Appendix B. Revised Stage 1B Modelling results (Scenario 2 – Local Plan No Mitigation)

B.1 Introduction

This section provides a summary of the results of the Local Plan No Mitigation scenario (Scenario 2) with the Reference scenario (Scenario 1). Scenarios 1 and 2 were completed as part of the Stage 1B Transport Assessment. This section presents updated model runs for both scenarios, incorporating the most recent information on Local Plan developments.

For each scenario a set of data and key performance indicators (KPIs) have been produced, which enable easy and direct comparisons. The highway modelling outputs include:

- Plots showing flow changes within the network, comparing Local Plan No Mitigation scenario with the Reference scenario
- Plots and tables showing junctions which are shown to be over capacity and where the newly generated traffic from the Local Plan sites is shown to have a detrimental impact.

Delay and v/c analysis has formed the main basis for identification of the impact of the Local Plan and to inform potential mitigation requirements at this stage of the study.

B.2 Traffic Flow Changes

The flow difference plots between Reference and Local Plan No Mitigation scenario for the three peaks are shown in Figure B.2-1 through Figure B.2-15.

The flow difference plots shows that in general there is an overall increase in traffic in the Local Plan scenario with the additional developments included. The are instances where reduction in traffic is noted due to assignment re-routing.

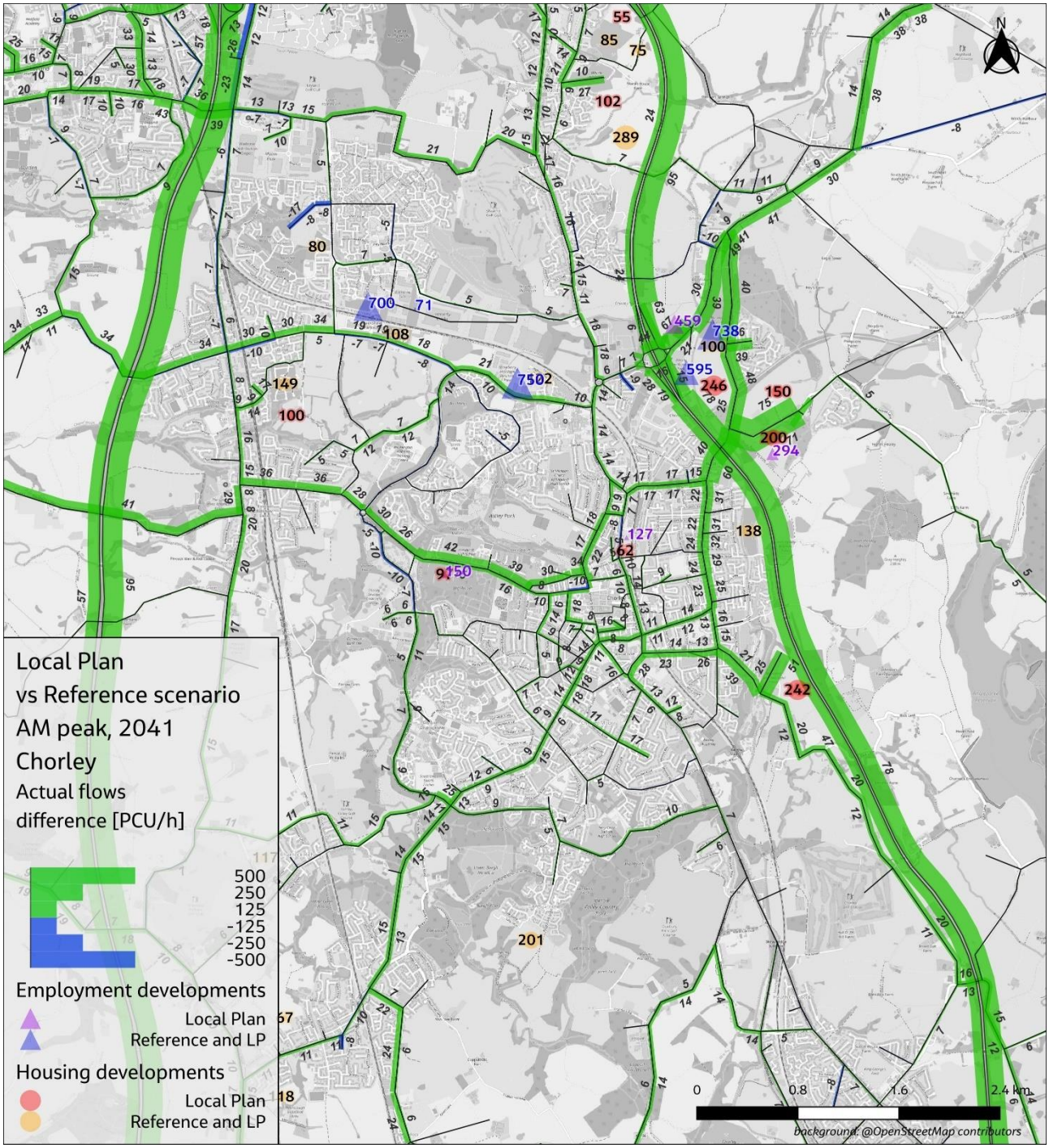

Figure B.2-1. Flow Difference Plot – 2041 AM Local Plan No Mitigation scenario Vs Reference Case – Chorley

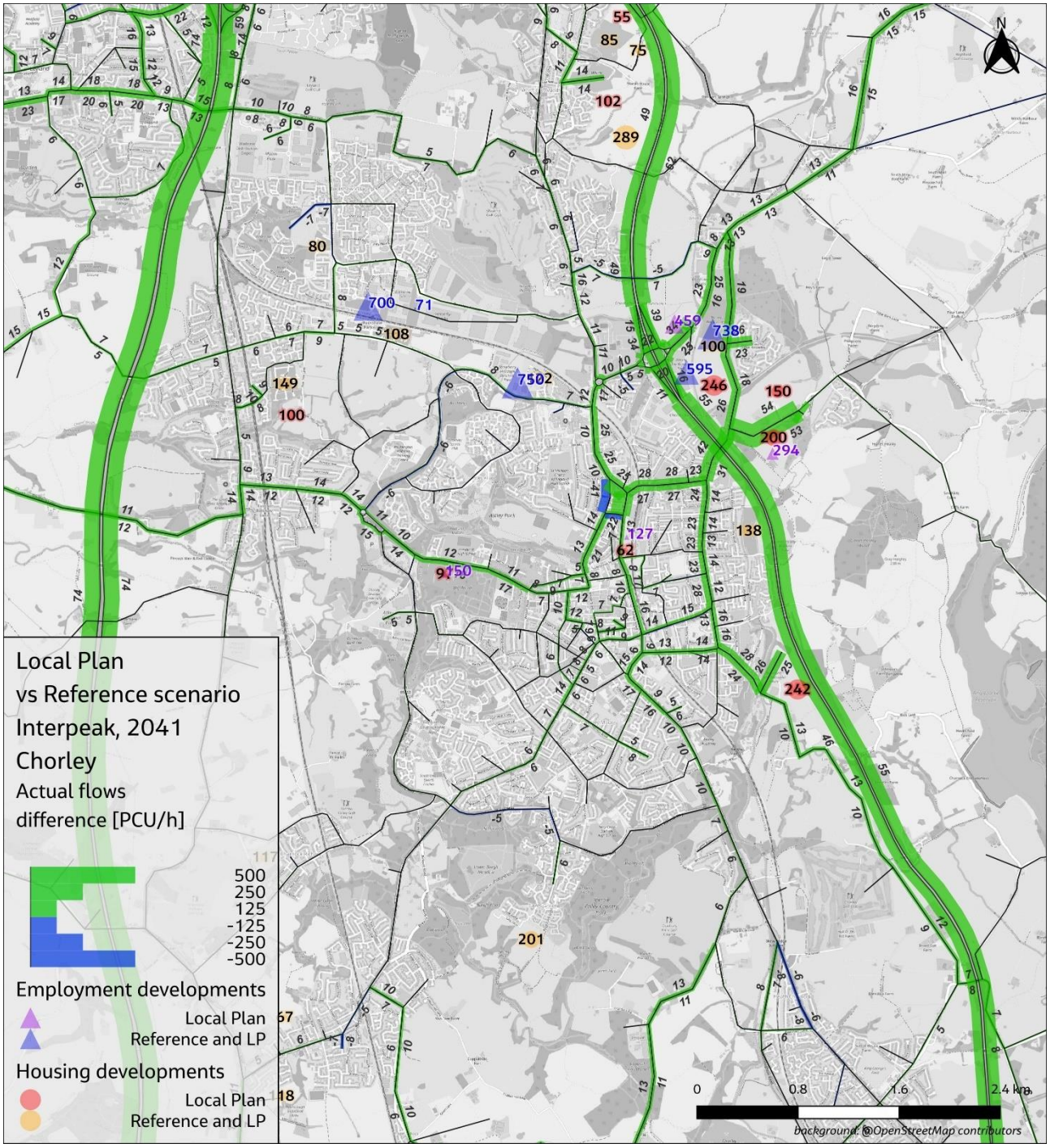

Figure B.2-2. Flow Difference Plot – 2041 IP Local Plan No Mitigation scenario Vs Reference Case – Chorley

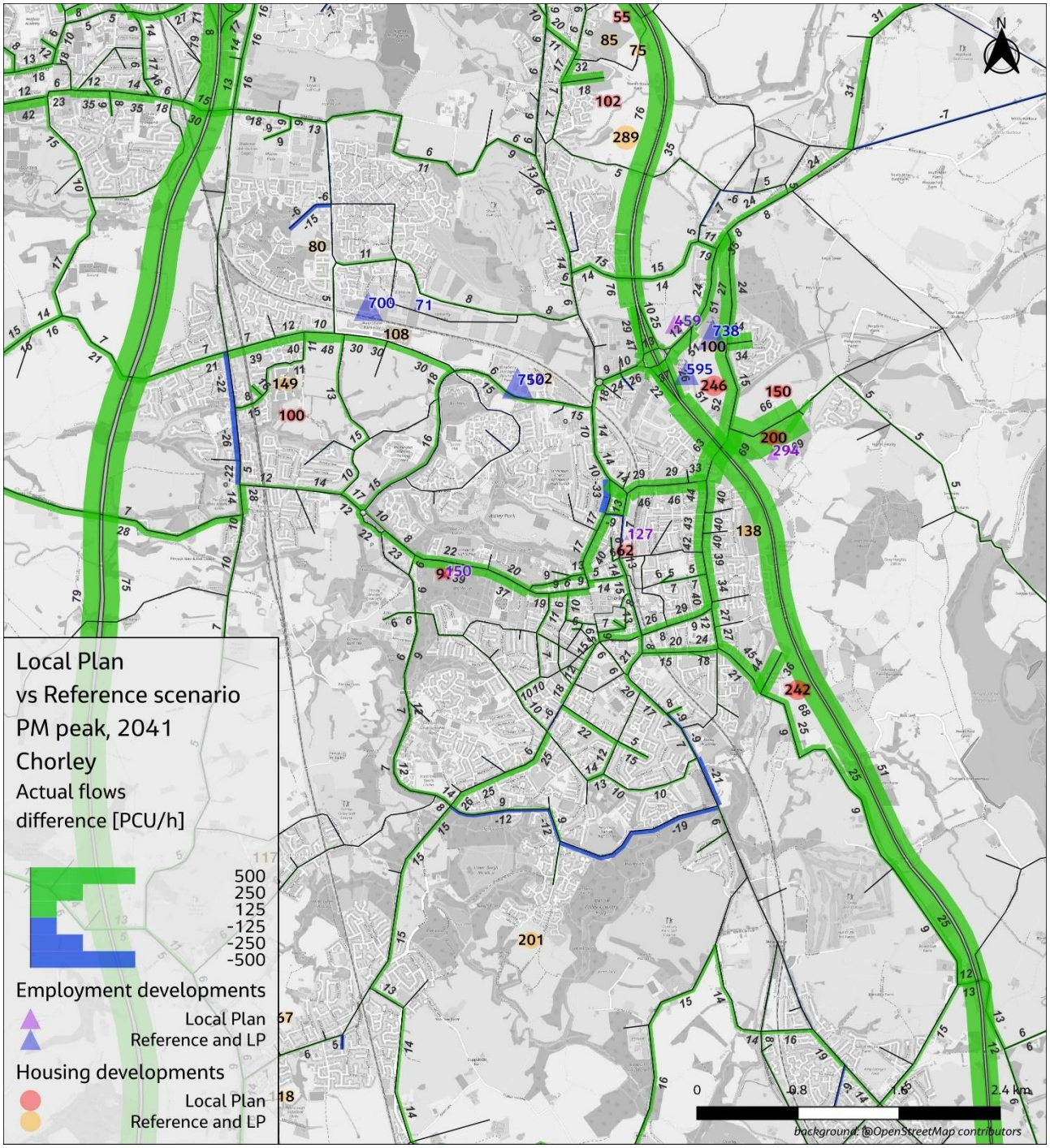

Figure B.2-3.Flow Difference Plot – 2041 PM Local Plan No Mitigation scenario Vs Reference Case – Chorley

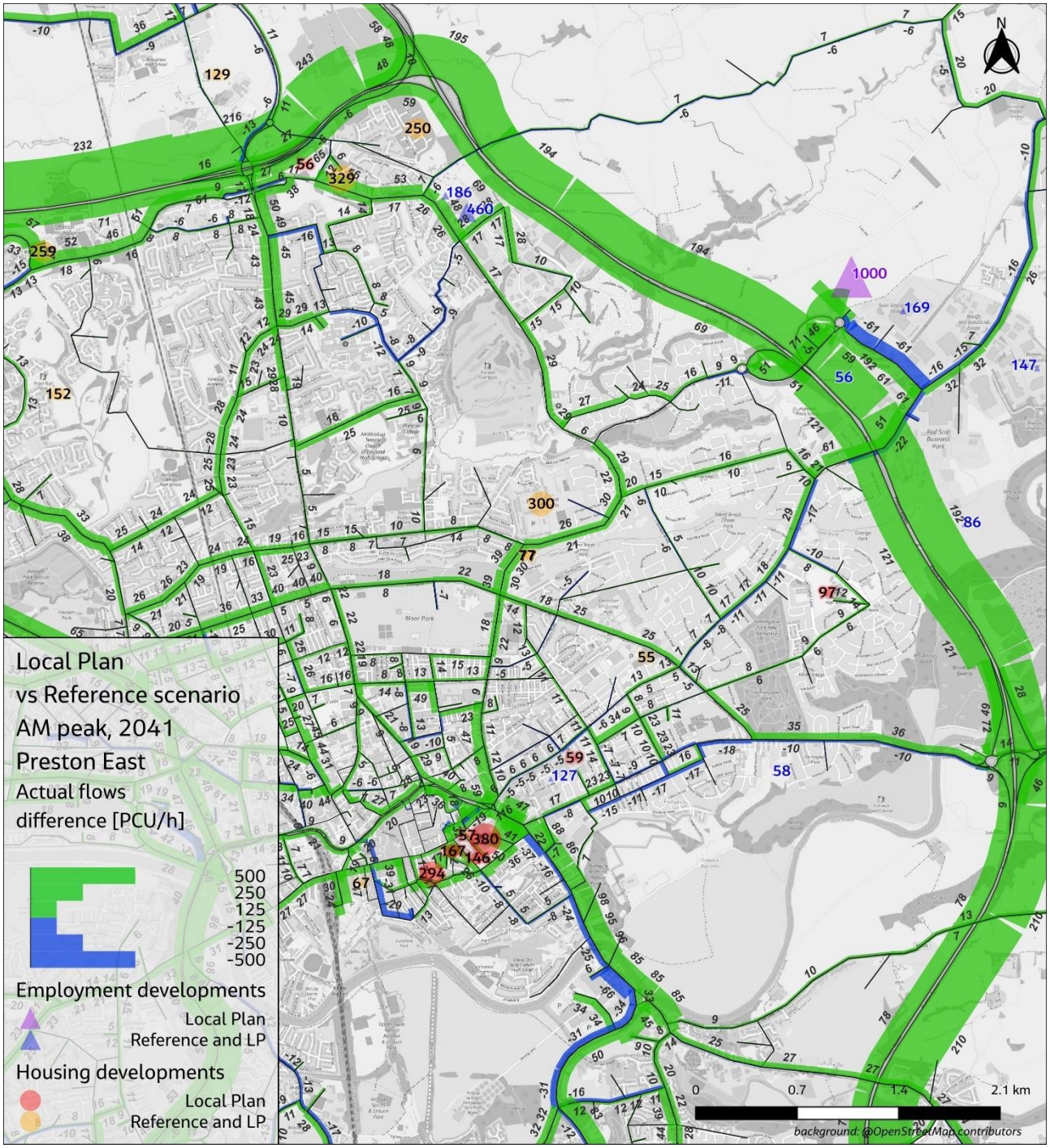

Figure B.2-4.Flow Difference Plot – 2041 AM Local Plan No Mitigation scenario Vs Reference Case – Preston East

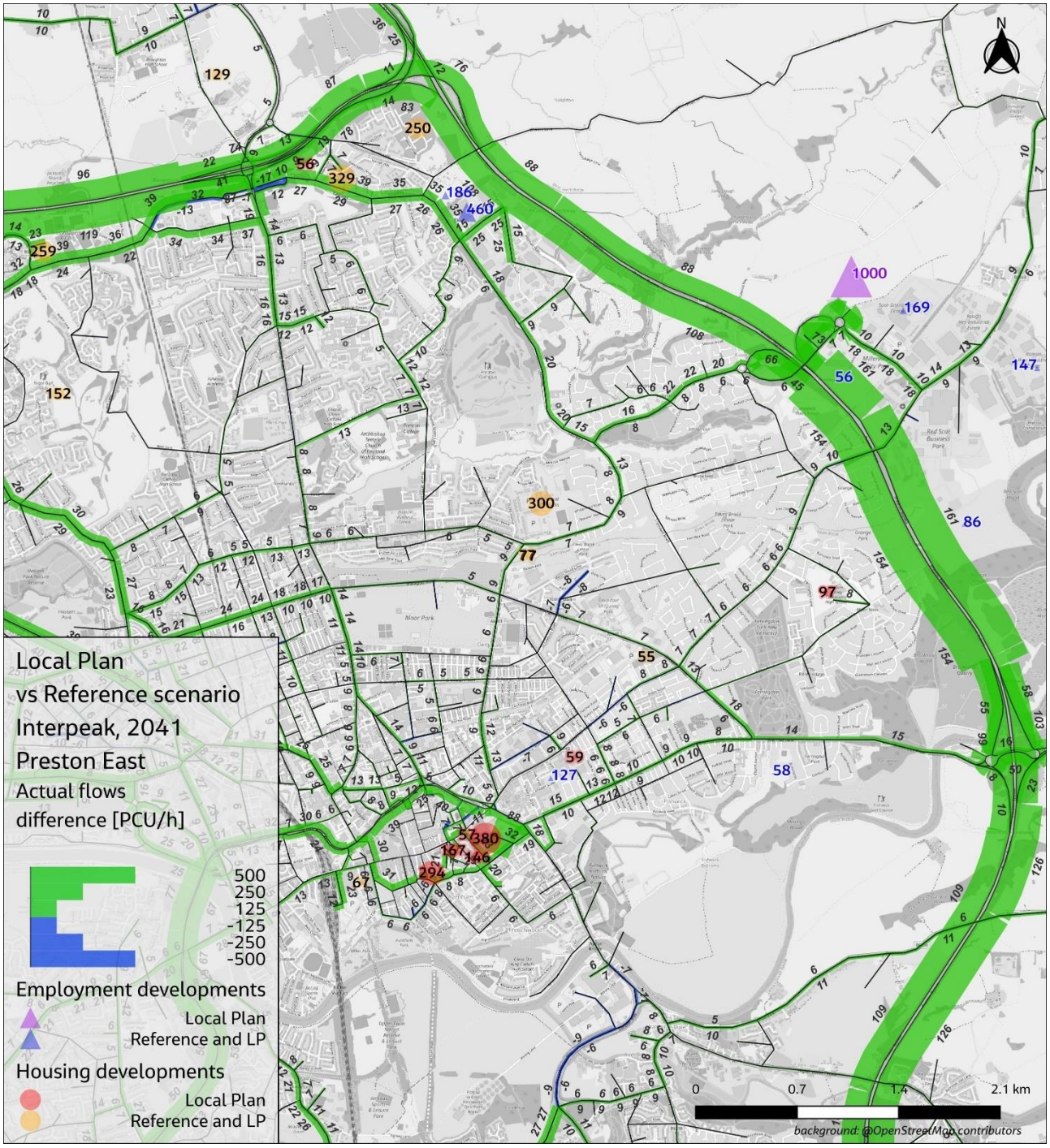

Figure B.2-5.Flow Difference Plot – 2041 IP Local Plan No Mitigation scenario Vs Reference Case – Preston East

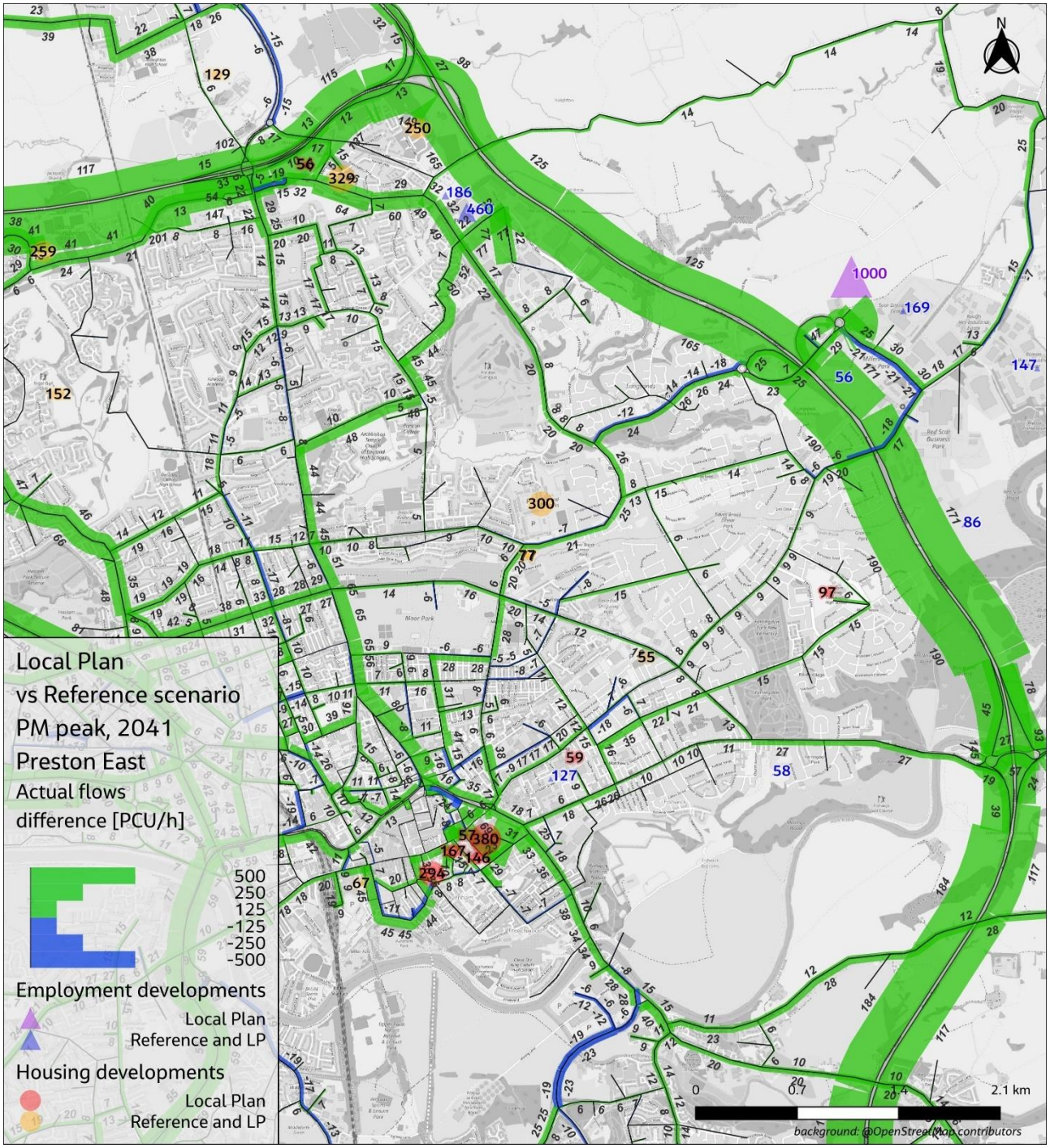

Figure B.2-6. Flow Difference Plot – 2041 PM Local Plan No Mitigation scenario Vs Reference Case – Preston East

