

Preferred Options Local Plan Transport Evidence – Assessment Case

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Preferred Options Local Plan Transport Evidence – Assessment Case

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Contents

Acronyms and abbreviations.....	vi
1. Introduction.....	1
1.1 North Essex Model.....	1
1.2 Purpose of report	2
2. Assumptions.....	3
2.1 Introduction.....	3
2.2 Growth	3
2.2.1 Household and job assumptions.....	3
2.2.2 Trip generation.....	5
2.2.3 Trip distribution	5
2.3 Network Changes (without interventions).....	5
2.3.1 Access arrangements.....	5
3. Assessment Scenario 1 (without intervention) vs Reference Case	6
3.1 Flow Difference	6
3.2 Speed Ratio Changes.....	7
3.3 Relative Queue Changes.....	9
3.4 SRN Junctions.....	11
4. Assessment Scenario 2 (without intervention) vs Reference Case	12
4.1 Flow Difference	12
4.2 Speed Ratio Changes.....	13
4.3 Relative Queue Changes.....	15
4.4 SRN Junctions.....	17
5. Assessment Scenario 2 (without intervention) vs Assessment Scenario 1 (without intervention).....	18
5.1 Flow Difference	18
5.2 Speed Ratio Changes.....	19
5.3 Relative Queue Changes.....	21
5.4 SRN Junctions.....	23
6. Interpreting Findings – Reference Case, Assessment Scenario 1 (without interventions) and Assessment Scenario 2 (without interventions).....	24
7. Sustainable Travel Reductions	30
7.1 Introduction.....	30
7.2 Sustainable Transport Schemes.....	30
7.3 Sustainable Travel Reductions.....	34
7.4 Results (Assessment Scenario 1 with sustainable travel reductions).....	35
7.4.1 Flow Difference	35
7.4.2 Speed Ratio Changes.....	37
7.4.3 Relative Queue Changes.....	39

7.4.4	SRN Junctions.....	41
7.5	Results (Assessment Scenario 2 with sustainable travel reductions).....	41
7.5.1	Flow Difference.....	41
7.5.2	Speed Ratio Changes.....	43
7.5.3	Relative Queue Changes.....	45
7.5.4	SRN Junctions.....	47
7.6	Tabular Analysis - with sustainable travel reductions	47
8.	Highway Mitigation Measures.....	54
9.	Summary and Conclusion	55

Appendices

Appendix A.	Tendring 2042 Spatial Options – Assessment Scenario 1	56
Appendix B.	Tendring 2042 Spatial Options – Assessment Scenario 2	60
Appendix C.	Speed Ratio	64
Appendix D.	Relative Queue.....	75

Tables

Table 2-1:	Spatial Option Dwellings and Jobs, 2042	3
Table 6-1:	Tabular Analysis Movement Scale.....	25
Table 6-2:	Assessment Scenarios (without intervention) vs Reference Case (2042) – Tabular Analysis – AM and PM.....	26
Table 6-3:	RAG Ratings.....	27
Table 6-4:	Assessment Scenarios (without intervention) vs Reference Case (2042) – RAG Ratings – AM and PM.....	28
Table 7-1:	Identified Sustainable Transport Schemes in Tendring	30
Table 7-3:	Assessment Scenarios (with sustainable travel reductions) vs Assessment Scenarios (without intervention) (2042) – Tabular Analysis – AM.....	48
Table 7-4:	Assessment Scenarios (with sustainable travel reductions) vs Assessment Scenarios (without intervention) (2042) – Tabular Analysis – PM.....	49
Table 7-5:	Assessment Scenarios (with sustainable travel reductions intervention) vs Reference Case (2042) – RAG Ratings – AM.....	51
Table 7-6:	Assessment Scenarios (with sustainable travel reductions intervention) vs Reference Case (2042) – RAG Ratings – PM.....	52

Figures

Figure 1-1:	Relationship between demand and assignment models.....	1
Figure 2-1:	Spatial Option 1 Dwellings and Jobs, 2042	4

Figure 3-1: Assessment Case 1 (without interventions) vs Reference Case (2042) - Flow difference – AM	6
Figure 3-2: Assessment Case 1 (without interventions) vs Reference Case (2042) - Flow difference – PM	7
Figure 3-3: Assessment Case 1 (without interventions) vs Reference Case (2042) – Speed Ratio changes – AM	8
Figure 3-4: Assessment Case 1 (without interventions) vs Reference Case (2042) – Speed Ratio changes – PM	9
Figure 3-5: Assessment Case 1 (without interventions) vs Reference Case (2042) – Relative Queue changes – AM	10
Figure 3-6: Assessment Case 1 (without interventions) vs Reference Case (2042) – Relative Queue changes – PM	11
Figure 4-1: Assessment Case 2 (without interventions) vs Reference Case (2042) - Flow difference – AM	12
Figure 4-2: Assessment Case 2 (without interventions) vs Reference Case (2042) - Flow difference – PM	13
Figure 4-3: Assessment Case 2 (without interventions) vs Reference Case (2042) – Speed Ratio changes – AM	14
Figure 4-4: Assessment Case 2 (without interventions) vs Reference Case (2042) – Speed Ratio changes – PM	15
Figure 4-5: Assessment Case 2 (without interventions) vs Reference Case (2042) – Relative Queue changes – AM	16
Figure 4-6: Assessment Case 2 (without interventions) vs Reference Case (2042) – Relative Queue changes – PM	17
Figure 5-1: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – AM	18
Figure 5-2: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – PM	19
Figure 5-3: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) – Speed Ratio changes – AM	20
Figure 5-4: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) – Speed Ratio changes – PM	21
Figure 5-5: Assessment Case 2 (without interventions) vs Assessment Scenario 1 (without intervention) (2042) – Relative Queue changes – AM	22
Figure 5-6: Assessment Case 2 (without interventions) vs Assessment Scenario 1 (without intervention) (2042) – Relative Queue changes – PM	23
Figure 7-1: Sustainable Transport Schemes, Assessment Case 1	33
Figure 7-2: Sustainable Transport Schemes, Assessment Case 2	34
Figure 7-3: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – AM	36
Figure 7-4: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – PM	37
Figure 7-5: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) – Speed Ratio changes – AM	38
Figure 7-6: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) – Speed Ratio changes – PM	39
Figure 7-7: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) – Relative Queue changes – AM	40

Figure 7-8: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions (2042) – Relative Queue changes – PM	41
Figure 7-9: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Flow difference – AM.....	42
Figure 7-10: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – flow difference – PM.....	43
Figure 7-11: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Speed Ratio changes – AM	44
Figure 7-12: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Speed Ratio changes – PM.....	45
Figure 7-13: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Relative Queue changes – AM	46
Figure 7-14: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Relative Queue changes – PM	47
Figure C-1: Speed Ratio - Reference Case - AM.....	64
Figure C-2: Speed Ratio – Spatial Option 1 (without mitigation measures) - AM	65
Figure C-3: Speed Ratio – Spatial Option 2 (without mitigation measures) - AM	66
Figure C-4: Speed Ratio – Spatial Option 1 (with mitigation measures) - AM	67
Figure C-5: Speed Ratio – Spatial Option 2 (with mitigation measures) - AM	68
Figure C-6: Speed Ratio - Reference Case - PM	69
Figure C-7: Speed Ratio – Spatial Option 1 (without mitigation measures) - PM	70
Figure C-8: Speed Ratio – Spatial Option 2 (without mitigation measures) - PM	71
Figure C-9: Speed Ratio – Spatial Option 1 (with mitigation measures) - PM	72
Figure C-10: Speed Ratio – Spatial Option 2 (with mitigation measures) - PM	73
Figure D- 1: Relative Queue - Reference Case – AM.....	75
Figure D- 2: Relative Queue – Spatial Option 1 (without mitigation measures) – AM.....	76
Figure D- 3: Relative Queue – Spatial Option 2 (without mitigation measures) – AM.....	77
Figure D- 4: Relative Queue – Spatial Option 1 (with mitigation measures) – AM.....	78
Figure D- 5: Relative Queue – Spatial Option 2 (with mitigation measures) – AM.....	79
Figure D- 6: Relative Queue – Reference Case – PM.....	80
Figure D- 7: Relative Queue – Spatial Option 1 (without mitigation measures) – PM	81
Figure D- 8: Relative Queue – Spatial Option 2 (without mitigation measures) – PM	82
Figure D- 9: Relative Queue – Spatial Option 1 (with mitigation measures) – PM.....	83
Figure D- 10: Relative Queue – Spatial Option 2 (with mitigation measures) – PM	84

Acronyms and abbreviations

TDC	Tendring District Council
NEMo	North Essex Model
NPPF	National Planning Policy Framework
TCBGC	Tendring Colchester Borders Garden Community
TRICS	Trip Rate Information Computer System
VDM	Variable Demand Model

1. Introduction

1.1 North Essex Model

The North Essex Model (NEMo) is a strategic highway and public transport model with a base year of 2023. It is being used to assess the impact of local plans across north Essex. Forecast year assessments involve changing the network in the base model along with trip demand to reflect scenarios to be tested.

The NEMo base year model has been developed by expanding and updating the Colchester Transport Model (CTM), which has a base year of 2019. The detailed area of modelling in the CTM was expanded to include parts of Braintree and Tendring to align with options being considered in their local plan reviews. Updates were made to the highway and public transport networks to reflect 2023 conditions; and car, LGV, HGV, bus and rail demand was adjusted to reflect better 2023 travel patterns. The resulting NEMo was then validated against 2023 flow and journey time data to confirm it is a reasonable representation.

CTM, and hence NEMo, has been built following Department for Transport (DfT) Transport Analysis Guidance (TAG) guidance and best modelling practice, and the update process has followed DfT guidance on present day updates, in which models are refreshed rather than reconstructed entirely.

NEMo includes a variable demand model (VDM), also developed in line with DfT guidance, which allows trip makers to change destination and switch between car and public transport modes. The VDM considers trip purposes over a 24-hour period and predicts from where trips will be produced, to where they will be attracted and which mode will be used. It then produces origin and destination car, bus and rail matrices for the AM and PM peak hours and average interpeak hours.

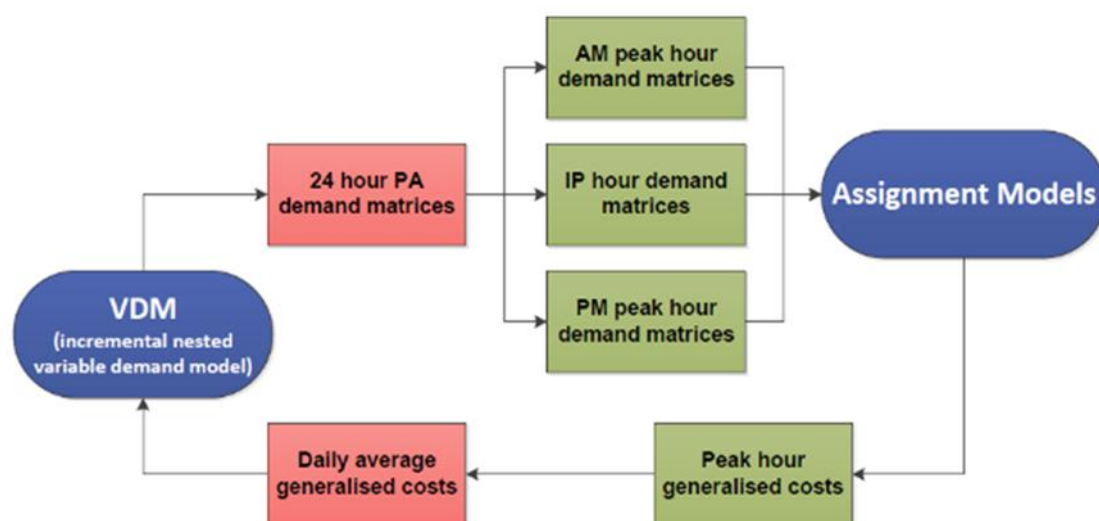


Figure 1-1: Relationship between demand and assignment models

The trips in the car matrix are subdivided into commuting, business and other trips and assigned onto the highway network alongside estimates of LGVs and HGVs using VISUM software. Buses, which travel on the highway network, are also included but follow designated routes. Meanwhile the bus and rail trips are assigned onto the public transport network using EMME software. Some public transport trips use both bus and rail to complete a journey.

The VDM and assignment models iterate with each other until they reach convergence - which means that an iteration of the model would not result in further changes in destination or mode choice. For

information, the highway assignment model forecasts route choice and delay as more trips are added to the network. The public transport assignment model allows buses to fall behind scheduled timetables as result of congestion on the highway network, but rail services are assumed always to run to schedule.

NEMo represents a typical mid-week day in month without major holidays; hence it is skewed towards days with heavier traffic flow. Choosing such conditions tends to maximise normal traffic flow through all parts of the transport network and follows modelling best practise¹. The highway assignment model shows traffic conditions in the AM peak hour 7.30-8.30 and the PM peak hour 4.30-5.30, since these are, overall, the busiest hours in 2023 across north Essex in the respective peaks. The highway model can also show traffic conditions for an average interpeak hour between 10am-4pm. The public transport model shows public transport trips for an average peak hours in the AM (7am-10am), interpeak and PM (4pm-7pm) periods.

The North Essex Model – 2023 Validation Technical Note, dated April 2025, details the changes and updates to NEMo and presents the updated validation information for the present-day base year model. This work has been reviewed by NH's sub-consultants, AECOM, with all comments closed.

1.2 Purpose of report

In order to set a baseline against which the impact of preferred site allocations in Tendring can be assessed, a reference case forecast model for 2042 has been developed which represents the growth without the preferred site allocations. This is detailed in Local Plan Reg 18 – Reference Case (December 2025).

Following the preparation of the Reference Case models, the residential and employment associated with Tendring's spatial options has been included to produce Assessment Scenarios without any interventions. Finally, sustainable travel assumptions have been incorporated to produce Assessment Scenarios with interventions.

This document outlines the key assumptions underpinning the growth and transport schemes included in the Assessment Scenarios and explains how these assumptions have been applied within the transport model. It also presents a comparative analysis of model outputs:

- between the post-VDM Reference Case and Assessment Scenarios (without interventions) model outputs;
- between the Assessment Scenarios (without interventions) and Assessment Scenarios (with sustainable travel assumptions) model outputs; and
- between the Assessment Scenarios (with sustainable travel assumptions) and Assessment Scenarios (with sustainable travel assumptions) model outputs.

¹ Transport for London. Traffic Modelling Guideline. London, UK, Sept. 2021. url: <https://content.tfl.gov.uk/traffic-modelling-guidelines.pdf>

2. Assumptions

2.1 Introduction

This section details the demand and network assumptions that have been included in the Assessment Case scenarios and describes how these assumptions have been applied in the models.

2.2 Growth

2.2.1 Household and job assumptions

The proposed site allocations will grow households and jobs in Tendring beyond the Reference Case estimate. Growth elsewhere remains at reference case levels. The table below shows growth assumptions for each Spatial Option, and the individual sites are listed in Appendix A and Appendix B.

Table 2-1: Spatial Option Dwellings and Jobs, 2042

Council Area	2042 Spatial Option 1	2042 Spatial Option 2	2042 Spatial Option 1	2042 Spatial Option 2
	Households		Jobs	
Tendring	9,595	9,614	8,412	8,412

It should be noted that these were the most up-to-date assumptions at the time the work was being undertaken. Amendments have since been made to the housing numbers at several sites; however, the scale of the changes will not be significant enough to affect the findings of this report. The housing and employment assumptions will be revisited as part of the Regulation 19 work.

The location of the development in each Spatial Option is shown in the figures below. Spatial Option 1 includes a new garden village at Horsley Cross, whilst Spatial Option 2 has a comparable level of growth at Thorpe-le-Soken.

[illegible][illegible]

2

2.2.2 Trip generation

Similarly to the Reference Case trip generation, the trip generation for the proposed site allocations was calculated utilising the alternative planning assumptions module in TEMPro. Since TEMPro provides trip growth assumptions at the MSOA level, these have been further adjusted to apply a greater proportion of growth to the model zones within those MSOAs where developments are located.

The trip generation was converted from 24-hour production/attraction format to time-period specific origin/destination format. This conversion was required as the Assessment Scenarios are not run through the VDM. The demand for the proposed site allocations was then added directly on top of the post-VDM Reference Case demand.

2.2.3 Trip distribution

The trip distribution for the proposed site allocations will be based on the trip distribution of the existing model zones within which they fall.

2.3 Network Changes (without interventions)

2.3.1 Access arrangements

The only network changes between the Reference Case and Assessment Scenarios (without interventions) are the addition of new zone connectors to represent the locations where the proposed site allocations access the network.

3. Assessment Scenario 1 (without intervention) vs Reference Case

3.1 Flow Difference

Figure 3-1 and Figure 3-2 illustrate the flow differences between the Assessment Scenario 1 (without intervention) and Reference Case models during the AM and PM peak hours respectively.

The plots show a very similar pattern in both time periods. There are significant increases in flow in both directions of the A120 between Colchester and Horsley Cross (up to 280 vehicles per hour eastbound in AM and up to 360 vehicles per hour westbound in PM).

There are also increases in flow along other strategic corridors, for example along the A133 between Colchester and Weeley, the B1027 between Clacton-on-Sea and Colchester, and the B1035 between Manningtree and the A120. There are also increases in flow around Great Bromley.

There are slight decreases in flow northbound along the A12 to the north of junction 29 (up to 160 vehicles per hour in PM).

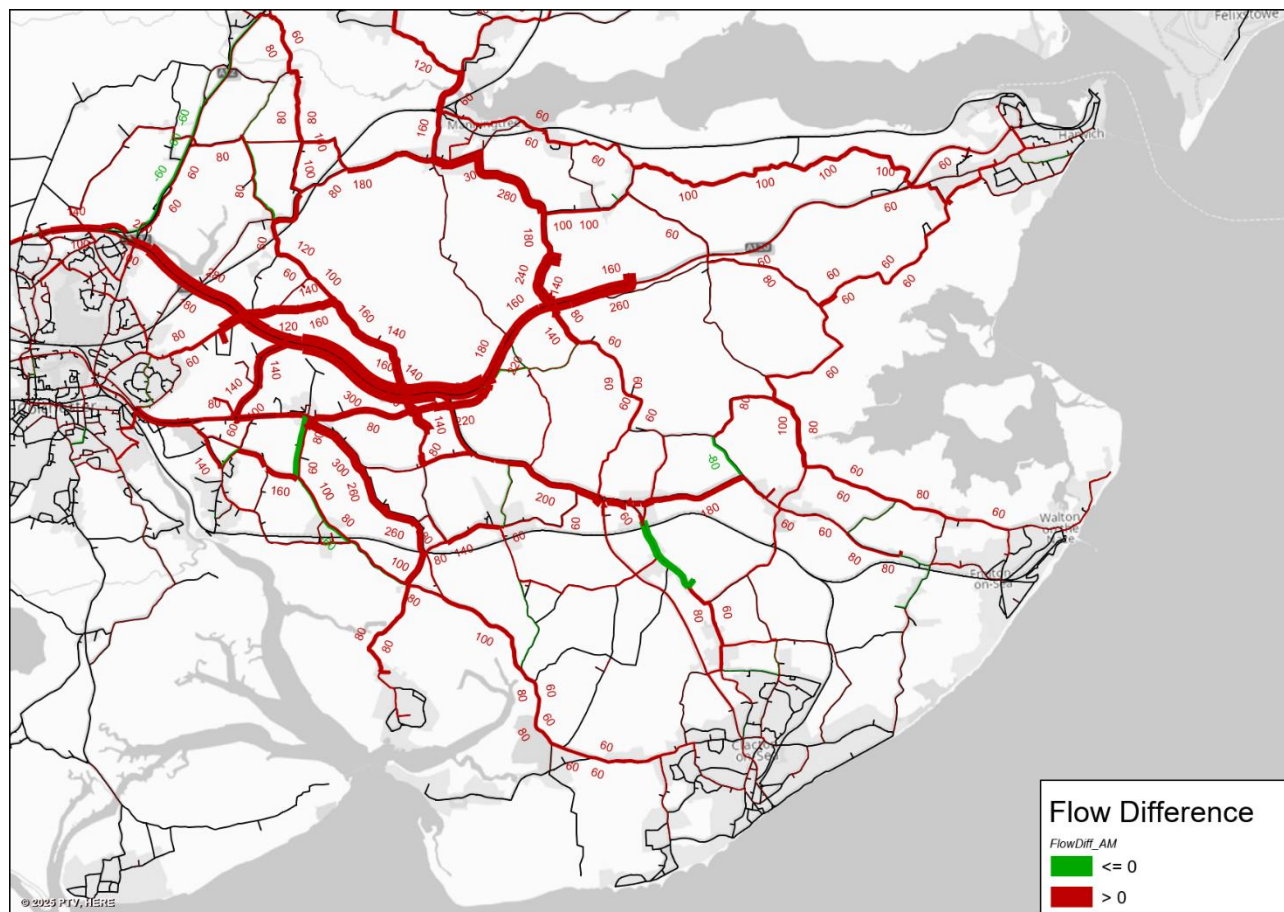


Figure 3-1: Assessment Case 1 (without interventions) vs Reference Case (2042) - Flow difference – AM

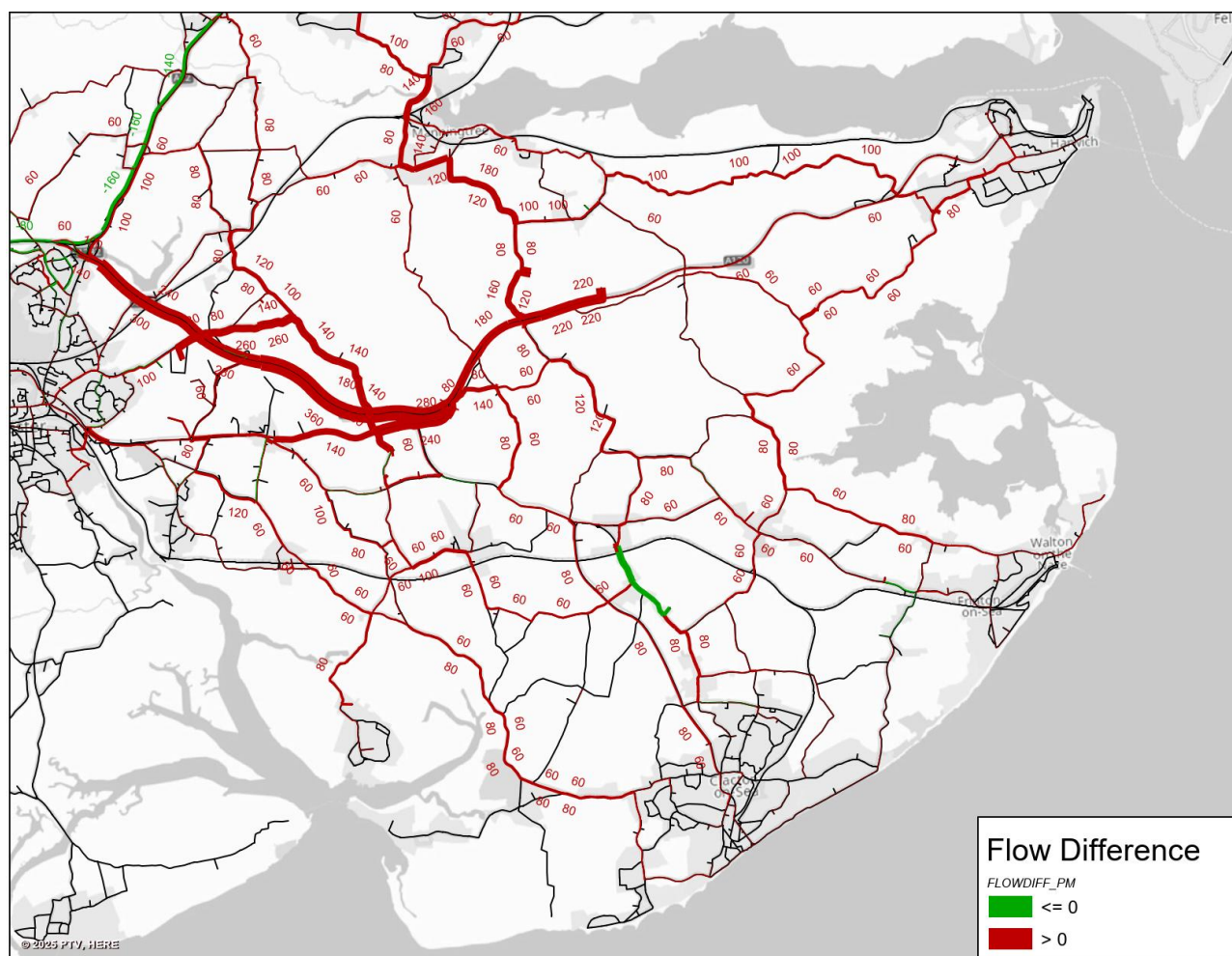


Figure 3-2: Assessment Case 1 (without interventions) vs Reference Case (2042) - Flow difference – PM

3.2 Speed Ratio Changes

The speed ratio is a measure of modelled speed compared to the free-flow speed on a link, with lower speed ratios showing reduced speeds compared to free-flow conditions. The base year model speed ratios have been compared against typical traffic in Google Maps to confirm that the model reflects delays and congestion in the district. This analysis is presented in the “Preferred Options Local Plan Transport Evidence – Reference Case” report (January 2026).

Figure 3-3 and Figure 3-4 illustrate the speed ratio changes between the Assessment Scenario 1 (without intervention) and Reference Case models during the AM and PM peak hours respectively. The red links show a worsening of speed ratio and therefore an increase in congestion, whilst the green links show improvements in speed ratio and reduced congestion. The absolute speed ratio plots for these scenarios are shown in Appendix C (opposed to change between scenarios).

The speed ratio changes show worsening congestion in several locations along the A120, including at junction 29 (both time periods), between Hare Green and Horsley Cross (AM only), and at the Harwich Rd approach to the A120 (AM only).

In the AM peak there are also reduced speed ratios at the A133/ Colchester Road roundabout, and at the Colchester Road and Elmstead Road approaches to the A133 to the east of Colchester.

In the PM peak there is a slight worsening on the A137 in Manningtree.

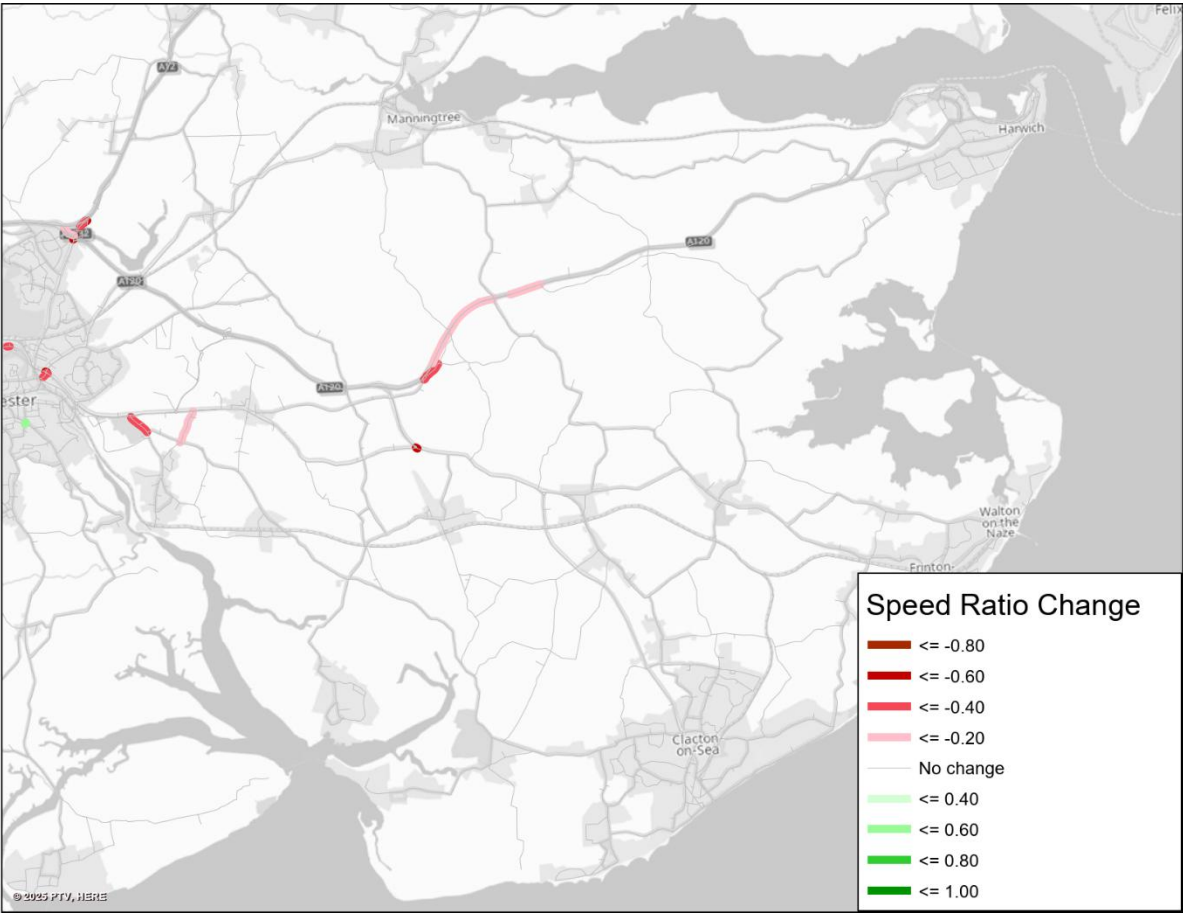


Figure 3-3: Assessment Case 1 (without interventions) vs Reference Case (2042) – Speed Ratio changes – AM

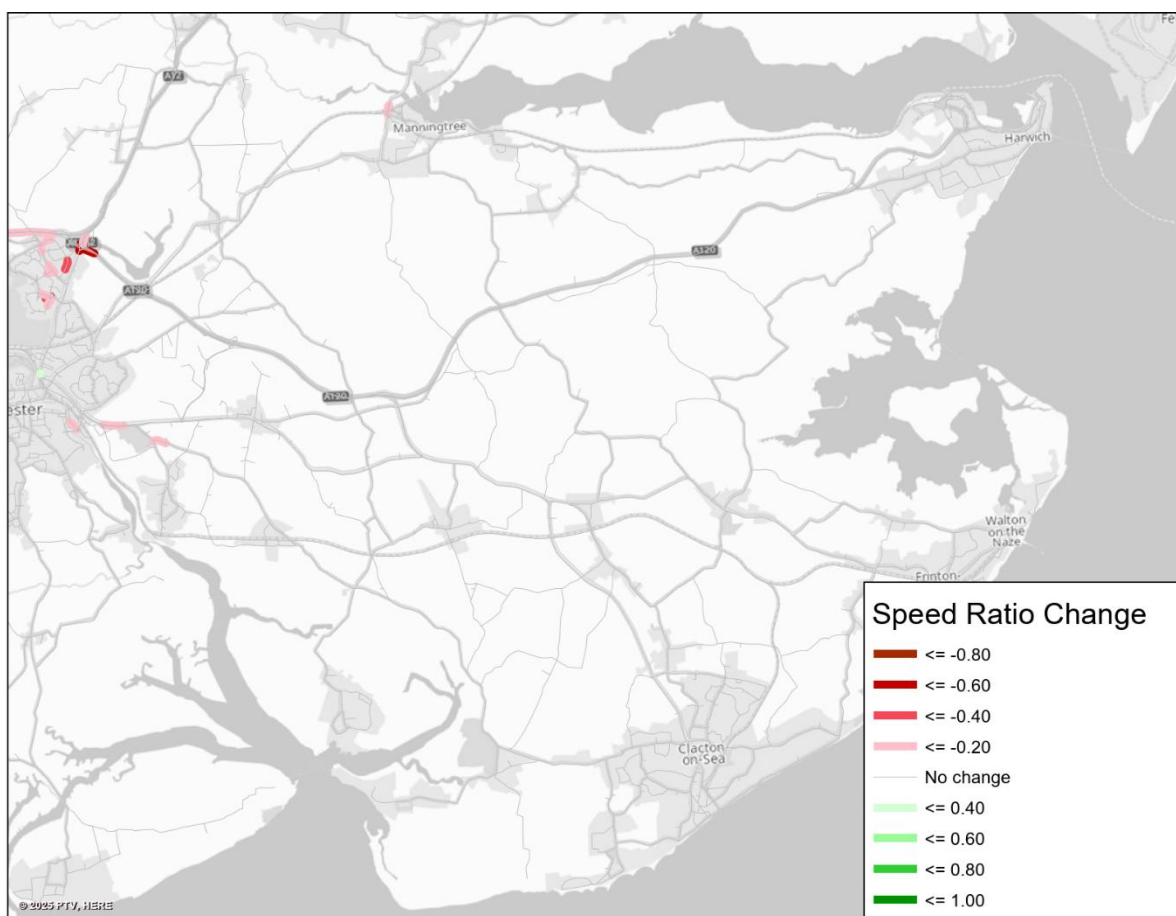


Figure 3-4: Assessment Case 1 (without interventions) vs Reference Case (2042) – Speed Ratio changes – PM

3.3 Relative Queue Changes

The relative queue indicator shows blocking back of traffic on links – i.e. traffic that doesn't get through in the modelled time period which, therefore, causes queues to form. This indicator only appears on the worst performing parts of the modelled network. The absolute relative queue plots for these scenarios are shown in Appendix D (opposed to change between scenarios).

