

# COMET Local Plan 2036 Run 5 Forecast Year Results



March 2020

**AECOM**

## This Presentation:

- Housing and Employment Growth Assumptions
- Future Year Network Updates
- Forecast Model Results
  - Flow Differences on Key Links relative to Base Year;
  - Town Flow Differences with summary of observations;
  - Delay Differences at Key Junctions relative to Base Year;
  - Volume/Capacity on Key Links; and
  - Journey Time Changes relative to Base Year.

# Housing and Employment Growth Assumptions

# Housing and Employment Growth Assumptions

Area	LP5 2036		LP5 Growth (2014-2036)		Difference in Growth LP4 vs LP5 (2036)	
	Dwellings	Jobs	Dwellings	Jobs	Dwellings	Jobs
Broxbourne	9,123	14,296	24%	33%	-15%	102%
Dacorum	21,183	6,157	34%	9%	7%	312%
East Hertfordshire	20,705	2,037	35%	3%	-2%	-38%
Hertsmere	17,633	1,185	43%	2%	5%	-81%
North Hertfordshire	16,147	3,574	29%	6%	-18%	-53%
St Albans	17,663	11,639	30%	17%	0%	87%
Stevenage	9,638	4,420	27%	9%	-21%	26%
Three Rivers	9,261	5,564	26%	15%	128%	-33%
Watford	13,664	2,880	36%	5%	32%	-74%
Welwyn Hatfield	16,432	9,896	36%	13%	-12%	-21%
<b>Hertfordshire</b>	<b>151,449</b>	<b>61,648</b>	<b>32%</b>	<b>11%</b>	<b>0%</b>	<b>-9%</b>
Essex	30,031	21,650	25%	16%	-7%	-6%
Central Bedfordshire	33,399	11,672	30%	11%	28%	-78%
Luton	7,348	5,340	10%	5%	-17%	0%
Buckinghamshire	52,604	26,013	26%	10%	-32%	-63%
Outer London	10,841	19,839	12%	12%		
Cambridgeshire	42,273	18,504	37%	10%	-32%	-19%
<b>Total</b>	<b>327,945</b>	<b>164,666</b>	<b>28%</b>	<b>11%</b>	<b>-8%</b>	<b>-32%</b>

- Growth assumptions for the rest of Great Britain are derived from NTEM v7.2
- Outer London highlighted as first time planning data in north London used



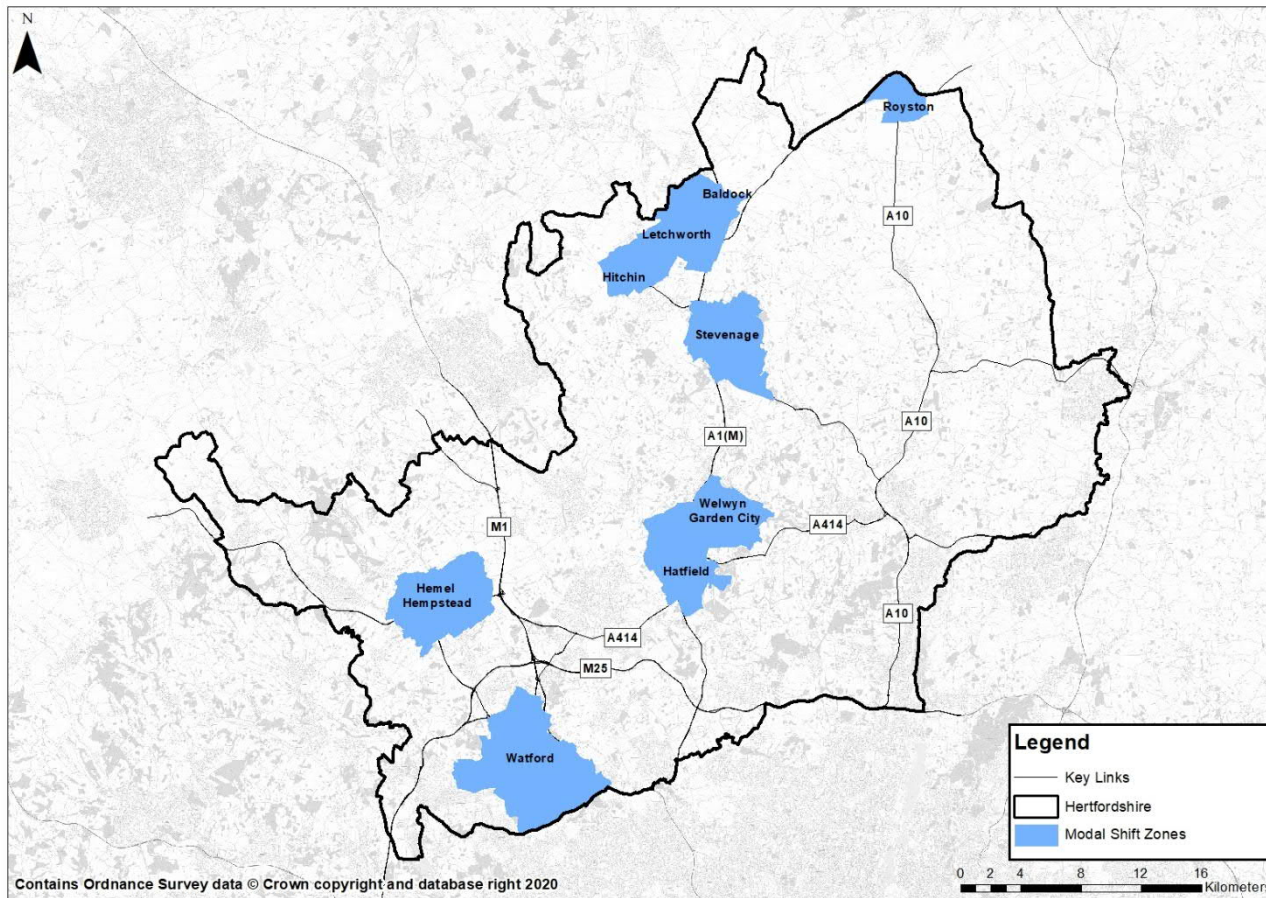
# LP5 Assumptions

## LP5 Parameters

- COMET v5 utilised for the first time. It includes an enhanced 2014 BY zoning system and network compared to previous LP runs using COMET v4.
- COMET v5 model performance is significantly enhanced compared to v4. The updated LMVR details full model performance
- This is the first LP run without the Hertford Bypass
- 2036 forecast year
- Planning data in 10 districts within Hertfordshire updated for LP5
- Essex and Luton planning data from LP4
- Central Bedfordshire housing and employment assumptions constrained to NTEM v7.2 projections (LP4 planning data growth was deemed unrealistic)

# LP5 Parameters

- A 5% modal shift was applied for the areas shown below
- A 20% decrease in car ownership was applied to specific new developments in Watford and Stevenage



## LP5 Parameters

- 283 highway infrastructure, PT and Demand Management (VDM) schemes included in LP5
- All schemes coded anew to ensure compatibility with COMET v5
- LP5 includes the latest “Road Traffic Forecasts 2018”
- LGV growth assumptions significantly higher in latest Road Traffic Forecasts
- HGV growth is not expected to rise as quickly as for other vehicles, however HGVs travel greater distances

## LP5 Parameters

- Several rounds of optimisation were undertaken to resolve delay and convergence issues.
- Generally, across the network, issues with zone loading points
  - lower give way saturation flows causing unrealistic delays
  - corrections made to resolve these delays to ensure traffic enters the network
- Specifically, convergence issues were experienced in areas such as Watford, Luton and south of the M25 (around Enfield)
- PM time period required more optimisation to achieve acceptable convergence

# Future Year Transport Schemes

# Forecast Network – Modelled Schemes (Summary)

District	Description	Total Number of Schemes			
		Highway	PT	Demand [Management]	Total
Broxbourne	Includes speed limit reduction (to 40mph) on A10 between Hertford to M25, junction improvements at Church Lane, College Road and Turnford Link Road serving Brookfield centre.	27	9	0	36
Dacorum	Includes new access into Maylands from M1 J8, north Hemel link road and Berkhamsted development link road.	30	1	1	32
East Herts	Includes the A120 Little Hadham bypass and development access schemes in Gilston and north and south Bishop's Stortford.	28	5	0	33
Hertsmere	Includes capacity enhancement, reconfiguration, signalisation and optimisation of key junctions and speed reduction of town centre.	13	1	0	14
North Herts	Junction improvements and capacity enhancement on key junctions. Provision for sustainable travel, including cycle routes and traffic calming measures. New link road in Baldock.	38	4	5	47
St Albans	Includes capacity enhancement, signalisation and optimisation of key junctions and speed reduction of town centre and London Colney.	27	3	8	38
Stevenage	Junction optimisation on A1(M) J7, A1(M) J8 and Lytton Way/Swingate. Widening of the A1(M).	9	0	2	11
Three Rivers	Junction improvement, signalisation and capacity enhancement on key junctions.	4	0	5	9
Watford	Now includes bus priority speed reductions and general traffic calming measures.	7	1	2	10
Welwyn Hatfield	Includes junction signalisation and capacity enhancement on key junctions and some pedestrian and cycle improvements like speed reductions and safe corridors.	28	1	2	31
Hertfordshire	A1(M) J6-J8 widening to 3 lanes and general improvements to Hertfordshire wide bus and rail services.	1	5	0	6
Outside Hertfordshire	Oxford / Cambridge Expressway in Buckinghamshire.	14	2	0	16
	A5-M1 and M1-A6 links in Central Bedfordshire.				
	Luton enhancements in Vauxhall Way, Gipsy Lane and Town centre ring road.				
	New M11 J7a.				
	Second River Stort crossing in Harlow.				



# Forecast Model Results

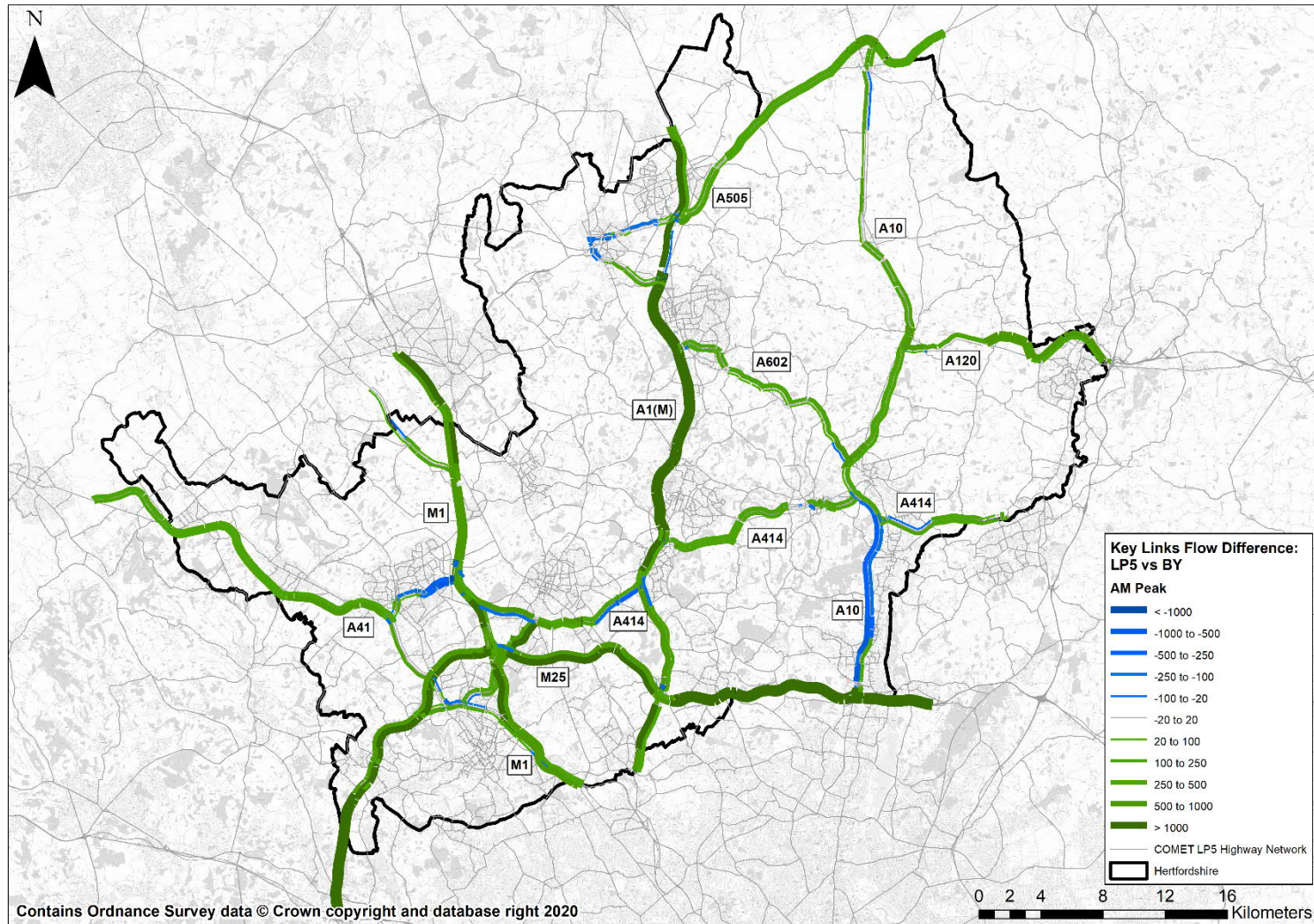
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Forecast Model  
Results:

Flow Differences

# Local Plan Run 5 vs Base Year

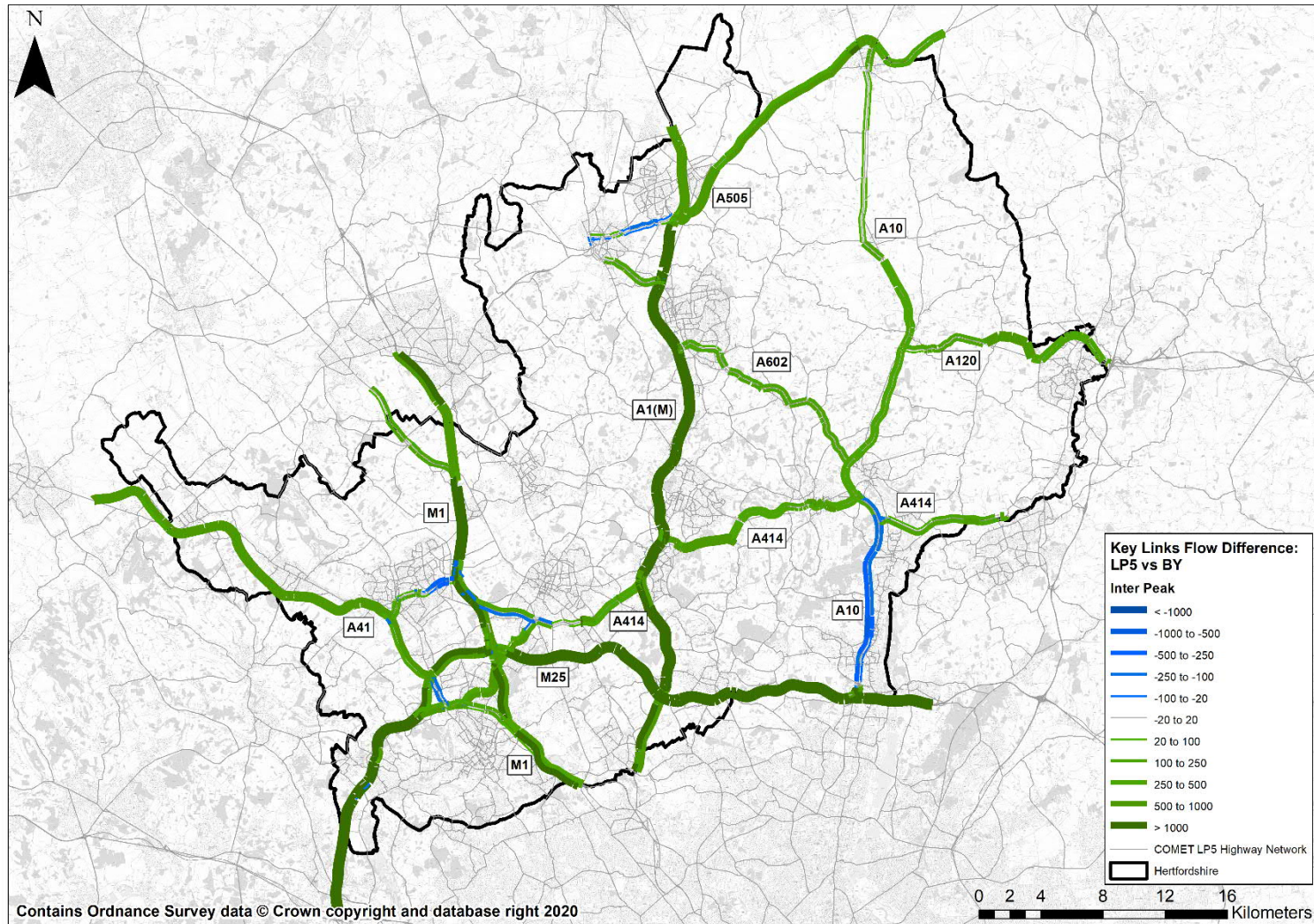
AM Peak - Actual flow difference on Key Links





# Local Plan Run 5 vs Base Year

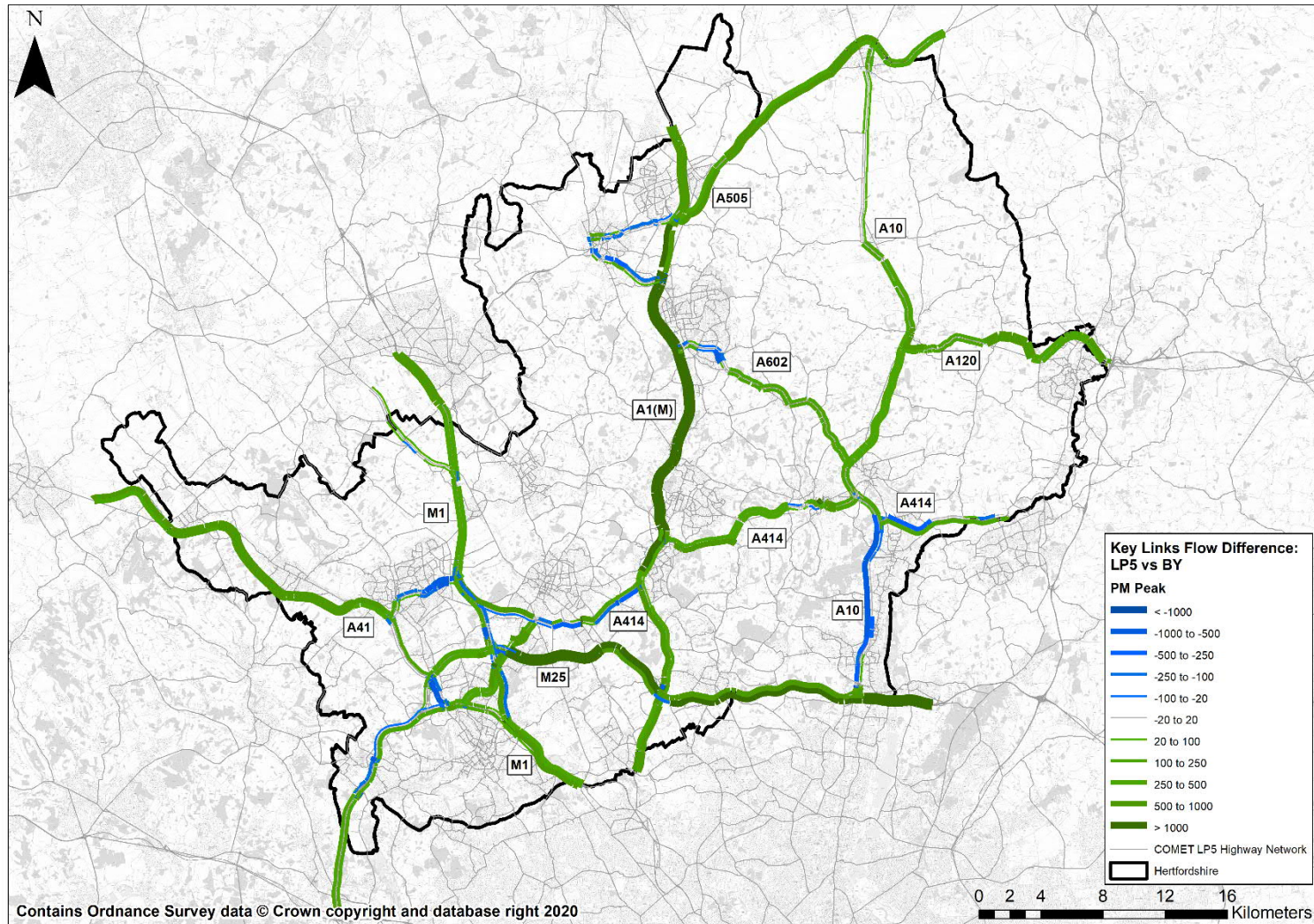
## Inter Peak - Actual flow difference on Key Links





# Local Plan Run 5 vs Base Year

## PM Peak - Actual flow difference on Key Links



# Strategic Impacts

- M1 and A1(M) are more popular for strategic north-south movements than the A10
- Increased flows along the M1, cause delays around junctions 5, 6a, 8, 9 and 10
- A414 broadly operates within capacity, but increased flow on the A414 corridor, between the A10 and A1(M)
- Increased westbound flow on the A414, between the A10 and Harlow, due to delays at the A414/Fifth Avenue junction in Harlow and A414/A1170 junction. This may affect the parallel A120 corridor further north
- Reduced eastbound flow on the A414, between the A10 and Harlow, in the AM and PM, possibly due to upgrades at A1184/West Road/Station Rd junction that allow for re-routeing

# Strategic Impacts

- Reduced flow on the A414 through central Hemel Hempstead due to new routing scheme at M1 Junction 8, the link road across North Hemel and the reduction of the A414 to one lane for general traffic in each direction
- Reduced flow on the A414, between A1(M) and M1 are possibly due to schemes in St Albans, e.g. at A414/A1081/London Colney Roundabout junction, new junction on the A414 connected to the Park Street Garden Village and new link road connecting to A5183 Radlett Road
- Marginal flow increases on the A414 around Hertford – considering that the bypass isn't included in LP5
- A1(M) experiences greatest increase in flows between Hatfield and Stevenage, especially in AM and PM peaks
- Decreased flows on the A602 between Valley Way and Gresley Way in the PM. Traffic prefers to use the parallel Broadwater Crescent / Oaks Cross due to increased delays from signalisation of the A602/Gresley Way Junction.



