

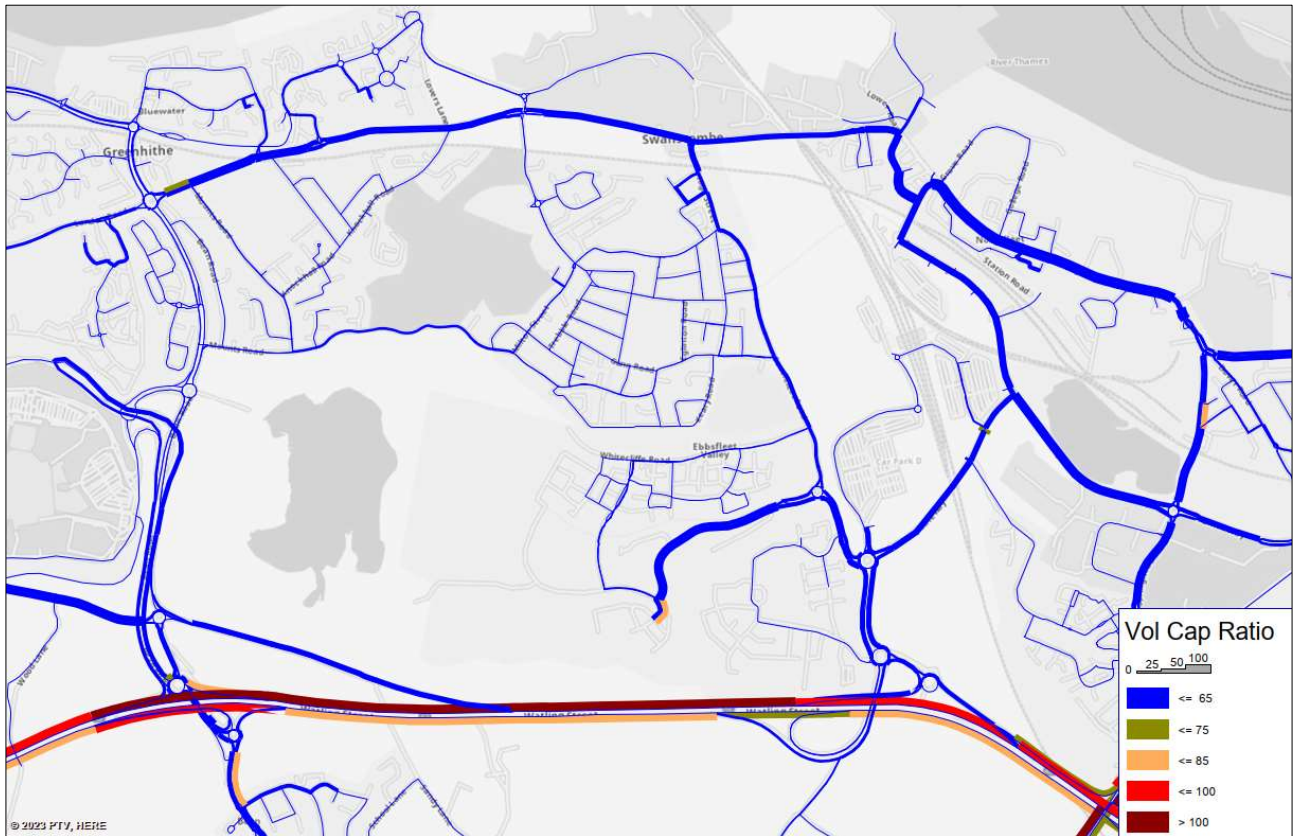


Figure 22: Volume over Capacity (V/C) Plot for With Development (Without LTC) – 2030 PM Peak



Figure 23: Volume over Capacity (V/C) Plot for Without Development (Without LTC) – 2045 AM Peak

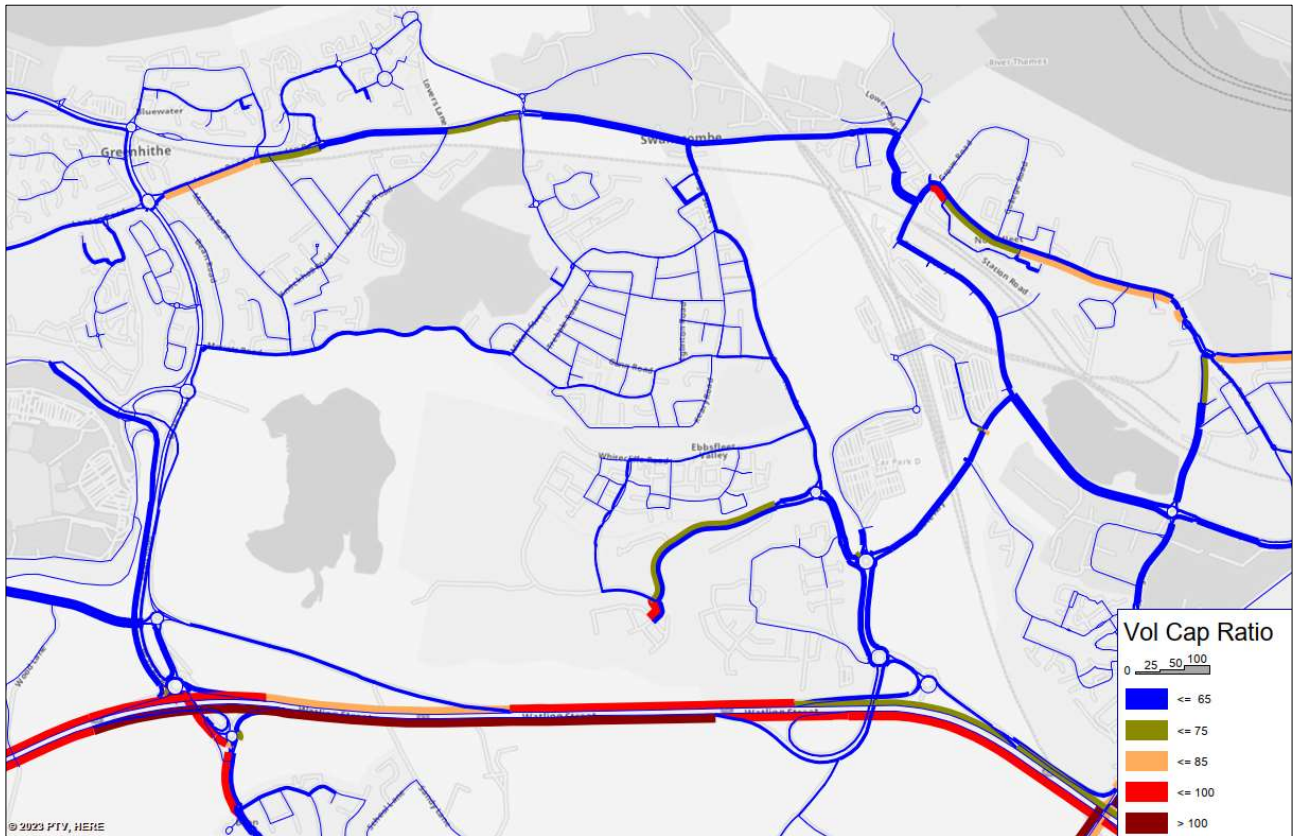


Figure 24: Volume over Capacity (V/C) Plot for With Development (Without LTC) – 2045 AM Peak

