

**A12 Chelmsford to
A120 widening scheme**

TR010060

**DEVELOPMENT CONSENT ORDER
CHANGE APPLICATION:
TRANSPORT ASSESSMENT ADDENDUM**

Advice Note 16 (Version 3) 2023

May 2023

Infrastructure Planning

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A12 Chelmsford to A120 widening scheme
Development Consent Order 202[]

**Development Consent Order Change Application:
Transport Assessment Addendum**

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CONTENTS

1	Introduction	1
1.1	Background.....	1
1.2	Purpose of this Transport Assessment Addendum	2
1.3	Structure of this Transport Assessment Addendum.....	2
1.4	Summary of proposed DCO application changes	4
2	Baseline data and model development	5
2.1	Introduction	5
2.2	Junction 19 – redesign of north bound on slip road	5
2.3	Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane	8
2.4	Junction 25 - Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120/junction 25	10
3	Current network performance and future network performance without the proposed scheme	13
4	Future network performance – with the proposed scheme – SRN	13
4.1	Overview	14
4.2	Future operational performance – with the proposed DCO changes – A12 junctions.....	14
5	Future network performance – with the proposed scheme – LRN	15
6	Future network performance – the proposed scheme under construction ...	15
7	Road Safety	15
8	Sustainable Transport	16
9	Summary and Conclusions	16
F.1	Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane	23
F.2	Junction 25 – Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120 / junction 25	29

APPENDICES

Appendix A Junction Modelling Results Summary

Appendix B Traffic Flow Diagrams – Overall Model Network

Appendix C Flow Diagrams – Communities and A12 Mainline

Appendix D Construction Traffic Diagrams

Appendix E Junction Modelling Technical Notes – Overarching Vissim Modelling Methodology

Appendix F Junction Modelling Technical Notes – A12 Junctions

Appendix G Junction Modelling Technical Notes – Local Road Junctions

1 Introduction

1.1 Background

- 1.1.1 This Change Application relates to an application submitted by National Highways (the Applicant) to the Secretary of State for Transport (through the Planning Inspectorate) for a development consent order (DCO) under the Planning Act 2008. The A12 Chelmsford to A120 Widening Scheme (the proposed scheme) involves widening the A12 to three lanes throughout (where it is not already three lanes) with a bypass between junctions 22 and 23 and a second bypass between junctions 24 and 25. It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.
- 1.1.2 A DCO application for the proposed scheme was accepted for examination by the Planning Inspectorate on the 12th of September 2022 (DCO Application). The proposed scheme is currently in examination which started on 12th January 2023 and is due to close on 12th July 2023.
- 1.1.3 Since the DCO application was made, the Applicant has continued to engage and refine designs to identify opportunities to further improve the proposals. As a result of this, the Applicant is proposing six changes to the proposed scheme during the Examination stage to address suggestions by interested parties and to implement improvements to the proposed scheme.
- 1.1.4 This Change Application comprises the Applicant's request to the Examining Authority (appointed by the Planning Inspectorate) to accept into the Examination of the DCO Application six changes to the proposed scheme for which development consent is sought.
- 1.1.5 On 30 March 2023, in accordance with paragraph 3.2 of Advice Note 16: Requests to change applications after they have been submitted for examination (AN16), the Applicant submitted its Change Notification to the Examining Authority (ExA) [REP2-031] (Change Notification). The Change Notification set out the Applicant's intention to make a change request, detailed its consultation proposals and confirmed the likely date for the Change Application to be submitted as 30 May 2023. The Change Notification also provided the details and background to the Applicant's request for the proposed changes as required by Figure 2a of AN16.
- 1.1.6 The proposed six changes to the proposed scheme in summary are:
- Junction 19 – redesign of north bound on slip road
 - Exclusion of Anglian Water pumping station from land proposed for compulsory acquisition at Hatfield Peverel

- Changes to the provision of replacement land at Whetmead and additional consequential changes reflecting change of ownership for open space in the Witham area
- Drainage works associated with B1023 Kelvedon Road at Inworth
- Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane
- Junction 25 - Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120/junction 25

1.1.7 The ExA responded to the Applicant's Change Notification on 6 April 2023 [PD-011] confirming that the Applicant had satisfied the requirements of Figure 2a of AN16 and acknowledged the Applicant's intent to submit a Change Application (Rule 9 Letter). In the Rule 9 Letter the ExA also confirmed the information required by Step 2 of AN16. Purpose of this document.

1.2 Purpose of this Transport Assessment Addendum

1.2.1 The purpose of this Transport Assessment Addendum is to present an assessment of any new or different transport impacts that are likely to result from the proposed changes to the proposed scheme and to support the Examining Authority in developing an informed view of the likely impacts of the proposed scheme.

