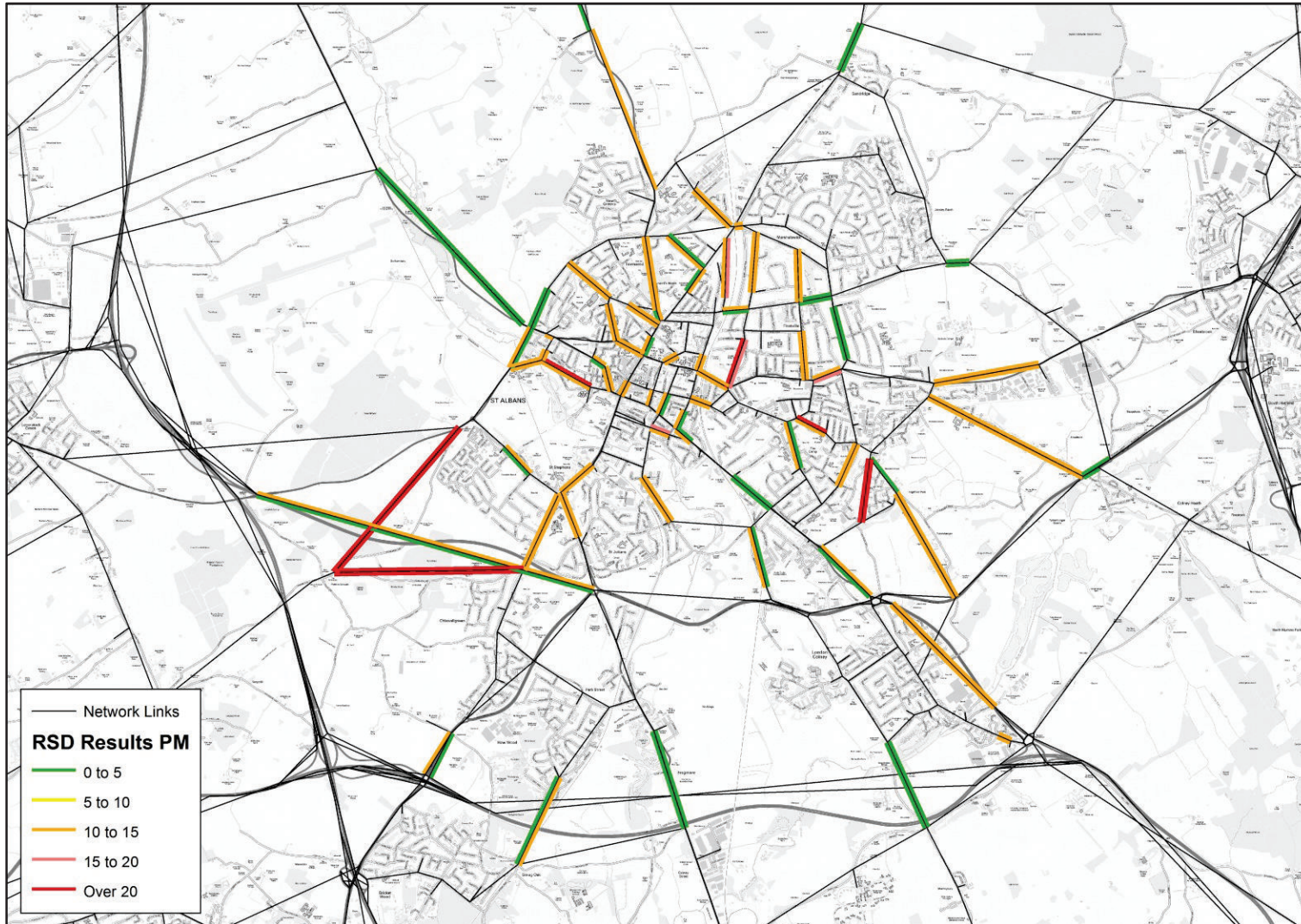
# Post Matrix Assignment Results

## GEH PM St Albans



# Traffic Count Data – RSD Values

## PM St Albans





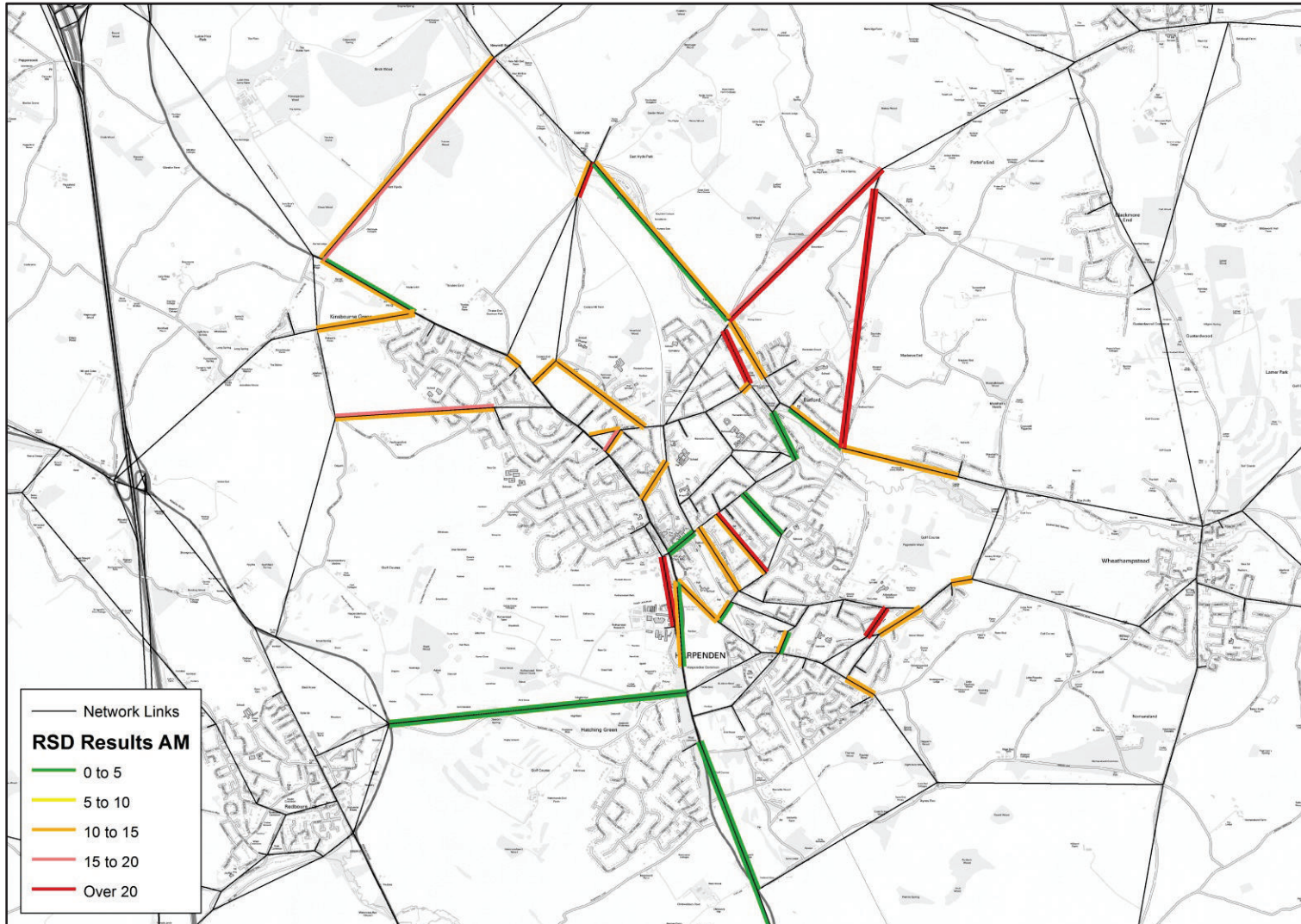
# Post Matrix Assignment Results

## GEH AM Harpenden



# Traffic Count Data – RSD Values

## AM Harpenden



# Post Matrix Assignment Results

## GEH IP Harpenden



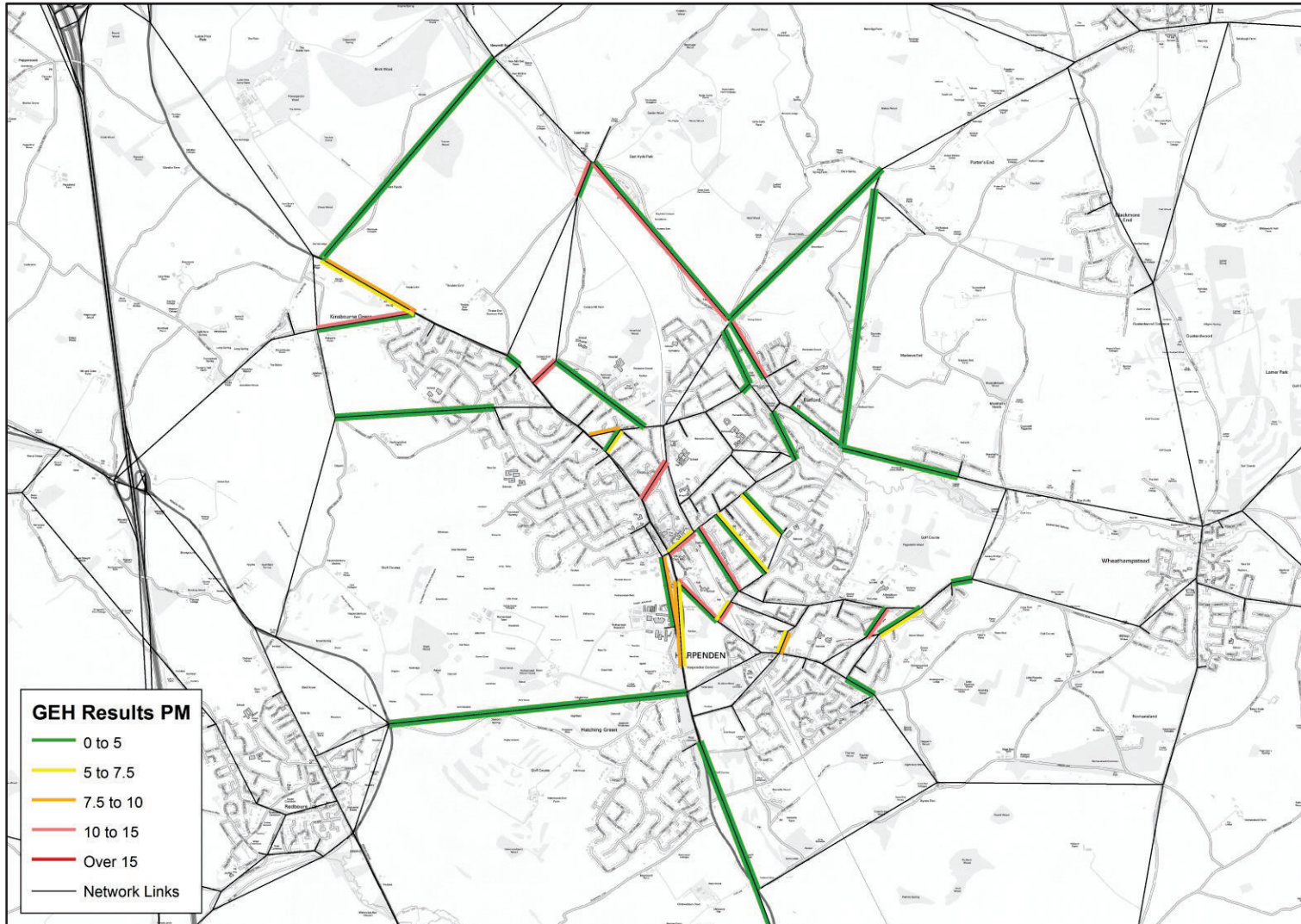
# Traffic Count Data – RSD Values

## IP Harpenden



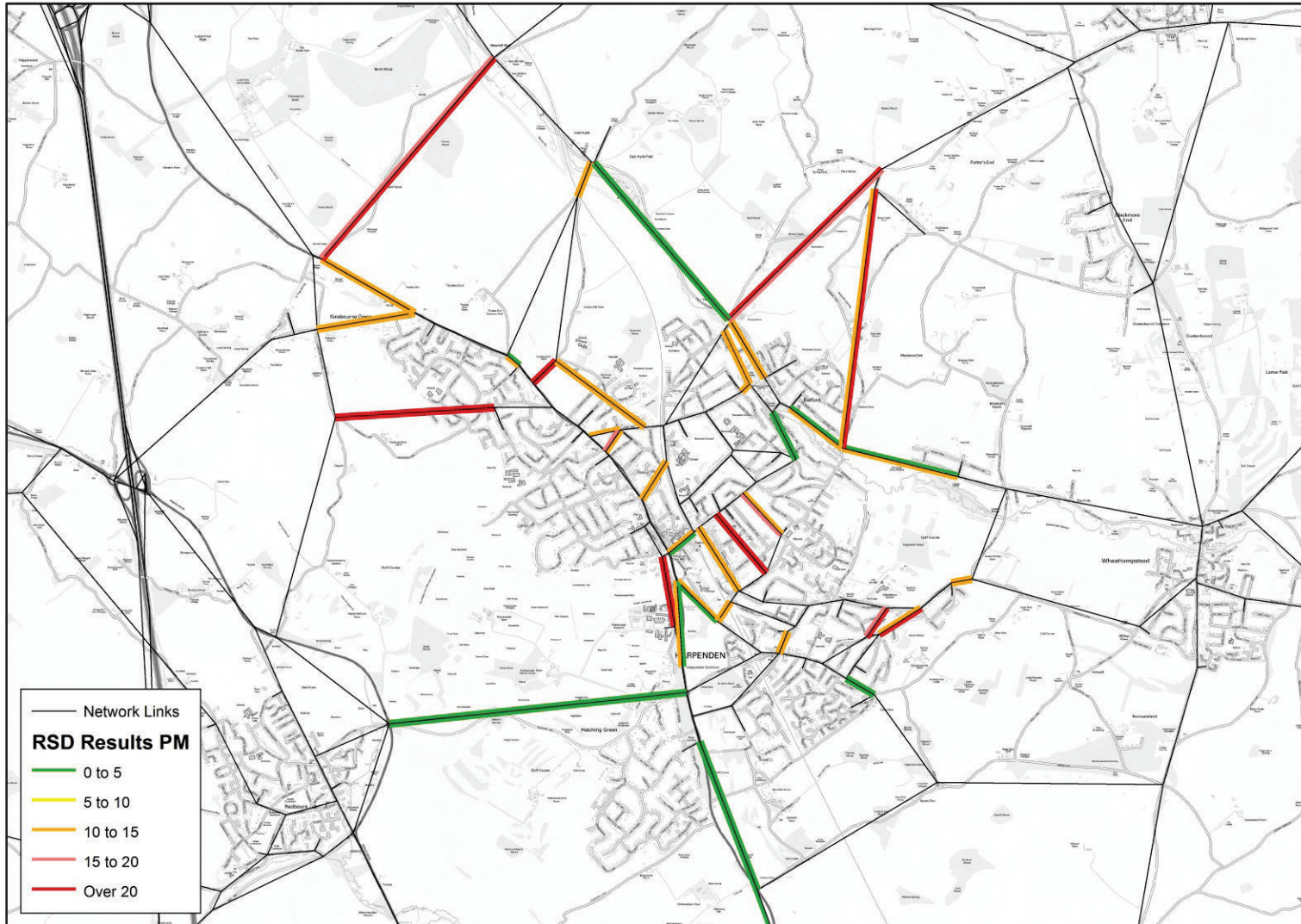
# Post Matrix Assignment Results

## GEH PM Harpenden



# Traffic Count Data – RSD Values

## PM Harpenden



## Screenline GEH/RSD Analysis

GEH/RSD results by screenline and time period are summarised in the following slides.

- The GEH columns highlight that despite the varying GEH values, across all links (i.e the entire screenline or cordon) the calibration/validation process has been able to correlate flows well.
- The RSD figures highlight that there is great variability in the data collected. This is especially prevalent in Harpenden where there is greater variability, but the overall flows are lower. A lot of the Max (individual links) figures relate to roads with lower flows where greater variability was seen.

# Screenline Analysis - AM

## Modelled Flows, GEH Results and RSD

Screenlines	Cal/Val	Modelled Flow	GEH				RSD			
			Min (Individual Links)	Max (Individual Links)	Total (All links)	Min (Individual Links)	Max (Individual Links)			
St Albans City-Inbound	C	10,858	● 0.00	● 10.88	● 1.24	✓ 1%	✗ 25%			
St Albans City-Outbound	C	10,482	● 0.04	● 11.63	● 2.68	✓ 3%	✗ 34%			
STA Inner Cordon-Inbound	C	4,865	● 0.11	● 14.14	● 0.73	✓ 1%	✗ 16%			
STA Inner Cordon-Outbound	C	4,410	● 0.08	● 14.93	● 4.06	✓ 2%	✗ 15%			