Figure 3-5 and Figure 3-6 show the changes in relative queue between the Assessment Scenario 1 (without intervention) and Reference Case models during the AM peak and PM peak respectively.

In both the AM and PM there is an increase in relative queues at junction 29. In the AM peak there are also increases at the A133/ Colchester Road roundabout, the Harwich Road approach to A120, and the Colchester Road and Elmstead Road approaches to the A133 to the east of Colchester. These increases mirror the speed ratio changes discussed in Section 3.2 above.

In the PM peak period there are negligible changes elsewhere in Tendring aside from junction 29.

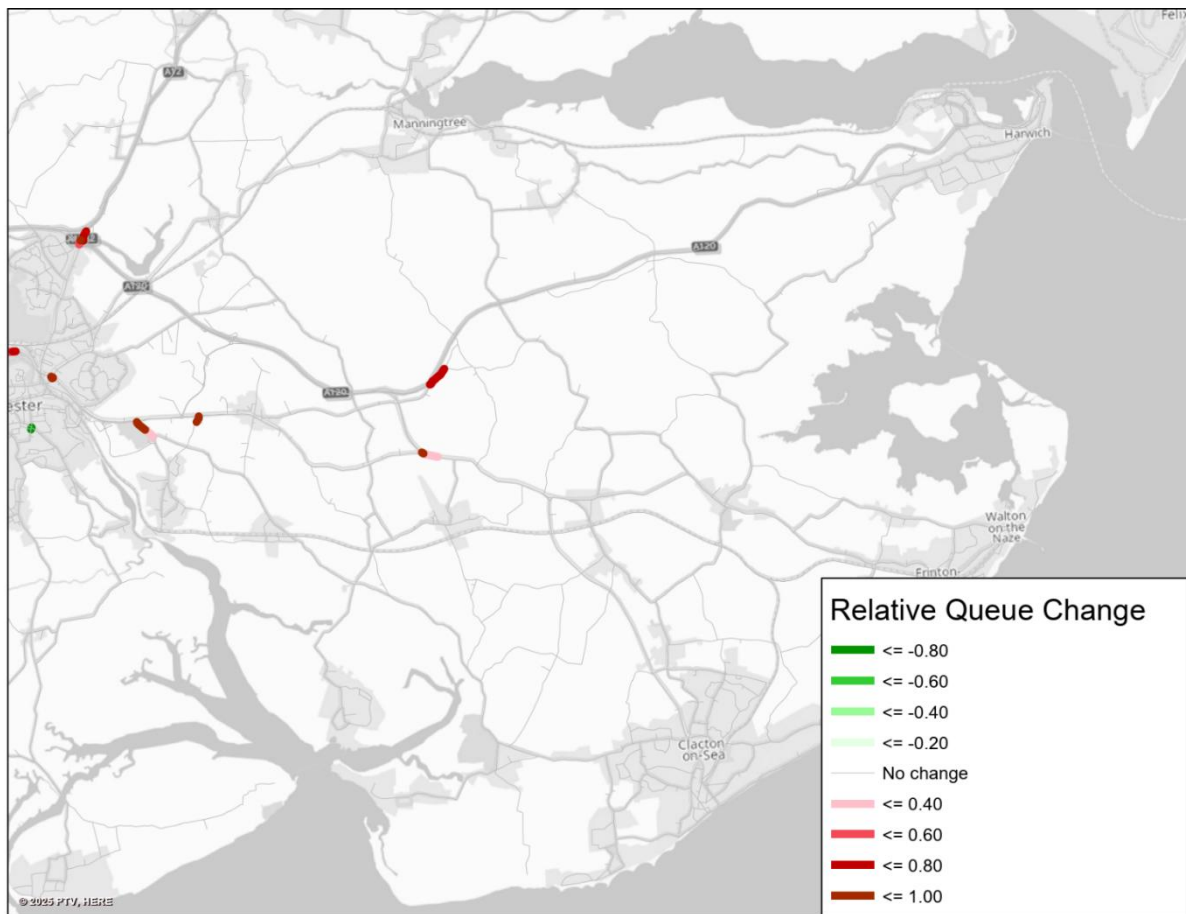


Figure 3-5: Assessment Case 1 (without interventions) vs Reference Case (2042) – Relative Queue changes – AM

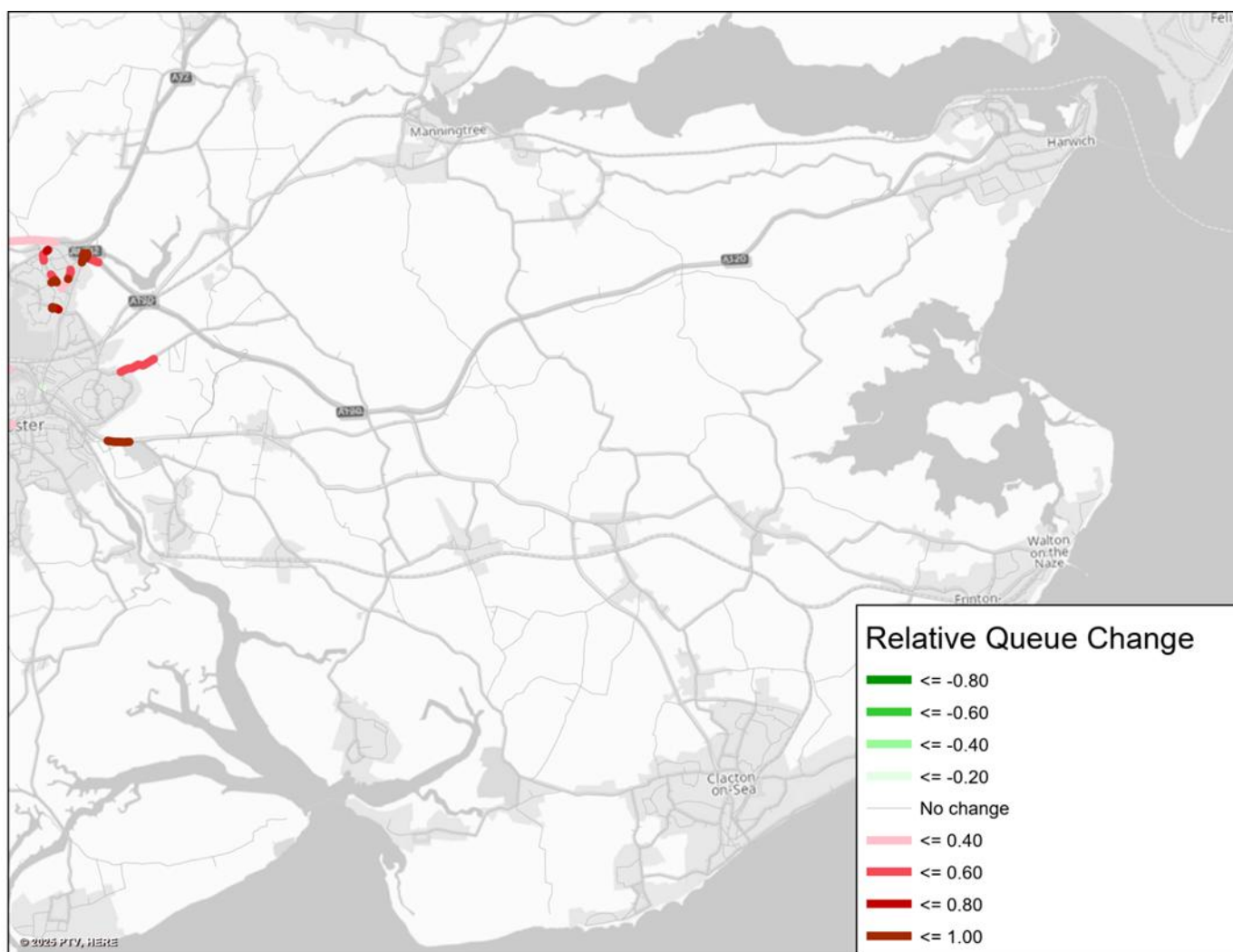


Figure 3-6: Assessment Case 1 (without interventions) vs Reference Case (2042) – Relative Queue changes – PM

3.4 SRN Junctions

The traffic flows and queue lengths on the Strategic Road Network (SRN) junctions will be provided as part of the Regulation 19 analysis, when the preferred option is developed further and there is a focus on detailed network assessment and safety aspects at specific locations.

4. Assessment Scenario 2 (without intervention) vs Reference Case

4.1 Flow Difference

Figure 4-1 and Figure 4-2 illustrate the flow differences between the Assessment Scenario 2 (without intervention) and Reference Case models during the AM and PM peak hours respectively.

The plots show a very similar pattern in both time periods. There are significant increases in flow in both directions of the A120 between Colchester and Horsley Cross (up to 260 vehicles per hour eastbound in AM and up to 360 vehicles per hour westbound in PM).

There are also increases in flow along other strategic corridors, for example along the A133 between Colchester and Weeley, the B1027 between Clacton-on-Sea and Colchester, the B1033 between Weeley and Thorpe-le-Soken, and the B1035 between Manningtree and the A120. There are also increases in flow around Great Bromley.

There are decreases in flow northbound along the A12 to the north of junction 29 (up to 140 vehicles per hour in PM).

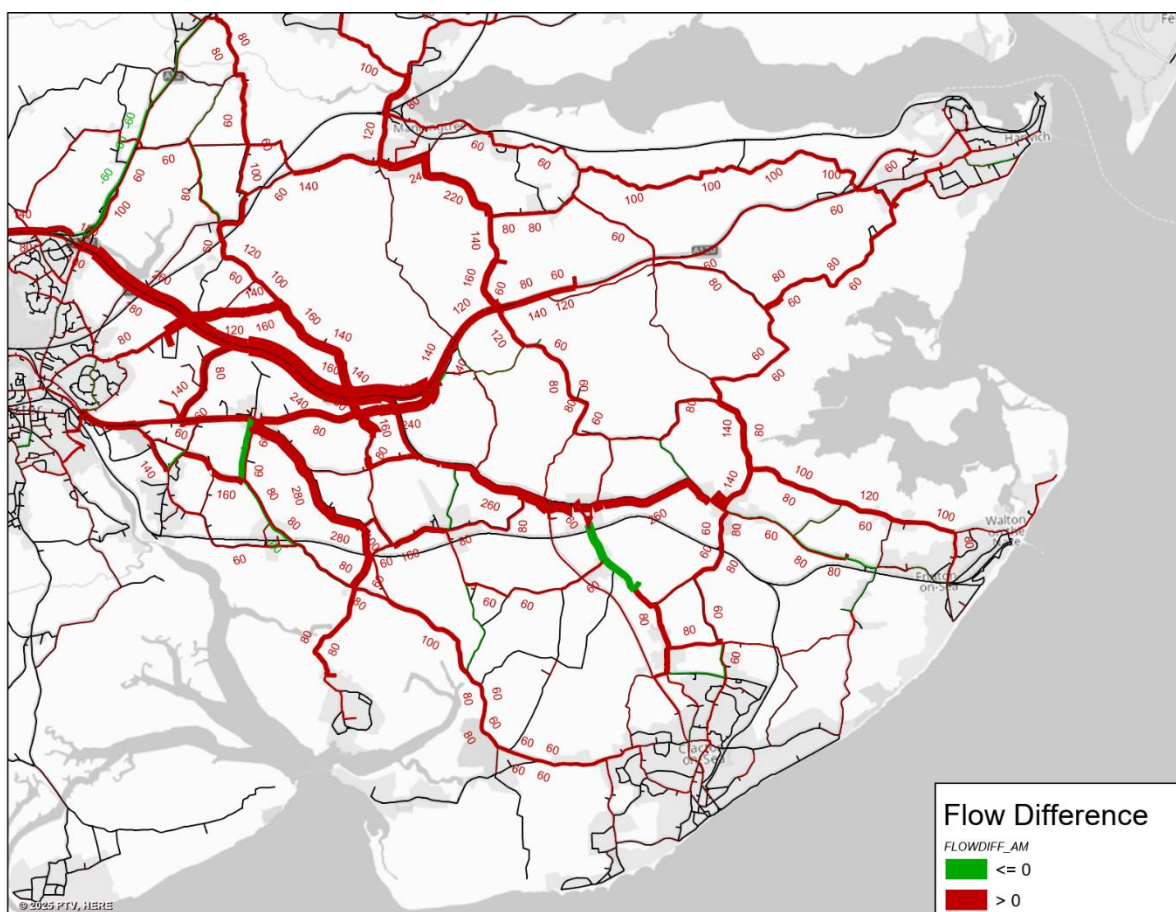


Figure 4-1: Assessment Case 2 (without interventions) vs Reference Case (2042) - Flow difference – AM

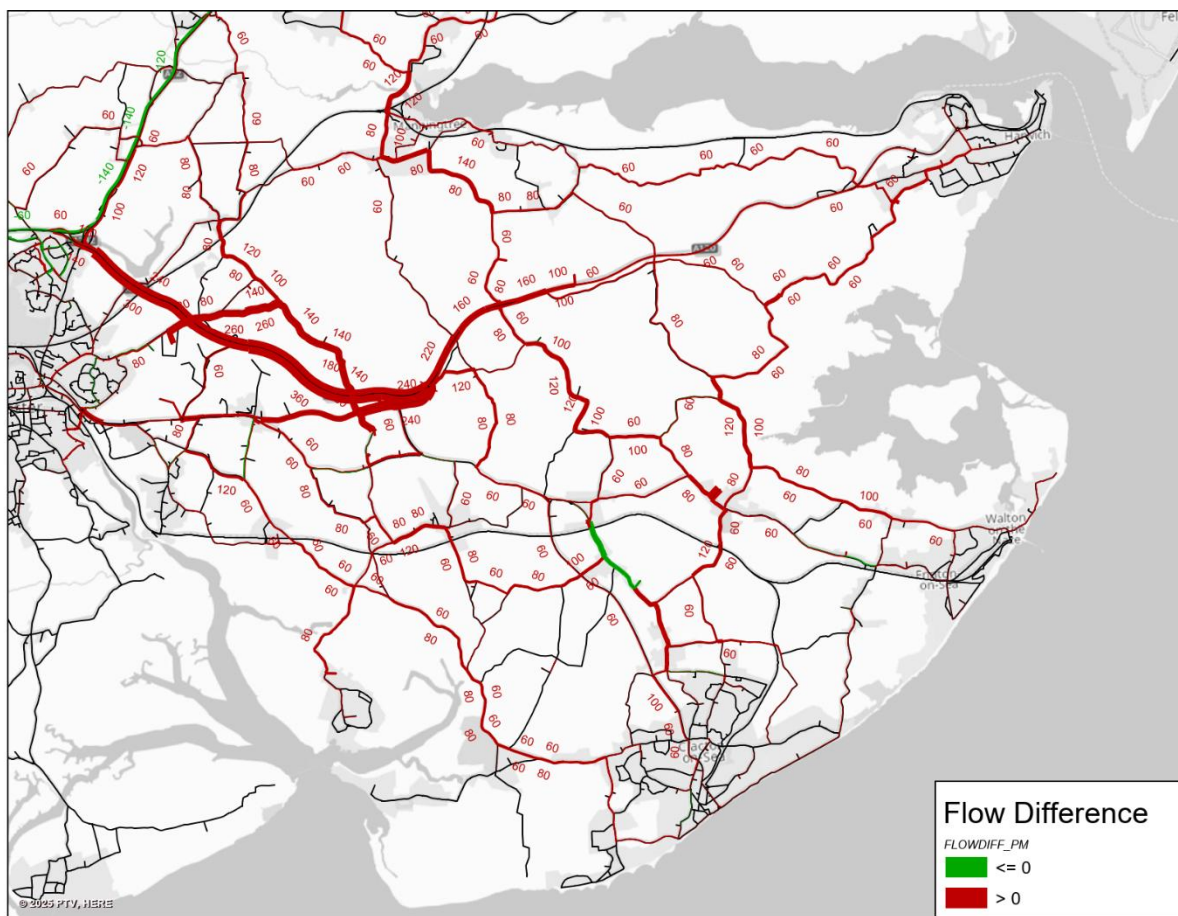


Figure 4-2: Assessment Case 2 (without interventions) vs Reference Case (2042) - Flow difference – PM

4.2 Speed Ratio Changes

Figure 4-3 and Figure 4-4 illustrate the speed ratio changes between the Assessment Scenario 2 (without intervention) and Reference Case models during the AM and PM peak hours respectively. The red links show a worsening of speed ratio and therefore an increase in congestion, whilst the green links show improvements in speed ratio and reduced congestion. The absolute speed ratio plots for these scenarios are shown in Appendix C where comparison to Assessment Case 1 can also be made.

The speed ratio changes show worsening congestion in several locations along the A120, including at junction 29 (both time periods), between Hare Green and Horsley Cross (AM only), and at the Harwich Rd approach to the A120 (AM only).

In the AM peak there are also reduced speed ratios at the A133/ Colchester Road roundabout, and at the Colchester Road and Elmstead Road approaches to the A133 to the east of Colchester.

In the PM peak there is a slight worsening on the A137 in Manningtree.

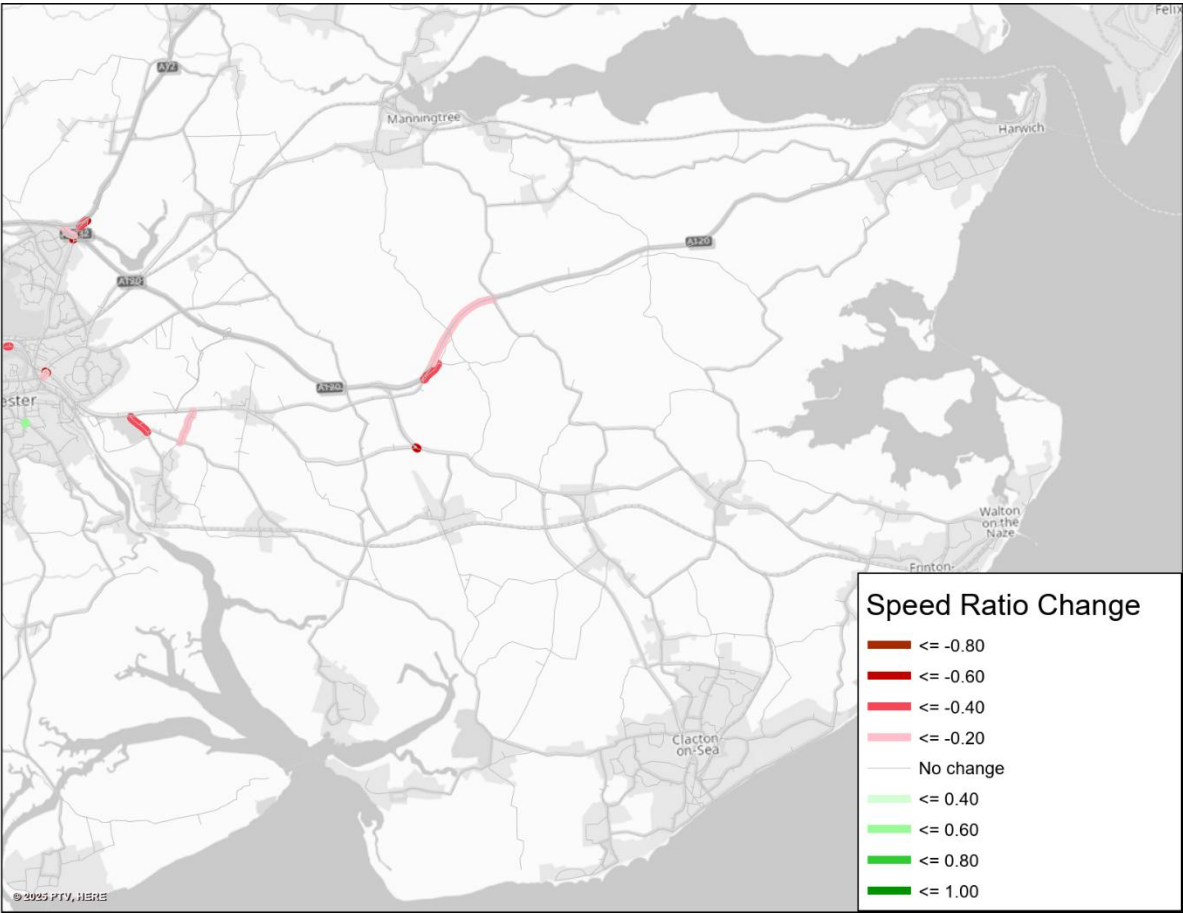


Figure 4-3: Assessment Case 2 (without interventions) vs Reference Case (2042) – Speed Ratio changes – AM

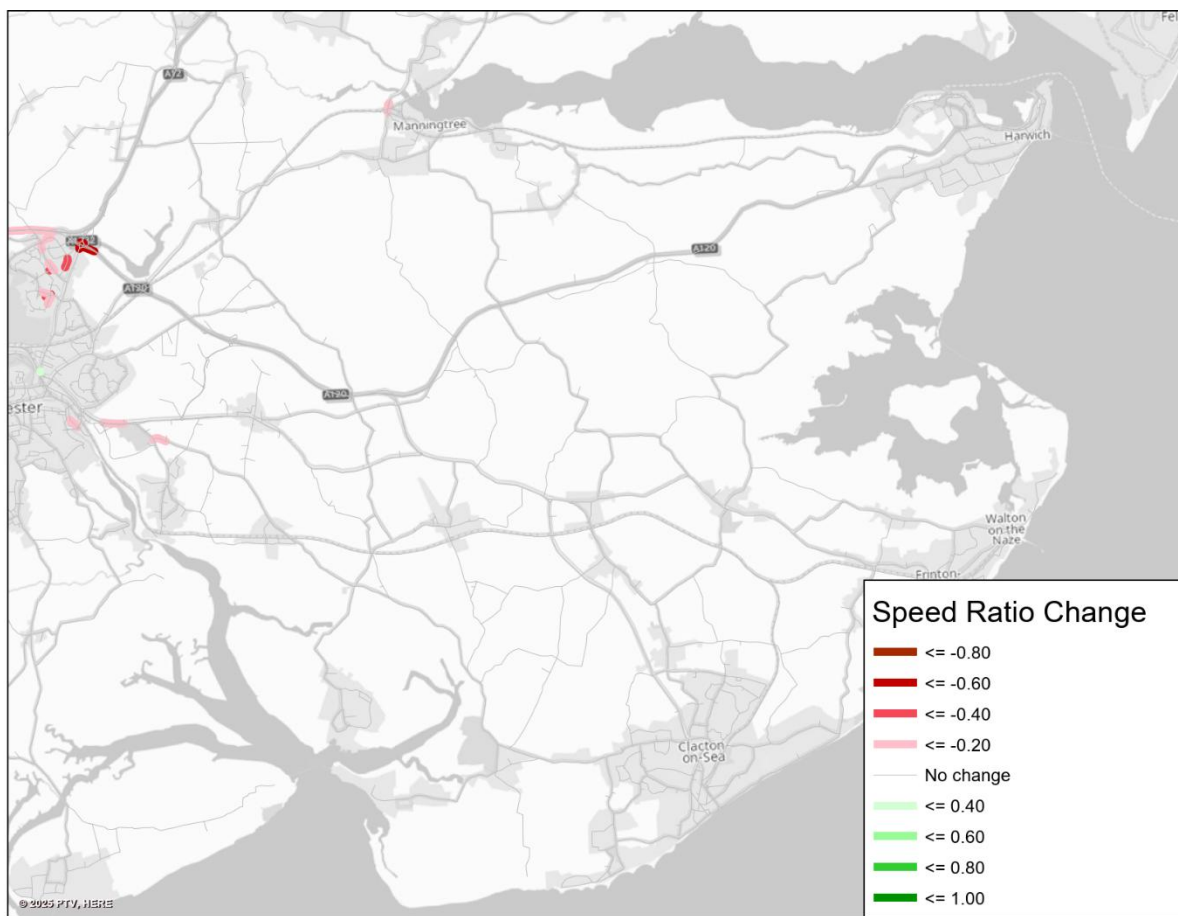


Figure 4-4: Assessment Case 2 (without interventions) vs Reference Case (2042) – Speed Ratio changes – PM

4.3 Relative Queue Changes

Figure 4-5 and Figure 4-6 show the changes in relative queue between the Assessment Scenario 2 (without intervention) and Reference Case models during the AM peak and PM peak respectively. The absolute relative queue plots for these scenarios are shown in Appendix D where comparison to Assessment Case 1 can also be made.

In both the AM and PM there is an increase in relative queues at junction 29. In the AM peak there are also increases at the A133/ Colchester Road roundabout, the Harwich Road approach to A120, and the Colchester Road and Elmstead Road approaches to the A133 to the east of Colchester. These increases mirror the speed ratio changes discussed in Section 4.2 above.

In the PM peak period there are negligible changes elsewhere in Tendring aside from junction 29.

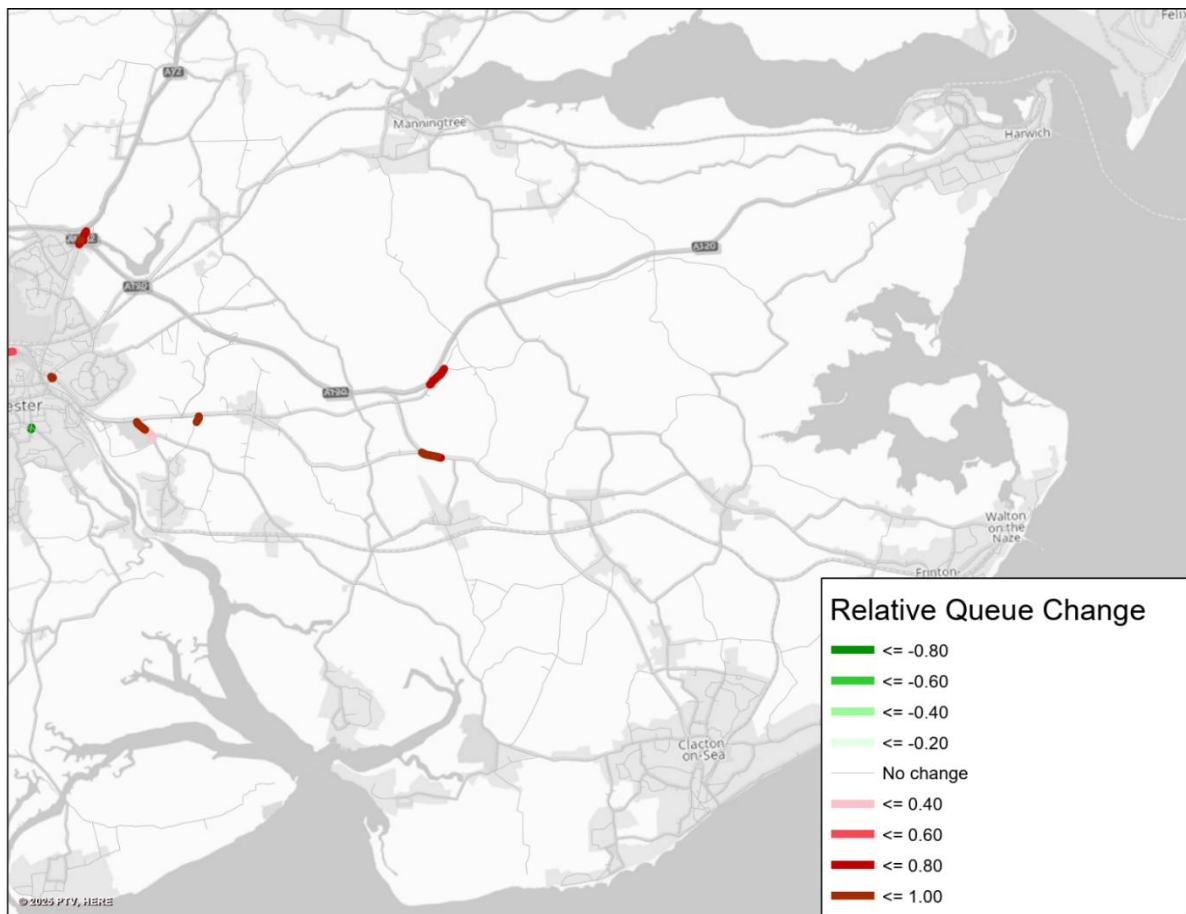


Figure 4-5: Assessment Case 2 (without interventions) vs Reference Case (2042) – Relative Queue changes – AM

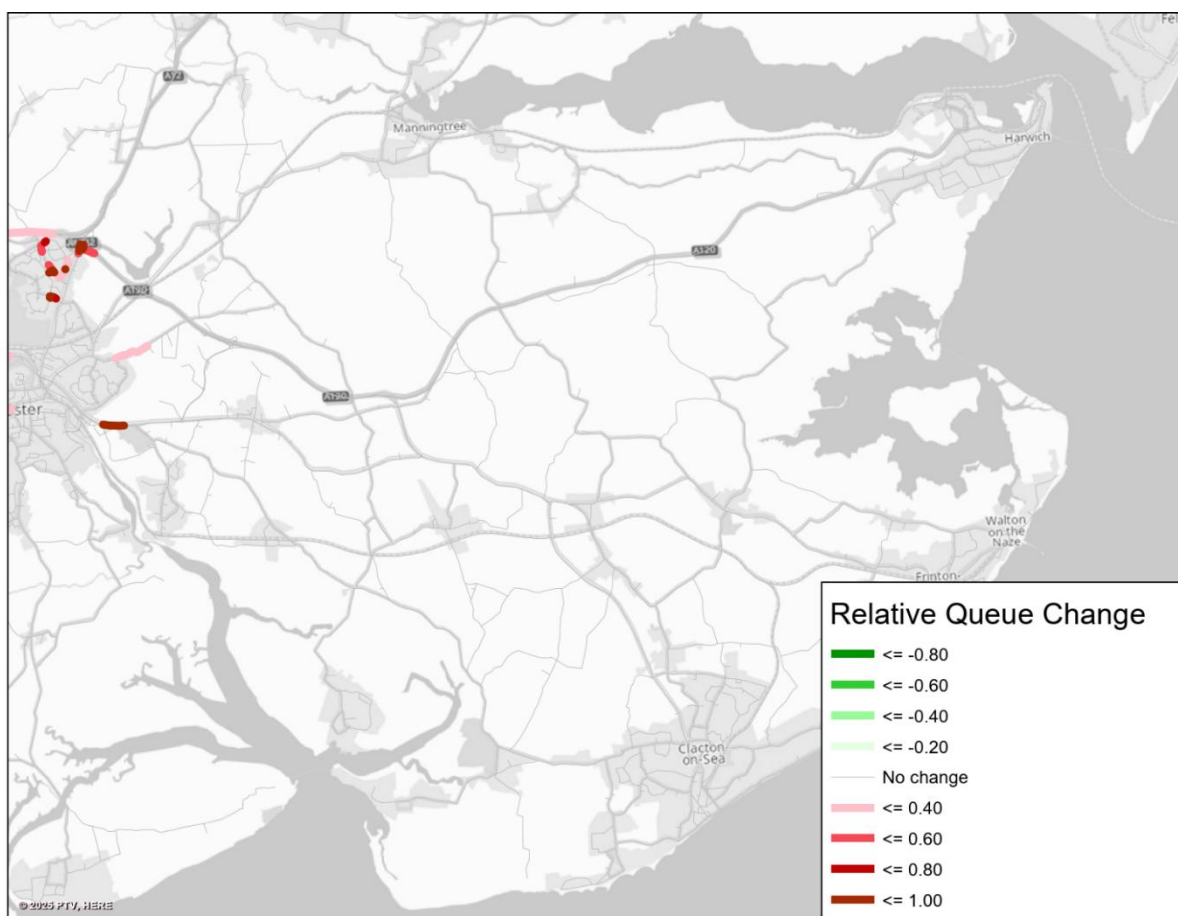


Figure 4-6: Assessment Case 2 (without interventions) vs Reference Case (2042) – Relative Queue changes – PM

4.4 SRN Junctions

The traffic flows and queue lengths on the Strategic Road Network (SRN) junctions will be provided as part of the Regulation 19 analysis, when the preferred option is developed further and there is a focus on detailed network assessment and safety aspects at specific locations.

5. Assessment Scenario 2 (without intervention) vs Assessment Scenario 1 (without intervention)

5.1 Flow Difference

Figure 5-1 and Figure 5-2 illustrate the flow differences between the Assessment Scenario 2 (without intervention) and Assessment Scenario 1 (without intervention) models during the AM and PM peak hours respectively.