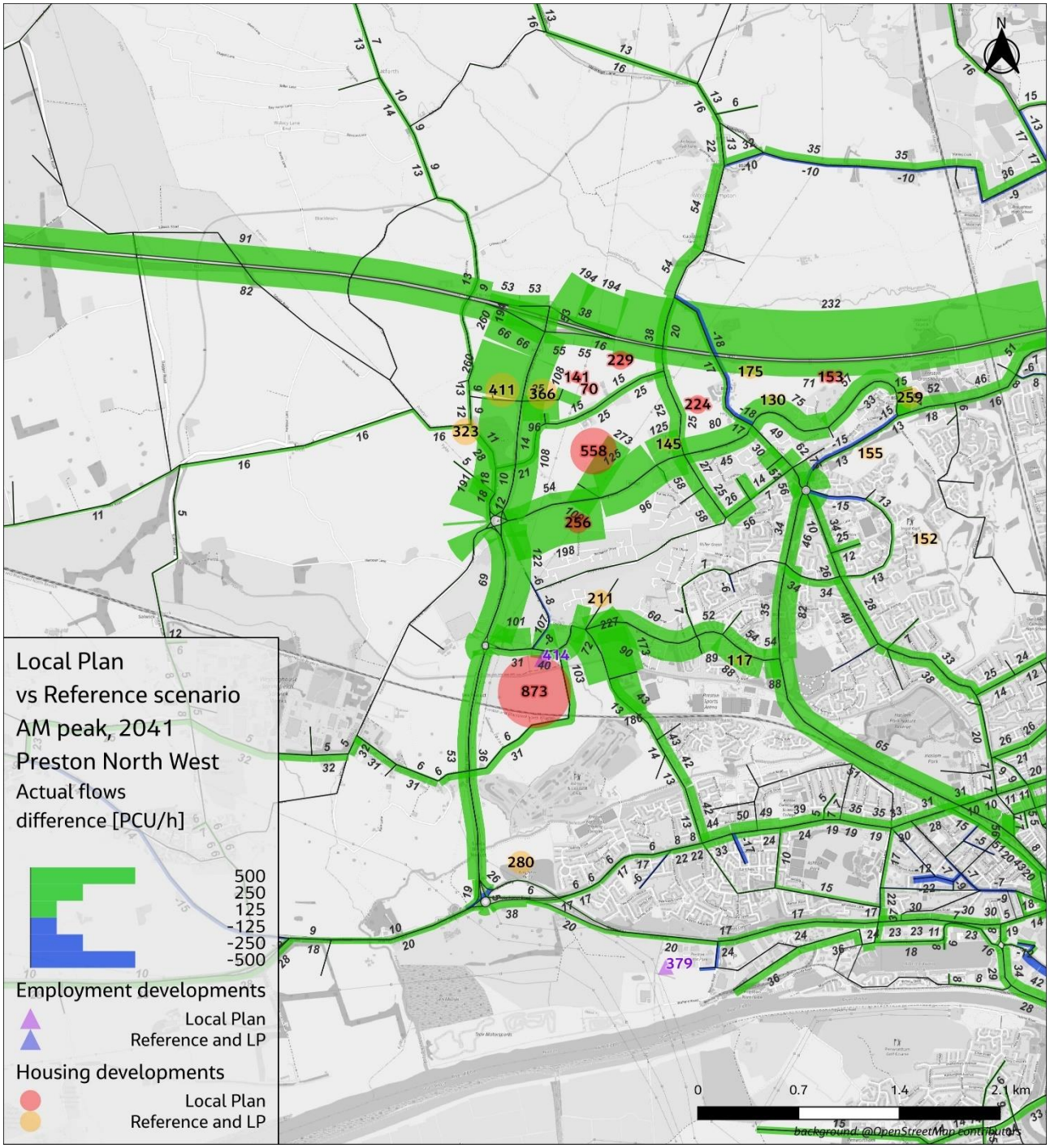

Figure B.2-7. Flow Difference Plot – 2041 AM Local Plan No Mitigation scenario Vs Reference Case – Preston Northwest

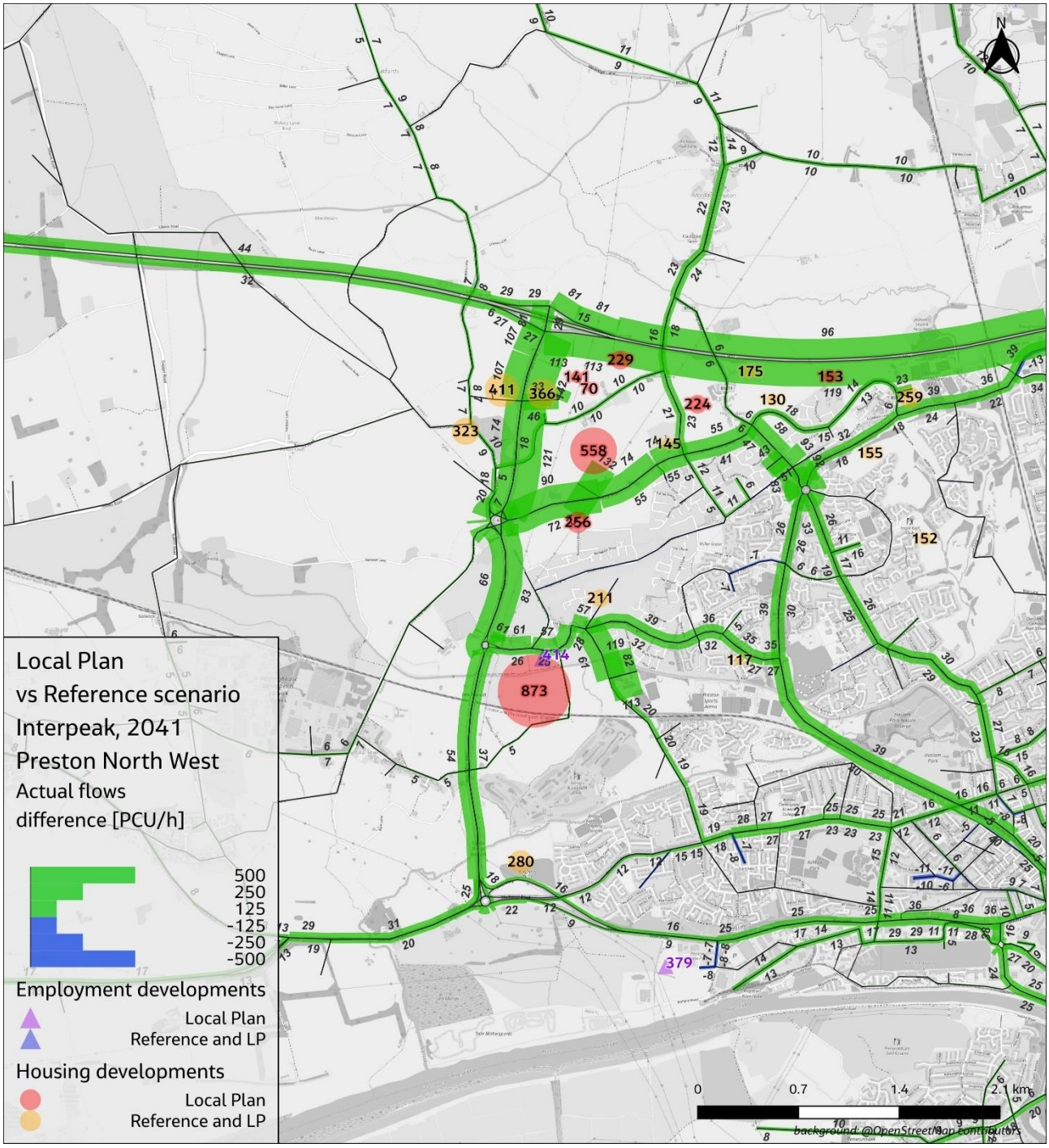

Figure B.2-8. Flow Difference Plot – 2041 IP Local Plan No Mitigation scenario Vs Reference Case – Preston Northwest

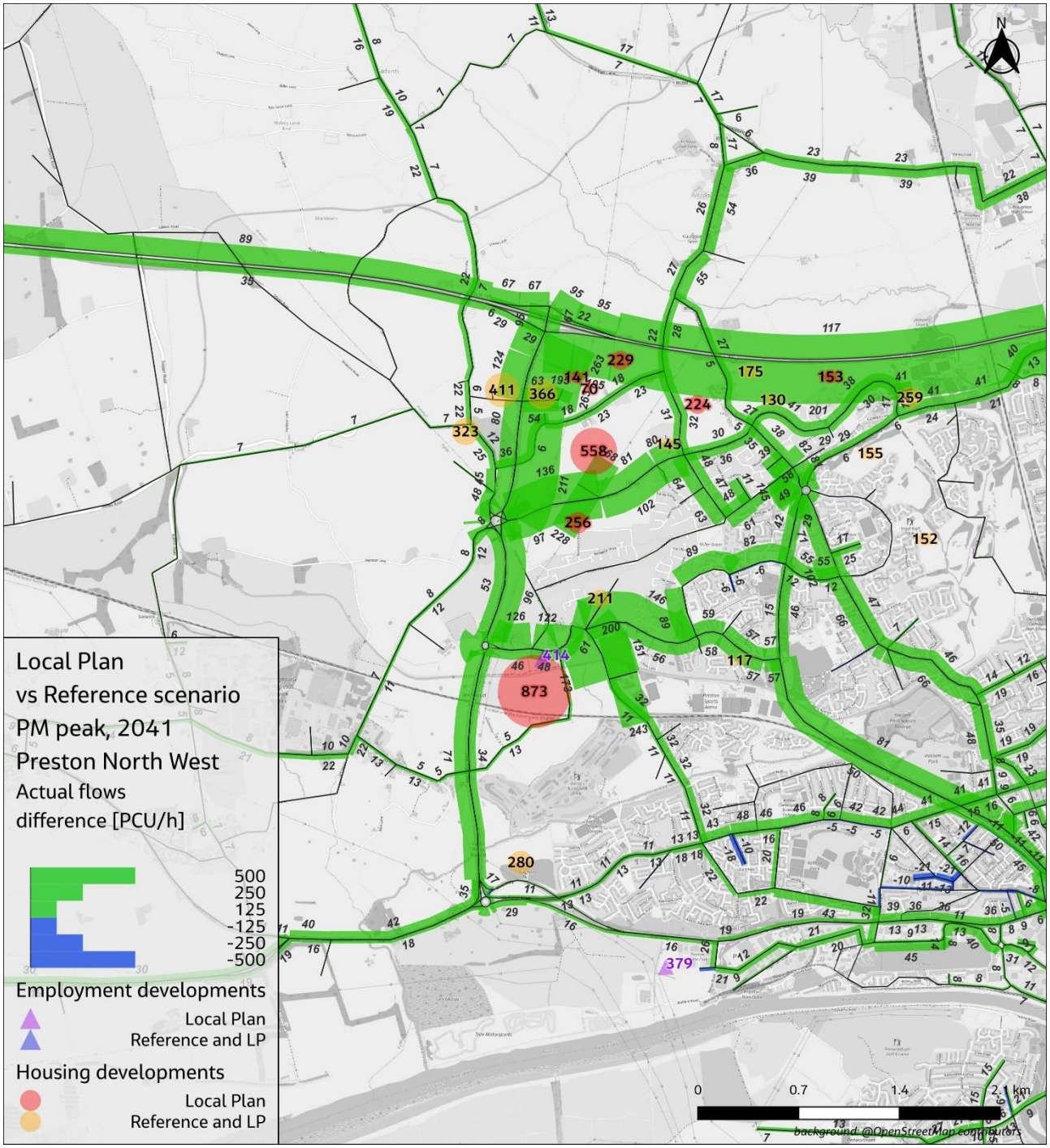

Figure B.2-9.Flow Difference Plot – 2041 PM Local Plan No Mitigation scenario Vs Reference Case – Preston Northwest

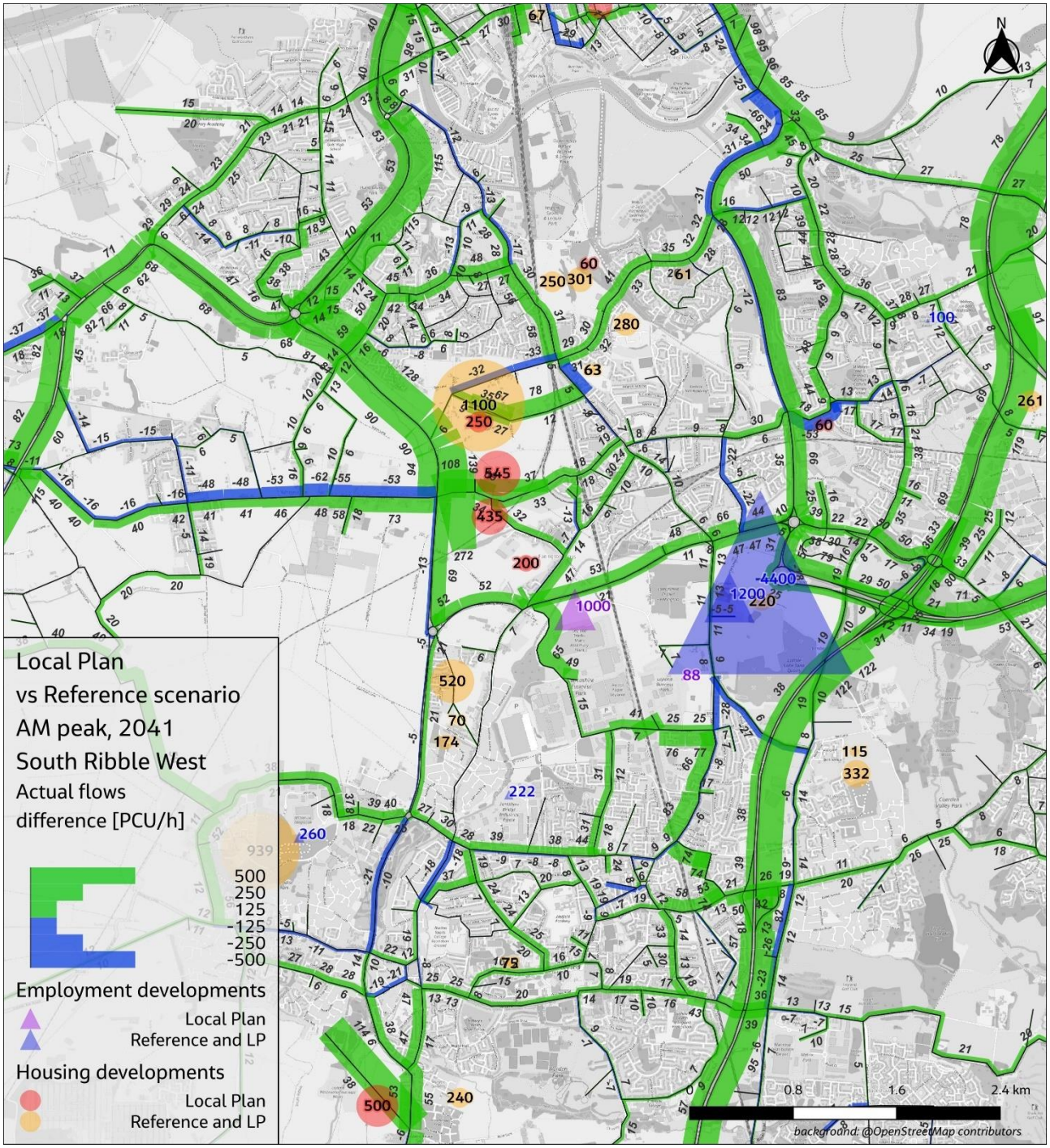

Figure B.2-10. Flow Difference Plot – 2041 AM Local Plan No Mitigation scenario Vs Reference Case – South Ribble

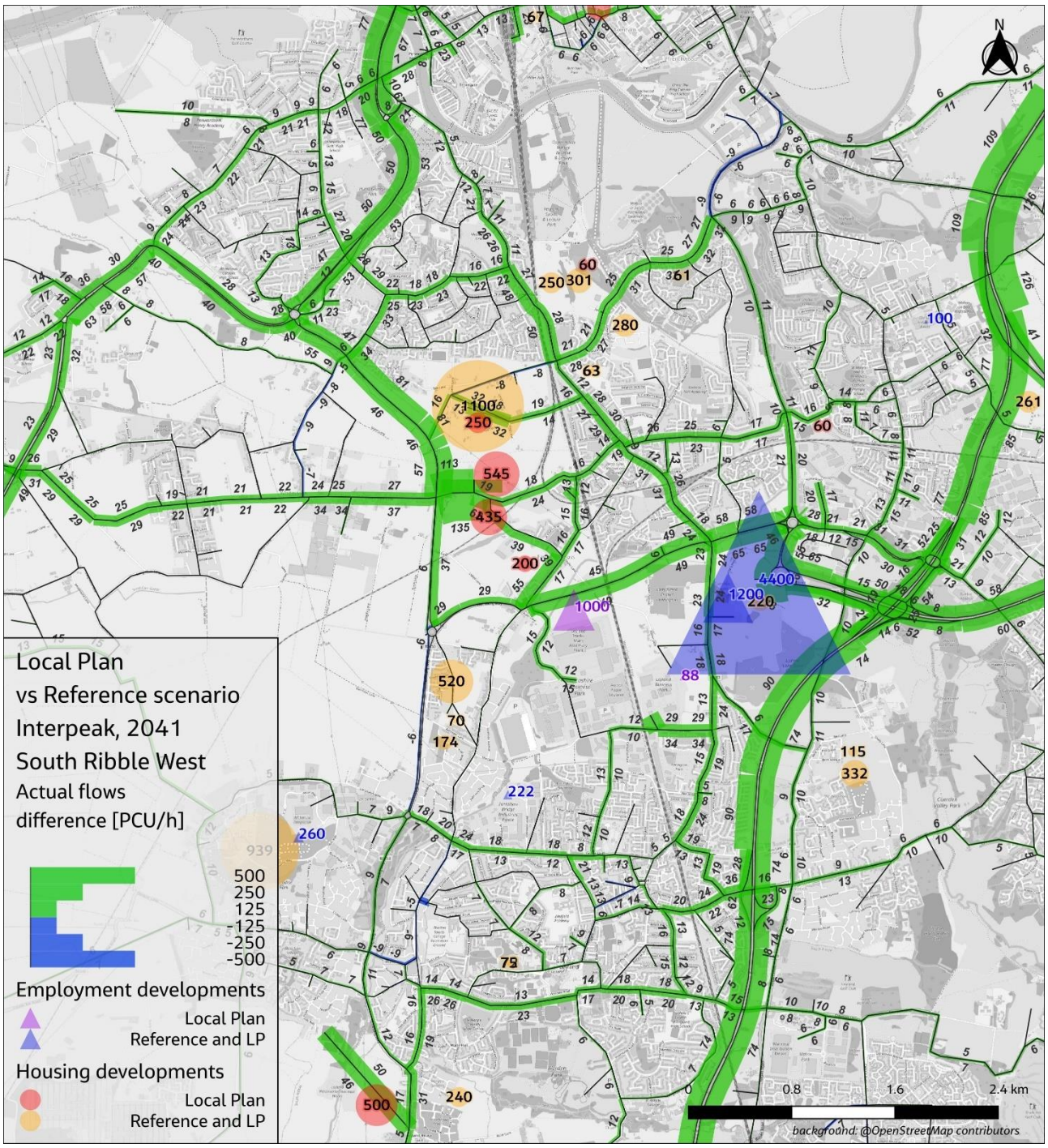

Figure B.2-11. Flow Difference Plot – 2041 AM Local Plan No Mitigation scenario Vs Reference Case – South Ribble

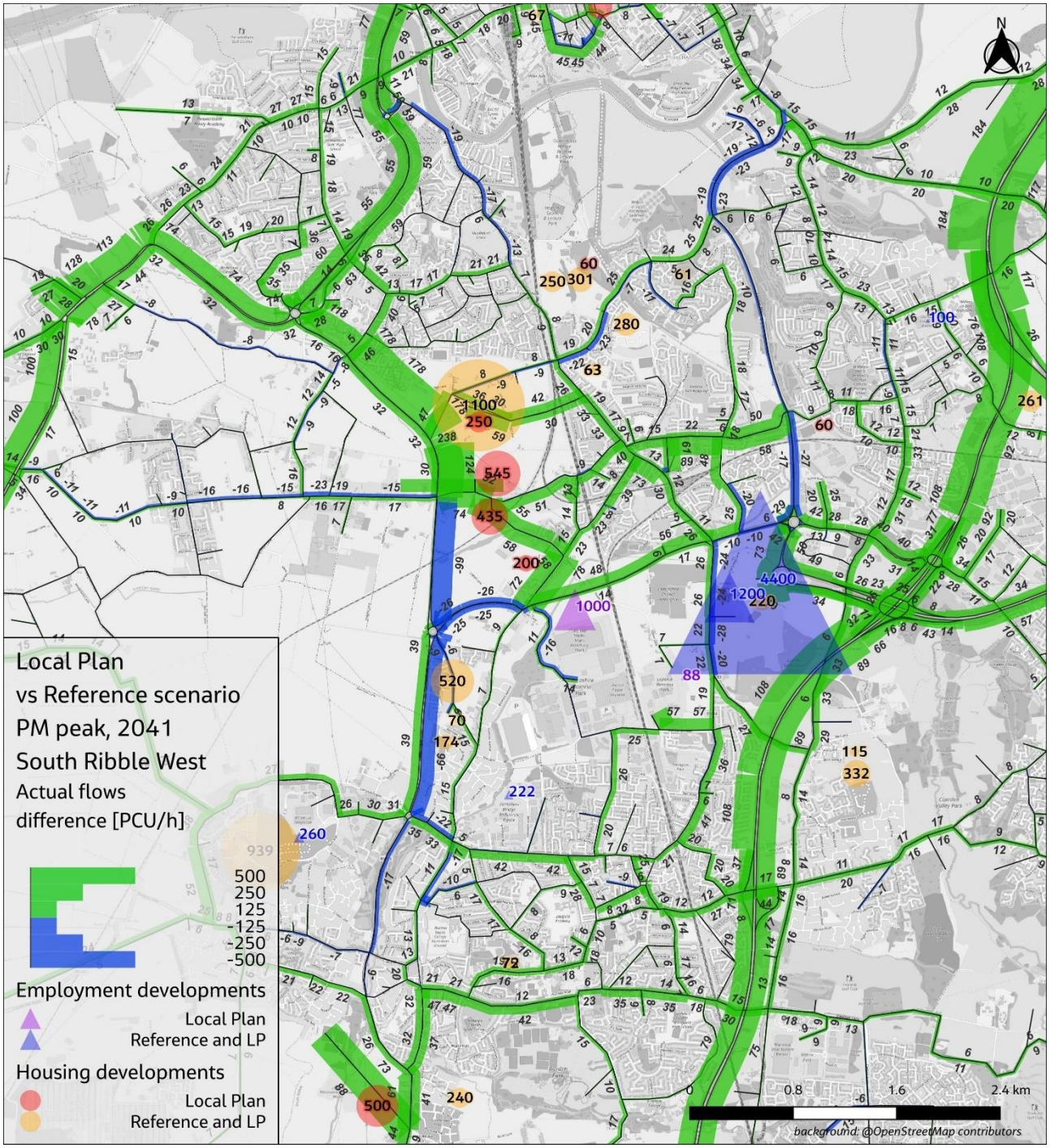

Figure B.2-12. Flow Difference Plot – 2041 PM Local Plan No Mitigation scenario Vs Reference Case – South Ribble

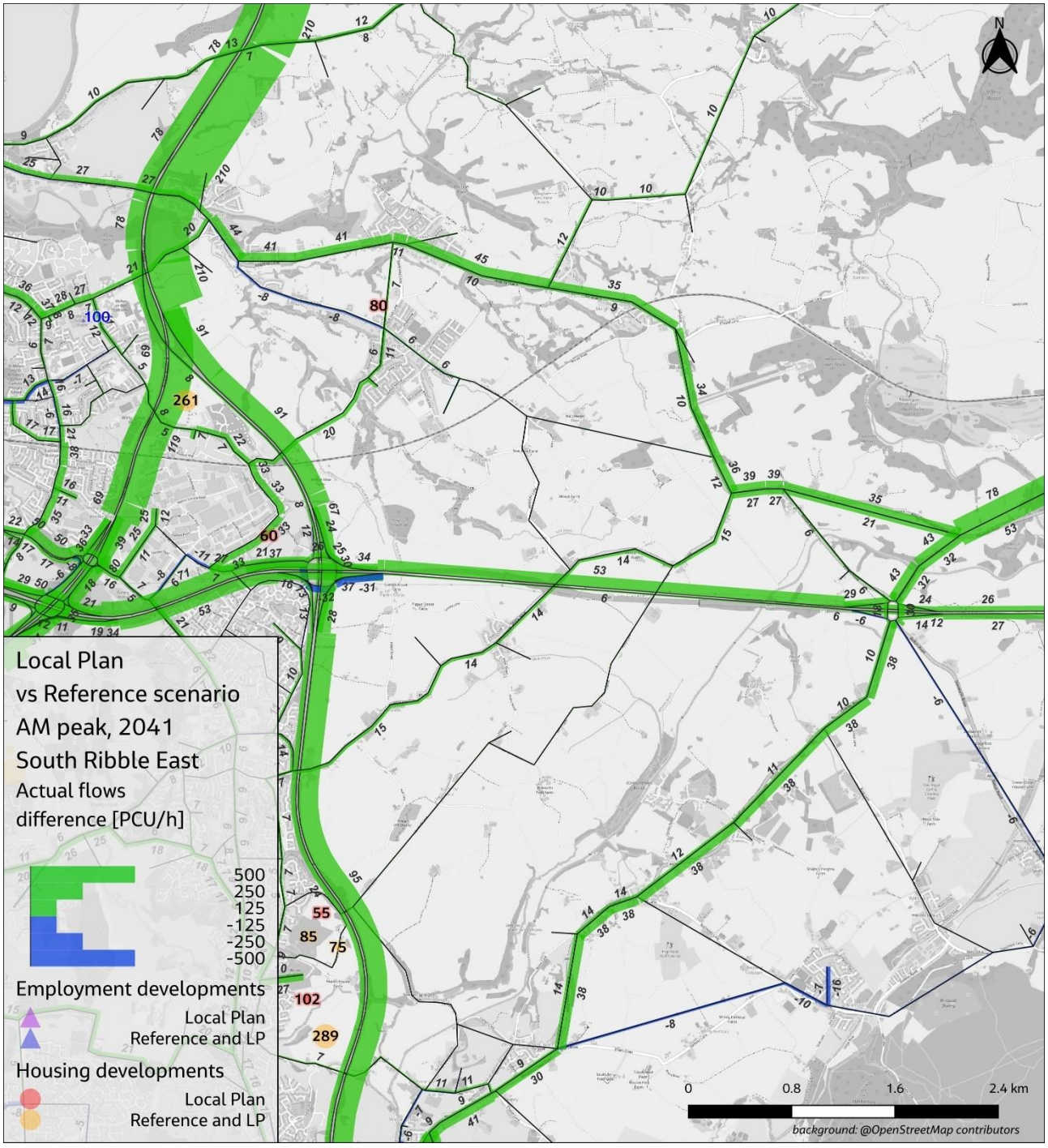

Figure B.2-13. Flow Difference Plot – 2041 AM Local Plan No Mitigation scenario Vs Reference Case – South Ribble East