# Strategic Impacts

- Capacity improvements at M25 Junction 21a are critical and contribute to small reduction in flows between M1 and North Orbital Road. Delays at Junction 21a are also reduced
- Impact of the A120 bypass can be seen linking to the northern ring road around Bishops Stortford
- A10, between the M25 and A414, operates at reduced flows for most of the day, linked to the lower speed limit in place in the 2036 scenario (40mph)
- Western M25 to/from Buckinghamshire is very congested in the AM and IP. The section between the M1 and A10 also experiences high congestion
- Localised flow reduction on the M25 approaching Junction 20 (A41) in the PM peak, due to considerable delays at the junction and delays on A41 approaching junction 20. Expected traffic is avoiding the junction

# Strategic Impacts (comparisons with LP4)

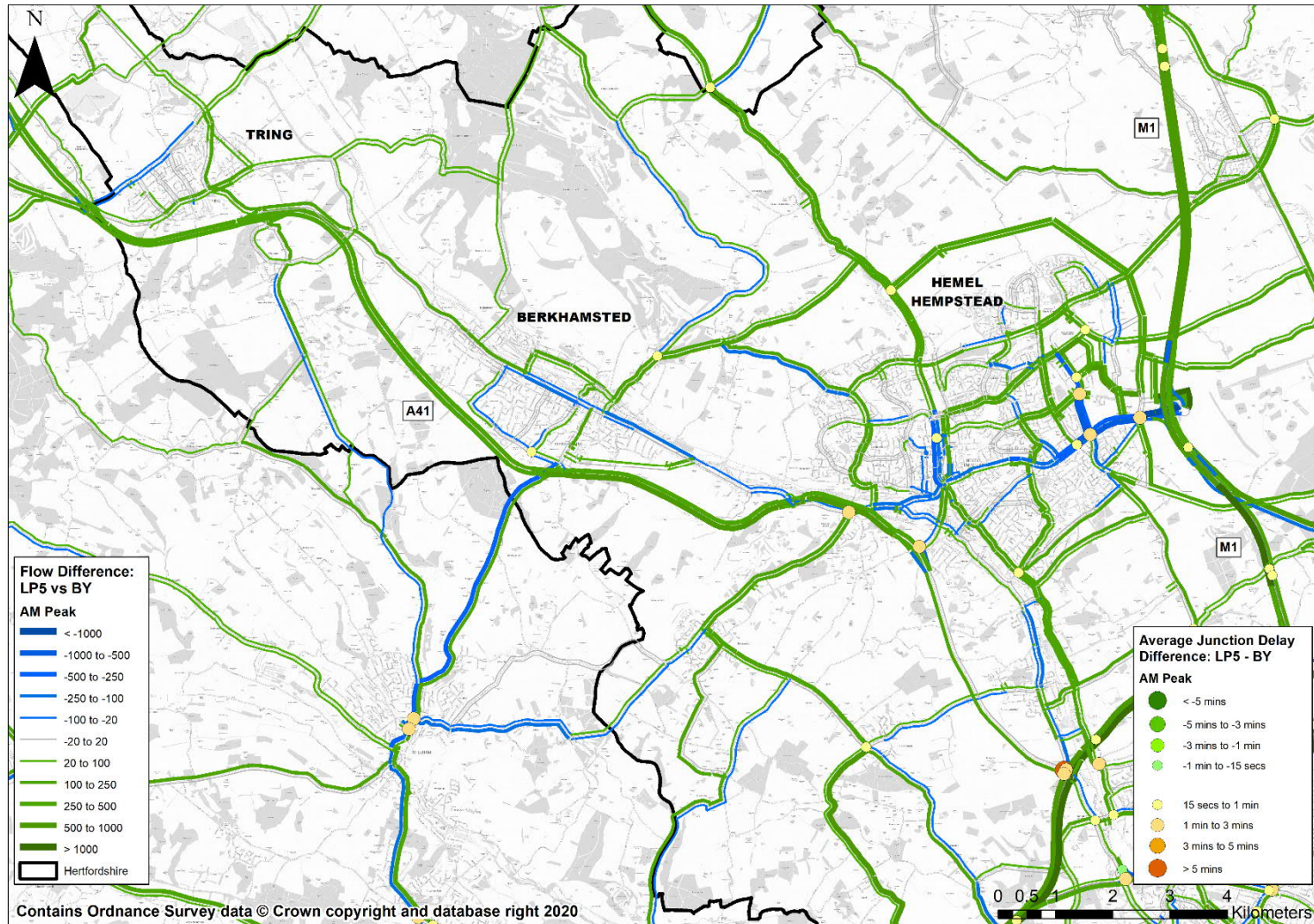
- Flow reduction:
  - on the A10, between the M25 and Hertford
  - locally on the A414, between A1(M) and M1 and around Hemel Hempstead
  - on the A505, between Letchworth Garden City and Hitchin
  - on the A602 near Stevenage in the PM
  - on the A41, south of the M25
  - eastbound on the M25 from Buckinghamshire in the PM
- Flow increase:
  - on the A414 around Hertford
  - on the A1(M), between Hatfield and Welwyn Garden City
  - on the M25, west of the A1(M)
  - on the A41, north of the M25
  - on the A120 leading to Bishop's Stortford
  - on the A602 near Stevenage in the AM
  - marginally on the M1

Abstract blue lines of varying thicknesses and orientations are scattered across the right side of the slide, creating a modern, geometric background.

# Forecast Model Results: Town Flow and Delay Differences

# Local Plan Run 5 vs Base Year

## Hemel Hempstead/Tring/Berkhamsted



# Local Plan Run 5 vs Base Year

## Hemel Hempstead/Tring/Berkhamsted

- Schemes at M1 junction 8, combined with the North Hemel link road, provide a new routing choice through Hemel
- Traffic avoids the A414 through central Hemel Hempstead, possibly due to the reduction in lanes
- Increased flows around Maylands linked to Hemel developments. Delays at M1 junction 8 and junctions along St Albans Road
- Traffic from Tring and Berkhamsted may also use the North Hemel link road rather than the A414/A41 to access the M1/M25 motorways
- A41 will be heavily influenced by the significant growth planned in Aylesbury
- Hemel contains the largest amount of significant infrastructure schemes in Local Plan Run 5, which all contribute to the new routing patterns observed

# Local Plan Run 5 vs Base Year

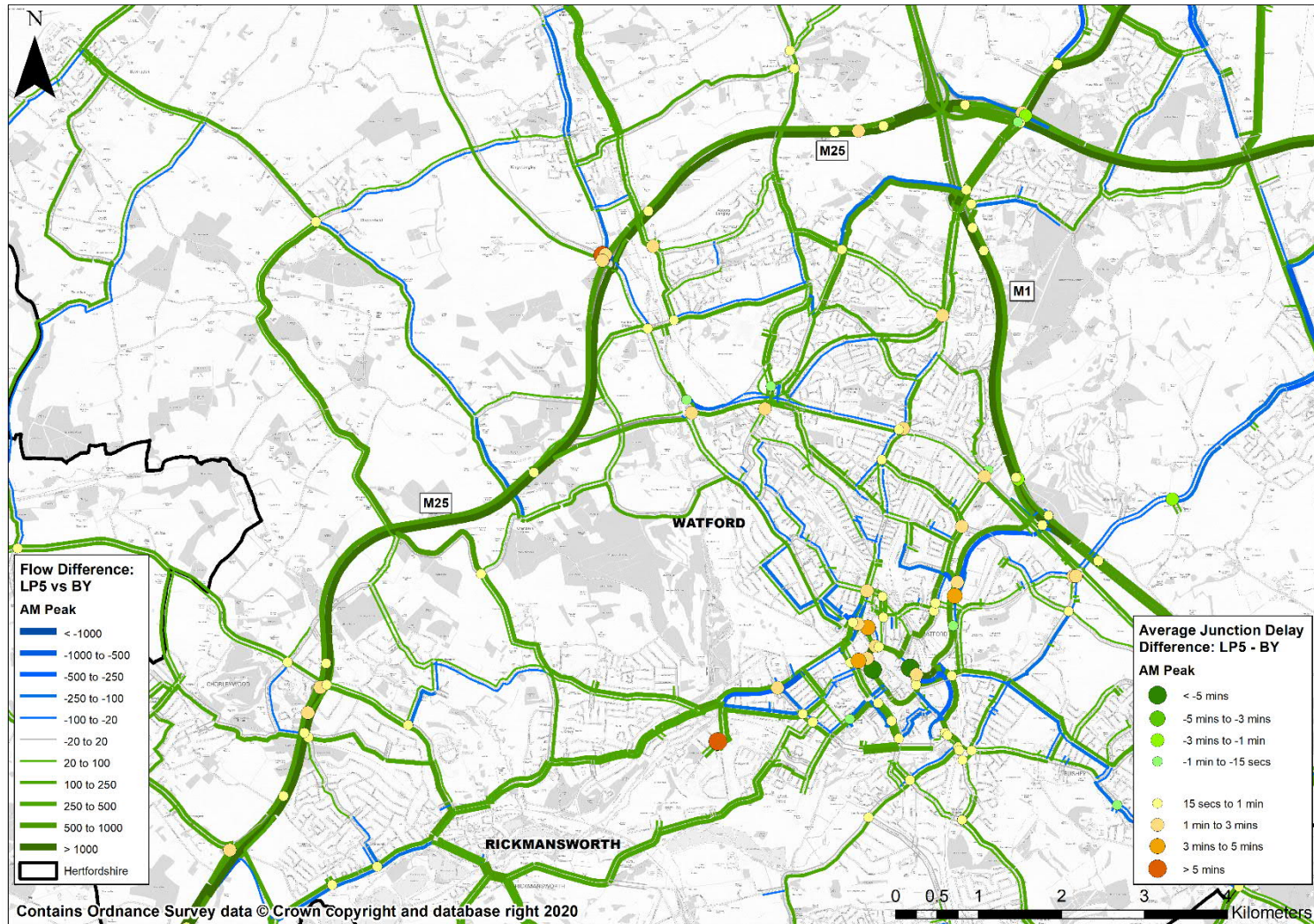
## Hemel Hempstead/Tring/Berkhamsted

- Reduced flows on linkage roads to St Albans Road, possibly linked to improvements at A4147/Hemel Hempstead Road and King Harry Lane junction
- Increased flows on A41 from Tring to M25
- Increased flows on M1 in both directions
- Longest delays (>5min) at M25 Junction 20 (A41) in the AM peak may be influencing route choice in the area
- Reductions in flows around Berkhamsted and linkages with rural routes, possibly due to the new A5-M1 and M1-A6 links
- Flow differences on A41 and M25 higher compared to LP4



# Local Plan Run 5 vs Base Year

## Watford





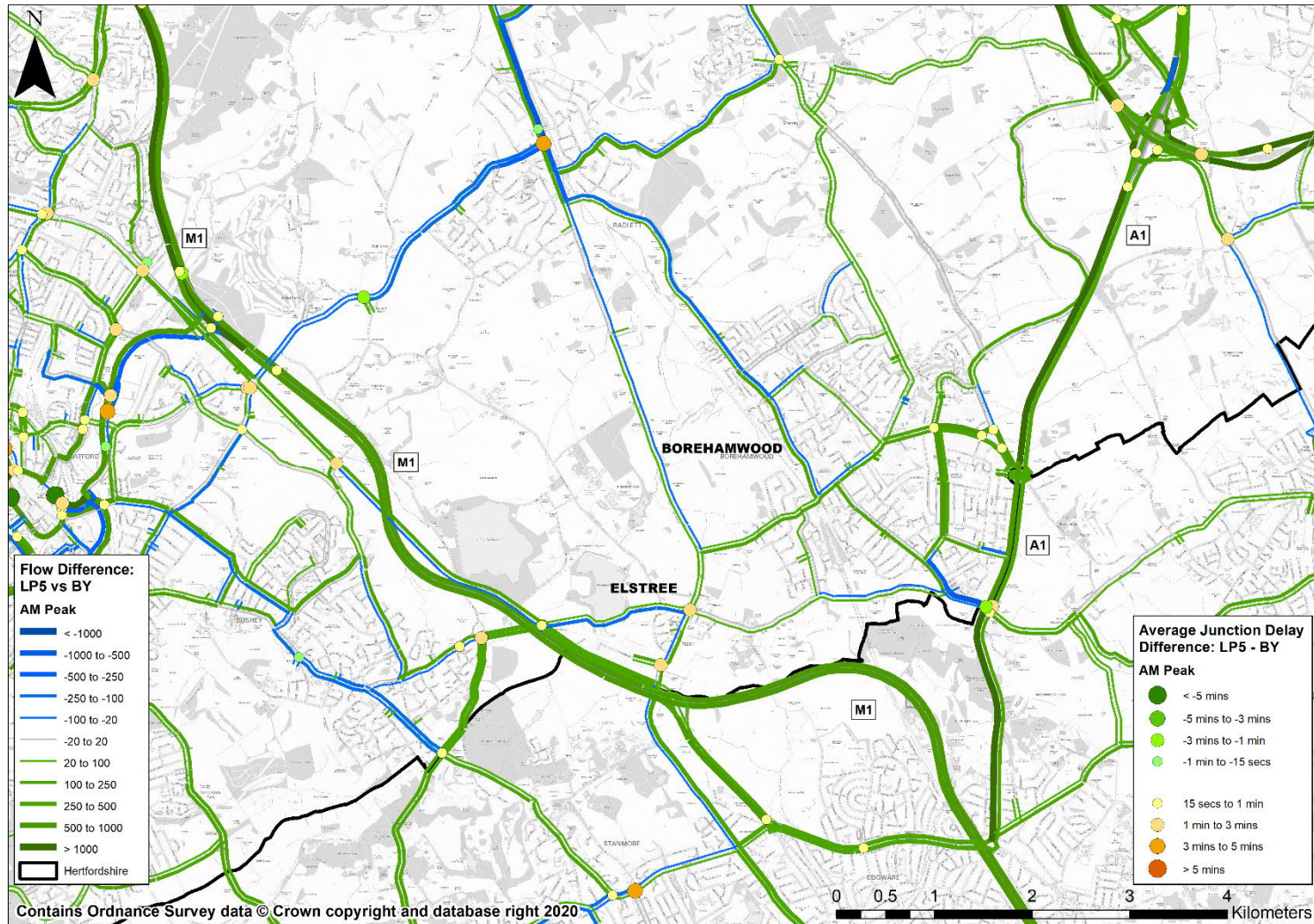
# Local Plan Run 5 vs Base Year

## Watford

- Reduced flows in the centre of Watford, but increased flows in peripheral roads.
- Delays at junctions on M25, east of Rickmansworth and Watford influences re-routeing on rural linkage roads
- Increases in flows around the town centre and Watford junction linked to the new developments. Longest delays in the model (> 5 min) in the PM peak are on M25 Junction 18, around Chorleywood Road and impact routeing in the area
- Increases in flows on M25, M1 and A41 (east of Watford)
- Some reductions between Radlett and Watford, possibly linked to delays at junctions crossing the A41 in either direction
- Delays for traffic crossing the A41 at junctions along A41 in both peak periods
- A 20% decrease in car ownership was applied to specific new developments in Watford