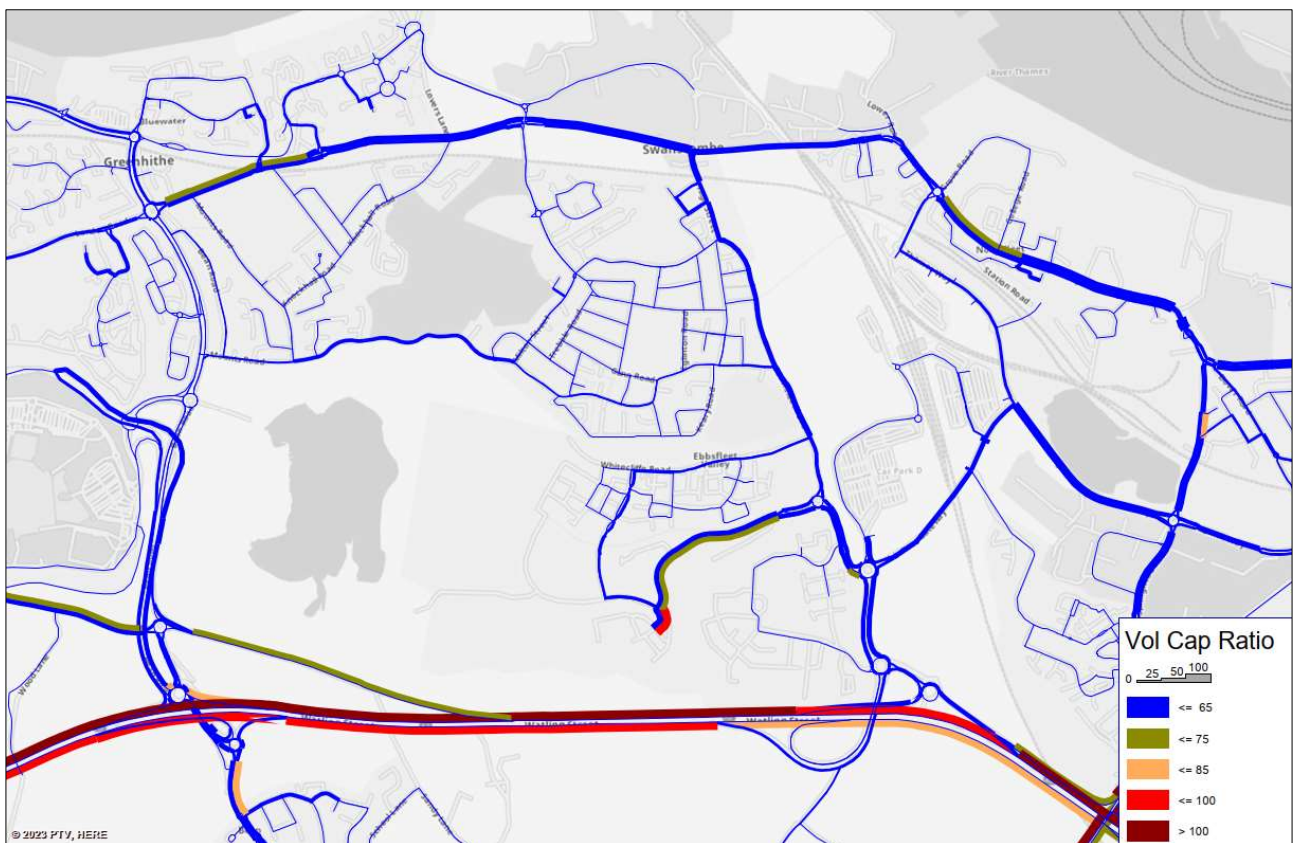


Figure 25: Volume over Capacity (V/C) Plot for Without Development (Without LTC) – 2045 PM Peak

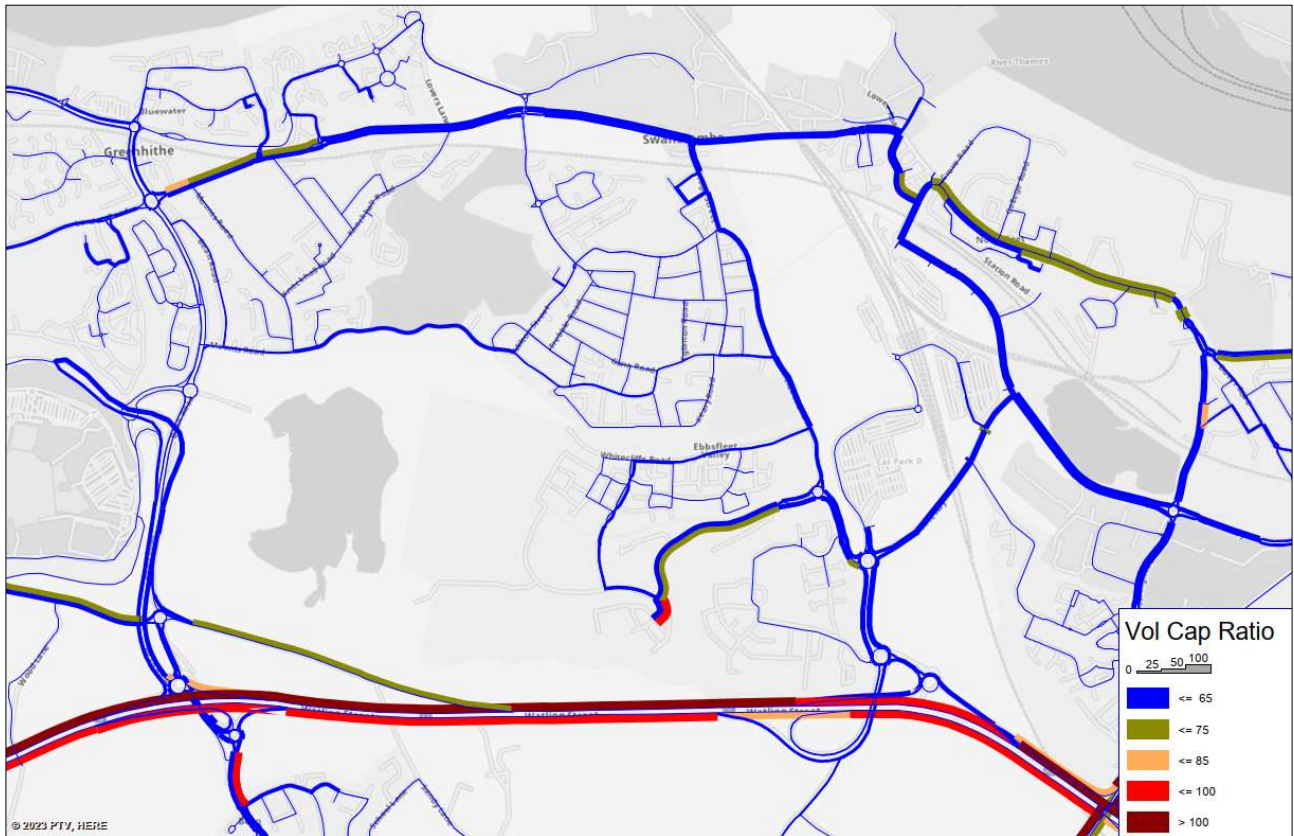


Figure 26: Volume over Capacity (V/C) Plot for With Development (Without LTC) – 2045 PM Peak