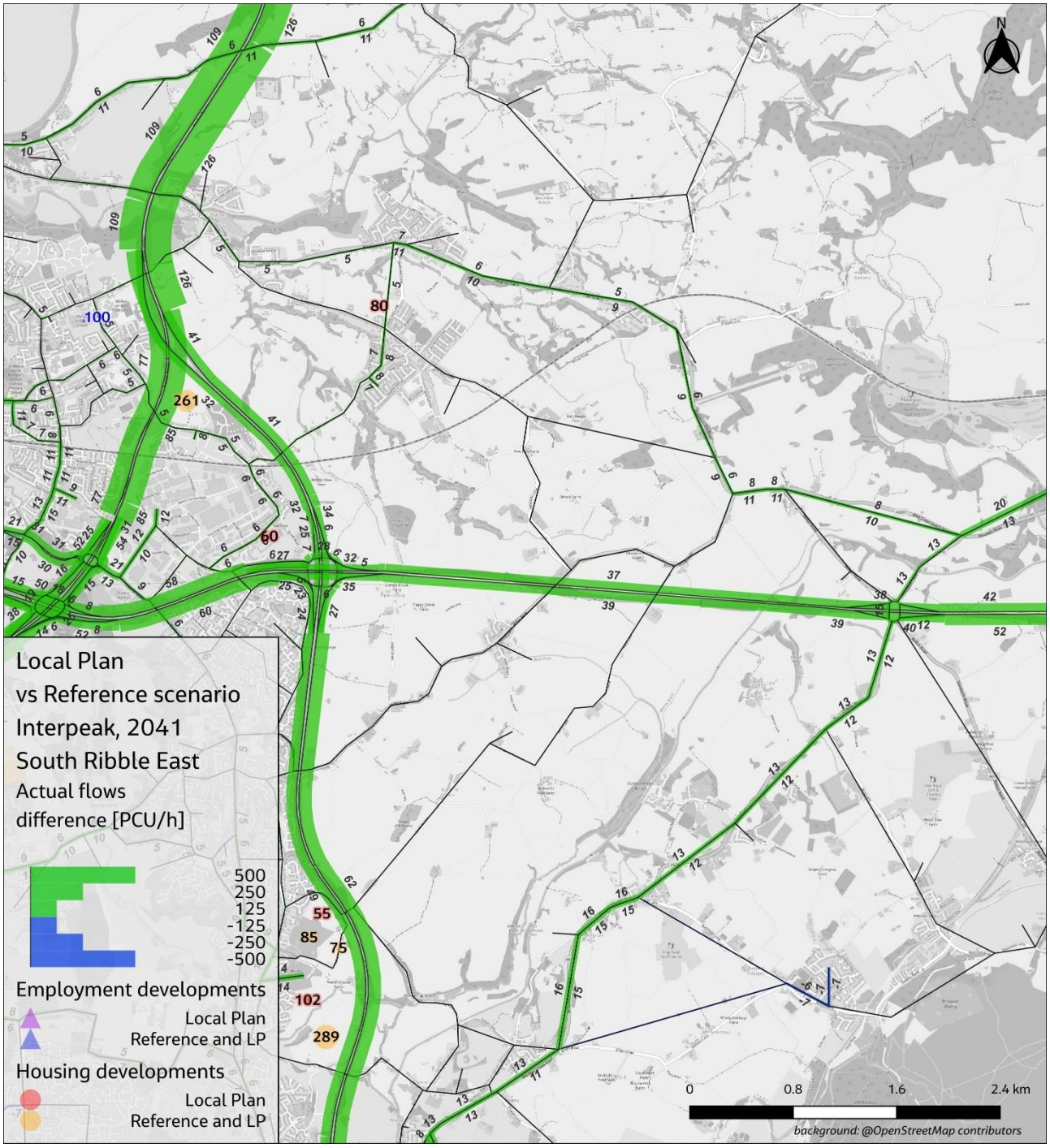

Figure B.2-14. Flow Difference Plot – 2041 IP Local Plan No Mitigation scenario Vs Reference Case – South Ribble East

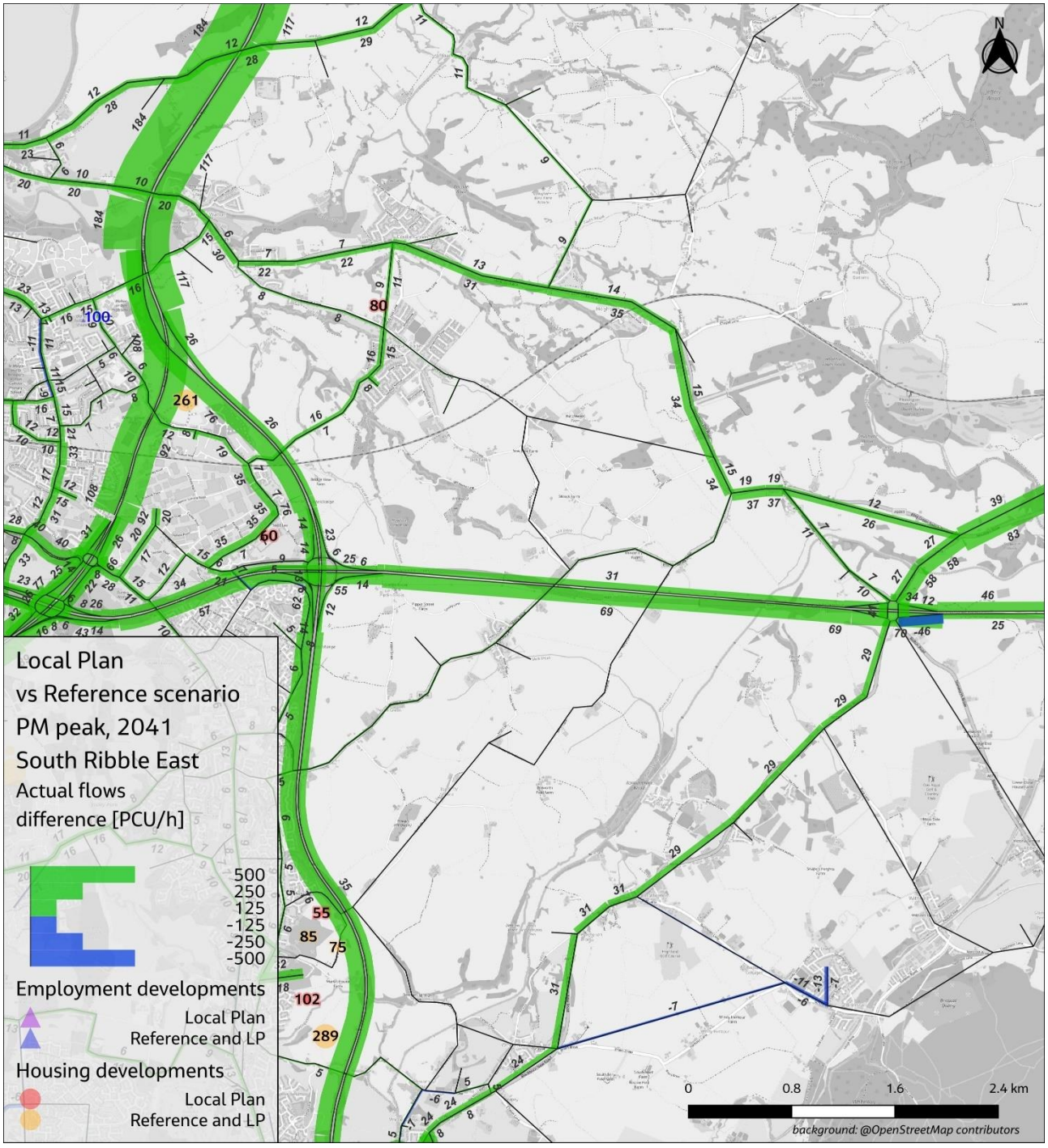

Figure B.2-15. Flow Difference Plot – 2041 PM Local Plan No Mitigation scenario Vs Reference Case – South Ribble East

B.3 Volume to capacity

In order to identify the areas in the model with significant congestion, the output from the modelling has been examined in terms of the ratio of volume over capacity (V/C). This compares the modelled traffic flow over an hour to the modelled capacity for an hour.

The modelled outputs have been displayed graphically in order to show the junction hotspot locations where the ratio of traffic volume to capacity is above 85% and therefore indicative of a lack of capacity for additional traffic. The figures provides an indication how the additional traffic from the Local Plan allocations will worsen the congestion with respect to the Reference scenario. The change in v/c is shown in different colour bands representing degree of congestions as defined below:

- Green: Decrease in V/C in the Local Plan scenario compared to the Reference scenario
- Grey: No change in V/C between scenarios
- Blue: Increase in V/C, but still below 80% in the Local Plan scenario
- Yellow: V/C increases from below 80% to the 80–85% range
- Orange: V/C increases within the 80–85% range
- Red: V/C increases from below 85% to above 85%
- Brown: V/C increases above 85% in the Local Plan scenario compared to the Reference scenario.

The following section provides a detailed discussion of network performance issues within each of the three districts, based on model outputs for both AM and PM peak periods in the 2041 Reference and Local Plan scenarios.

Chorley

Figure B.3-16through Figure B.3-23 presents the future year V/C plots for the Reference and Local Plan scenarios during AM and PM peaks. The highest V/C value at each junction is provided.

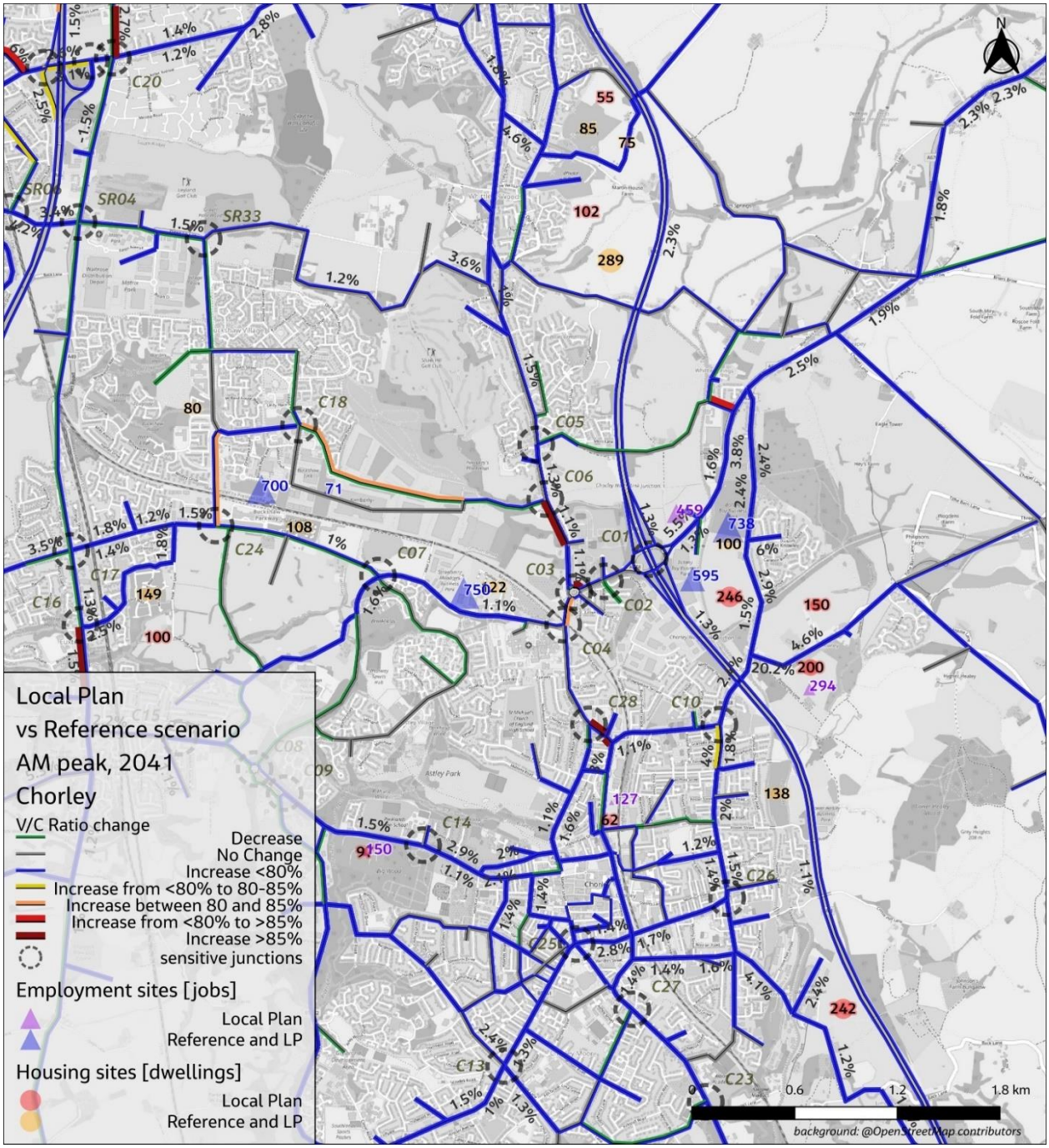

Figure B.3-16.V/C – 2041 AM Local Plan No Mitigation scenario Vs Reference Scenario – Chorley

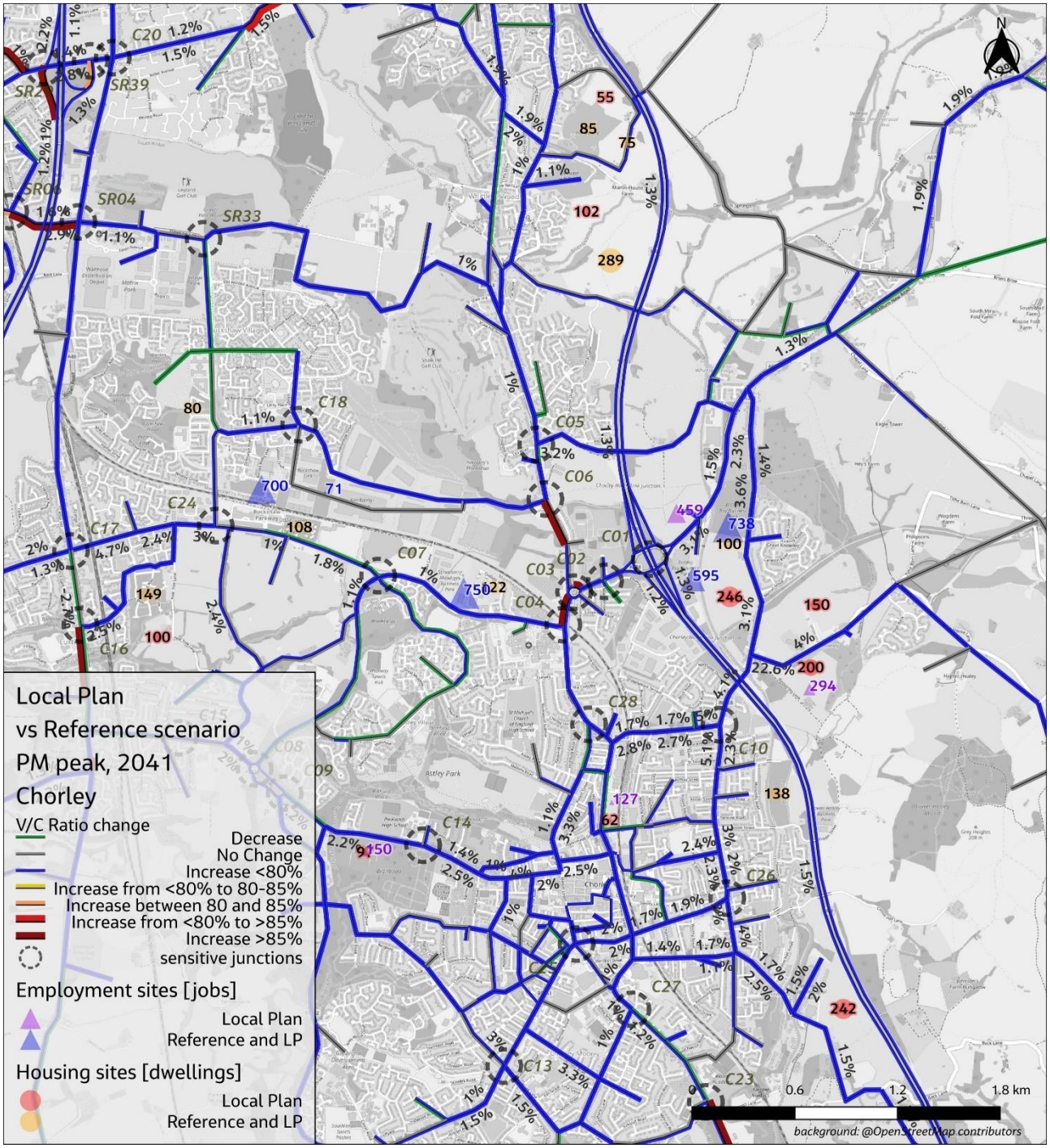

Figure B.3-17. V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Chorley

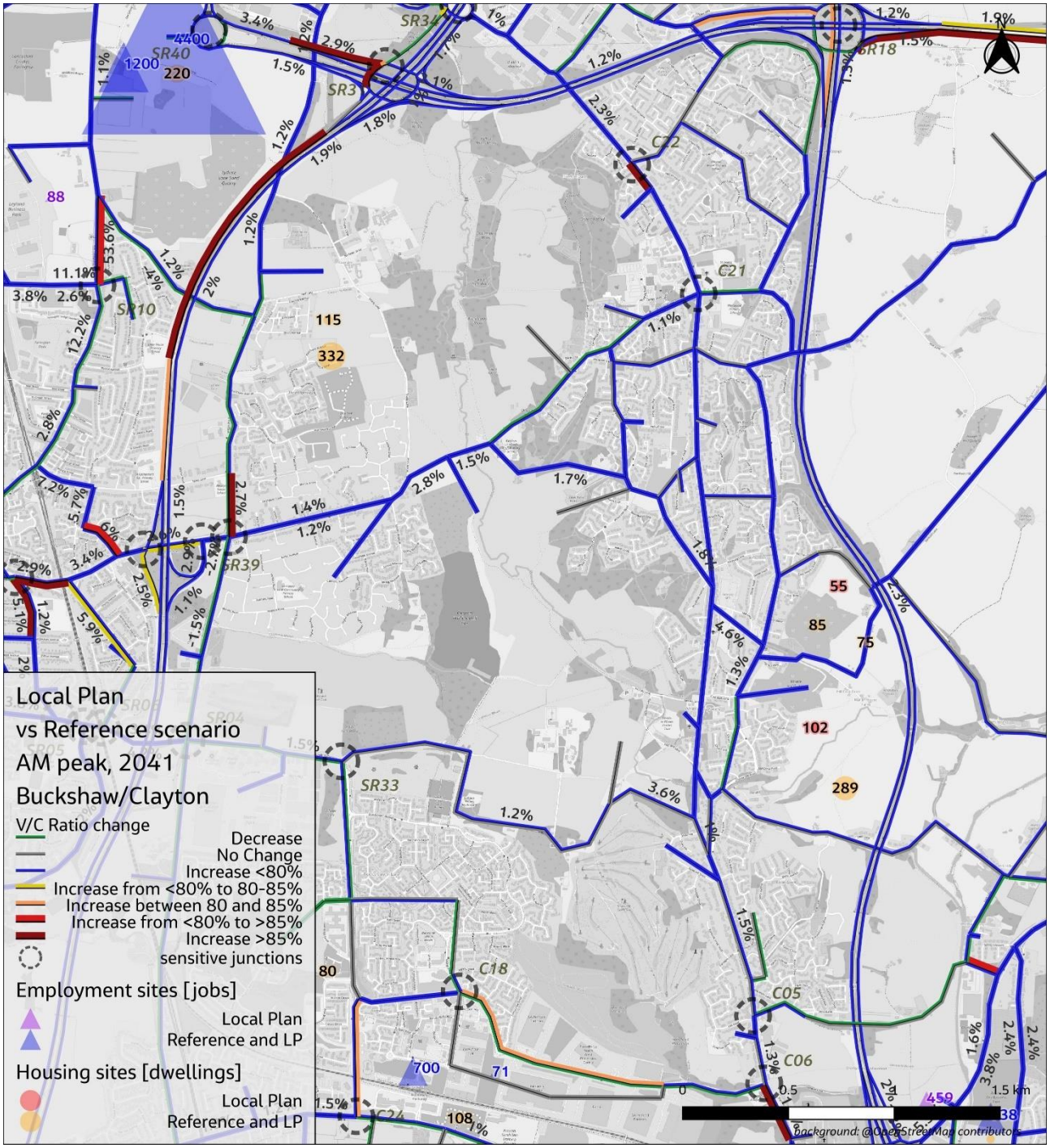

Figure B.3-18. V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Chorley Buckshaw/Clayton

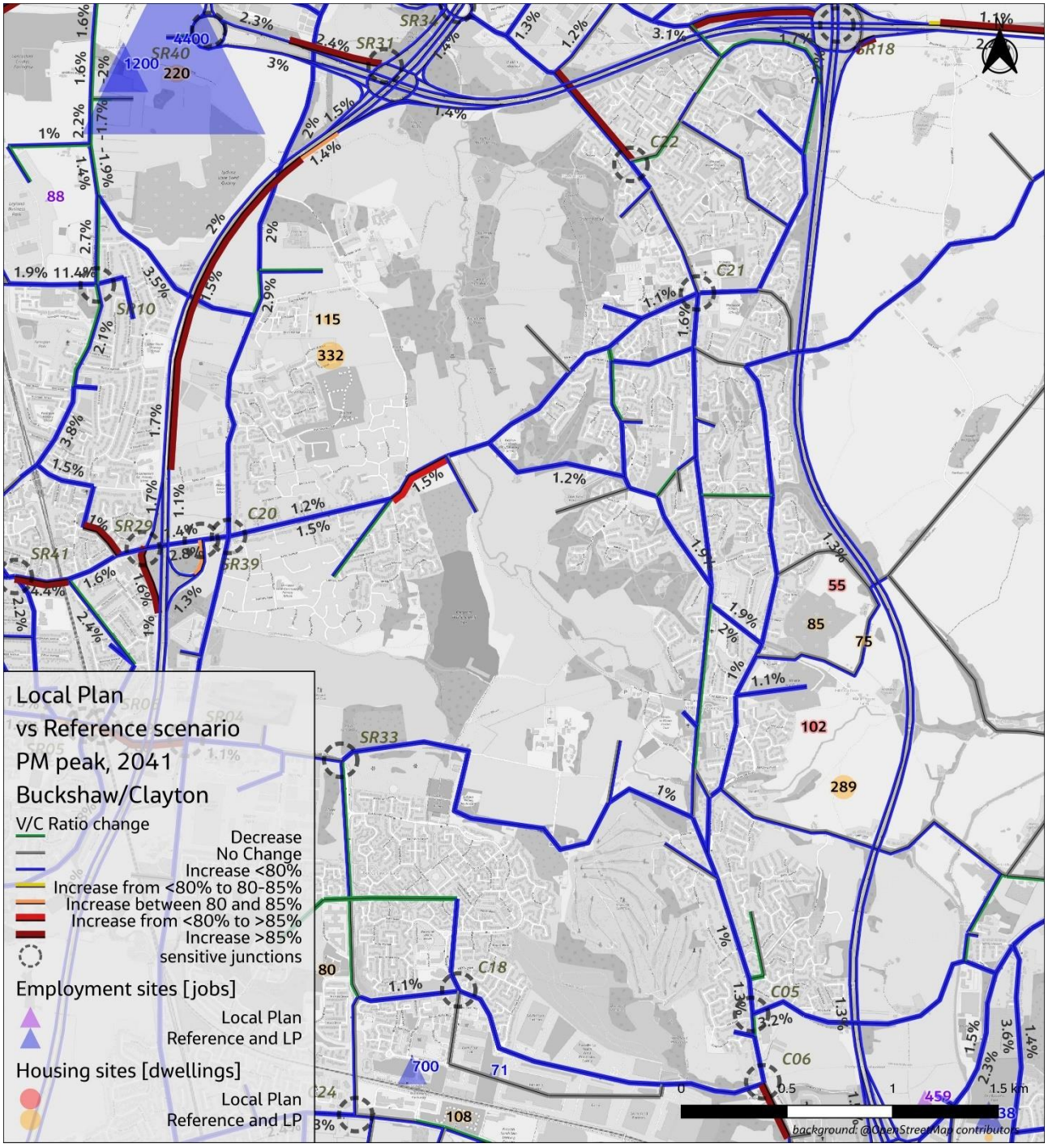

Figure B.3-19. V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Chorley Buckshaw/Clayton