# Local Plan Run 5 vs Base Year

## Elstree & Borehamwood



# Local Plan Run 5 vs Base Year

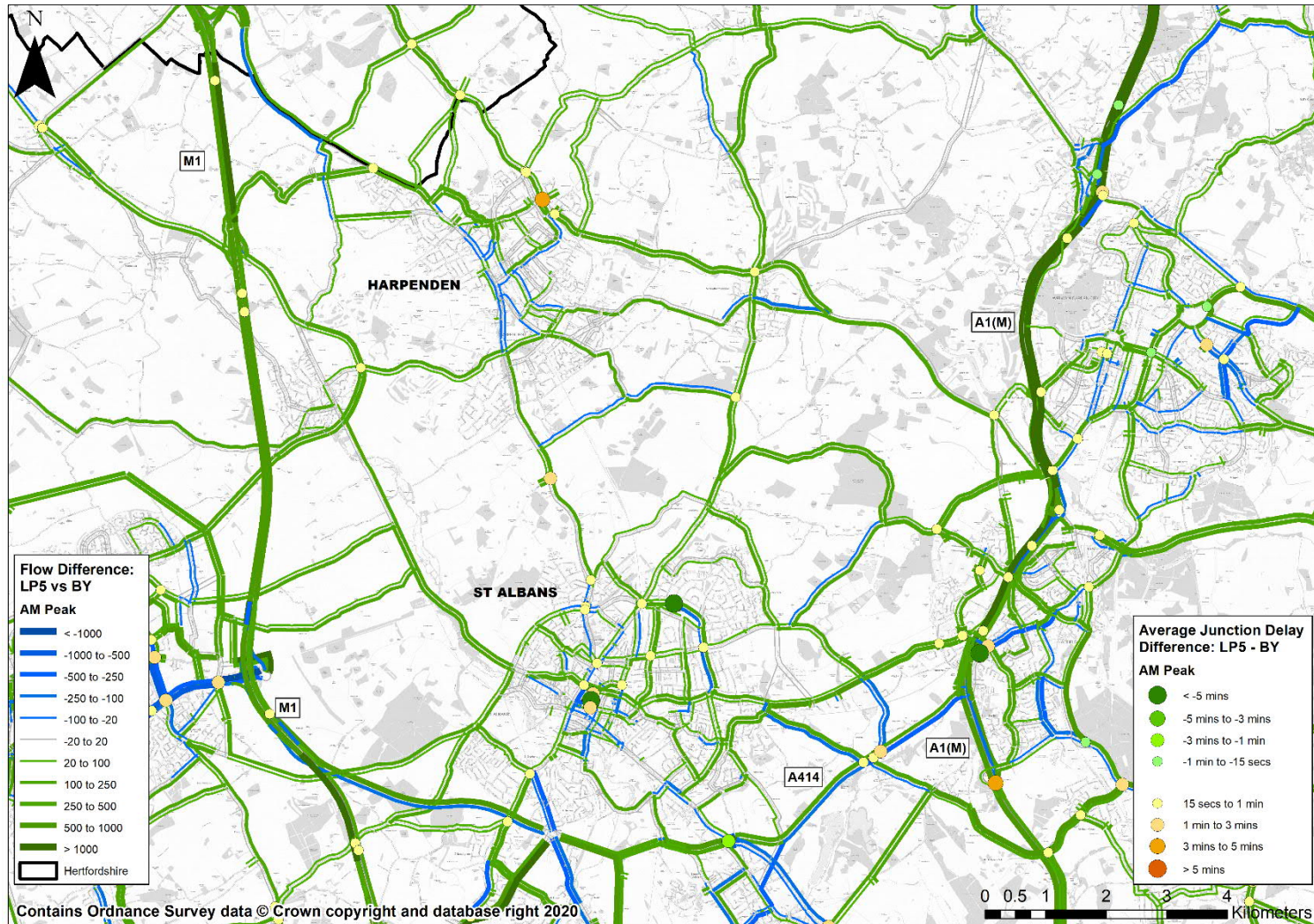
## Elstree & Borehamwood

- Increases in flows around the town centre of Borehamwood, but reductions in flows on cross country routes between London Colney and the M1
- Delays at Stirling Corner continue to influence route choices in the area
- Decreased flows between Stirling Corner roundabout and Borehamwood



# Local Plan Run 5 vs Base Year

## St Albans/Harpenden



# Local Plan Run 5 vs Base Year

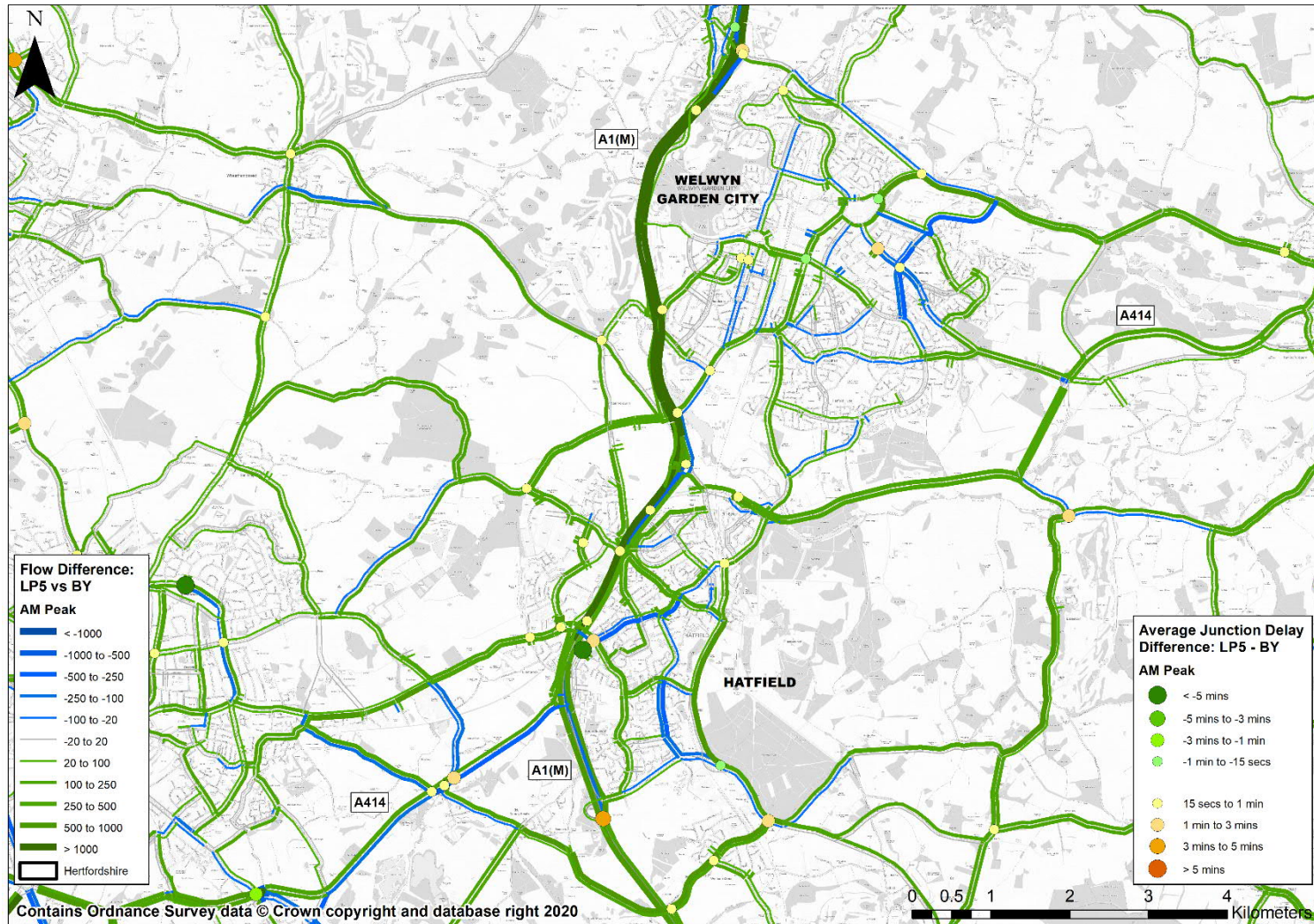
## St Albans/Harpenden

- Reduced eastbound flows along the A414, between the A1(M) and London Colney Roundabout and between Park Street Roundabout and the M1
- Eastbound traffic avoids the A414 and prefers the North Circular to reach the M25. Consequently, increased flows on the North Circular between the A414 and M25
- Decrease in delays at M25 junction 21a and at London Colney Roundabout may be influencing route choice in the area
- Reduced flows to the centre of St Albans due to schemes on A1081/ London Colney Roundabout and A5183/A4147 junctions
- Increased flows on road linkages to Park Street Garden Village
- Localised re-routeing around the town centres may be linked to the expanded 20mph zone
- Most local east-west cross-country routes between Hemel Hempstead and Hatfield show increases in flows



