



Figure 39. Relief of Junction Congestion – With Development Scenario vs Highway Mitigation Scenario – Amber Valley - Morning Peak

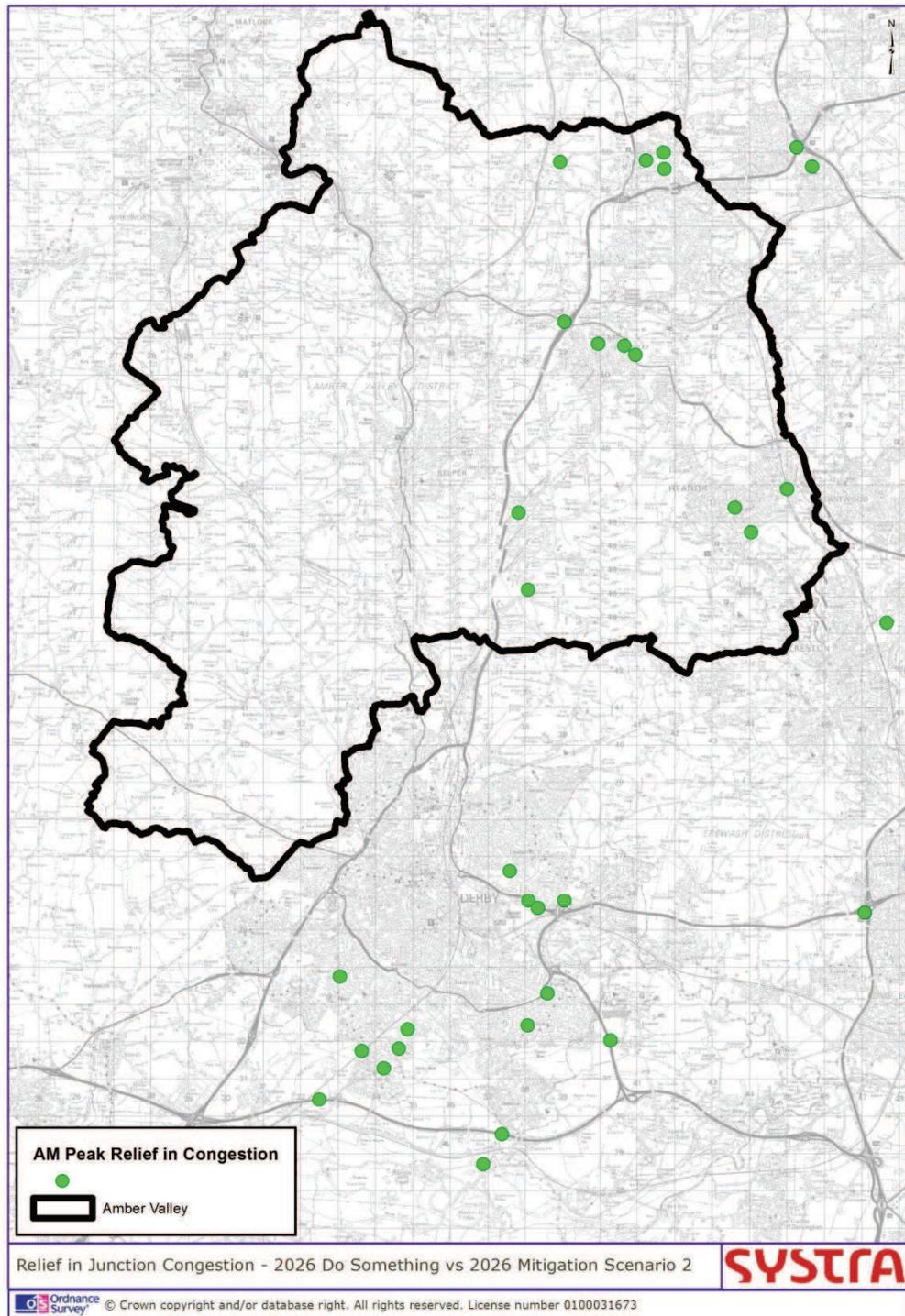
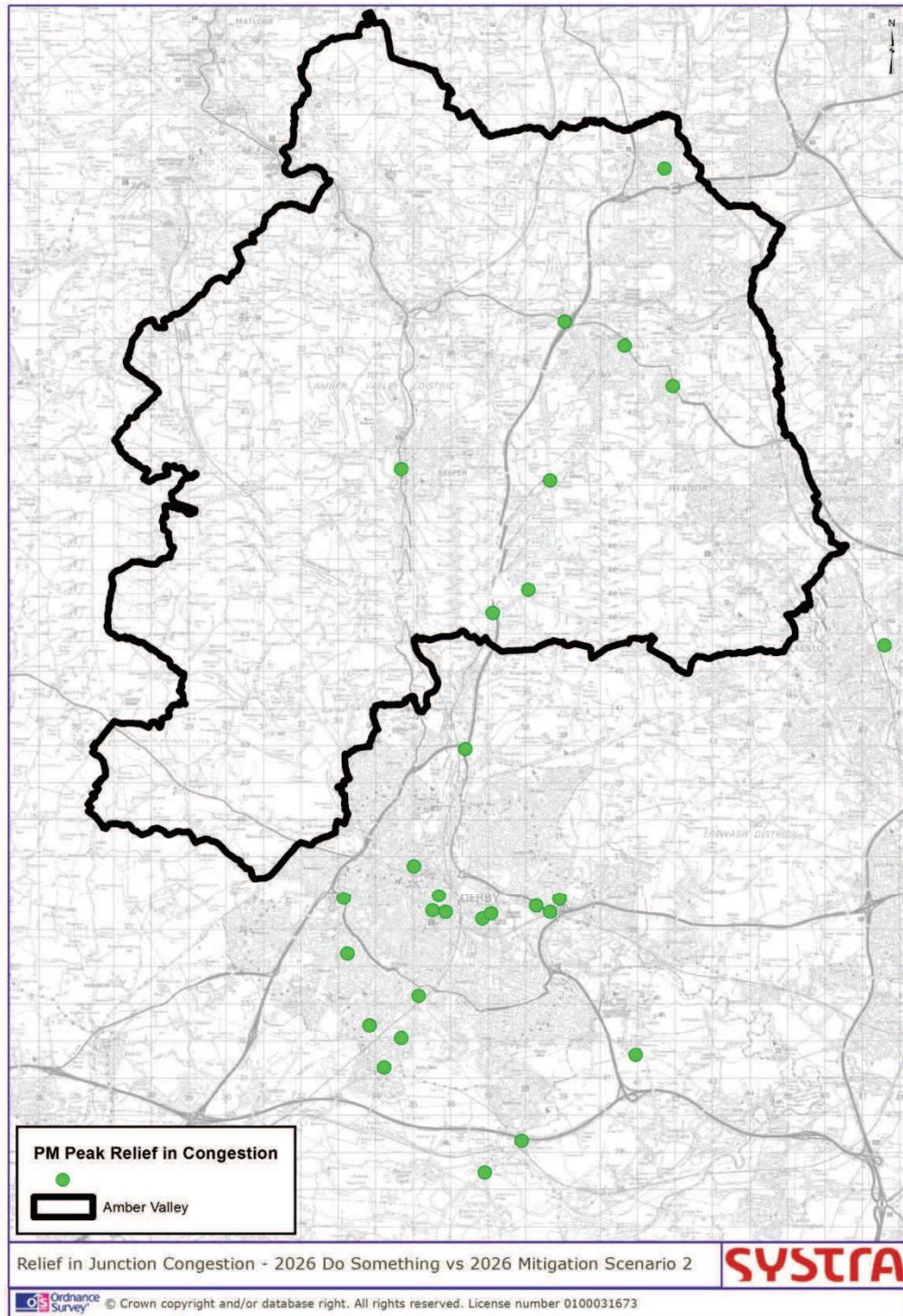