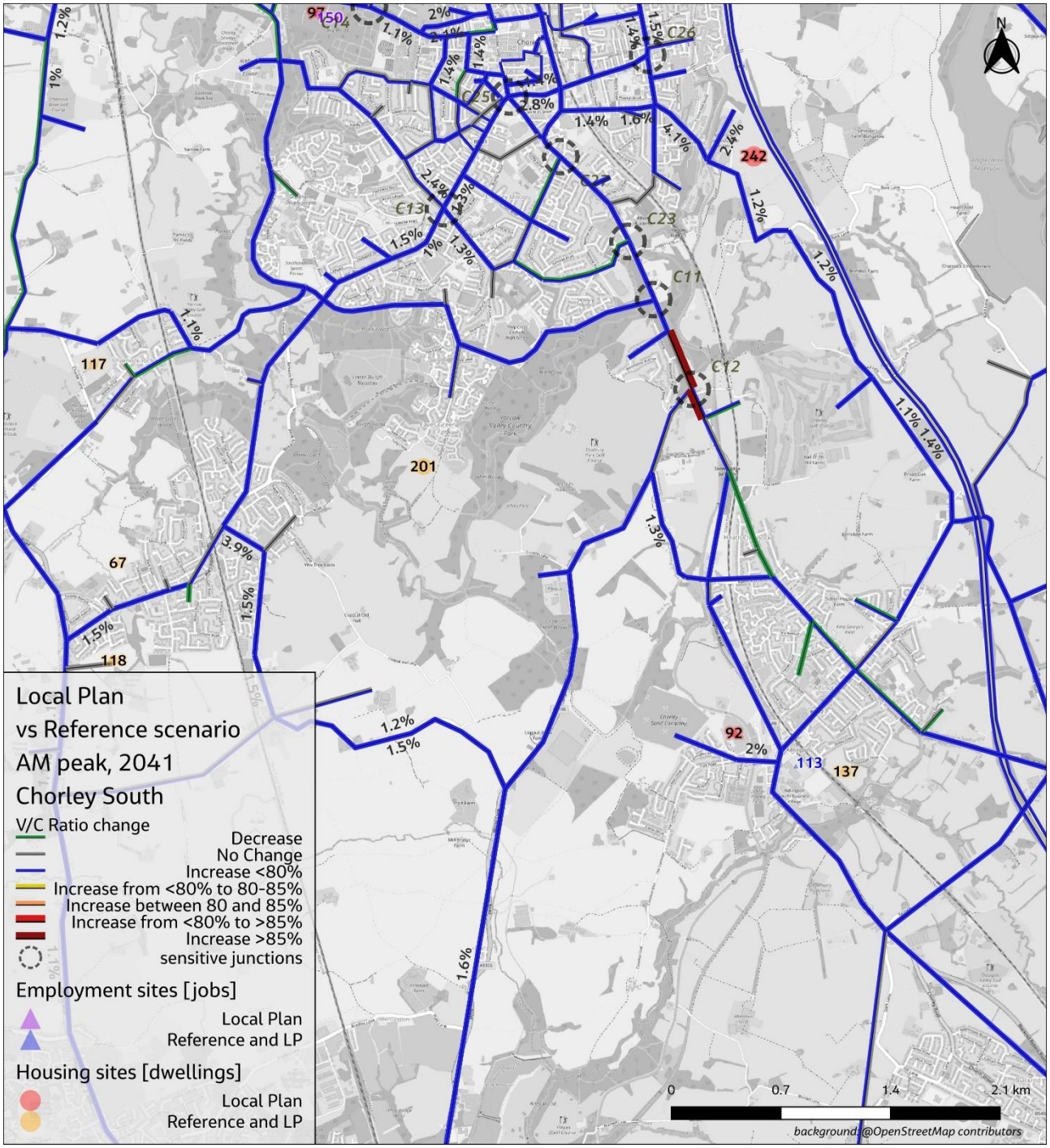

Figure B.3-20. V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Chorley South

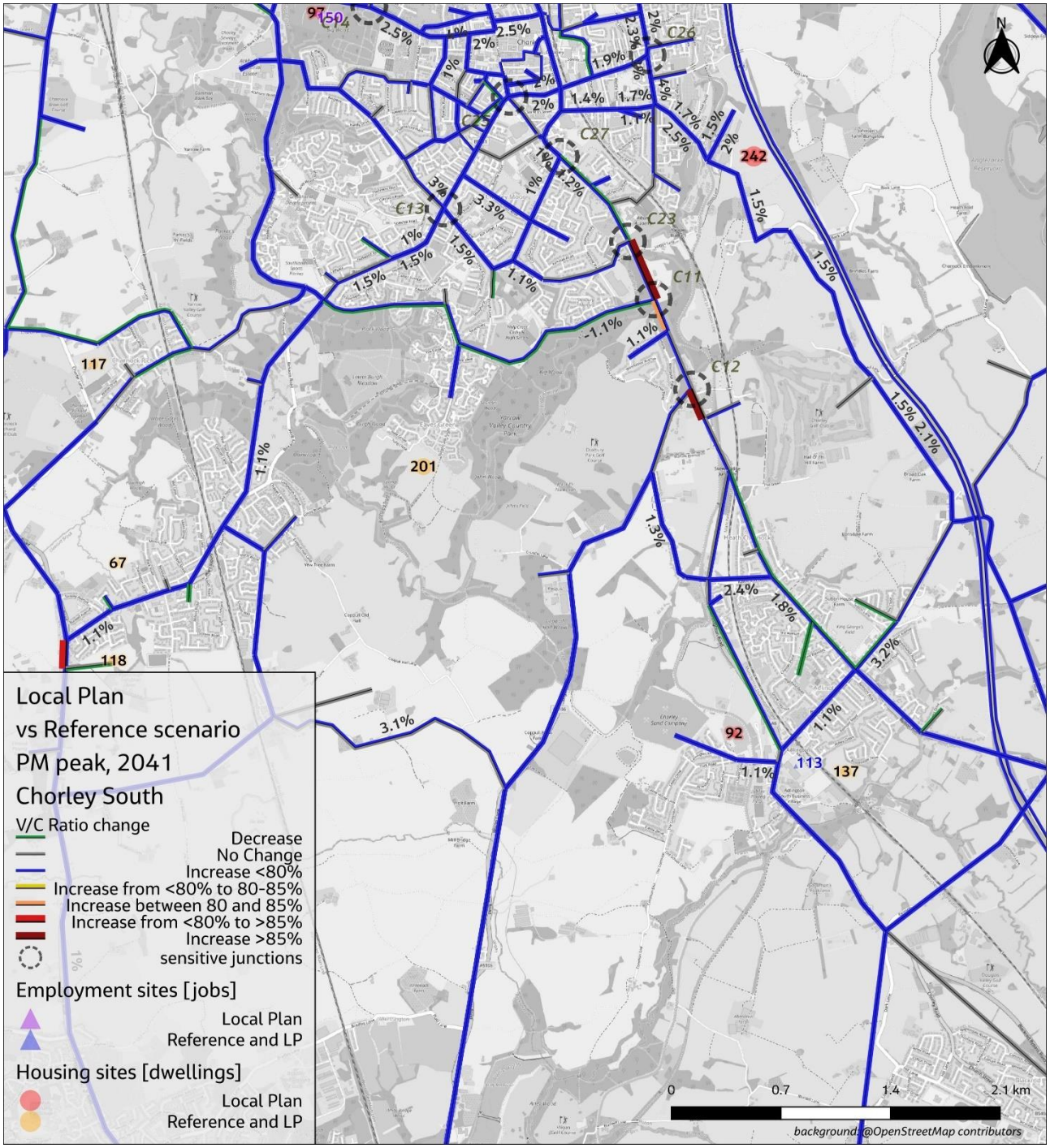

Figure B.3-21. V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Chorley South

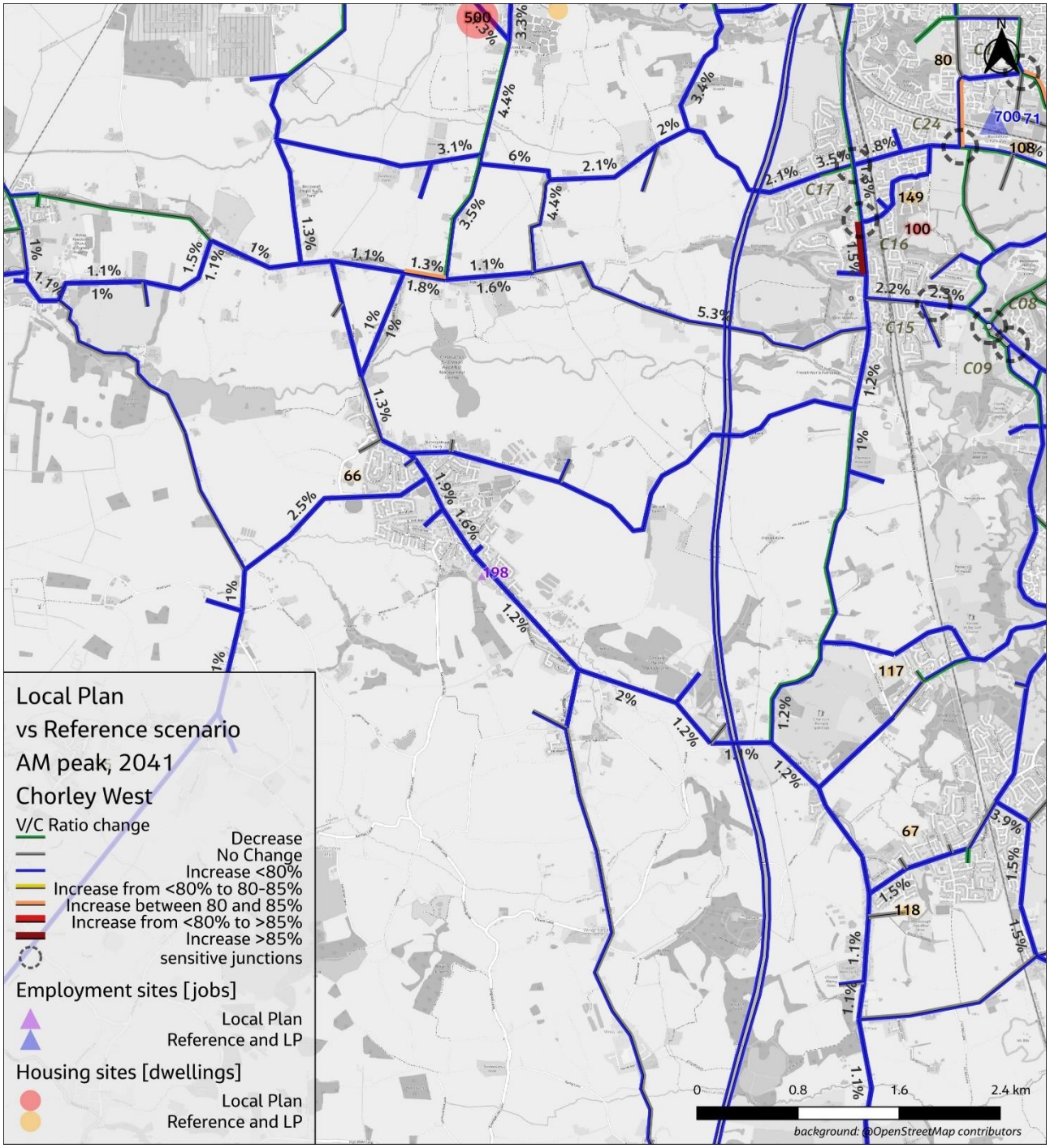

Figure B.3-22. V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Chorley West

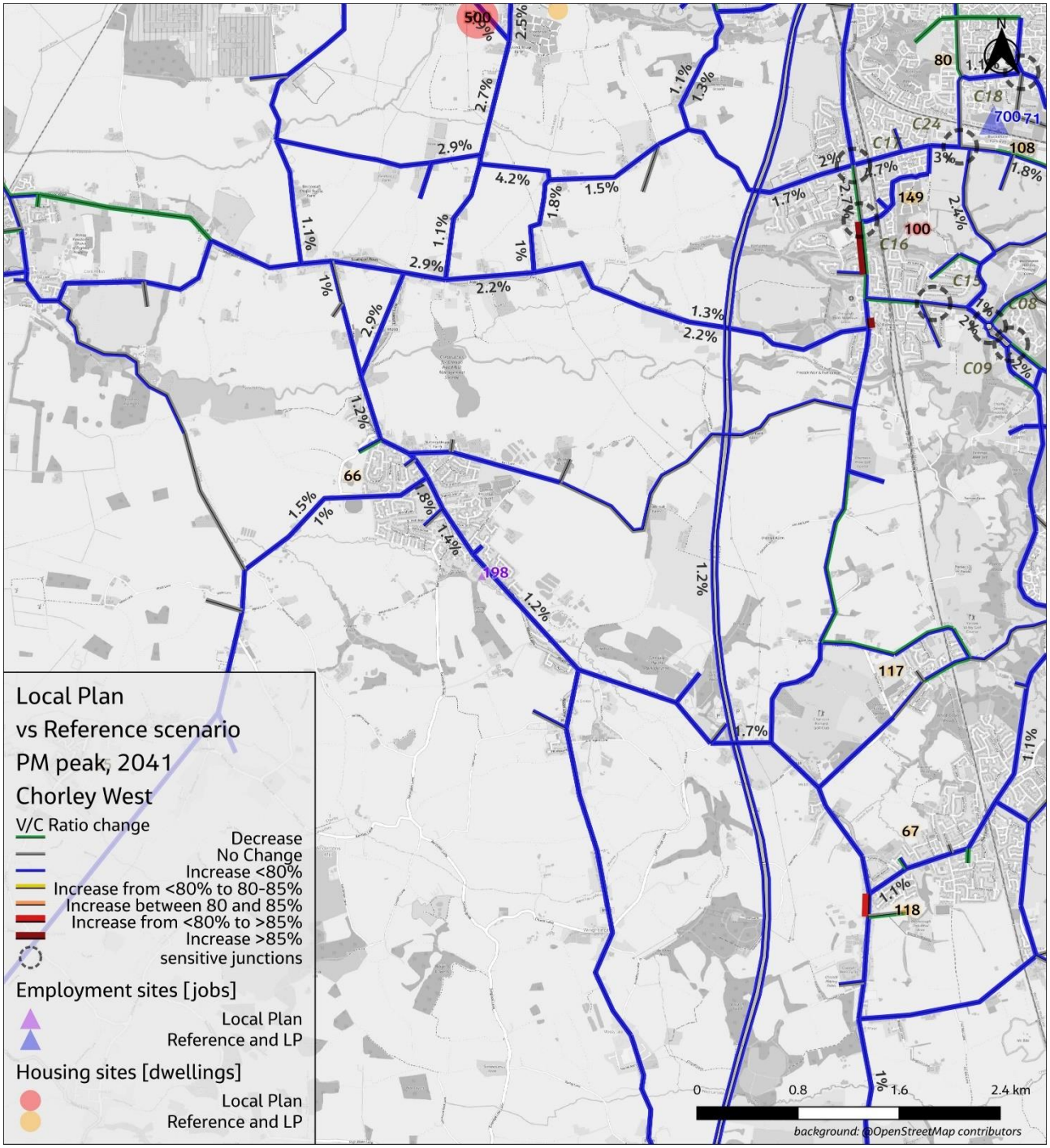

Figure B.3-23. V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Chorley West

Preston

Figure B.3-24 through Figure B.3-33 show the future year V/C plots for the Reference and Local Plan scenarios during AM and PM peaks.

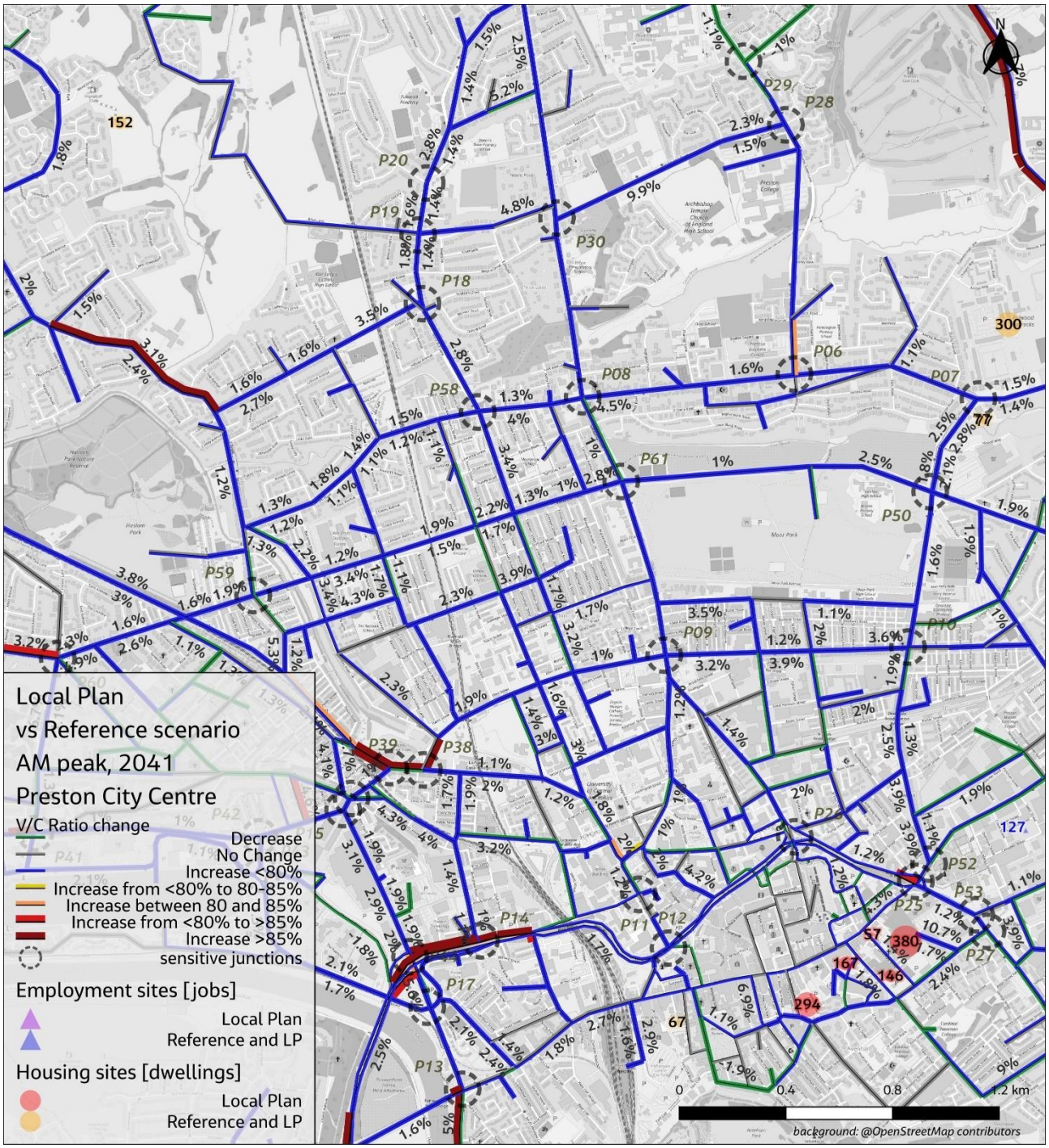

Figure B.3-24. V/C – 2041 AM Do Minimum Scenario Vs Reference Scenario – Preston City Centre

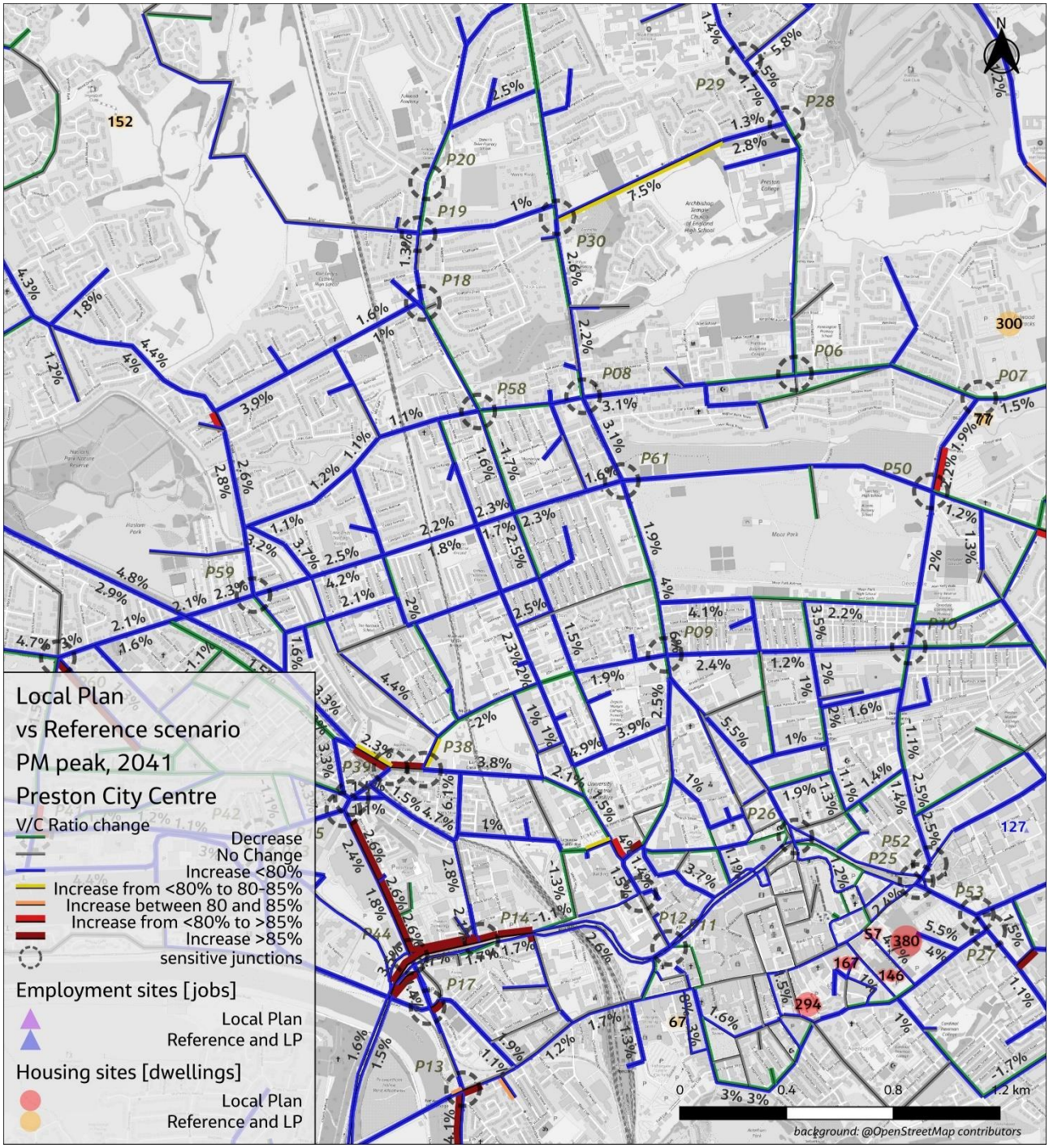

Figure B.3-25. V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Preston City Centre