# Local Plan Run 5 vs Base Year

## Hatfield/Welwyn Garden City



# Local Plan Run 5 vs Base Year

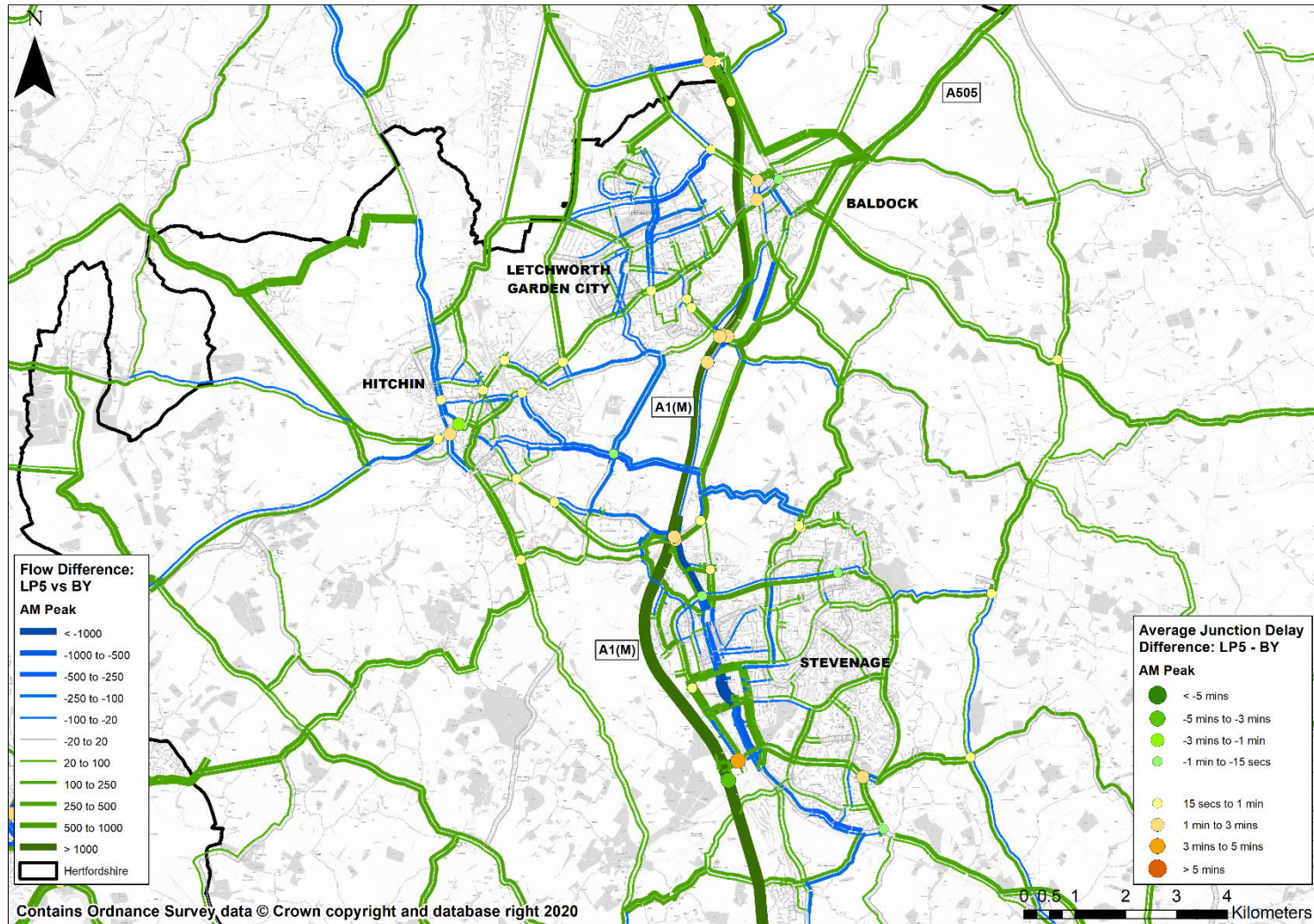
## Hatfield/Welwyn Garden City

- Increased congestion on the A1(M) SB on approach to J6
- Flow increase on the A1(M) significantly higher compared to LP4
- Increased flows on routes to/from these towns
- Increased flows around the town centres but some localised re-routing
- Decreased flows on A414 between A1(M) and M1
- This area will be influenced by the VDM parameter reflecting 5% mode shift



# Local Plan Run 5 vs Base Year

## Stevenage/Hitchin/Baldock



# Local Plan Run 5 vs Base Year

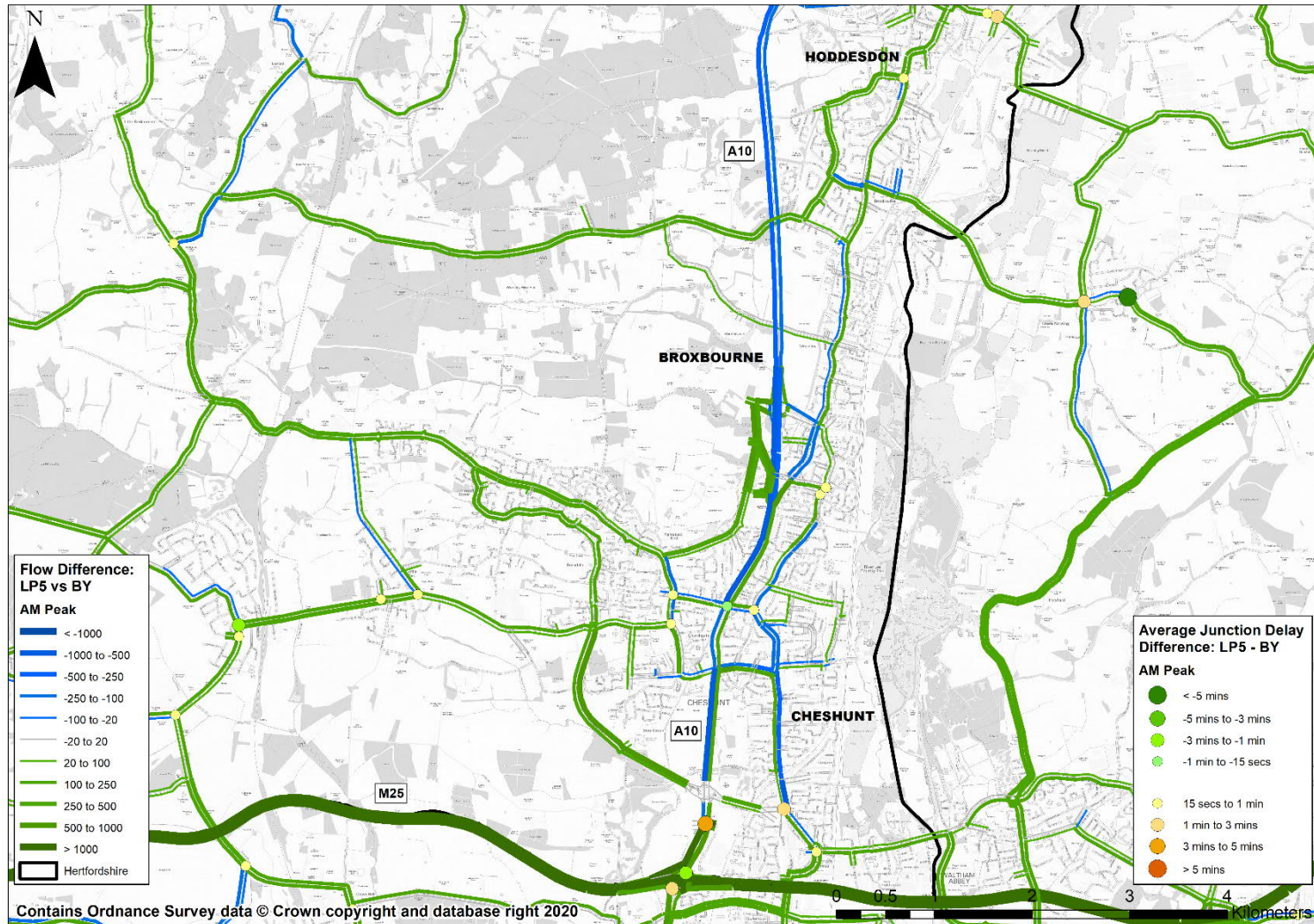
## Stevenage/Hitchin/Baldock

- Extreme congestion on A1(M) past these towns and increased flows on routes to/from towns
- Decreased flows on rural routes to/from Hitchin and north Stevenage. Increased flows to/from Baldock off the A1(M)
- Upgrade of A602 / Gunnels Wood Road / GSK junction results in some re-routeing on local roads around Stevenage town centre.
- Delays at junctions 8 and 9 of the A1(M), due to increased traffic. Increase in delays in the PM peak at these junctions
- A 20% decrease in car ownership was applied to specific new developments in Stevenage



# Local Plan Run 5 vs Base Year

## Broxbourne



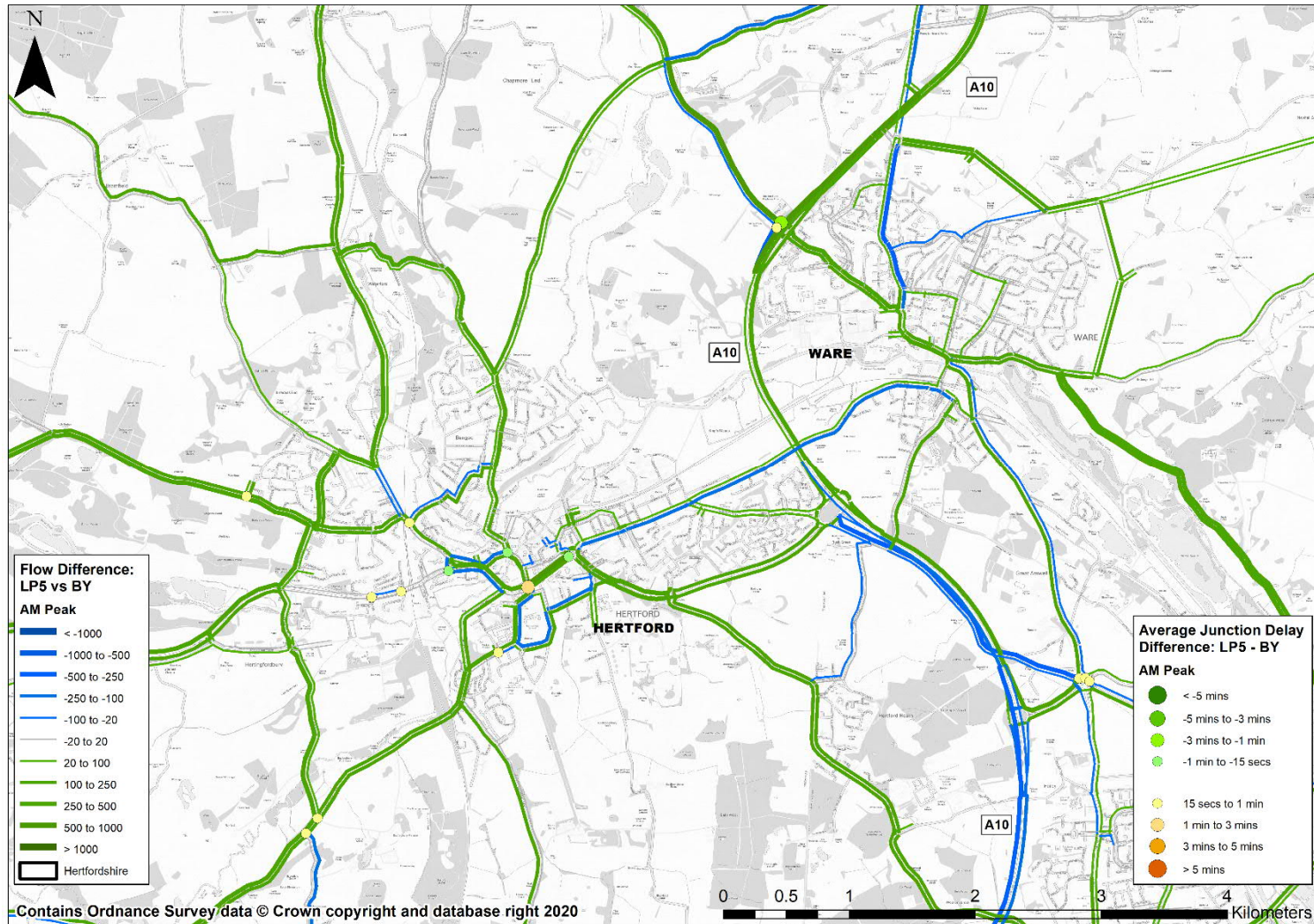
# Local Plan Run 5 vs Base Year

## Broxbourne

- Decreased flows on the A10, especially northbound due to the speed limit reduction to 40mph
- Decreased flows on Church Lane, east of A10, possibly related to the prohibition of right turns
- M25 operating above capacity around Broxbourne
- Some reductions on old A1170, especially northbound and around Cheshunt
- Increased flows east/west rural routes to/from Broxbourne