The plots show a very similar pattern in both time periods. In Assessment Scenario 2 there are increases in flow Thorpe-Le-Soken and decreases around Horsley Cross. This reflects the different development distributions in each Spatial Option.

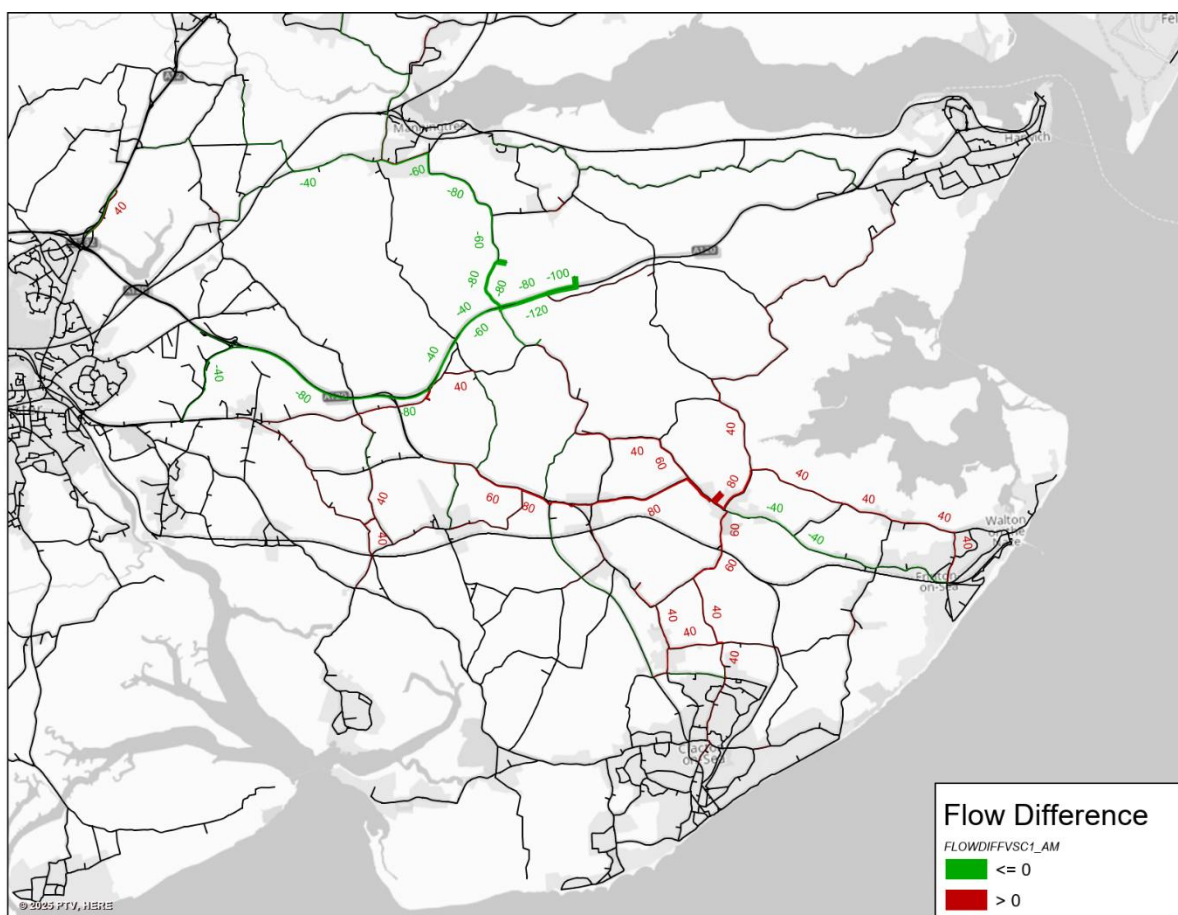


Figure 5-1: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – AM

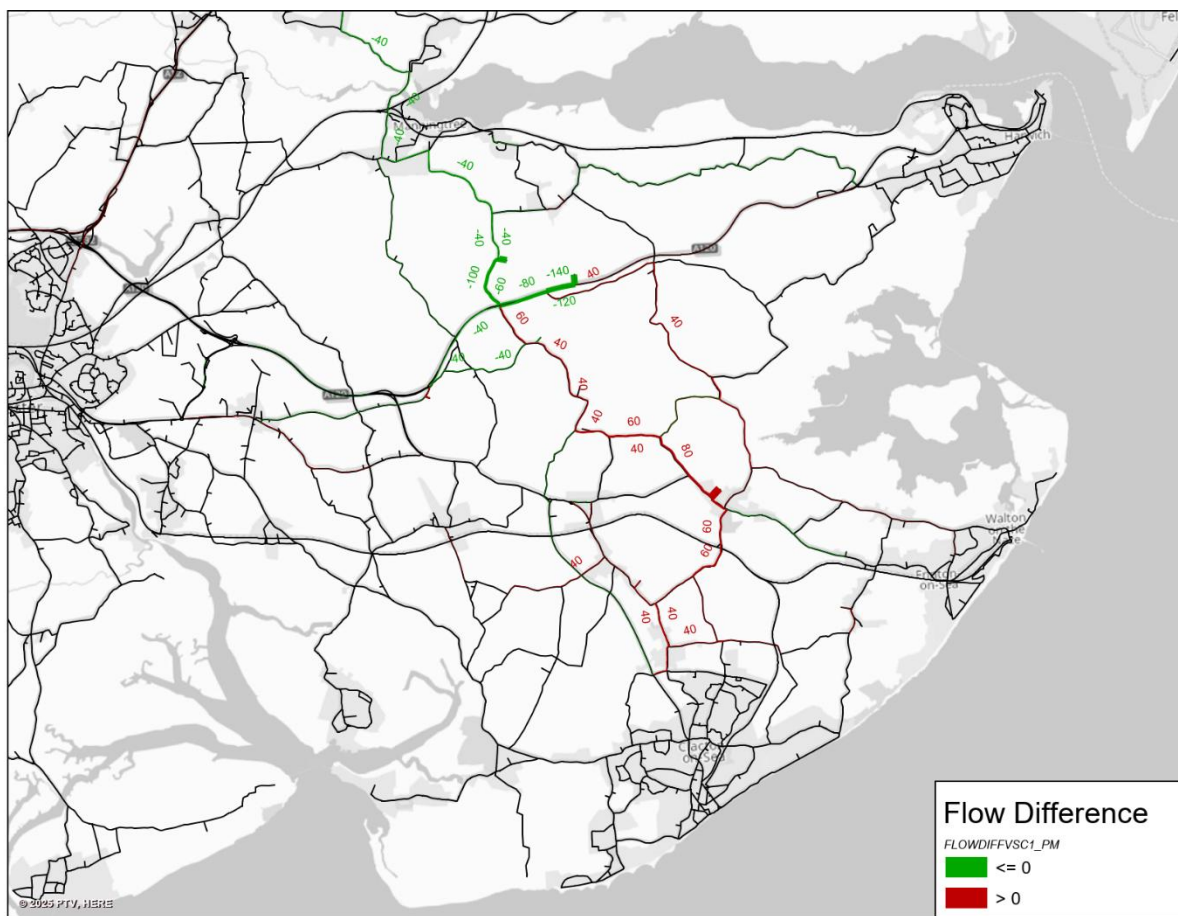


Figure 5-2: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – PM

5.2 Speed Ratio Changes

Figure 5-3 and Figure 5-4 illustrate the speed ratio changes between the Assessment Scenario 2 (without intervention) and Assessment Scenario 1 (without intervention) models during the AM and PM peak hours respectively. The red links show a worsening of speed ratio and therefore an increase in congestion, whilst the green links show improvements in speed ratio and reduced congestion. Speed plots for each scenario are also provided in Appendix C.

The speed ratio changes show worsening congestion in several locations along the A120 in Assessment Scenario 2 in the AM peak, including at junction 29, between Hare Green and Horsley Cross, and at the Harwich Rd approach to the A120. There are also reduced speed ratios at the A133/ Colchester Road roundabout, and at the Colchester Road and Elmstead Road approaches to the A133 to the east of Colchester.

In the PM peak there are slight improvements in speed ratio at junction 29 in Assessment Scenario 2 compared to Assessment Scenario 1.

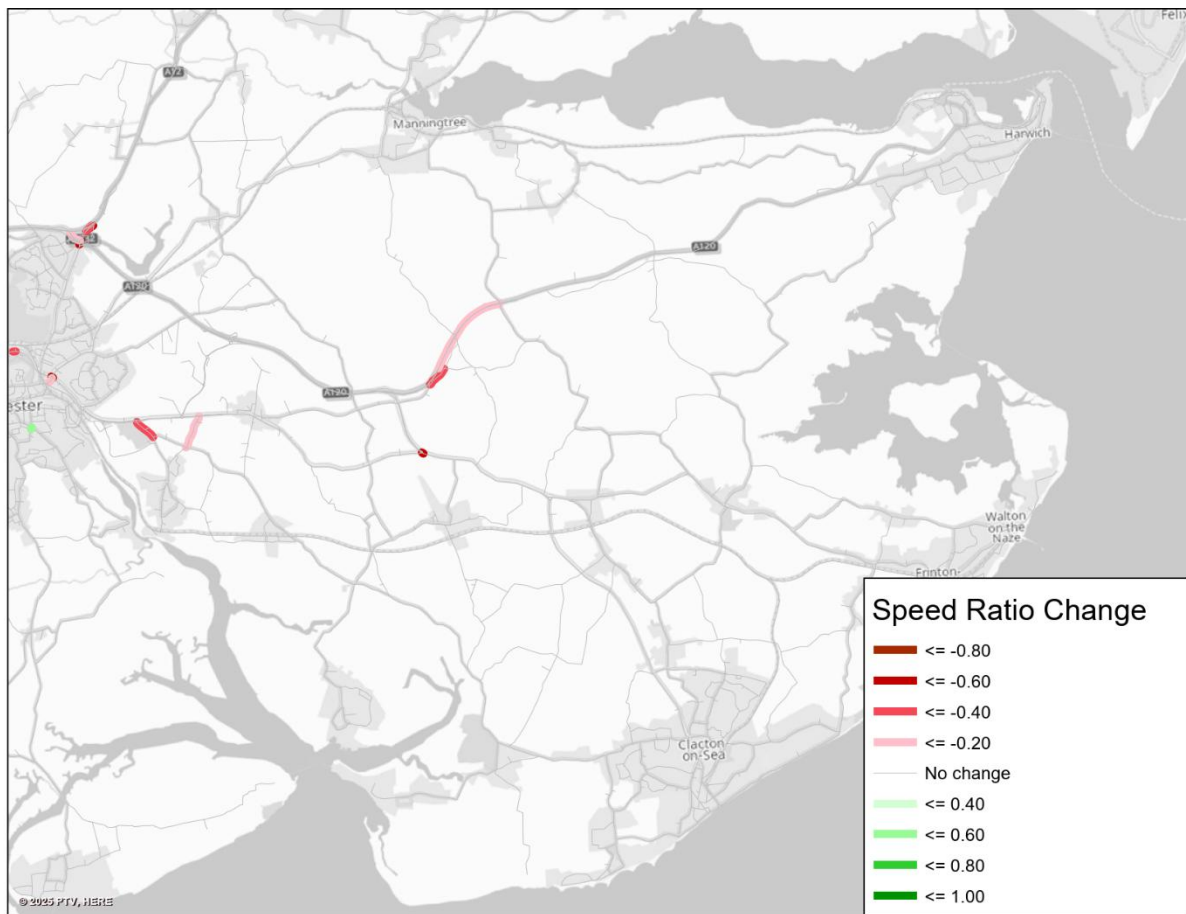


Figure 5-3: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) – Speed Ratio changes – AM

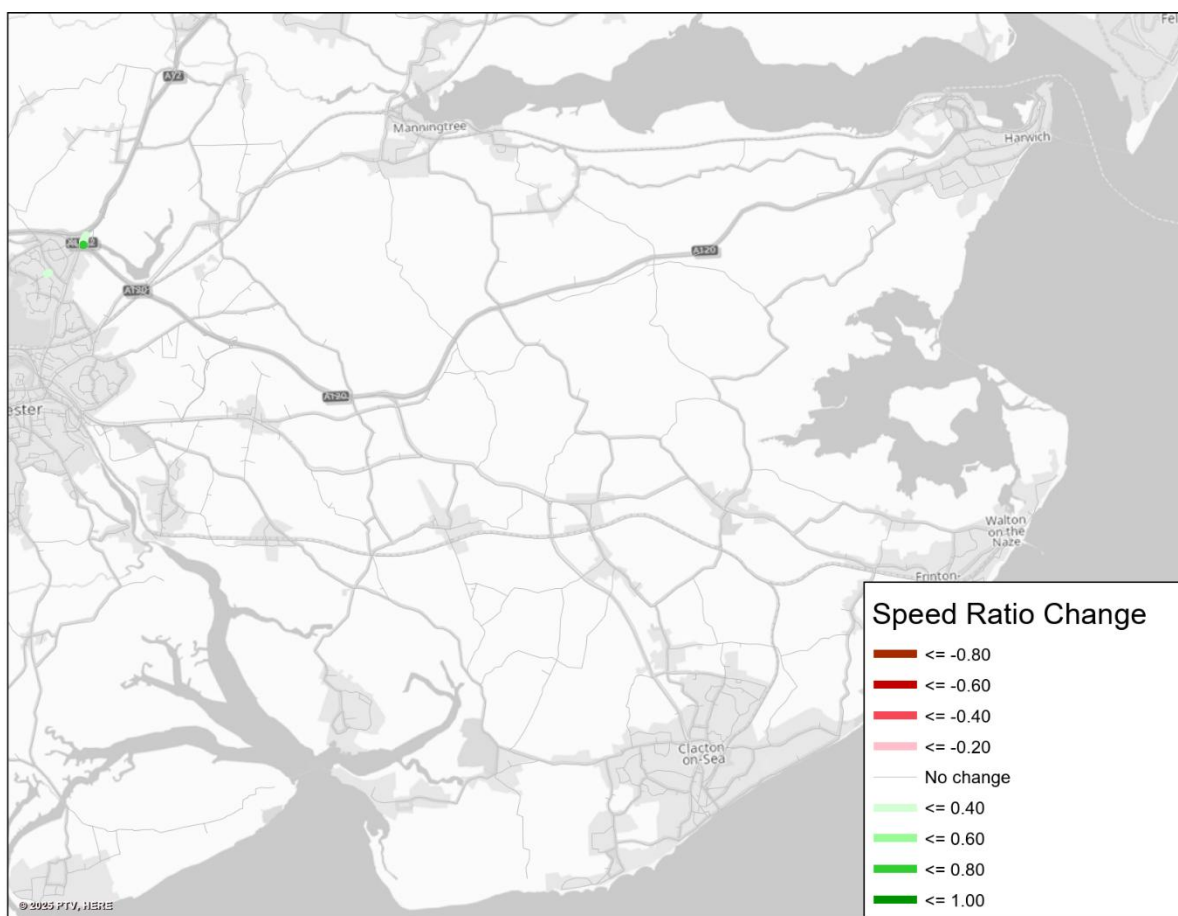


Figure 5-4: Assessment Case 2 (without interventions) vs Assessment Case 1 (without interventions) (2042) – Speed Ratio changes – PM

5.3 Relative Queue Changes

Figure 5-5 and Figure 5-6 show the changes in relative queue between the Assessment Scenario 2 (without intervention) and Assessment Scenario 1 (without intervention) models during the AM peak and PM peak respectively. Relative queue plots for each scenario are also provided in Appendix D.

In the AM peak Assessment Scenario 2 shows an increase in relative queue at the A133/ Colchester Road roundabout, whereas in the PM peak Assessment Scenario 2 shows a slight improvement in queueing at junction 29. Aside from these areas, there are negligible changes elsewhere in Tendring and along SRN.

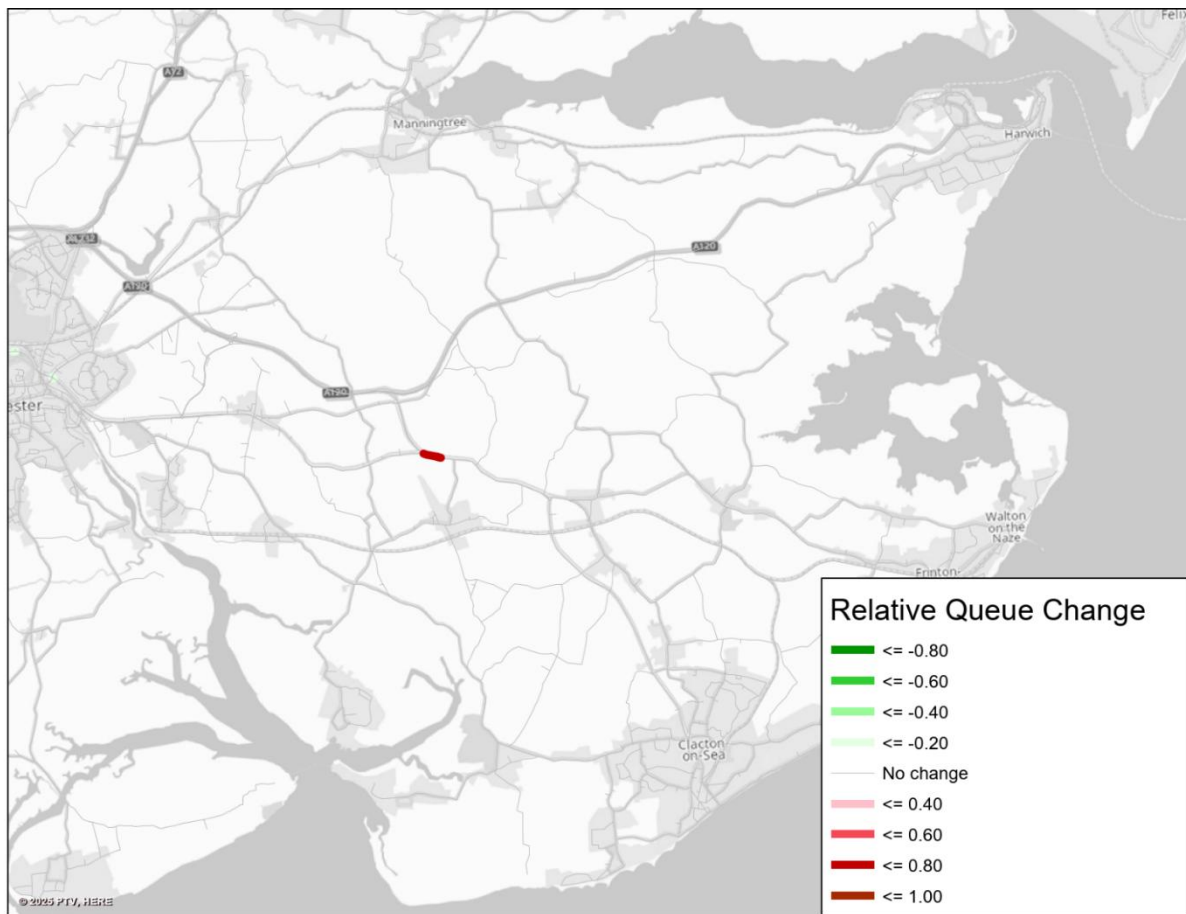


Figure 5-5: Assessment Case 2 (without interventions) vs Assessment Scenario 1 (without intervention) (2042) – Relative Queue changes – AM

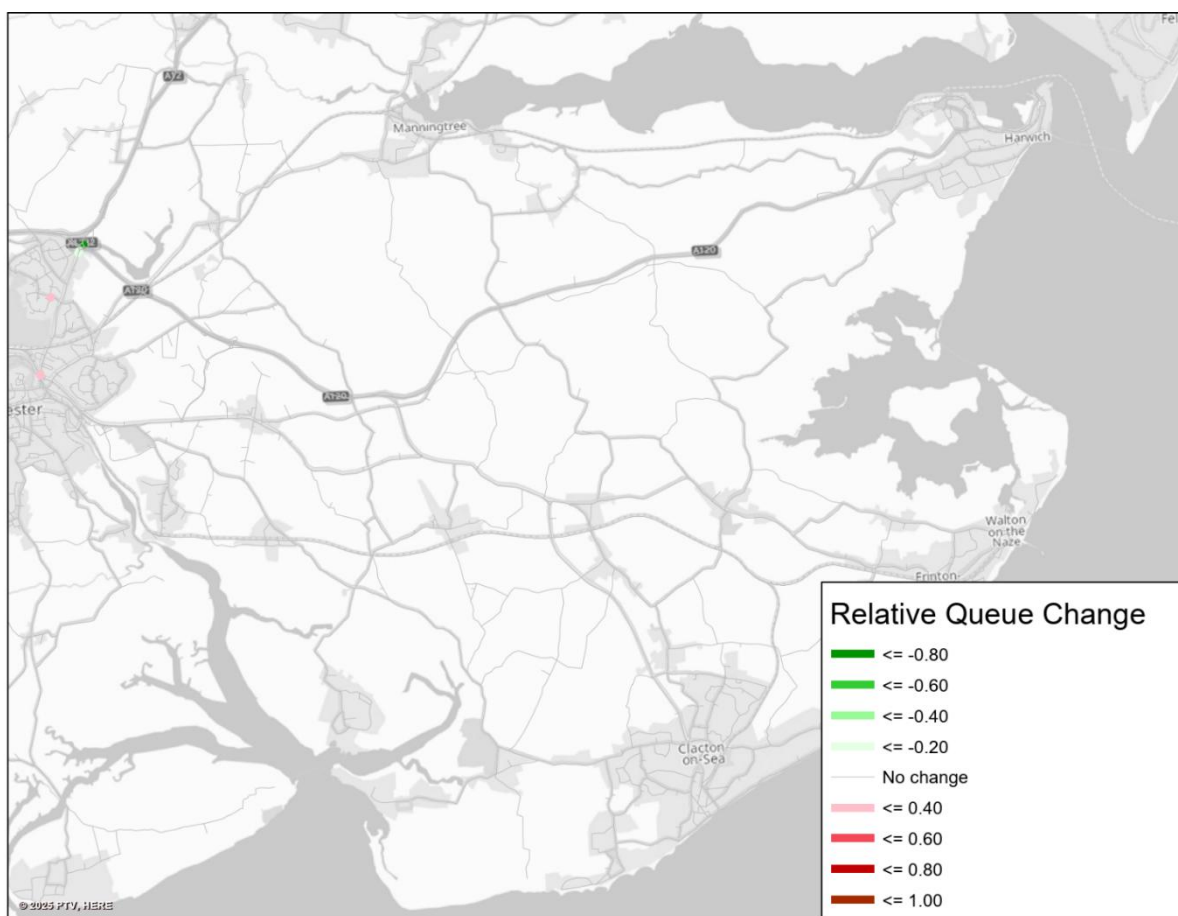


Figure 5-6: Assessment Case 2 (without interventions) vs Assessment Scenario 1 (without intervention) (2042) – Relative Queue changes – PM

5.4 SRN Junctions

The traffic flows and queue lengths on the Strategic Road Network (SRN) junctions will be provided as part of the Regulation 19 analysis, when the preferred option is developed further and there is a focus on detailed network assessment and safety aspects at specific locations.

6. Interpreting Findings – Reference Case, Assessment Scenario 1 (without interventions) and Assessment Scenario 2 (without interventions)

The travel conditions along selected routes in Tendring have been examined to understand the scale of change between the Assessment Scenarios (without intervention) and the Reference Case. The method of analysis applied is referred to as tabular analysis since we are extracting tables of indicators from the transport model which are combined into a movement index. The selected routes, which were identified by considering the location of preferred site allocations and local knowledge, are summarised in Figure 6-1 below.

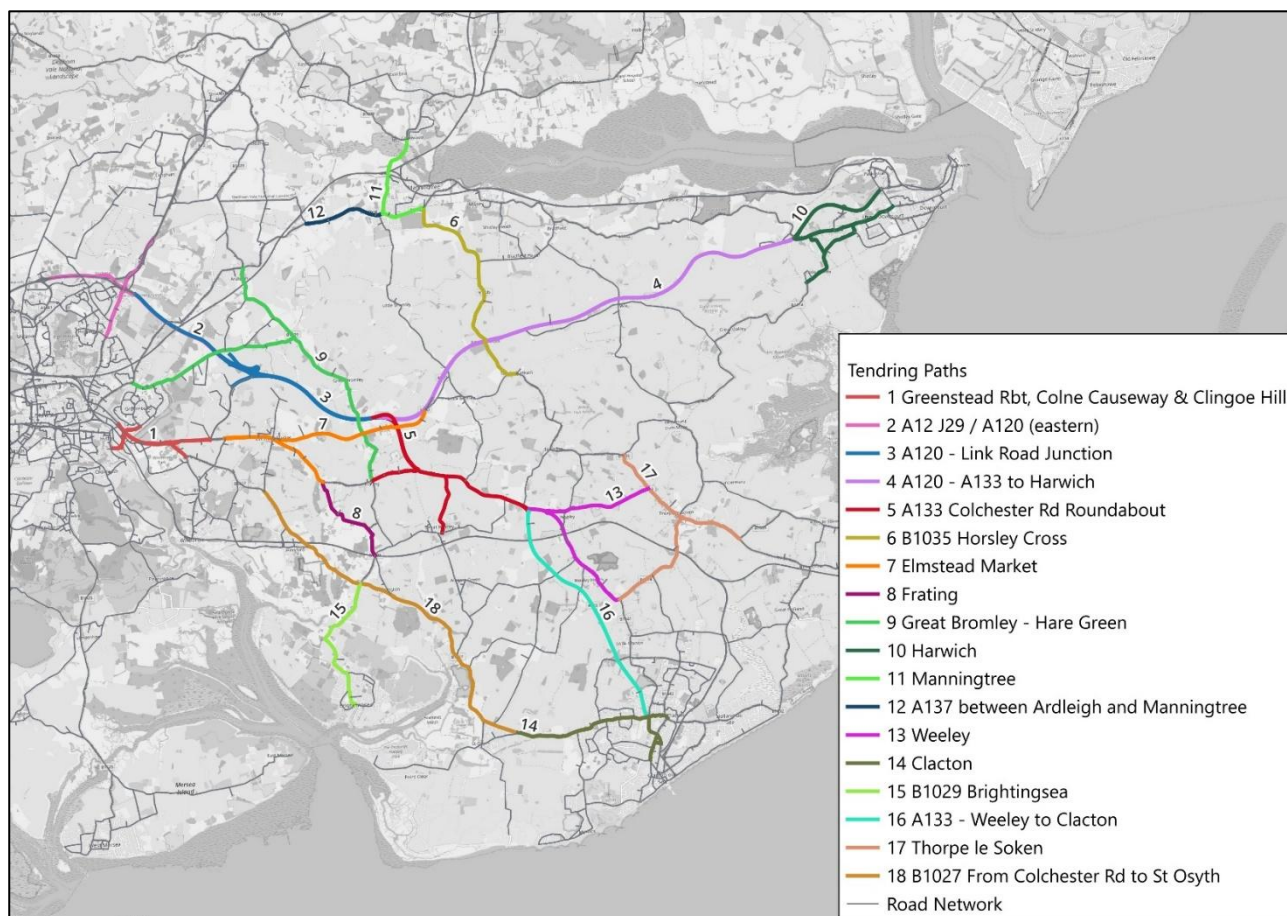


Figure 6-1: Routes of Interest

A movement indicator (I) was calculated for each route for each scenario and time period. This movement indicator was based on the relative queue (q), speed ratio (s) and ratio of actual flow compared to demand flow (d) as per the formula below:

$$I = \left(\frac{1+q}{s} \right)^d$$

The movement indicators range from 1 to 15 as shown in Table 6-1 below. A scale of 15 has been chosen in order that differences between routes of interest and scenarios can be perceived.

Table 6-1: Tabular Analysis Movement Scale

Description	Movement Scale
More or less free-flow	1
	2
	3
Travelling slower	4
	5
	6
Moderate congestion	7
	8
	9
Substantial congestion	10
	11
	12
Extreme congestion	13
	14
	15

The movement scale has been used to understand the acceptability of changes between the Assessment Scenarios and Reference Case. The movement indicators for each route are shown in Table 6-2 below.

Table 6-2: Assessment Scenarios (without intervention) vs Reference Case (2042) – Tabular Analysis – AM and PM

Sector	Route	AM Peak			PM Peak		
		2042 RC	2042 AC1	2042 AC2	2042 RC	2042 AC1	2042 AC2
East Colchester	Greenstead Roundabout, Colne Causeway & Clingoe Hill	8	9	10	8	10	10
	A12 J29 / A120 (eastern)	9	10	10	9	10	10
North Tendring	A120 - Link Road Junction	5	5	5	4	4	4
	A120 - A133 to Harwich	4	7	6	3	4	4
	A133 Colchester Rd Roundabout	10	11	12	10	11	11
	B1035 Horsley Cross	3	4	3	3	3	3
	Elmstead Market	4	4	5	3	4	4
	Frating	3	4	4	1	1	1
	Great Bromley - Hare Green	4	5	5	5	7	7
	Harwich	3	4	4	3	3	3
	Manningtree	9	10	10	9	10	10
	A137 - Between Ardleigh and Manningtree	5	6	5	5	5	5
South Tendring	Weeley	2	2	2	2	2	2
	Clacton	4	5	5	5	5	5
	B1029 Brightingsea	4	4	4	4	4	4
	A133 Weeley - Clacton	5	6	6	5	5	5
	Thorpe le Soken	3	4	5	3	4	5
	B1027 From Colchester Rd to St Osyth	4	5	5	4	4	4
Overall assessment combining all areas		6	7	7	6	6	6

The tabular analysis shows that there is a slight increase in the movement indicators in the Assessment Case models compared to the Reference Case model.

In the AM peak this includes both East Colchester routes, the A133 Colchester Rd Roundabout route and the route through Manningtree, which continue to experience either "moderate" or "severe" congestion. There is a more significant increase in movement indicator along the A120 - A133 to Harwich route, which increases to 7 ("moderate" congestion) in Assessment Case 1 and 6 ("travelling slower") in Assessment Case 2. This reflects the worsening of speed ratios along the A120 between Hare Green and Horsley Cross in both Assessment Scenarios.

The patterns in the PM peak are very similar, with increases in East Colchester, along the A133 Colchester Rd Roundabout route and Manningtree. This reflects the slight worsening in speed ratios discussed in the above sections, for example on the A137 in Manningtree.

The movement indicators have been used to determine the acceptability of change on each of the routes. A RAG comparison rating has been calculated, which is based on the share of paths that are rated as having "Extreme" congestion (movement indicator 13, 14 and 15), and specifically how that share changes between the Reference Case and Assessment Case scenarios. The RAG comparison ratings as shown in Table 6-3 below. The RAG comparison ratings for each route are shown in Table 6-4 below.

Table 6-3: RAG Ratings

RAG Rating	Marker
Passable	✓
Caution	!
Unsatisfactory	×

Table 6-4: Assessment Scenarios (without intervention) vs Reference Case (2042) – RAG Ratings – AM and PM

Sector	Route	AM Peak		PM Peak	
		2042 AC1	2042 AC2	2042 AC1	2042 AC2
East Colchester	Greenstead Roundabout, Colne Causeway & Clingoe Hill	!	!	!	!
	A12 J29 / A120 (eastern)	✓	!	!	✓
North Tendring	A120 - Link Road Junction	✓	✓	✓	✓
	A120 - A133 to Harwich	!	!	✓	✓
	A133 Colchester Rd Roundabout	!	×	!	✓
	B1035 Horsley Cross	✓	✓	✓	✓
	Elmstead Market	✓	✓	✓	✓
	Frating	✓	✓	✓	✓
	Great Bromley - Hare Green	✓	✓	!	✓
	Harwich	✓	✓	✓	✓
	Manningtree	✓	✓	✓	✓
	A137 - Between Ardleigh and Manningtree	✓	✓	✓	✓
	Weeley	✓	✓	✓	✓
South Tendring	Clacton	✓	✓	✓	✓
	B1029 Brightingsea	✓	✓	✓	✓
	A133 Weeley - Clacton	✓	✓	✓	✓
	Thorpe le Soken	✓	✓	✓	✓
	B1027 From Colchester Rd to St Osyth	✓	✓	✓	✓

The RAG ratings show that the increase in congestion along the A133/ Colchester Road Roundabout route in the AM peak of Assessment Case 2 (which increases from 10 in the Reference Case to 12 in the Assessment Case), is not acceptable. Increased congestion along this route should also be treated with caution in the AM and PM peaks of Assessment Case 1.

A number of other routes experience increased levels of congestion that must be treated with caution, including the Clingoe Hill and Colne Causeway route in the AM and PM peaks for both Assessment Case scenarios. This route includes the Colchester Road approach to the A133, which was identified as a problem in the speed ratio plots.

Increased levels of congestion along the A12 J29 / A120 (eastern) route in the AM peak for Assessment Case 2 and the PM peak for Assessment Case 1 must also be treated with caution. These increases reflect worsening speed ratios at junction 29.