STA EW 1-Eastbound	C	2,421	● 1.34	● 17.29	● 0.29	✓ 2%	✗ 13%			
STA EW 1-Westbound	C	2,816	● 0.10	● 17.16	● 4.20	✓ 2%	✗ 51%			
STA EW 2-Eastbound	V	1,855	● 0.29	● 11.03	● 10.63	✓ 3%	✗ 14%			
STA EW 2-Westbound	V	2,624	● 1.20	● 12.05	● 3.34	✓ 4%	✗ 15%			
STA A414-Northbound	C	3,107	● 4.03	● 17.84	● 1.47	✓ 2%	✗ 27%			
STA A414-Southbound	C	2,857	● 0.20	● 10.95	● 1.47	✓ 2%	✗ 24%			
STA NS 1-Northbound	C	3,718	● 0.27	● 13.08	● 1.26	✓ 4%	✗ 40%			
STA NS 1-Southbound	C	3,596	● 0.28	● 15.28	● 2.96	✓ 3%	✗ 39%			
STA NS 2-Northbound	C	2,450	● 0.55	● 8.47	● 2.73	✓ 2%	✗ 20%			
STA NS 2-Southbound	C	2,330	● 0.38	● 13.79	● 0.81	✓ 3%	✗ 13%			
Harpenden Cordon-Inbound	C	4,161	● 0.64	● 8.34	● 0.82	✓ 3%	✗ 30%			
Harpenden Cordon-Outbound	C	4,381	● 0.09	● 15.68	● 0.76	✓ 2%	✗ 37%			
HPD EW 1-Eastbound	C	1,687	● 0.25	● 8.19	● 1.06	✓ 3%	✗ 59%			
HPD EW 1-Westbound	C	1,737	● 0.82	● 9.11	● 0.42	✓ 3%	✗ 27%			
HPD NS 1-Northbound	C	1,847	● 1.18	● 23.67	● 0.31	! 5%	✗ 29%			
HPD NS 1-Southbound	C	1,942	● 0.25	● 8.76	● 0.59	! 5%	✗ 24%			
HPD NS 2-Northbound	V	1,738	● 1.45	● 9.44	● 7.45	✓ 3%	✗ 36%			
HPD NS 2-Southbound	V	2,087	● 0.19	● 11.80	● 3.34	✓ 2%	✗ 31%			
<b>St Albans Cordon - East/West Analysis</b>										
St Albans City-Inbound East		3,909	● 0.13	● 5.07	● 3.14	✓ 3%	! 6%			
St Albans City-Outbound East		3,693	● 0.04	● 0.85	● 0.03	✓ 3%	✗ 11%			
St Albans City-Inbound West		2,787	● 0.00	● 9.64	● 2.29	✓ 3%	✗ 11%			
St Albans City-Outbound West		1,877	● 0.33	● 4.87	● 2.74	✓ 4%	✗ 34%			



# Screenline Analysis - IP

## Modelled Flows, GEH Results and RSD

Screenlines	Cal/Val	Modelled Flow	GEH			RSD	
			Min (Individual Links)	Max (Individual Links)	Total (All links)	Min (Individual Links)	Max (Individual Links)
