

LLITM 2014 Base

Melton Mowbray Distributor Road
Transport Assessment:
Initial Modelling Technical Note

Quality Information

Prepared by	Checked by	Approved by
Ian Stanness	Mark Dazeley	Mark Dazeley
Principal Consultant	Regional Director	Regional Director

Revision History

Revision	Revision date	Details	Authorised	Name	Position
v1.0	2018-05-01	For issue	Yes	Mark Dazeley	Regional Director
v1.1	2018-05-16	Including Executive Summary	Yes	Mark Dazeley	Regional Director

Prepared by:

Ian Stanness
Principal Consultant
T: 01727 530000

AECOM Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire
AL1 3ER

aecom.com

© 2018 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited (“AECOM”) for sole use of our client (the “Client”) in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

Executive Summary	4
Section 1 – Overview	6
1.1 Introduction	6
1.2 Report Structure	6
Section 2 – Test A: Updated Scheme Alignment, OBC Model Version	8
2.1 Introduction and Approach	8
2.2 Summary Flow and Speed Changes	8
Section 3 – Test B: Updated Scheme Alignment, Latest Model Version	18
3.1 Introduction and Approach	18
3.2 Summary Flow and Speed Changes	18

List of Tables

Table 2.1: Forecast Change in 2036 “without” Scheme Metrics, Test A	11
Table 2.2: Forecast Change in 2021 “with” Scheme Metrics, Test A	11
Table 2.3: Forecast Change in 2036 “with” Scheme Metrics, Test A	11
Table 3.1: Forecast Change in 2021 “without” Scheme Metrics, Test B	20
Table 3.2: Forecast Change in 2036 “without” Scheme Metrics, Test B	20
Table 3.3: Forecast Change in 2021 “with” Scheme Metrics, Test B	20
Table 3.4: Forecast Change in 2036 “with” Scheme Metrics, Test B	20

List of Figures

Figure 2.1: Noise and Air Quality Assessment Network, 2036 “with” Scheme	9
Figure 2.2: Test A Changes in Forecast Total Vehicle Flows by Scenario and Time Period	12
Figure 2.3: Test A Change in 24-hour AADT Forecast Total Vehicle Flow, 2036 “without” Scheme	15
Figure 2.4: Test A Change in 24-hour AADT Forecast Total Vehicle Flow, 2021 “with” Scheme	16
Figure 2.5: Test A Change in 24-hour AADT Forecast Total Vehicle Flow, 2036 “with” Scheme	17
Figure 3.1: Test B Changes in Forecast Total Vehicle Flows by Scenario and Time Period	21
Figure 3.2: Test B Changes in Forecast HDV Vehicle Flows by Scenario and Time Period	23
Figure 3.3: Test B Change in 24-hour AADT Forecast Flow, 2021 “without” Scheme	26
Figure 3.4: Test B Change in 24-hour AADT Forecast Flow, 2036 “without” Scheme	27
Figure 3.5: Test B Change in 24-hour AADT Forecast Flow, 2021 “with” Scheme	28
Figure 3.6: Test B Change in 24-hour AADT Forecast Flow, 2036 “with” Scheme	29
Figure 3.7: Test B Distribution of Forecast 24-hour AADT Total Vehicle Flow Change by Distance	30
Figure 3.8: Test B Distribution of Forecast 24-hour AADT HDV Vehicle Flow Change by Distance	31

Executive Summary

E.1 Introduction

- E.1.1 An Outline Business Case (OBC) for the proposed Melton Mowbray Distributor Road (MMDR) was submitted to the Department for Transport (DfT) in December 2017. As part of the OBC submission, traffic forecasts were produced using the Leicester and Leicestershire Integrated Transport Model (LLITM 2014) based on the latest available assumptions regarding future developments in and around Melton Mowbray, the scheme alignment, and DfT guidance (WebTAG¹) as of Summer 2017.
- E.1.2 The traffic forecasts produced for the OBC submission are expected to be used as part of the Transport Assessment and Environmental Impact Assessment of the scheme. However, since the development of the traffic forecasts for the OBC submission, a number of updates to forecast assumptions have been made, and this technical note details the impact of these changes on the forecast flows and speeds, with a focus on the metrics used within the noise and air quality assessments of the proposed scheme.
- E.1.3 There are two changes to the forecasting assumptions assessed as part of this technical note, namely an update to the proposed scheme alignment, and updates to the DfT's WebTAG advice. These have been assessed through two sensitivity tests:
- **Test A:** an update to the OBC forecasts incorporating the revised scheme alignment only.
 - **Test B:** using the latest version of the LLITM 2014 suite (which incorporates latest WebTAG assumptions) and the revised scheme alignment.
- E.1.4 The analysis contained within the technical note does not seek to make a judgement whether or not the changes in the forecast flows and speeds are sufficient to require the noise and air quality assessments to be updated with the revised model forecasts. The objective of this technical note is to provide the required information for an informed decision to be made.

E.2 Test A, Updated Scheme Alignment

- E.2.1 For this sensitivity test, the existing traffic forecasts which underpin the OBC submission have been updated to reflect the latest scheme alignment. This changes the forecasts for the 2021 and 2031 forecasts with the proposed scheme, and the 2036 forecasts without the proposed scheme (which includes the section between Nottingham Road and Melton Spinney Road).
- E.2.2 Considering links within the noise and air quality assessment area (see Figure 2.1), and the forecasts for 24-hour Annual Average Daily Traffic, 1% or less of modelled links change by more than 5% in the two "with scheme" forecasts, with 3.3% of modelled links changing by more than 5% in the 2036 "without scheme" forecast.
- E.2.3 In terms of the flow changes forecast in the "without scheme" scenario for 2036, Figure 2.3 shows that these changes are concentrated to the north-east of Melton Mowbray, with rerouting forecast between Scalford Road and Thorpe Road.
- E.2.4 As shown in Figure 2.4 and Figure 2.5, the flow changes in the "with scheme" forecasts for 2021 and 2031 are concentrated on Saxby Road to the west of the proposed scheme, and on the proposed scheme between Saxby Road and Burton Road, where 24-hour flows are forecast to increase with the revised scheme alignment.
- E.2.5 Considering forecast HDV² flows, a similar or lower proportion of modelled links are forecast to have a 5% or more change in HDV flows with the revised scheme alignment. Around 1.5% or less of modelled links within the three model scenarios has a forecast 24-hour HDV flow change of more than 5%.

¹ <https://www.gov.uk/guidance/transport-analysis-guidance-webtag>

² Heavy Duty Vehicles (heavy goods vehicles and buses)

- E.2.6 In terms of modelled speeds, these are not forecast to change significantly with the updated scheme alignment. 99.9% or more of modelled links within the assessment area have a forecast speed change with the revised scheme alignment of 5% or less.

E.3 Test B, Latest LLITM 2014 and Updated Scheme Alignment

- E.3.1 This sensitivity test considers the change in the forecast flows and speeds between the OBC submission and updated forecasts using the latest version of the LLITM 2014 suite and the updated scheme alignment. The most significant update to the model suite is the change to reflect the latest (December 2017) version of WebTAG, although other updates have been applied elsewhere within the county as part of other applications of the model.
- E.3.2 Using the latest version of the model suite and the revised scheme alignment, forecasts for flows and speeds have been produced for 2021 and 2036 both without and with the proposed scheme. Due to the number of changes in forecasting assumptions, the changes in forecast flow with the latest version of the model suite are greater than with the latest scheme alignment alone.
- E.3.3 Considering 24-hour Annual Average Daily Flow, between around 86% and 89% of modelled links within the assessment area are forecast to have flow changes of less than 5% between the OBC submission and the forecasts using the latest model suite.
- E.3.4 Figure 3.3 to Figure 3.6 show the location of these forecast flow changes in the four model scenarios, with the largest forecast flow changes concentrated on Nottingham Road to the north-west of Melton Mowbray, the northern section of the proposed scheme (between Nottingham Road and Melton Spinney Road), and Asfordby Road to the west of Melton Mowbray.
- E.3.5 In terms of 24-hour HDV flows, around 20% of modelled links are forecast to change by more than 5% within the latest version of the model suite, although only around 2% of modelled links are forecast to have a HDV flow change of more than 50 vehicles. Figure 3.3 to Figure 3.6 also show the forecast change in HDV flows, with the largest absolute change in HDV flows forecast for the A46.
- E.3.6 As with the Test A forecasts, the modelled speeds forecast with the latest version of LLITM 2014 are not forecast to change significantly from those produced as part of the OBC submission. Despite the larger changes in forecast flows, modelled speeds are forecast to change by more than 5% on less than 1% of modelled links within the assessment area.

Section 1 – Overview

1.1 Introduction

- 1.1.1 AECOM was commissioned to undertake traffic modelling using the LLITM 2014 Base suite to assess the proposed Melton Mowbray Distributor Road (MMDR), informing an Outline Business Case (OBC). This OBC was submitted to the DfT in late December 2017. Subsequent to this submission, a Transport Assessment and Environmental Impact Assessment are being prepared for the proposed scheme, using the traffic forecasts produced as part of the modelling undertaken for the OBC.
- 1.1.2 Since the modelling work to inform the OBC, minor updates have been made to the proposed scheme alignment and also to the LLITM 2014 model suite (incorporating latest WebTAG assumptions, and incremental improvements to the highway model). This technical note details the results of two sensitivity tests undertaken to understand the impact of the changes to forecasting assumptions on the model forecasts.
- 1.1.3 The key metrics assessed within this technical note are those provided for use in the assessment of the noise and air quality impacts of the proposed scheme. These are the forecast total flow, Heavy Duty Vehicle (HGVs and buses) flow, and speed for 2021 and 2036 without and with the proposed scheme, for the following seven time periods:
- Noise assessment:
 - 18-hour AAWT³ (06:00 to 00:00); and
 - 8-hour AAWT (23:00 to 07:00).
 - Air quality assessment:
 - AM Period (07:00 to 10:00);
 - Interpeak Period (10:00 to 16:00);
 - PM Period (16:00 to 19:00);
 - Off-peak Period (19:00 to 07:00); and
 - 24-hour AADT⁴.
- 1.1.4 This technical note considers the change in the modelled speeds before the application of speed pivoting and speed banding required for the noise and air quality assessments.
- 1.1.5 In terms of the additional model runs detailed within this technical note, two have been defined in discussion with LCC and WSP. These are:
- **Test A:** re-run of the 2021 and 2036 “without” and “with” scheme scenarios using the OBC version of the LLITM 2014 suite, including only the changes to the proposed scheme alignment.
 - **Test B:** run of the 2021 and 2036 “without” and “with” scheme forecasts using the latest version of the LLITM 2014 suite and the current proposed scheme alignment.
- 1.1.6 This technical note does not seek to make a judgement as to whether or not updated model forecasts are required for the purposes of the Transport Assessment and Environmental Impact Assessment of the proposed scheme. It does however seek to provide the required information for the teams undertaking these assessments to make an informed decision as to whether updated model forecasts are required.

1.2 Report Structure

- 1.2.1 Following this introduction, this technical note contains the following sections:
- Section 2 – Test A: Updated Scheme Alignment, OBC Model Version: this section details the approach and results of the Test A forecasts using the updated scheme alignment only.

³ Annual Average Weekday Traffic

⁴ Annual Average Daily Traffic

- Section 3 – Test B: Updated Scheme Alignment, Latest Model Version: this section details the approach and results of the Test B forecasts including both the updated scheme alignment and the latest version of the LLITM 2014 suite.

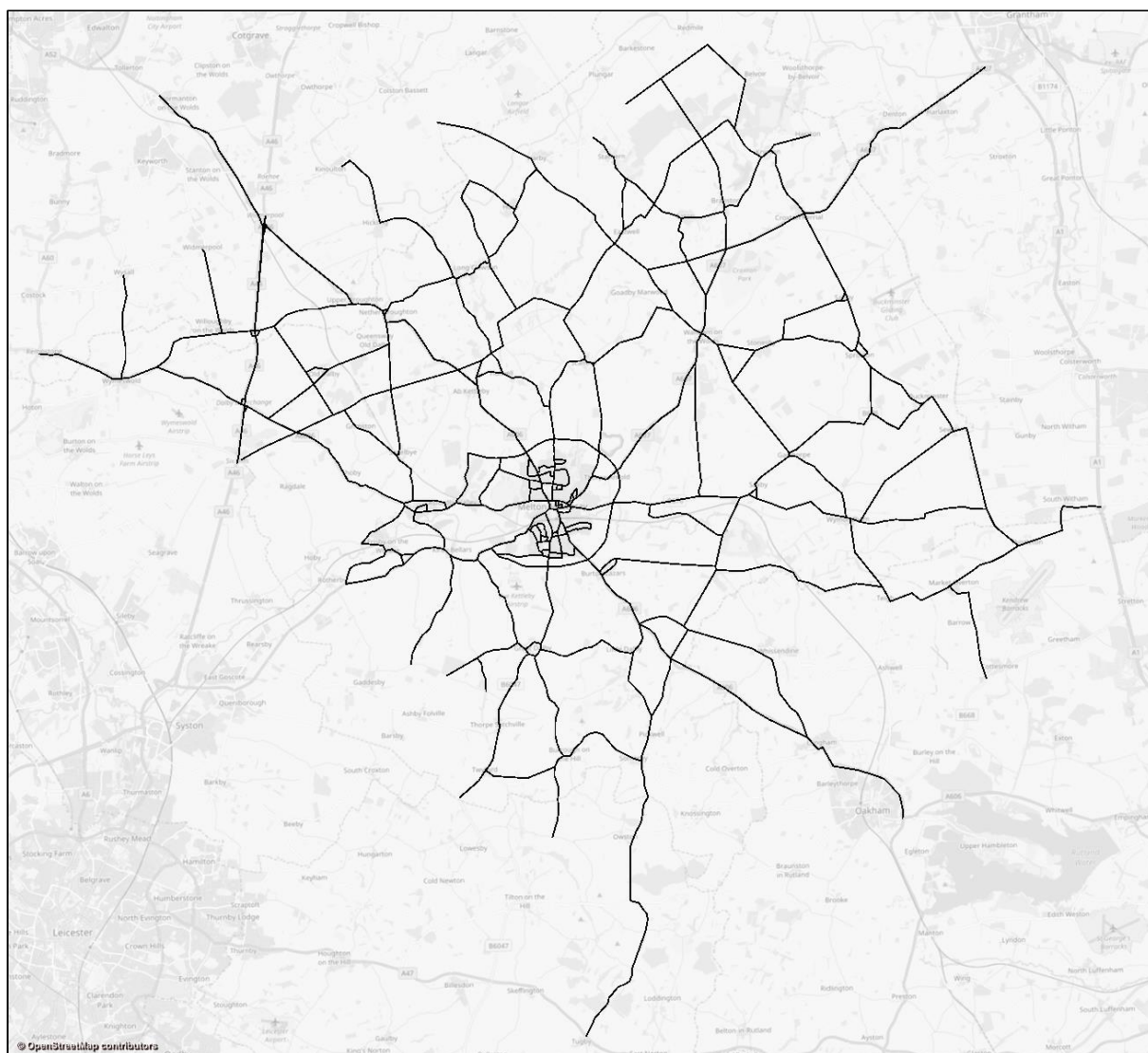
Section 2 – Test A: Updated Scheme Alignment, OBC Model Version

2.1 Introduction and Approach

- 2.1.1 The forecasts presented within this section use the version of the LLITM 2014 suite used as part of the development of the OBC for the proposed scheme, with updates to the highway network coding to reflect the latest assumptions regarding the proposed scheme alignment.
- 2.1.2 The modelling reflects the scheme alignment as of 3rd April 2018, and compared with the assumptions adopted for the modelling work undertaken for the OBC includes the following updates:
- an increase in distance between Scalford Road and Melton Spinney Road;
 - a reduction in distance between Melton Spinney Road and A607, Thorpe Road;
 - a reduction in distance between B676, Saxby Road and A606, Burton Road; and
 - a relocation of the proposed junction with the B676, Saxby Road to a revised location to the west of that modelled within the OBC.
- 2.1.3 As part of these forecasts, the land-use model forecasts produced as part of the OBC have not been updated using the latest highway network assumptions. Given the scale of the changes to the highway network assumptions included within the Core Scenario (i.e. only the distance change between Scalford Road and Melton Spinney Road), it is not thought that this would materially change the planning forecasts produced by the land-use model.
- 2.1.4 In addition to this, given that in the 2021 “without” scheme assumptions, none of the northern section of the proposed scheme (between Nottingham Road and Melton Spinney Road) is included in the modelling, there are no changes to the forecasting assumptions for this scenario, and therefore the forecast flows and speeds are unchanged from those provided from the OBC modelling.

2.2 Summary Flow and Speed Changes

- 2.2.1 For the 2021 “with” scheme and 2036 “without” and “with” scheme scenarios, there are changes to the assumed highway networks, and therefore changes in the outturn forecast flows and speeds. In order to assess the impact of these changes on the noise and air quality assessments of the proposed scheme, total vehicle flows, HDV (HGV and bus) vehicle flows and modelled speeds have been compared against the OBC forecasts for the seven time periods defined in Paragraph 1.1.3.
- 2.2.2 This comparison has focussed on the subset of the LLITM 2014 highway network used for the noise and air quality assessments. This network is shown in Figure 2.1 for the 2036 “with” scheme scenario, and contains around 1,350 modelled links.