Network stress based on link Volume to Capacity (V/C) Ratio is illustrated in Figure 1 to 16 of **Appendix D** as follows:

- Figure 1: 2030 Without Development (Without LTC) – AM Peak
- Figure 2: 2030 With Development (Without LTC) – AM Peak
- Figure 3: 2030 Without Development (Without LTC) – PM Peak
- Figure 4: 2030 With Development (Without LTC) – PM Peak
- Figure 5: 2030 Without Development (With LTC) – AM Peak
- Figure 6: 2030 With Development (With LTC) – AM Peak
- Figure 7: 2030 Without Development (With LTC) – PM Peak
- Figure 8: 2030 With Development (With LTC) – PM Peak
- Figure 9: 2045 Without Development (Without LTC) – AM Peak
- Figure 10: 2045 With Development (Without LTC) – AM Peak
- Figure 11: 2045 Without Development (Without LTC) – PM Peak
- Figure 12: 2045 With Development (Without LTC) – PM Peak
- Figure 13: 2045 Without Development (With LTC) – AM Peak
- Figure 14: 2045 With Development (With LTC) – AM Peak
- Figure 15: 2045 Without Development (With LTC) – PM Peak
- Figure 16: 2045 With Development (With LTC) – PM Peak

1.6 Saturday Peak Model

The Saturday model has been developed using sets of assumptions from:

- KTC without LTC Model
- TEMPro data; and
- ATC Surveys

The comparison of TEMPro 7.2b Kent County journey purpose split was first interrogated and found that the Inter-peak model vehicle split by journey purpose was closest to Saturday's as shown in in Table 8. Therefore it was decided that the inter-peak demand matrices will be the starting point of developing Saturday model.

Table 8: Comparison of Kent County Journey Purposes split with Tempro 7.2b

Tempro 7.2b				
Journey Purpose	AM Peak	Inter-Peak	PM Peak	Saturday
Commute	55%	14%	40%	13%
Business	9%	9%	7%	2%
Others	36%	77%	53%	86%
Total Cars	100%	100%	100%	100%

Secondly, the 24hr ATCs in the vicinity of Northfleet area were analysed and the daily profiles for weekday and Saturday were compared as shown in the Figure 27 below.

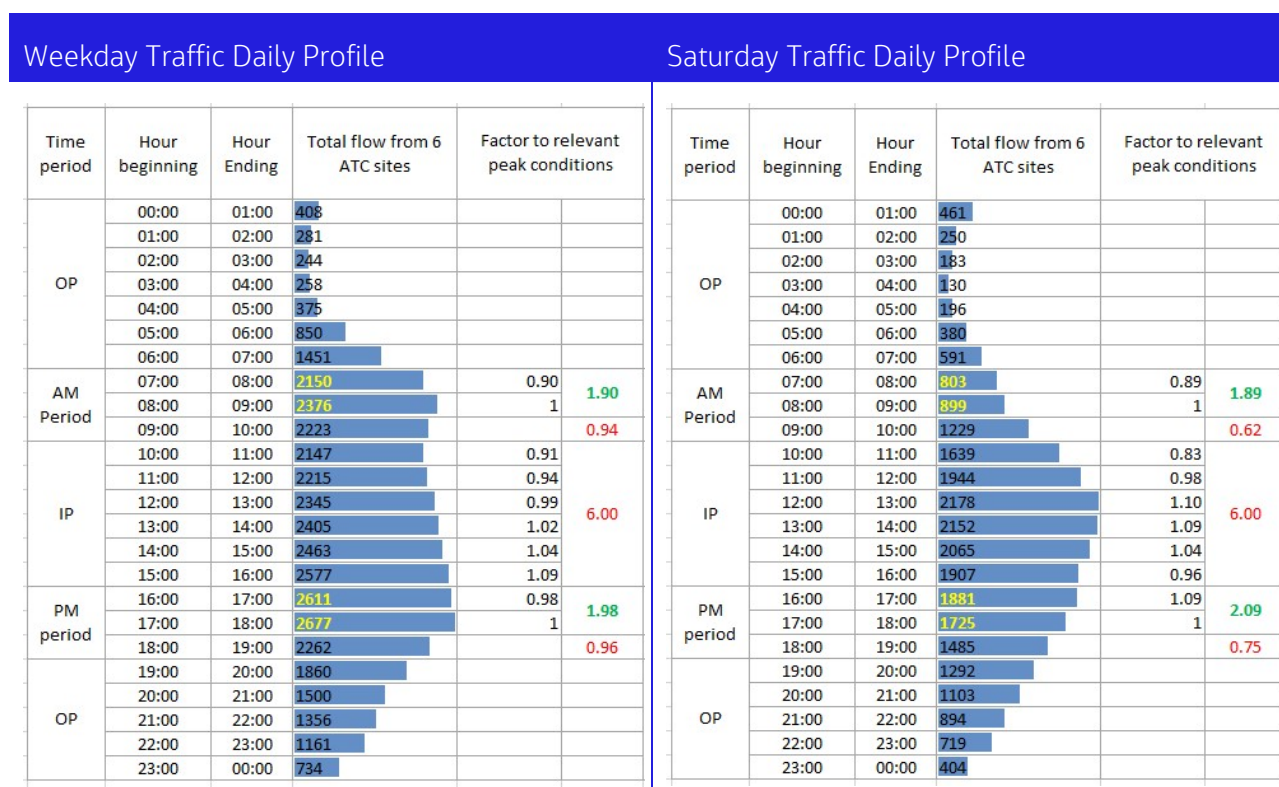


Figure 27: Daily Profile for Weekday and Saturday

Based on daily and Saturday profiles shown in the Figure 27, the weekday average Inter-peak to Saturday Peak hr Conversion Factor was worked out as 0.9234 as shown in Table 9:

Table 9: Inter-Peak to Saturday Conversion Factor

Tempro 7	
	LV
Aver Inter-Peak	2358
Saturday Peak	2178
Factor	0.9234

The Saturday trip generations have been agreed with KCC and are presented in Table 10 below.