St Albans City-Inbound	C	7,712	● 0.11	● 14.81	● 0.73	✓ 2%	✗ 11%
St Albans City-Outbound	C	7,655	● 0.10	● 8.61	● 0.48	✓ 2%	✗ 15%
STA Inner Cordon-Inbound	C	3,269	● 0.21	● 11.41	● 2.62	✓ 2%	✗ 21%
STA Inner Cordon-Outbound	C	3,375	● 0.17	● 9.25	● 1.41	✓ 2%	✗ 11%
STA EW 1-Eastbound	C	1,948	● 2.41	● 11.92	● 0.48	✓ 2%	✗ 15%
STA EW 1-Westbound	C	2,342	● 0.24	● 9.30	● 0.67	✓ 2%	✗ 17%
STA EW 2-Eastbound	V	1,593	● 0.23	● 11.97	● 11.06	✓ 3%	✗ 13%
STA EW 2-Westbound	V	1,750	● 0.25	● 17.40	● 11.55	✓ 2%	✗ 17%
STA A414-Northbound	C	2,238	● 2.35	● 10.00	● 1.01	✓ 2%	✗ 13%
STA A414-Southbound	C	2,209	● 0.91	● 9.87	● 0.73	✓ 2%	✗ 13%
STA NS 1-Northbound	C	2,860	● 0.58	● 10.13	● 0.71	✓ 2%	✗ 29%
STA NS 1-Southbound	C	2,751	● 0.16	● 25.23	● 22.84	✓ 3%	✗ 35%
STA NS 2-Northbound	C	1,742	● 0.87	● 8.06	● 2.73	✓ 2%	✗ 15%
STA NS 2-Southbound	C	1,864	● 1.32	● 10.83	● 0.47	✓ 2%	✗ 11%
Harpenden Cordon-Inbound	C	2,388	● 0.34	● 6.78	● 0.35	✓ 2%	! 9%
Harpenden Cordon-Outbound	C	2,396	● 0.54	● 4.06	● 0.40	✓ 2%	✗ 14%
HPD EW 1-Eastbound	C	1,036	● 0.94	● 6.61	● 0.21	✓ 2%	✗ 33%
HPD EW 1-Westbound	C	1,030	● 0.49	● 6.32	● 0.34	✓ 3%	✗ 20%
HPD NS 1-Northbound	C	1,023	● 1.17	● 8.20	● 0.20	✓ 3%	! 5%
HPD NS 1-Southbound	C	1,021	● 0.37	● 10.97	● 0.23	✓ 3%	✗ 13%
HPD NS 2-Northbound	V	1,265	● 0.96	● 6.95	● 1.72	✓ 2%	✗ 28%
HPD NS 2-Southbound	V	1,216	● 1.44	● 7.52	● 1.80	✓ 4%	✗ 23%
<b>St Albans Cordon - East/West Analysis</b>							
St Albans City-Inbound East		2,716	● 0.11	● 1.62	● 0.07	✓ 3%	! 8%
St Albans City-Outbound East		2,678	● 0.11	● 4.79	● 0.28	✓ 3%	! 7%
St Albans City-Inbound West		1,348	● 1.87	● 14.81	● 0.28	✓ 5%	✗ 11%
St Albans City-Outbound West		1,352	● 0.81	● 8.61	● 1.67	✓ 4%	✗ 15%