# Local Plan Run 5 vs Base Year

## Hertford/Ware





# Local Plan Run 5 vs Base Year

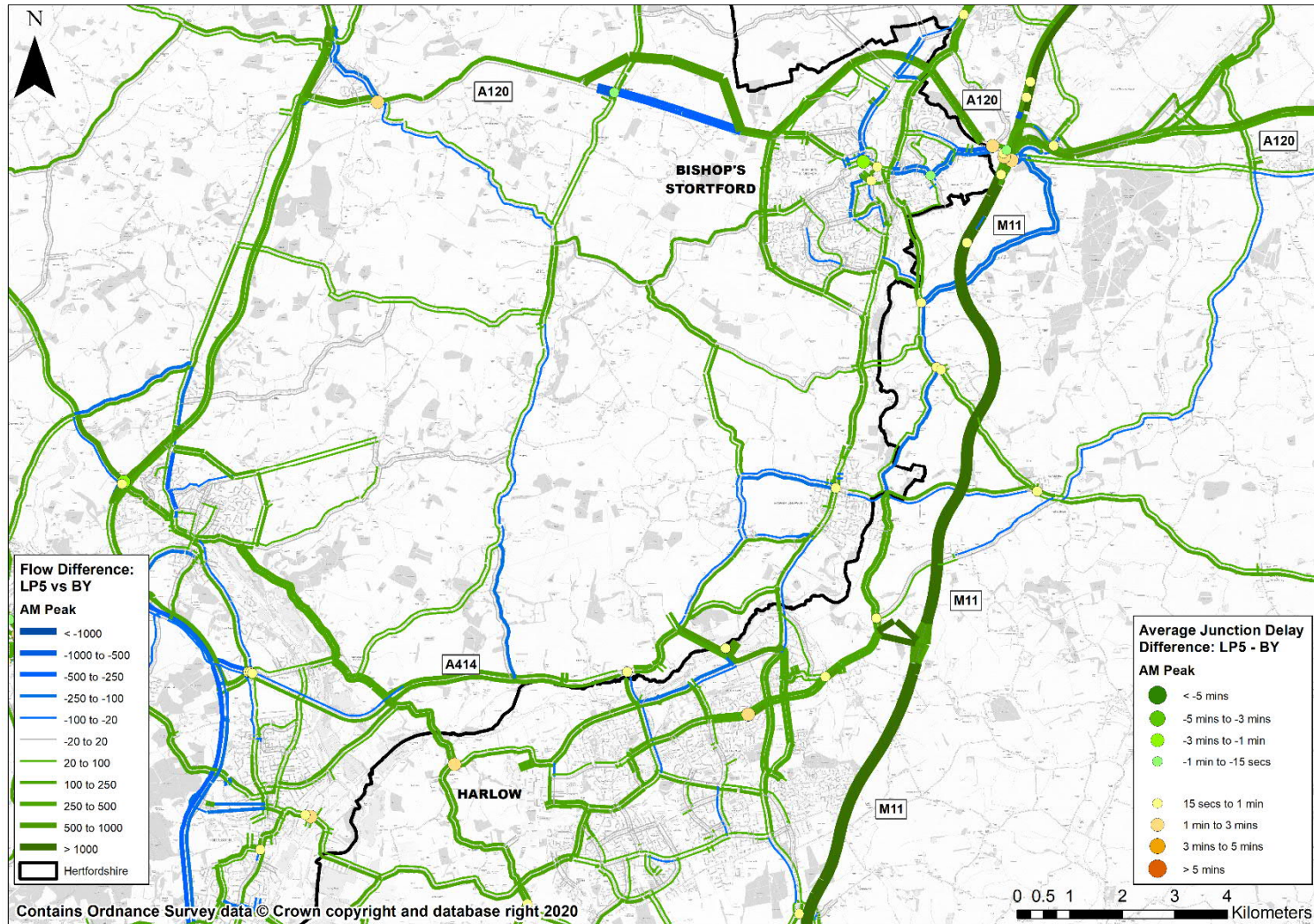
## Hertford/Ware

- Increased flows on the A414 between Hertford and Ware
- Increased flows on routes through Hertford and Ware
- Decreased flows on the A10, south of Rush Green linked to the speed limit reduction implemented
- B158, between Hertford and A602, experiences increased flows
- Reduced flows on the A602 northbound, between A10 and B158. Possibly due to the signalisation and upgrade of A10 / A602 junction
- Increased flows on the eastbound and decreased flows on the westbound of the A119 (between Hertford and the A1170)



# Local Plan Run 5 vs Base Year

## East Herts/Harlow



# Local Plan Run 5 vs Base Year

## East Herts/Harlow

- Increased flows on A414 through Harlow, but some localised (minimal) re-routeing around the town which is linked to the delays at junctions in Harlow
- Increased flows on A120 and using Little Hadham bypass – less flows through the junction
- Increased flows around the outer link roads around Bishops Stortford and some localised re-routeing the town centre due to the development on Rye Street
- Minimal increase in flows (especially northbound) between Harlow and Stansted via rural routes
- M11 Junction 7a influencing route choices in the area
- Flow reductions on Church Road, between the A1060 and B1256

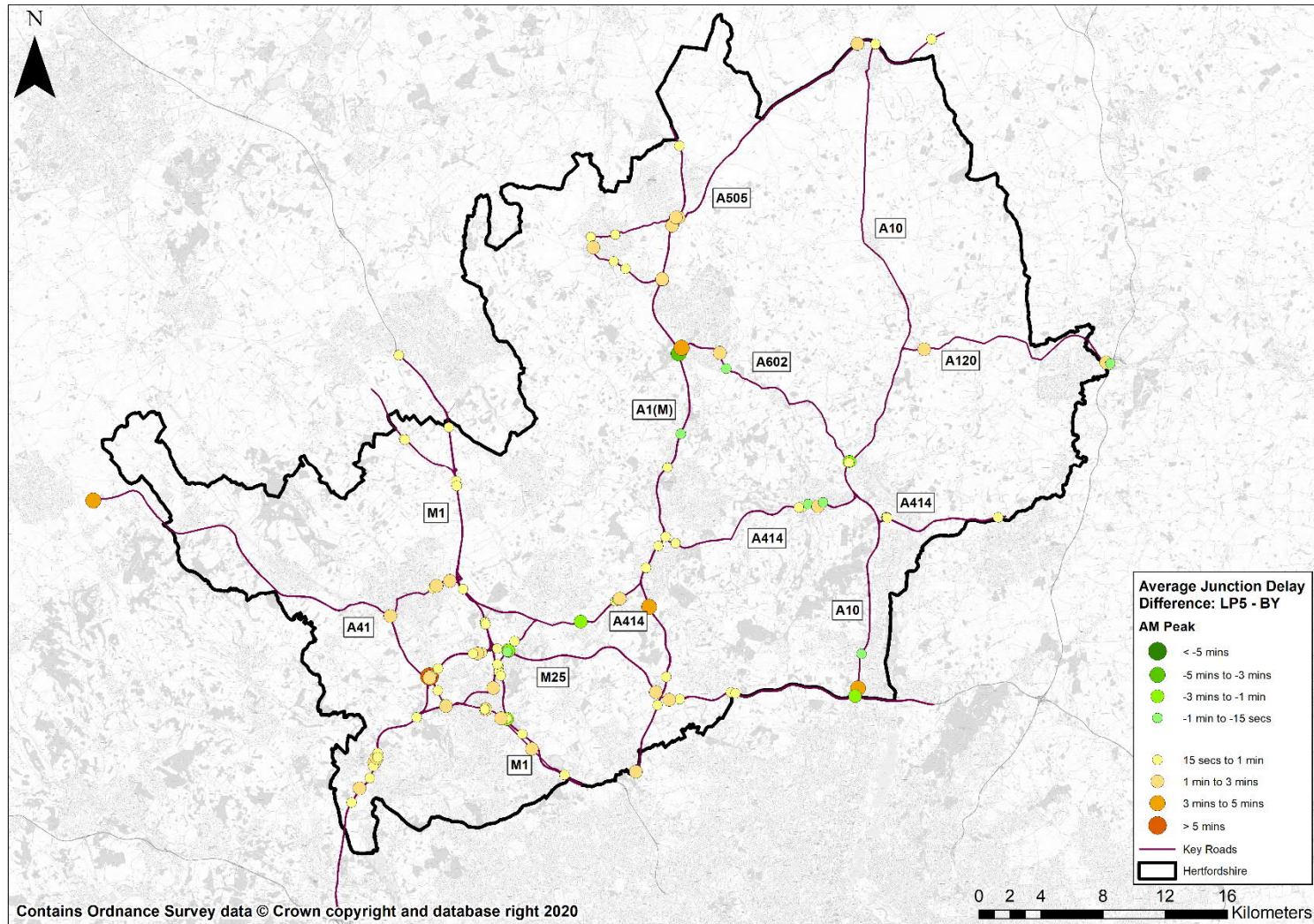
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# Forecast Model Results: Delay Differences



# Local Plan Run 5 vs Base Year

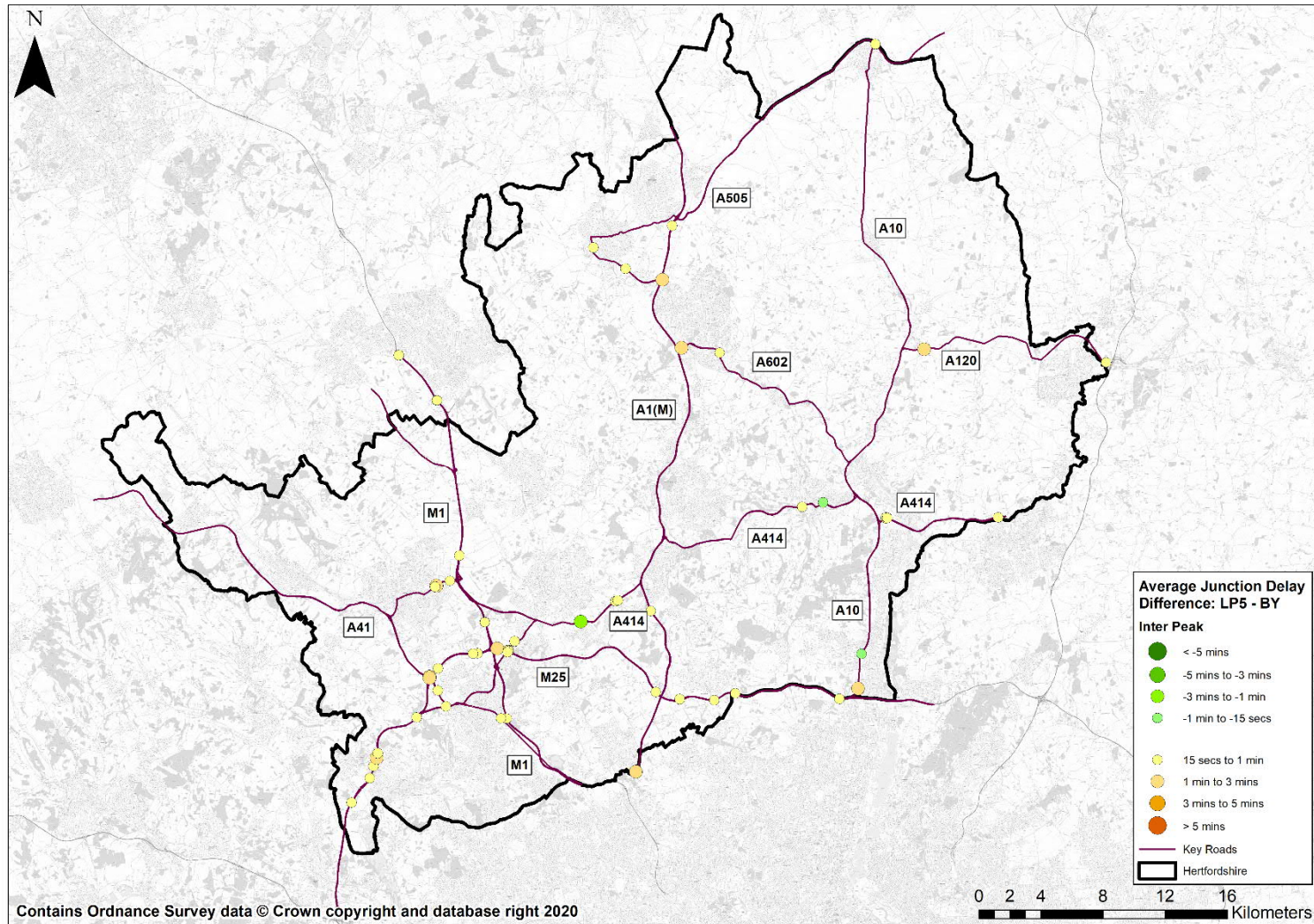
## AM Peak – Delay Differences at Key Junctions