Table 10: Saturday Trip generation of Proposed Northfleet Harbourside Development

Light Vehicles			
Time Period	Dep	Arr	Total
Saturday Peak	696	777	1473

The car trip generations have been split using the following journey purposes based on Saturday Tempro:

- Commuter
- Employer's Business
- Others

The forecast trip ends for the proposed development zones were then distributed by journey purpose based on adjusted inter-peak distribution patterns of the Northfleet zone.

The development trips were then added to the demand matrices without proposed development (WoD) to obtain the forecast of 'with development' (WD) matrices. The 2030 and 2045 forecasts matrices were produced for Saturday peak.

Table 11: Without LTC Matrix Totals for with and without Proposed Development

Scenario	WoD	WD	Diff	%Diff
2030 withoutLTC- Saturday Peak	101833	103310	1477	1.45%
2045 withoutLTC- Saturday Peak	113797	115450	1653	1.45%

Flow bundle plots were extracted from the model forecasts to show distribution of traffic to and from proposed Northfleet Harbourside development as shown in Figure 4 for 2030 Saturday Peak.

The Saturday peak predict that the highest level of traffic to and from proposed development will use A226 Thames Way followed by B2175 Stonebridge Rd, and lowest on A226 Stonebridge Rd.



Figure 28: Northfleet Harbourside Proposed Development Flow bundle – 2030 Saturday Peak

1.6.1 Saturday Model Forecast Results

This section provides model outputs for the Northfleet Harbourside without LTC scenarios for 2030 and 2045 during the Saturday peak hour.

A set of output plots has been produced to show the link flows, link flow differences, junction Level of Service (LoS) and link Volume over Capacity (V/C) Ratio in order to help identify key areas of constraint arising from Northfleet Harbourside development for Saturday peak.

1.6.1.1 Flow Plots and Flow Change Plots – Saturday Peak

Link flow plots and flow difference plots were extracted for the Saturday model forecasts and compared against the 'Without Development (WoD)' reference case. The link flow plots and link flow difference (i.e. WD minus WoD) plots are shown in Figure 1 to 6 of **Appendix E** as follows:

- Figure 1: 2030 Without Development (Without LTC) – Saturday Peak
- Figure 2: 2030 With Development (Without LTC) – Saturday Peak
- Figure 3: 2030 With & Without Development (Without LTC) – Saturday Peak
- Figure 4: 2045 Without Development (Without LTC) – Saturday Peak
- Figure 5: 2045 With Development (Without LTC) – Saturday Peak; and
- Figure 6: 2045 With & Without Development (Without LTC) – Saturday Peak

1.6.1.2 Junction Turning Flow Plots – Saturday Peak

Appendix F shows the junction turning flows for the following Saturday peak scenarios:

- Figure 1: 2030 Without Development (Without LTC) – Saturday Peak
- Figure 2: 2030 With Development (Without LTC) – Saturday Peak
- Figure 3: 2045 Without Development (Without LTC) – Saturday Peak
- Figure 4: 2045 With Development (Without LTC) – Saturday Peak

1.6.1.3 Level of Service Plots – Saturday Peak

Figure 1 to 4 of **Appendix G** present the LoS for the following Saturday peak:

- Figure 1: 2030 Without Development (Without LTC) – Saturday Peak
- Figure 2: 2030 With Development (Without LTC) – Saturday Peak
- Figure 3: 2045 Without Development (Without LTC) – Saturday Peak
- Figure 4: 2045 With Development (Without LTC) – Saturday Peak

1.6.2 Volume over Capacity Ratio

Network stress based on link Volume to Capacity (V/C) Ratio for Saturday peak is illustrated in Figure 1 to 4 of **Appendix H** as follows:

- Figure 1: 2030 Without Development (Without LTC) – Saturday Peak
- Figure 2: 2030 With Development (Without LTC) – Saturday Peak
- Figure 3: 2045 Without Development (Without LTC) – Saturday Peak
- Figure 4: 2045 With Development (Without LTC) – Saturday Peak

1.7 Summary

This Technical Note provides a summary of the assumptions and methodology used to test the impacts of the proposed Northfleet Harbourside development.

Both with and without LTC scenarios predict an increase in traffic in areas surrounding the proposed development and beyond. By 2030 the two-way traffic based on zonal totals will increase by 1,206 and 1,558 veh/hr for AM and PM peak respectively and therefore likely to impact on the surrounding network. Saturday peak will see slightly more increase than the weekday peak to 1,477 veh/hr.

In both with and without LTC scenarios, after updating the distribution of trips to access points, the model predicts the highest level of traffic to and from the development will be using A226 Thames Way followed by A226 Stonebridge Rd, and lowest on B2175 Stonebridge Rd. The Saturday peak traffic follows the same pattern.

The analysis also shows that there are already some junctions with a poor level of service, and the proposed development is likely to worsen some of them by potentially deteriorating the Level of Service, which can limit the amount of traffic passing through the junctions. This, in turn, results in traffic reductions in some sections of the network, as shown in the flow difference plots. Additionally, accompanying files have been prepared to include detailed information on turning flows, volume/capacity ratio, and Level of Service for the junctions in the vicinity of the proposed development.

The scenarios presented in this Technical Note have been developed in order to assess the impacts of the proposed development in the surrounding areas. However, it should be noted that the assumptions used in the analysis are based on the available information during the time of modelling, and further review should be undertaken if additional or new information become available. Detailed junction modelling is also recommended to assess the detailed junctions performance in terms of queues, delay and LoS.

Due to the large strategic nature of the Kent Transport Model, the Base model was not expected to meet TAG recommended criteria for validation of minor roads and junctions. While the Kent Transport Model is predicting flows that generally reflect 2030 and 2045 future traffic forecast values at a strategic level, it is inevitable that there will be specific locations which may require further output refinement. It should be noted that no Base model enhancement or improved validation within the vicinity of the development was undertaken prior to this assessment. As a result, there is a need to acknowledge the limitations of the model in accurately capturing the intricacies of minor roads and junctions, and to consider the possibility of adjustment of forecast outputs in these specific areas to ensure a more comprehensive representation of the traffic patterns.