# Screenline Analysis - PM

## Modelled Flows, GEH Results and RSD

Screenlines	Cal/Val	Modelled Flow	GEH			RSD	
			Min (Individual Links)	Max (Individual Links)	Total (All links)	Min (Individual Links)	Max (Individual Links)
St Albans City-Inbound	C	10,739	● 0.21	● 8.48	● 0.71	✓ 2%	✗ 32%
St Albans City-Outbound	C	10,114	● 0.22	● 13.10	● 1.04	✓ 2%	✗ 25%
STA Inner Cordon-Inbound	C	3,721	● 0.03	● 13.19	● 0.43	✓ 1%	✗ 20%
STA Inner Cordon-Outbound	C	4,266	● 0.05	● 12.72	● 2.91	✓ 3%	✗ 37%
STA EW 1-Eastbound	C	2,215	● 1.96	● 14.22	● 1.25	✓ 5%	✗ 32%
STA EW 1-Westbound	C	2,908	● 0.86	● 12.96	● 0.47	✓ 4%	✗ 12%
STA EW 2-Eastbound	V	1,997	● 0.51	● 15.54	● 15.88	✓ 5%	✗ 19%
STA EW 2-Westbound	V	1,802	● 0.07	● 18.05	● 19.40	✓ 5%	✗ 11%
STA A414-Northbound	C	2,989	● 0.05	● 9.40	● 3.76	✓ 2%	✗ 13%
STA A414-Southbound	C	2,961	● 3.01	● 14.08	● 0.63	✓ 5%	✗ 13%
STA NS 1-Northbound	C	3,128	● 0.18	● 10.43	● 3.25	✓ 1%	✗ 30%
STA NS 1-Southbound	C	3,330	● 0.60	● 11.10	● 2.61	✓ 3%	✗ 42%
STA NS 2-Northbound	C	2,169	● 0.21	● 8.98	● 2.05	✓ 3%	✗ 30%
STA NS 2-Southbound	C	2,381	● 1.65	● 13.03	● 0.37	✓ 1%	✗ 17%
Harpenden Cordon-Inbound	C	3,905	● 0.33	● 11.21	● 0.44	✓ 4%	✗ 32%
Harpenden Cordon-Outbound	C	3,752	● 0.29	● 12.77	● 0.05	✓ 3%	✗ 32%
HPD EW 1-Eastbound	C	1,352	● 1.49	● 13.71	● 0.32	! 6%	✗ 35%
HPD EW 1-Westbound	C	1,342	● 5.71	● 13.58	● 4.34	✓ 5%	✗ 35%
HPD NS 1-Northbound	C	1,701	● 0.17	● 10.16	● 0.54	! 7%	✗ 35%
HPD NS 1-Southbound	C	1,658	● 2.33	● 21.05	● 2.51	✓ 1%	✗ 22%
HPD NS 2-Northbound	V	1,674	● 0.01	● 8.30	● 2.10	✓ 3%	✗ 30%
HPD NS 2-Southbound	V	1,598	● 3.22	● 13.82	● 0.09	✓ 3%	✗ 21%
<b>St Albans Cordon - East/West Analysis</b>							
St Albans City-Inbound East		3,889	● 1.10	● 8.48	● 0.93	✓ 2%	✗ 14%
St Albans City-Outbound East		3,358	● 0.41	● 13.10	● 0.52	✓ 2%	✗ 14%
St Albans City-Inbound West		1,701	● 0.45	● 1.75	● 0.98	✓ 3%	✗ 32%
St Albans City-Outbound West		2,255	● 0.48	● 10.73	● 5.86	✓ 3%	✗ 25%

# Screenline Analysis - Summary

## Modelled Flows, GEH Results and RSD

- Analysis of the GEH and RSD plots highlights the variability in the data used to calibrate the model in St Albans and Harpenden
- AECOM cleaned and processed all data from the HCC and ATR traffic surveys to obtain the lowest RSD values – in some cases leaving only a few days of data. High values still remain
- The model is trying to calibrate against one average value rather than a range
- Lots of rat running in St Albans and Harpenden in reality and the model – traffic moves around to avoid queues/delays
- Relatively low flows across individual sites on minor roads led to high variability in data
- Relatively low total flows across screenlines mean small variances impact the results greatly
- COMET is a strategic model and therefore has limitations. It does not include every road in the network and local urban trip patterns are difficult to define

# Delays on the Base Year Highway Network - AM

The following plots provide background to the base year network and highlight that delays and congestion are appearing in the correct areas of the network.