Figure 2.1: Noise and Air Quality Assessment Network, 2036 “with” Scheme

Map contains Ordnance Survey data © Crown copyright and database right 2018

- 2.2.3 A summary of the changes in the model forecasts is given in Table 2.1, Table 2.2 and Table 2.3 for the 2036 “without” scheme, 2021 “with” scheme, and 2036 “with” scheme scenarios respectively. These tables show the percentage of links changing by given thresholds from the OBC forecasts to the Test A forecasts for the seven time periods.
- 2.2.4 Considering the 2036 “without” scheme forecasts, around 96% to 97% of links within the assessment area have forecast total vehicle flows which change by less than 5% with the changes to the proposed scheme alignment. In terms of absolute change, 96.7% or more of links have a forecast total vehicle flow which changes by less than 50 vehicles with the revised alignment.
- 2.2.5 The forecast changes in HDV flows and modelled speeds in the 2036 “without” scheme scenario with the revised scheme alignment are smaller in magnitude than for total vehicle flows. Around 98% or more of links have a forecast change in HDV flow of less than 5%, with 99.9% or more of links having a forecast change in modelled speed of less than 5%.
- 2.2.6 The scale of the change in forecast vehicle flows and speeds in the two “with” scheme scenarios is smaller than that forecast for the 2036 “without” scheme scenario. The percentage of links whose forecast total vehicle flows changes by less than 5% is around 98% or more depending on the forecast year and time period. As with the 2036 “without” scheme forecasts, with the revised scheme alignment there is not forecast to be a significant number of links with a 5% or greater change in HDV flow or modelled speed.
- 2.2.7 Considering the forecast changes in total vehicle flows in more detail, it is important to consider if those links with a higher percentage change in forecast flows also have a large absolute change in

forecast flows. To assess this, Figure 2.2 compares the percentage and absolute change in total vehicle flows for links within the assessment area for each of the three scenarios for the seven defined time periods.

- 2.2.8 These scatterplots show that, in general, where there are forecast to be larger percentage changes in total vehicle flows, the absolute change in vehicle flows is relatively small. Similarly, where the absolute change in vehicle flows is forecast to be larger, these links are forecast to experience a relatively small change in percentage terms.

Table 2.1: Forecast Change in 2036 “without” Scheme Metrics, Test A

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	96.5%	98.7%	99.9%	97.4%	99.0%	100.0%	96.6%	99.9%	99.9%	97.4%	99.0%	99.9%	96.3%	97.7%	99.9%	97.4%	99.0%	100.0%	96.7%	98.7%	99.9%
Change less than 10%	98.2%	99.0%	100.0%	97.9%	99.0%	100.0%	98.4%	99.9%	99.9%	97.9%	99.0%	99.9%	97.8%	99.3%	99.9%	97.9%	99.0%	100.0%	98.2%	99.0%	100.0%
Change less than 20%	98.4%	99.0%	100.0%	98.6%	99.0%	100.0%	99.4%	99.9%	100.0%	98.6%	99.0%	100.0%	98.7%	100.0%	100.0%	98.6%	99.0%	100.0%	98.4%	99.0%	100.0%
Change less than 50	96.7%	100.0%	-	100.0%	100.0%	-	99.7%	100.0%	-	97.2%	100.0%	-	99.9%	100.0%	-	100.0%	100.0%	-	96.7%	100.0%	-
Change less than 100	97.8%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	97.8%	100.0%	-
Change less than 200	99.7%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	99.7%	100.0%	-

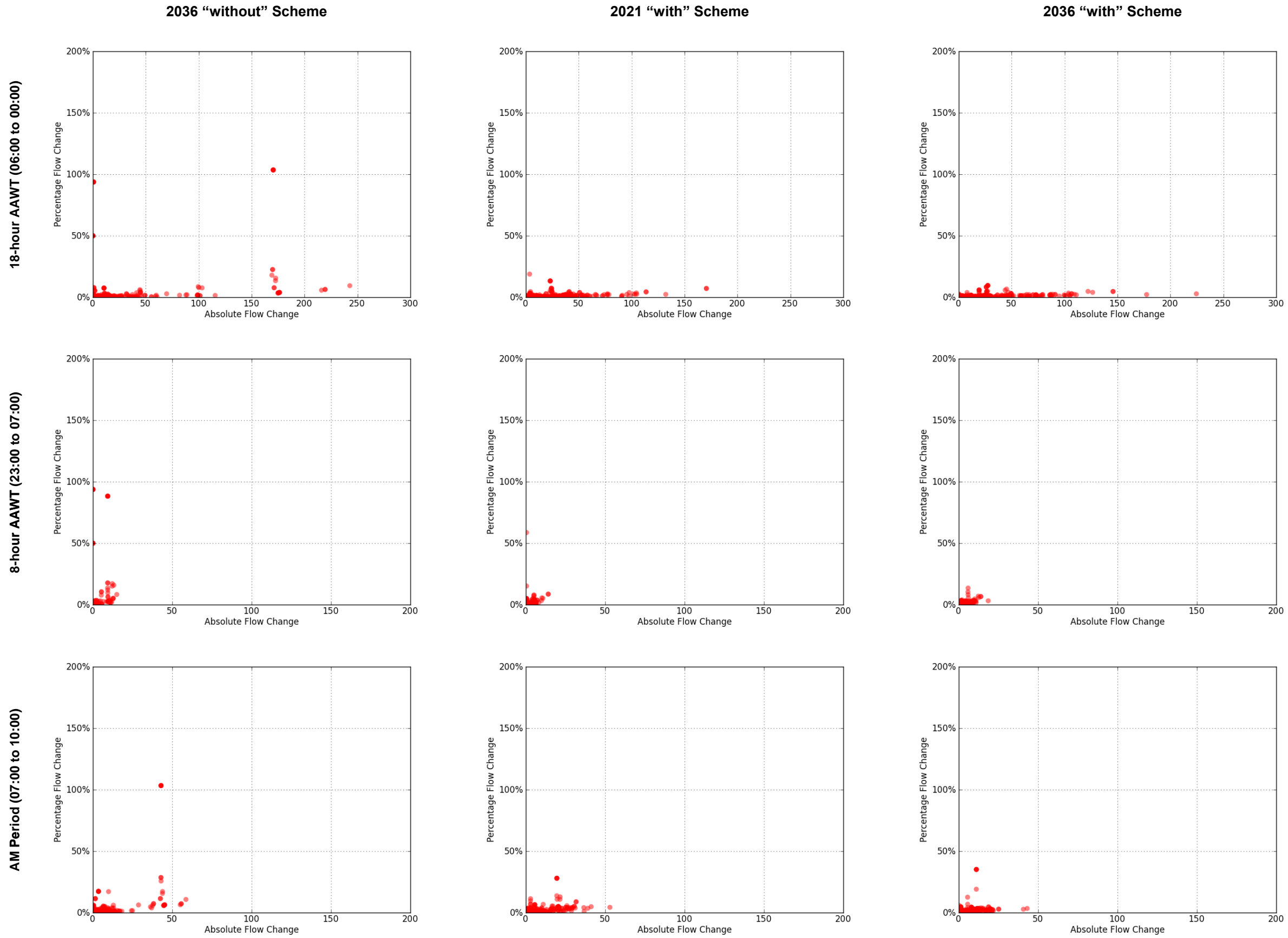
Table 2.2: Forecast Change in 2021 “with” Scheme Metrics, Test A

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	98.9%	98.9%	99.9%	99.3%	99.3%	100.0%	98.2%	99.0%	99.9%	99.3%	99.3%	100.0%	99.0%	99.5%	100.0%	99.3%	99.3%	100.0%	99.2%	98.8%	100.0%
Change less than 10%	99.6%	99.3%	100.0%	99.9%	99.6%	100.0%	99.3%	99.0%	99.9%	99.9%	99.6%	100.0%	99.5%	99.5%	100.0%	99.9%	99.6%	100.0%	99.6%	99.3%	100.0%
Change less than 20%	100.0%	99.8%	100.0%	99.9%	99.8%	100.0%	99.7%	99.3%	99.9%	99.9%	99.8%	100.0%	100.0%	99.5%	100.0%	99.9%	99.8%	100.0%	99.9%	99.8%	100.0%
Change less than 50	96.9%	100.0%	-	100.0%	100.0%	-	99.9%	100.0%	-	99.6%	100.0%	-	99.9%	100.0%	-	100.0%	100.0%	-	97.5%	100.0%	-
Change less than 100	99.3%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	99.6%	100.0%	-
Change less than 200	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-

Table 2.3: Forecast Change in 2036 “with” Scheme Metrics, Test A

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	99.0%	99.0%	100.0%	99.4%	99.3%	100.0%	99.4%	99.3%	100.0%	99.4%	99.3%	99.9%	97.6%	98.4%	99.9%	99.4%	99.3%	100.0%	99.0%	99.0%	100.0%
Change less than 10%	100.0%	99.5%	100.0%	99.9%	99.7%	100.0%	99.6%	99.6%	100.0%	99.9%	99.7%	100.0%	98.5%	99.5%	99.9%	99.9%	99.7%	100.0%	100.0%	99.4%	100.0%
Change less than 20%	100.0%	99.9%	100.0%	100.0%	99.7%	100.0%	99.7%	100.0%	100.0%	100.0%	99.7%	100.0%	99.1%	99.6%	100.0%	100.0%	99.7%	100.0%	100.0%	99.9%	100.0%
Change less than 50	95.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	98.9%	100.0%	-	99.6%	100.0%	-	100.0%	100.0%	-	95.1%	100.0%	-
Change less than 100	98.8%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	99.9%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	99.0%	100.0%	-
Change less than 200	99.9%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	100.0%	100.0%	-	99.9%	100.0%	-

Figure 2.2: Test A Changes in Forecast Total Vehicle Flows by Scenario and Time Period

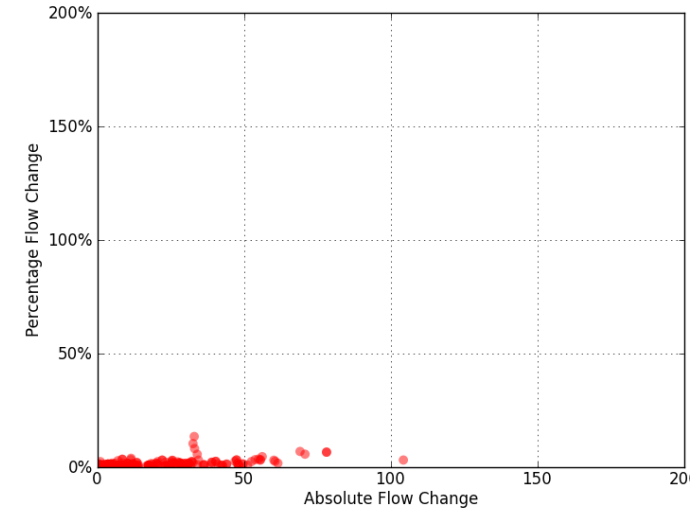
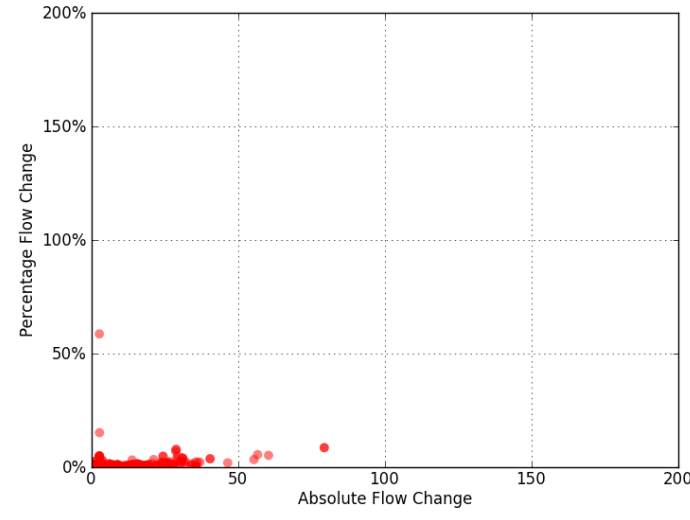
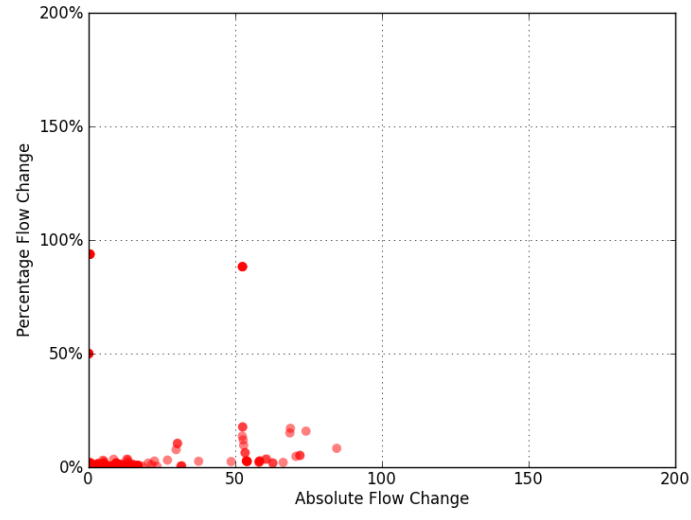


2036 "without" Scheme

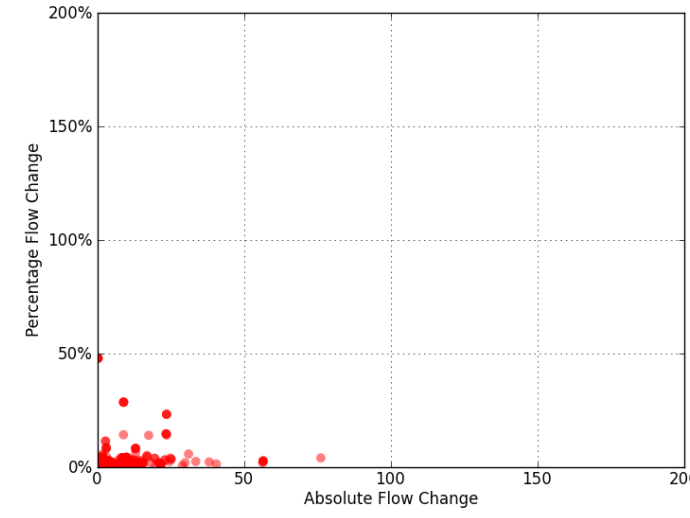
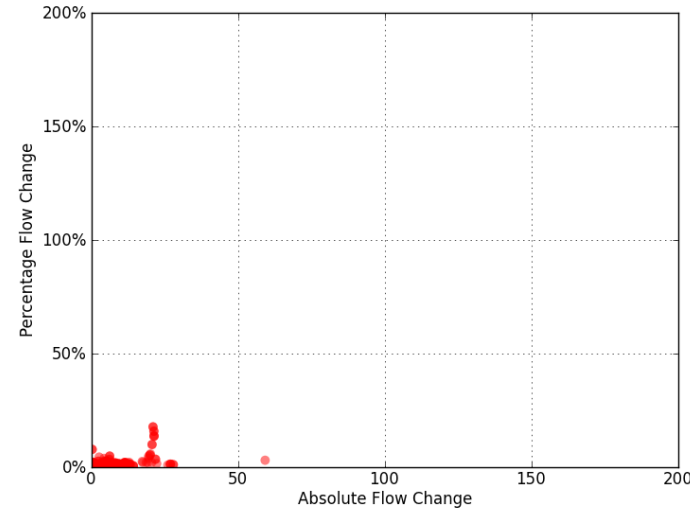
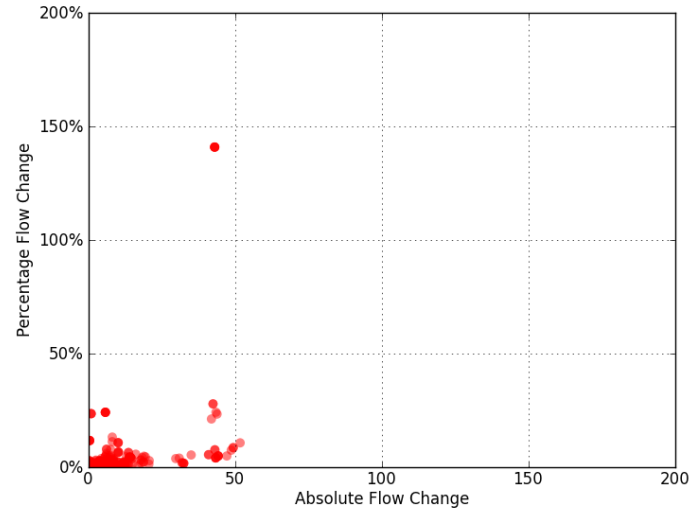
2021 "with" Scheme