Appendices

Appendix A - Flow Plots and Flow Change Plots

Appendix B - Junction Turning Flow Plots

Appendix C - Level of Service Plots

Appendix D - Volume over Capacity Ratio

Appendix E - Flow Plots and Flow Change Plots Saturday Peak

Appendix F - Junction Turning Flow Plots Saturday Peak

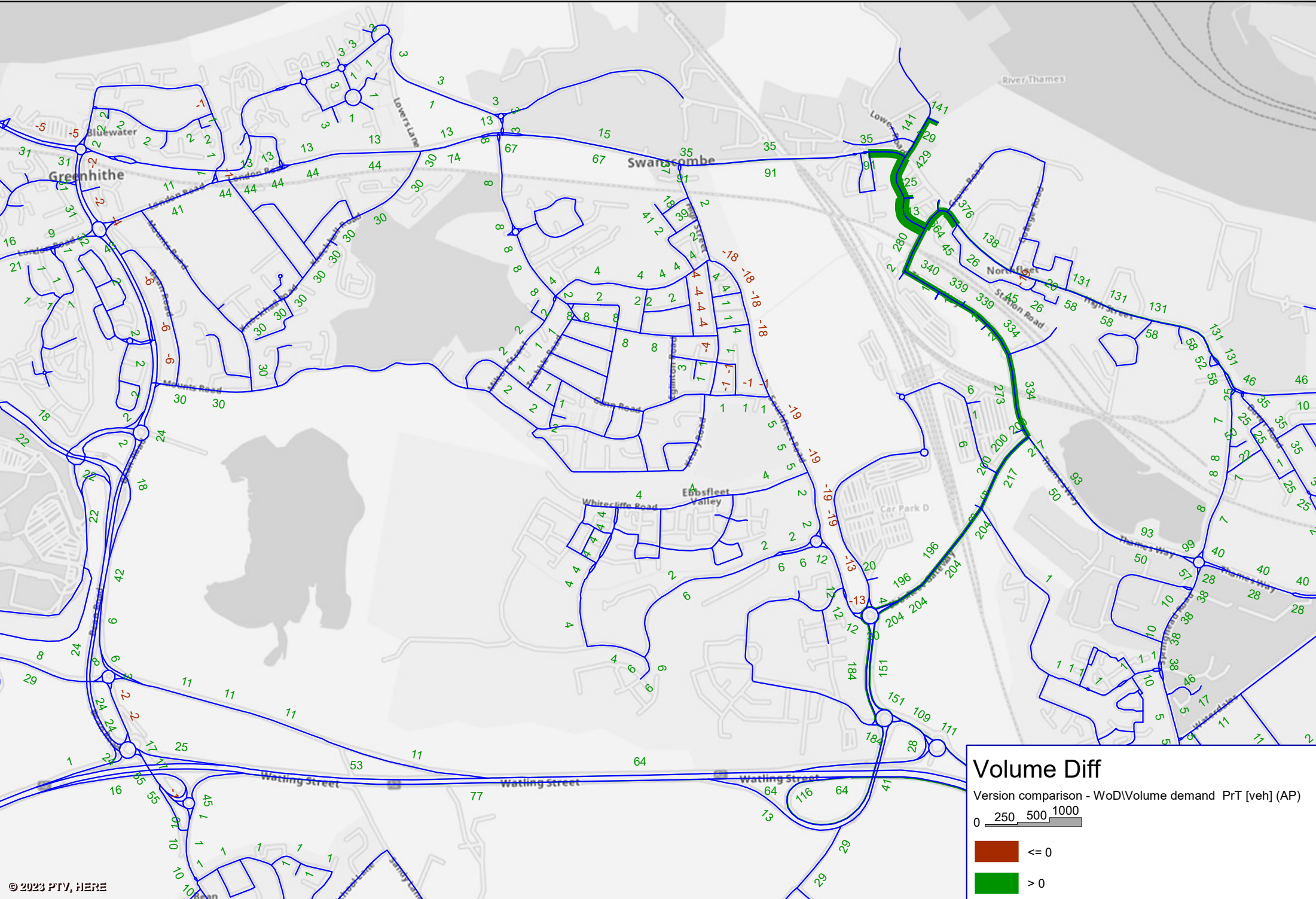
Appendix G - Level of Service Plots Saturday Peak

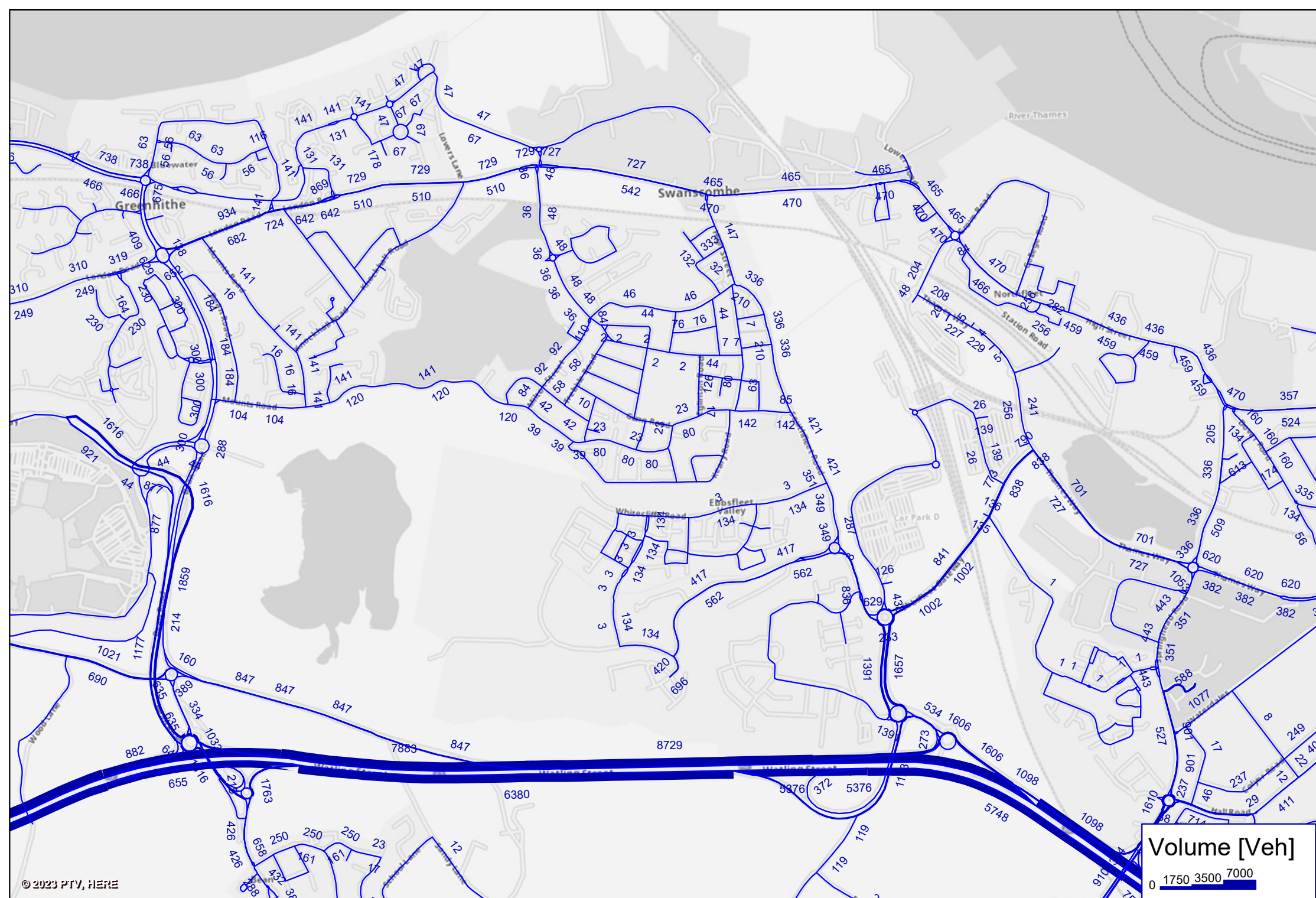
Appendix H - Volume over Capacity Ratio Saturday Peak