Finally, increased congestion along the A120 - A133 to Harwich route in the AM peak (both scenarios) must also be treated with caution. This reflects the worsening of speed ratios along the A120 between Hare Green and Horsley Cross in both Assessment Scenarios.

It should be noted that NEMo represents a typical mid-week day in month without major holidays; choosing such conditions tends to maximise normal traffic flow through all parts of the transport network and follows modelling best practise. It is acknowledged that due to Tendring's geographic location there will be additional travel demand on certain days due to tourism, for example bank holidays or during summer holidays. However, it is expected that additional recreational trips will mainly occur within the inter-peak period when overall travel demand is lower. It is therefore unlikely that the transport model will show that an increase in trips will result in congestion above the levels seen in the AM and PM peak hours.

7. Sustainable Travel Reductions

7.1 Introduction

This section discusses the potential impact of sustainable transport schemes in Tendring. Section 7.2 discusses the sustainable schemes that have been considered to support the development proposals, and section 7.3 explains how the potential impact of these schemes has been applied in the models. Section 7.4 and section 7.5 present the flow difference, speed ratio changes and relative queue changes for the Assessment Scenarios with sustainable travel reductions compared to the Assessment Scenarios without sustainable travel reductions, and section 7.6 presents the tabular analysis for these scenarios.

7.2 Sustainable Transport Schemes

In March 2025, Essex Highways undertook an initial review of sites submitted through the Call for Sites process to determine which locations may be most suitable for development and where opportunities exist to integrate sustainable transport.

As part of Tendring's Local Plan consultation in April 2025, the district outlined its vision for 2041:

"In 2041, the Tendring District will be a vibrant, healthy and attractive place to live, work and visit. It will have a thriving, resilient and prosperous economy that promotes sustainable economic growth, making sustainable use of its natural and historic environments, maritime connections and popularity as a visitor destination."

With particular emphasis on transport and housing delivery, it states:

"To deliver high quality sustainable new communities.... To make efficient use of existing transport infrastructure and ensure sustainable transport opportunities are promoted in all new development. Where additional capacity is required in the form of new or upgraded transport infrastructure, to ensure this is provided as necessary in connection with new development."

Building on this vision, Essex Highways has undertaken a detailed assessment of the proposed site allocations. The focus is on previously identified schemes - either adopted into policy or proposed for future feasibility - that could encourage greater use of sustainable travel. These measures aim to reduce highway impacts and supporting a clear, long-term vision for the district. This is particularly critical in areas with significant development potential, where cumulative impacts are likely to be greatest.

The sustainable transport schemes, and their potential benefit for each of the Assessment Case scenarios, is summarised in Table 7-1.

Table 7-1: Identified Sustainable Transport Schemes in Tendring

Ref	Scheme	Category	Source	Benefit	AC1	AC2
1	Park and Ride – Clacton	P&R	BSIP Network Review	- Improve bus reliability by reducing traffic entering town centre - Support bus use in the town - Support seasonal access	Supports seasonal access to the coast	
2	RTS extension to Hare Green	RTS	Tendring LP Stage 2	- Allow inter-urban bus routes within Tendring to split at Hare Green – without extending the full way to Colchester - Allows for a more responsive network and higher frequency within Tendring		

Preferred Options Local Plan Transport Evidence – Assessment Case

Ref	Scheme	Category	Source	Benefit	AC1	AC2
3	RTS extension Hare Green to Harwich	RTS	Tendring LP Stage 2	- Rapid connectivity between Colchester & Harwich - Core PT route for Horsley Cross development (potential for housing expansion beyond 2042 increasing viability)		
4	P&R Hare Green	P&R		- Capture trips towards Colchester - Supplementing RTS extension demand		
5	Harwich Town Bus Route & Harwich Port Shuttle	Bus	BSIP Network Review	- Supporting access to Harwich Freeport area - Flexible and higher frequency bus routes serving a greater area of the towns		
6	Kirby Cross Cycle Connectivity to the Coast	Cycle	Tendring LP Stage 2	- High quality access to the station from new and existing development - Improved connection to amenities on the coast (10-15min cycle)		
7	Walton & Frinton Cycle Access to Stations	Cycle	Tendring LP Stage 2	- High quality access to town centre attractors, station and seafront - Reduce the need to use vehicles for short journeys		
8	Undertake LCWIP North Tendring – incorporating MTP routes	Cycle	Manningtree Transport Package (MTP)	- Connecting Manningtree, Mistley, Lawford - Schemes 2,3, 4, 10 & 11 from Manningtree Transport Package		
9	Horsley Cross - Manningtree Greenway	Cycle	Manningtree Transport Package	- Connecting Horsley Cross with Manningtree - Linking into LCWIP North Tendring - Part delivery of scheme 6 Manningtree Transport Package		
10	Sunshine Coast Rail Frequency Upgrade	Rail	Freeport East Transport Masterplan	- Increasing frequency along the rail route - Competitive to long distance driving to Colchester - Greater opportunity for bus route timetables to align with rail services - Provide improved access to employment and education opportunities for Clacton residents - Support wider economic activity in Clacton		
11	Clacton- Harwich Bus Route Split at Thorpe-Le- Soken	Bus	Tendring LP Stage 2	- Support increased frequency - More efficient, responsive network - Allows alignment with rail services		

Preferred Options Local Plan Transport Evidence – Assessment Case

Ref	Scheme	Category	Source	Benefit	AC1	AC2
12	Kirby Cross Rail Bridge	Bus	BSIP Network Review	Allow vehicle with more capacity to serve the route (double-decker)		
13	Weeley to Thorpe-le-Soken Greenway	Cycle	Tendring LP Stage 2	- Connecting two development areas - Alternative to car for short trips		
14	Horsley Cross to Hare Green Greenway	Cycle	Manningtree Transport Package	- Connection between Garden Communities - Part delivery of scheme 6 Manningtree Transport Package – with refinement of routing		
15	LCWIP Thorpe-Le-Soken & Weeley	Cycle		- High quality access to town centre attractors, station and seafront - Reduce the need to use vehicles for short journeys		
16	Implement LCWIP Harwich & Dovercourt routes	Cycle	LCWIP Freeport East Transport Masterplan	- High quality access to town centre attractors, station and seafront - Reduce the need to use vehicles for short journeys - Focus on Sustrans route from Little Oakley to Dovercourt, Harwich & Parkeston, cycle route 4, walking route 10 and secondary walking and cycle routes around developments - Inclusive of Bathside Bay Green Access Corridor		
17	North Tendring bus route	Bus	BSIP Network Review	Scheme 23 Manningtree Transport Package	<i>Inclusive of Horsley Cross</i>	<i>No Horsley Cross</i>
18	Thorpe-Le-Soken Sustainable Boulevard (along Station Road / incorporated within new development area)	Bus, Walk, Cycle	Tendring Sustainable Transport Options Stage 3 Assessment	- Given train station is out of town, will provide a high-quality sustainable access corridor between the town, new developments and the station - Increase accessibility of the train station - Combined with other interventions, will provide viable alternative for short trips		
19	Mobility Hub Network	Bus, Walk, Cycle	Essex Mobility Hubs Freeport East Transport Masterplan	- Integrate modes - Increase perception of safety and quality - Support trip chaining - Initial focus at rail stations and key interchanges. - Feasibility work to understand potential for wider networks within towns and new developments to develop network		

Ref	Scheme	Category	Source	Benefit	AC1	AC2
20	Hare Green to Great Bentley Station	Cycle	Manningtree Transport Package	- Connection between Garden Community and rail station - Part delivery of scheme 6 Manningtree Transport Package		

It should be noted that whilst increasing service frequency along the Sunshine Coast Rail Line (line 10 in Table 7-1) could encourage a shift towards rail travel, existing peak passenger numbers exceed capacity along the Greater Anglia line to Liverpool Street Station, with the highest proportion of passengers standing of any service (39% in the 2023 AM peak, up from 35% in 2022²). The potential impact of increasing service frequency along the Sunshine Coast Rail Line on this overcrowding will be explored further in Regulation 19.

The locations of the sustainable transport schemes are shown in Figure 7-1 and Figure 7-2 below for Assessment Case 1 and Assessment Case 2 respectively.

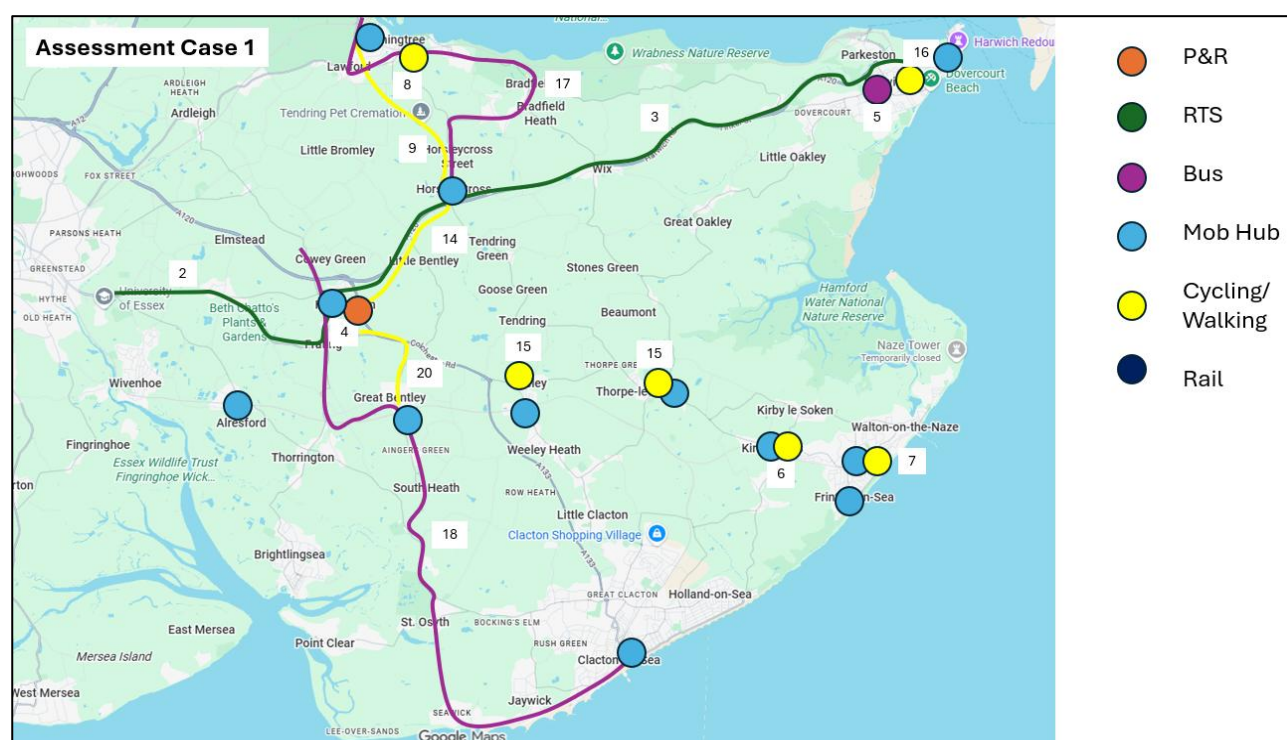


Figure 7-1: Sustainable Transport Schemes, Assessment Case 1

² <https://www.gov.uk/government/statistics/rail-passenger-numbers-and-crowding-on-weekdays-in-major-cities-in-england-and-wales-2023/rail-passenger-numbers-and-crowding-on-weekdays-in-major-cities-in-england-and-wales-2023>

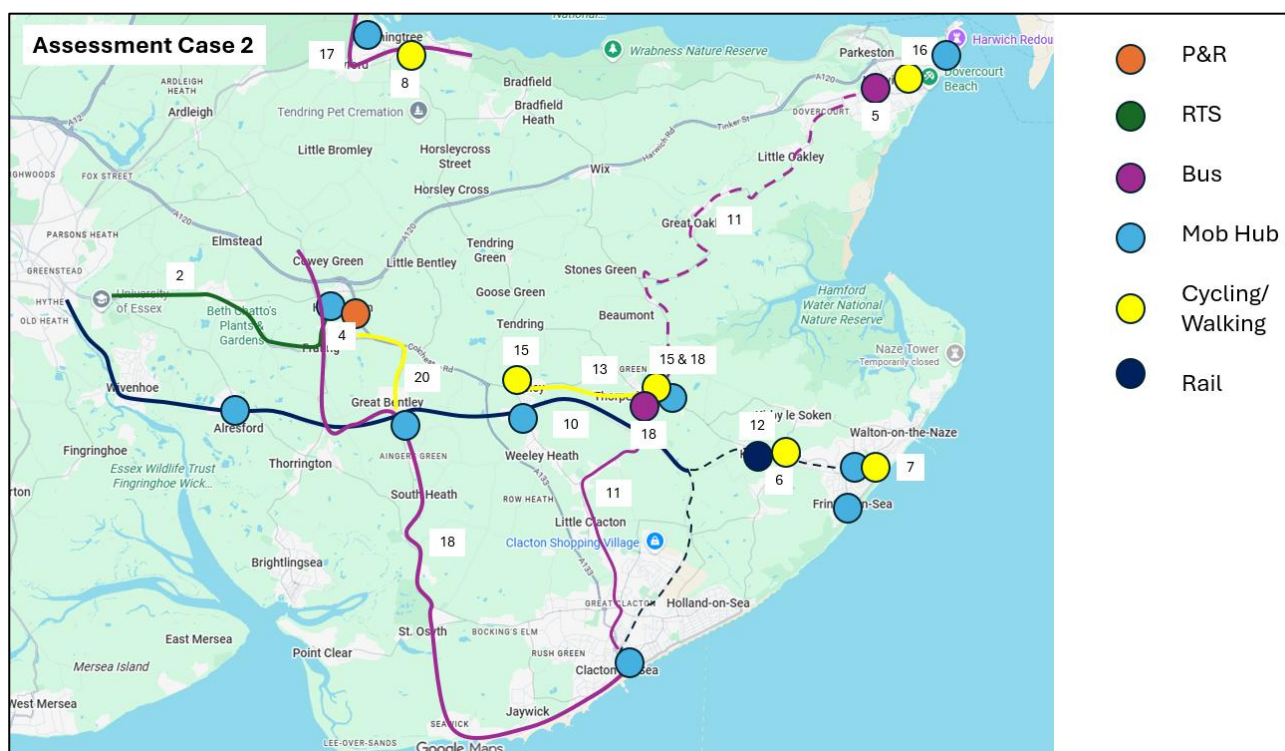


Figure 7-2: Sustainable Transport Schemes, Assessment Case 2

7.3 Sustainable Travel Reductions

The proposed mitigations have been grouped into the following sustainable transport types to ensure consistency in how they are represented within the transport model:

- Rail improvements
- Rapid Transit Scheme (RTS)
- Bus improvements
- Mobility hub
- Cycle improvements
- Walking improvements

For each Assessment Case scenario, the model zones in scope for mode shift via each sustainable travel mode have been identified, based on the location of the sustainable transport schemes. A single model zone can be in scope for mode shift via more than one sustainable travel mode, for example both bus improvements and cycle improvements.

Distance filters have been created to isolate the trips that are in scope for mode shift via each sustainable travel mode. For example, longer distance trips are eligible to shift to rail, whereas short distance trips are eligible to shift to cycling, walking or bus. These distance bands are aligned to evidence on the impact of sustainable transport measures. When multiple sustainable travel modes fall into the same distance band, a dampening factor has been identified to ensure the level of mode shift is not overestimated.

Each model zone has been classified as either rural, urban, a combination of rural and urban, or external to the Tendring area. Each model zone has also been classified by the amount of development within that zone (ranging from garden village with greater than 2000 homes to minor development with less than 50 homes).

A range of factors for each sustainable travel mode have been identified to calculate the potential mode shift. Different factors have been identified for different zone-to-zone movements depending on the characteristics of the zones, including the urban/ rural classification and the development classification discussed above. This is to ensure that the most appropriate level of mode shift is calculated for each zone-to-zone movement. For example, factors are lower in zones where there is less proposed development to reflect a lower likelihood of change. Factors are also lower for trips between rural zones compared to trips between urban zones to reflect the lower likelihood of shifting away from car travel.

The potential shift to each sustainable travel mode has been calculated for each zone-to-zone movement. It has been assumed that the introduction of the sustainable measures will encourage mode shift for both existing car trips and new car trips from the proposed development in the Assessment Case scenarios. It has been assumed that the impact on existing car trips will be lower, and so lower factors have been applied to the existing trips as per the development classification.

The trips shifting to sustainable modes have been removed from the demand matrices to create an adjusted demand for both "car commute" and "car other" purposes. It has been assumed that the "car employers' business" will not be affected by mode shift. The total number of trips removed from the demand matrices are shown in Table 7-2 below.

Table 7-2: Sustainable Travel Trip Reductions

Demand Segment	AM Peak		PM Peak	
	Assessment Case 1	Assessment Case 2	Assessment Case 1	Assessment Case 2
Car Commute	1,265	1,247	1,083	1,065
Car Other	1,625	1,633	2,152	2,150

7.4 Results (Assessment Scenario 1 with sustainable travel reductions)

7.4.1 Flow Difference

Figure 7-3 and Figure 7-4 illustrate the flow differences between the Assessment Scenario 1 (with sustainable travel reductions) and Assessment Scenario 1 (without interventions) during the AM and PM peak hours respectively.

The flow difference plots show that there is a general decrease in flow around Tendring in Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions). This is to be expected due to the mode shift away from car towards sustainable travel modes. The biggest decrease in flow is a 120-vehicle reduction in flow northbound along the B1027 in the AM peak hour.

There is a slight increase in flow on the A12 in the PM peak hour.

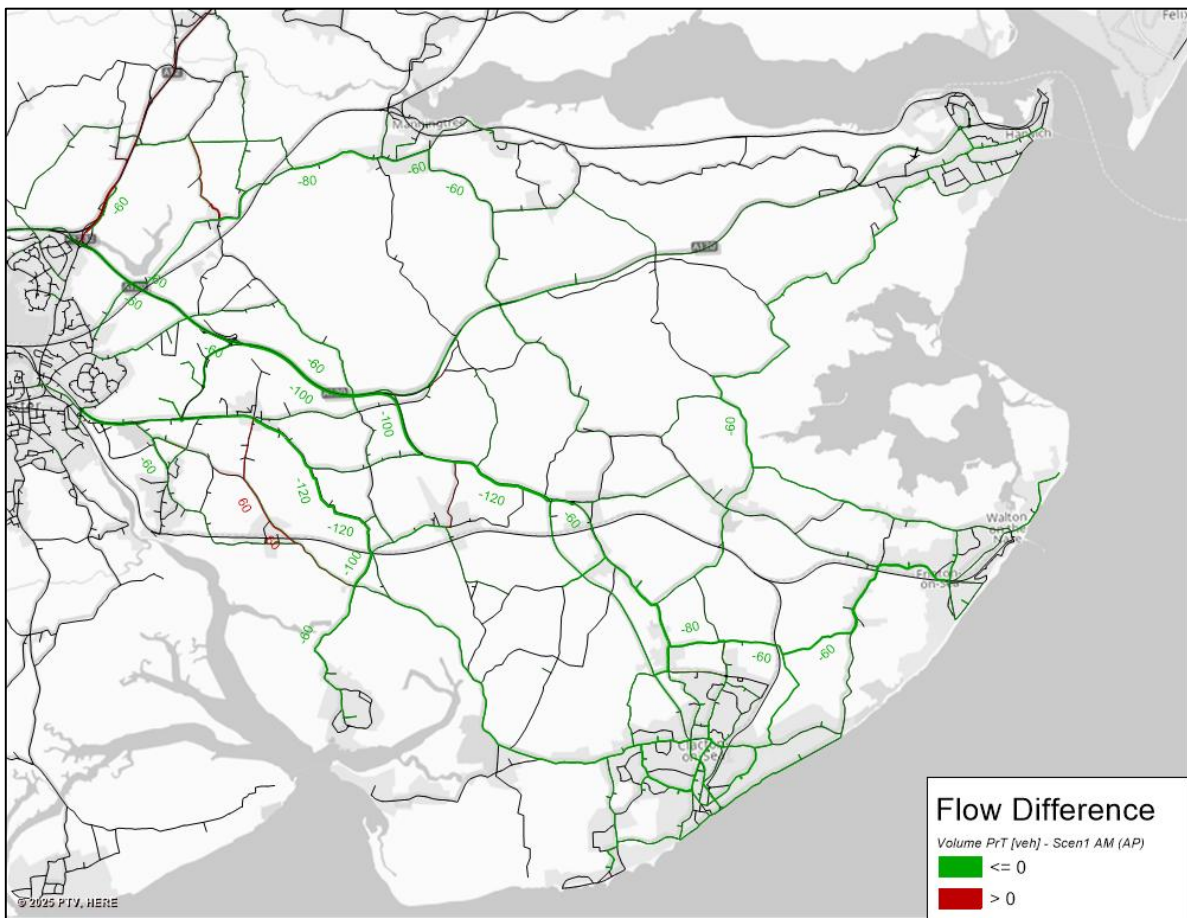


Figure 7-3: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – AM

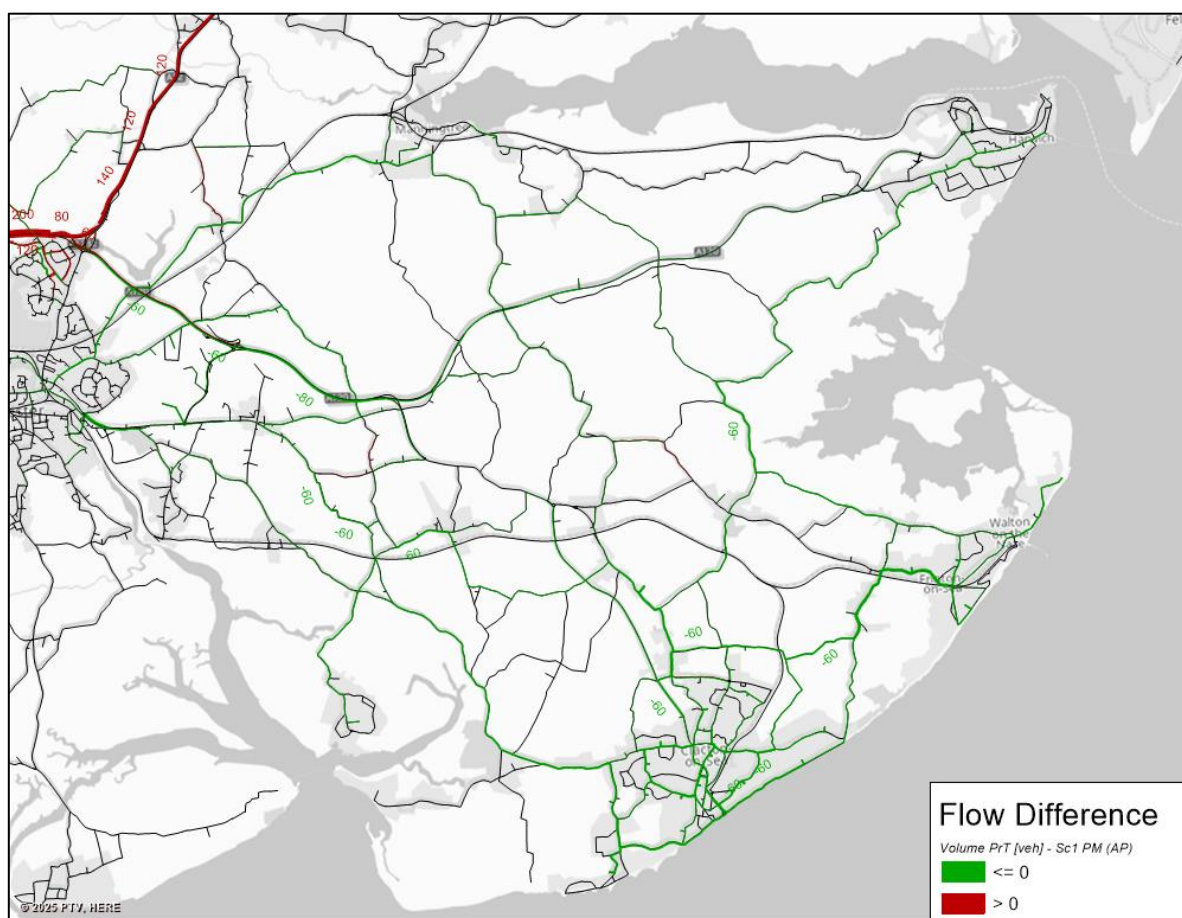


Figure 7-4: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) - Flow difference – PM

7.4.2 Speed Ratio Changes

Figure 7-5 and Figure 7-6 illustrate the speed ratio changes between the Assessment Scenario 1 (with sustainable travel reductions) and Assessment Scenario 1 (without interventions) during the AM and PM peak hours respectively. Plots are also shown in Appendix C.

The speed ratio changes show some slight improvements in speed at various locations, including at junction 29 (AM and PM), the A133/ Colchester Road roundabout (AM) and Colchester town centre (PM).

There are also improvements in speed on the Colchester Road and Elmstead Road approaches to the A133 in the AM peak, although there are slight reductions in speed upstream along the B1027 Brightlingsea Road.

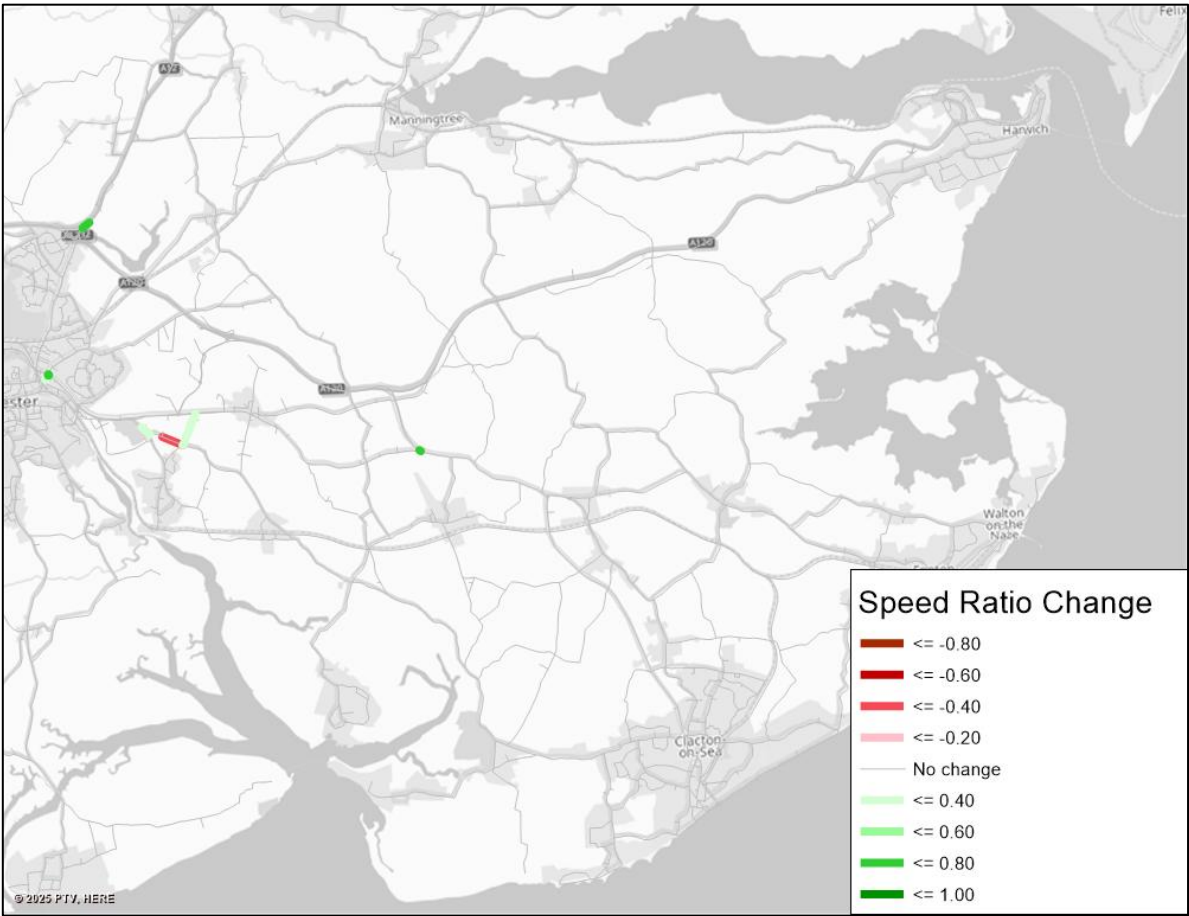


Figure 7-5: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions (2042) – Speed Ratio changes – AM

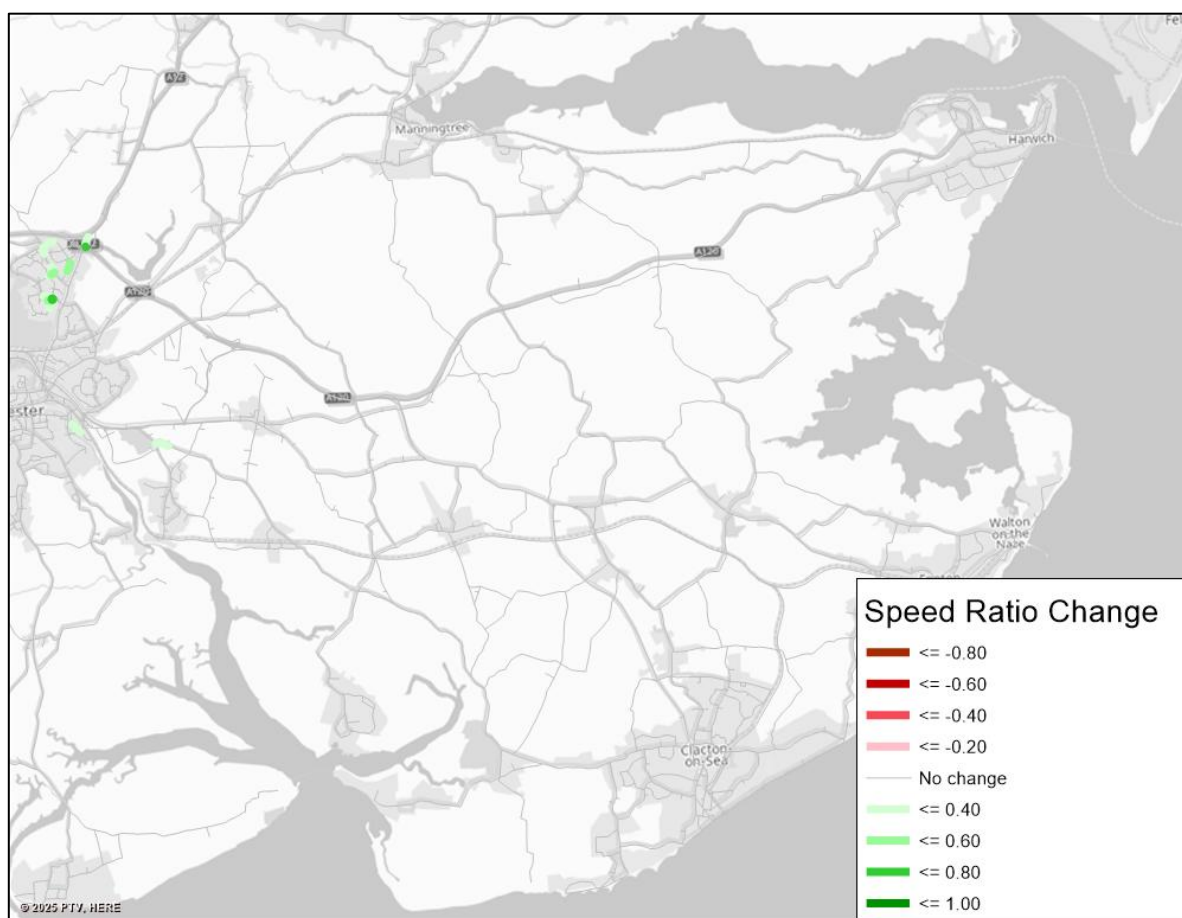


Figure 7-6: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions (2042) – Speed Ratio changes – PM

7.4.3 Relative Queue Changes

Figure 7-7 and Figure 7-8 illustrate the relative queue changes between the Assessment Scenario 1 (with sustainable travel reductions) and Assessment Scenario 1 (without interventions) during the AM and PM peak hours respectively. Plots are also shown in Appendix D.

The relative queue changes show some slight improvements in queues at various locations.

In the AM peak this includes the A133/ Colchester Road roundabout and the Harwich Rd approach to the A120. There are also improvements in queues on the Colchester Road and Elmstead Road approaches to the A133, although there are slight increases in queues upstream along the B1027 Brightlingsea Road.

In the PM there are improvements at junction 29 and in Colchester town centre.