# Local Plan Run 5 vs Base Year

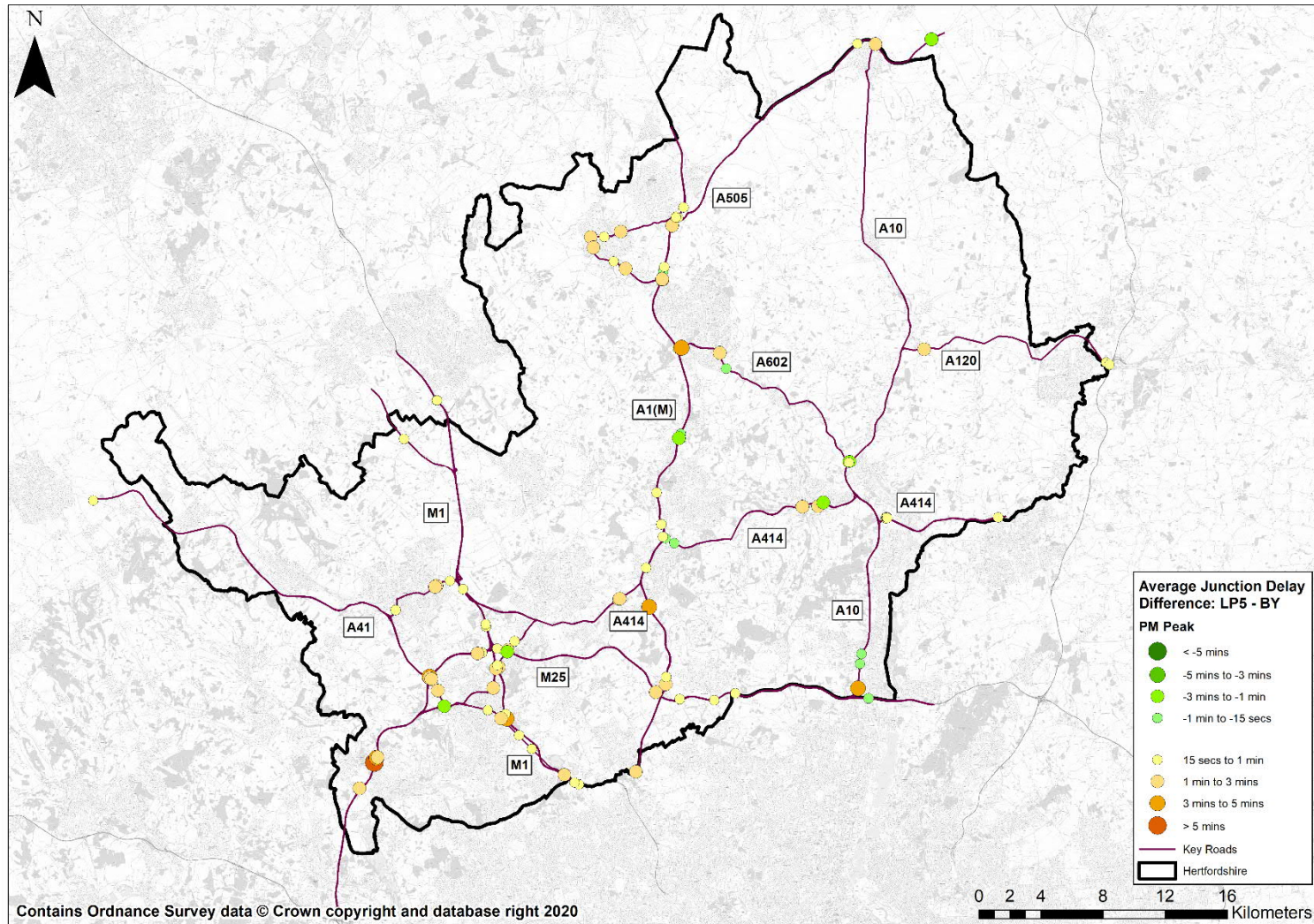
## Inter Peak – Delay Differences at Key Junctions





# Local Plan Run 5 vs Base Year

## PM Peak – Delay Differences at Key Junctions



## Delay Differences - Summary

- Delays can be seen to increase across the western half of Hertfordshire (west of the A1(M))
- Up to 3 minutes increases in delays:
  - on the western section of the M25
  - on the M1 approaching the M25
  - around the M25 Junction 21 (M1) and at Watford Road/A405 junction
  - around the A1(M) and M25 at Junction 23
  - on the A120 at Bishop's Stortford
- Up to 6min decreases in delays at the :
  - A414/London Colney Roundabout junction
  - M25 Junction 21A towards the A405 to St Albans
  - M25 Junction 25 (A10) and the A10/Church Lane junction
  - A602/GSK Junction 7 (A1(M))

## Delay Differences - Summary

- Increases in delays along the A414 in Hemel may be due to the reduced road capacity
- Overall, increase in delays on junctions along the A1(M) and M1, due to the flow increases
- Decrease in delays on the A10, due to the flow reductions
- Decrease in delays on the A602, due to junction upgrades
- East-west movements via the A414 experience increased delays at key junctions and town centres, including Hertford, A1(M) Junction 4 and M1 Junction 8
- Compared to LP4, it is clear that delays increase significantly across the strategic routes, especially in south west Hertfordshire

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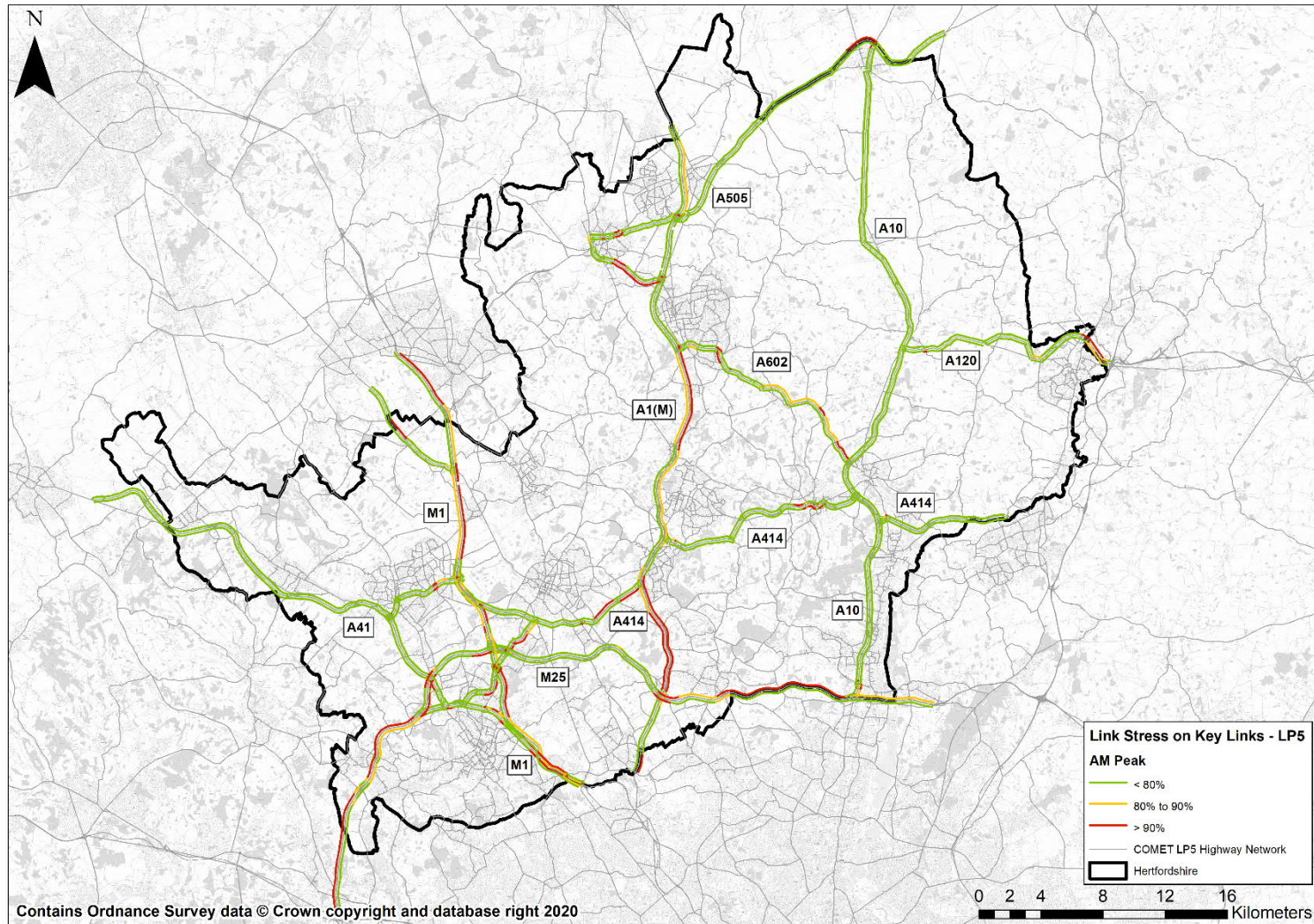
Forecast Model Results:

Volume over Capacity on  
Key Links



# Local Plan Run 5

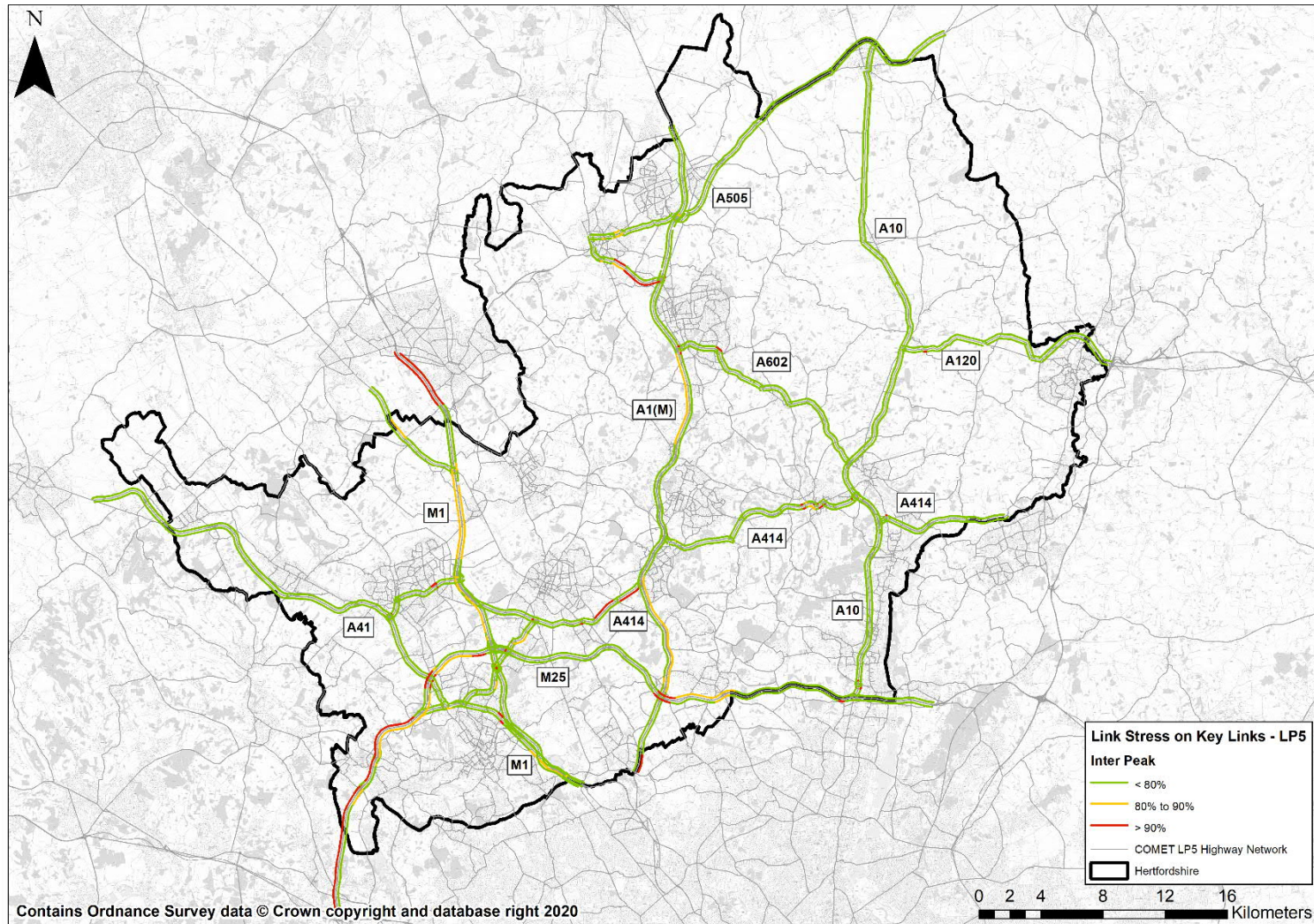
## AM Peak – Volume over Capacity Ratio on Key Links