Figure 40. Relief of Junction Congestion – With Development Scenario vs Highway Mitigation Scenario – Amber Valley - Evening Peak



**Network Indicators**

7.4.12 The Network Indicators for the Highway Mitigation and With Development Scenarios are provided in Tables 22 and 23. This indicates that congestion in Amber Valley, as indicated by the over-capacity queues indicator, reduces as a result of Highway Mitigation proposals (25% in the AM peak and 20% in the PM peak). The reduction equates to a mitigation of 44% in the morning peak and 38% in the evening peak.

7.4.13 The average speed is forecast to increase by 4% across both peaks; a mitigation of 50% in the morning peak and 53% in the evening peak.

Table 22. Network Indicators (morning peak) – Amber Valley

INDICATOR	MORNING PEAK			
	REF CASE	WITH DEV.	FULL MITIGATION SCENARIO	PERCENTAGE MITIGATION
Over Capacity Queues (PCU Hrs)	220	514	386	44%
Total Travel Time (PCU Hrs)	6,124	7,206	6,935	25%
Total Travel Distance (PCU kms)	324,116	354,964	354,222	2%
Average Speed (km/hr)	52.9	49.3	51.1	50%

Table 23. Network Indicators (evening peak) – Amber Valley

INDICATOR	EVENING PEAK			
	REF CASE	WITH DEV.	FULL MITIGATION SCENARIO	PERCENTAGE MITIGATION
Over Capacity Queues (PCU Hrs)	171	365	292	38%
Total Travel Time (PCU Hrs)	5,856	6,989	6,687	27%
Total Travel Distance (PCU kms)	318,540	356,356	352,838	9%
Average Speed (km/hr)	54.4	51	52.8	53%



7.5 Modelling Results – Derby City

Flow Difference

- 7.5.1 Figures 41 and 42 show the flow difference between the 'With Development' (No Mitigation) and Highway Mitigation scenarios for the morning and evening peak hours respectively. Blue lines indicate roads which are forecast to experience an increase in traffic between the With Development Scenario and the Highway Mitigation Scenario, whilst green lines indicate roads which are forecast to experience a decrease in traffic.
- 7.5.2 Reduction in traffic is forecast along the following routes in Derby City as a result of the Highway Mitigation measures:
- Grampian Way (Both peaks);
 - Sinfin Lane (Both peaks);
 - Wilmore Road (Both peaks);
 - Derwent Parade (Both peaks);
 - Boulton Lane (Morning Peak);
 - A5132 east of Swarkestone (Morning Peak); and
 - T12 southern section (Evening Peak).
- 7.5.3 However, as a result of the highway mitigation traffic moves to the South Derby Integrated Transport Link, the northern section of T12, the A52 around Wyvern and the A5111 Raynesway.

Junction Congestion

- 7.5.4 A junction is considered to become relieved of congestion when the With Development Scenario V/C ratio is more than 85% and due to mitigation it decreases to below 85% in the Highway Mitigation Scenario. The reduction in V/C ratio is presented for such junctions and are colour coded in green.
- 7.5.5 Figures 43 and 44 show the forecast reduction in junction congestion between the With Development and Highway Mitigation scenarios for the morning and evening peak hours respectively.
- 7.5.6 The majority of junctions relieved of congestion as a result of the Highway Mitigation in Derby City are found in the south of the city with an orientation towards the south west and east in the Morning Peak and the south west and centre in the Evening Peak. The following junctions are relieved of congestion in the Morning Peak:
- A5111/Shardlow Road Roundabout;
 - Boulton Lane/Crayford Road Junction;
 - Sinfin Lane/Kingsley Street Junction;
 - Sinfin Lane/Grampian Way Roundabout;
 - Arleston Lane/Redwood Road Junction;
 - The Hollow/Carlisle Avenue Junction;
 - A52 Wyvern Junction; and
 - Nottingham Road/Reginald Road Junction.



7.5.7 The following junctions are relieved of congestion in the Evening Peak:

- Arleston Lane/Redwood Road Junction;
- Sinfin Lane/Wordsworth Avenue Junction;
- Stenson Road/Breedon Avenue Junction;
- Sinfin Lane/Kitchener Avenue Junction;
- Burton Road/Middleton Avenue Junction;
- A5111/Kingsway Retail Park Roundabout;
- A601 Traffic Street/Liversage Street Junction;
- A514 Osmaston Road/Melbourne Street Junction;
- A5194 London Road/Canal Street Junction;
- A6 Pride Parkway/Derwent Parade Junction;
- Derwent Parade/Royal Way Junction;
- A52 Wyvern Junction; and
- Derby Road/Raynesway/Acorn Way Junction.



Figure 41. Flow Difference – With Development Scenario vs Highway Mitigation Scenario – Derby City – Morning Peak