2036 "with" Scheme

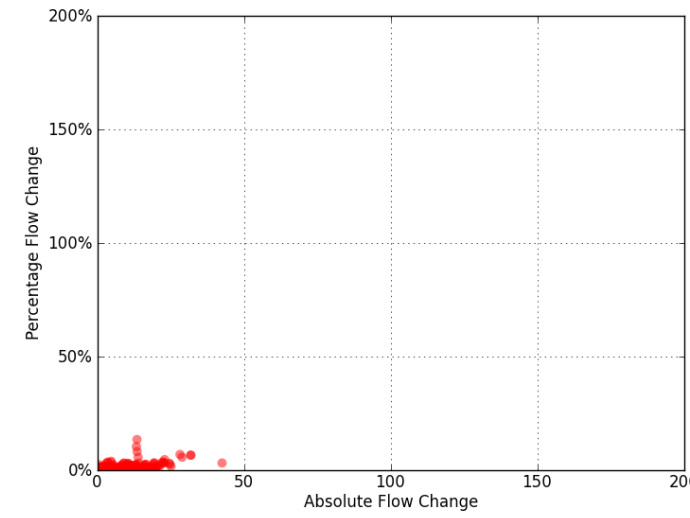
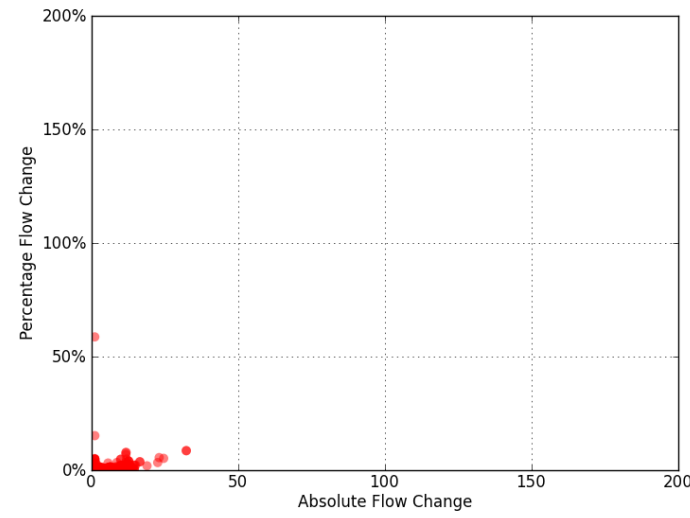
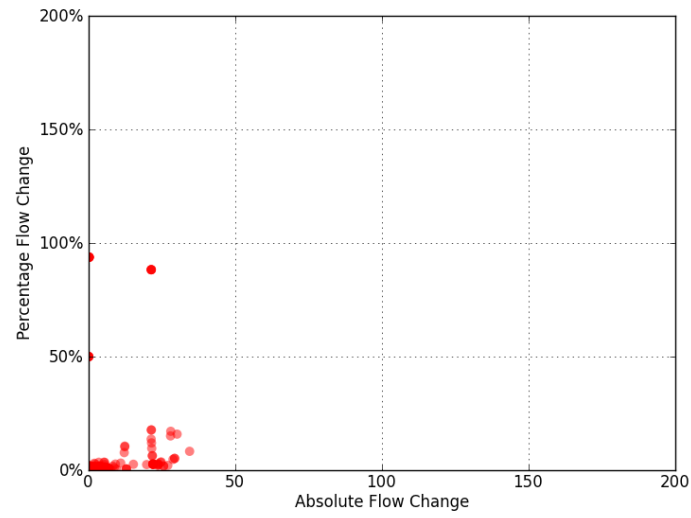
IP Period (10:00 to 16:00)

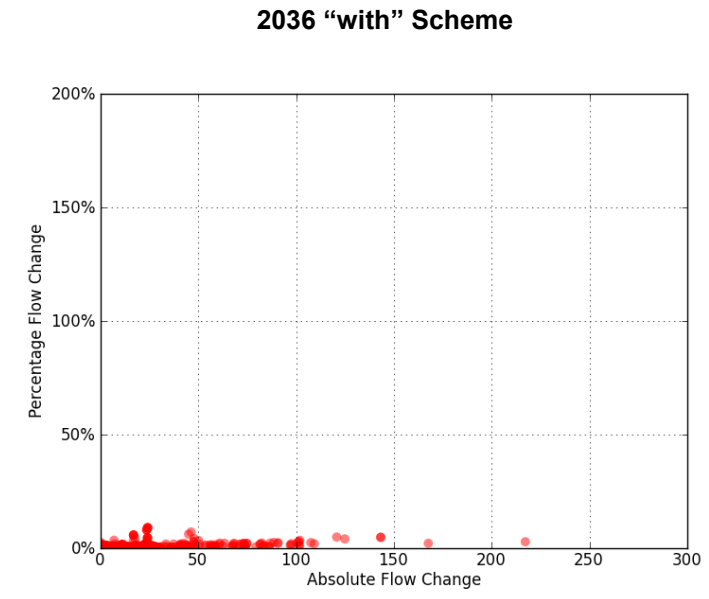
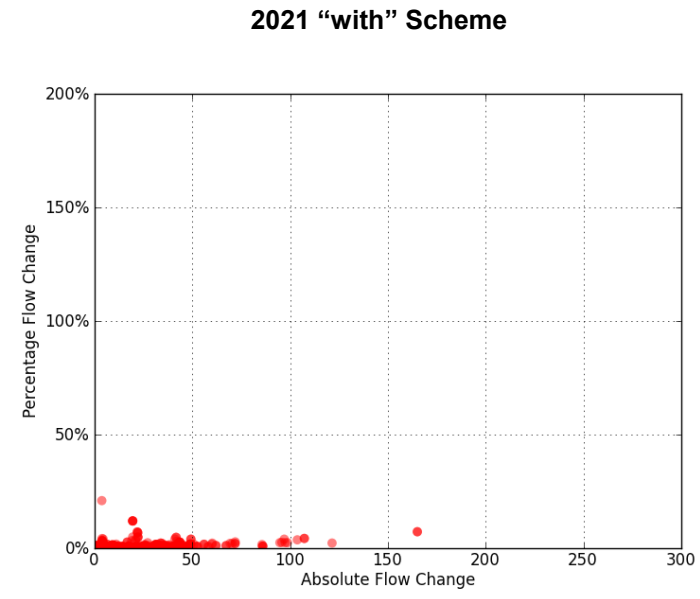
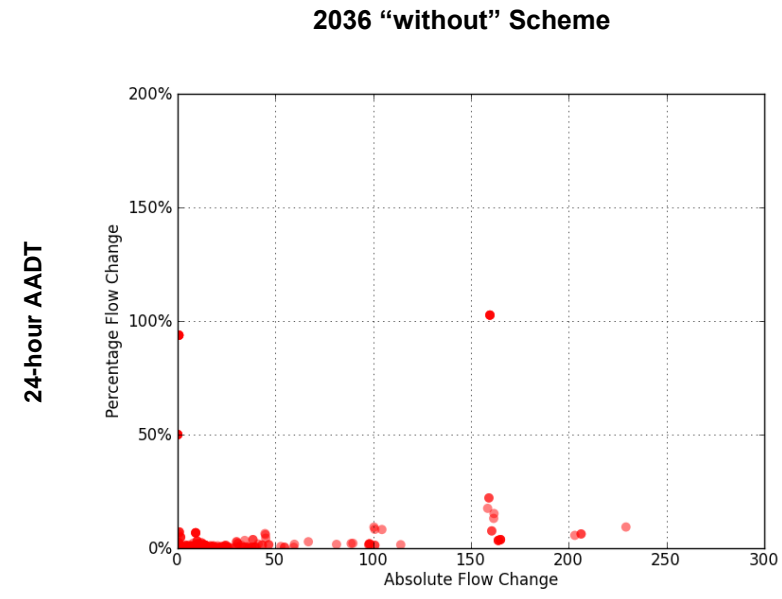


PM Period (16:00 to 19:00)



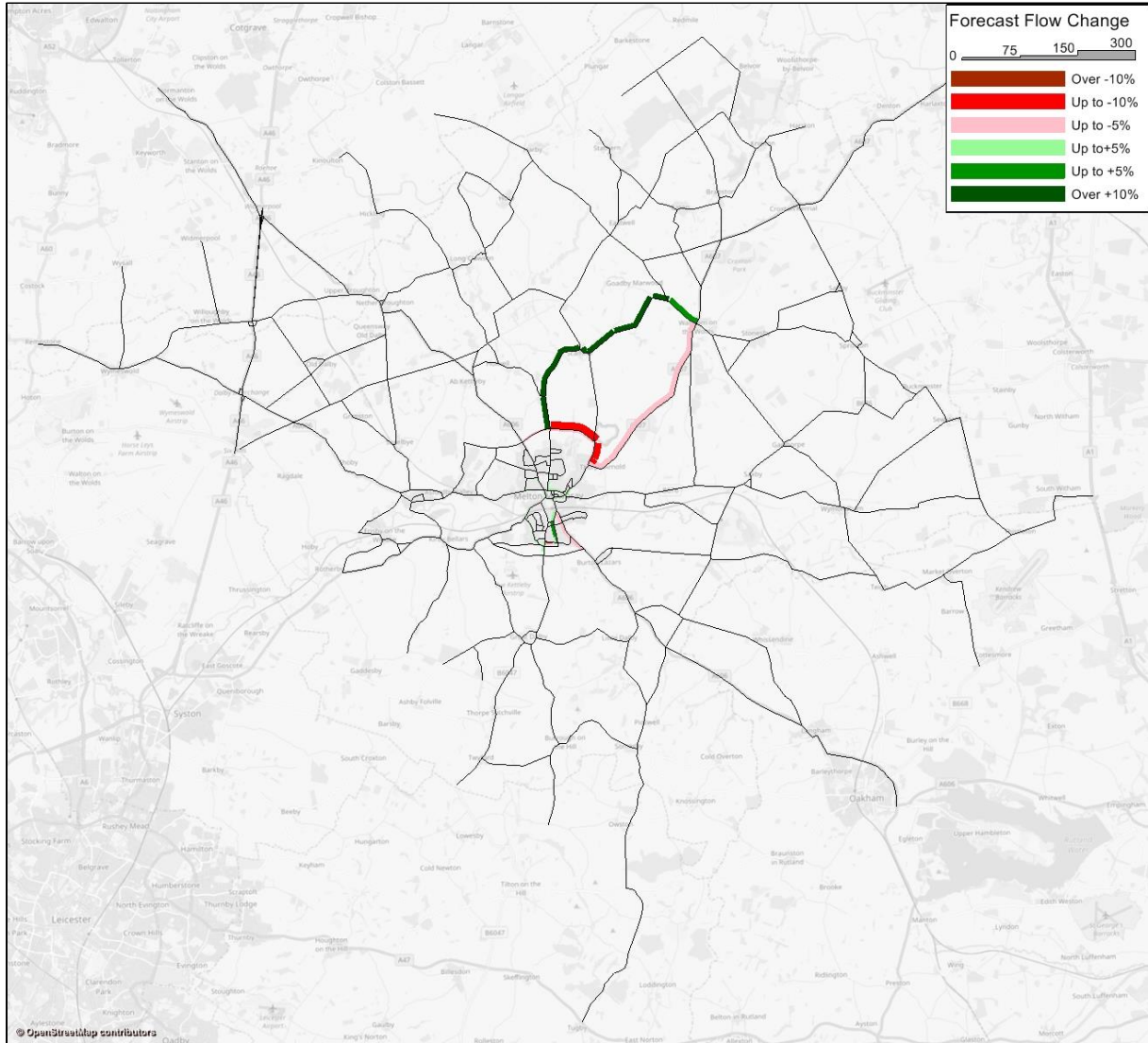
OP Period (19:00 to 07:00)





2.2.9 The scatterplots shown in Figure 2.2 show that there are a limited number of links which are forecast to see relatively large absolute and percentage changes in forecast total vehicle flows with the revised scheme alignment. Figure 2.3 shows the change in 24-hour AADT total vehicle flows between the OBC forecasts and the Test A forecasts for the 2036 “without” scheme scenario. This shows that the majority of forecast flow change is related to rerouting to the north-east of Melton Mowbray between Scaford Road and the proposed scheme / Thorpe Road.

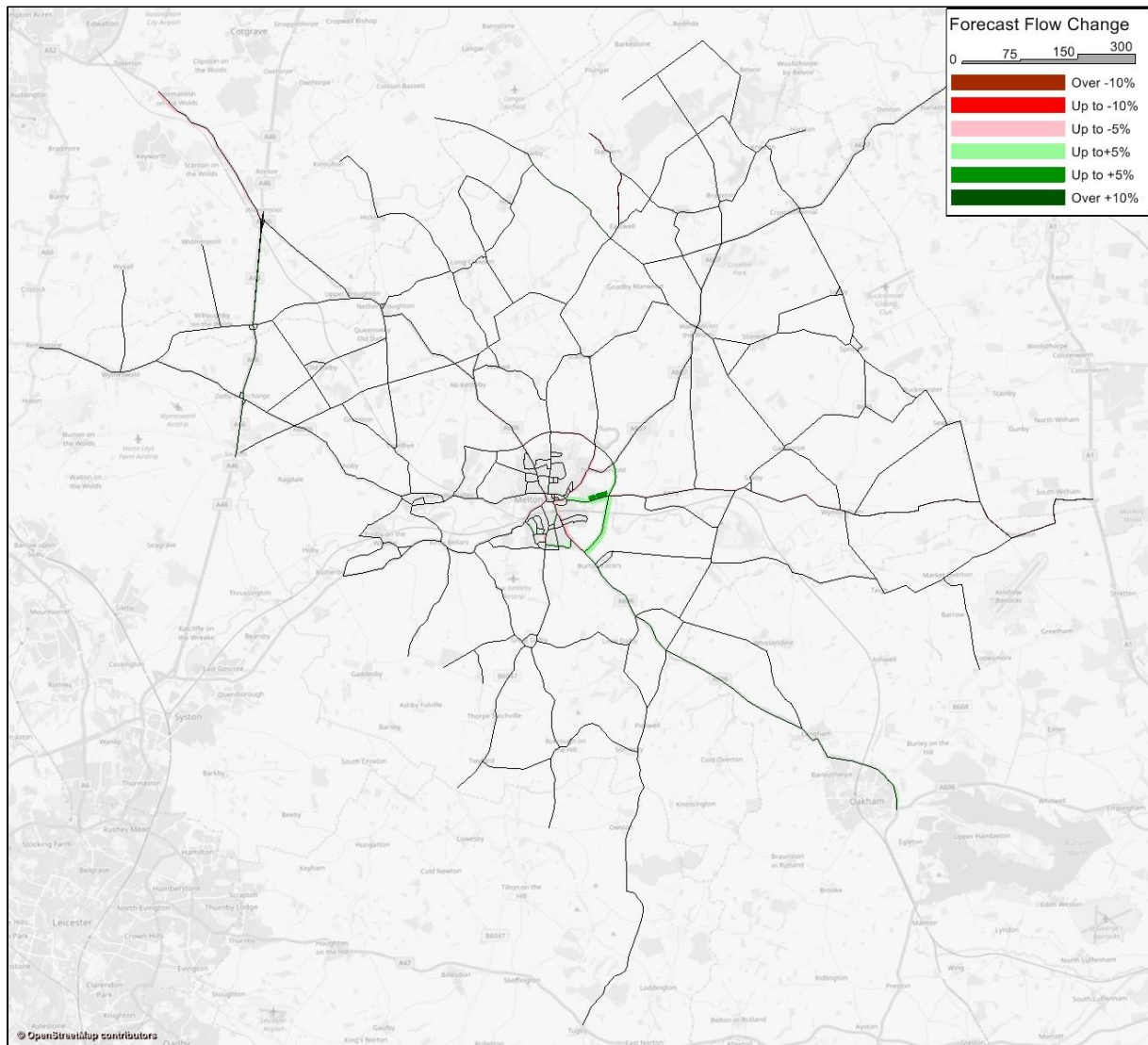
Figure 2.3: Test A Change in 24-hour AADT Forecast Total Vehicle Flow, 2036 “without” Scheme



Map contains Ordnance Survey data © Crown copyright and database right 2018

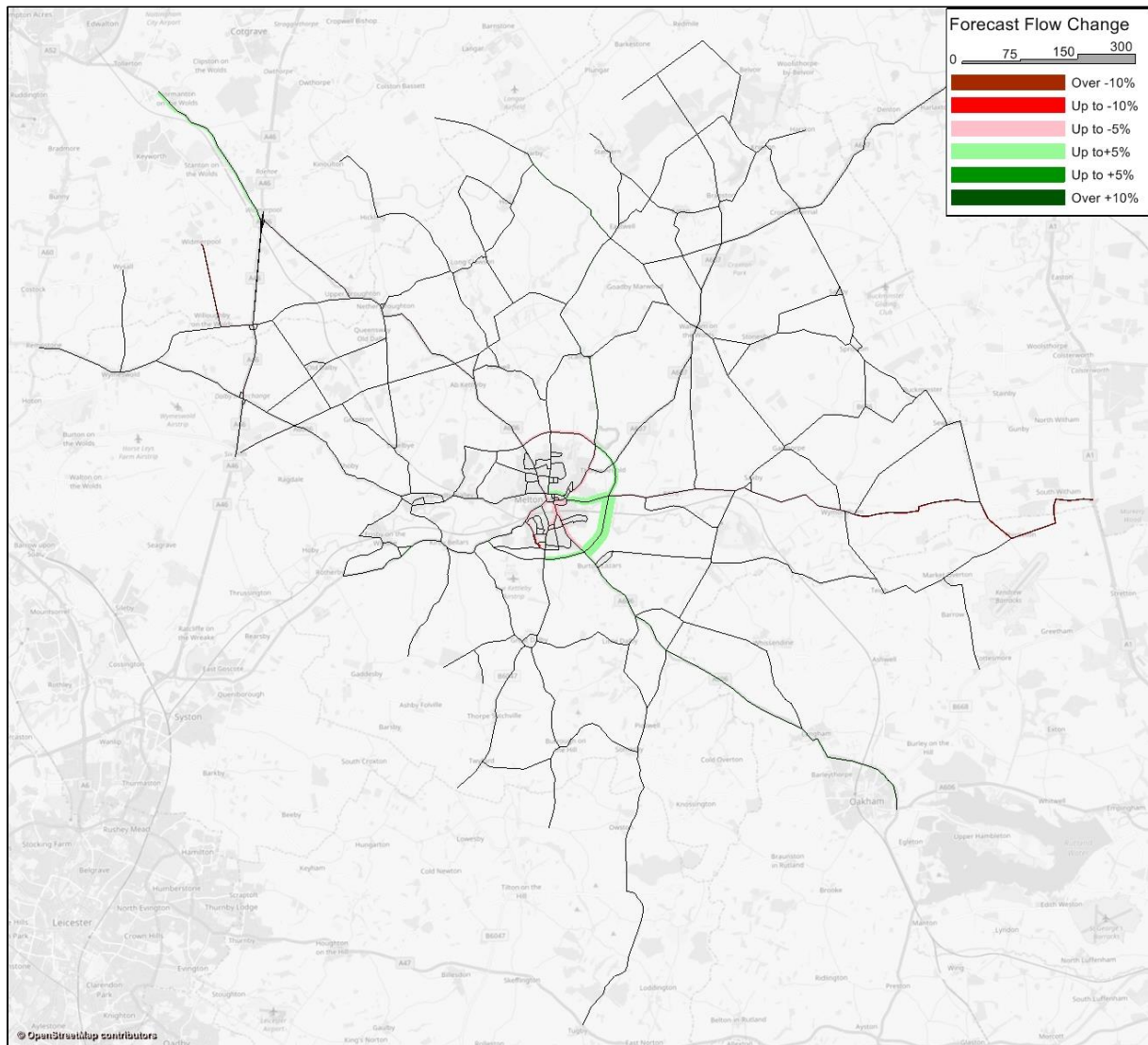
2.2.10 Figure 2.4 and Figure 2.5 show the change in 24-hour AADT forecast total vehicle flows including the proposed scheme for 2021 and 2036 respectively. Both show a similar pattern of forecast flow changes with the revised scheme alignment, with increases in forecast flows to the south-east of Melton Mowbray on Saxby Road and the proposed scheme between Saxby Road and Burton Road.