# Local Plan Run 5

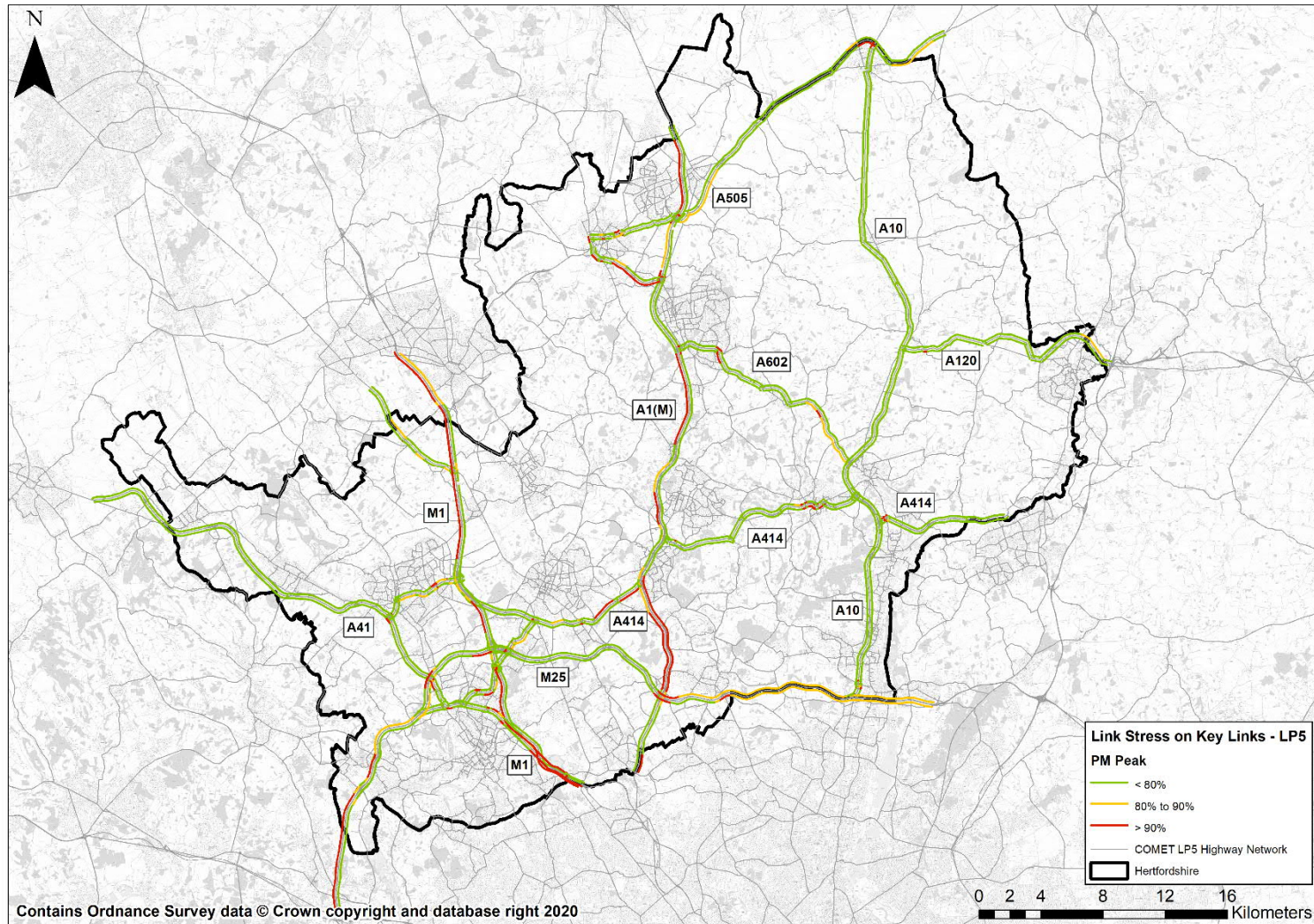
## Inter Peak – Volume over Capacity Ratio on Key Links





# Local Plan Run 5

## PM Peak – Volume over Capacity Ratio on Key Links



## Link Stress - Summary

- High link stress on most of key links in the western half of Hertfordshire (west of the A1(M))
- Link stress above 80% on the:
  - M25 east of the A1(M) and west of the M1
  - A1(M) between the M25 and A414 and between Hatfield and Stevenage
  - A414 around Hertford and between the A1(M) and London Colney Roundabout junction
  - M1, north of Hemel Hempstead
  - A602 towards Hitchin
  - A120 at Bishop's Stortford
- Increased link stress on the A1(M) and M1 due to increased flows
- Increased link stress on the A602 due to delays along the link
- Decreased link stress on the A10 due to reduced flows and decreased delays

## Link Stress Comparisons with LP4

- Significant increase in congestion on the M25, between the A10 and A1(M) and west of the M14
- Increased congestion on the A1(M) between the M25 and Hatfield
- Significant increase in congestion on the M1 south of Hertfordshire and approaching the M25, and between Hemel Hempstead and Luton
- Western Hertfordshire experiences more congestion than eastern Hertfordshire (consistent with LP4)



Four thin, light blue lines intersect in the top right corner of the slide, creating a geometric pattern.

# Forecast Model Results: Journey Time Changes

# Local Plan Run 5 vs Base Year

## AM Peak

LP5 vs  
BY

2036 LP5 - BY AM (min)											
Town	Bishop's Stortford	Cheshunt	Borehamwood	Rickmansworth	Watford	Hertford	Welwyn Garden City	Stevenage	Hitchin	St Albans	Hemel Hempstead
Bishop's Stortford	0	5	9	17	16	0	0	1	7	6	17
Cheshunt	9	0	9	17	16	9	3	11	9	11	18
Borehamwood	14	17	0	12	15	10	8	10	8	6	11
Rickmansworth	15	17	2	0	3	11	10	12	8	5	5
Watford	13	15	10	3	0	9	8	10	7	4	4
Hertford	1	3	7	14	12	0	0	1	3	4	14
Welwyn Garden City	3	6	7	14	12	3	0	4	3	3	11
Stevenage	3	7	6	13	11	5	4	0	5	4	10
Hitchin	8	10	8	12	12	7	5	5	0	4	9
St Albans	7	12	3	9	6	7	5	7	3	0	3
Hemel Hempstead	19	22	9	5	7	11	7	9	6	2	0

# Local Plan Run 5 vs Base Year

## Inter Peak

2036 LP5 - BY IP (min)

Town		Bishop's Stortford	Cheshunt	Borehamwood	Rickmansworth	Watford	Hertford	Welwyn Garden City	Stevenage	Hitchin	St Albans	Hemel Hempstead
LP5 vs BY	Bishop's Stortford	0	4	8	12	11	1	3	3	7	4	9
	Cheshunt	4	0	7	10	10	6	2	8	5	8	13
	Borehamwood	6	10	0	4	4	2	1	4	4	1	5
	Rickmansworth	10	14	5	0	1	7	6	9	6	5	4
	Watford	8	13	7	2	0	4	2	5	5	2	6
	Hertford	0	4	1	6	4	0	0	1	2	1	6
	Welwyn Garden City	0	3	1	6	3	1	0	2	2	1	4
	Stevenage	1	5	2	7	4	1	1	0	3	2	7
	Hitchin	5	8	3	7	4	3	2	4	0	1	5
	St Albans	2	9	1	6	3	2	0	3	1	0	1
	Hemel Hempstead	12	16	5	5	4	6	3	7	4	1	0

# Local Plan Run 5 vs Base Year

## PM Peak

LP5 vs  
BY

2036 LP5 - BY PM (min)

Town	Bishop's Stortford	Cheshunt	Borehamwood	Rickmansworth	Watford	Hertford	Welwyn Garden City	Stevenage	Hitchin	St Albans	Hemel Hempstead
Bishop's Stortford	0	5	11	17	16	0	1	3	7	5	18
Cheshunt	5	0	7	13	13	8	3	10	8	8	13
Borehamwood	11	16	0	9	7	7	4	7	6	4	10
Rickmansworth	18	22	13	0	4	18	15	18	15	14	11
Watford	19	23	15	5	0	18	16	19	17	12	13
Hertford	0	3	6	10	8	0	0	2	5	3	9
Welwyn Garden City	2	6	7	11	9	3	0	5	3	2	8
Stevenage	2	6	7	11	9	3	1	0	5	6	11
Hitchin	6	9	10	14	12	6	4	7	0	1	9
St Albans	4	10	2	7	5	4	2	4	2	0	1
Hemel Hempstead	16	18	8	6	8	10	6	8	5	2	0



# Local Plan Run 5 (journey times)

## AM Peak

2036 LP5 AM (min)

Town		Bishop's Stortford	Cheshunt	Borehamwood	Rickmansworth	Watford	Hertford	Welwyn Garden City	Stevenage	Hitchin	St Albans	Hemel Hempstead
LP5 2036	Bishop's Stortford	0	41	54	74	75	32	44	43	51	65	75
	Cheshunt	44	0	33	53	54	29	34	45	50	44	54
	Borehamwood	60	39	0	38	41	35	30	37	39	30	39
	Rickmansworth	73	52	33	0	16	49	46	53	53	32	24
	Watford	71	50	33	16	0	47	44	51	51	30	22
	Hertford	32	26	34	53	53	0	13	23	33	33	48
	Welwyn Garden City	45	34	31	49	50	14	0	23	24	24	41
	Stevenage	45	44	41	60	60	27	30	0	17	39	52
	Hitchin	54	56	47	60	58	39	35	19	0	38	46
	St Albans	65	44	28	39	35	34	27	36	35	0	23
	Hemel Hempstead	81	60	40	28	32	51	45	52	45	23	0

# Local Plan Run 5 (journey times)

## Inter Peak

2036 LP5 IP (min)

Town		Bishop's Stortford	Cheshunt	Borehamwood	Rickmansworth	Watford	Hertford	Welwyn Garden City	Stevenage	Hitchin	St Albans	Hemel Hempstead
LP5 2036	Bishop's Stortford	0	38	52	67	66	31	41	42	49	56	68
	Cheshunt	38	0	27	43	41	24	29	40	44	37	45
	Borehamwood	48	31	0	30	28	26	22	30	33	24	32
	Rickmansworth	64	47	32	0	14	44	40	49	48	31	22
	Watford	62	45	27	15	0	41	37	45	46	28	23
	Hertford	30	22	25	43	39	0	11	21	29	27	40
	Welwyn Garden City	41	30	22	39	35	12	0	20	22	20	35
	Stevenage	40	35	28	45	41	21	17	0	15	30	42
	Hitchin	47	45	33	50	44	29	22	16	0	32	39
	St Albans	54	38	23	32	27	27	21	31	32	0	20
	Hemel Hempstead	68	49	32	24	22	40	35	44	40	21	0

# Local Plan Run 5 (journey times)

## PM Peak

2036 LP5 PM (min)

Town		Bishop's Stortford	Cheshunt	Borehamwood	Rickmansworth	Watford	Hertford	Welwyn Garden City	Stevenage	Hitchin	St Albans	Hemel Hempstead
LP5 2036	Bishop's Stortford	0	39	56	75	73	31	42	44	51	63	76
	Cheshunt	43	0	29	48	46	28	31	46	51	40	48
	Borehamwood	57	37	0	36	34	32	27	40	41	27	37
	Rickmansworth	79	59	43	0	17	59	54	67	66	44	39
	Watford	90	70	47	18	0	69	65	77	74	49	43
	Hertford	32	27	33	49	45	0	11	24	35	32	45
	Welwyn Garden City	45	36	30	46	42	14	0	27	27	25	40
	Stevenage	44	40	35	51	47	24	18	0	19	35	47
	Hitchin	50	53	44	60	55	34	26	20	0	35	46
	St Albans	62	43	26	34	30	31	24	38	35	0	22
	Hemel Hempstead	78	55	36	26	29	47	41	52	47	22	0

## Journey Time Changes - Summary

- Compared to Base Year, the PM peak shows greatest increases in journey times locally, however the average increase in both the AM and PM peaks is ~8 minutes
- This can be explained by the increased congestion on key links in the AM peak and increased delays at key junctions in the PM peak
- Overall, the AM and PM journey times in 2036 are similar, but locally slightly more increased in the PM peak
- Towns in the south and west of Hertfordshire experience some of the greatest changes in journey times due to the congestion on the network
- Increased journey times for routes passing through the M1/M25, A1(M)/M25 and A1(M)/A414 junctions, due to increased flows and delays at that junction.



## Journey Time Changes (comparisons with LP4)

- Increased journey times for Hemel Hempstead, Rickmansworth and Watford
- Hertford bypass in LP4 was providing an alternative route choice across the county, that explains reductions in journey time from north east districts to south west districts, e.g. Bishop's Stortford to Hemel Hempstead
- Journey times in LP5 are more sensitive to delays as a result of new saturation flows used in COMETv5 when compared to results from LP4