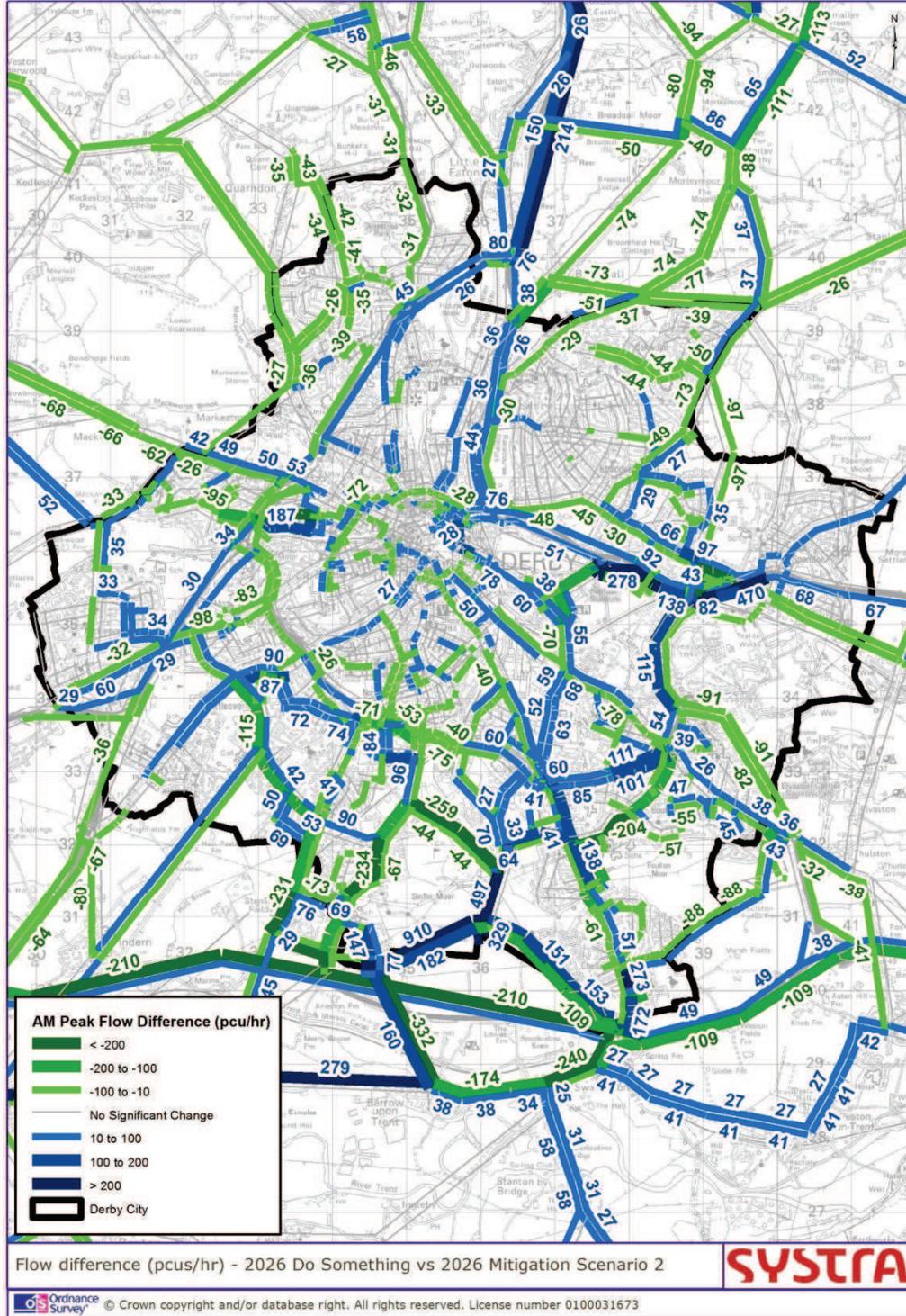




Figure 42. Flow Difference – With Development Scenario vs Highway Mitigation Scenario – Derby City - Evening Peak