Figure 2: 2030 With Development (Without LTC) – AM Peak

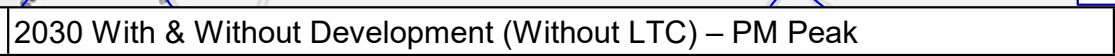




2030 Without Development (Without LTC) – PM Peak



2030 With Development (Without LTC) – PM Peak





2030 Without Development (With LTC) – AM Peak



2030 With Development (With LTC) – AM Peak

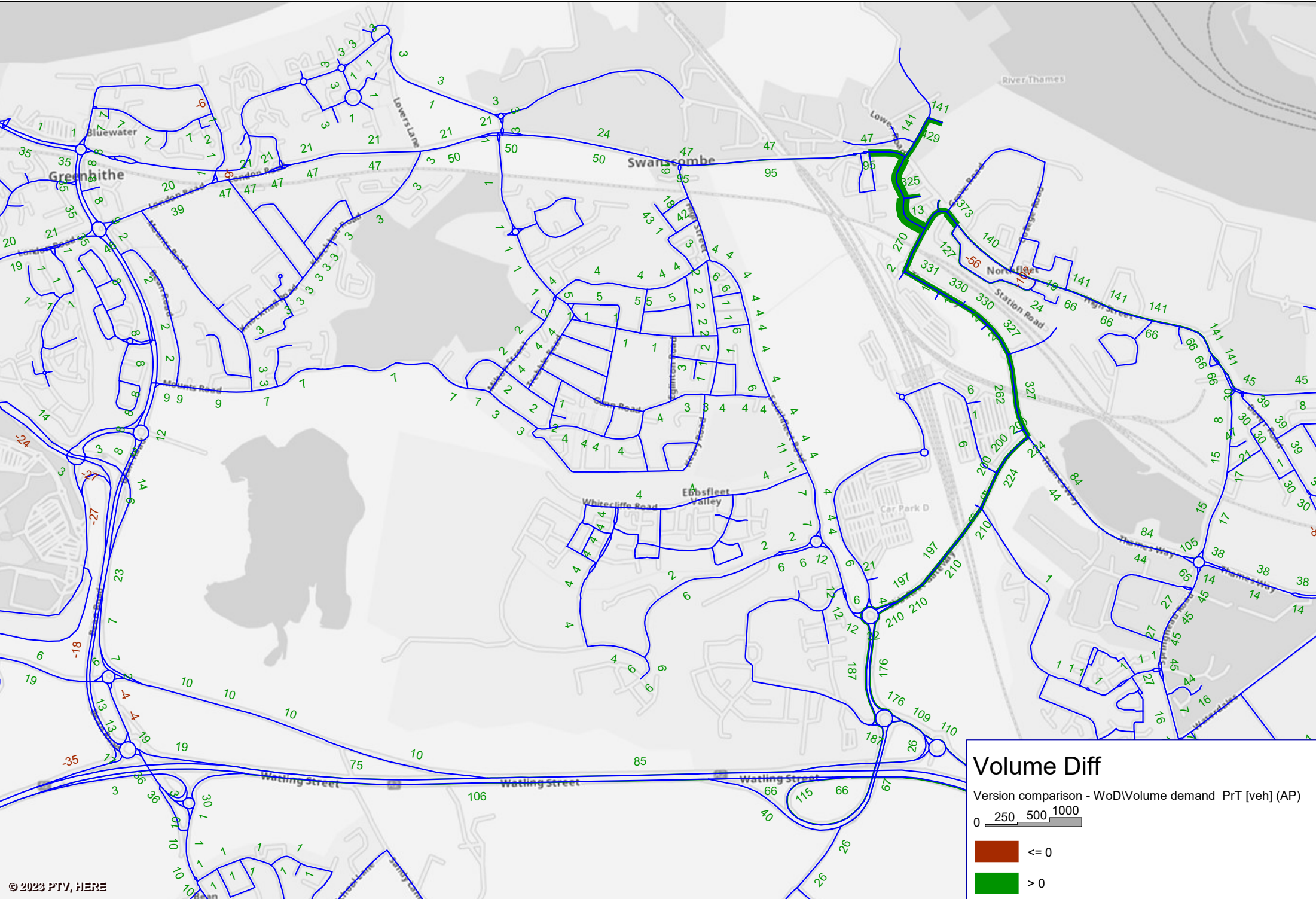
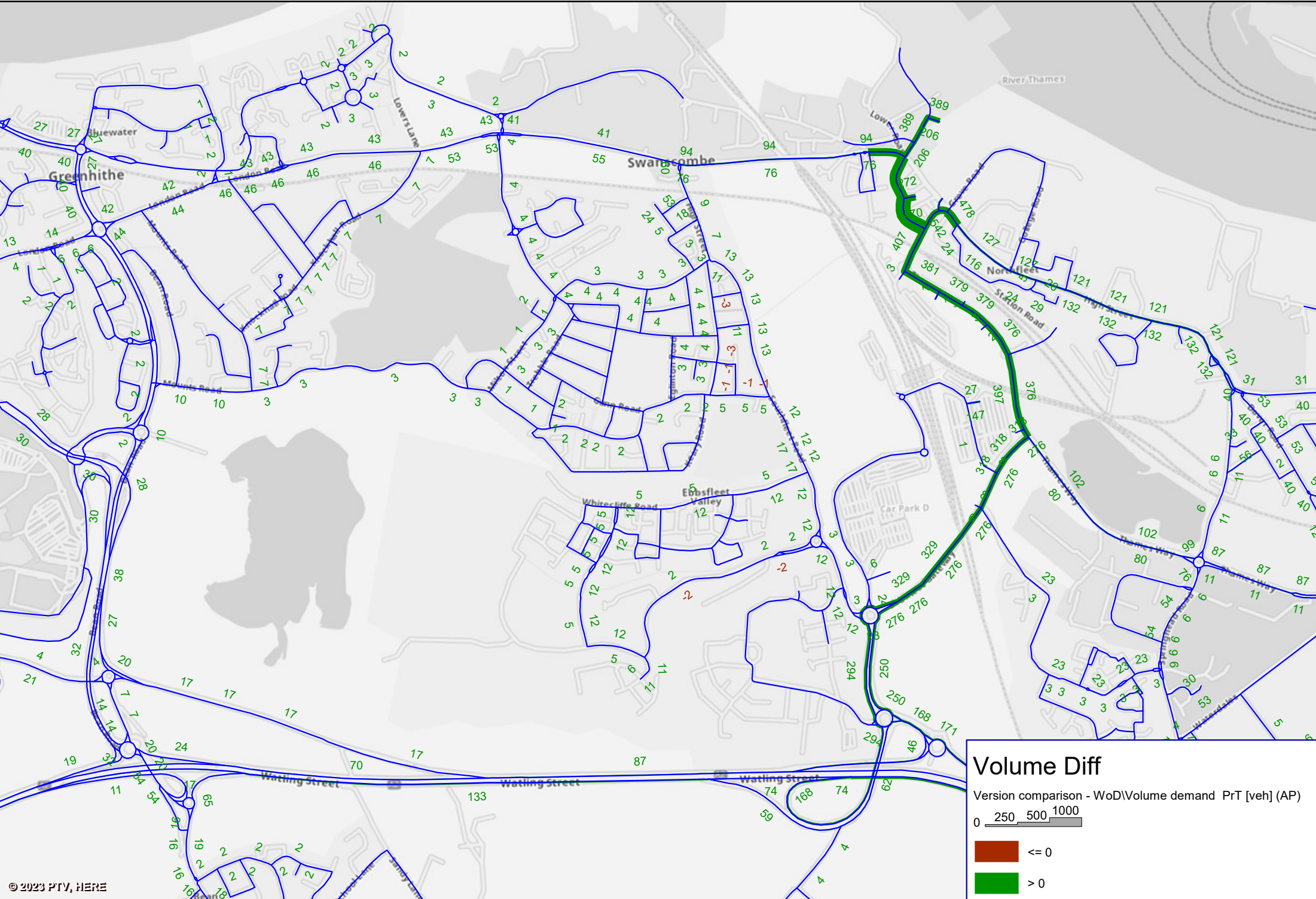