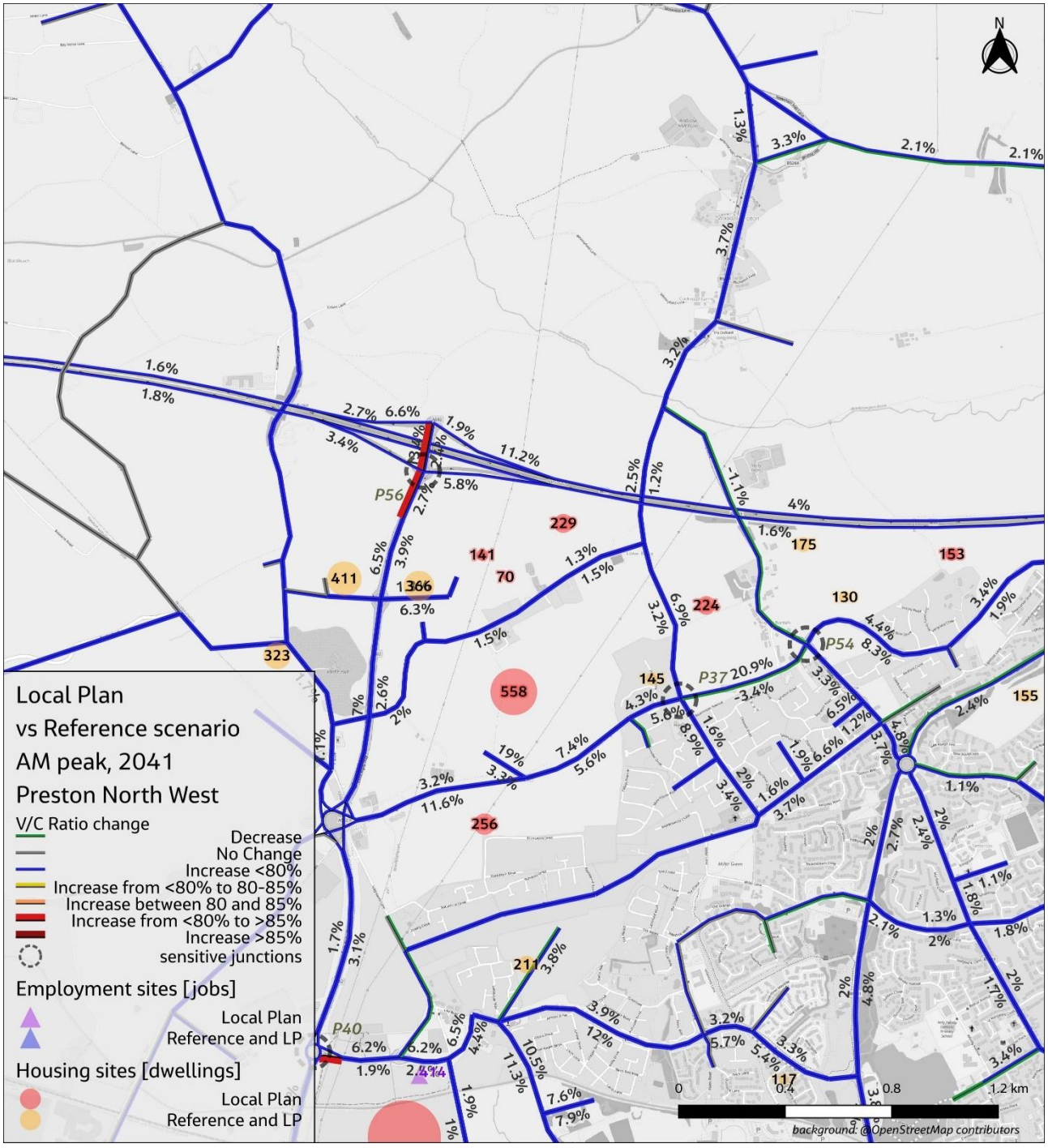

Figure B.3-26. V/C – 2041 AM Do Minimum Scenario Vs Reference Scenario – Preston Northwest

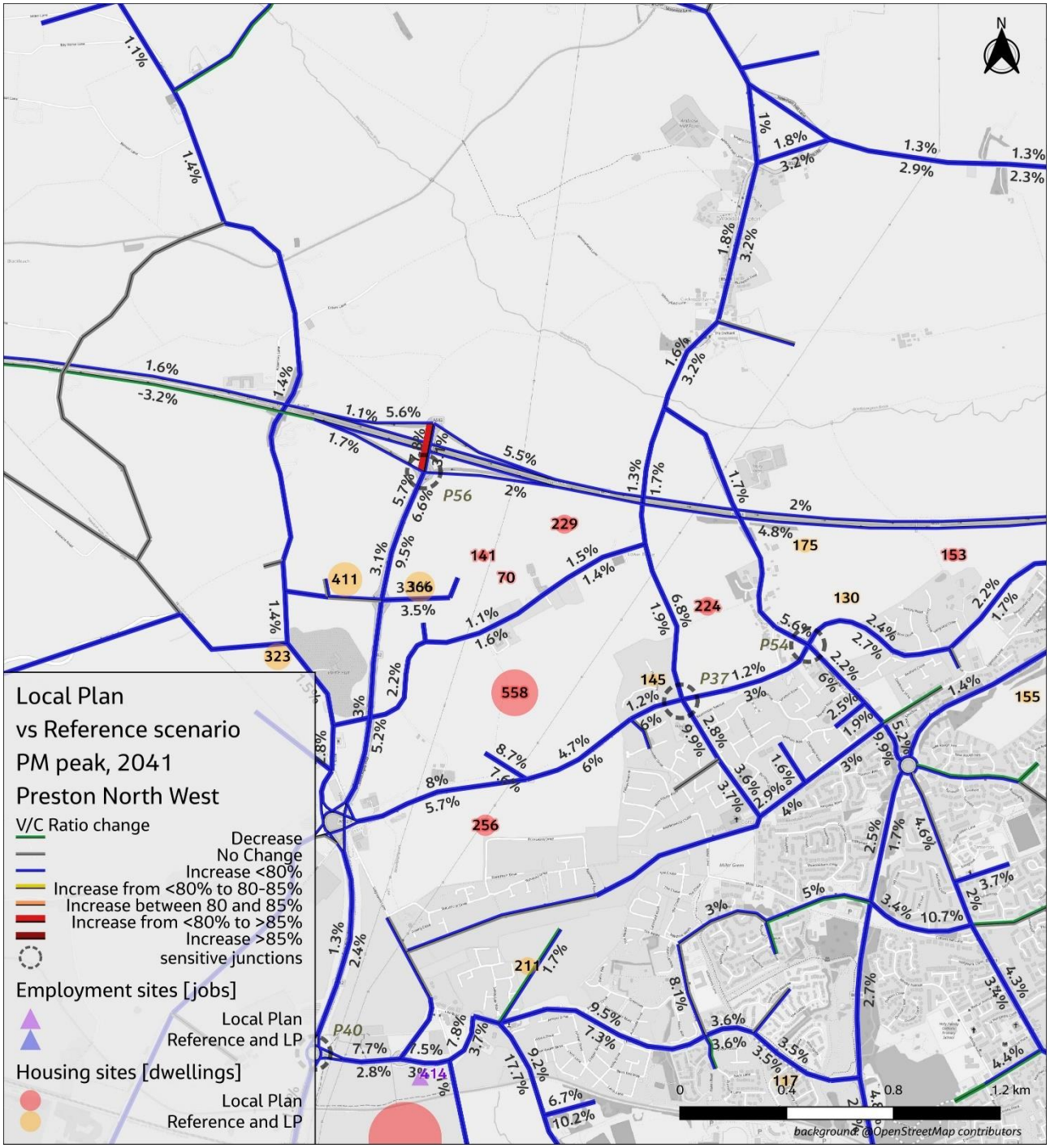

Figure B.3-27 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Preston Northwest

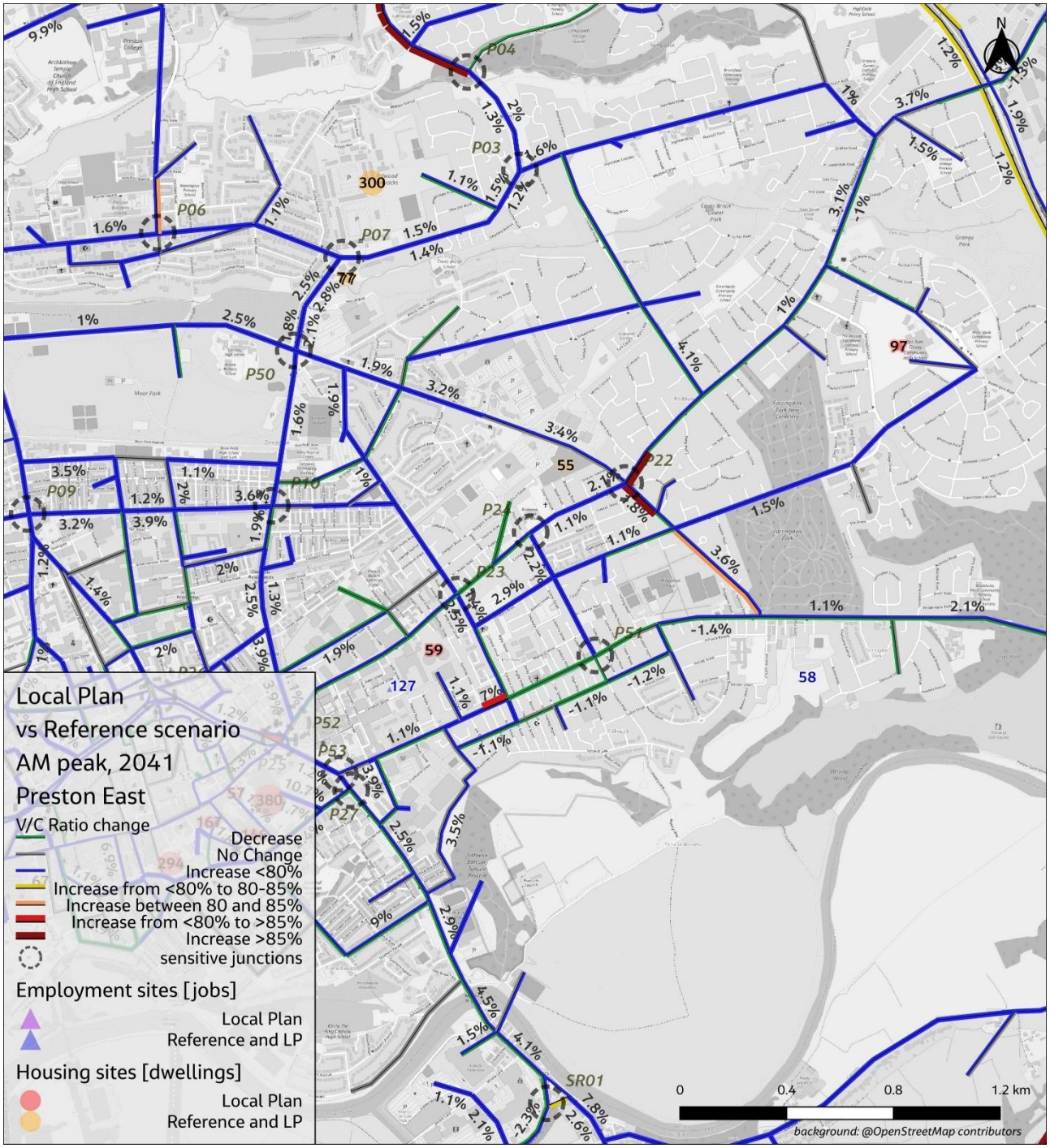

Figure B.3-28 V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Preston East

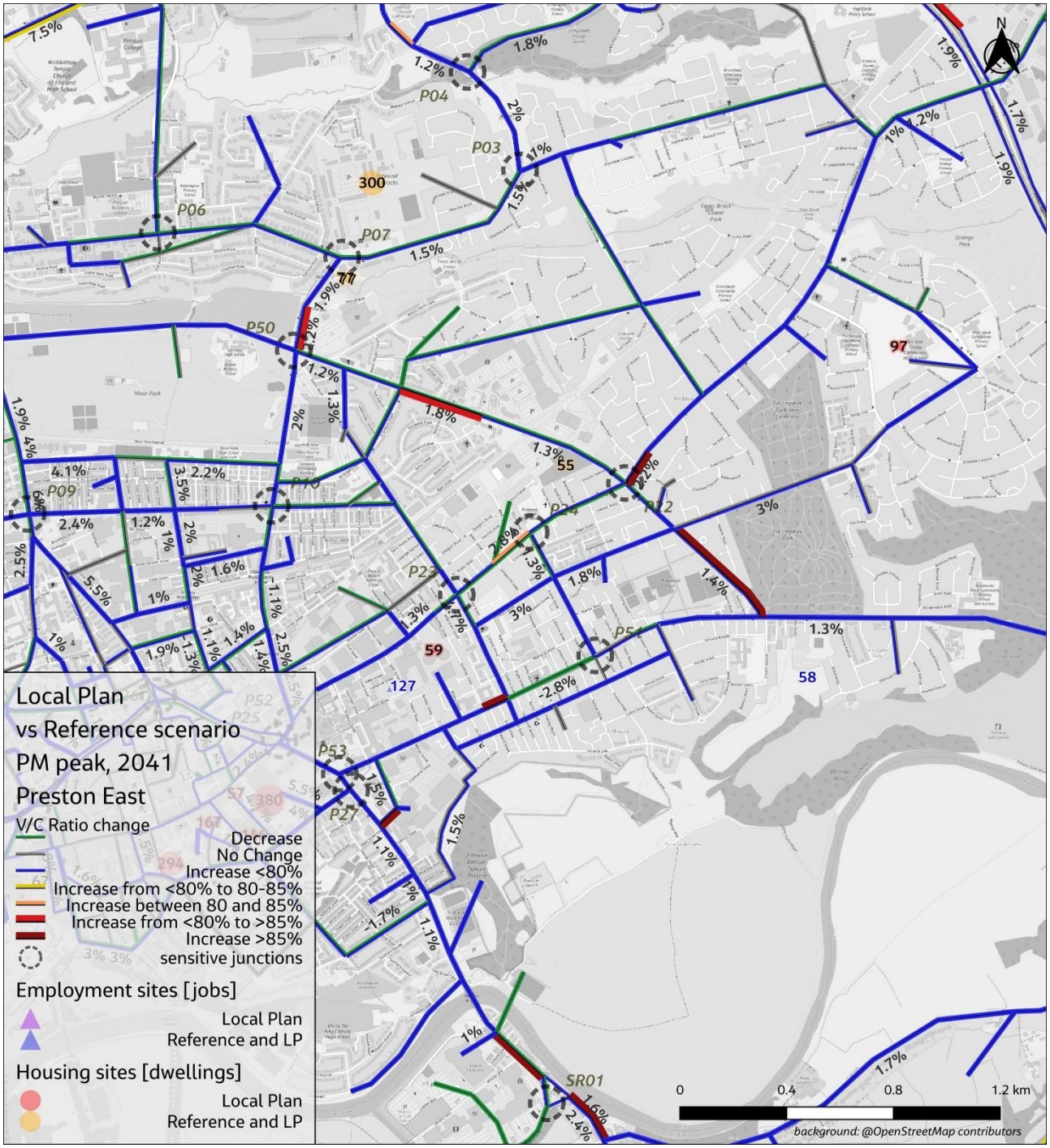

Figure B.3-29 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Preston East

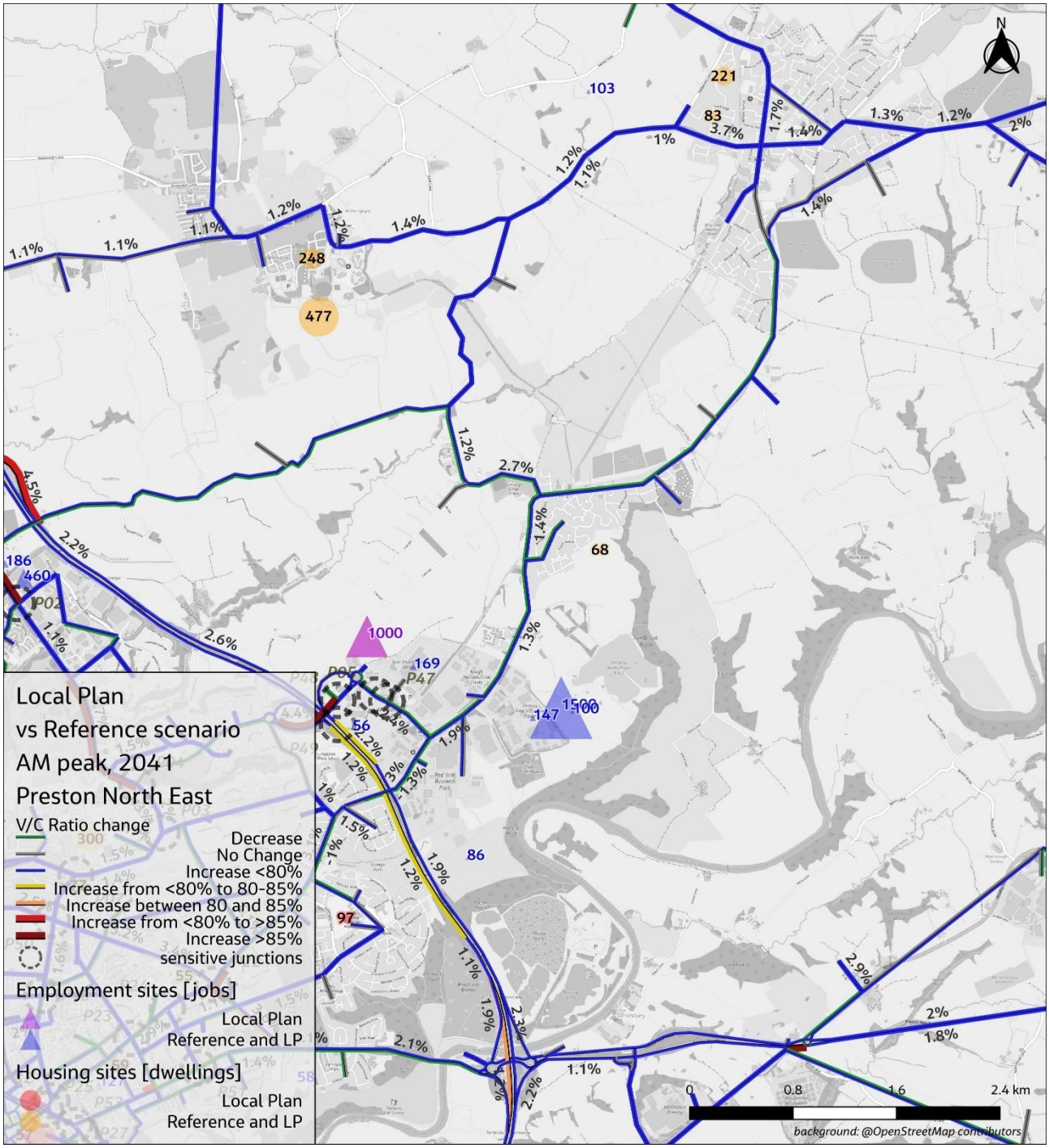

Figure B.3-30 /C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Preston Northeast

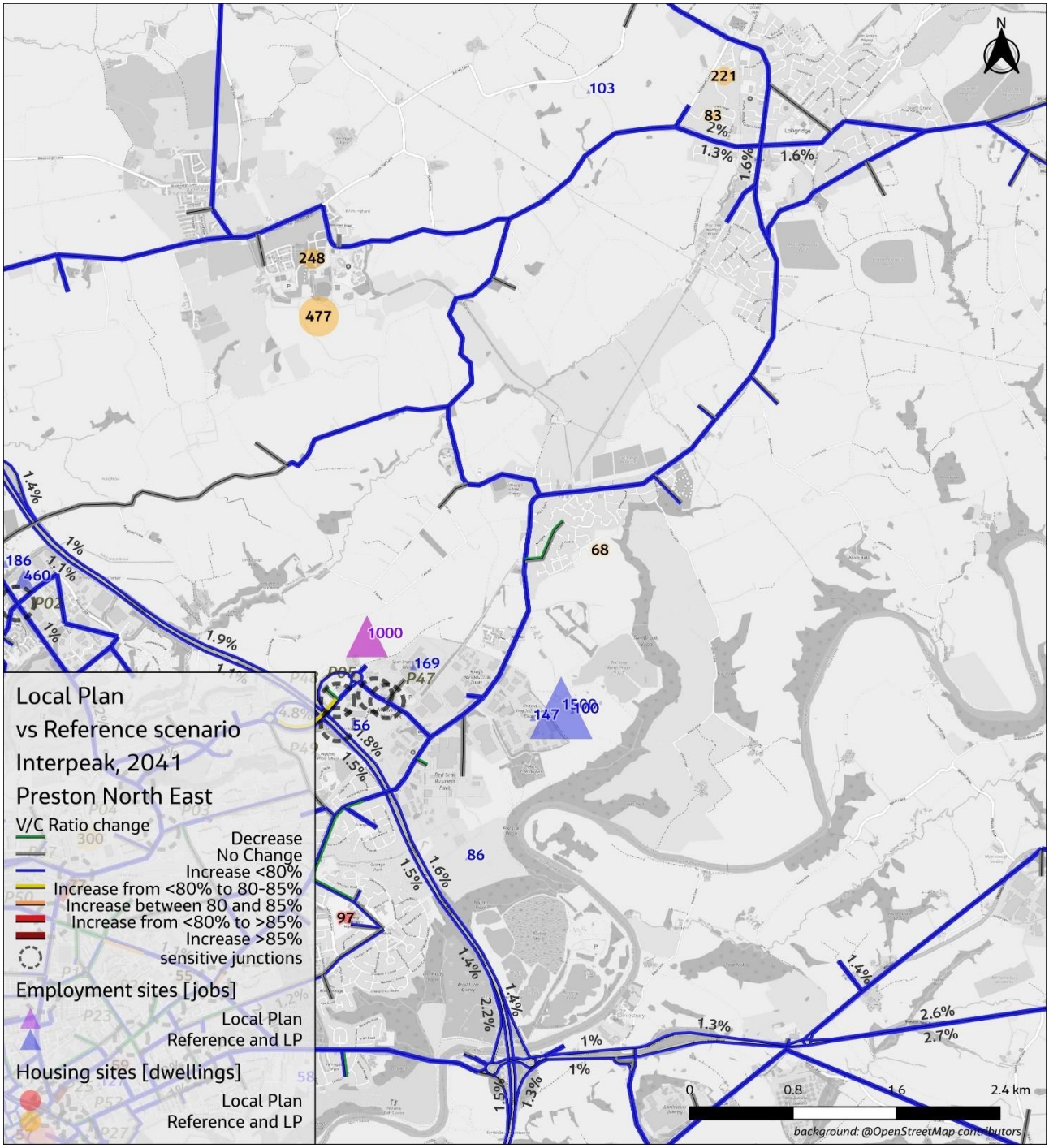

Figure B.3-31 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Preston Northeast

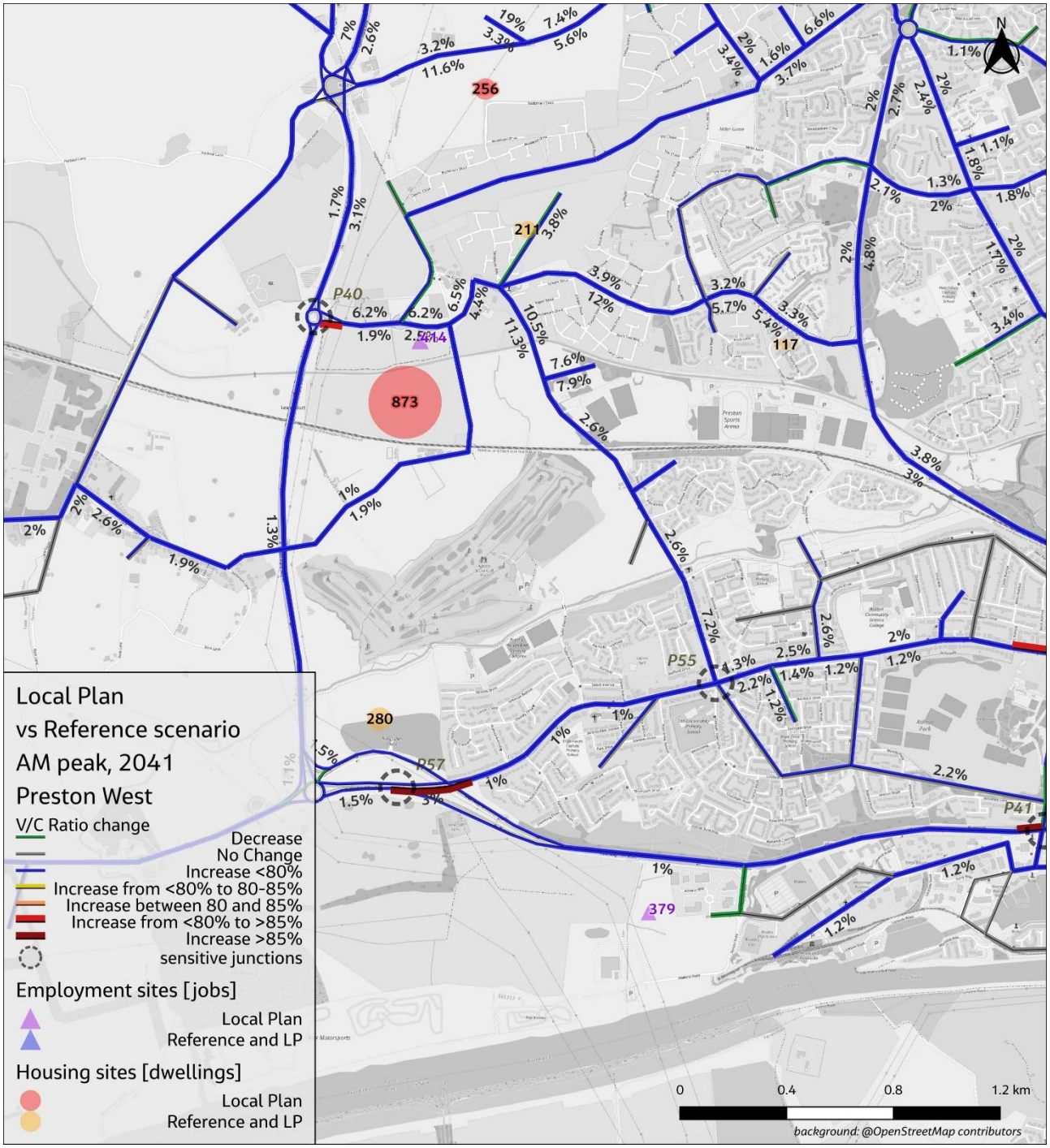

Figure B.3-32 /C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Preston West

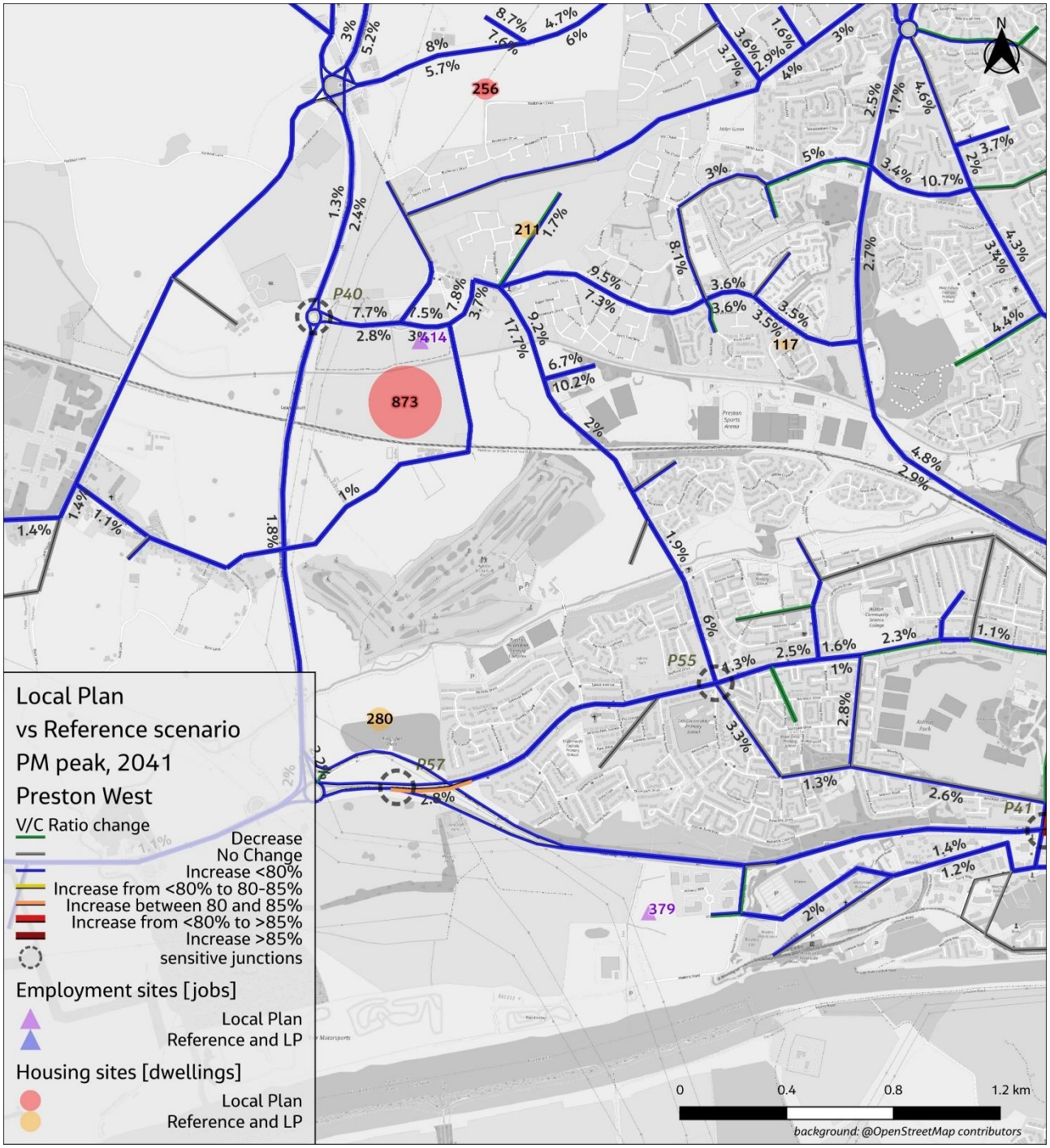

Figure B.3-33 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Preston West

South Ribble

Figure B.3-34 through Figure B.3-41 show the future year V/C plots for the Reference and Local Plan scenarios during AM and PM peaks. The highest V/C value at each junction is provided.