1.2.2 This addendum only covers changes from the Transport Assessment submitted for the DCO application, and as such is intended to be read alongside the original Transport Assessment [APP-253 to APP-260] as well as subsequent submissions into the Examination process (which can be found in the Examination Library). If no change is listed in this Transport Assessment Addendum, then the conclusions are the same as those presented in the Transport Assessment or other traffic information submitted into the Examination.

1.3 Structure of this Transport Assessment Addendum

1.3.1 This report follows a similar structure to the Transport Assessment submitted with the DCO application, but with a focus on areas that have changed as a result of the proposed design changes. The structure of this report is set out in Table 1.1.

1.3.2 Where relevant, this report cross refers to the submitted Transport Assessment or other DCO application materials to explain how the proposed design changes have changed the original submitted documents. In these instances, were the proposed changes accepted, the information contained in this report supersedes the information presented in the submitted documents.

Table 1.1 Structure of this Transport Assessment Addendum

Subject	Description
Chapter 1: Introduction	A brief introduction to the proposed changes and the purpose and structure of the Transport Statement Addendum.
Chapter 2: Baseline data and model development	Description of the development of the traffic models and the impact of the proposed changes on traffic flows.
Chapter 3: Current network performance and future network performance without the proposed scheme	Description of the current network performance and the future network performance without the proposed A12 scheme – this would not change as a result of the proposed changes.
Chapter 4: Future network performance – with the proposed scheme – SRN	Description of the impact that the proposed changes would have on the operational performance of junctions on the Strategic Road Network.
Chapter 5: Future network performance – with the proposed scheme – LRN	Description of the impact that the proposed changes would have on the operational performance of junctions on the local road network – this would not change as a result of the proposed changes.
Chapter 6: Future network performance – the proposed scheme under construction	Description of the impact of construction activity on the performance of the road network. This would not change as a result of the proposed changes.
Chapter 7: Road Safety	Description of the impact of the proposed changes on road safety.
Chapter 8: Sustainable Transport	Description of the impact of the proposed changes on sustainable transport. This would not change as a result of the proposed changes.
Chapter 9: Summary and Conclusions	Summary and conclusions of the impact that the proposed changes would have on network performance, road safety, walkers, cyclists, horse riders (WCH) and public transport.
Appendix A: Junction Modelling Results Summary	Summary of the updated junction modelling results with the proposed changes.
Appendix B: Traffic Flow Diagrams – Overall Model Network	Summary of the changes that the proposed changes would have on traffic flows across the full traffic model network.
Appendix C: Traffic Flow Diagrams – Communities and A12 Mainline	Summary of the changes that the proposed changes would have on the A12 and local road network affected by the proposed scheme.
Appendix D: Construction Traffic Diagrams	Further information on the impact of construction activity on the performance of the road network. This would not change as a result of the proposed changes.

Subject	Description
Appendix E: Junction Modelling Technical Notes – Overarching Vissim Methodology	Summary of the overarching methodology used in the Vissim assessments of junction performance. This would not change as a result of the proposed changes.
Appendix F: Junction Modelling Technical Notes – A12 Junctions	Detailed information on the assessment and performance of A12 junctions with the proposed changes.
Appendix G: Junction Modelling Technical Notes – Local Road Junctions	Detailed information on the assessment and performance of local road junctions. This would not change as a result of the proposed changes.

1.4 Summary of proposed DCO application changes

1.3.3 The DCO change application consultation was held to seek views from stakeholders on six proposed design changes to the DCO application, which are:

- Junction 19 – redesign of north bound on slip road
- Exclusion of Anglian Water pumping station from land proposed for compulsory acquisition at Hatfield Peverel
- Changes to the provision of replacement land at Whetmead and additional consequential changes reflecting change of ownership for open space in the Witham area
- Drainage works associated with B1023 Kelvedon Road at Inworth
- Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane
- Junction 25 - Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120/junction 25

1.3.4 Only three of these six changes are covered within this Transport Assessment Addendum. The other changes are assumed to have no impact on the conclusions presented in the Transport Assessment submitted as part of the DCO application. This is because they would have no impact on the operational traffic performance of the scheme, and any potential changes in construction traffic impacts would not be higher than the ‘worst case’ construction traffic assumptions presented in the earlier Transport Assessment.

1.3.5 The three changes covered within this Transport Assessment Addendum are:

- Junction 19 – redesign of north bound on slip road
- Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane

- Junction 25 - Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120/junction 25

1.3.6 The above proposed design changes, as well as the reason for the changes, are described below in Chapter 2 of this Transport Assessment Addendum and are reflected in the relevant sheets of the updated General Arrangement Plans and Environmental Masterplan in the Map Books that have been submitted with the change application [TR010060/EXAM/10.5 to TR010060/EXAM/10.11].