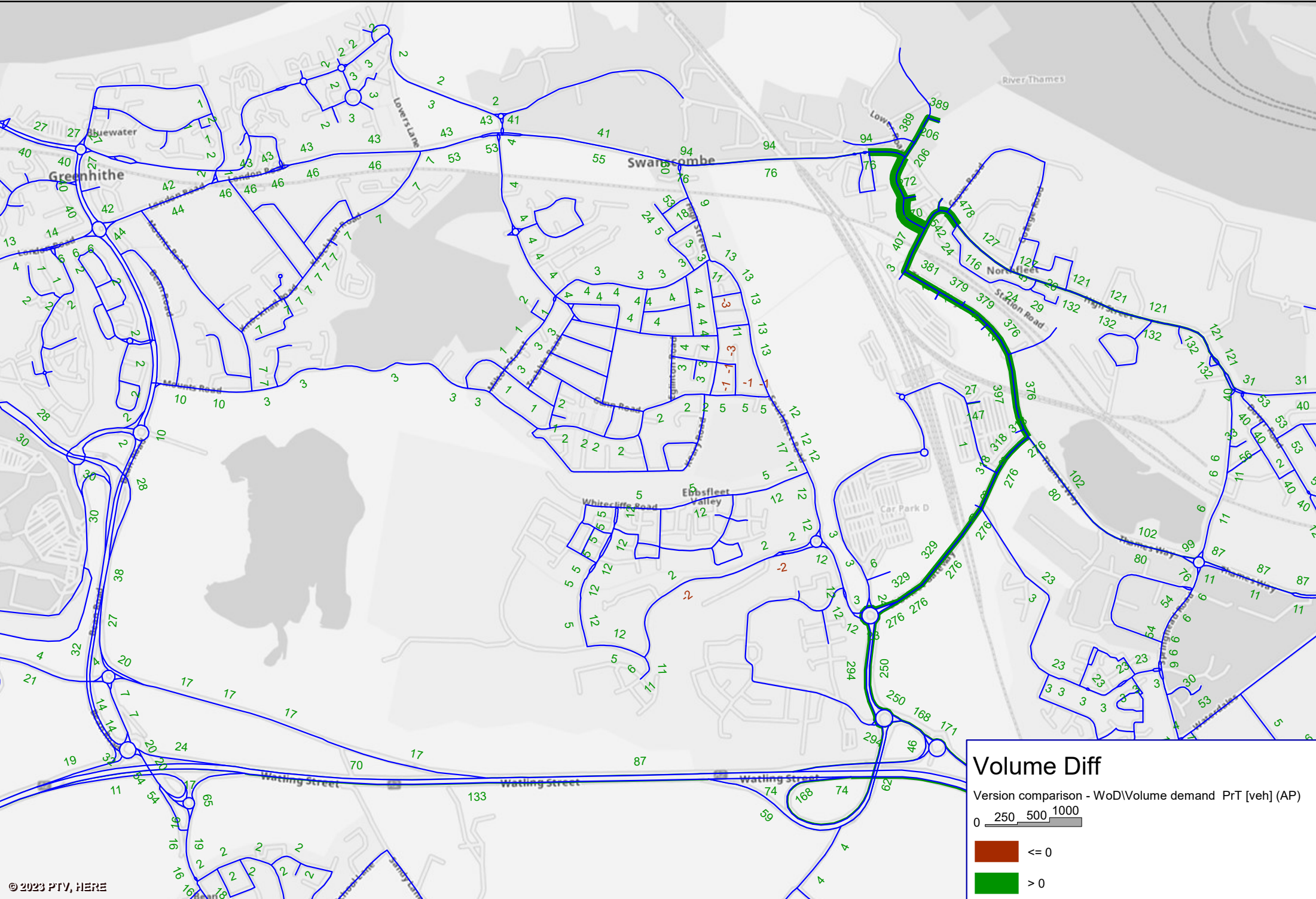
Figure 10: 2030 Without Development (With LTC) – PM Peak