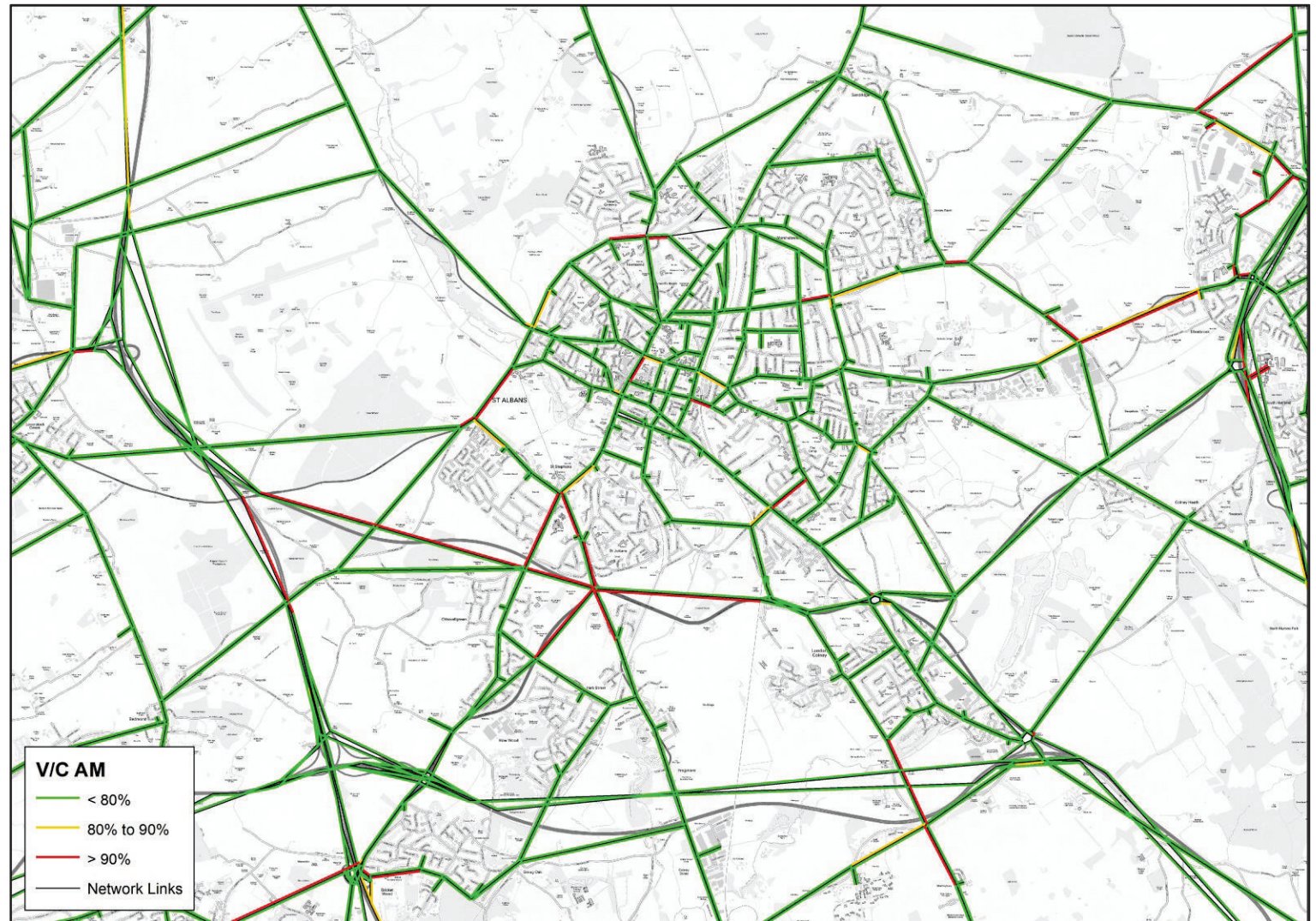
The delay plots show the average delay at junctions each vehicle will experience (regardless of the route they approach from, weighted by flows).



# Congestion on the Base Year Highway Network - AM

It should be remembered that COMET saturation flows are the standard ones defined in the coding manual for a strategic model.

V/C = volume divided by capacity



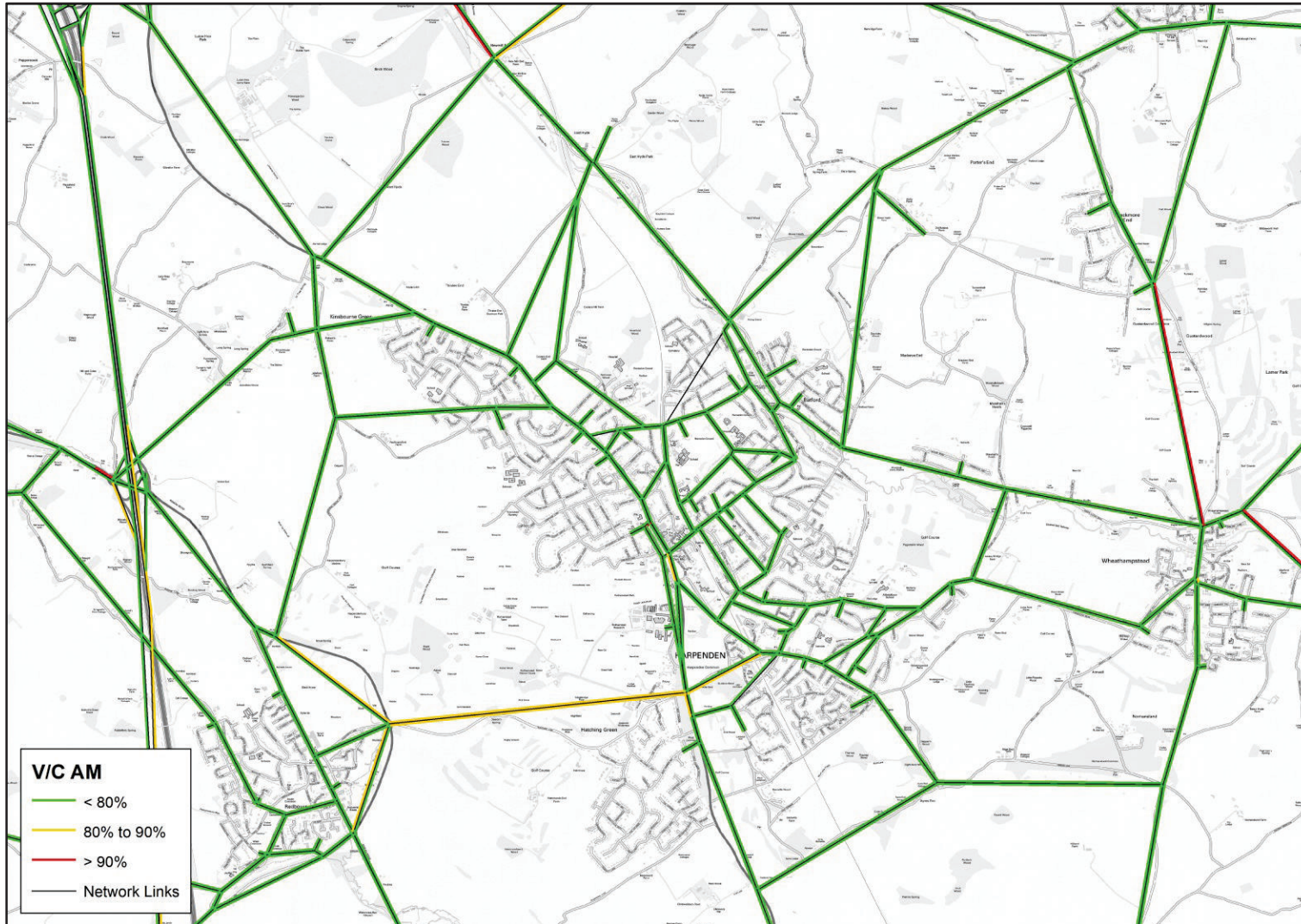
# Delays on the Base Year Highway Network - AM

Minimal delays around and through Harpenden.

No signal controlled junctions within Harpenden in the model which could impact flows.