Figure 2.4: Test A Change in 24-hour AADT Forecast Total Vehicle Flow, 2021 “with” Scheme



Map contains Ordnance Survey data © Crown copyright and database right 2018

Figure 2.5: Test A Change in 24-hour AADT Forecast Total Vehicle Flow, 2036 “with” Scheme



Map contains Ordnance Survey data © Crown copyright and database right 2018

Section 3 – Test B: Updated Scheme Alignment, Latest Model Version

3.1 Introduction and Approach

- 3.1.1 In addition to the updated alignment of the proposed scheme, since the development of the forecasts for the OBC a number of updates have been applied to the LLITM 2014 suite. The most significant of these updates is the change in model parameters to reflect the December 2017 version of WebTAG. Incorporating the latest version of WebTAG results in changes to the assumed values of time (in both the base year and forecast year scenarios), and other modelling assumptions such as vehicle operating costs.
- 3.1.2 In parallel to this work to assess the proposed Melton Mowbray Distributor Road, the LLITM 2014 suite has been used for a number of other applications within the county. As part of these applications, refinements have been implemented to improve the model's performance and capability in assessing these applications.
- 3.1.3 The latest available version of the LLITM 2014 suite (referred to internally as version 1.3) includes both the updates to reflect latest DfT guidance and also the incremental refinements to the model through its use in other applications. Using the updated scheme alignment, 2021 and 2036 “without” and “with” scheme forecasts have been produced.
- 3.1.4 As with the assessment of Test A (detailed in Section 2), the Test B scenarios have used the planning forecasts produced by the land-use model as part of the OBC modelling. In order to produce updated land-use model forecasts using the latest version of the LLITM 2014 suite, a recalibration exercise for the land-use model would be required, and this is not possible within the timescales of this assessment.

3.2 Summary Flow and Speed Changes

- 3.2.1 As with the results of Test A, Table 3.1 to Table 3.4 provide a summary of the changes in forecast total vehicle flows, HDV vehicle flows and modelled speeds between the forecasts underpinning the OBC and those using the latest version of the LLITM 2014 suite for the links shown in Figure 2.1.
- 3.2.2 Considering each of the four forecast scenarios:
- *2021 “without” and “with” scheme: forecasts*
 - **Total vehicle flows:** between around 74% and 89% of links' forecast total vehicle flow change by less than 5%, with between around 91% and 97% changing by less than 10%
 - **HDV vehicle flows:** between around 66% and 84% of links are forecast to have HDV flows change by less than 5%, with 80% to 94% of links changing by less than 10%
 - *2036 “without” and “with” scheme: forecasts*
 - **Total vehicle flows:** between around 71% and 87% of links' forecast total vehicle flow change by less than 5%, with between around 89% and 95% changing by less than 10%
 - **HDV vehicle flows:** between around 66% and 84% of links are forecast to have HDV flows change by less than 5%, with 79% to 94% of links changing by less than 10%

For all four scenarios, modelled speeds are forecast to change by less than 5% on 99% or more of the selected links.

- 3.2.3 Compared with the forecast changes detailed for Test A, the scale of the forecast changes in modelled flows is larger when using the latest version of the LLITM 2014 suite. Given that Test A only includes minor changes to the proposed scheme alignment, and Test B includes a number of changes to key forecasting assumptions (through the updates to WebTAG), it is expected that Test B results in larger changes in forecast vehicle flows.

- 3.2.4 To further understand the scale of the changes to forecast vehicle flows, Figure 3.1 compares the absolute and percentage change in forecast total vehicle flows for the four scenarios and the seven defined time periods. These scatterplots show that the majority of links are located close to the axes, indicating that where the forecast change in vehicle flows is large in absolute terms, it is relatively small in percentage terms, and vice-versa.
- 3.2.5 Figure 3.2 provides the same analysis focusing on forecast HDV flows in the four scenarios and seven time periods. As with forecast total vehicle flows, the majority of links are located near the axes within the scatterplots, with the exception of the PM Peak Period. In this time period there are a larger number of links located away from the chart axes, although these are concentrated in the lower-left of the graph showing that the absolute change in forecast HDV flows is relatively small.
- 3.2.6 In order to understand the location of the forecast changes in 24-hour AADT vehicle flows within the assessment area, Figure 3.3 to Figure 3.6 show the change in forecast total vehicle and HGV vehicle flows from the OBC forecasts to those using the latest version of the LLITM 2014 suite for the four forecast scenarios.
- 3.2.7 Firstly, considering the forecast flow changes in the 2021 “without” scheme scenario shown in Figure 3.3, the majority of the forecast change in total vehicle flows is located to the west and north-west of Melton Mowbray on the A6006 Asfordby Road, the A606 Nottingham Road and the A46. In terms of the forecast changes in HDV flows, these are concentrated on the A6006 / A607 route through Melton Mowbray, and on the A46 to the north-west of the assessment area.
- 3.2.8 The location of forecast flow changes in the 2021 “with” scheme scenario (as shown in Figure 3.5) is similar to that shown for the corresponding “without” scheme scenario. In the 2021 “with” scheme scenario there are additional forecast flow changes along the proposed scheme, particularly on the northern section between Nottingham Road and Melton Spinney Road.
- 3.2.9 The forecast change in vehicle flows for the 2036 “without” scheme scenario, shown in Figure 3.4, also shows that there are forecast to be changes in total vehicle flows along the A6006, A607 and A46 to the west and north-west of Melton Mowbray. In addition to this, there are forecast to be flow changes on the northern section of the proposed scheme (included within the Core Scenario assumptions for 2036), with similar rerouteing to the north-east of Melton Mowbray as detailed for Test A.
- 3.2.10 As with the 2021 forecasts, the forecast flow changes in the 2036 “with” scheme scenario (shown in Figure 3.6) are similar to those forecast for the corresponding “without” scheme scenario. In addition to the forecast changes in vehicle flows discussed for the 2036 “without” scheme scenario, there are forecast to be flow changes on the B676 and A606 to the east and south-east of Melton Mowbray in this scenario.
- 3.2.11 In considering the scale of the change in forecast flows from the OBC forecasts to those produced with the latest version of the LLITM 2014 suite, it is important to not only consider the number of links with difference levels of forecast flow change, but the contribution of those links to the overall coded road network. This is due to link distances varying significantly within the noise and air quality assessment areas, with links in urban areas generally shorter in length than those in rural areas. Including link length within the analysis considers the contribution of each individual link to traffic levels within the assessment area.
- 3.2.12 Figure 3.7 and Figure 3.8 show the distribution of 24-hour AADT forecast vehicle flow changes as a proportion of total network distance for total vehicle flows and HDV vehicle flows respectively. Considering a threshold of forecast 24-hour AADT change of more than $\pm 10\%$ from the OBC forecasts:
- around 5% to 6% of network distance has a forecast total vehicle flow change of more than $\pm 10\%$ in the 2021 scenarios “without” and “with” the proposed scheme;
 - around 9% of network distance has a forecast total vehicle flow change of more than $\pm 10\%$ in the 2036 scenarios “without” and “with” the proposed scheme; and
 - in terms of forecast HDV flows, 5.3% to 5.9% of network distance sees HDV flows change by more than $\pm 10\%$ in the “without” scheme forecasts, with 9.3% to 9.9% of network distance changing by more than $\pm 10\%$ in the “with” scheme forecasts.

Table 3.1: Forecast Change in 2021 “without” Scheme Metrics, Test B

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	88.1%	81.3%	99.2%	87.2%	82.9%	99.3%	81.7%	76.3%	99.0%	87.2%	82.9%	99.2%	75.9%	71.2%	99.2%	87.2%	82.9%	99.3%	88.4%	81.4%	99.2%
Change less than 10%	95.3%	93.9%	99.5%	95.3%	94.4%	99.6%	94.9%	92.1%	99.3%	95.3%	94.4%	99.5%	91.8%	83.6%	99.3%	95.3%	94.4%	99.6%	95.3%	94.2%	99.5%
Change less than 20%	98.0%	97.4%	99.6%	98.3%	97.6%	99.8%	98.4%	96.4%	99.5%	98.3%	97.6%	99.7%	97.8%	91.2%	99.5%	98.3%	97.6%	99.8%	98.0%	97.5%	99.7%
Change less than 50	72.2%	98.6%	-	99.9%	100.0%	-	98.3%	99.9%	-	87.9%	99.2%	-	95.2%	100.0%	-	97.3%	100.0%	-	73.5%	98.6%	-
Change less than 100	87.2%	99.2%	-	100.0%	100.0%	-	99.8%	100.0%	-	95.7%	99.7%	-	99.2%	100.0%	-	99.8%	100.0%	-	88.0%	99.2%	-
Change less than 200	95.5%	99.3%	-	100.0%	100.0%	-	100.0%	100.0%	-	99.0%	100.0%	-	99.4%	100.0%	-	100.0%	100.0%	-	96.1%	99.4%	-

Table 3.2: Forecast Change in 2036 “without” Scheme Metrics, Test B

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	87.2%	83.7%	99.2%	83.4%	79.2%	99.3%	76.9%	78.1%	99.0%	83.4%	79.2%	99.1%	75.0%	68.5%	99.2%	83.4%	79.2%	99.3%	87.1%	83.7%	99.1%
Change less than 10%	93.4%	93.2%	99.3%	94.1%	91.6%	99.6%	91.9%	91.1%	99.3%	94.1%	91.6%	99.4%	90.4%	83.9%	99.3%	94.1%	91.6%	99.6%	93.3%	93.6%	99.5%
Change less than 20%	96.8%	96.8%	99.6%	97.6%	96.8%	99.8%	97.2%	96.9%	99.5%	97.6%	96.8%	99.6%	95.2%	92.1%	99.5%	97.6%	96.8%	99.8%	96.8%	96.7%	99.6%
Change less than 50	69.5%	99.2%	-	99.9%	100.0%	-	94.8%	100.0%	-	80.9%	99.2%	-	95.1%	99.9%	-	96.2%	99.9%	-	70.6%	99.2%	-
Change less than 100	81.3%	99.2%	-	100.0%	100.0%	-	99.0%	100.0%	-	94.1%	99.3%	-	99.0%	100.0%	-	99.9%	99.9%	-	81.2%	99.2%	-
Change less than 200	93.7%	99.9%	-	100.0%	100.0%	-	99.9%	100.0%	-	99.7%	99.9%	-	99.4%	100.0%	-	100.0%	100.0%	-	94.3%	99.9%	-

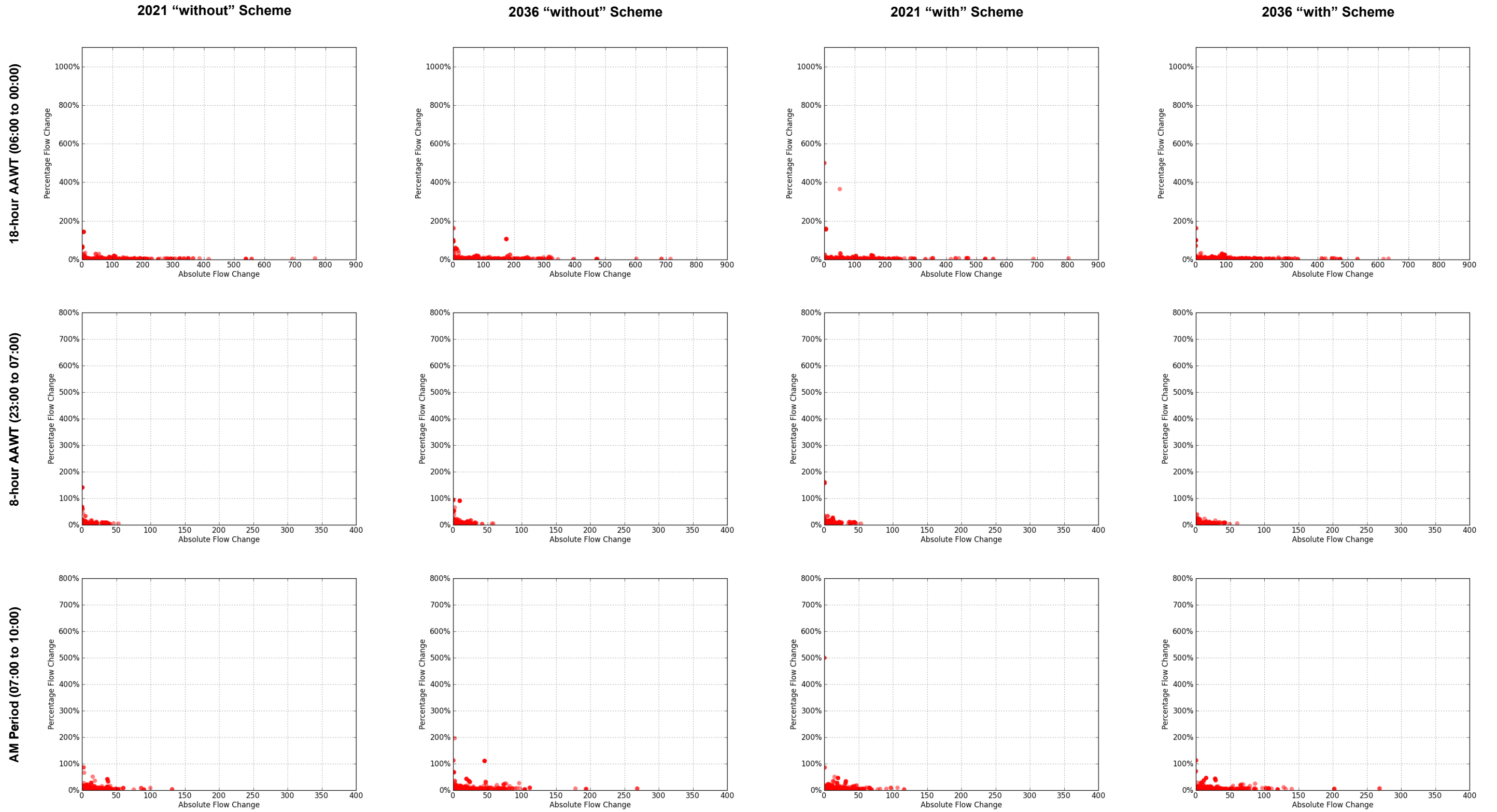
Table 3.3: Forecast Change in 2021 “with” Scheme Metrics, Test B