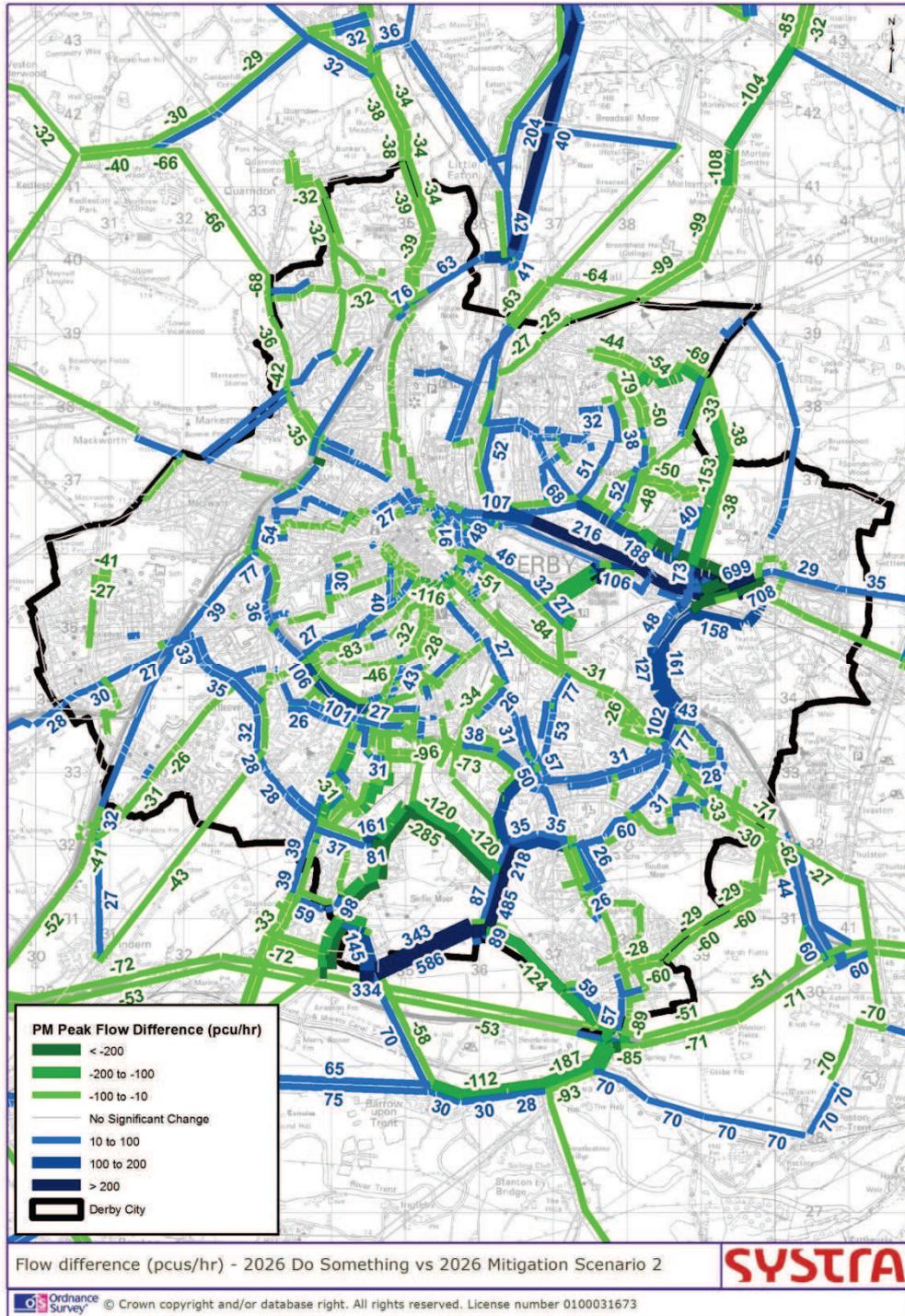




Figure 43. Relief of Junction Congestion – With Development Scenario vs Highway Mitigation Scenario – Derby City - Morning Peak