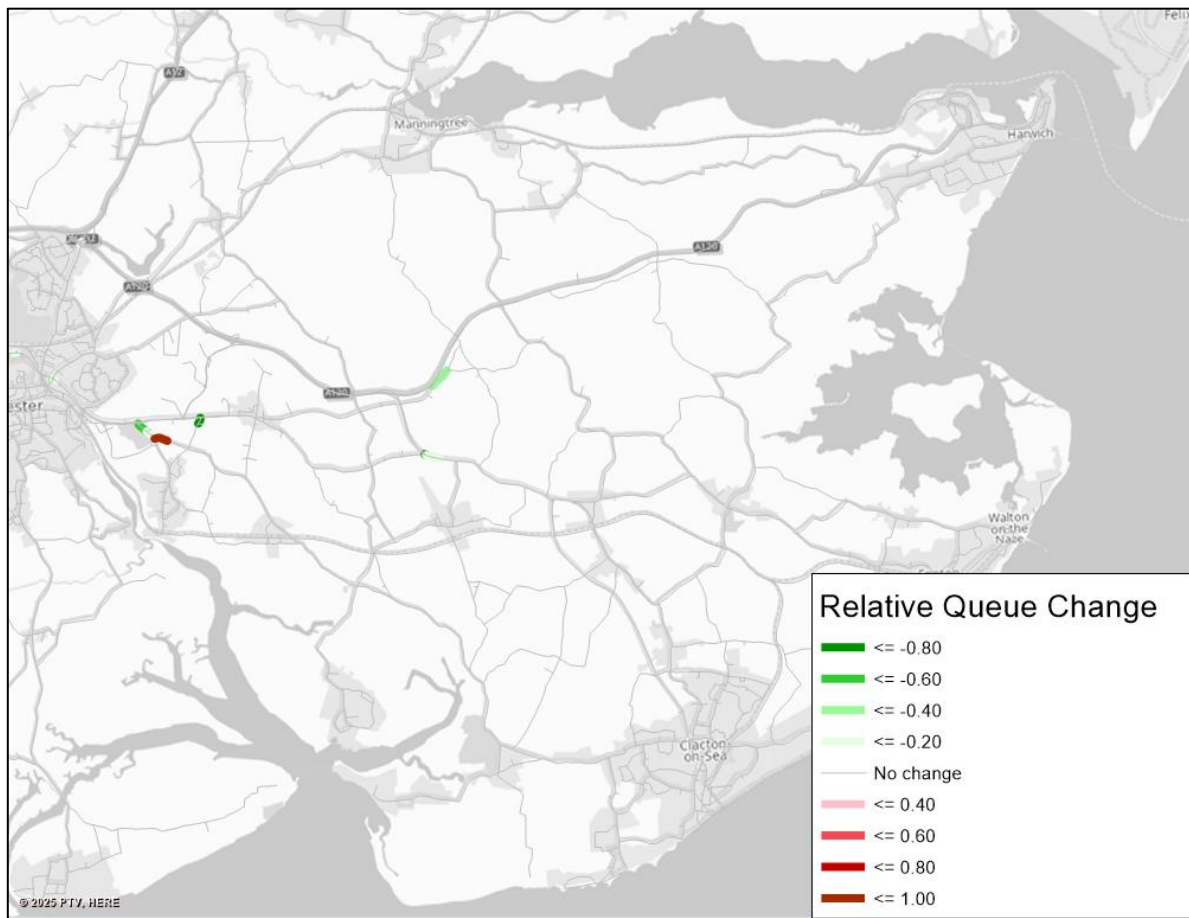


Figure 7-7: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) – Relative Queue changes – AM

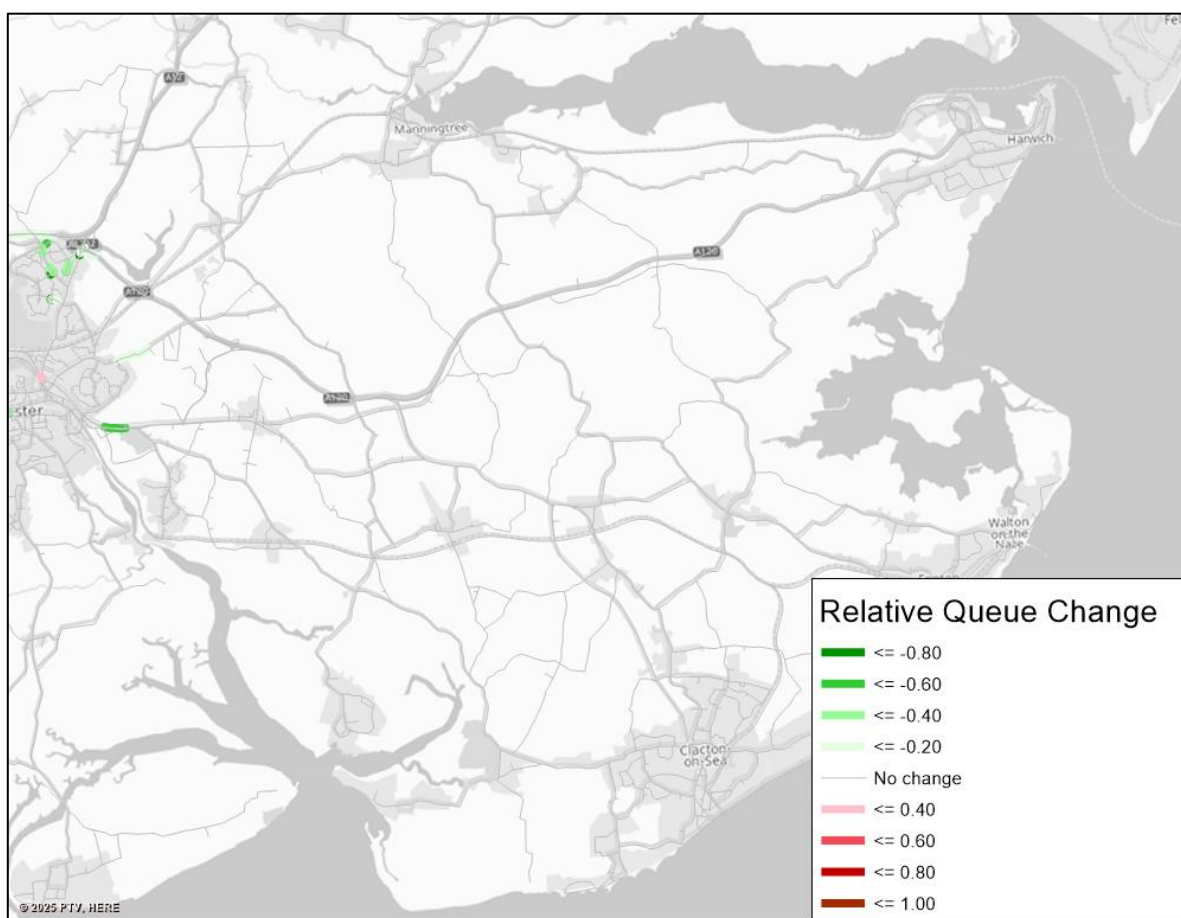


Figure 7-8: Assessment Case 1 (with sustainable travel reductions) vs Assessment Case 1 (without interventions) (2042) – Relative Queue changes – PM

7.4.4 SRN Junctions

The traffic flows and queue lengths on the Strategic Road Network (SRN) junctions will be provided as part of the Regulation 19 analysis, when the preferred option is developed further and there is a focus on detailed network assessment and safety aspects at specific locations.

7.5 Results (Assessment Scenario 2 with sustainable travel reductions)

7.5.1 Flow Difference

Figure 7-9 and Figure 7-10 illustrate the flow differences between the Assessment Scenario 2 (with sustainable travel reductions) and Assessment Scenario 2 (without interventions) during the AM and PM peak hours respectively.

The flow difference plots show that there is a general decrease in flow around Tendring in Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions). This is to be expected due to the mode shift away from car towards sustainable travel modes. The biggest decrease in flow is a 120-vehicle reduction in flow northbound along the B1027 in the AM peak hour.

There is a slight increase in flow on the A12 in the PM peak hour.

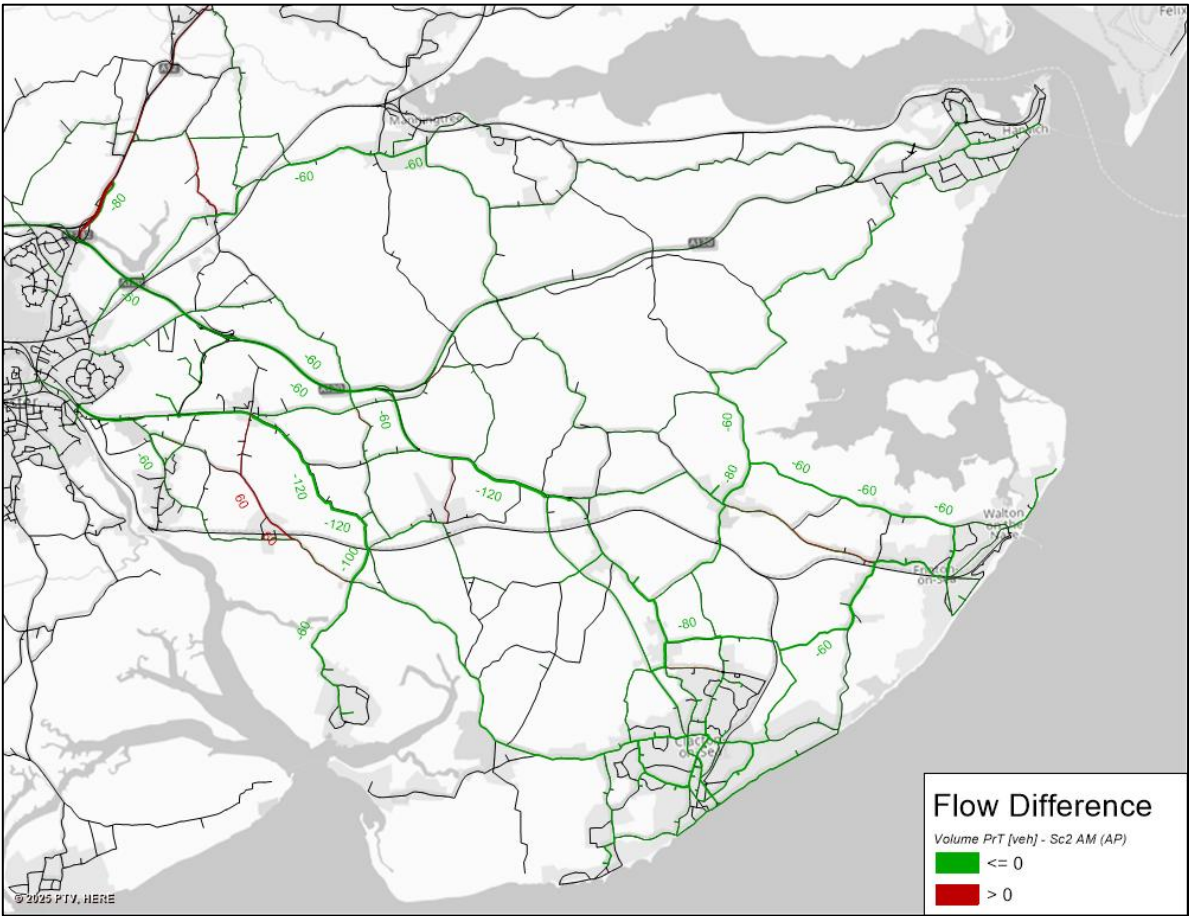


Figure 7-9: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Flow difference – AM

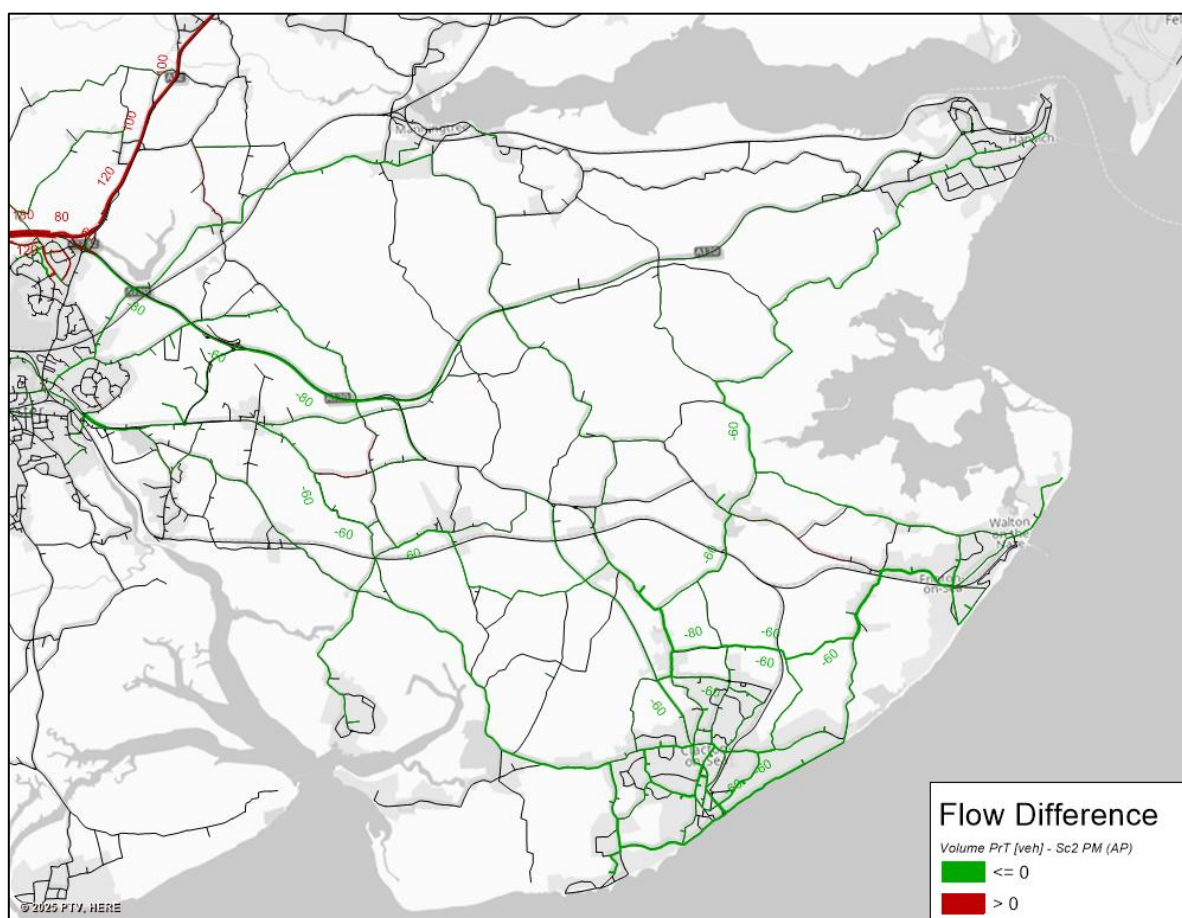


Figure 7-10: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – flow difference – PM

7.5.2 Speed Ratio Changes

Figure 7-11 and Figure 7-12 illustrate the speed ratio changes between the Assessment Scenario 2 (with sustainable travel reductions) and Assessment Scenario 2 (without interventions) during the AM and PM peak hours respectively. Absolute speed ratio plots for these scenarios are also provided in Appendix C.

The speed ratio changes show some slight improvements in speed at various locations. In the AM peak this includes junction 29 (AM) and the A133/ Colchester Road roundabout. There are also improvements in on the Colchester Road and Elmstead Road approaches to the A133, although there are slight decreases in speed upstream along the B1027 Brightlingsea Road.

In the PM peak the most noticeable improvements are in Colchester town centre.

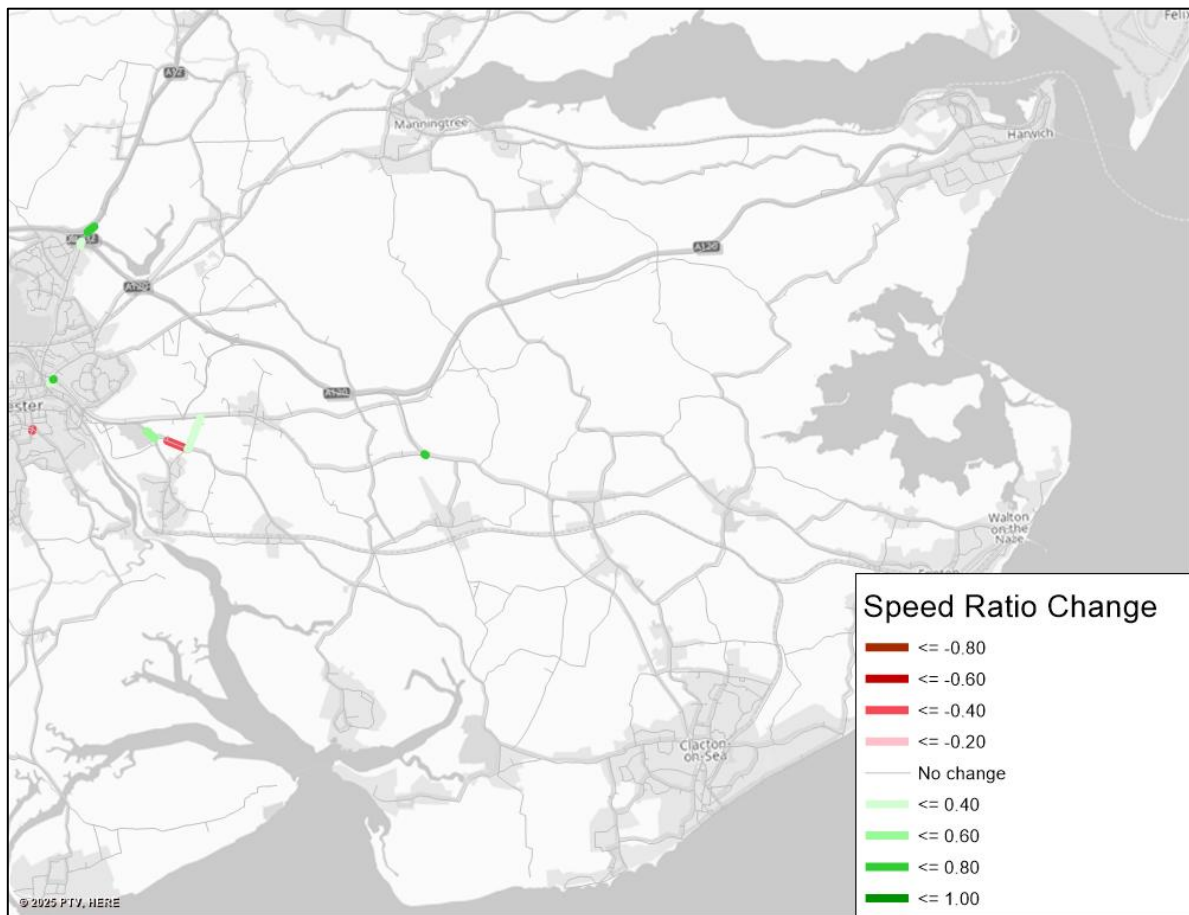


Figure 7-11: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Speed Ratio changes – AM

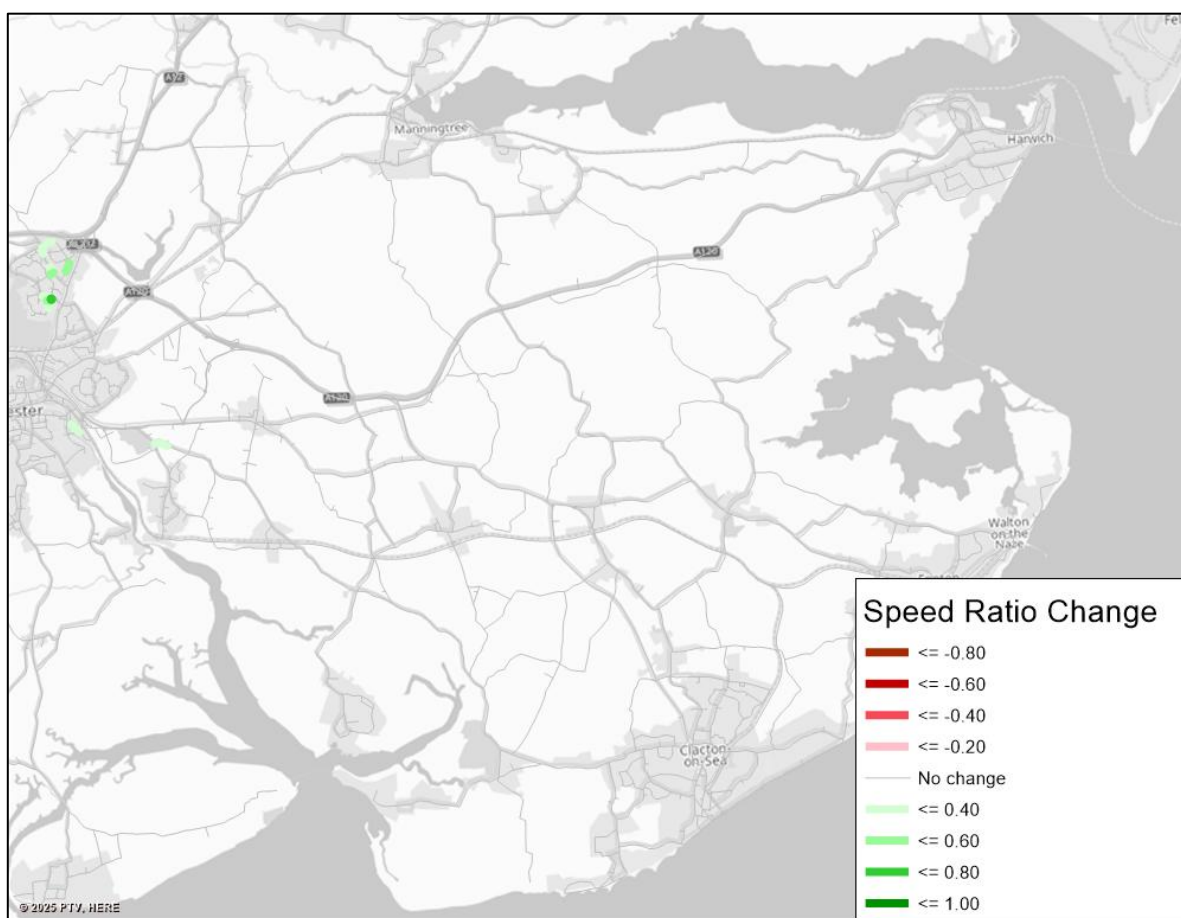


Figure 7-12: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions) (2042) – Speed Ratio changes – PM

7.5.3 Relative Queue Changes

Figure 7-13 and Figure 7-14 illustrate the relative queue changes between the Assessment Scenario 2 (with sustainable travel reductions) and Assessment Scenario 2 (without interventions) during the AM and PM peak hours respectively. Absolute relative queue plots for these scenarios are also provided in Appendix C.

The relative queue changes show some slight improvements in queues at various locations.

In the AM peak this includes the A133/ Colchester Road roundabout and the Harwich Rd approach to the A120. There are also improvements in queues on the Colchester Road and Elmstead Road approaches to the A133, although there are slight increases in queues upstream along the B1027 Brightlingsea Road.

In the PM there are improvements at junction 29, in Colchester town centre and on Clingoe Hill.

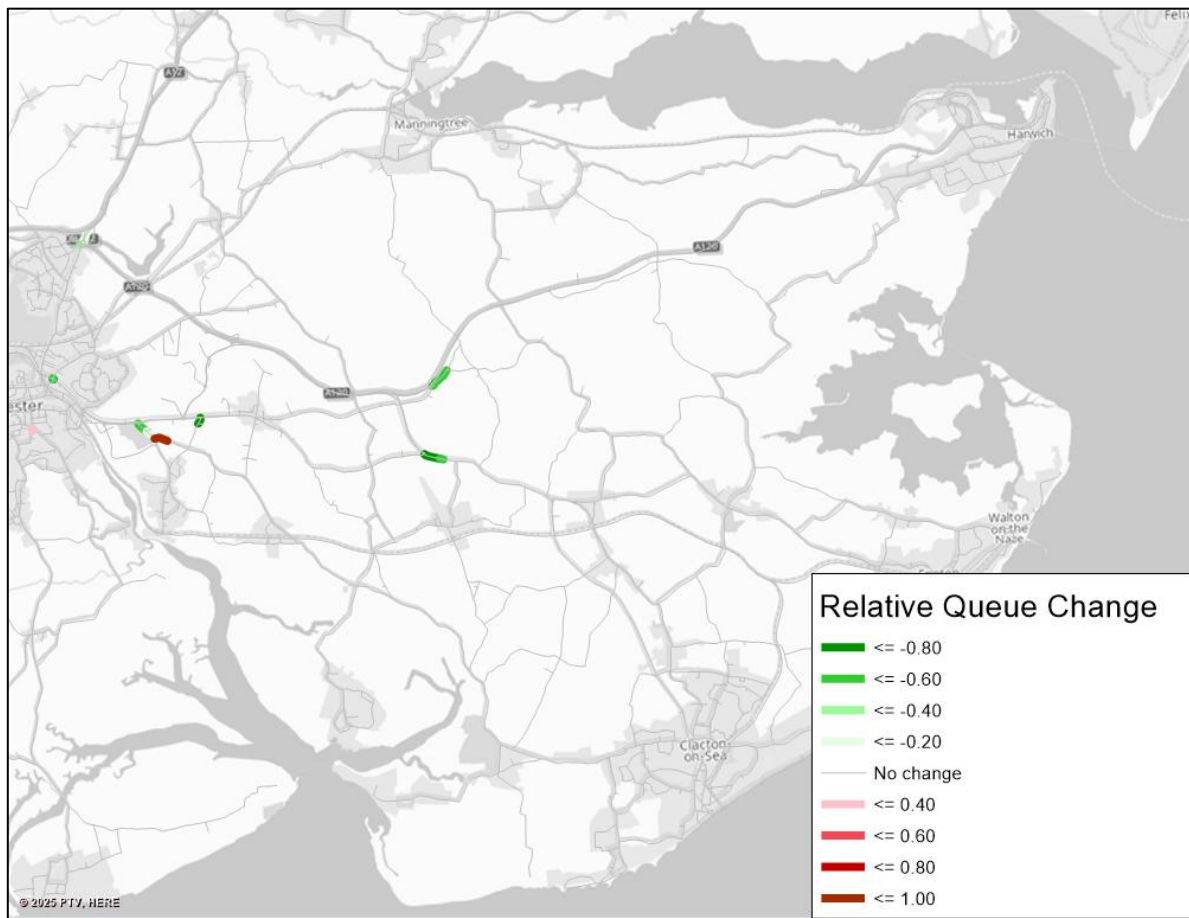


Figure 7-13: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Relative Queue changes – AM

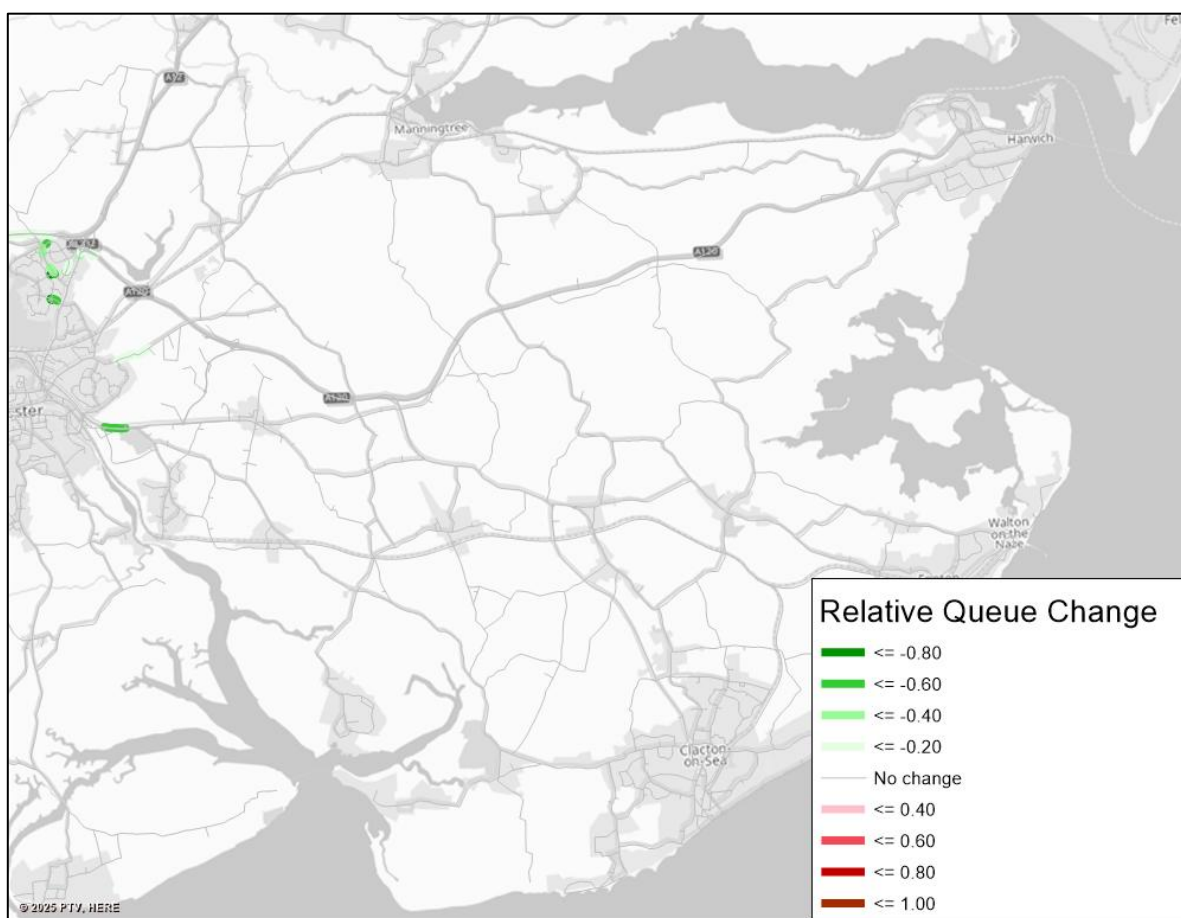


Figure 7-14: Assessment Case 2 (with sustainable travel reductions) vs Assessment Case 2 (without interventions (2042) – Relative Queue changes – PM

7.5.4 SRN Junctions

The traffic flows and queue lengths on the Strategic Road Network (SRN) junctions will be provided as part of the Regulation 19 analysis, when the preferred option is developed further and there is a focus on detailed network assessment and safety aspects at specific locations.

7.6 Tabular Analysis - with sustainable travel reductions

The travel conditions along selected routes in Tendring (as shown in Figure 6-1) have been examined to understand the scale of change between the Assessment Scenarios (with sustainable travel reductions) and Assessment Scenarios (without intervention).

The movement indicators for each route are shown in Table 7-3 and Table 7-4 below for the AM and PM peak respectively.

Table 7-3: Assessment Scenarios (with sustainable travel reductions) vs Assessment Scenarios (without intervention) (2042) – Tabular Analysis – AM

Sector	Route	AM Peak				
		2042 RC	2042 AC1 (w/o ST)	2042 AC2 (w/o ST)	2042 AC1 (with ST)	2042 AC2 (with ST)
East Colchester	Greenstead Roundabout, Colne Causeway & Clingoe Hill	8	9	10	9	9
	A12 J29 / A120 (eastern)	9	10	10	10	10
North Tending	A120 - Link Road Junction	5	5	5	5	5
	A120 - A133 to Harwich	4	7	6	7	6
	A133 Colchester Rd Roundabout	10	11	12	11	11
	B1035 Horsley Cross	3	4	3	3	3
	Elmstead Market	4	4	5	4	4
	Frating	3	4	4	4	4
	Great Bromley - Hare Green	4	5	5	4	4
	Harwich	3	4	4	4	4
	Manningtree	9	10	10	10	10
	A137 - Between Ardleigh and Manningtree	5	6	5	5	5
South Tending	Weeley	2	2	2	2	2
	Clacton	4	5	5	4	4
	B1029 Brightingsea	4	4	4	4	4
	A133 Weeley - Clacton	5	6	6	5	5
	Thorpe le Soken	3	4	5	4	4
	B1027 From Colchester Rd to St Osyth	4	5	5	5	5
Overall assessment combining all areas		6	7	7	6	6

Table 7-4: Assessment Scenarios (with sustainable travel reductions) vs Assessment Scenarios (without intervention) (2042) – Tabular Analysis – PM

Sector	Route	PM Peak				
		2042 RC	2042 AC1 (w/o ST)	2042 AC2 (w/o ST)	2042 AC1 (with ST)	2042 AC2 (with ST)
East Colchester	Greenstead Roundabout, Colne Causeway & Clingoe Hill	8	10	10	9	9
	A12 J29 / A120 (eastern)	9	10	10	9	9
North Tending	A120 - Link Road Junction	4	4	4	4	4
	A120 - A133 to Harwich	3	4	4	4	4
	A133 Colchester Rd Roundabout	10	11	11	11	11
	B1035 Horsley Cross	3	3	3	3	3
	Elmstead Market	3	4	4	4	4
	Frating	1	1	1	1	1
	Great Bromley - Hare Green	5	7	7	6	6
	Harwich	3	3	3	3	3
	Manningtree	9	10	10	10	10
	A137 - Between Ardleigh and Manningtree	5	5	5	5	5
South Tending	Weeley	2	2	2	2	2
	Clacton	5	5	5	5	5
	B1029 Brightingsea	4	4	4	4	4
	A133 Weeley - Clacton	5	5	5	5	5
	Thorpe le Soken	3	4	5	4	4
	B1027 From Colchester Rd to St Osyth	4	4	4	4	4
Overall assessment combining all areas		6	6	6	6	6

The tabular analysis shows some minor reductions in the movement indicators in the Assessment Case (with sustainable travel reductions) models compared to the Assessment Case (without interventions) models, which is to be expected due to the mode shift away from car towards sustainable travel modes.