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	89.4%	81.6%	99.3%	87.8%	83.9%	99.3%	81.0%	78.2%	99.0%	87.8%	83.9%	99.2%	73.6%	66.0%	99.3%	87.8%	83.9%	99.3%	89.2%	81.2%	99.3%
Change less than 10%	96.6%	91.9%	99.5%	95.8%	91.7%	99.6%	92.8%	92.6%	99.3%	95.8%	91.7%	99.5%	91.0%	80.4%	99.3%	95.8%	91.7%	99.6%	96.3%	92.2%	99.5%
Change less than 20%	98.7%	98.3%	99.6%	98.4%	98.1%	99.8%	97.8%	97.9%	99.4%	98.4%	98.1%	99.7%	98.4%	88.6%	99.5%	98.4%	98.1%	99.8%	98.7%	98.3%	99.7%
Change less than 50	68.7%	98.1%	-	99.9%	100.0%	-	97.8%	100.0%	-	84.8%	99.2%	-	94.3%	100.0%	-	96.6%	100.0%	-	71.2%	98.1%	-
Change less than 100	83.7%	99.2%	-	100.0%	100.0%	-	99.8%	100.0%	-	94.8%	99.7%	-	98.9%	100.0%	-	99.4%	100.0%	-	85.4%	99.2%	-
Change less than 200	95.6%	99.3%	-	100.0%	100.0%	-	100.0%	100.0%	-	98.5%	100.0%	-	99.7%	100.0%	-	100.0%	100.0%	-	95.7%	99.7%	-

Table 3.4: Forecast Change in 2036 “with” Scheme Metrics, Test B

	18-hour AAWT (06:00 to 00:00)			8-hour AAWT (23:00 to 07:00)			AM Period (07:00 to 10:00)			IP Period (10:00 to 16:00)			PM Period (16:00 to 19:00)			OP Period (19:00 to 07:00)			24-hour AADT		
	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed	Flow	HDVs	Speed
Change less than 5%	85.4%	82.2%	99.3%	86.5%	78.4%	99.2%	80.1%	78.8%	99.2%	86.5%	78.4%	99.2%	70.6%	65.9%	99.1%	86.5%	78.4%	99.2%	85.7%	81.8%	99.2%
Change less than 10%	95.1%	91.7%	99.4%	94.6%	89.2%	99.6%	93.1%	92.0%	99.3%	94.6%	89.2%	99.5%	88.7%	78.8%	99.3%	94.6%	89.2%	99.6%	94.6%	91.7%	99.5%
Change less than 20%	98.1%	96.7%	99.6%	98.6%	96.8%	99.7%	97.7%	97.7%	99.5%	98.6%	96.8%	99.6%	94.1%	90.3%	99.5%	98.6%	96.8%	99.7%	98.1%	96.7%	99.6%
Change less than 50	67.0%	99.1%	-	99.9%	100.0%	-	94.6%	100.0%	-	79.6%	99.2%	-	93.2%	99.9%	-	95.5%	99.9%	-	68.6%	99.2%	-
Change less than 100	81.0%	99.2%	-	100.0%	100.0%	-	98.5%	100.0%	-	93.3%	99.9%	-	98.7%	100.0%	-	99.9%	99.9%	-	81.9%	99.2%	-
Change less than 200	94.2%	99.9%	-	100.0%	100.0%	-	99.6%	100.0%	-	99.3%	99.9%	-	99.4%	100.0%	-	100.0%	100.0%	-	94.7%	99.9%	-

Figure 3.1: Test B Changes in Forecast Total Vehicle Flows by Scenario and Time Period



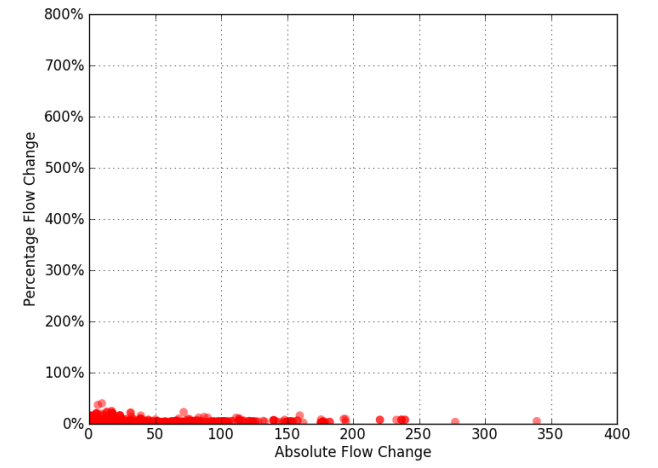
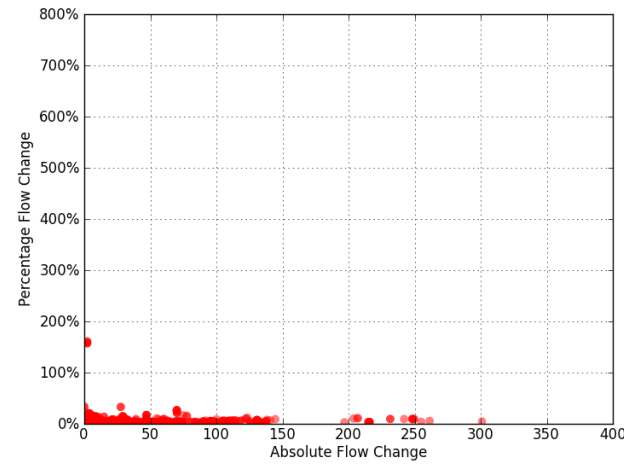
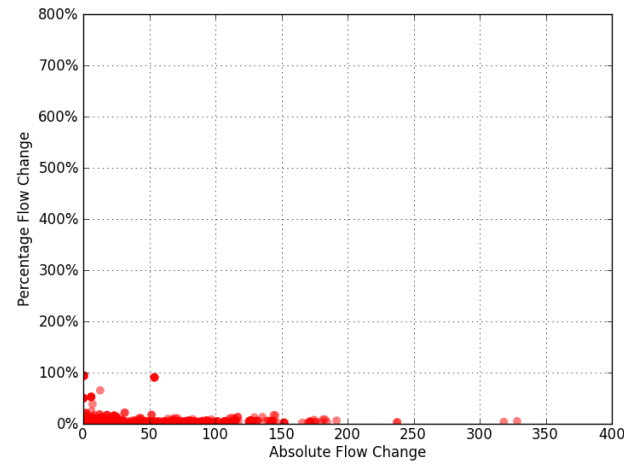
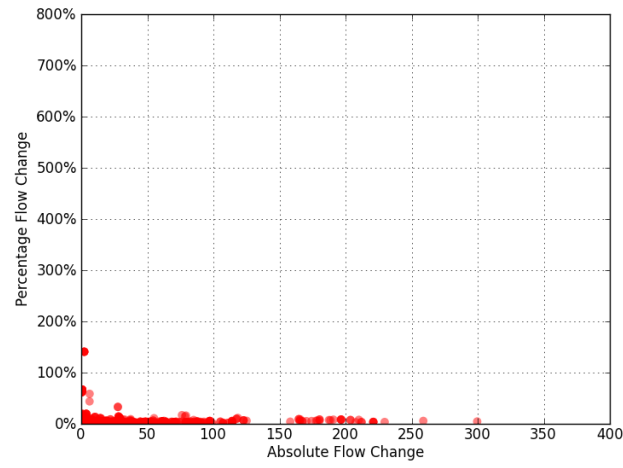
2021 "without" Scheme

2036 "without" Scheme

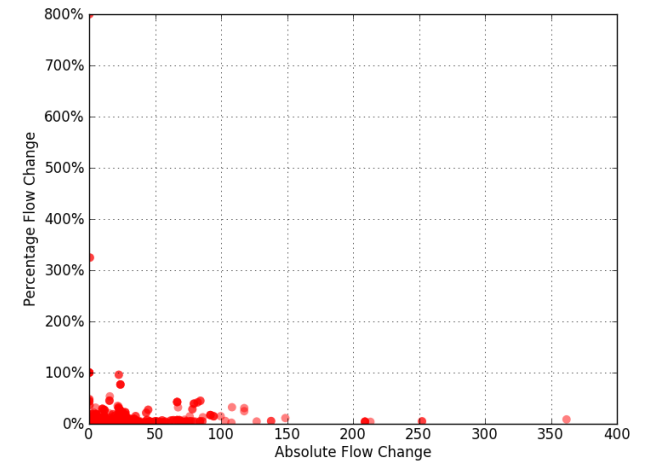
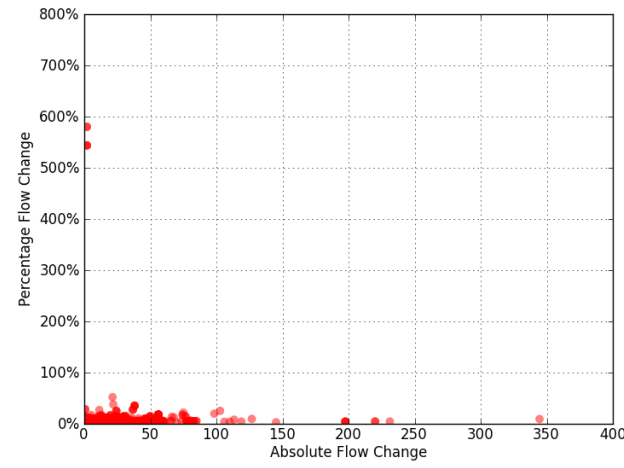
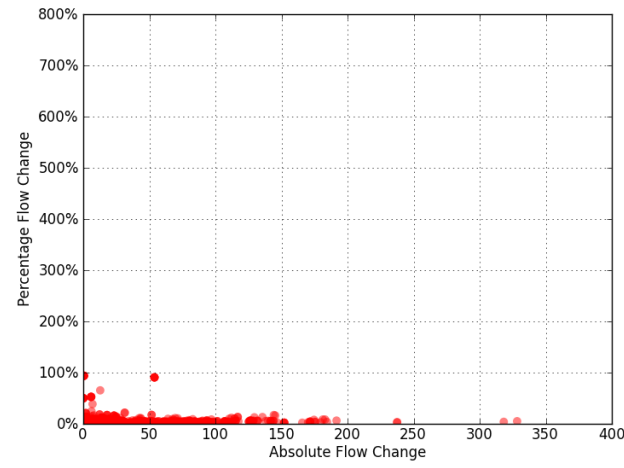
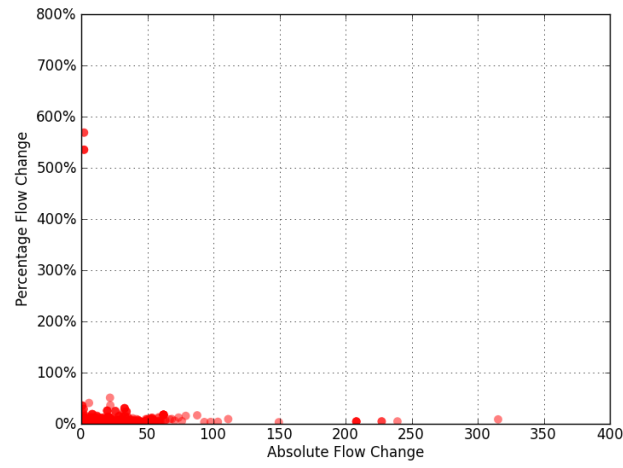
2021 "with" Scheme

2026 "with" Scheme

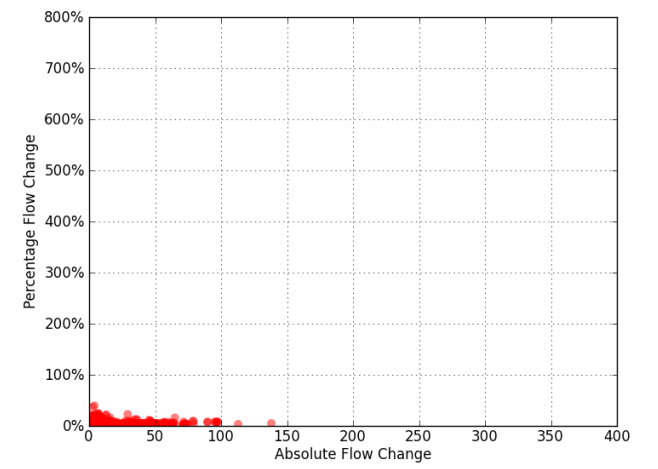
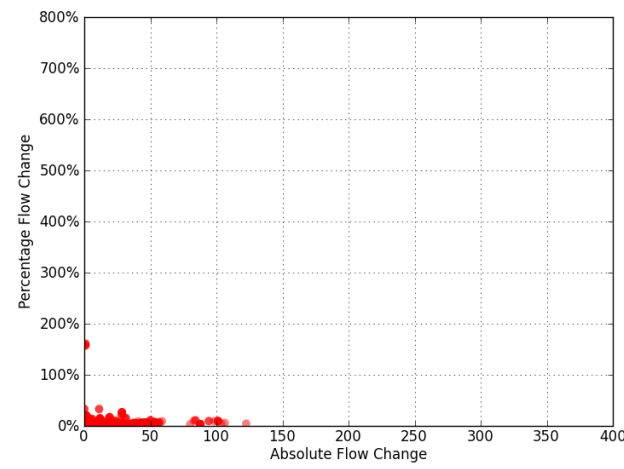
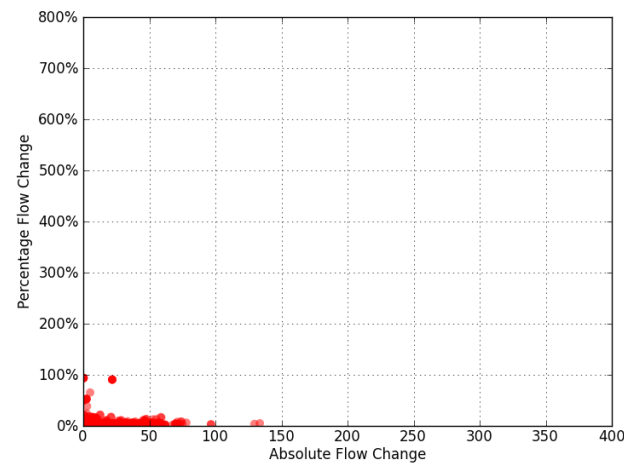
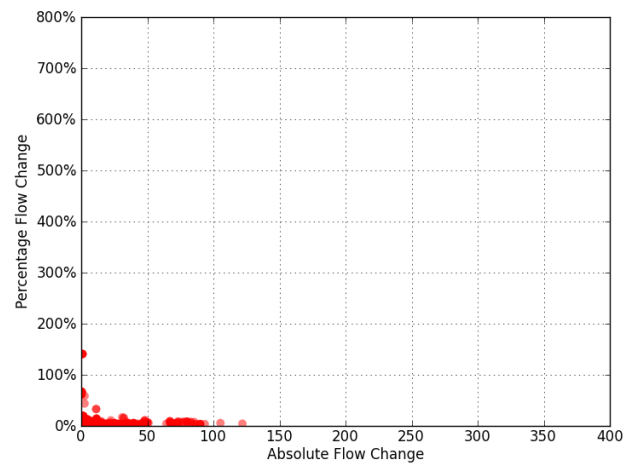
IP Period (10:00 to 16:00)



PM Period (16:00 to 19:00)



OP Period (19:00 to 07:00)



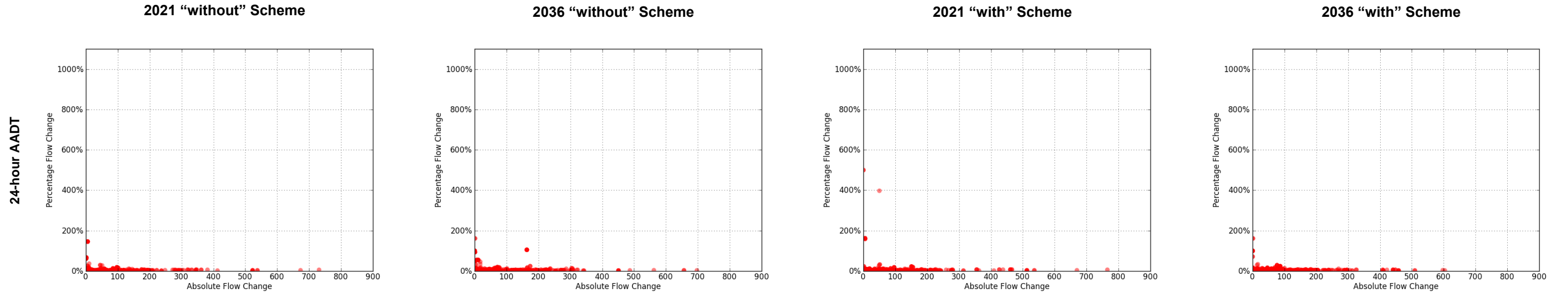
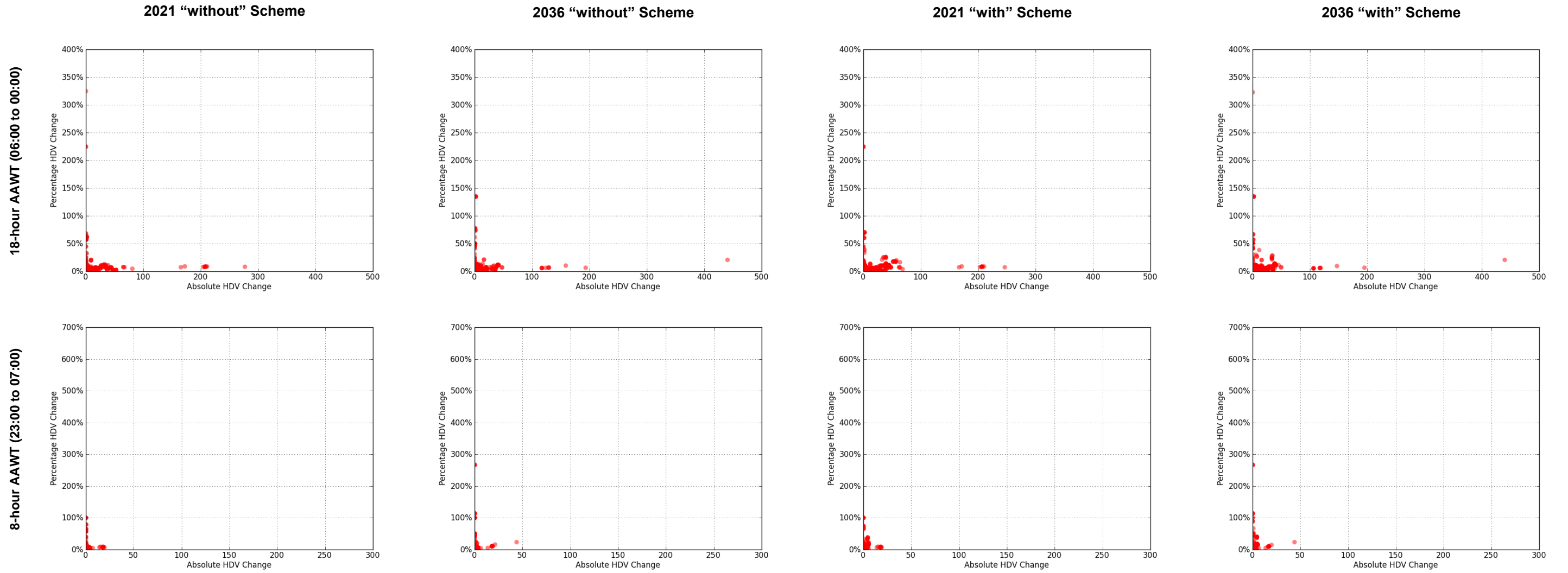