# Congestion on the Base Year Highway Network - AM



# Delays on the Base Year Highway Network - PM





# Congestion on the Base Year Highway Network - PM



# Delays on the Base Year Highway Network - PM



# Congestion on the Base Year Highway Network - PM



# Summary of COMET validation

## St Albans Area

### – At screenline level

- Pass WebTAG criterion (>85%) for light and total vehicles in the IP. Figures for the AM and PM peaks slightly lower
- Poor performance in all time periods for validation screenlines
- St Albans and Harpenden Cordons validate well with only one exception where flows are 6%. We believe we are accurately modelling flows into/out of St Albans and Harpenden
- Using the western and eastern sides of the St Albans City Cordon to track movements between Hemel / Hatfield and St Albans the results are approximately 80% across all time periods

### – At count level

- Below WebTAG criterion (>85%) but similar results with the rest of COMET
- COMET is a strategic model → limited level of network details
- Sensitivity test that optimised counts over screenlines did not produce material differences

# Summary of COMET validation

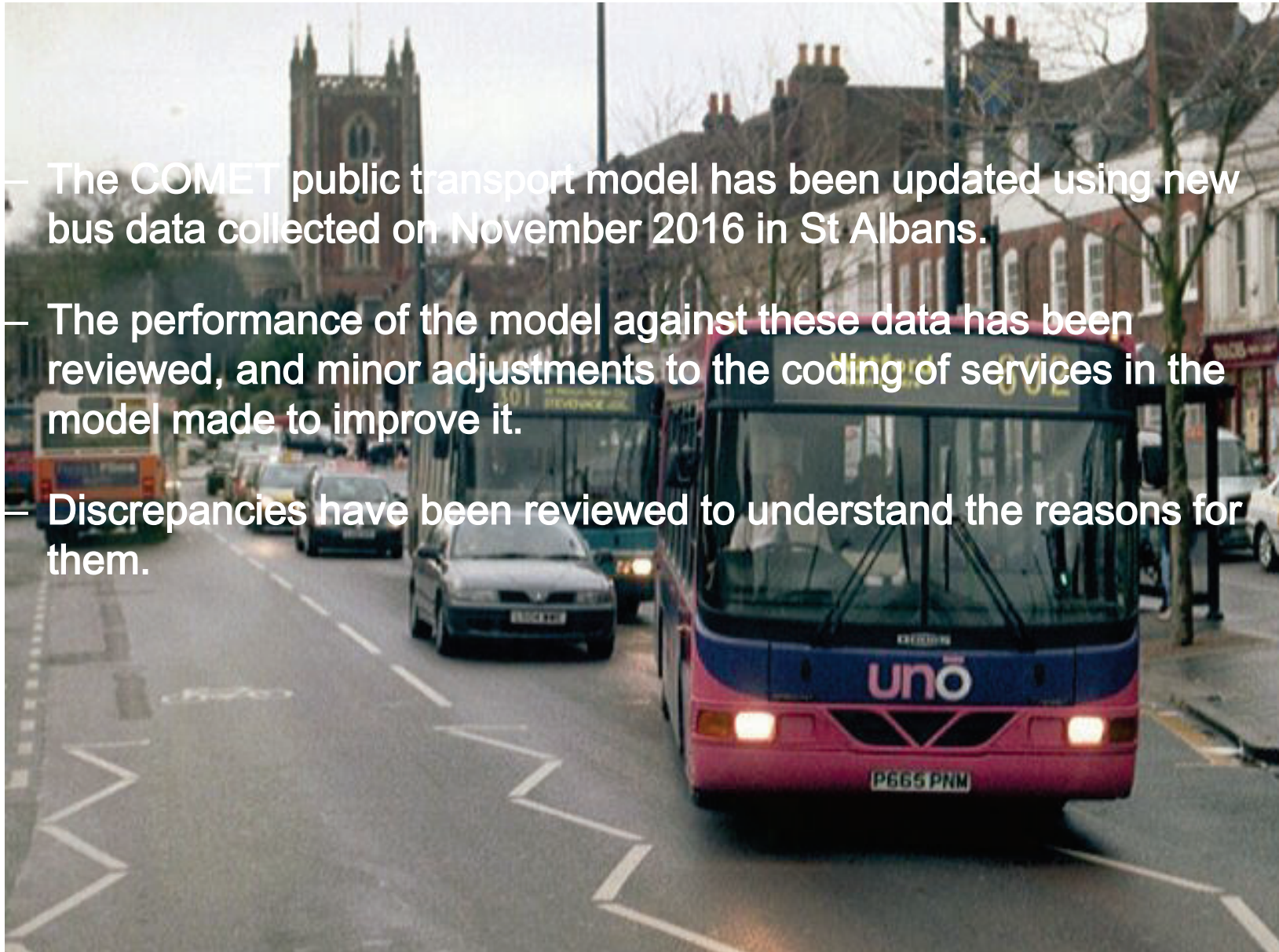
## St Albans Area

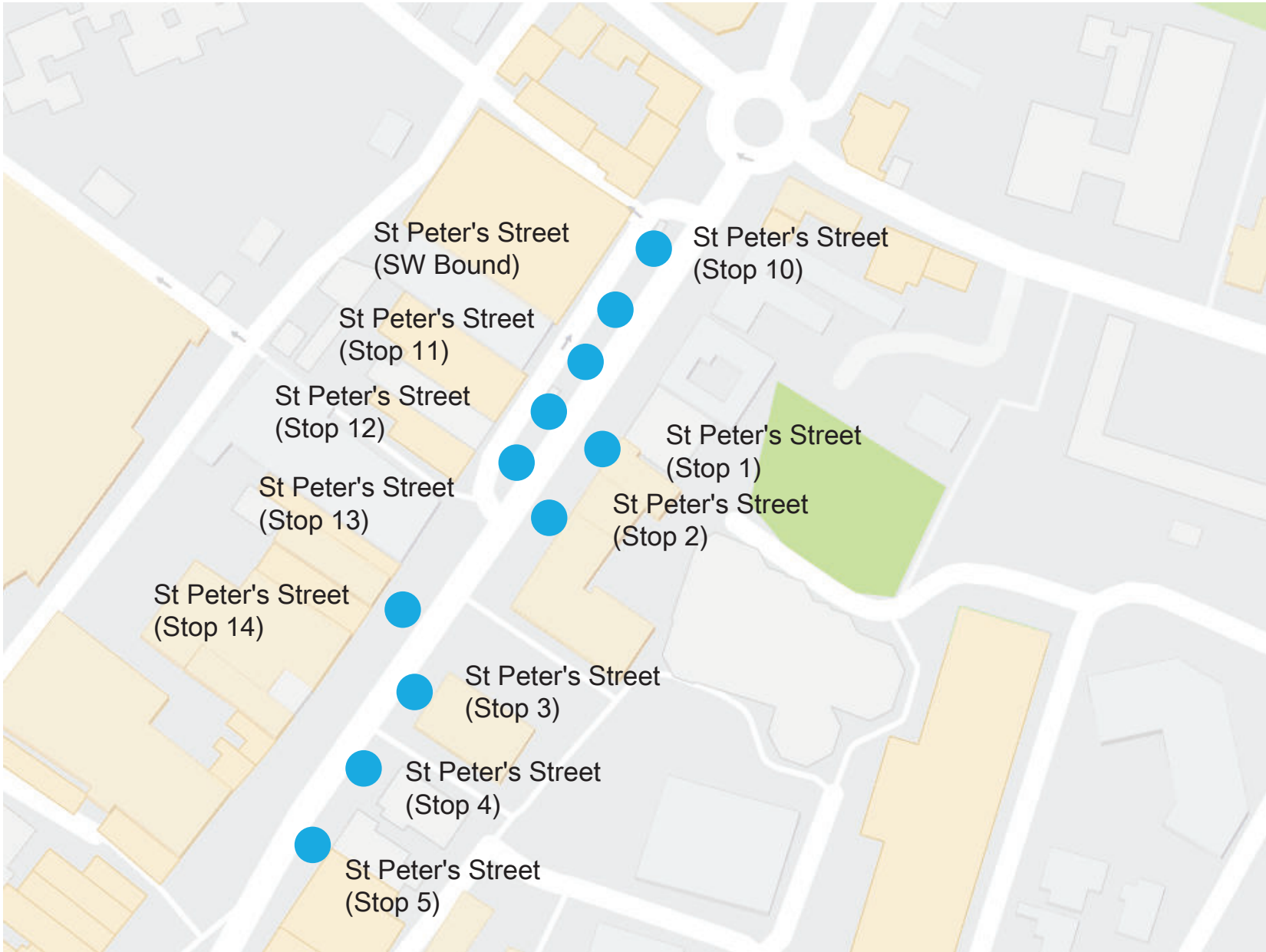
- Journey time validation
  - Good validation, above COMET overall performance
  - Whilst flows may fluctuate between routes, we feel the model is accurately reflecting journey times through and around St Albans and Harpenden
- The overall objective for this COMET model enhancement work was to:
  - Have a good representation of St Albans and Harpenden areas to test the cumulative growth from the Local Plan alongside broad, strategic-level interventions in St Albans District; and
  - Be able to demonstrate the scale and location of the impacts from both Local Plan growth and potential strategic schemes.
- We believe the results seen provide a sound evidence base from which to test the cumulative impact of Local Plan growth and provide a high level assessment of the mitigation schemes.