In Assessment Case 1 in the AM peak there are no changes to the more congested routes (East Colchester, A133/ Colchester Rd roundabout, Manningtree), but there are some slight reductions in movement indicators in some of the less congested routes such as the B1035 Horsley Cross and Great Bromley - Hare Green.

In Assessment Case 2 in the AM peak there are slight reductions in congestion along the Greenstead Roundabout, Colne Causeway & Clingoe Hill route and the A133/ Colchester Rd roundabout route. It should be noted however that the movement indicators for these routes remain higher than in the Reference Case.

In the PM peak there are reductions in congestion along both East Colchester routes and the Great Bromley - Hare Green in both Assessment Scenarios. Whilst this means the A120 - A12 J29 - Ipswich Road North route returns to the same movement indicator as in the Reference Case, the Clingoe Hill and Colne Causeway route and Great Bromley - Hare Green route are still more congested than in the Reference Case.

The RAG comparison ratings, which identify the congestion changes as either passable, cautionary or unsatisfactory compared to the Reference Case models, are shown in Table 7-5 and Table 7-6 below for the AM and PM peaks respectively.

Table 7-5: Assessment Scenarios (with sustainable travel reductions intervention) vs Reference Case (2042) – RAG Ratings – AM

Sector	Route	AM Peak			
		2042 AC1 (w/o ST)	2042 AC2 (w/o ST)	2042 AC1 (with ST)	2042 AC2 (with ST)
East Colchester	Greenstead Roundabout, Colne Causeway & Clingoe Hill	!	!	!	!
	A12 J29 / A120 (eastern)	✓	!	!	!
North Tending	A120 - Link Road Junction	✓	✓	✓	✓
	A120 - A133 to Harwich	!	!	✓	✓
	A133 Colchester Rd Roundabout	!	×	✓	!
	B1035 Horsley Cross	✓	✓	✓	✓
	Elmstead Market	✓	✓	✓	✓
	Frating	✓	✓	✓	✓
	Great Bromley - Hare Green	✓	✓	✓	✓
	Harwich	✓	✓	✓	✓
	Manningtree	✓	✓	✓	✓
	A137 - Between Ardleigh and Manningtree	✓	✓	✓	✓
	Weeley	✓	✓	✓	✓
South Tending	Clacton	✓	✓	✓	✓
	B1029 Brightingsea	✓	✓	✓	✓
	A133 Weeley - Clacton	✓	✓	✓	✓
	Thorpe le Soken	✓	✓	✓	✓
	B1027 From Colchester Rd to St Osyth	✓	✓	!	!

Table 7-6: Assessment Scenarios (with sustainable travel reductions intervention) vs Reference Case (2042) – RAG Ratings – PM

Sector	Route	PM Peak			
		2042 AC1 (w/o ST)	2042 AC2 (w/o ST)	2042 AC1 (with ST)	2042 AC2 (with ST)
East Colchester	Greenstead Roundabout, Colne Causeway & Clingoe Hill	!	!	✓	✓
	A12 J29 / A120 (eastern)	!	✓	✓	✓
North Tendring	A120 - Link Road Junction	✓	✓	✓	✓
	A120 - A133 to Harwich	✓	✓	✓	✓
	A133 Colchester Rd Roundabout	!	✓	✓	✓
	B1035 Horsley Cross	✓	✓	✓	✓
	Elmstead Market	✓	✓	✓	✓
	Frating	✓	✓	✓	✓
	Great Bromley - Hare Green	!	✓	✓	✓
	Harwich	✓	✓	✓	✓
	Manningtree	✓	✓	✓	✓
	A137 - Between Ardleigh and Manningtree	✓	✓	✓	✓
South Tendring	Weeley	✓	✓	✓	✓
	Clacton	✓	✓	✓	✓
	B1029 Brightingsea	✓	✓	✓	✓
	A133 Weeley - Clacton	✓	✓	✓	✓
	Thorpe le Soken	✓	✓	✓	✓
	B1027 From Colchester Rd to St Osyth	✓	✓	✓	✓

In the AM peak, the introduction of sustainable travel measures improves congestion along the A133/ Colchester Road route from “cautionary” to “acceptable” in Assessment Case 1 and “unsatisfactory” to “cautionary” in Assessment Case 2. Congestion levels along the A120 - A133 to Harwich route also improve from “cautionary” to “acceptable” in both scenarios. There are several routes where congestion changes

should still be treated with caution in both scenarios, including the East Colchester routes and the B1027 from Colchester Rd to St Osyth route.

In the PM peak the introduction of sustainable travel measures improves congestion along all previously “cautionary” routes so that all congestion changes are acceptable compared to the Reference Case. But it should be noted that there are still locations with congestion problems; and the problems remain in the AM peak.

8. Highway Mitigation Measures

Following on from the analysis presented in Chapter 7, even with sustainable travel reductions there are several areas on the highway network which still experience unacceptable increases in congestion as a result of the Assessment Case developments.

The main areas which have been identified in the strategic-level analysis as experiencing unacceptable levels of congestion compared to the Reference Case models include:

- A12 Junction 29
- Harwich Road approach to the A120
- A133/ Colchester Road roundabout
- A137 in Manningtree
- Colchester Road and Elmstead Road approaches to the A133

In addition, it should be noted that there will be local highway mitigations required close to development sites to avoid localised problems and create acceptable access routes.

Potential highway mitigation measures to alleviate congestion at the above locations will be considered as part of the Regulation 19 work.

9. Summary and Conclusion

The following 2042 forecast scenarios have been prepared to support Tendring District Council's Local Plan transport evidence base:

- Reference Case Scenario without the preferred site allocations (this is detailed in Local Plan Reg 18 – Reference Case (December 2025))
- Assessment Case 1 (without interventions), which includes the residential and employment development associated with Spatial Option 1
- Assessment Case 2 (without interventions), which includes the residential and employment development associated with Spatial Option 2
- Assessment Case 1 (with sustainable travel reductions), which includes the sustainable travel reductions which could be achieved via a package of sustainable measures to support the proposed development
- Assessment Case 2 (with sustainable travel reductions), which includes the sustainable travel reductions which could be achieved via a package of sustainable measures to support the proposed development

This report details the key assumptions underpinning the growth and transport schemes included in the Assessment Scenarios and explains how these assumptions have been applied within the transport model. It also presents a range of model outputs to understand the impact of the development on the highway network. These results include tabular analysis, which examines selected routes within Tendring to understand how the proposed development in the Assessment Case Scenarios impacts the congestion, and whether the increased congestion is acceptable.

Several locations have been identified as experiencing unacceptable levels of congestion compared to the Reference Case models. Sustainable transport measures partially contribute to a reduction in level of problems. However, highway mitigation measures to alleviate congestion to acceptable levels at these locations will be required. These measures will be identified and assessed as part of the Regulation 19 work.

Appendix A. Tendring 2042 Spatial Options – Assessment Scenario 1

Name	Model Zone	MSOA	Development Type	Dwl	Jobs
Land south of Mill Lane	328	Tendring 007	Housing	17	0
Land south of Colchester Road	6	Tendring 003	Housing	20	0
Land south-west of Colchesetr Main Road	37	Tendring 009	Housing	40	0
Land adjacent Branscombe Close, Frinton	322	Tendring 008	Housing	40	0
Land east of Plough Road	28	Tendring 009	Housing	150	0
Land south of Windmill Road and east of Straight Road	6	Tendring 003	Housing	100	0
Lan at Pannell Palce	301	Tendring 011	Housing	10	0
Land at Avocet Place	34	Tendring 009	Housing	60	0
Saltings Quarter, Riverside Avenue	336	Tendring 003	Housing	40	0
Land east of Bentley Road	328	Tendring 007	Housing	60	0
Crisp Malting	336	Tendring 003	Housing	30	0
Land south of Shop Road	26	Tendring 005	Housing	17	0
Durite Works, Valley Road	329	Tendring 004	Housing	82	0
Vicarage Farm, Main Road	331	Tendring 002	Housing	150	0
Abbey Bottom Farm	6	Tendring 003	Housing	20	0
Land south of Clacton Road	303	Tendring 018	Housing	100	0
Brightlingsea Telephone Exchange, 16 New Street	301	Tendring 011	Housing	15	0
Land north east of Wix Road	329	Tendring 004	Housing	50	0
Land North of Rectory Road	6	Tendring 003	Housing	30	0
Land off Arthur Ransome Way, Walton	326	Tendring 006	Housing	200	0
Land west of Main Road	324	Tendring 008	Housing	10	0
Land north of Kirby-le-Soken Evangelical Church	323	Tendring 008	Housing	20	0
Land South of Oakley Road	329	Tendring 004	Housing	1650	0
Land North of Lifehouse Spa & Hotel	327	Tendring 007	Housing	110	0
Land east of Cockaynes Lane	37	Tendring 009	Housing	100	0
Land east of Station Road	327	Tendring 007	Housing	200	0

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Land adj Village Hall, Harwich Road	327	Tendring 007	Housing	20	0
Land South of Colchester Road	328	Tendring 007	Housing	900	0
Land east of Amerells Road	328	Tendring 007	Housing	100	0
Land north of Thorpe Road, Kirby Cross	324	Tendring 008	Housing	420	0
Land north of Walton Road	323	Tendring 008	Housing	10	0
Land West of Church Road	337	Tendring 009	Housing	150	0
Land East of Church Road	337	Tendring 009	Housing	150	0
Horsley Garden Community	6	Tendring 003	Housing	2250	0
Tendring Central	5	Tendring 005	Housing	1200	0
Tendring Central	5	Tendring 009	Housing	639	0
Tendring Central	5	Tendring 003	Housing	161	0
Land west of Plough Road	28	Tendring 009	Housing	75	0
Land east of Kirby Road	324	Tendring 008	Housing	10	0
Land south of Orchard Close	329	Tendring 004	Housing	50	0
Land west of Manningtree Road	5	Tendring 003	Housing	12	0
Land east of Shop Road	26	Tendring 005	Housing	12	0
Haulage Depot, Heath Road	6	Tendring 003	Housing	10	0
Affinity Water	1	Tendring 003	Housing	80	0
Land south of Hall Road	7	Tendring 005	Housing	15	0
Land west of Parsons Hill	7	Tendring 005	Housing	10	0
Horsley Garden Community, Land at Horsley Cross, Horsley Cross, CO11 2PH	6	Tendring 003	Employment -B1a/b	0	469
Horsley Garden Community, Land at Horsley Cross, Horsley Cross, CO11 2PH	6	Tendring 003	Employment -B2	0	156
Horsley Garden Community, Land at Horsley Cross, Horsley Cross, CO11 2PH	6	Tendring 003	Employment -B8	0	80
Groewood Business Park, Collierswood Farm, Land North of the A120	8, 24	Tendring 005	Employment -B1a/b	0	2130
Groewood Business Park, Collierswood Farm, Land North of the A120	8, 24	Tendring 005	Employment -B2	0	710
Groewood Business Park, Collierswood Farm, Land North of the A120	8, 24	Tendring 005	Employment -B8	0	365
Tendring Central Garden Community, A120/A133 Junction	5	Tendring 003	Employment -B1a/b	0	134
Tendring Central Garden Community, A120/A133 Junction	5	Tendring 003	Employment -B2	0	45
Tendring Central Garden Community, A120/A133 Junction	5	Tendring 003	Employment -B8	0	23
Tendring Central Garden Community, A120/A133 Junction	7	Tendring 005	Employment -B1a/b	0	999

Preferred Options Local Plan Transport Evidence – Assessment Case

Tendring Central Garden Community, A120/A133 Junction	7	Tendring 005	Employment -B2	0	333
Tendring Central Garden Community, A120/A133 Junction	7	Tendring 005	Employment -B8	0	171
Tendring Central Garden Community, A120/A133 Junction	33, 35	Tendring 009	Employment -B1a/b	0	532
Tendring Central Garden Community, A120/A133 Junction	33, 35	Tendring 009	Employment -B2	0	177
Tendring Central Garden Community, A120/A133 Junction	33, 35	Tendring 009	Employment -B8	0	91
Land North East of A133, Ravens Green, Colchester, Essex	5	Tendring 003	Employment -B1a/b	0	359
Land North East of A133, Ravens Green, Colchester, Essex	5	Tendring 003	Employment -B2	0	120
Land North East of A133, Ravens Green, Colchester, Essex	5	Tendring 003	Employment -B8	0	62
Land North East of A133, Ravens Green, Colchester, Essex	28	Tendring 009	Employment -B1a/b	0	59
Land North East of A133, Ravens Green, Colchester, Essex	28	Tendring 009	Employment -B2	0	20
Land North East of A133, Ravens Green, Colchester, Essex	28	Tendring 009	Employment -B8	0	10
Land South of Colchester Road, Frating, Colchester, Essex.	33	Tendring 009	Employment -B1a/b	0	389
Land South of Colchester Road, Frating, Colchester, Essex.	33	Tendring 009	Employment -B2	0	130
Land South of Colchester Road, Frating, Colchester, Essex.	33	Tendring 009	Employment -B8	0	67
Tendring Business and Innovation Hub (North-Western), Horsley Cross CO11 2PH	6	Tendring 003	Employment -B1a/b	0	144
Tendring Business and Innovation Hub (North-Western), Horsley Cross CO11 2PH	6	Tendring 003	Employment -B2	0	48
Tendring Business and Innovation Hub (North-Western), Horsley Cross CO11 2PH	6	Tendring 003	Employment -B8	0	25
Land North of Harwich Road, Great Bromley, CO7 8SZ	7	Tendring 005	Employment -B1a/b	0	170
Land North of Harwich Road, Great Bromley, CO7 8SZ	7	Tendring 005	Employment -B2	0	57
Land North of Harwich Road, Great Bromley, CO7 8SZ	7	Tendring 005	Employment -B8	0	29
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -B1a/b	0	22
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -B2	0	7
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -B8	0	4
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -A3	0	15
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -D2	0	4
Land North of the A120 Harwich Road	331	Tendring 002	Employment -B1a/b	0	160
Land North of the A120 Harwich Road	331	Tendring 002	Employment -B2	0	53

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Land North of the A120 Harwich Road	331	Tendring 002	Employment -B8	0	44
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Appendix B. Tendring 2042 Spatial Options – Assessment Scenario 2

Name	Model Zone	MSOA	Development Type	Dwl	Jobs
Land south of Mill Lane	328	Tendring 007	Housing	17	0
Land south of Colchester Road	6	Tendring 003	Housing	20	0
Land south-west of Colchesetr Main Road	37	Tendring 009	Housing	40	0
Land adjacent Branscombe Close, Frinton	322	Tendring 008	Housing	40	0
Land east of Plough Road	28	Tendring 009	Housing	150	0
Land south of Windmill Road and east of Straight Road	6	Tendring 003	Housing	100	0
Land North of New Town Road	327	Tendring 007	Housing	300	0
Lan at Pannell Palce	301	Tendring 011	Housing	10	0
Land at Avocet Place	34	Tendring 009	Housing	60	0
Land West of Crow Lane	328	Tendring 007	Housing	250	0
Saltings Quarter, Riverside Avenue	336	Tendring 003	Housing	40	0
Land East of Crow Lane	328	Tendring 007	Housing	80	0
Land east of Bentley Road	328	Tendring 007	Housing	60	0
Crisp Malting	336	Tendring 003	Housing	30	0
Land south of Shop Road	26	Tendring 005	Housing	17	0
Durite Works, Valley Road	329	Tendring 004	Housing	82	0
Vicarage Farm, Main Road	331	Tendring 002	Housing	150	0
Abbey Bottom Farm	6	Tendring 003	Housing	20	0
Land south of Clacton Road	303	Tendring 018	Housing	100	0
Brightlingsea Telephone Exchange, 16 New Street	301	Tendring 011	Housing	15	0
Land north east of Wix Road	329	Tendring 004	Housing	50	0
Land North of Rectory Road	6	Tendring 003	Housing	30	0
Land off Arthur Ransome Way, Walton	326	Tendring 006	Housing	200	0
Land west of Main Road	324	Tendring 008	Housing	10	0
Land north of Kirby-le-Soken Evangelical Church	323	Tendring 008	Housing	20	0
Land South of Oakley Road	329	Tendring 004	Housing	1650	0
Land North of Lifehouse Spa & Hotel	327	Tendring 007	Housing	110	0

Preferred Options Local Plan Transport Evidence – Assessment Case

Land east of Cockaynes Lane	37	Tendring 009	Housing	100	0
Land east of Station Road	327	Tendring 007	Housing	200	0
Land at Former King Edward VII Public House, Station Road	327	Tendring 007	Housing	14	0
Land adj Village Hall, Harwich Road	327	Tendring 007	Housing	20	0
Land between Frinton Road and Landermere Road	327	Tendring 007	Housing	350	0
Land South of Colchester Road	328	Tendring 007	Housing	900	0
Land east of Amerells Road	328	Tendring 007	Housing	100	0
Land north of Thorpe Road, Kirby Cross	324	Tendring 008	Housing	420	0
Land north of Walton Road	323	Tendring 008	Housing	10	0
Land West of Church Road	337	Tendring 009	Housing	150	0
Land East of Church Road	337	Tendring 009	Housing	150	0
Land south of Thorpe-le-Soken	327	Tendring 007	Housing	1275	0
Tendring Central	7	Tendring 005	Housing	1200	0
Tendring Central	33	Tendring 009	Housing	639	0
Tendring Central	5	Tendring 003	Housing	161	0
Land west of Plough Road	28	Tendring 009	Housing	75	0
Land east of Kirby Road	324	Tendring 008	Housing	10	0
Land south of Orchard Close	329	Tendring 004	Housing	50	0
Land west of Manningtree Road	5	Tendring 003	Housing	12	0
Land east of Shop Road	26	Tendring 005	Housing	12	0
Haulage Depot, Heath Road	6	Tendring 003	Housing	10	0
Affinity Water	1	Tendring 003	Housing	80	0
Land south of Hall Road	7	Tendring 005	Housing	15	0
Land west of Parsons Hill	7	Tendring 005	Housing	10	0
Horsley Garden Community, Land at Horsley Cross, Horsley Cross, CO11 2PH	6	Tendring 003	Employment -B1a/b	0	469
Horsley Garden Community, Land at Horsley Cross, Horsley Cross, CO11 2PH	6	Tendring 003	Employment -B2	0	156
Horsley Garden Community, Land at Horsley Cross, Horsley Cross, CO11 2PH	6	Tendring 003	Employment -B8	0	80
Grovewood Business Park, Collierswood Farm, Land North of the A120	8, 24	Tendring 005	Employment -B1a/b	0	2130
Grovewood Business Park, Collierswood Farm, Land North of the A120	8, 24	Tendring 005	Employment -B2	0	710
Grovewood Business Park, Collierswood Farm, Land North of the A120	8, 24	Tendring 005	Employment -B8	0	365

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Tendring Central Garden Community, A120/A133 Junction	5	Tendring 003	Employment -B1a/b	0	134
Tendring Central Garden Community, A120/A133 Junction	5	Tendring 003	Employment -B2	0	45
Tendring Central Garden Community, A120/A133 Junction	5	Tendring 003	Employment -B8	0	23
Tendring Central Garden Community, A120/A133 Junction	7	Tendring 005	Employment -B1a/b	0	999
Tendring Central Garden Community, A120/A133 Junction	7	Tendring 005	Employment -B2	0	333
Tendring Central Garden Community, A120/A133 Junction	7	Tendring 005	Employment -B8	0	171
Tendring Central Garden Community, A120/A133 Junction	33, 35	Tendring 009	Employment -B1a/b	0	532
Tendring Central Garden Community, A120/A133 Junction	33, 35	Tendring 009	Employment -B2	0	177
Tendring Central Garden Community, A120/A133 Junction	33, 35	Tendring 009	Employment -B8	0	91
Land North East of A133, Ravens Green, Colchester, Essex	5	Tendring 003	Employment -B1a/b	0	359
Land North East of A133, Ravens Green, Colchester, Essex	5	Tendring 003	Employment -B2	0	120
Land North East of A133, Ravens Green, Colchester, Essex	5	Tendring 003	Employment -B8	0	62
Land North East of A133, Ravens Green, Colchester, Essex	28	Tendring 009	Employment -B1a/b	0	59
Land North East of A133, Ravens Green, Colchester, Essex	28	Tendring 009	Employment -B2	0	20
Land North East of A133, Ravens Green, Colchester, Essex	28	Tendring 009	Employment -B8	0	10
Land South of Colchester Road, Frating, Colchester, Essex.	33	Tendring 009	Employment -B1a/b	0	389
Land South of Colchester Road, Frating, Colchester, Essex.	33	Tendring 009	Employment -B2	0	130
Land South of Colchester Road, Frating, Colchester, Essex.	33	Tendring 009	Employment -B8	0	67
Tendring Business and Innovation Hub (North-Western), Horsley Cross CO11 2PH	6	Tendring 003	Employment -B1a/b	0	144
Tendring Business and Innovation Hub (North-Western), Horsley Cross CO11 2PH	6	Tendring 003	Employment -B2	0	48
Tendring Business and Innovation Hub (North-Western), Horsley Cross CO11 2PH	6	Tendring 003	Employment -B8	0	25
Land North of Harwich Road, Great Bromley, CO7 8SZ	7	Tendring 005	Employment -B1a/b	0	170
Land North of Harwich Road, Great Bromley, CO7 8SZ	7	Tendring 005	Employment -B2	0	57
Land North of Harwich Road, Great Bromley, CO7 8SZ	7	Tendring 005	Employment -B8	0	29
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -B1a/b	0	22
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -B2	0	7
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -B8	0	4
Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -A3	0	15

Preferred Options Local Plan Transport Evidence – Assessment Case

Saltings Quarter - Manningtree Regeneration Area, Riverside Avenue East, Manningtree, CO11 1US	2, 336	Tendring 003	Employment -D2	0	4
Land North of the A120 Harwich Road	331	Tendring 002	Employment -B1a/b	0	160
Land North of the A120 Harwich Road	331	Tendring 002	Employment -B2	0	53
Land North of the A120 Harwich Road	331	Tendring 002	Employment -B8	0	44