Figure 3.2: Test B Changes in Forecast HDV Vehicle Flows by Scenario and Time Period



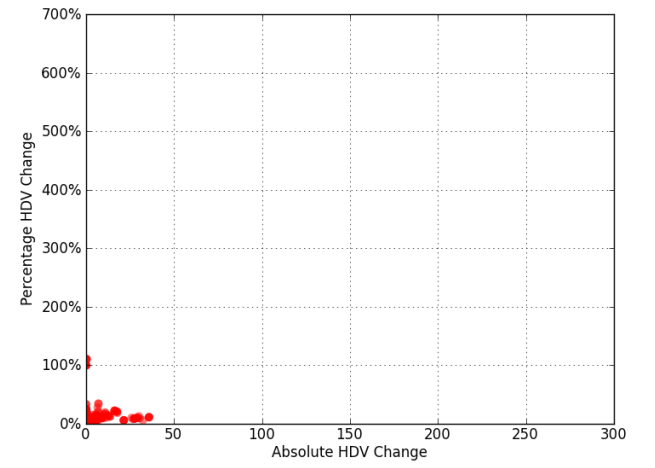
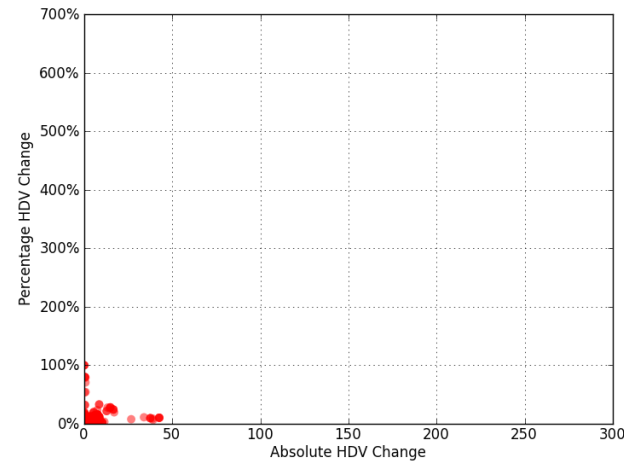
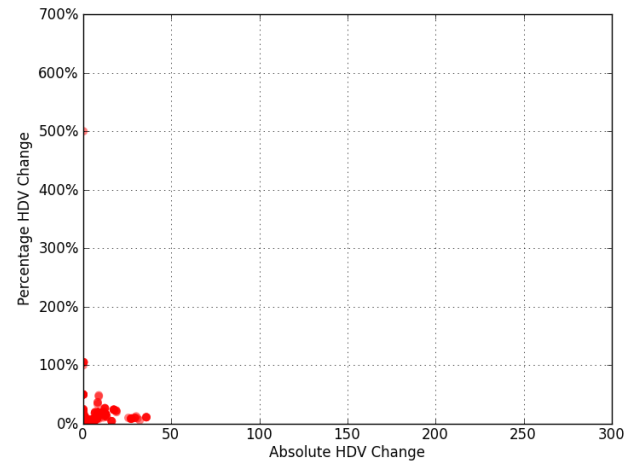
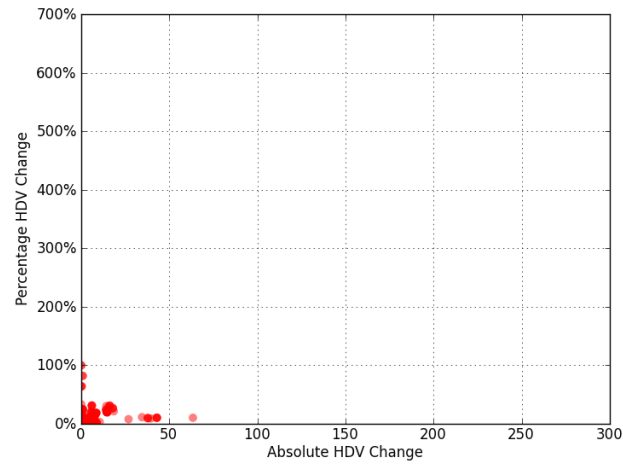
2021 "without" Scheme

2036 "without" Scheme

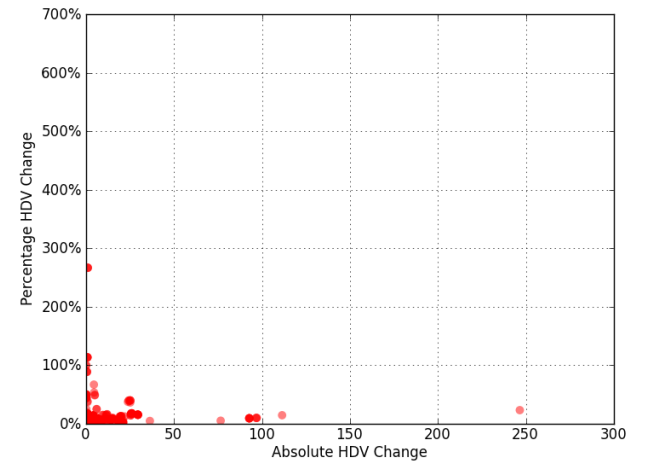
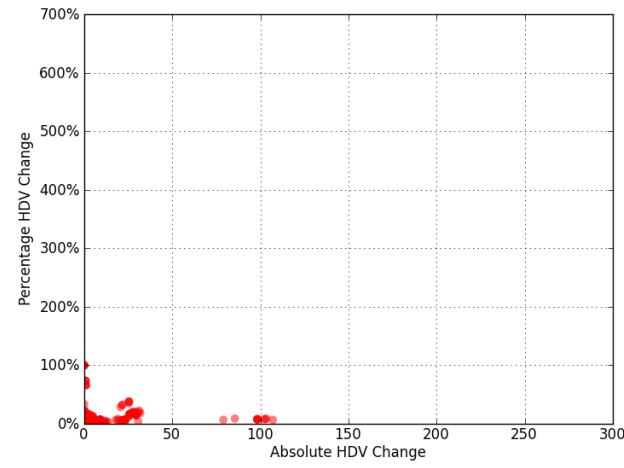
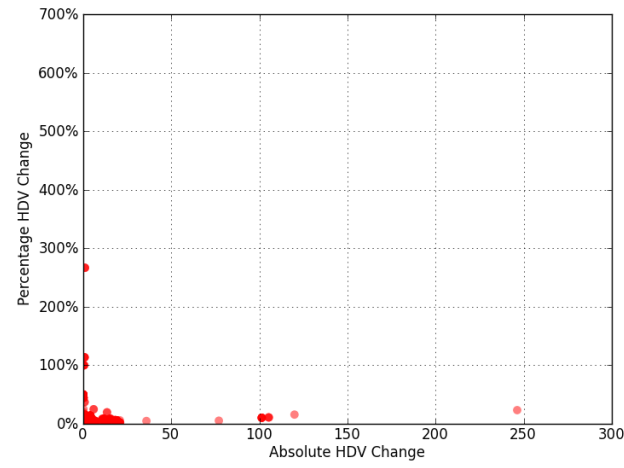
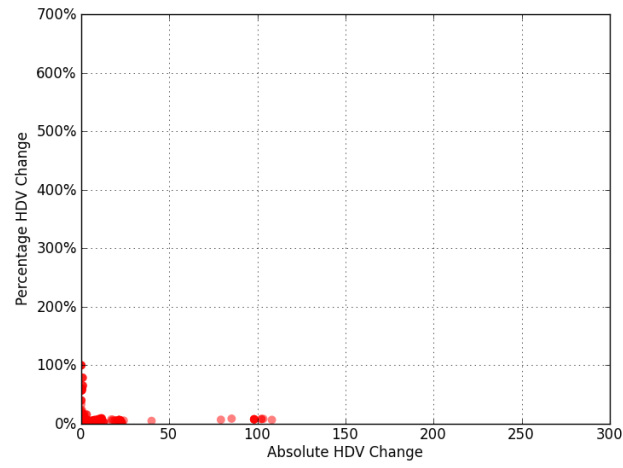
2021 "with" Scheme

2036 "with" Scheme

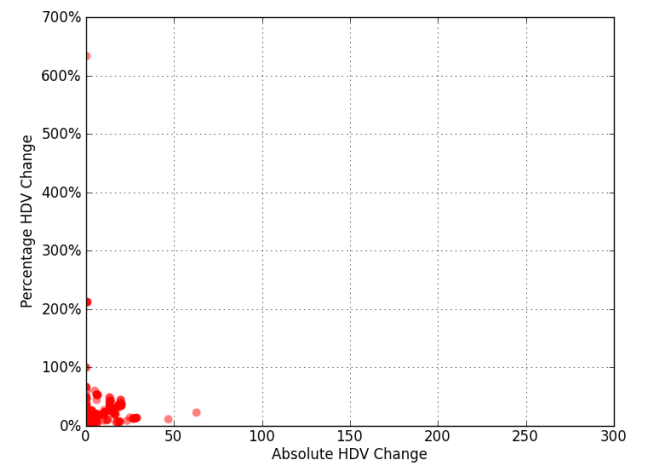
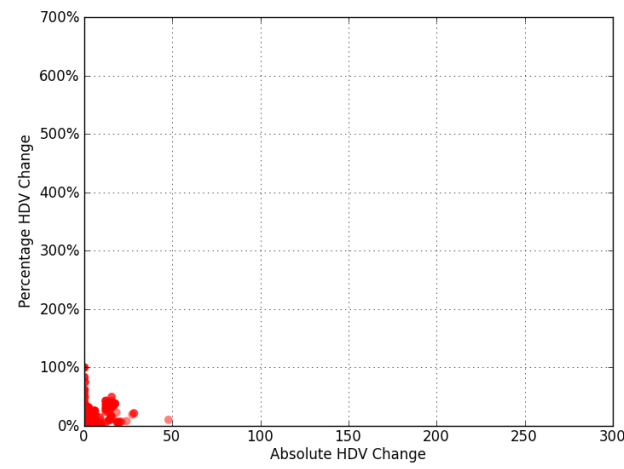
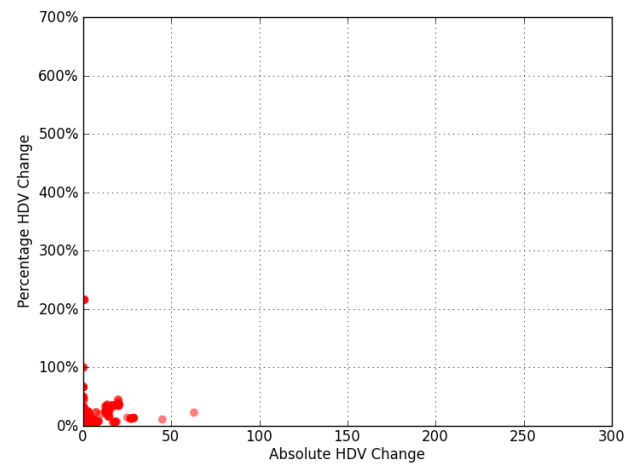
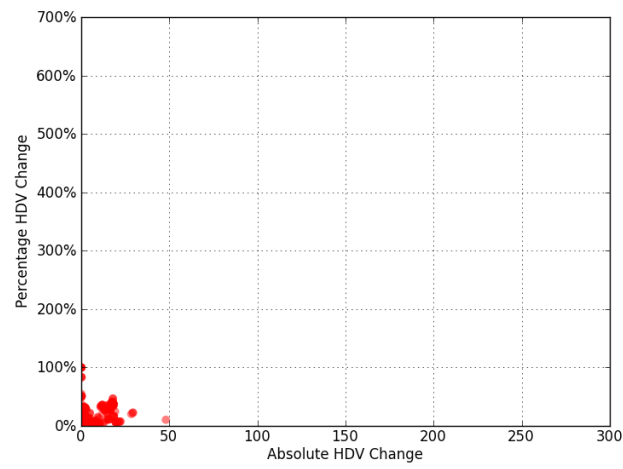
AM Period (07:00 to 10:00)



IP Period (10:00 to 16:00)



PM Period (16:00 to 19:00)



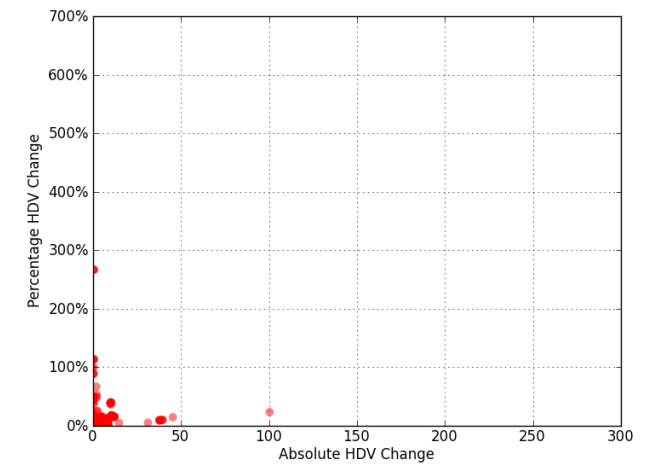
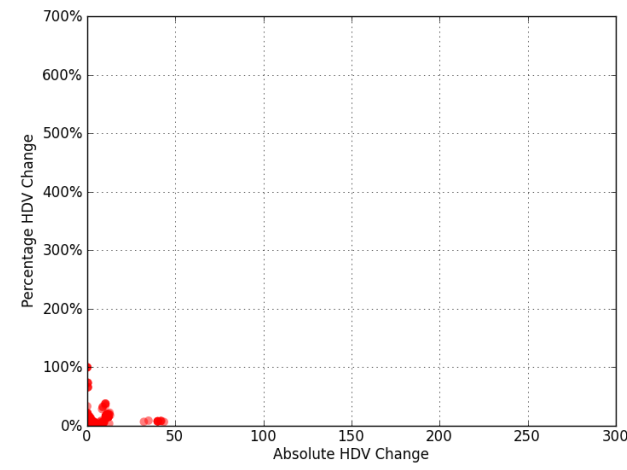
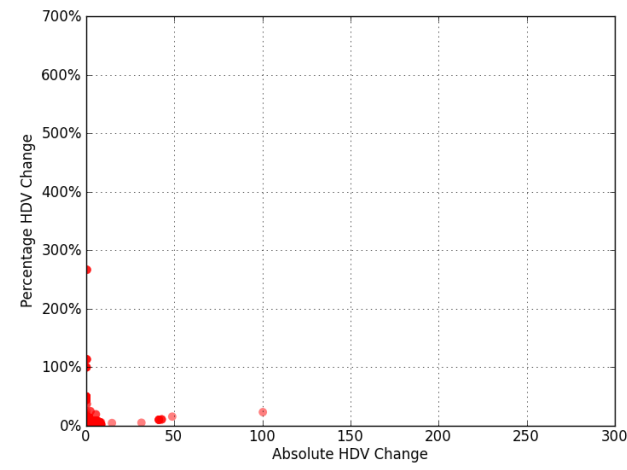
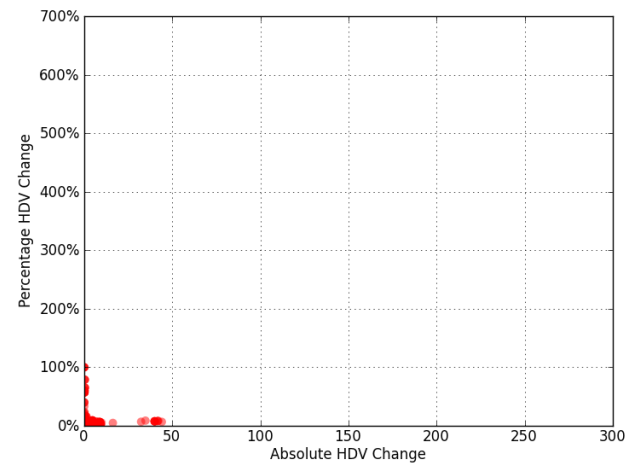
2021 "without" Scheme