# Base Year validation – Public Transport model

# Summary of COMET validation St Albans Area

- The COMET public transport model has been updated using new bus data collected on November 2016 in St Albans.
- The performance of the model against these data has been reviewed, and minor adjustments to the coding of services in the model made to improve it.
- Discrepancies have been reviewed to understand the reasons for them.





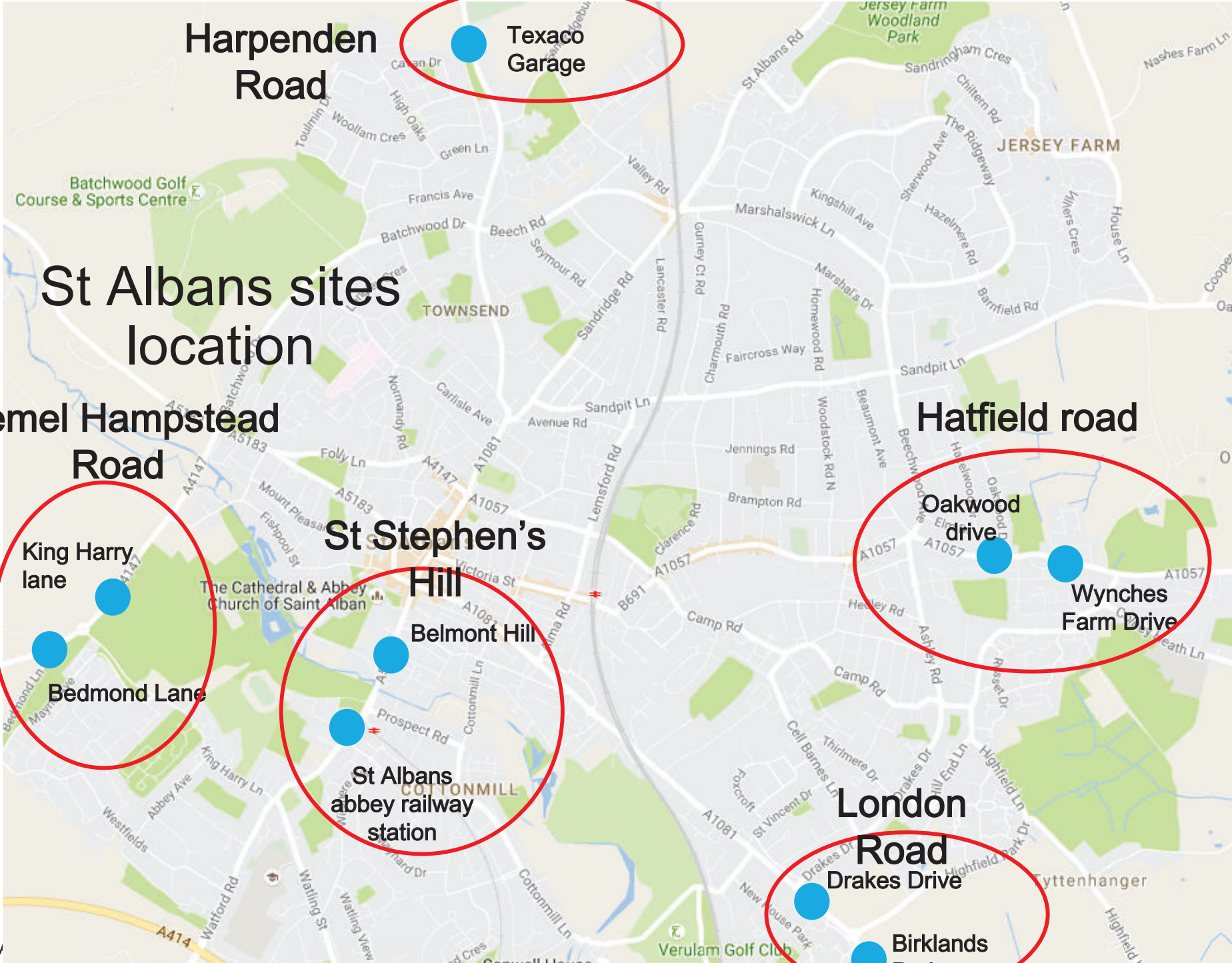


# Boardings and Alightings

	AM			IP			PM		
	Observed	Model	Difference	Observed	Model	Difference	Observed	Model	Difference
Boardings	162	172	7%	282	286	1%	236	213	-10%
Alightings	225	297	32%	208	283	36%	125	142	14%

- This model boardings perform well against the counts.
- The alighting validation appears worse, but the counts show a poor symmetry at all day level, with 120 people fewer than the boardings. In the model the boardings and alightings across the day are similar, as might be expected.
- No changes had to be made to the model to achieve this performance; the existing model broadly agreed with the counts.