Appendix C. Speed Ratio

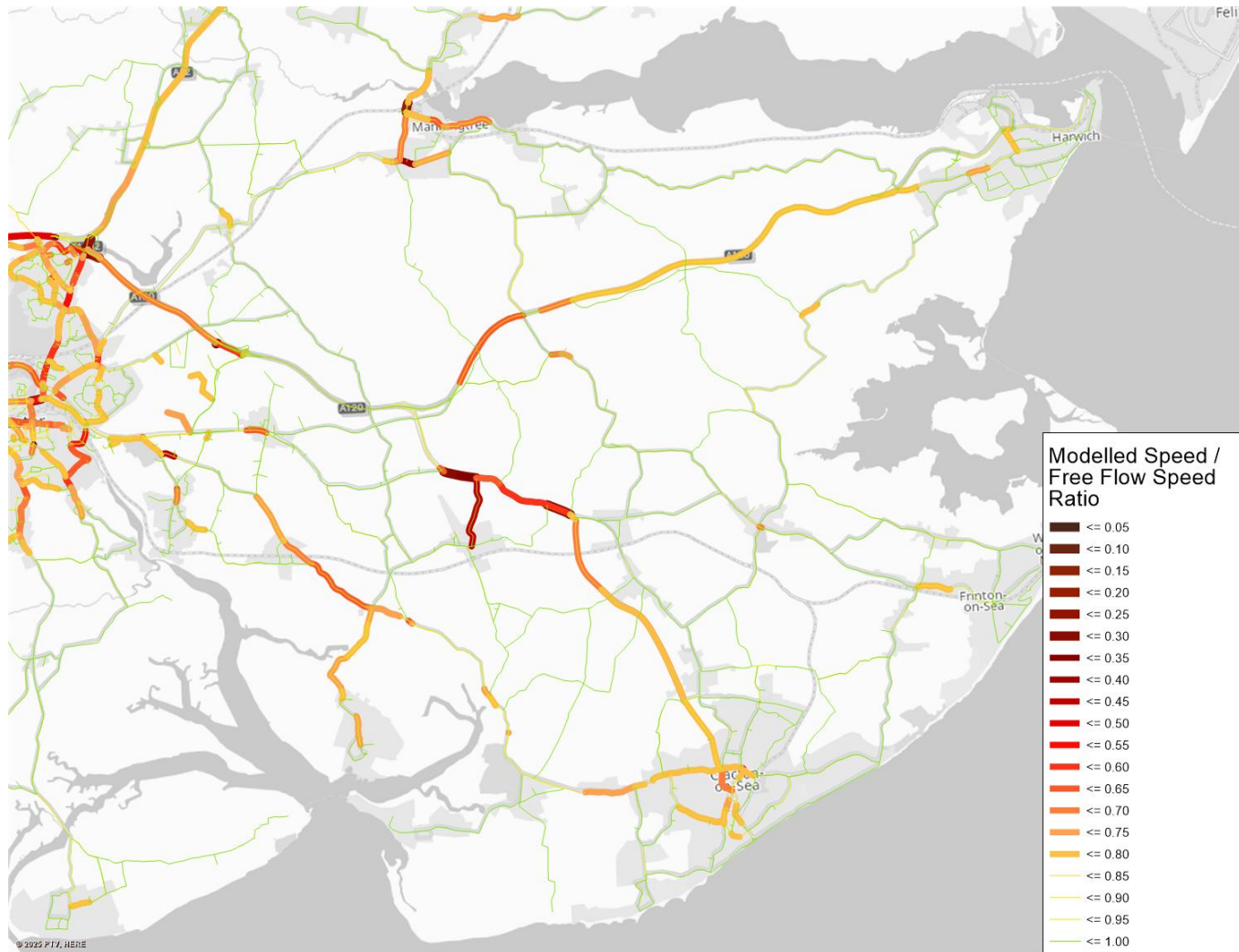


Figure C-1: Speed Ratio - Reference Case - AM

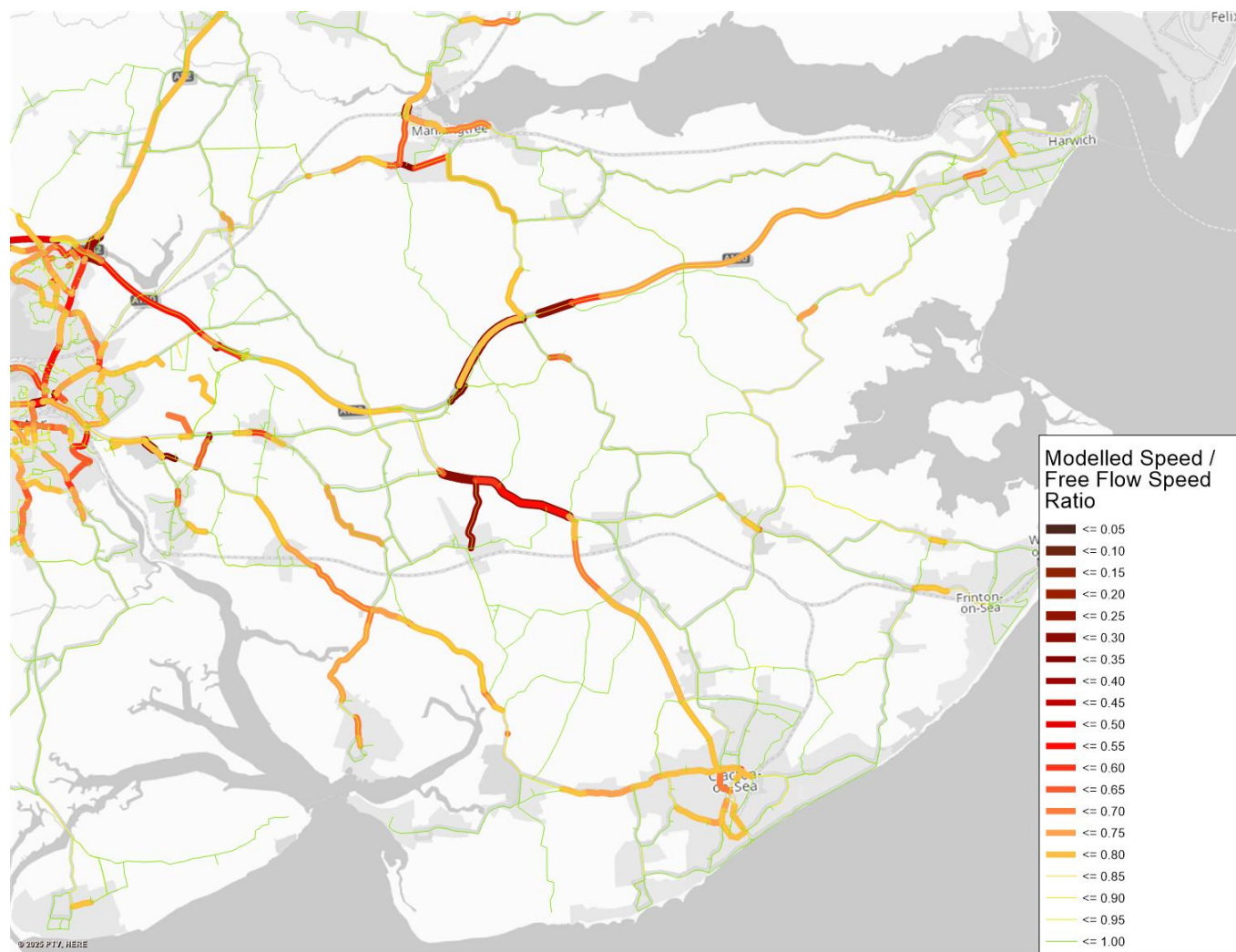


Figure C-2: Speed Ratio – Spatial Option 1 (without mitigation measures) - AM

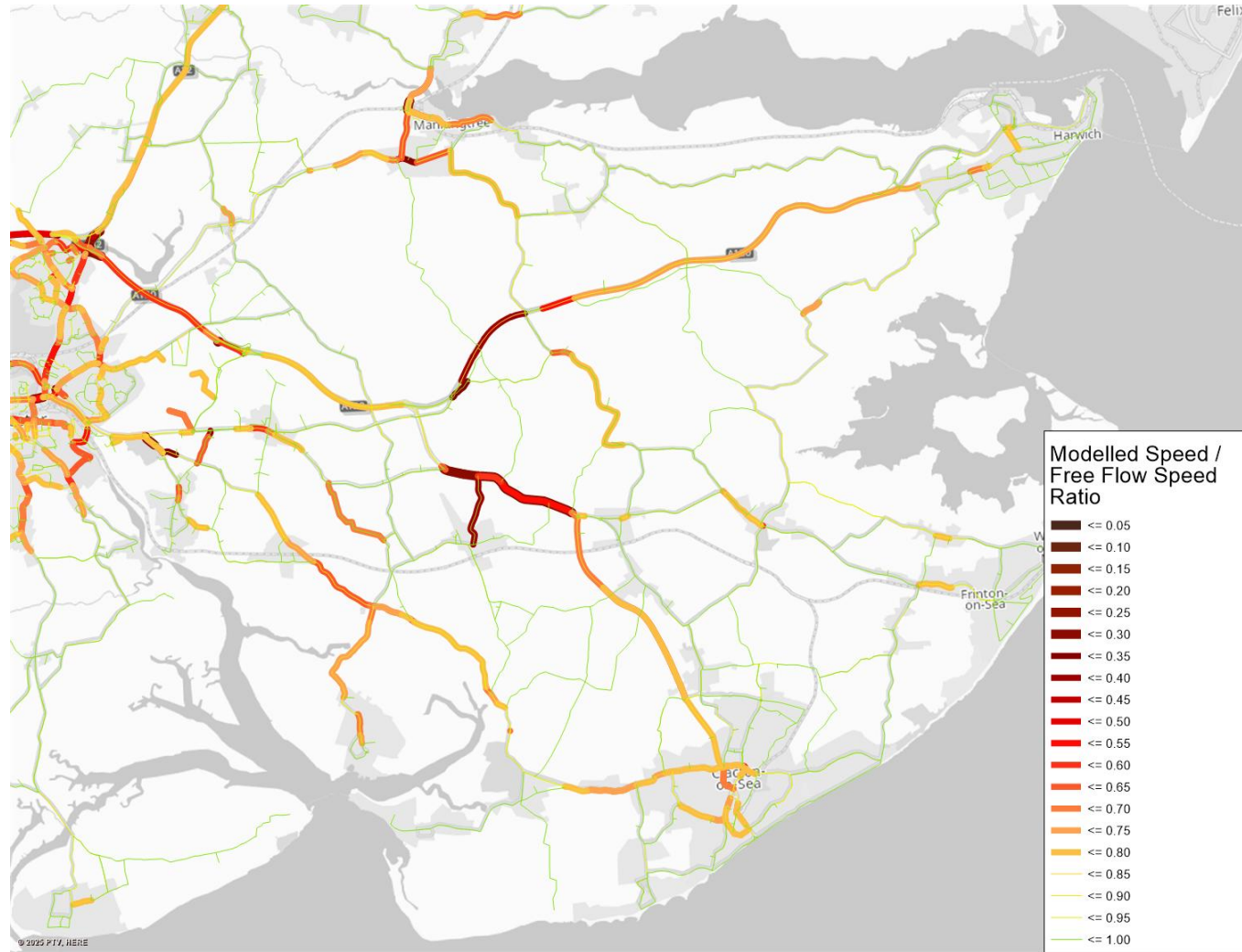


Figure C-3: Speed Ratio – Spatial Option 2 (without mitigation measures) - AM

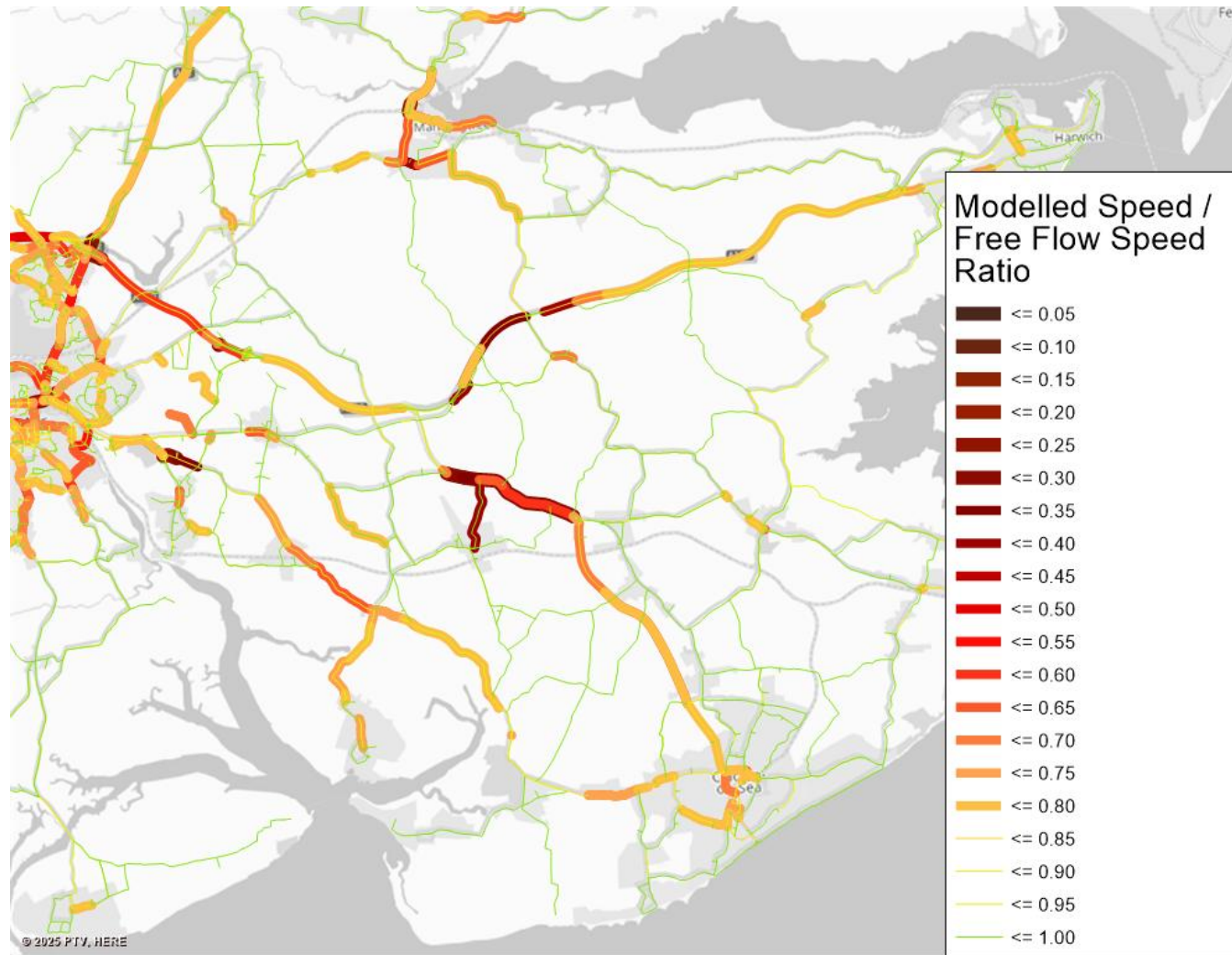


Figure C-4: Speed Ratio – Spatial Option 1 (with mitigation measures) - AM

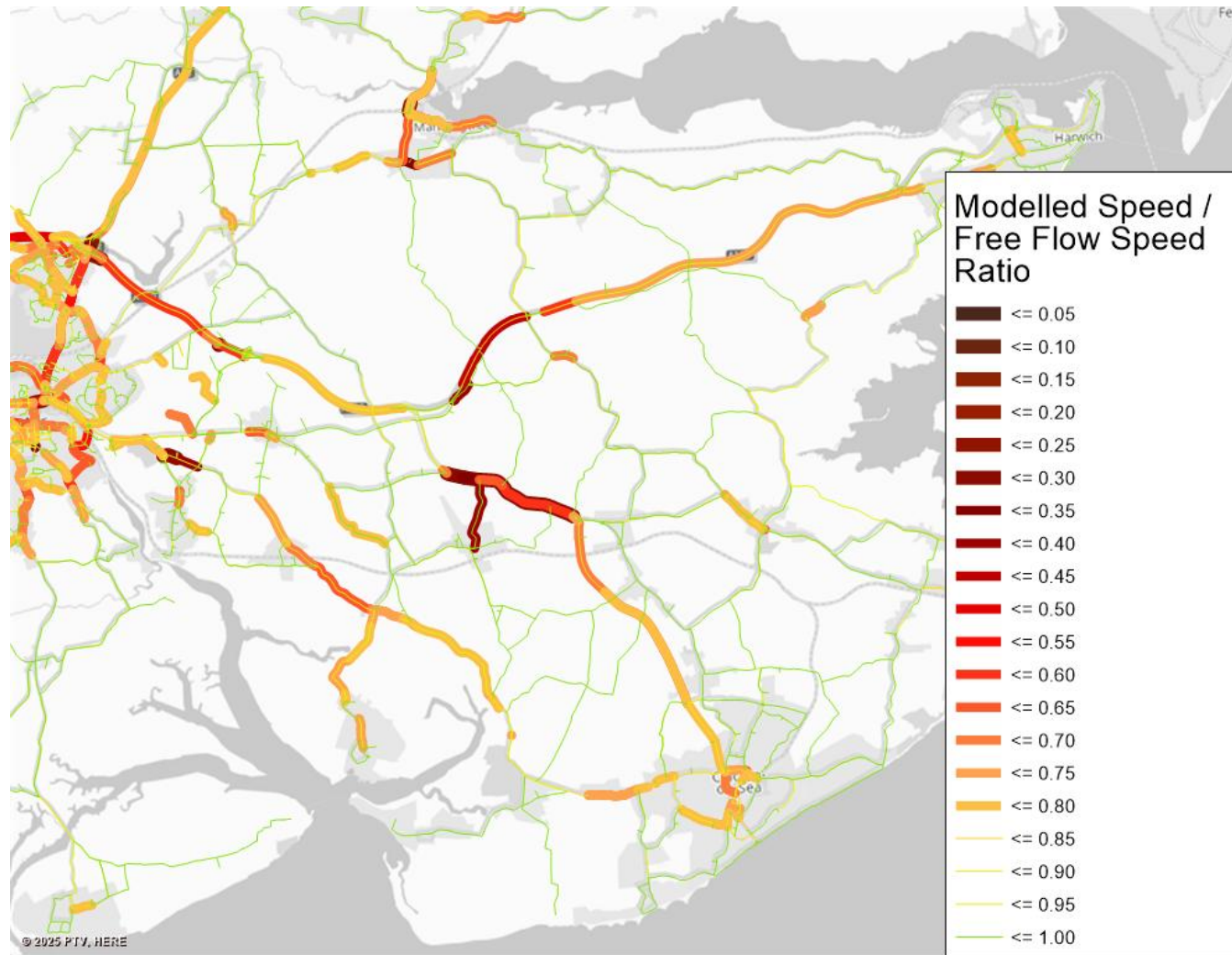


Figure C-5: Speed Ratio – Spatial Option 2 (with mitigation measures) - AM

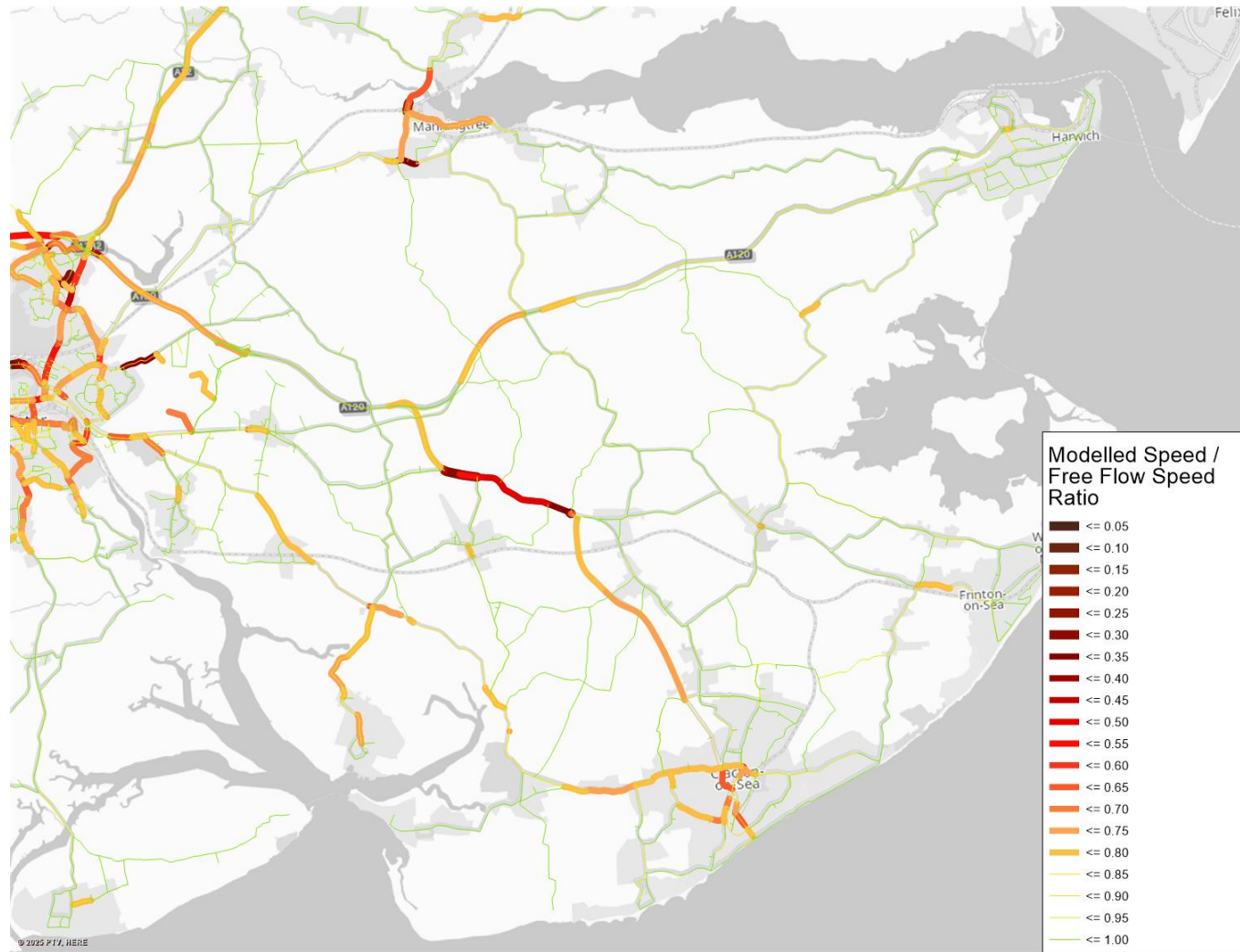


Figure C-6: Speed Ratio - Reference Case - PM

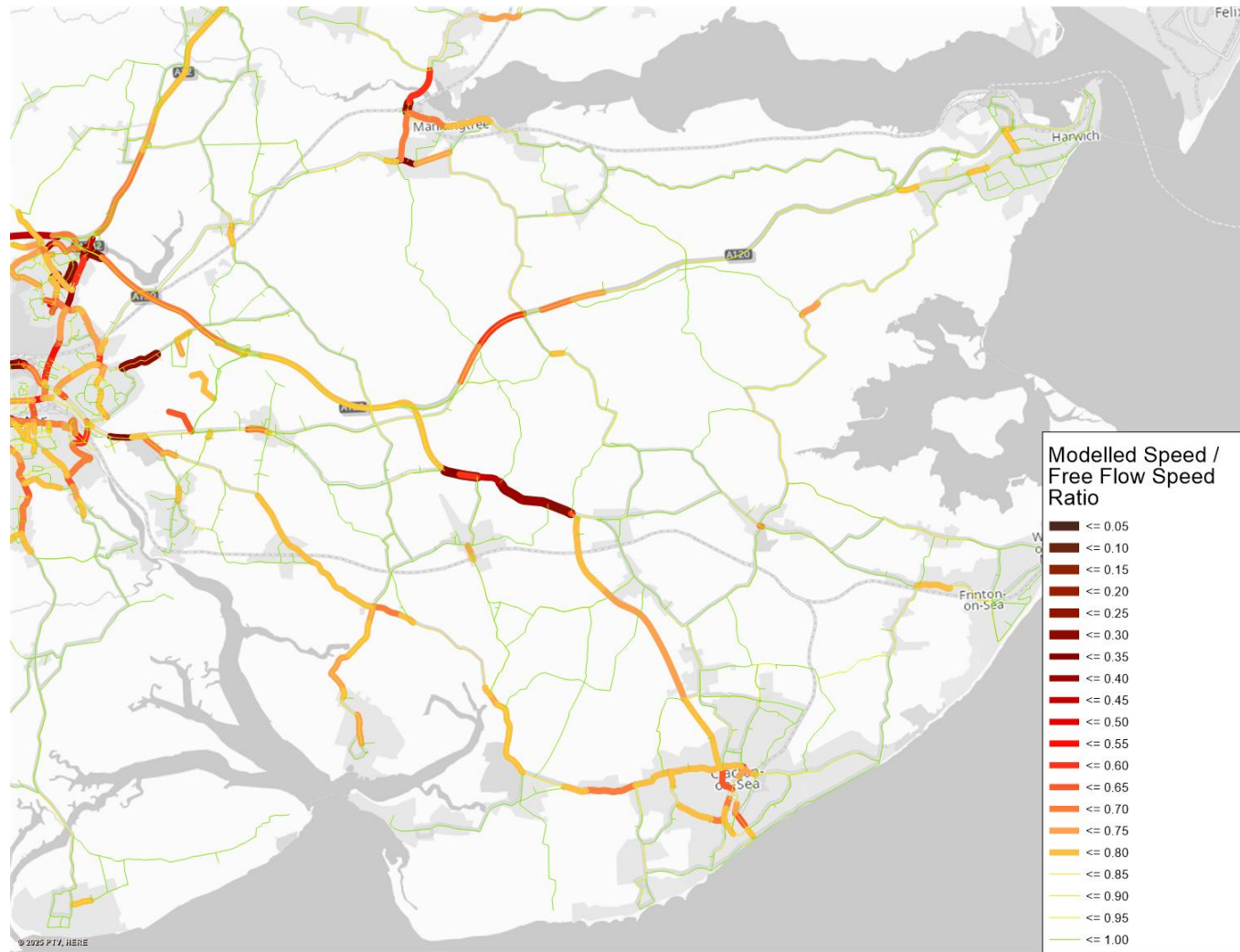


Figure C-7: Speed Ratio – Spatial Option 1 (without mitigation measures) - PM

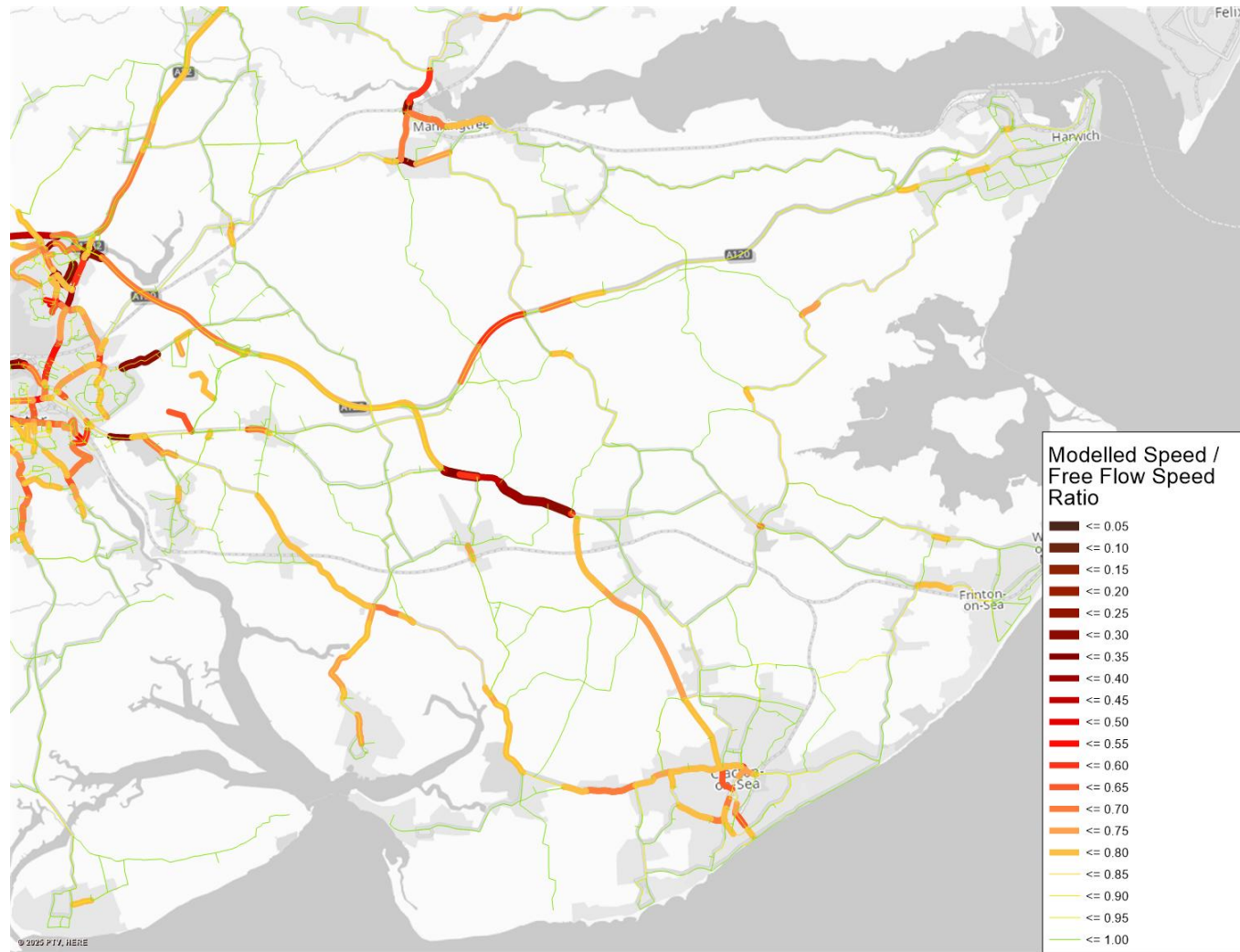


Figure C-8: Speed Ratio – Spatial Option 2 (without mitigation measures) - PM

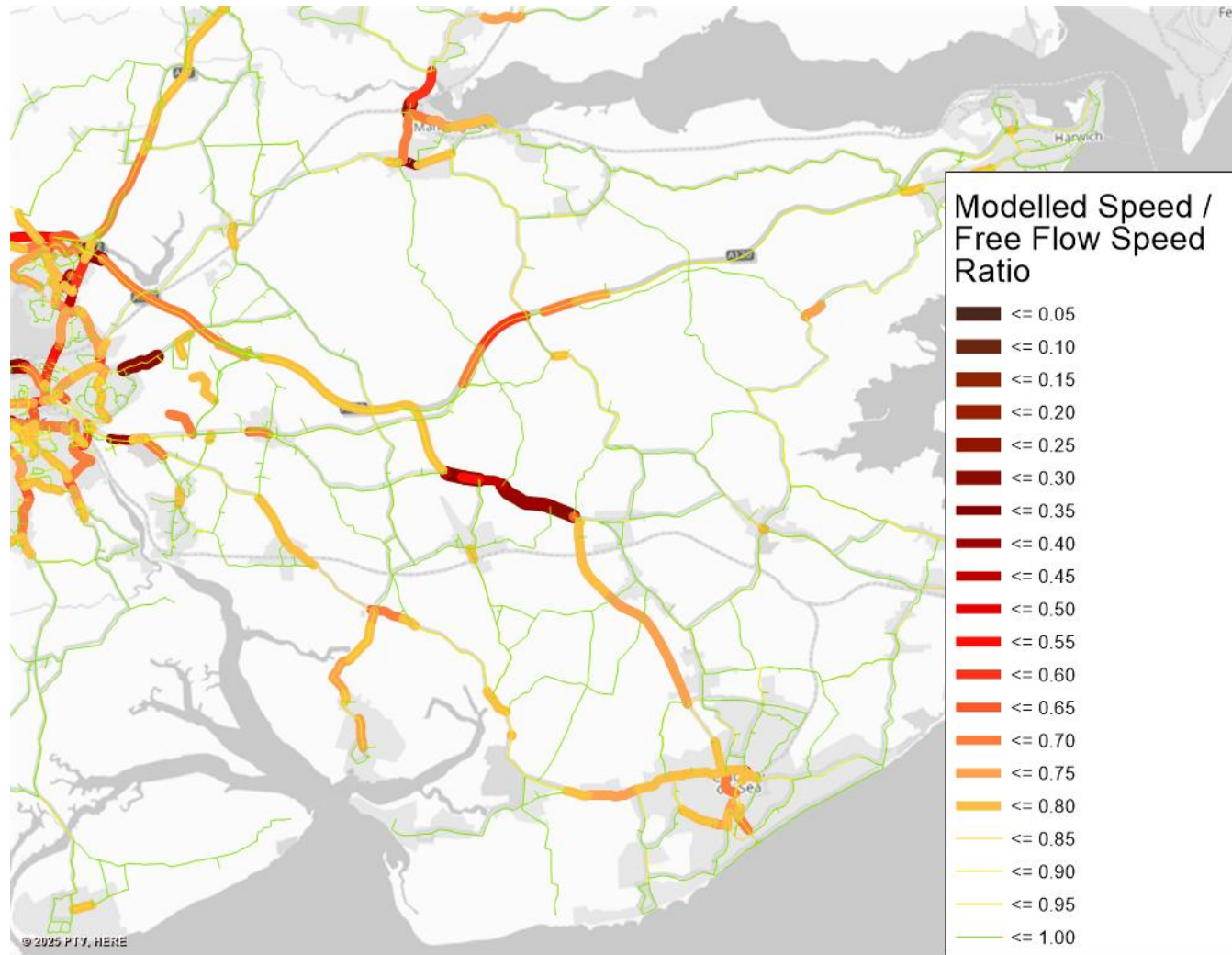


Figure C-9: Speed Ratio – Spatial Option 1 (with mitigation measures) - PM

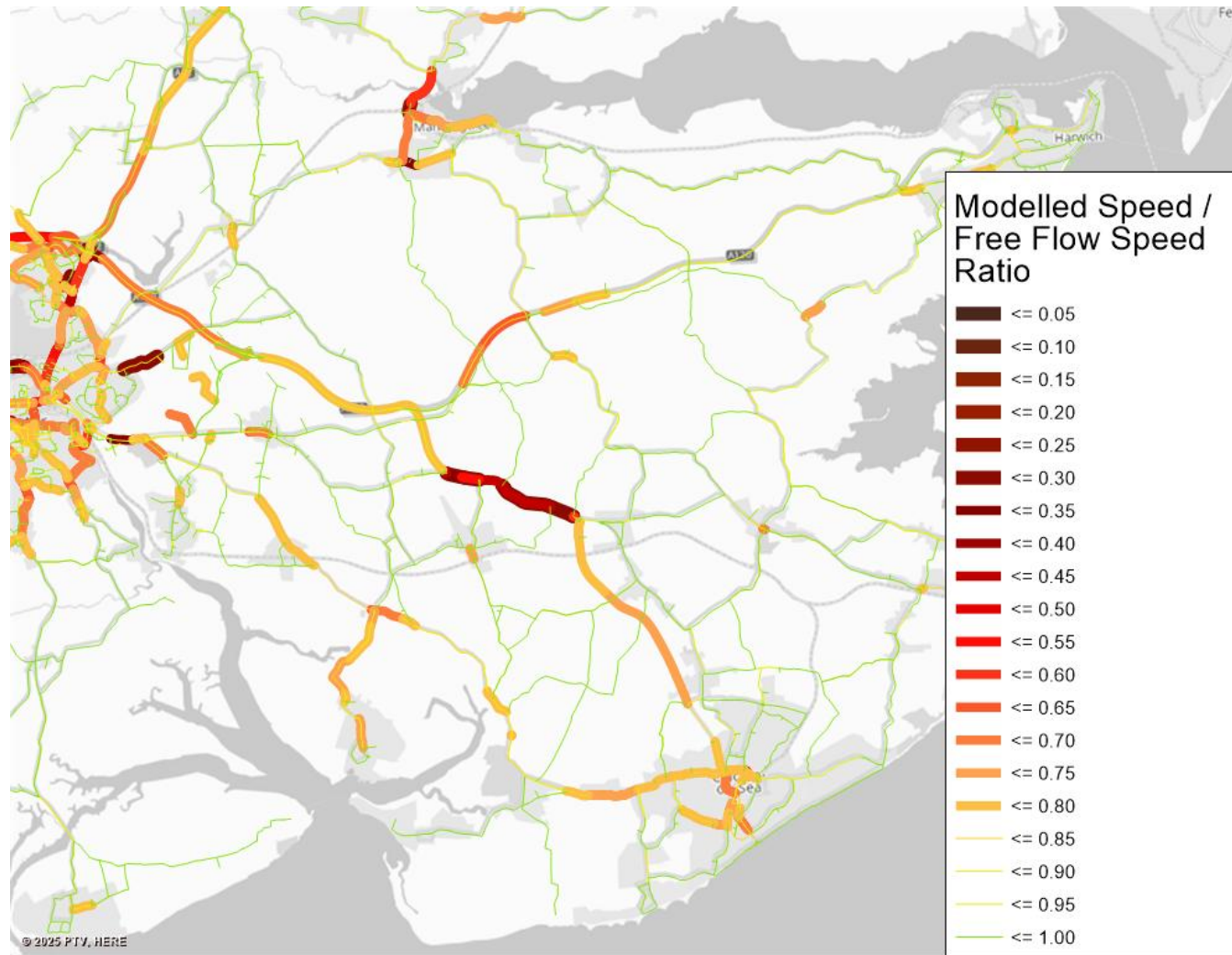


Figure C-10: Speed Ratio – Spatial Option 2 (with mitigation measures) - PM

Appendix D. Relative Queue

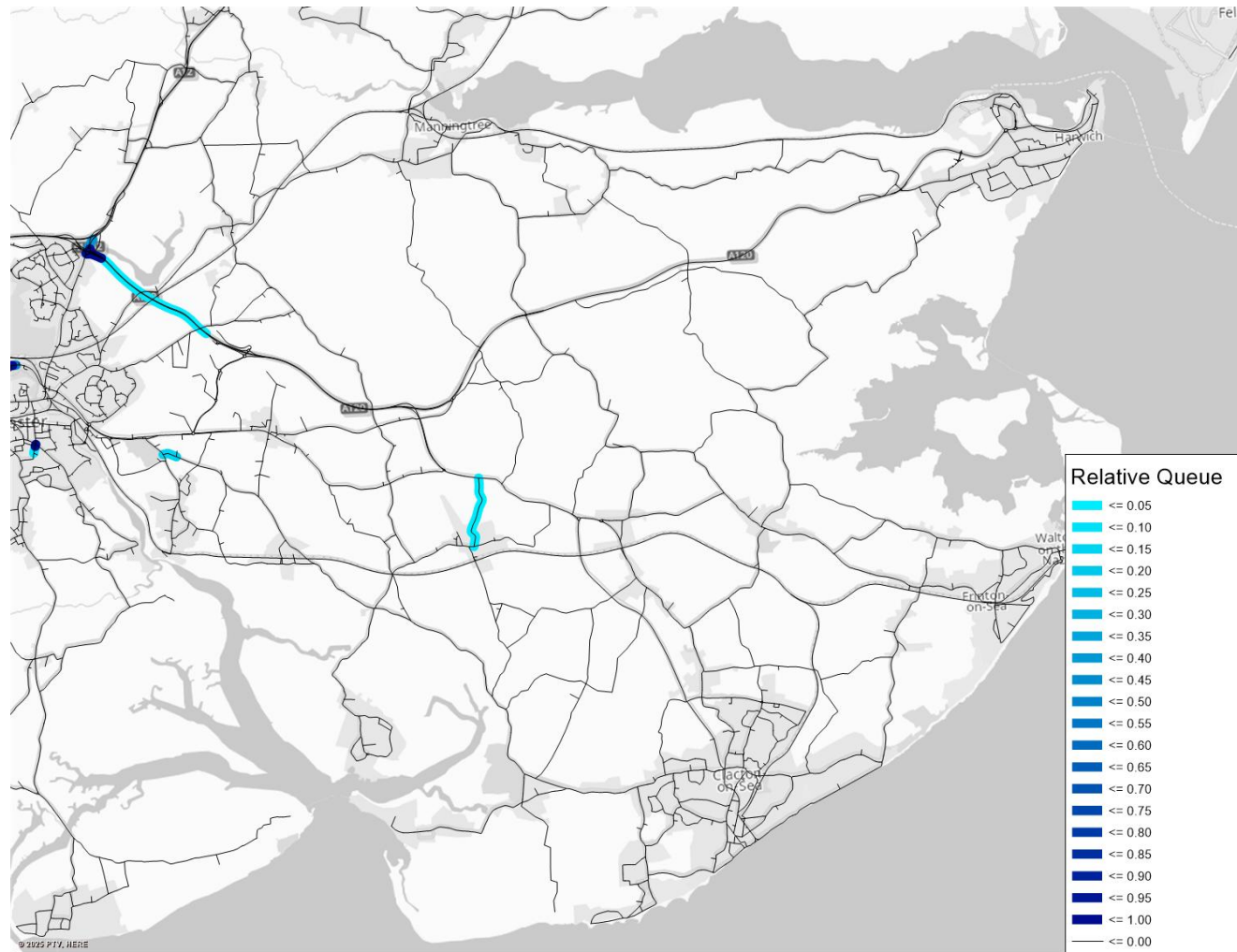


Figure D- 1: Relative Queue - Reference Case – AM

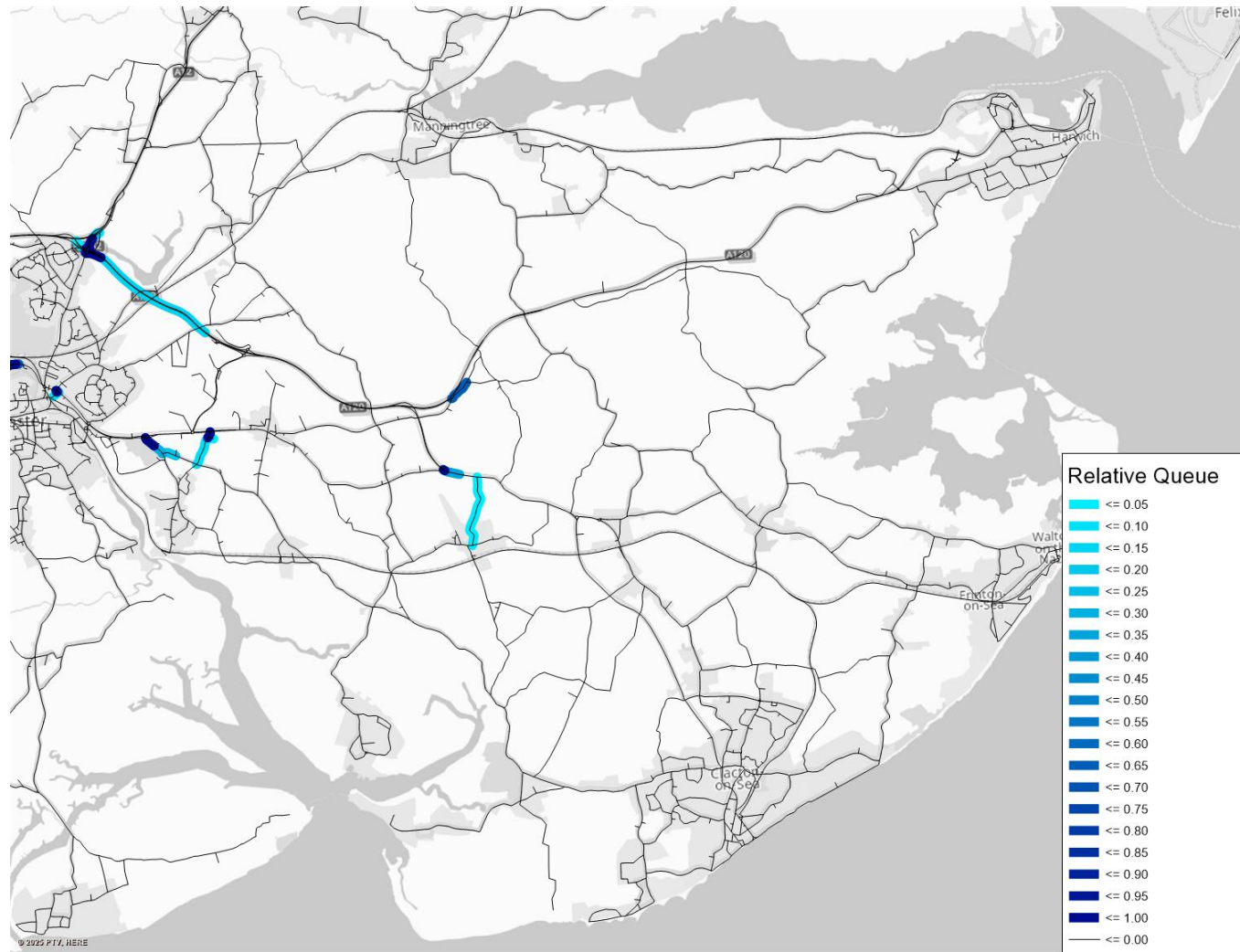


Figure D- 2: Relative Queue – Spatial Option 1 (without mitigation measures) – AM