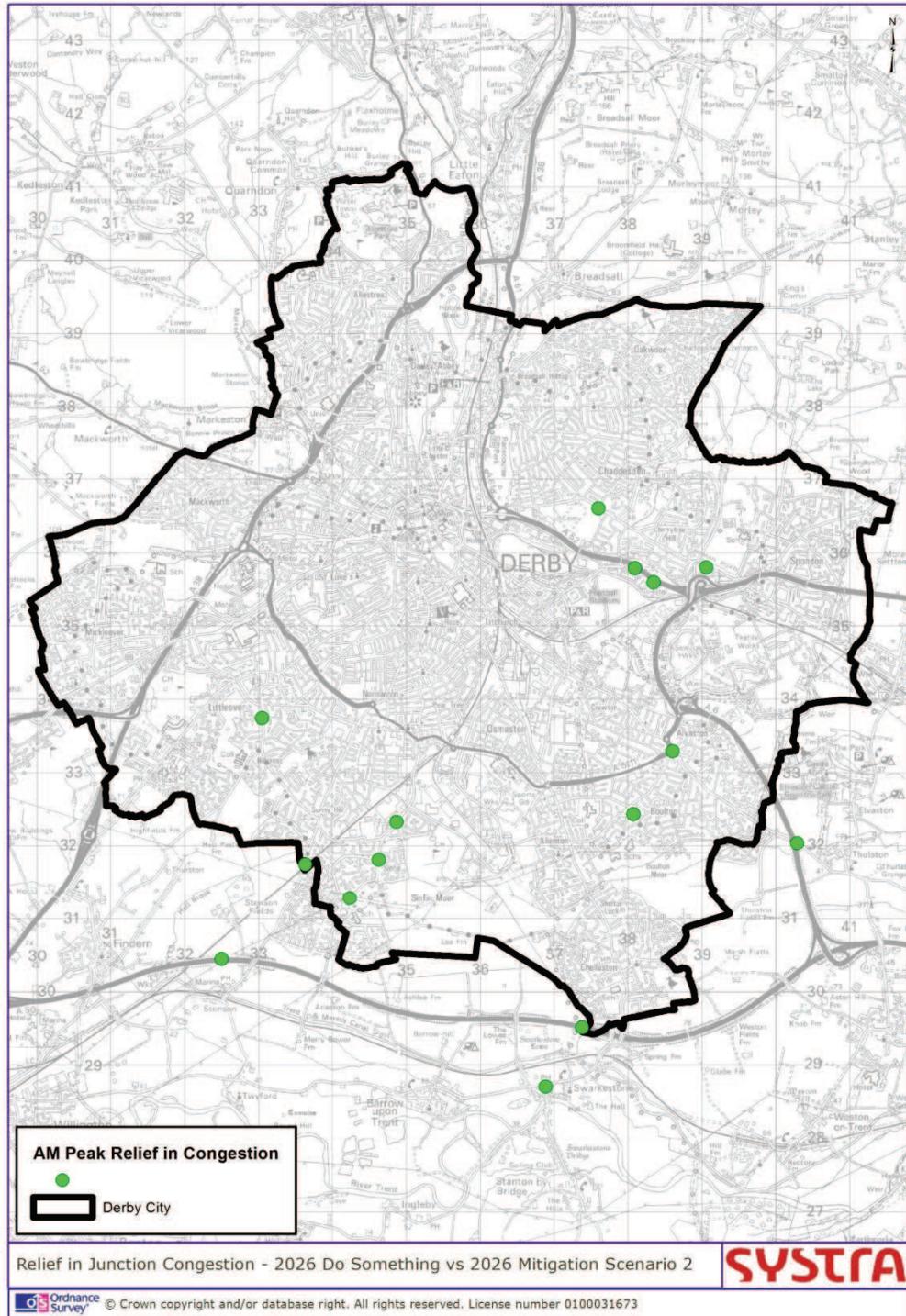
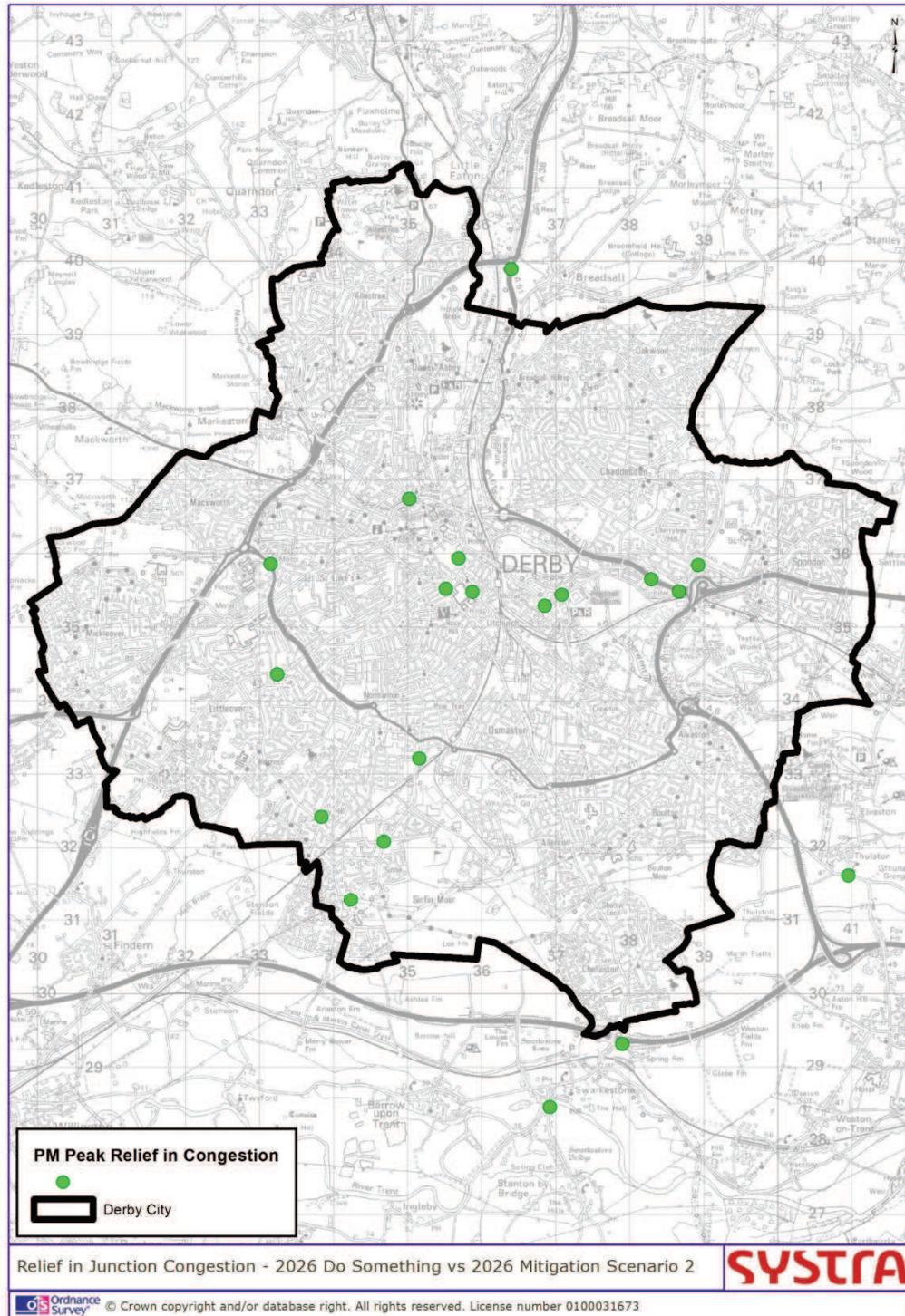