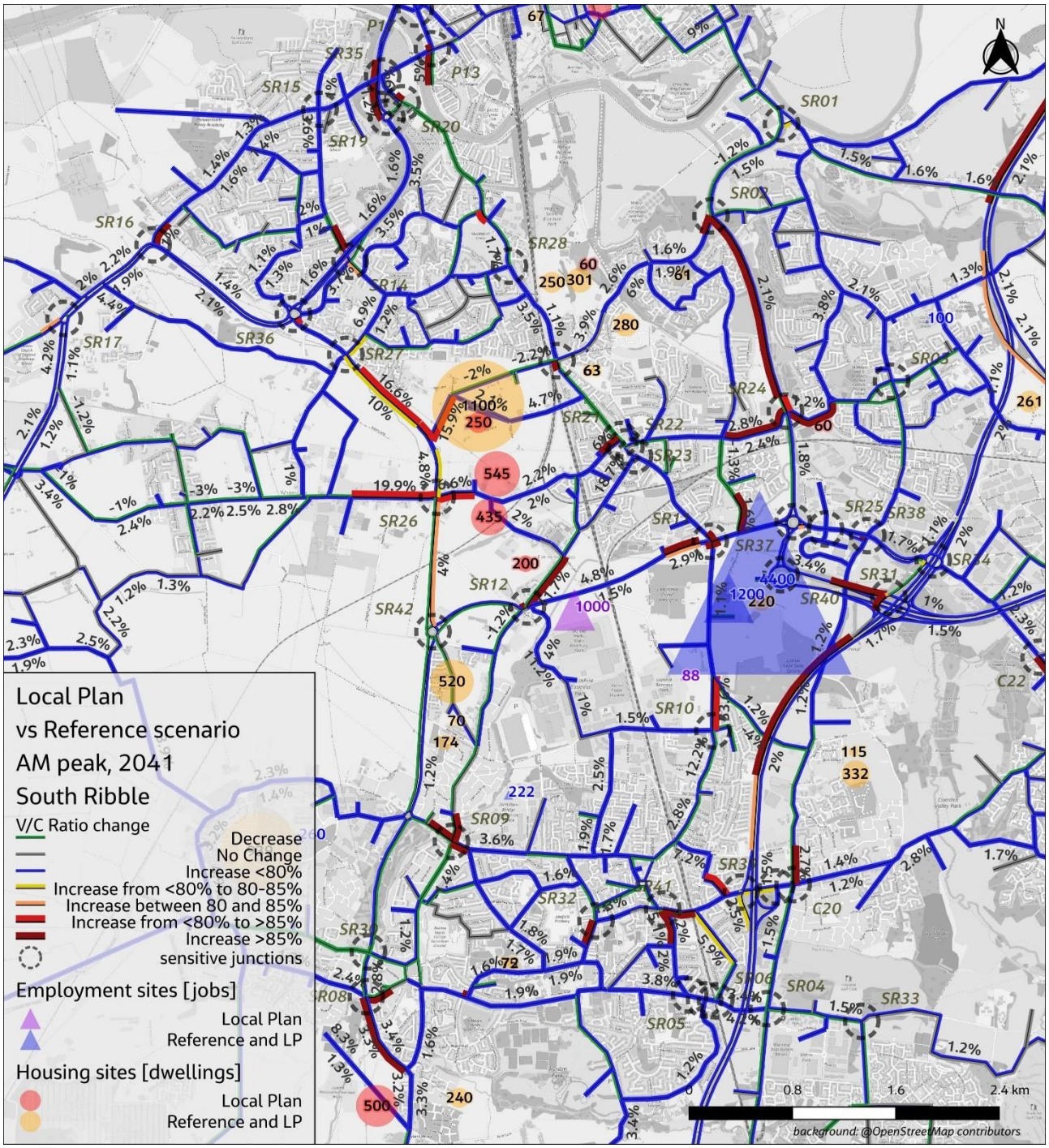

Figure B.3-34 V/C – 2041 AM Do Minimum Scenario Vs Reference Scenario – South Ribble

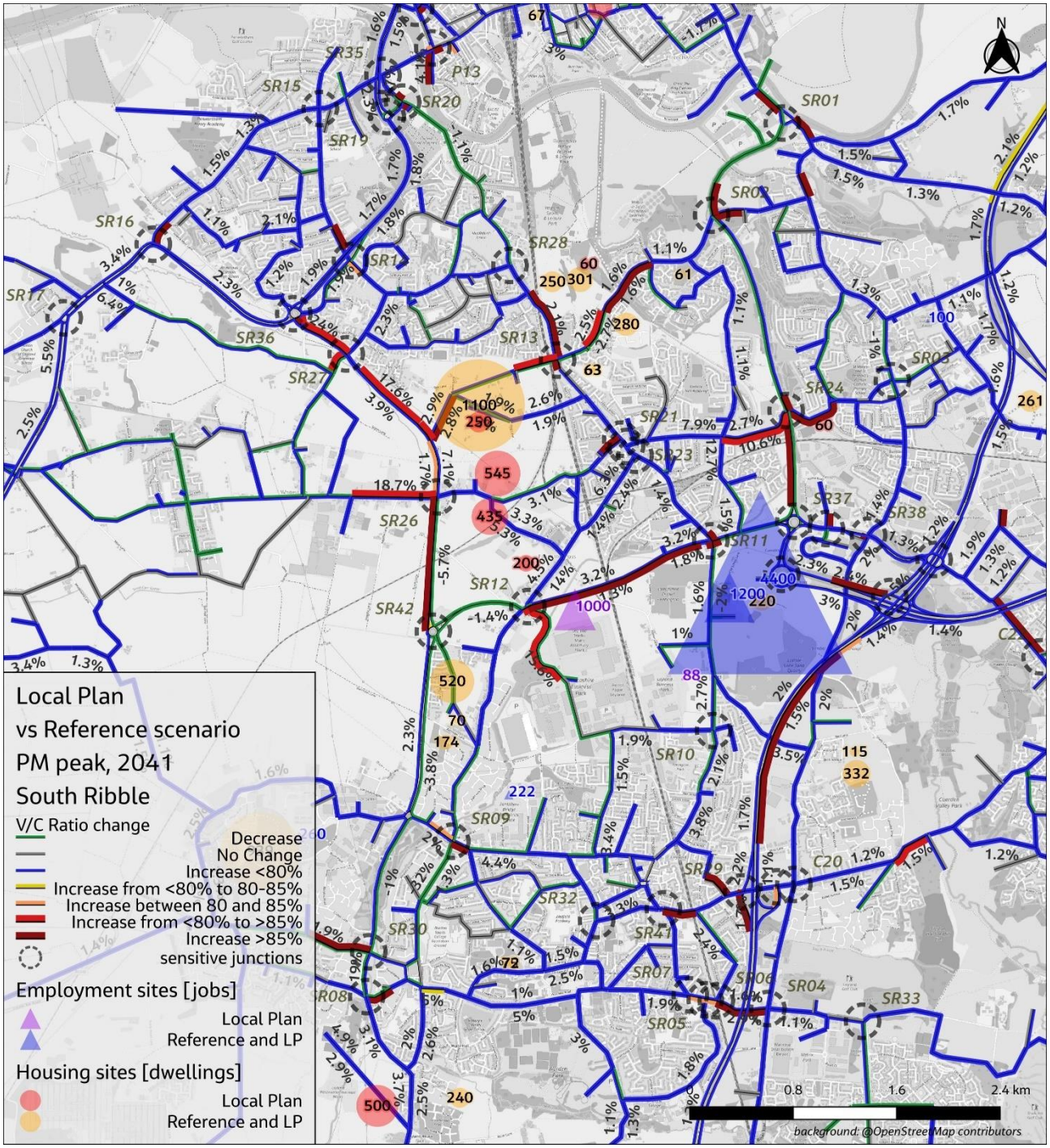

Figure B.3-35 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – South Ribble

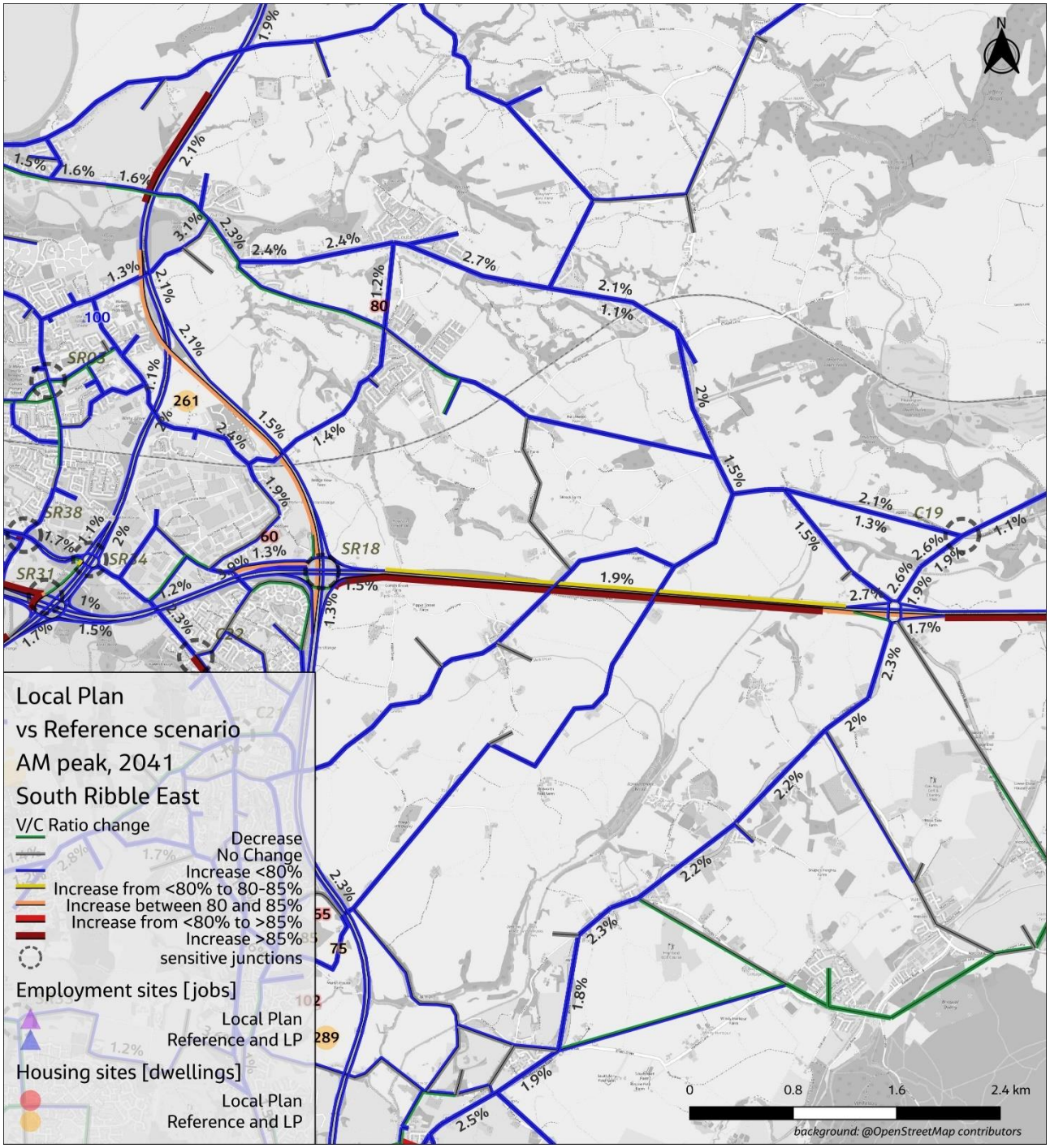

Figure B.3-36 V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – South Ribble East

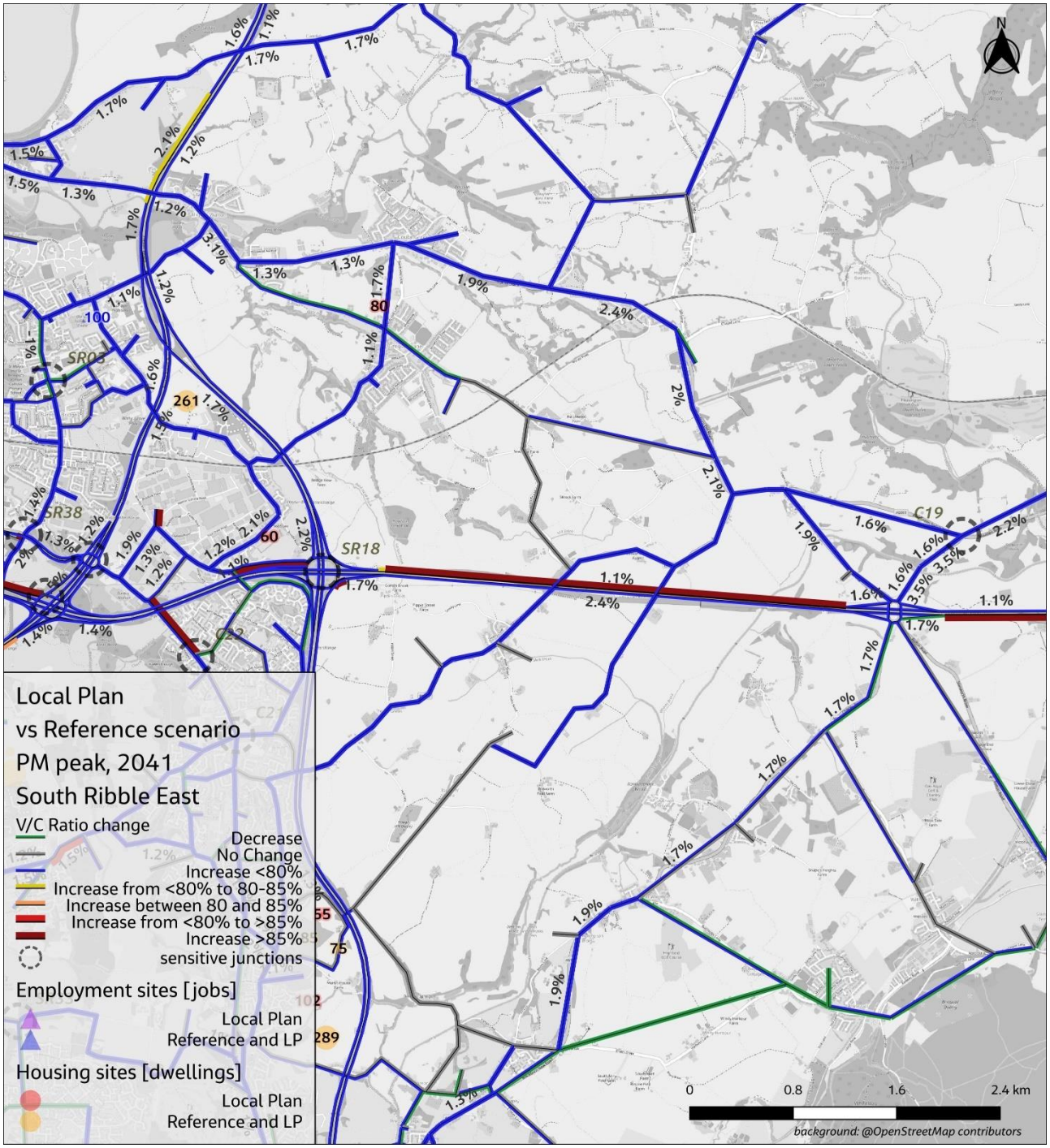

Figure B.3-37 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – South Ribble East

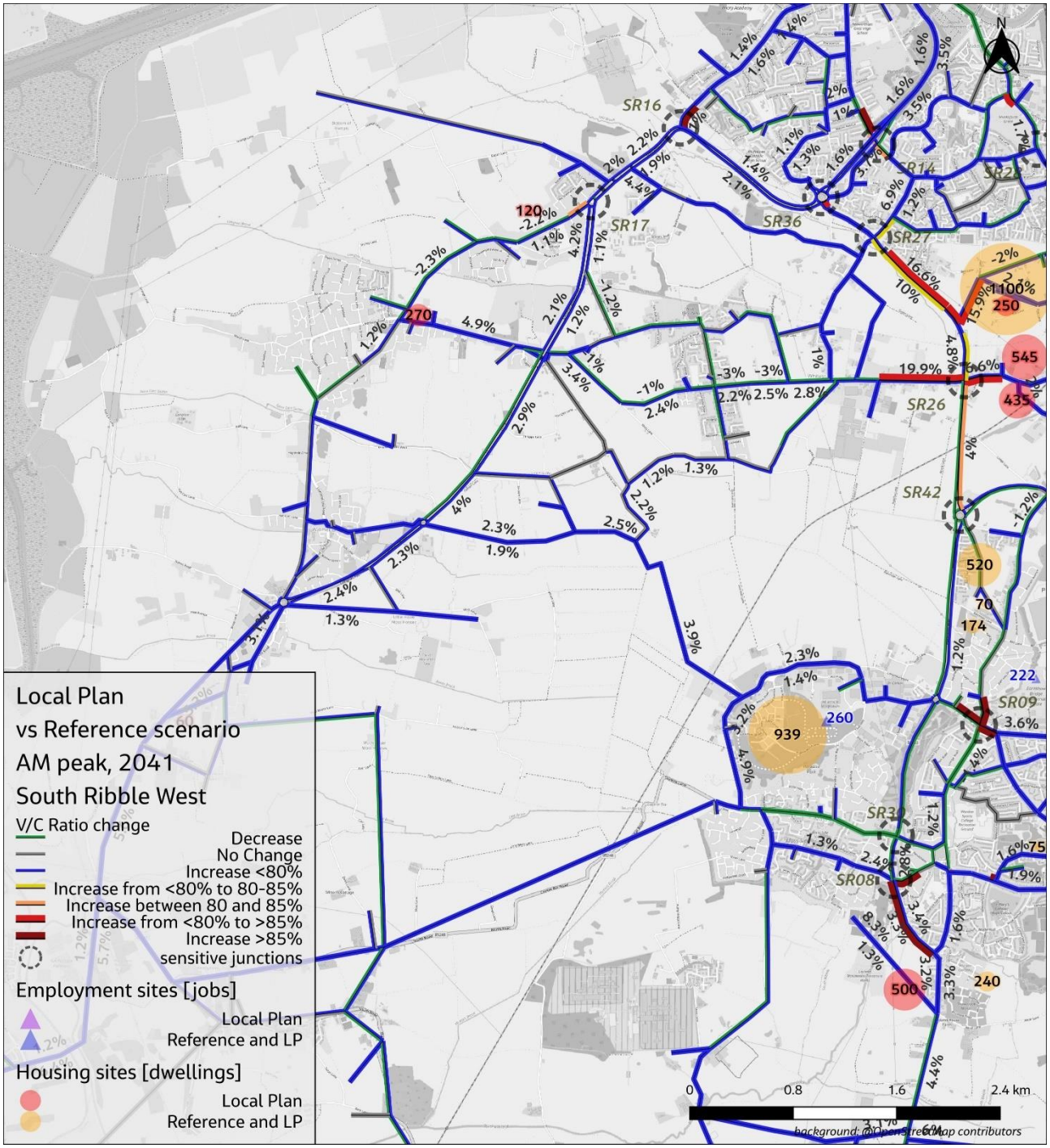

Figure B.3-38 V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – South Ribble West

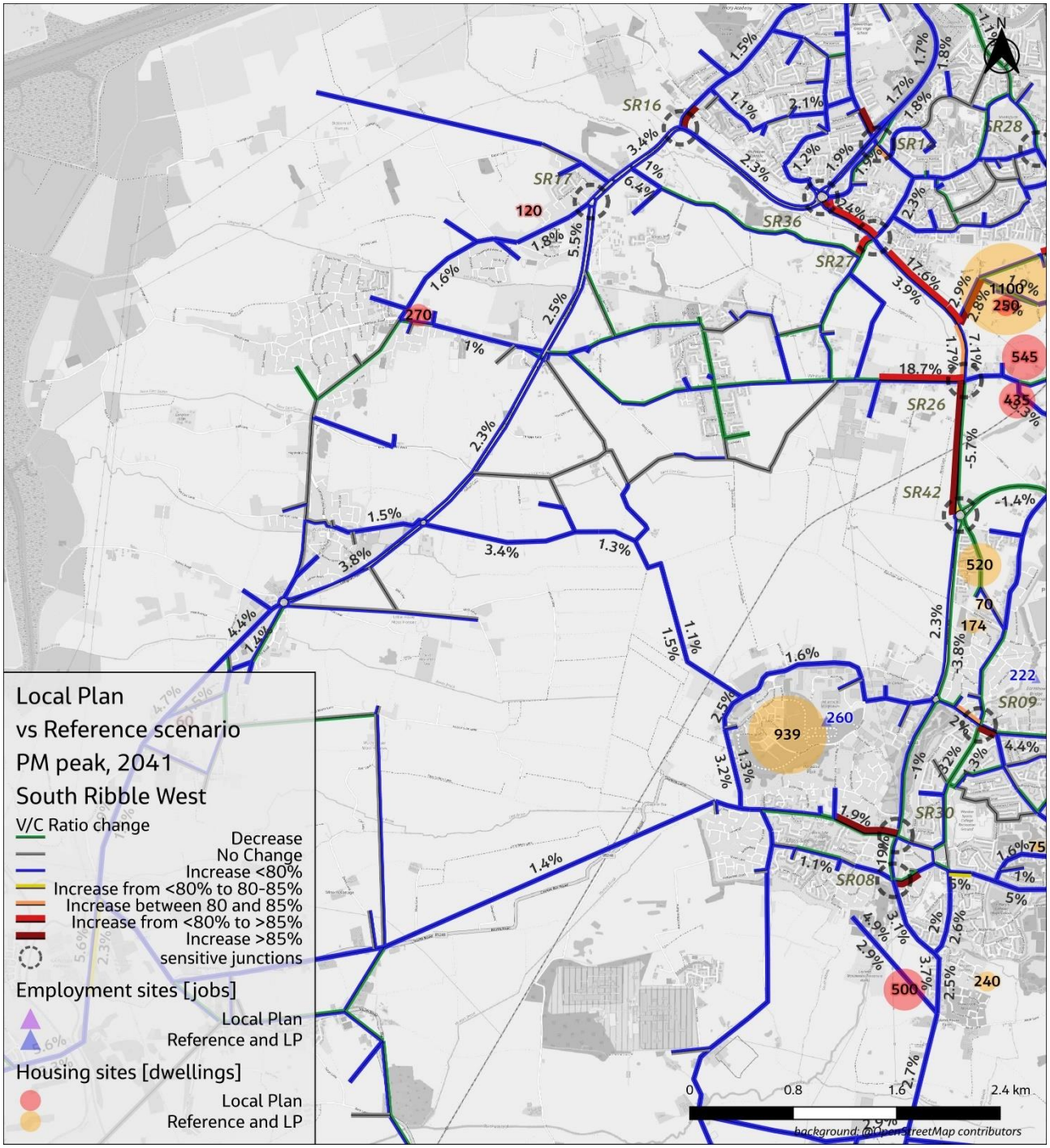

Figure B.3-39 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – South Ribble West