2036 "without" Scheme

2021 "with" Scheme

2036 "with" Scheme

OP Period (19:00 to 07:00)



24-hour AADT

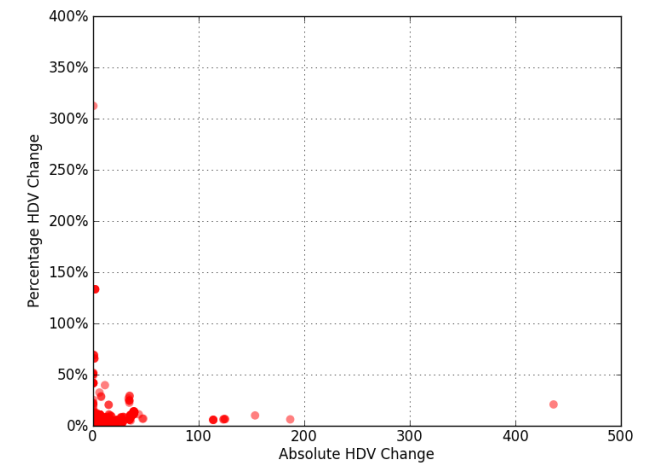
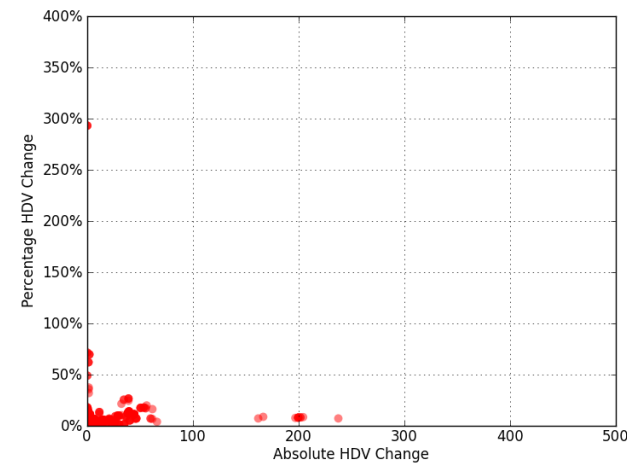
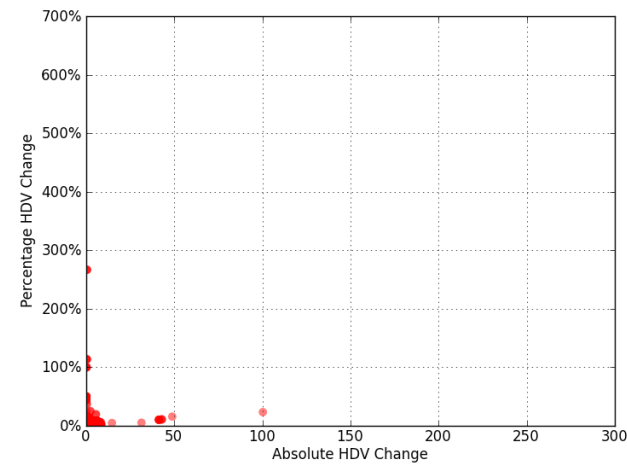
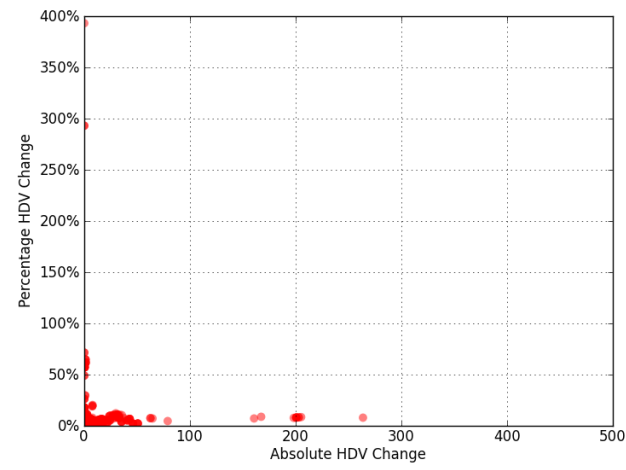
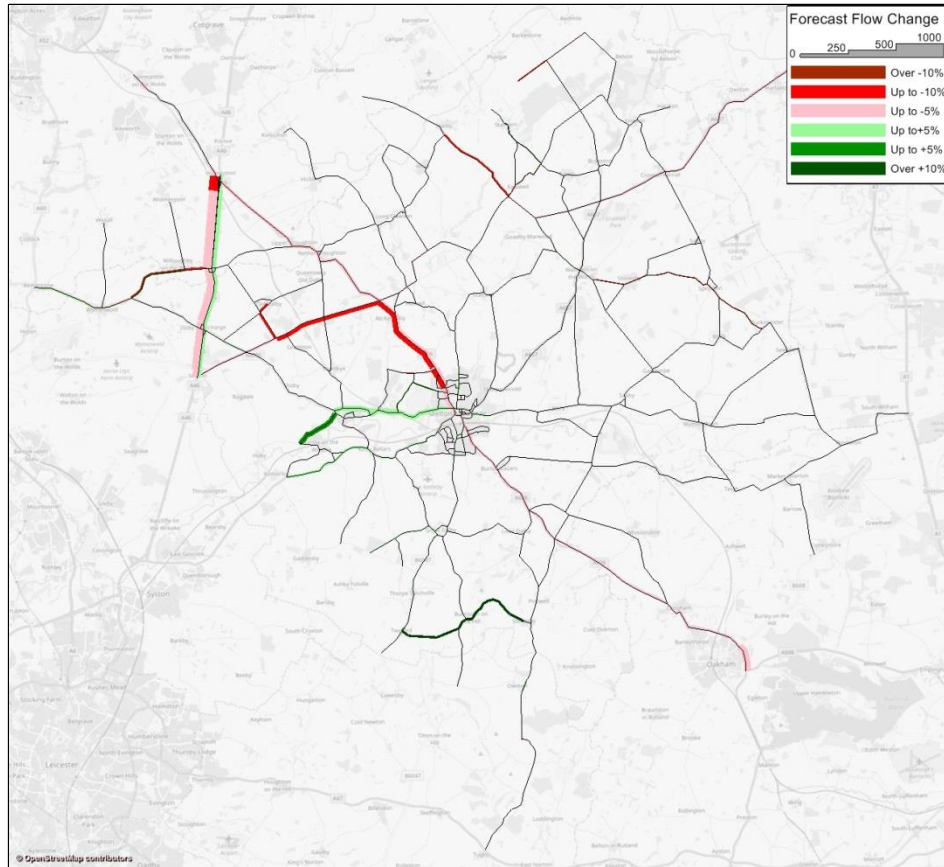
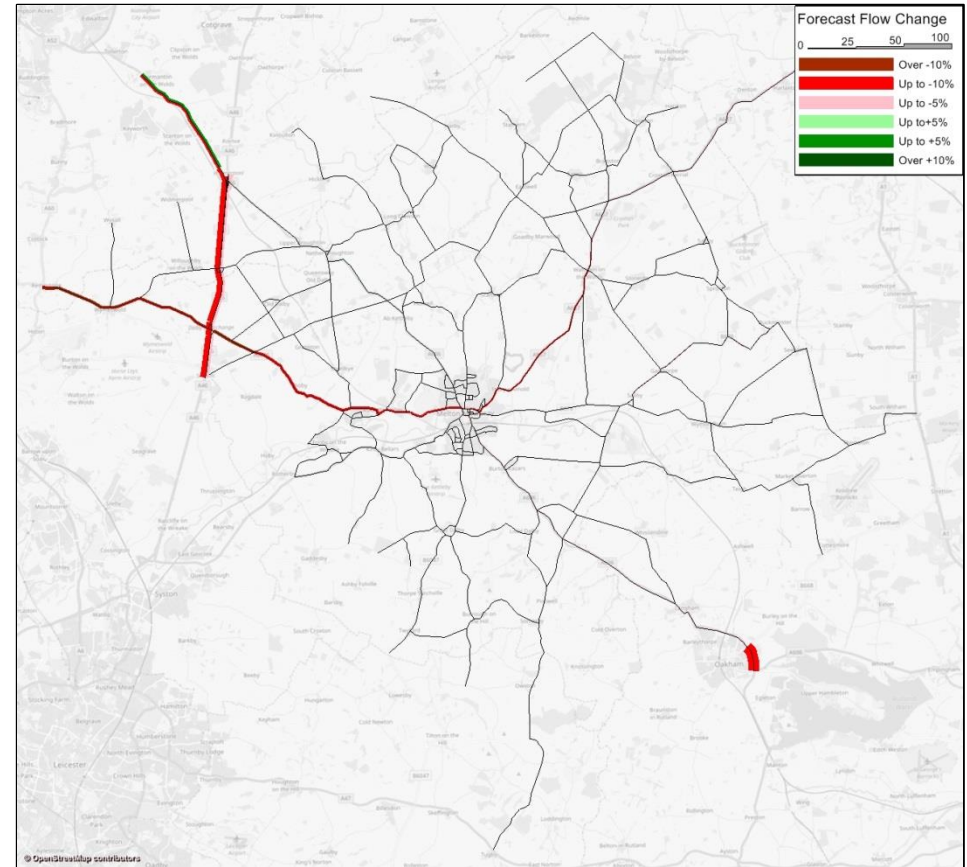


Figure 3.3: Test B Change in 24-hour AADT Forecast Flow, 2021 “without” Scheme

Total Vehicle Flows



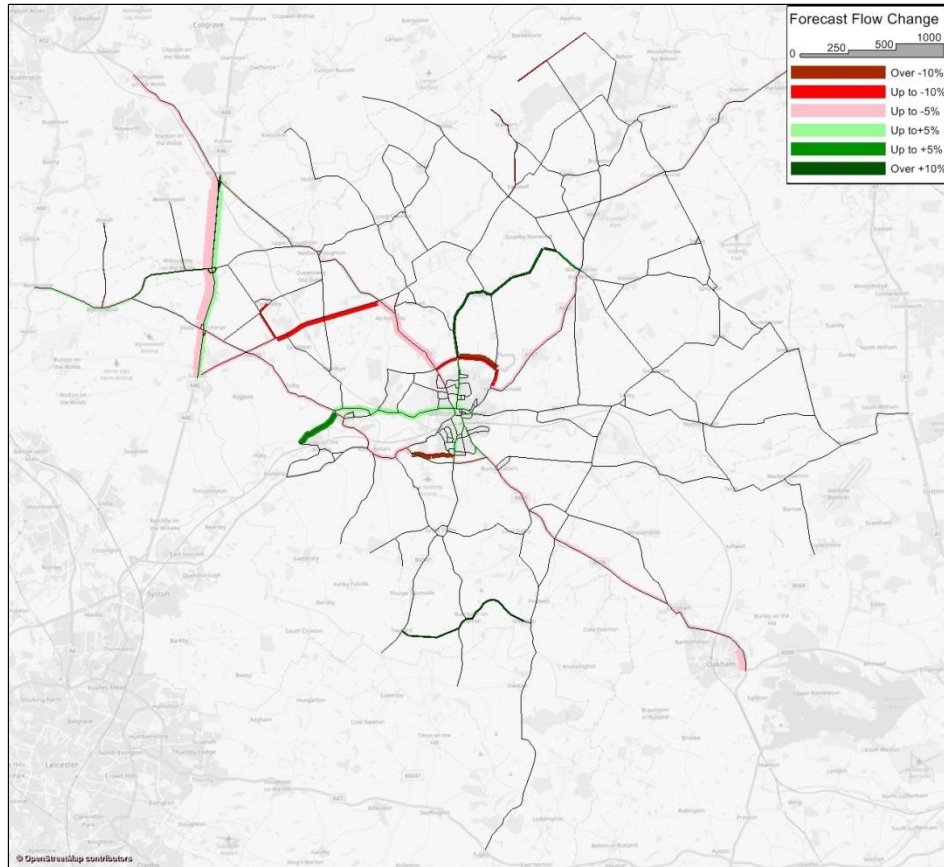
HGV Flows



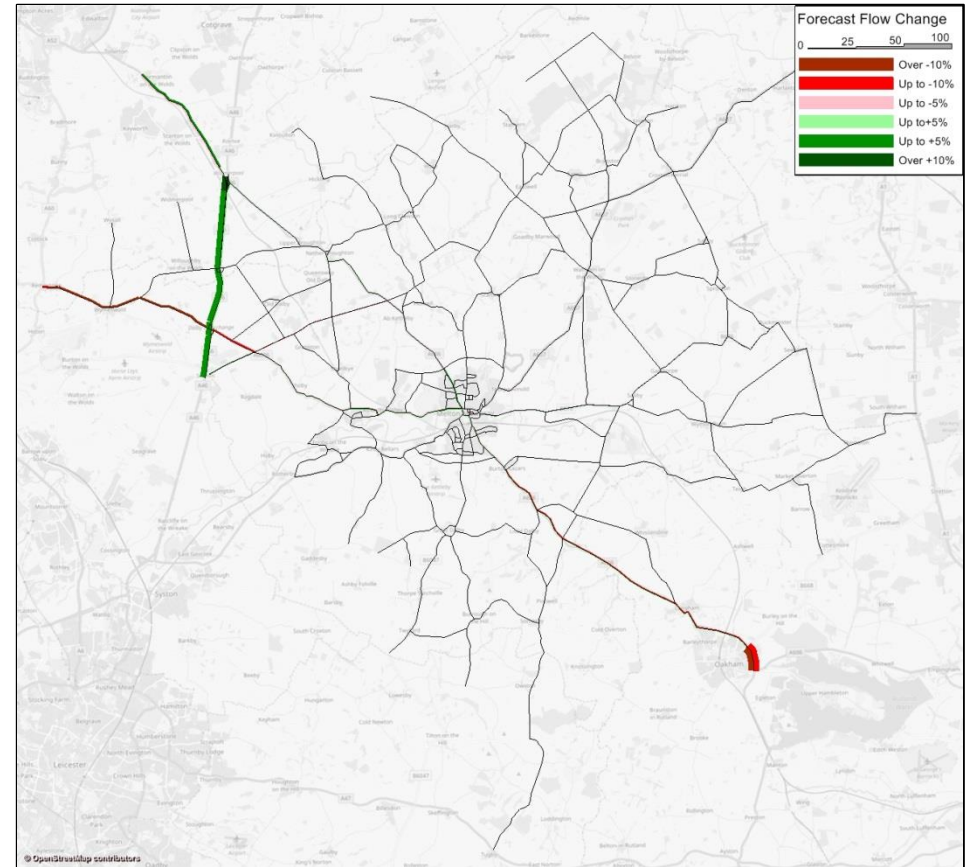
Map contains Ordnance Survey data © Crown copyright and database right 2018