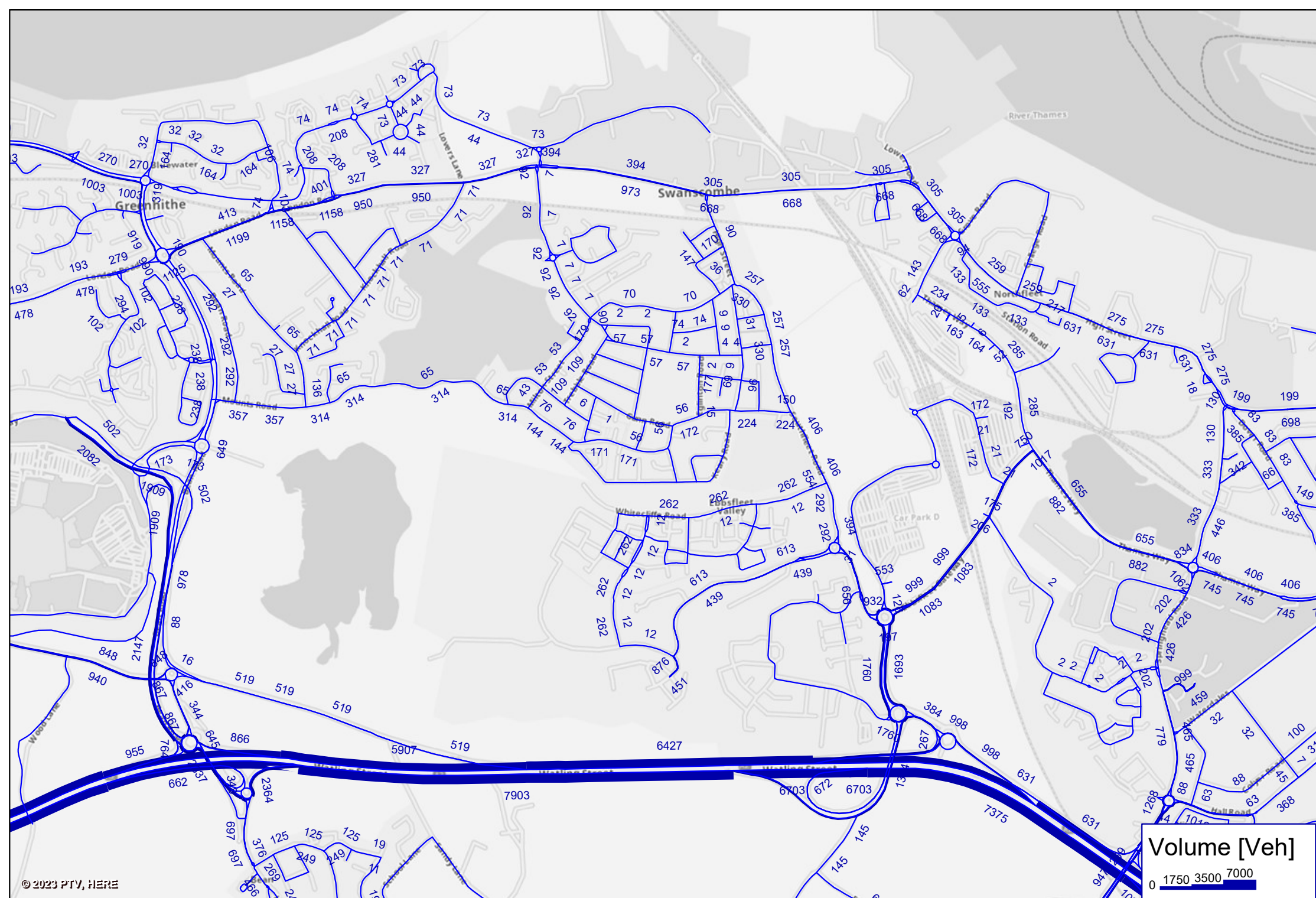
2030 With Development (With LTC) – PM Peak



2030 With & Without Development (With LTC) – PM Peak



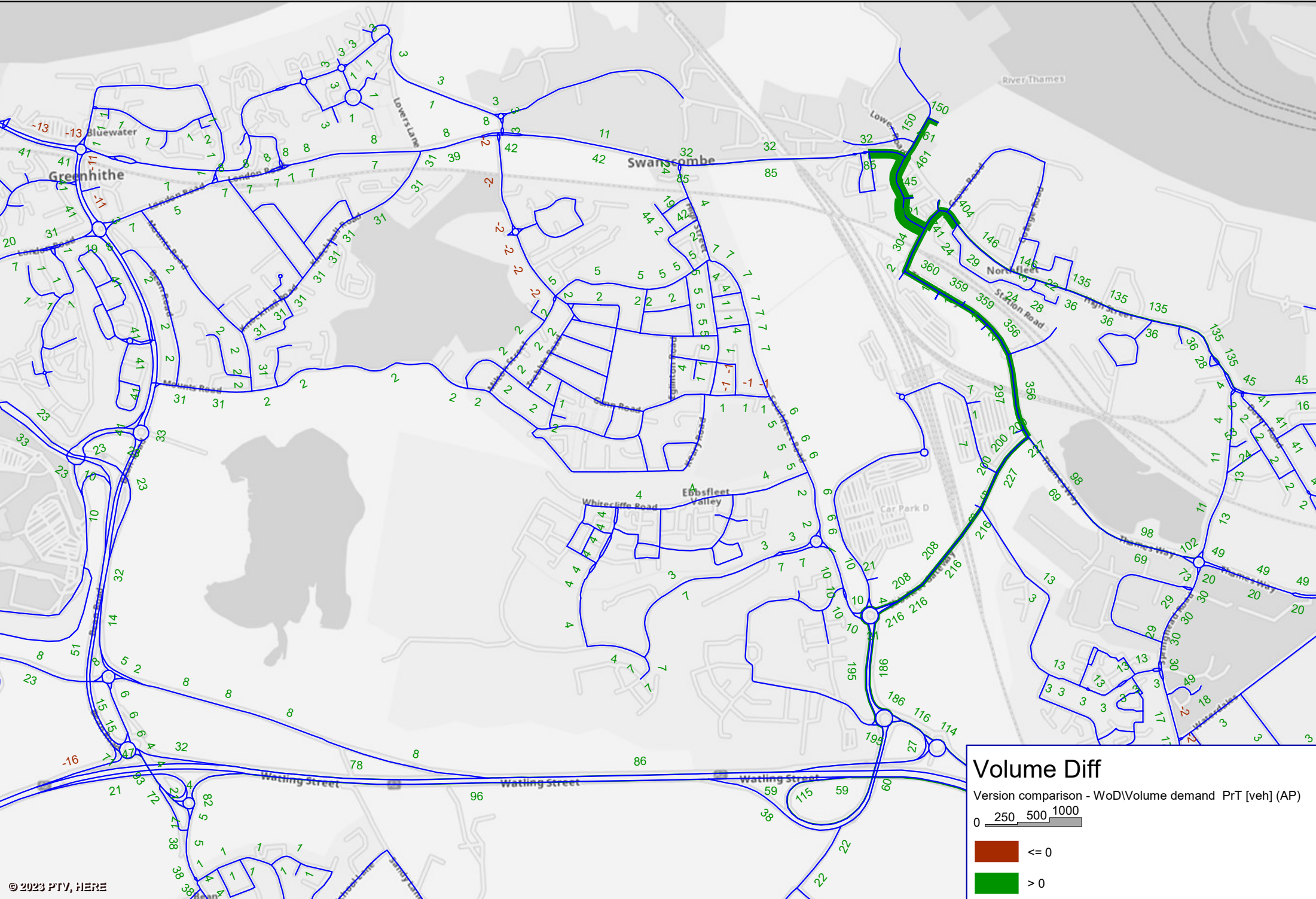
2030 With & Without Development (With LTC) – PM Peak



2045 Without Development (Without LTC) – AM Peak



Figure 14: 2045 With Development (Without LTC) – AM Peak







2045 With Development (Without LTC) – PM Peak



2045 With & Without Development (Without LTC) – PM Peak



2045 Without Development (With LTC) – AM Peak