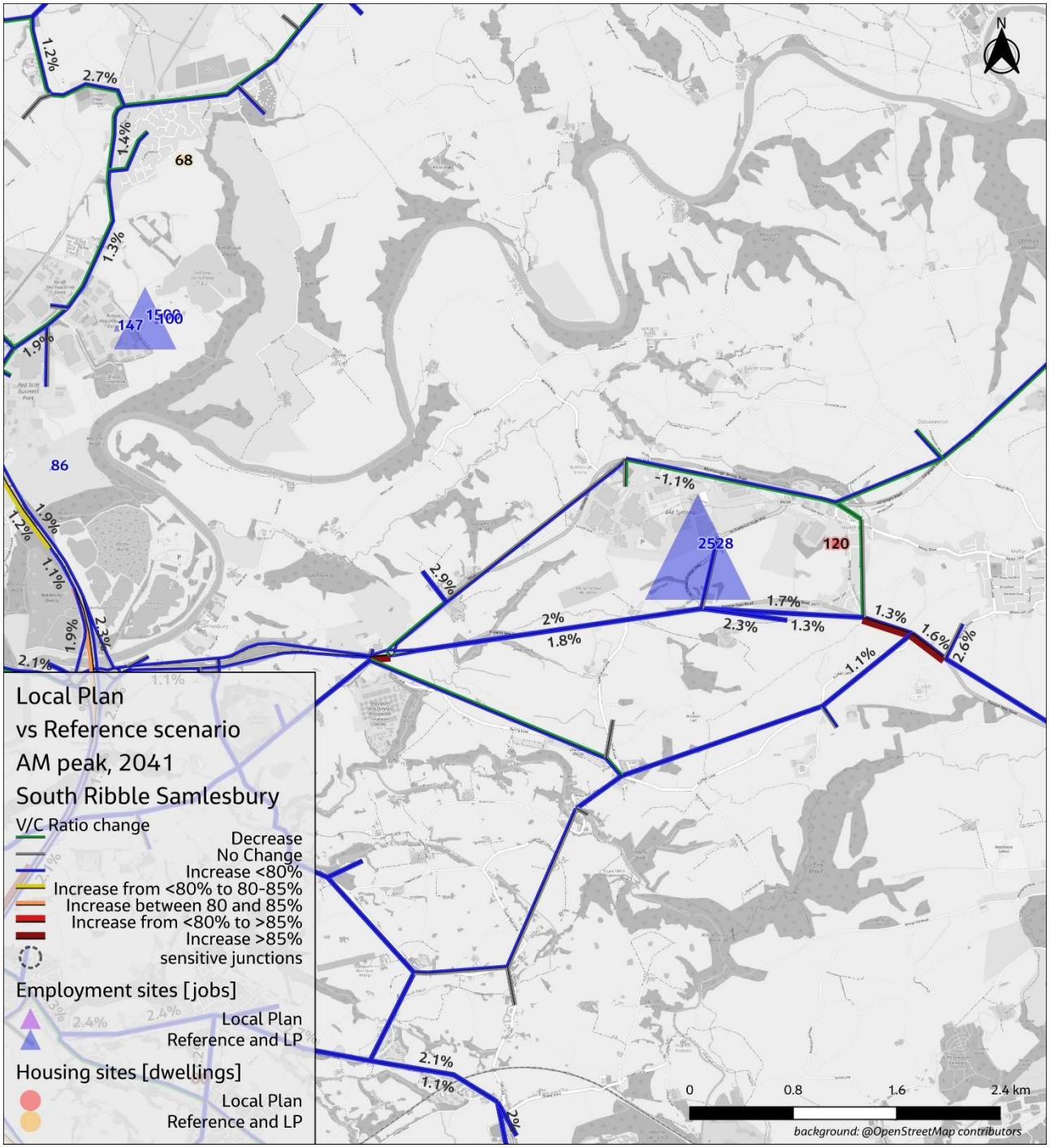

Figure B.3-40 V/C Plot – 2041 AM Do Minimum Scenario Vs Reference Scenario – Samelsbury

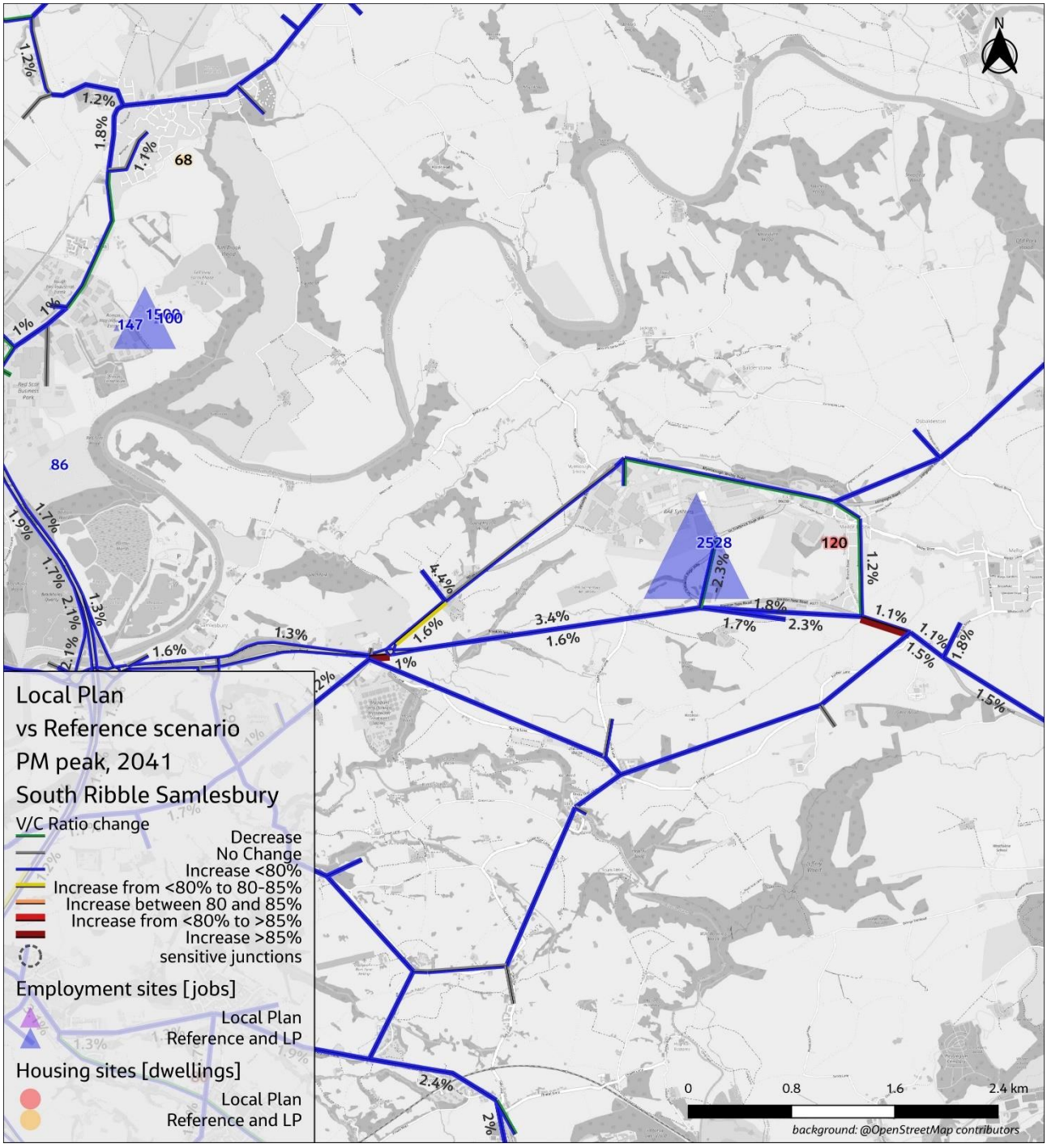

Figure B.3-41 V/C Plot – 2041 PM Do Minimum Scenario Vs Reference Scenario – Samelsbury

B.4 Highway Network Performance

The highway traffic growth within the CLTM model, resulting from the inclusion of Local Plan allocations, leads to a projected increase in total vehicle kilometres travelled during both the AM and PM peak periods, approximately 3% in Preston and South Ribble, and 2% in Chorley. Although average speeds across all three districts remain largely unchanged between scenarios, these results suggest that the highway network in Central Lancashire is accommodating a higher volume of trips and experiencing modest increase in congestion.

The impact on the wider core model area is considered minimal, as land use changes between scenarios are concentrated solely within the Central Lancashire districts.

Table B.4-1. Model Network Statistics by District 2041

Network Statistics by district		AM		IP		PM	
		Reference	Local Plan	Reference	Local Plan	Reference	Local Plan
Total vehicle kilometres	Chorley	485,716	494,795	397,166	403,950	485,632	494,485
	Preston	473,981	486,195	406,147	414,870	461,063	473,858
	South Ribble	318,201	326,877	245,729	252,724	306,064	314,262
Total vehicle hours	Chorley	8,156	8,357	5,986	6,107	7,986	8,184
	Preston	9,751	10,187	7,424	7,632	9,418	9,841
	South Ribble	7,088	7,474	4,683	4,868	6,714	7,057
Average speed	Chorley	41.01	40.88	42.52	42.46	41.27	41.14
	Preston	30.94	30.79	31.77	31.70	31.10	30.96
	South Ribble	36.34	36.13	37.83	37.72	36.65	36.49

B.5 Public Transport Model outputs

This section summarises the bus and rail passenger flow comparisons for the three districts to gauge the increase in PT demand in the future scenarios. The committed PT schemes along with the background growth and PT demand from the proposed committed and Local Plan develop contribute to the increase in PT demand over the years. The variable demand modelling reduces the rail demand due to increases in rail fare in future years, while the bus demand is seen to increase slightly from the Pre-VDM results.

Bus passenger flow comparisons for the Local Plan No Mitigation scenario with Reference scenario for AM and PM for 2041 is provided in Figure B.5-42 through Figure B.5-49. An increase in bus flows is observed across all three districts as a result of the Local Plan allocations.

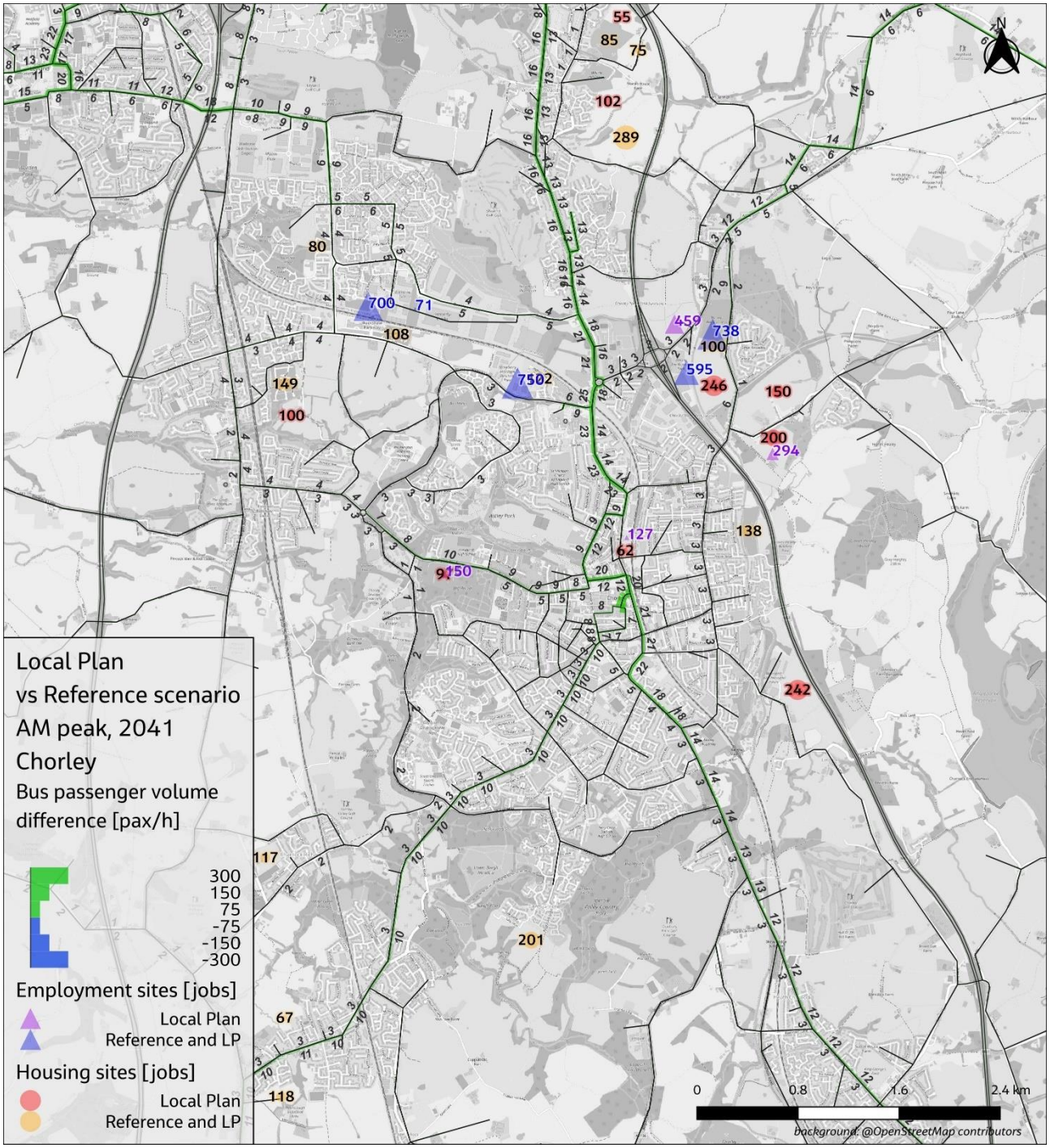

Figure B.5-42 Bus Passenger Flow Comparisons – 2041 AM Local Plan No Mitigation scenario with Reference – Chorley

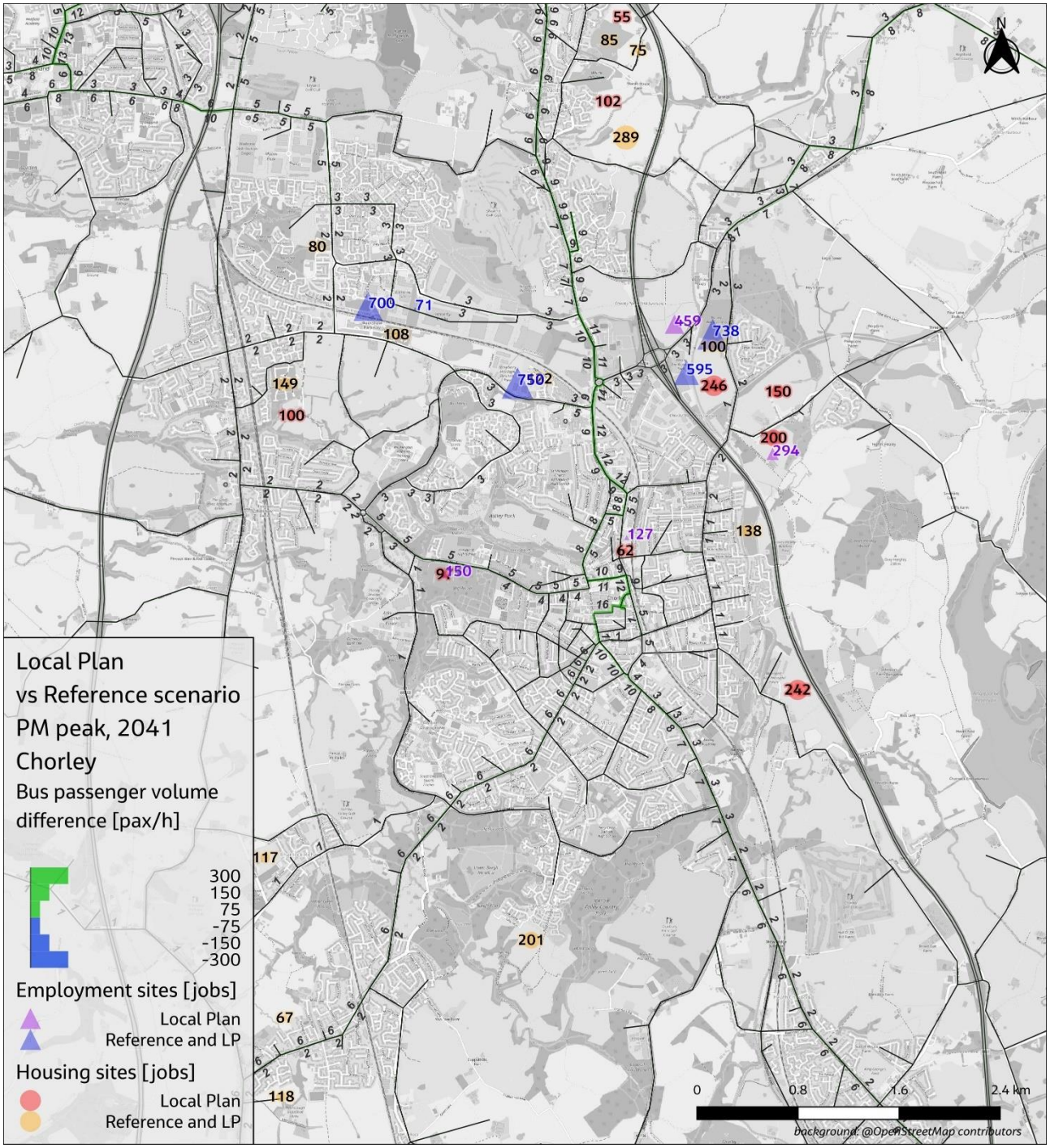

Figure B.5-43 Bus Passenger Flow Comparisons – 2041 PM Local Plan No Mitigation scenario with Reference – Chorley

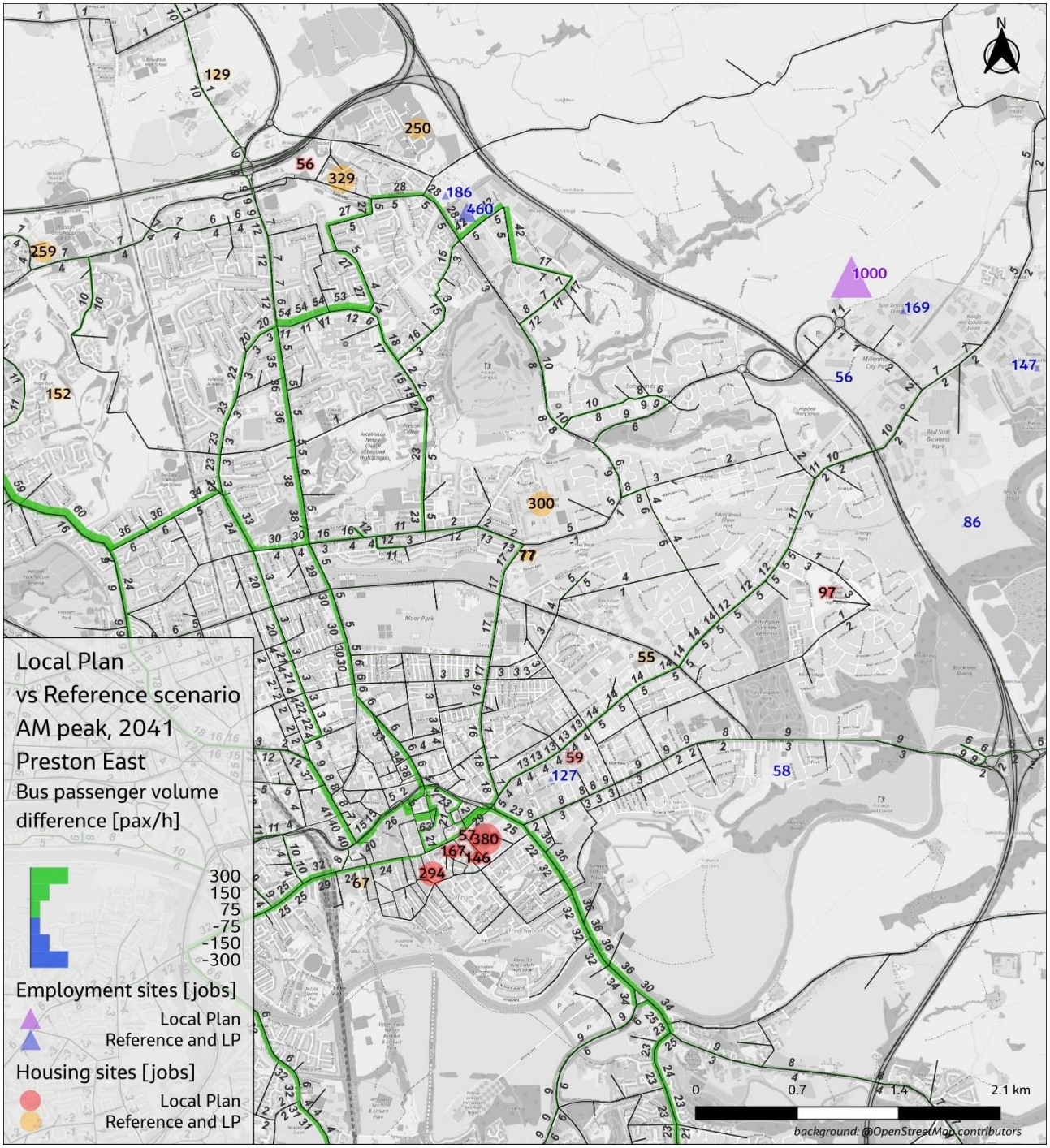

Figure B.5-44 Bus Passenger Flow Comparisons – 2041 AM Local Plan No Mitigation scenario with Reference – Preston East

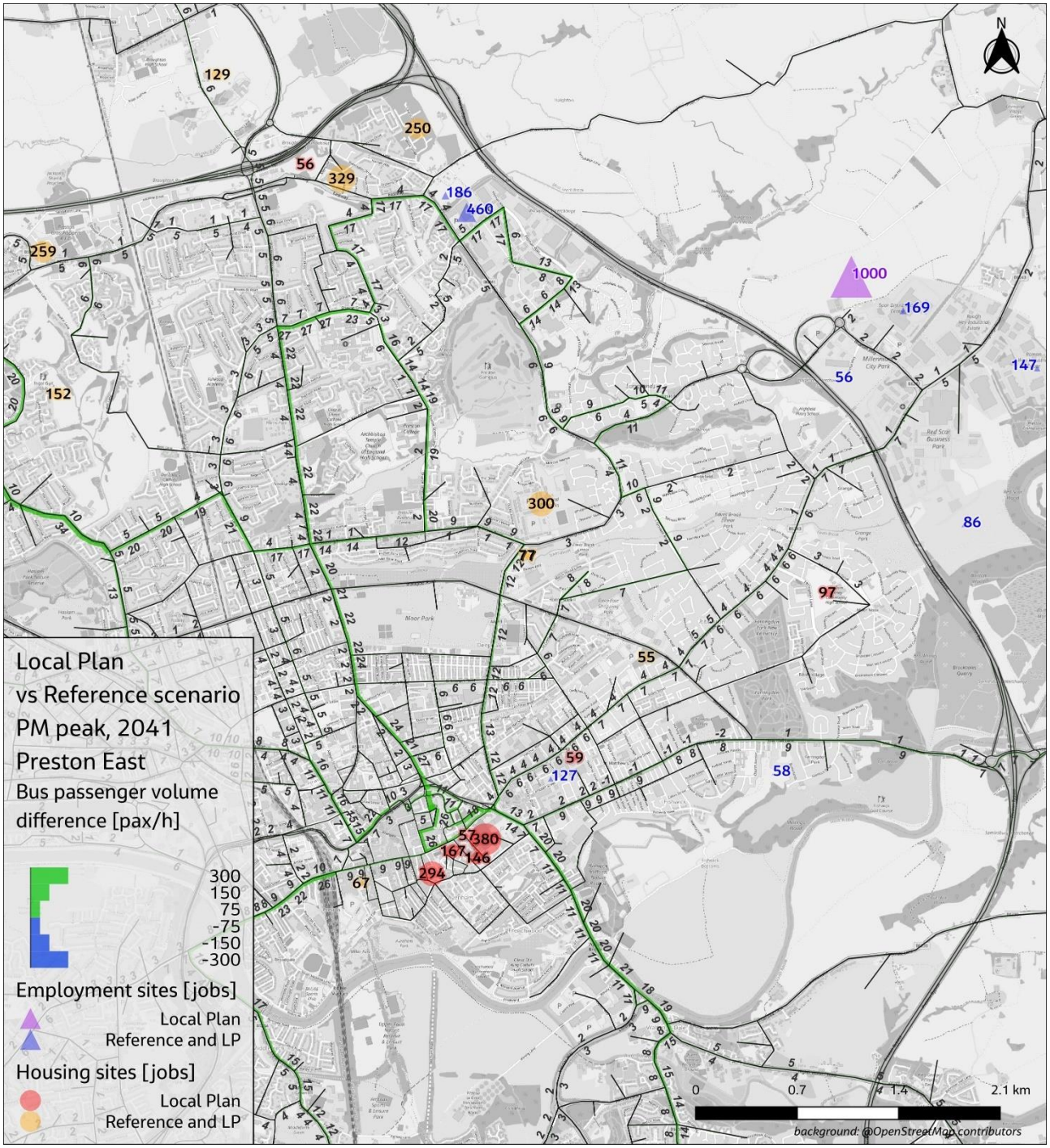

Figure B.5-45 Bus Passenger Flow Comparisons – 2041 PM Local Plan No Mitigation scenario with Reference – Preston East