Figure 3.4: Test B Change in 24-hour AADT Forecast Flow, 2036 “without” Scheme

Total Vehicle Flows



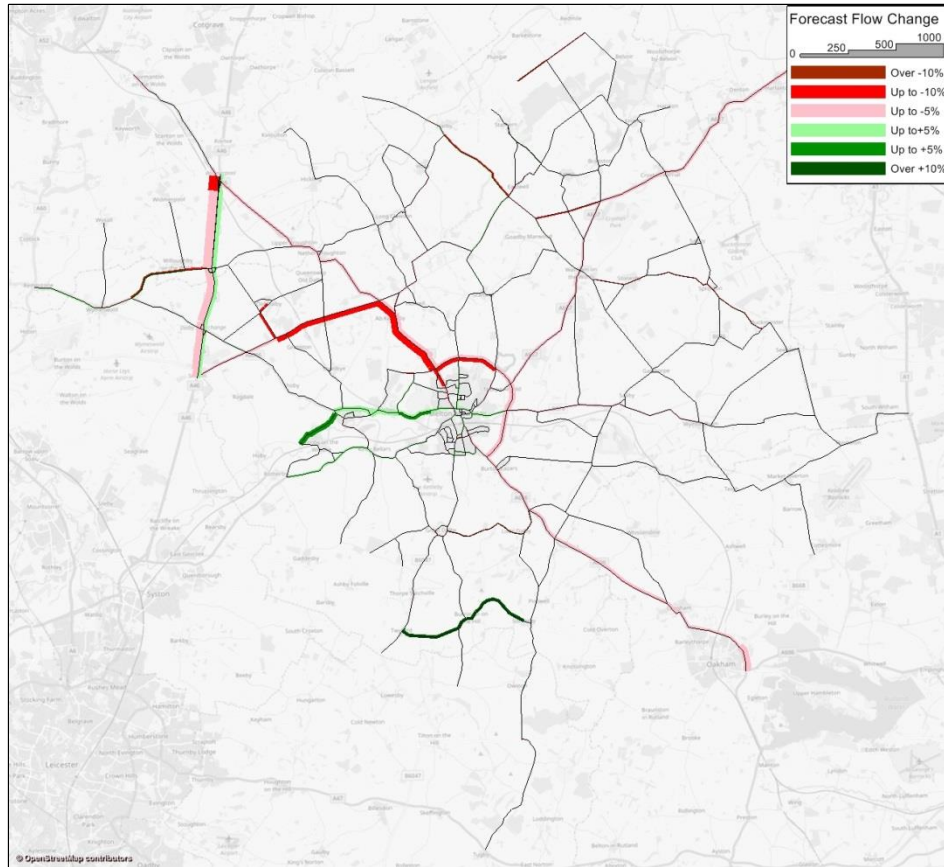
HGV Flows



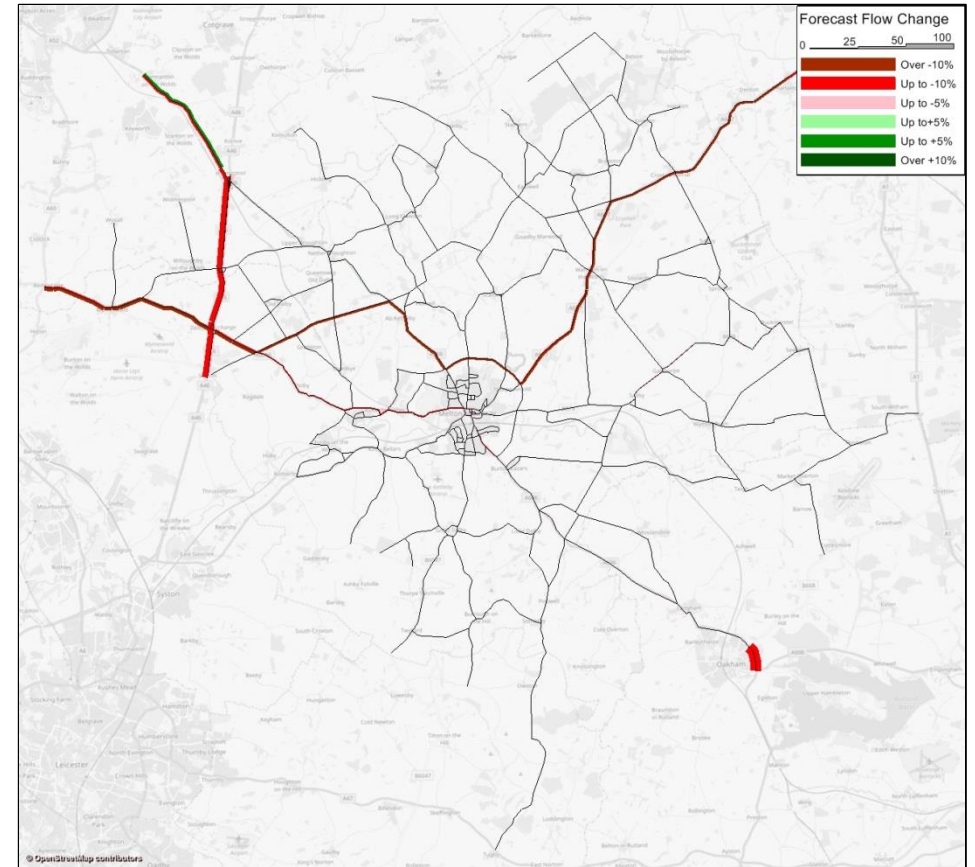
Map contains Ordnance Survey data © Crown copyright and database right 2018

Figure 3.5: Test B Change in 24-hour AADT Forecast Flow, 2021 “with” Scheme

Total Vehicle Flows



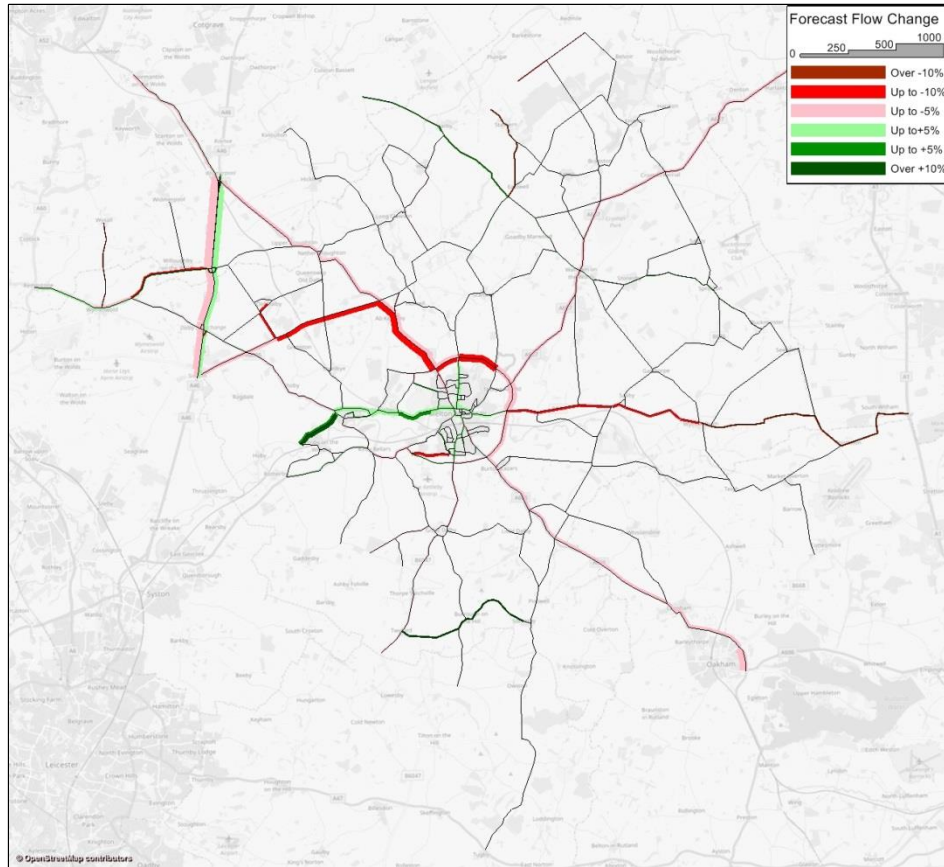
HGV Flows



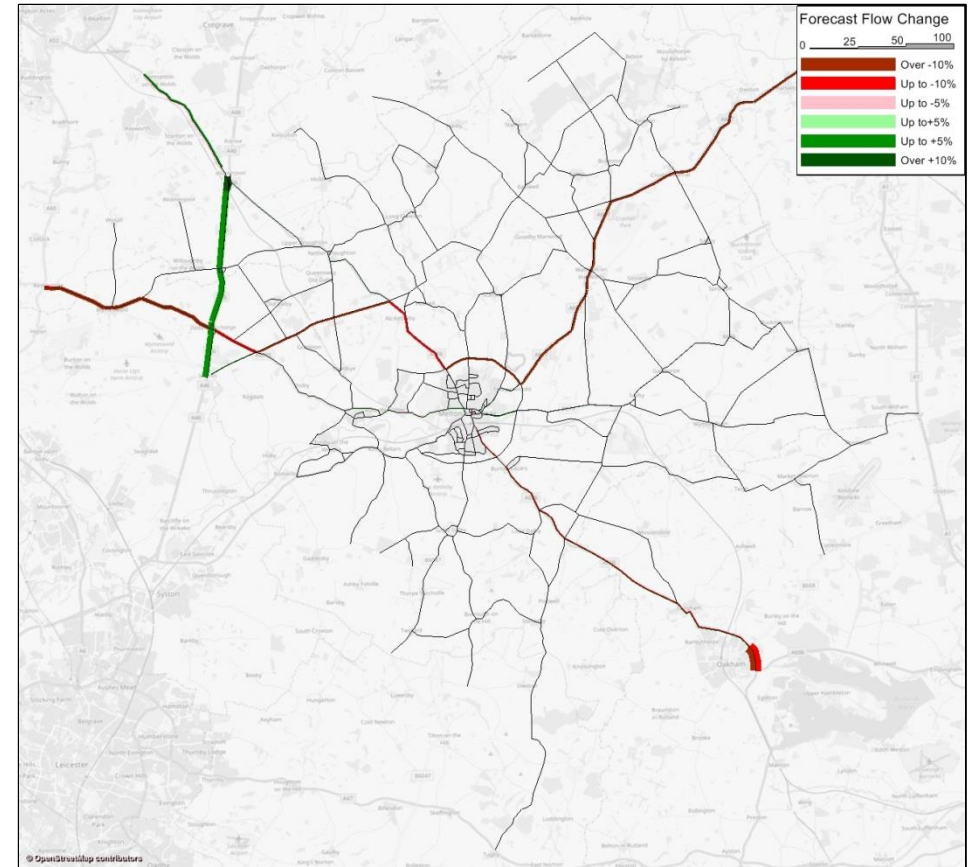
Map contains Ordnance Survey data © Crown copyright and database right 2018

Figure 3.6: Test B Change in 24-hour AADT Forecast Flow, 2036 “with” Scheme

Total Vehicle Flows



HGV Flows



Map contains Ordnance Survey data © Crown copyright and database right 2018

Figure 3.7: Test B Distribution of Forecast 24-hour AADT Total Vehicle Flow Change by Distance

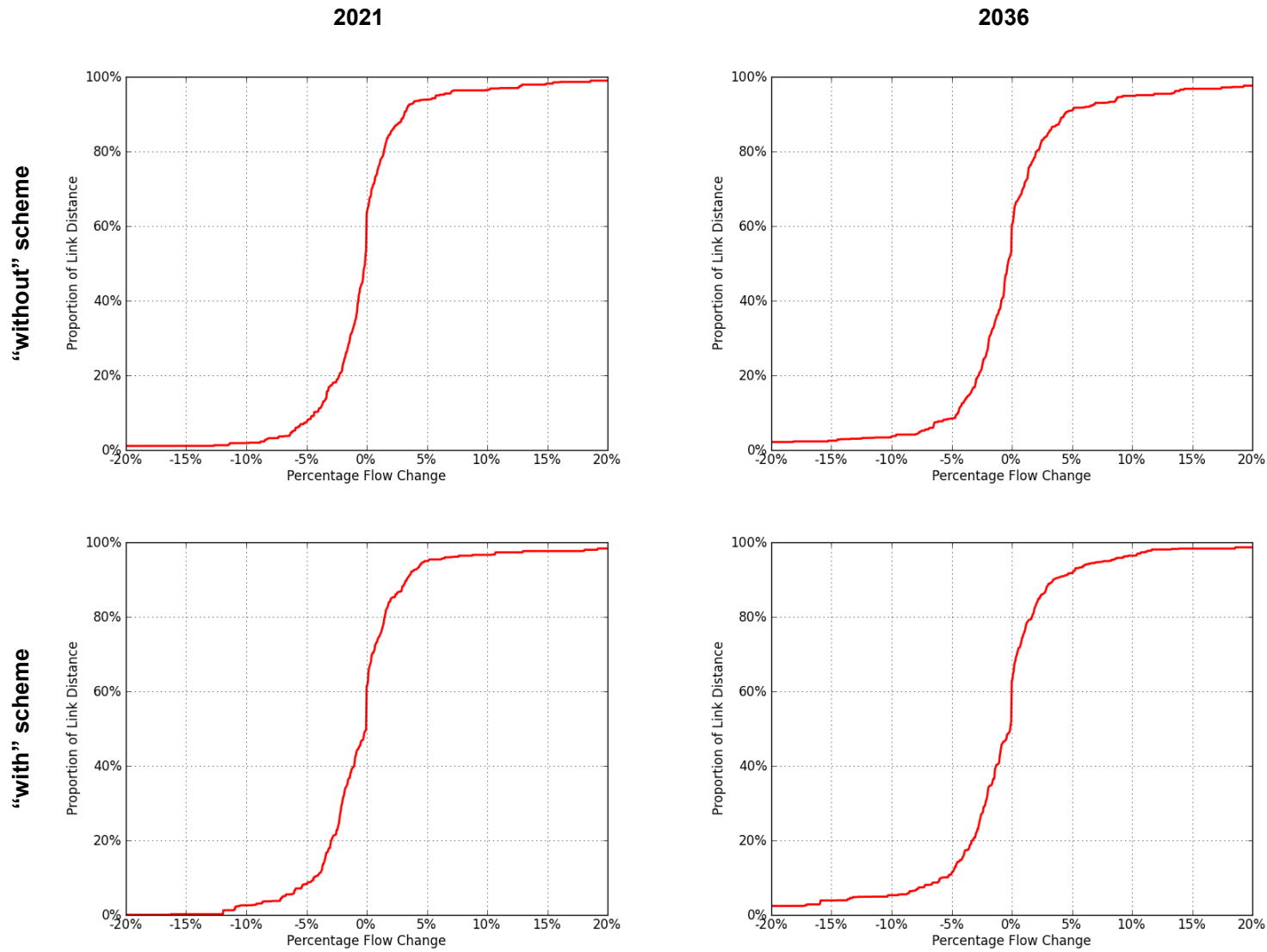
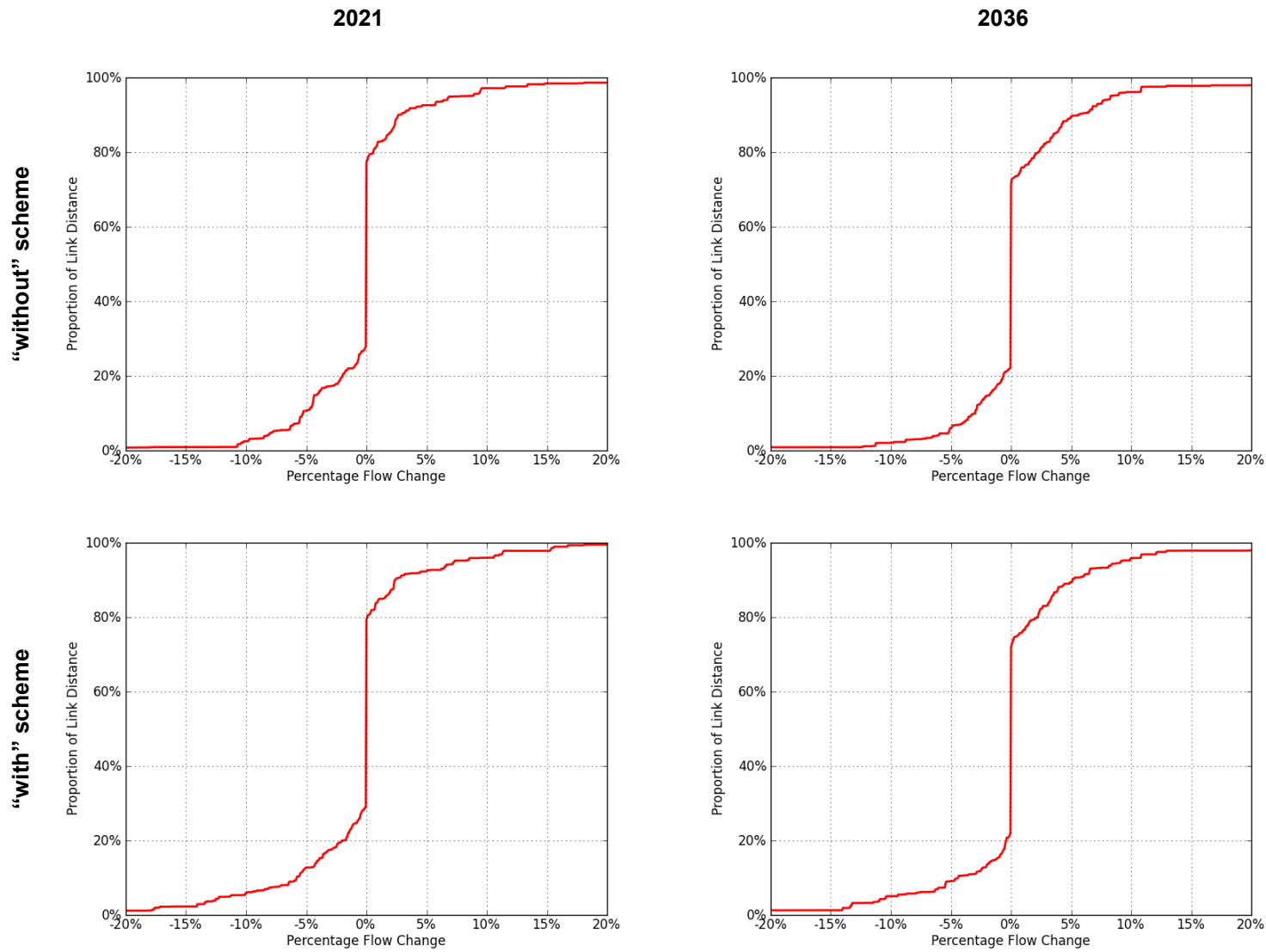
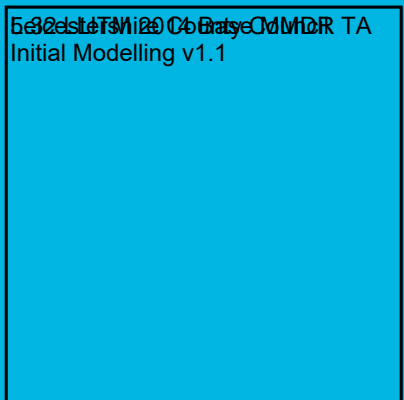


Figure 3.8: Test B Distribution of Forecast 24-hour AADT HDV Vehicle Flow Change by Distance





Ian Stanness
Principal Consultant
T: 01727 535919
E: ian.stanness@aecom.com

AECOM Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire
AL1 3ER

T: 01727 535000
aecom.com