Figure 44. Relief of Junction Congestion – With Development Scenario vs Highway Mitigation Scenario – Derby City - Evening Peak





Network Indicators

- 7.5.8 The Network Indicators for the Highway Mitigation and With Development Scenarios are provided in Tables 24 and 25. This indicates that congestion in Derby City, as indicated by the over-capacity queues indicator, reduces as a result of the Highway Mitigation proposals (11% reduction across both peaks). This is a mitigation of 23% in the morning peak and 26% in the evening peak.
- 7.5.9 This results in an increase of average speed of around 2% in the morning and evening peaks; a mitigation of 38% in the morning peak and 43% in the evening peak.
- 7.5.10 There is an increase in total travel distance as the highway mitigation provides extra lengths of road such as the South Derby Integrated Transport Link which reduce queues and total travel time but increase the distance of routes, particularly in Derby City.

Table 24. Network Indicators (morning peak) – Derby City

INDICATOR	MORNING PEAK			
	REF CASE	WITH DEV.	FULL MITIGATION SCENARIO	PERCENTAGE MITIGATION
Over Capacity Queues (PCU Hrs)	404	759	679	23%
Total Travel Time (PCU Hrs)	11,817	13,204	13,121	6%
Total Travel Distance (PCU kms)	387,553	412,249	417,781	-22%
Average Speed (km/hr)	32.8	31.2	31.8	38%

Table 25. Network Indicators (evening peak) – Derby City

INDICATOR	EVENING PEAK			
	REF CASE	WITH DEV.	FULL MITIGATION SCENARIO	PERCENTAGE MITIGATION
Over Capacity Queues (PCU Hrs)	466	828	734	26%
Total Travel Time (PCU Hrs)	12,097	13,373	13,257	9%
Total Travel Distance (PCU kms)	392,976	416,365	420,572	-18%
Average Speed (km/hr)	32.5	31.1	31.7	43%



7.6 Modelling Results –South Derbyshire

Flow Difference

- 7.6.1 Figures 45 and 46 show the flow difference between the 'With Development' (No Mitigation) and Highway Mitigation scenarios for the morning and evening peak hours respectively. Blue lines indicate roads which are forecast to experience an increase in traffic between the With Development Scenario and the Highway Mitigation Scenario, whilst green lines indicate roads which are forecast to experience a decrease in traffic.
- 7.6.2 Reduction in traffic is forecast along the following routes in South Derbyshire as a result of the Highway Mitigation measures:
- A50 between the A38 and A6 (Evening Peak);
 - Common Road, Swadlincote (Both peaks);
 - A514 Swadlincote Road (Both peaks);
 - York Road, Swadlincote (Both peaks);
 - Wilmot Road, Swadlincote (Both peaks);
 - Darklands Road, Swadlincote (Both peaks); and
 - B5353 Newhall Road (Both peaks).
- 7.6.3 However, there are also forecast to be increases along the following routes as a result of the Highway Mitigation measures:
- Parts of the A50 (Morning Peak);
 - A5132 Twyford Road (Both peaks); and
 - Woodville Regeneration Route.
- 7.6.4 There is a clear re-routing of traffic around Swadlincote and Woodville to the Woodville Regeneration Route.