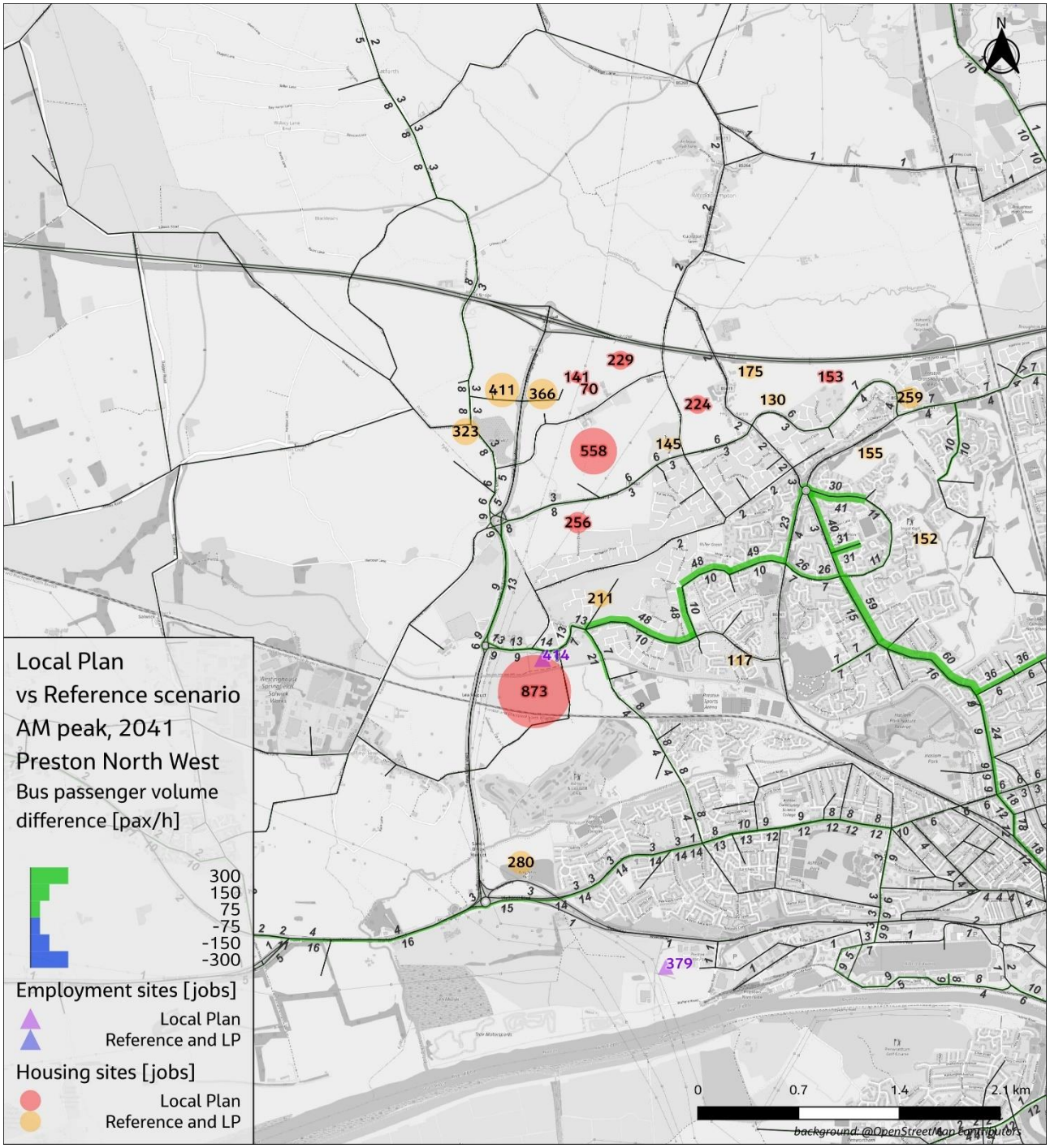

Figure B.5-46 Bus Passenger Flow Comparisons – 2041 AM Local Plan No Mitigation scenario with Reference – Northwest Preston

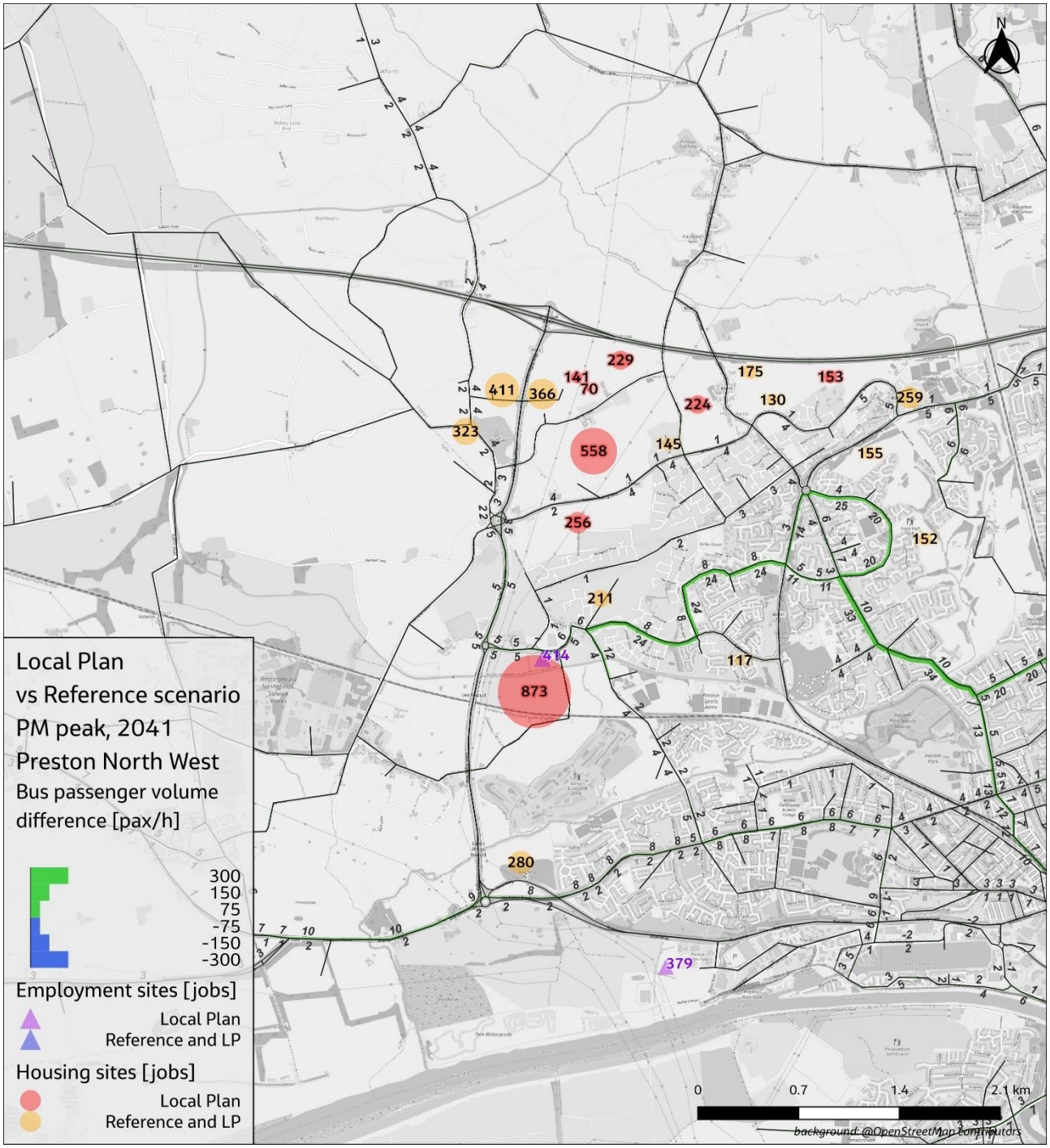

Figure B.5-47 Bus Passenger Flow Comparisons – 2041 PM Local Plan No Mitigation scenario with Reference – Northwest Preston

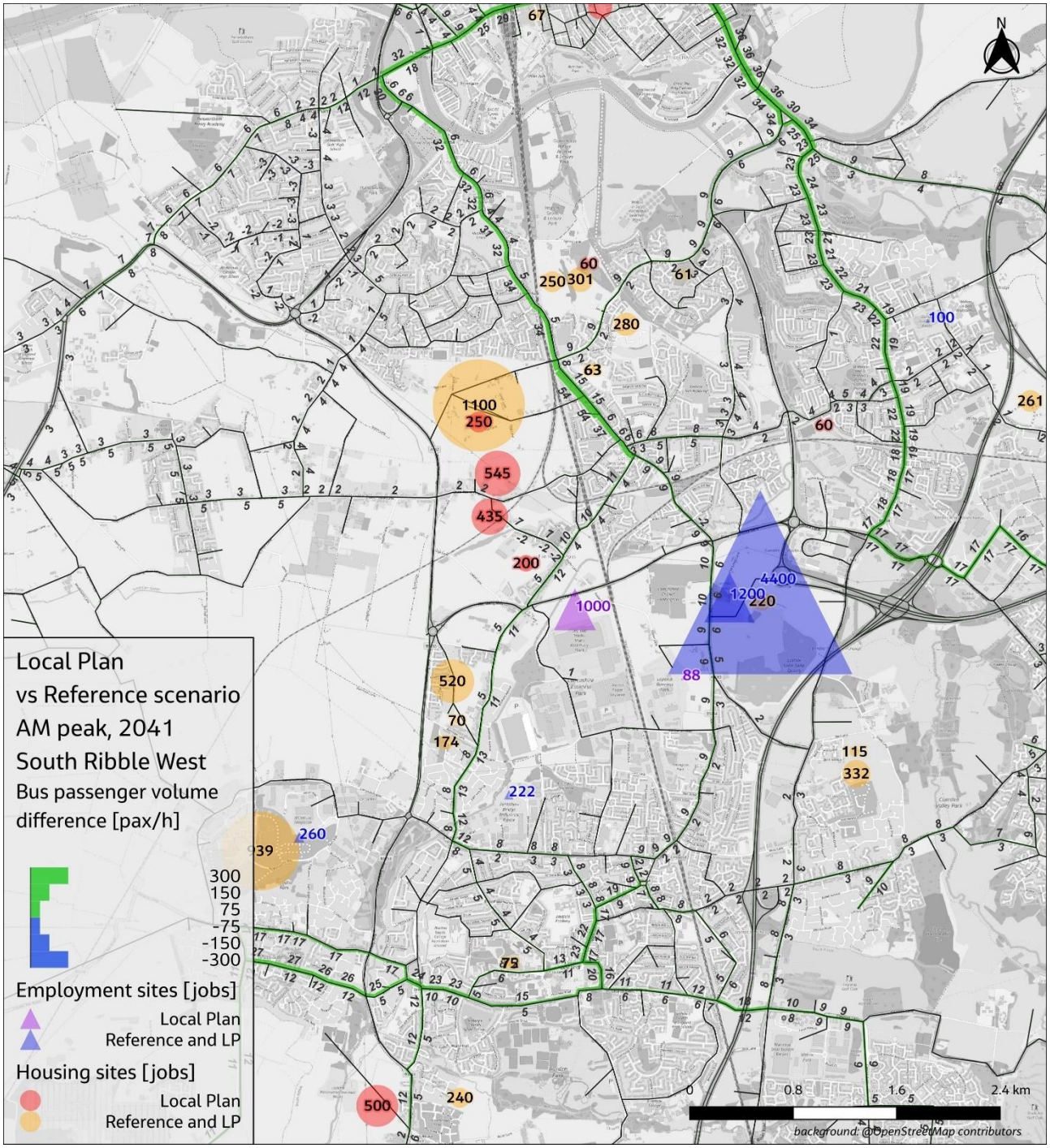

Figure B.5-48 Bus Passenger Flow Comparisons – 2041 AM Local Plan No Mitigation scenario with Reference – South Ribble

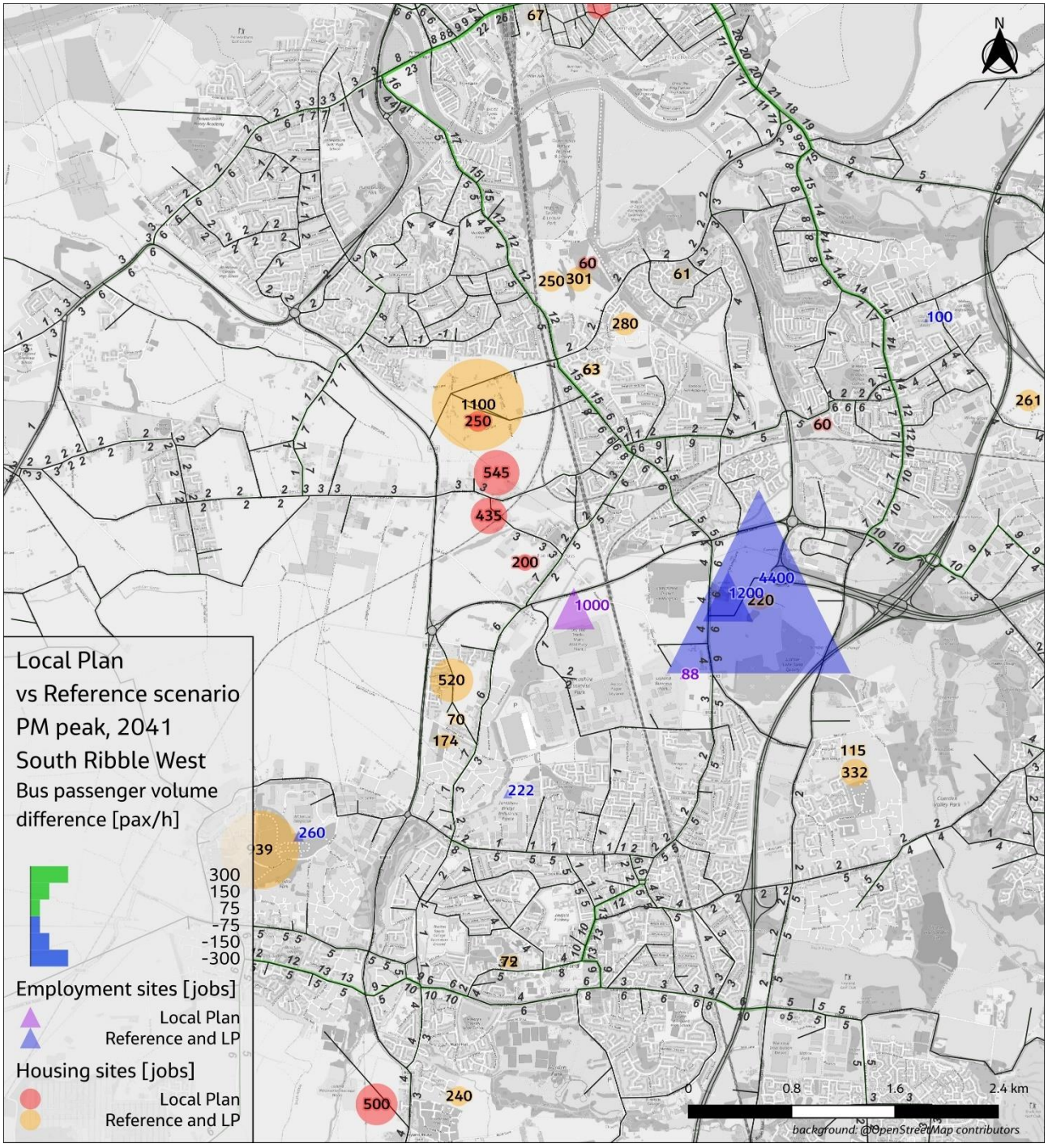

Figure B.5-49 Bus Passenger Flow Comparisons – 2041 PM Local Plan No Mitigation scenario with Reference – South Ribble

Figure B.5-50 and Figure B.5-51 present rail passenger flow comparisons between the Local Plan No Mitigation scenario and the Reference scenario for the AM and PM peak periods in 2041. The figures indicate a modest increase in rail usage due to the Local Plan allocations, with the most notable increases observed at Cottam and Preston rail stations.

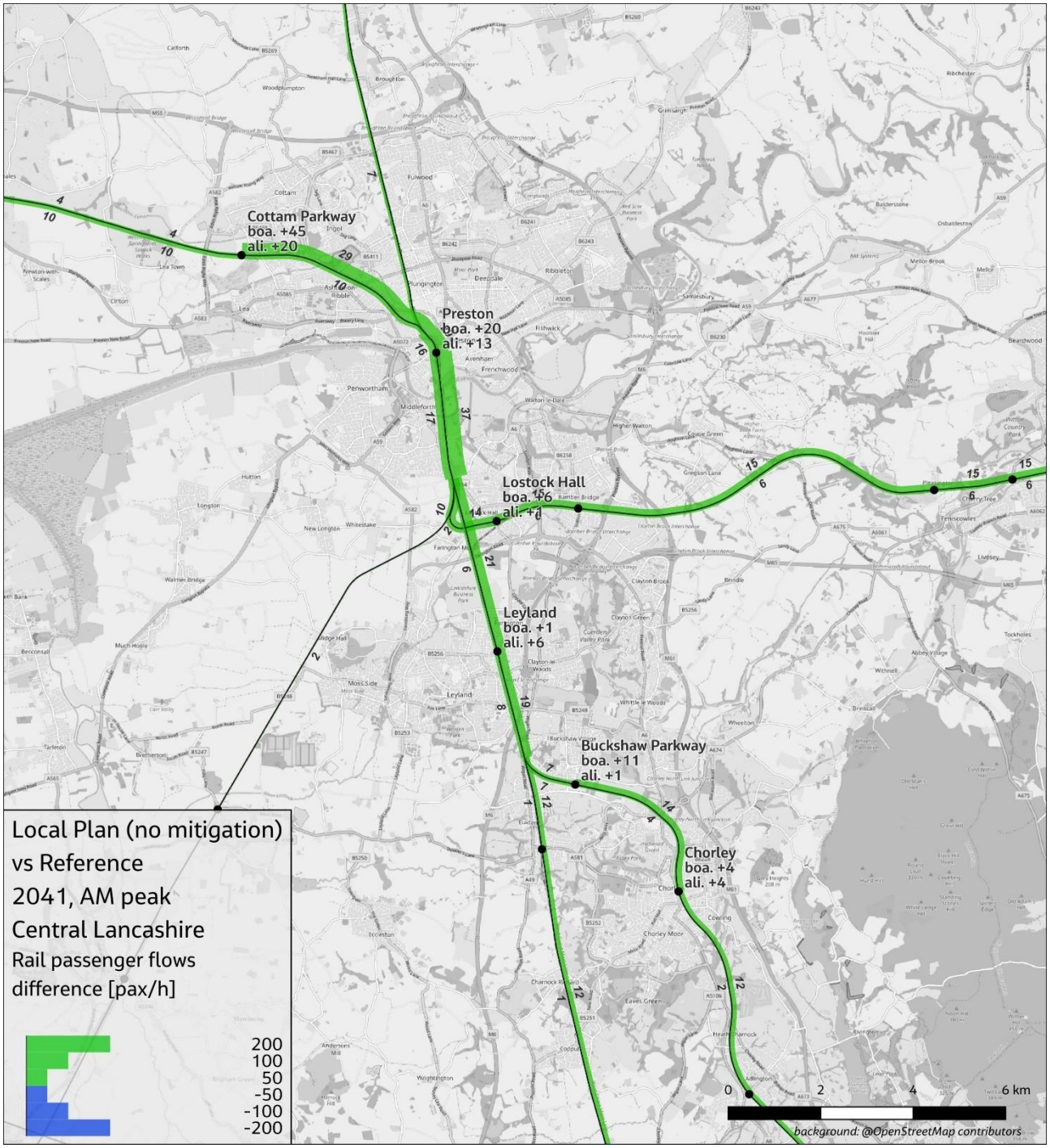

Figure B.5-50 Rail Passenger Flow Comparisons – 2041 AM Local Plan No Mitigation scenario with Reference – Central Lancashire

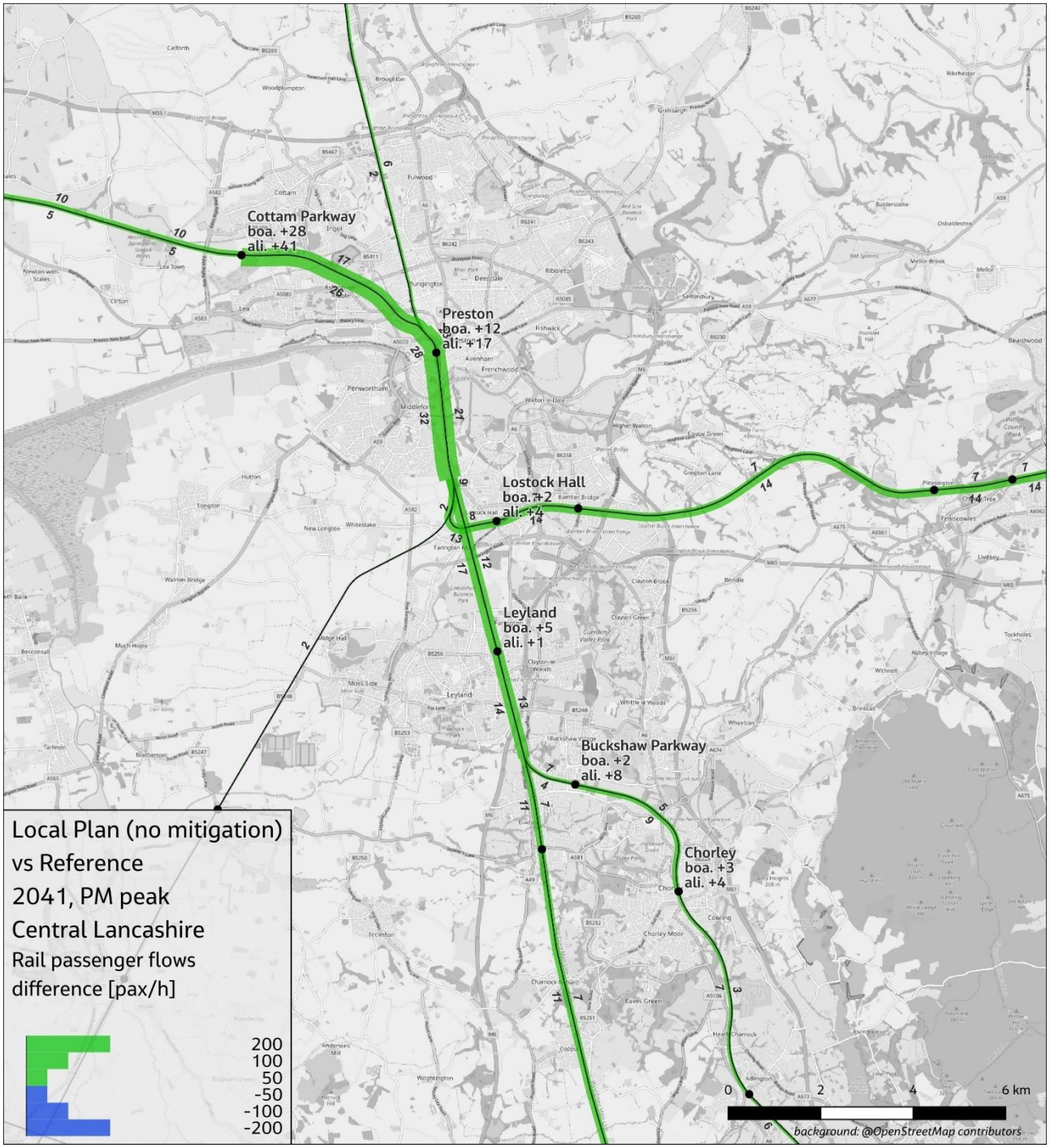

Figure B.5-51 Rail Passenger Flow Comparisons – 2041 PM Local Plan No Mitigation scenario with Reference – Central Lancashire