**Harpenden Road**

**Texaco Garage**

**St Albans sites location**

**Hemel Hempstead Road**

**Hatfield road**

**King Harry lane**

**St Stephen's Hill**

**Oakwood drive**

**Wynches Farm Drive**

**Bedmond Lane**

**Belmont Hill**

**St Albans abbey railway station**

**London Road Drakes Drive**

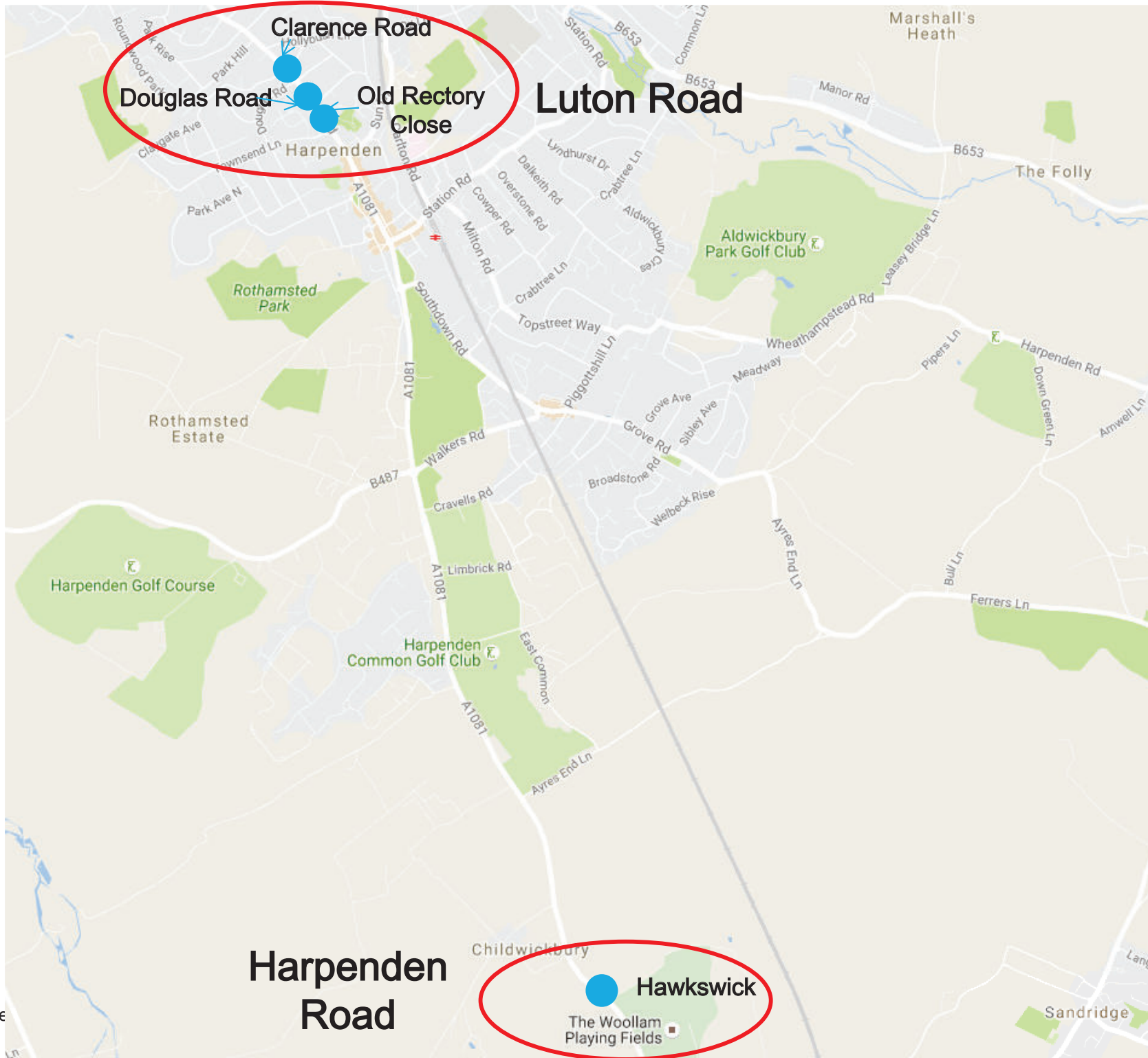
**Birklands Park**

St /

# Passenger In-Vehicle Counts (St Albans)

Site	Direction	AM			IP			PM		
		07:00:00	10:00:00	Diff	10:00:00	16:00:00	Diff	16:00:00	19:00:00	Diff
		Obs	Mod		Obs	Mod		Obs	Mod	
Hatfield Road	Westbound	118	145	22%	112	120	7%	202	96	-52%
St Stephen's Hill	Northbound	54	98	84%	56	77	38%	46	50	9%
Hemel Hampstead Road	Eastbound	75	66	-11%	45	40	-12%	29	32	12%
London Road	Westbound	74	78	6%	55	59	8%	24	26	9%
Harpenden Road	Southbound	63	60	-4%	37	61	62%	48	46	-4%
<b>ST ALBANS INBOUND TOTALS</b>		<b>383</b>	<b>448</b>	<b>16.9%</b>	<b>305</b>	<b>356</b>	<b>16.8%</b>	<b>348</b>	<b>249</b>	<b>-28.3%</b>
Hatfield Road	Eastbound	156	140	-11%	106	138	31%	109	106	-3%
St Stephen's Hill	Southbound	49	54	9%	65	88	35%	105	71	-33%
Hemel Hampstead Road	Westbound	30	23	-22%	32	35	11%	81	36	-55%
London Road	Eastbound	19	29	53%	50	76	51%	85	55	-36%
Harpenden Road	Northbound	32	46	42%	38	40	5%	55	47	-14%
<b>ST ALBANS OUTBOUND TOTALS</b>		<b>287</b>	<b>292</b>	<b>1.5%</b>	<b>291</b>	<b>378</b>	<b>29.8%</b>	<b>435</b>	<b>315</b>	<b>-27.6%</b>

Harpenden sites location



# Passenger In-Vehicle Counts (Harpenden)



Site	Direction	AM			IP			PM		
		07:00:00	10:00:00	Diff	10:00:00	16:00:00	Diff	16:00:00	19:00:00	Diff
		Obs	Mod		Obs	Mod		Obs	Mod	
Luton Road	Southbound	99	64	-35%	59	55	-6%	31	46	50%
Harpenden Road	Southbound	63	60	-4%	37	61	62%	48	46	-4%
<b>Harpenden SouthBOUND TOTALS</b>		<b>162</b>	<b>124</b>	<b>-23.3%</b>	<b>96</b>	<b>116</b>	<b>20.5%</b>	<b>78</b>	<b>92</b>	<b>17.2%</b>
Luton Road	Northbound	35	39	10%	50	44	-13%	89	56	-37%
Harpenden Road	Northbound	32	46	42%	38	40	5%	55	47	-14%
<b>Harpenden NorthBOUND TOTALS</b>		<b>67</b>	<b>84</b>	<b>25.3%</b>	<b>89</b>	<b>84</b>	<b>-4.8%</b>	<b>143</b>	<b>103</b>	<b>-28.0%</b>

# Flows

- At all day level all sites and the cordon total by direction are within the 25% of the observed data.
- There are localised discrepancies. Generally these are within expected day-to-day variability in counts, so there is little reason to suspect the model is necessarily wrong.
- We have checked the ticket sales data directly for the larger discrepancies, and as near as it is possible to determine (translating ticket sales to in-vehicle passengers at a particular point is obviously a bit subjective), they are significantly closer to the model than the counts.
- In some cases bus services have changed slightly between the model year (2014), and the count year (2016), which explain some discrepancies. For instance, service 84 – 84A was extended to Luton Airport in August 2016.

Next steps

The background is a solid blue color. On the right side, there are several thin, white, intersecting lines that create a geometric pattern of triangles and quadrilaterals. The lines are thin and extend across the right half of the image.

## Next steps: St Albans Local Plan update

- Run Realism tests using the Variable Demand Model next week and assess impacts on the network
- Prepare Future Year 2031 network
  - Include all changes to Base Year network
  - Confirm the planning data provided to AECOM in October 2016 is still current
  - Consider high-level signal optimisation at key / problematic junctions?
- Prepare final presentation by early/mid April to complement the completion of Task 5
- Await Task Order 6



Thank You