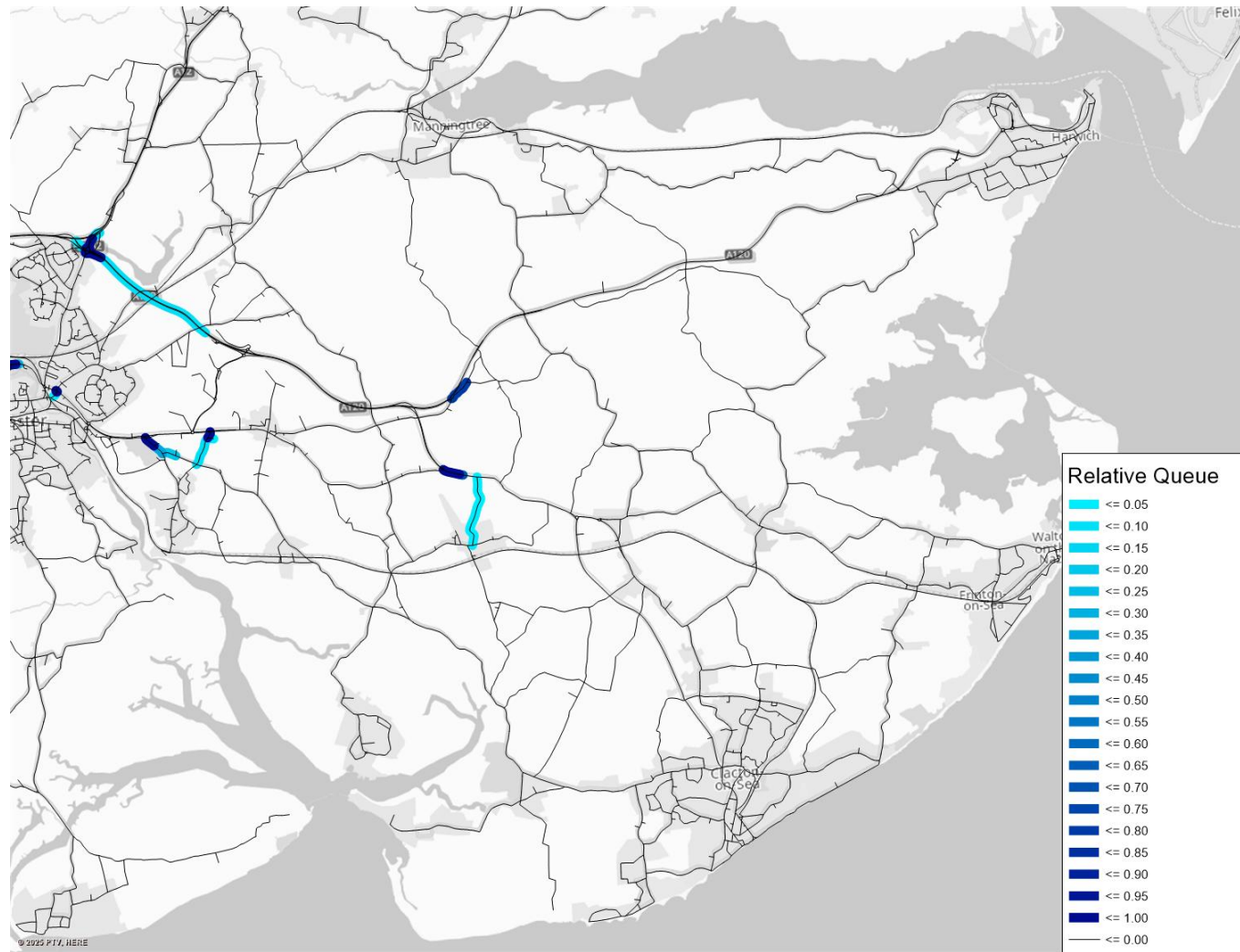


Figure D- 3: Relative Queue – Spatial Option 2 (without mitigation measures) – AM

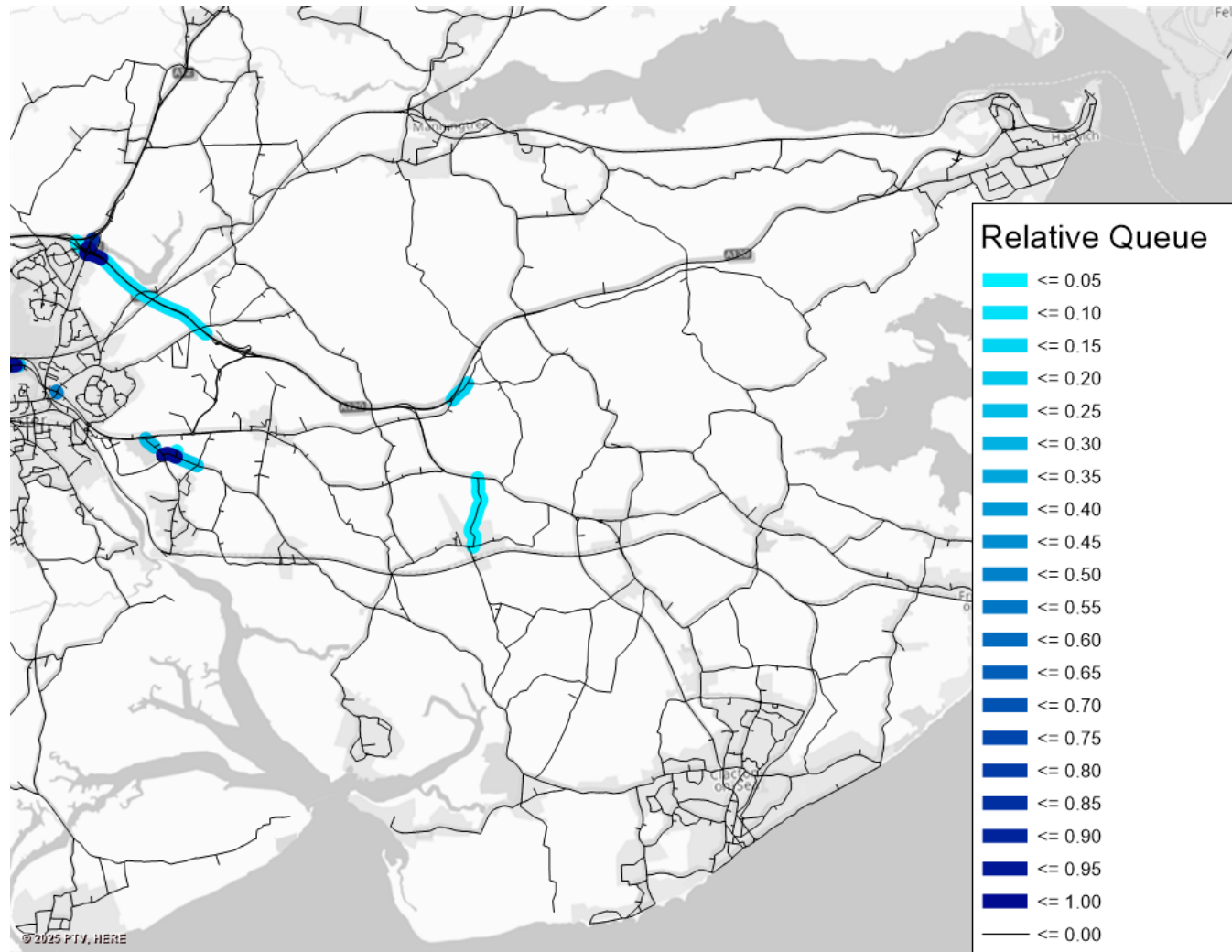


Figure D- 4: Relative Queue – Spatial Option 1 (with mitigation measures) – AM

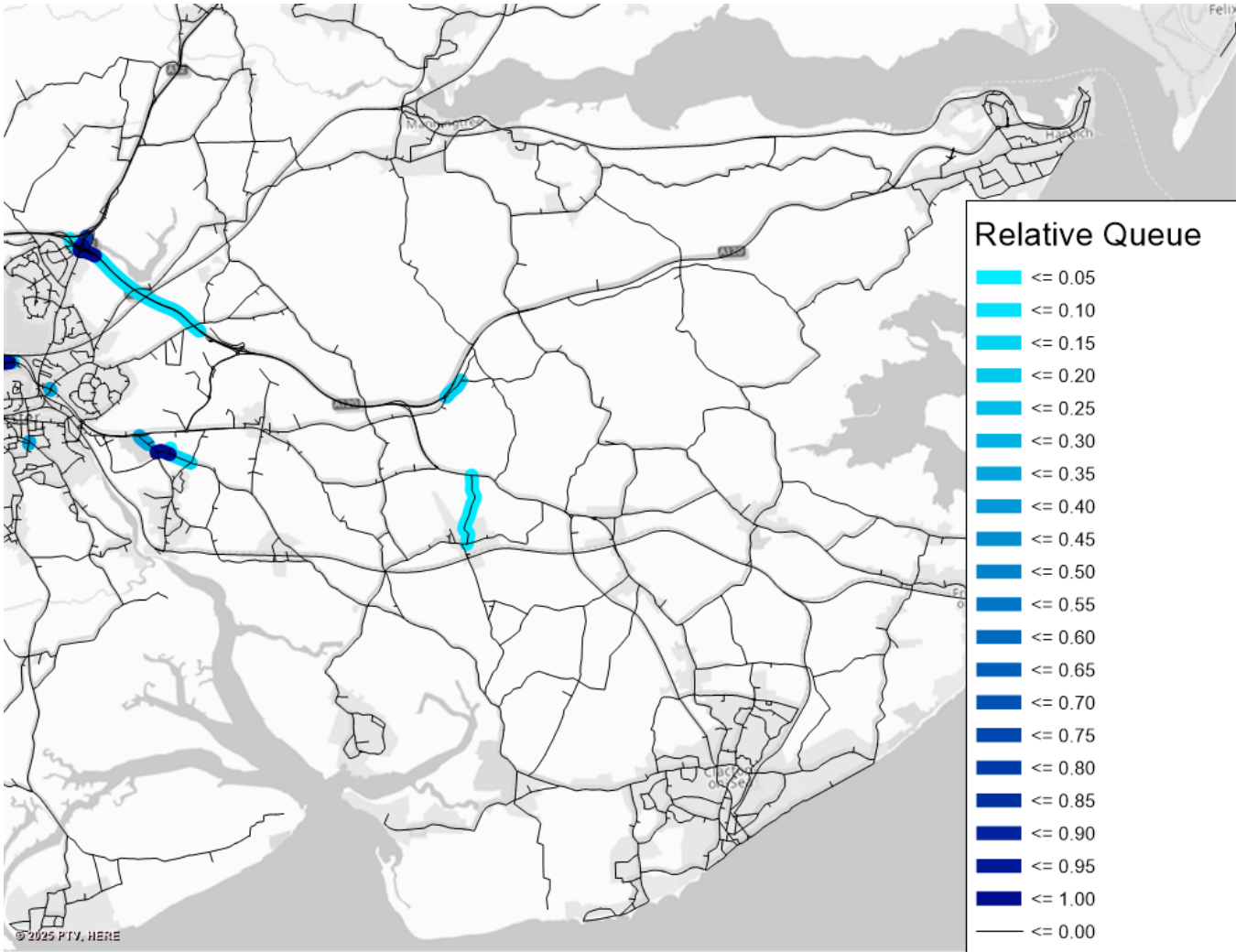


Figure D- 5: Relative Queue – Spatial Option 2 (with mitigation measures) – AM

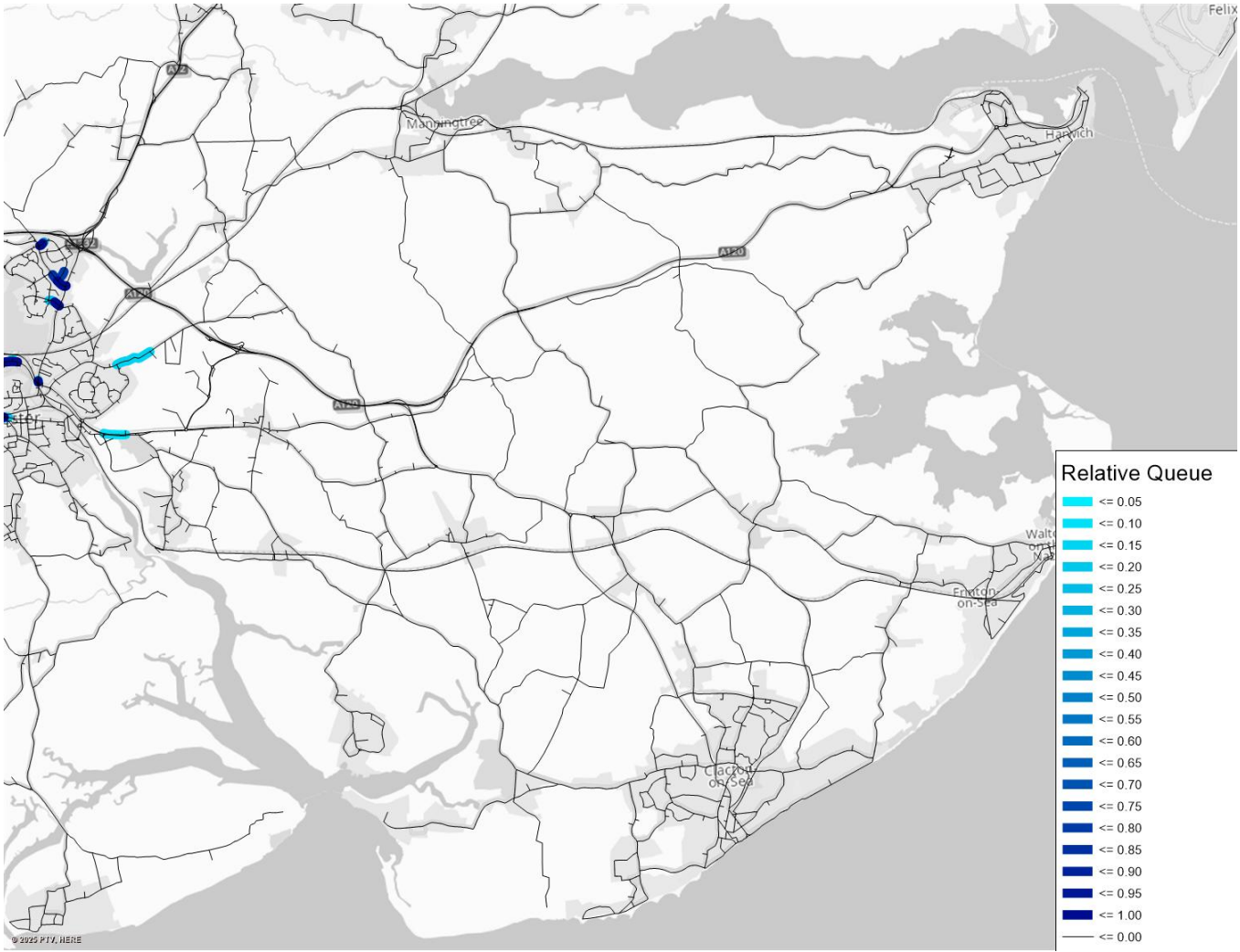


Figure D- 6: Relative Queue – Reference Case – PM

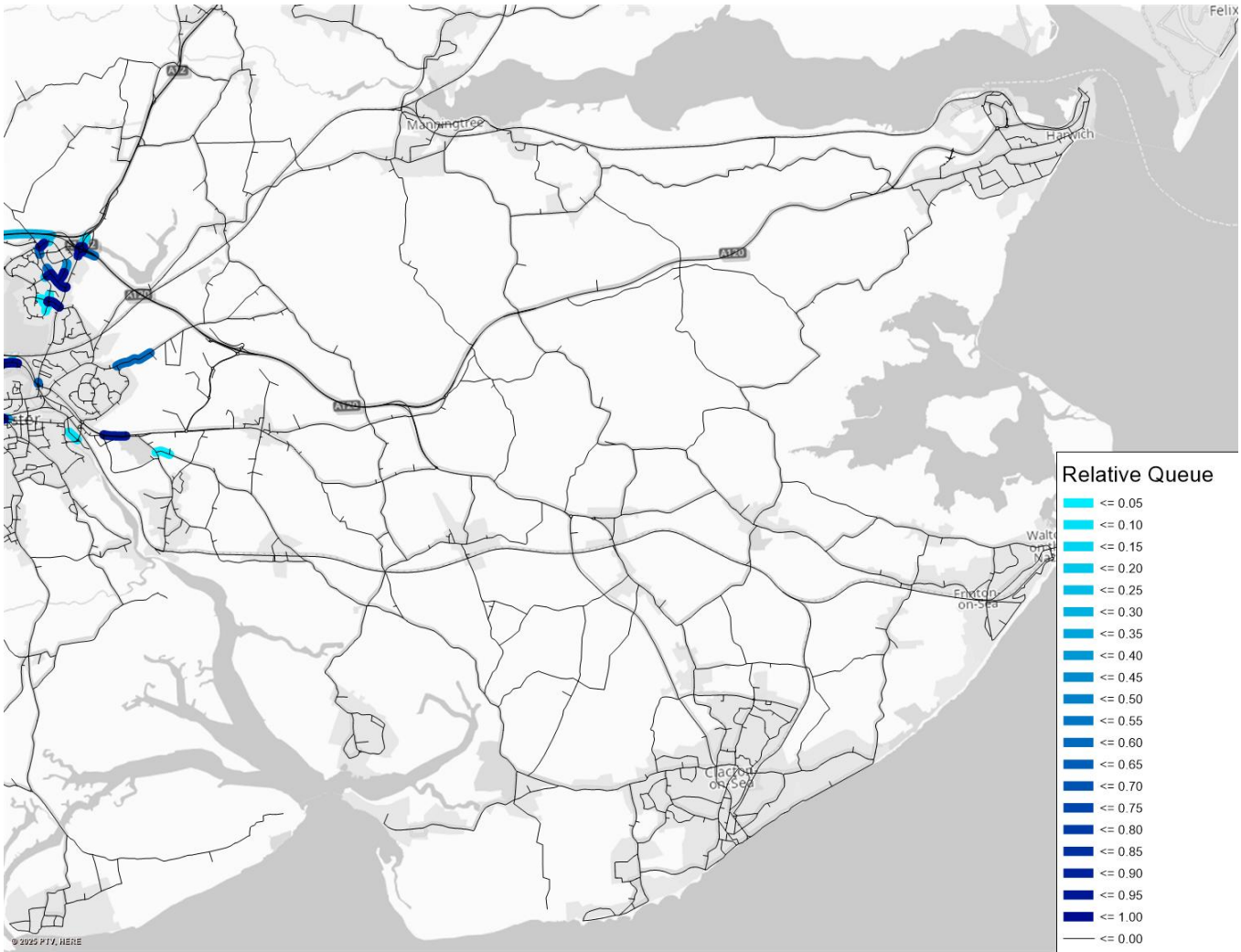


Figure D- 7: Relative Queue – Spatial Option 1 (without mitigation measures) – PM

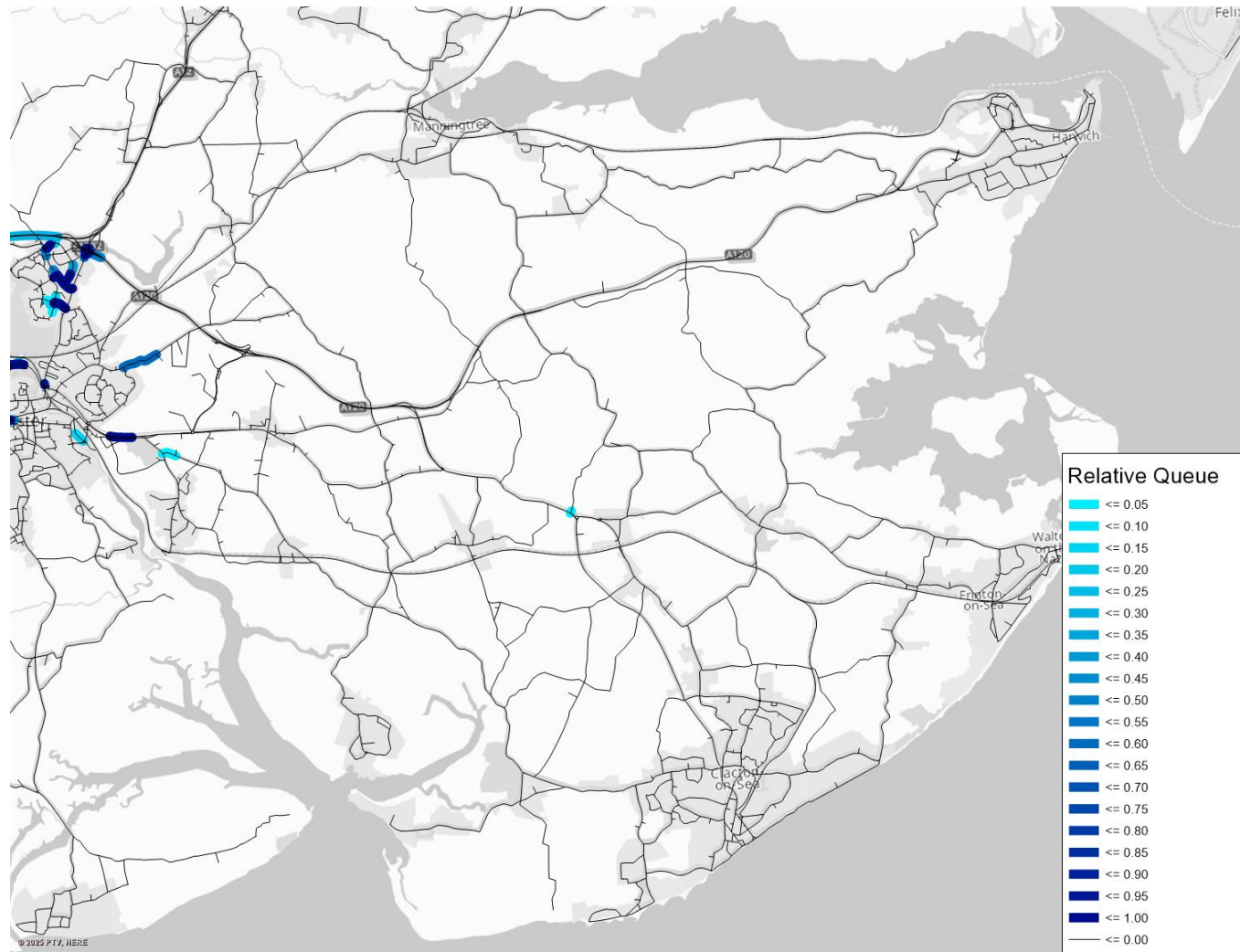


Figure D- 8: Relative Queue – Spatial Option 2 (without mitigation measures) – PM

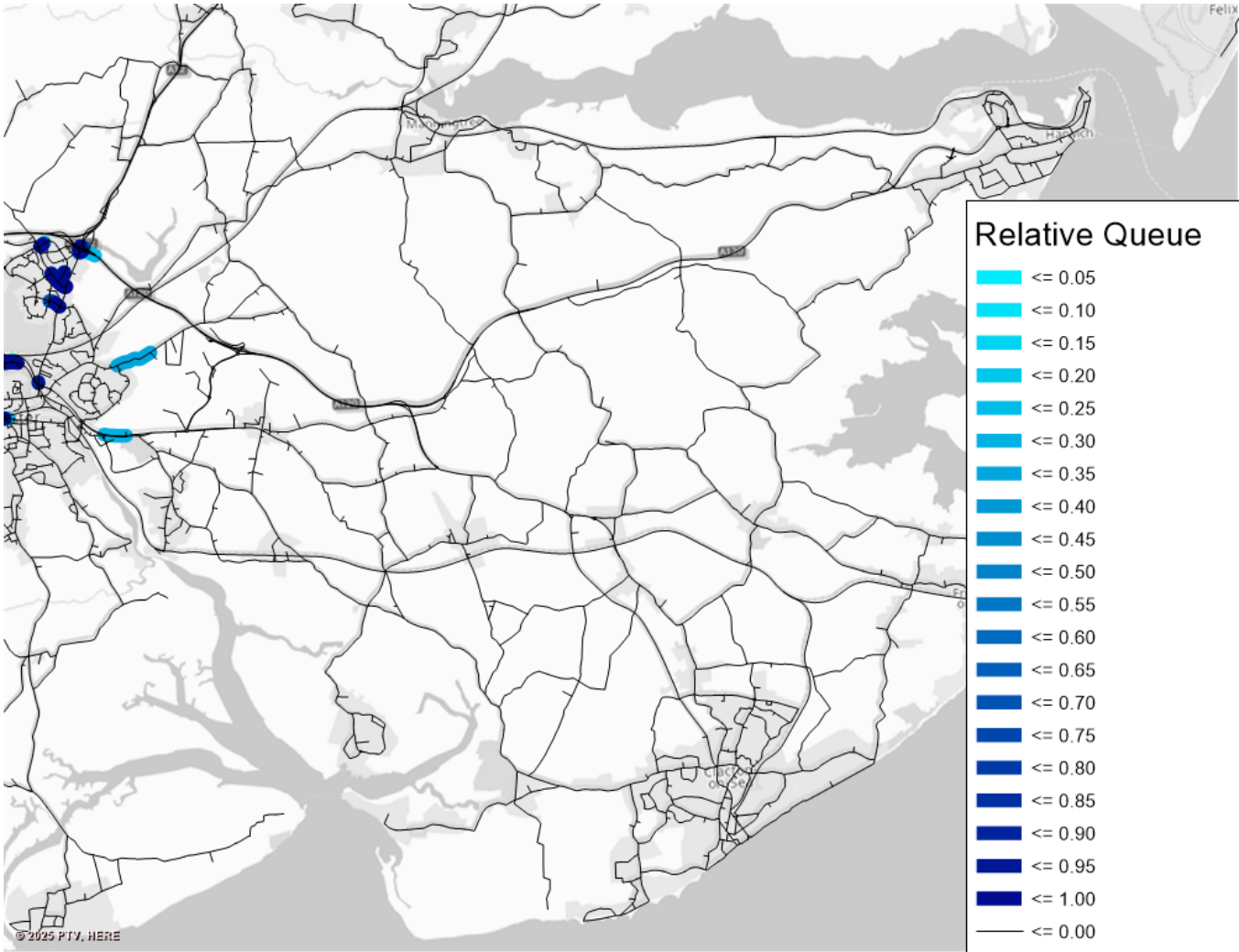


Figure D- 9: Relative Queue – Spatial Option 1 (with mitigation measures) – PM

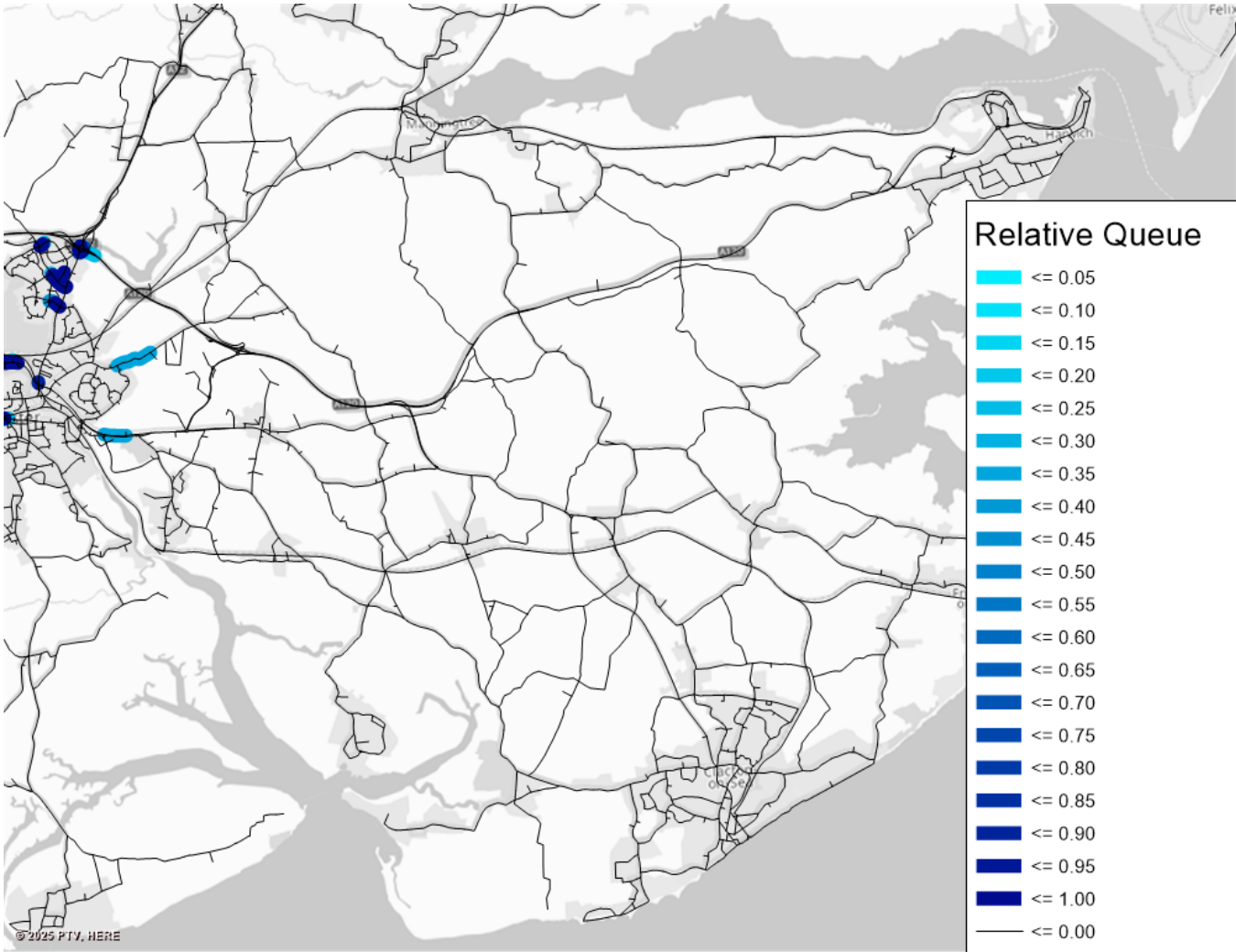


Figure D- 10: Relative Queue – Spatial Option 2 (with mitigation measures) – PM

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