Junction Congestion

- 7.6.5 A junction is considered to become relieved of congestion when the With Development Scenario V/C ratio is more than 85% and due to mitigation it decreases to below 85% in the Highway Mitigation Scenario. The reduction in V/C ratio is presented for such junctions and are colour coded in green.
- 7.6.6 Figures 47 and 48 show the forecast reduction in junction congestion between the With Development and Highway Mitigation scenarios for the morning and evening peak hours respectively.
- 7.6.7 As a result of the Highway Mitigation in South Derbyshire, the following junctions are relieved of congestion:
- A514/Woodhouse Street, Swadlincote (Morning Peak);
 - York Road, Wilmot Road, Swadlincote (Evening Peak);
 - Foston Interchange/Watery Lane (Evening Peak);
 - A514/A5132 Junction, Swarkestone (Morning Peak); and
 - A514/Ingleby Road Junction.



Figure 45. Flow Difference – With Development Scenario vs Highway Mitigation Scenario – South Derbyshire – Morning Peak

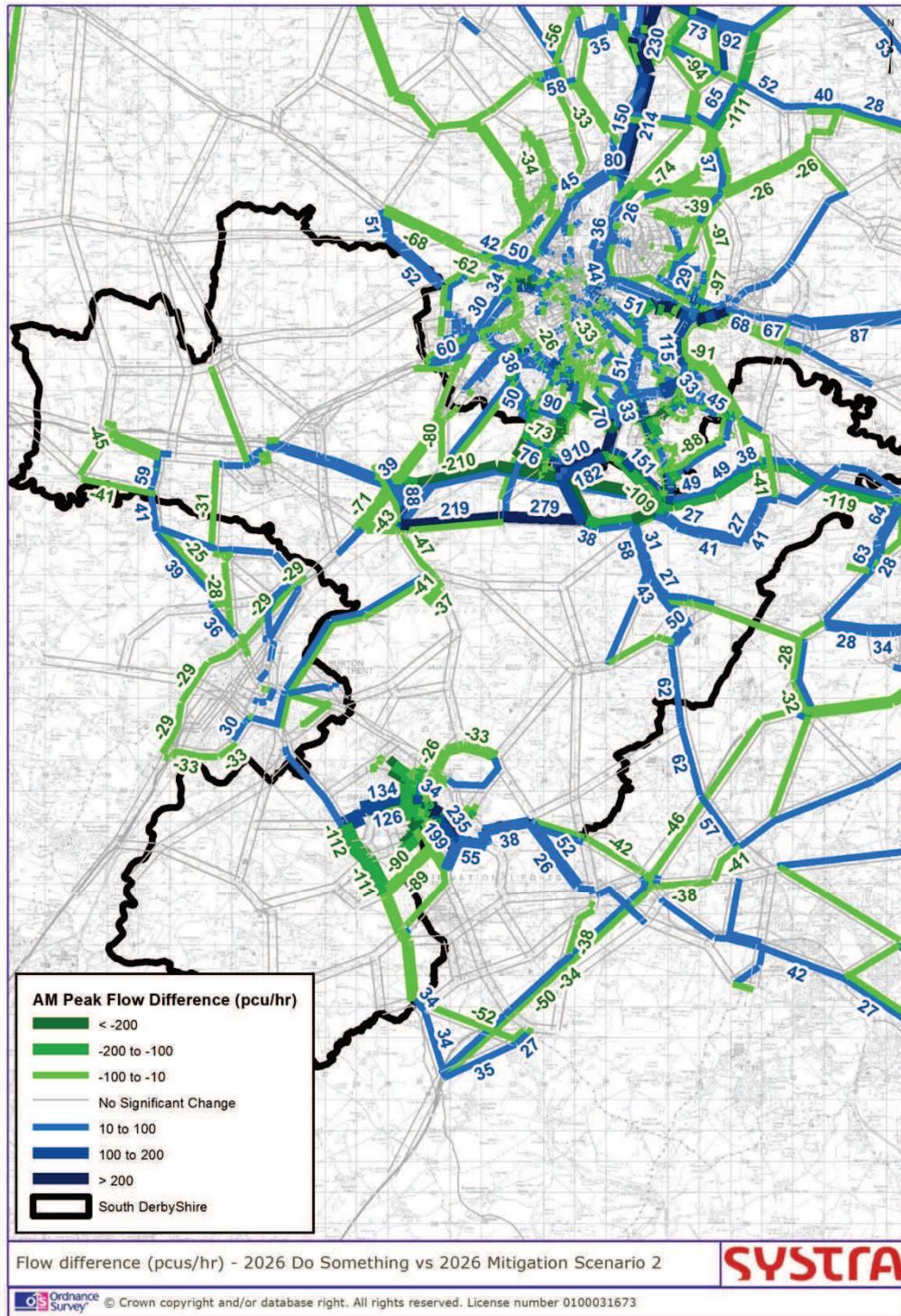




Figure 46. Flow Difference – With Development Scenario vs Highway Mitigation Scenario – South Derbyshire - Evening Peak