2 Baseline data and model development

2.1 Introduction

2.1.1 The same strategic traffic model used to assess the proposed scheme as presented in the original DCO application was used to assess the impact of the proposed changes. No changes were made to the 'base year' or 'Do Minimum (without scheme)' traffic models. The 'Do Something (with scheme)' traffic models were updated to reflect the updated scheme design in the proposed changes.

2.1.2 This chapter summarises those proposed changes and the impact they would have on traffic flows.

2.2 Junction 19 – redesign of north bound on slip road

Proposed changes being made

2.2.1 In the design submitted with the DCO application, traffic travelling between the Beaulieu Park Radial Distributor Road and the northbound A12 would use a segregated left turn lane, which connected to the existing junction 19 northbound on-slip road. This merge was proposed to use an offside merge, which would require traffic to join the offside lane 2 of the junction 19 northbound on-slip road. The proposals submitted under the DCO application can be seen on Plate 2-1.

2.2.2 It is proposed that this arrangement would be improved by connecting the link from the Beaulieu Park Radial Distributor Road directly to the A12 northbound carriageway. This proposed merge would be more conventional, in that the merging slip road would join the nearside lane 1 of the A12. The updated design can be seen on Plate 2-2 and sheet 2 of the updated General Arrangement Plans in Map Book 1 [TR010060/EXAM/10.5].

Plate 2-1 Junction 19 design submitted with DCO application

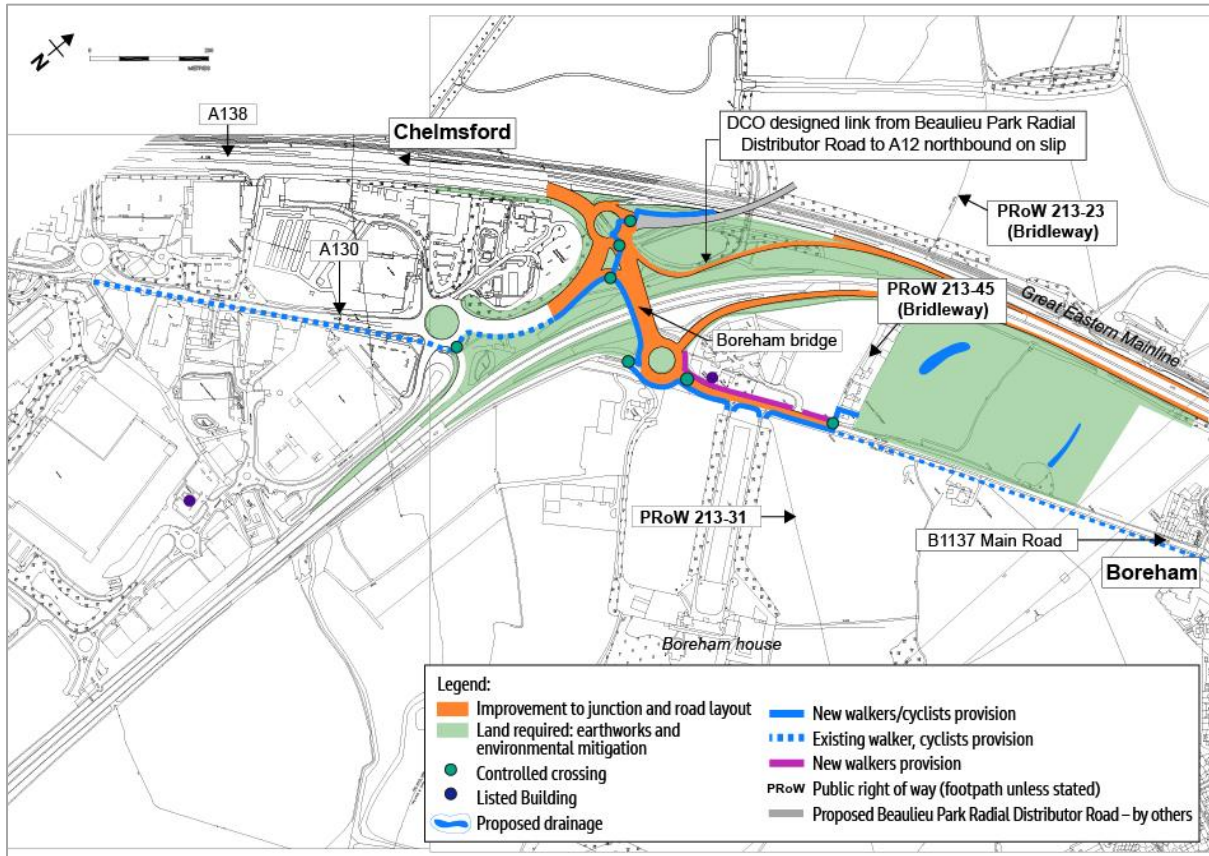
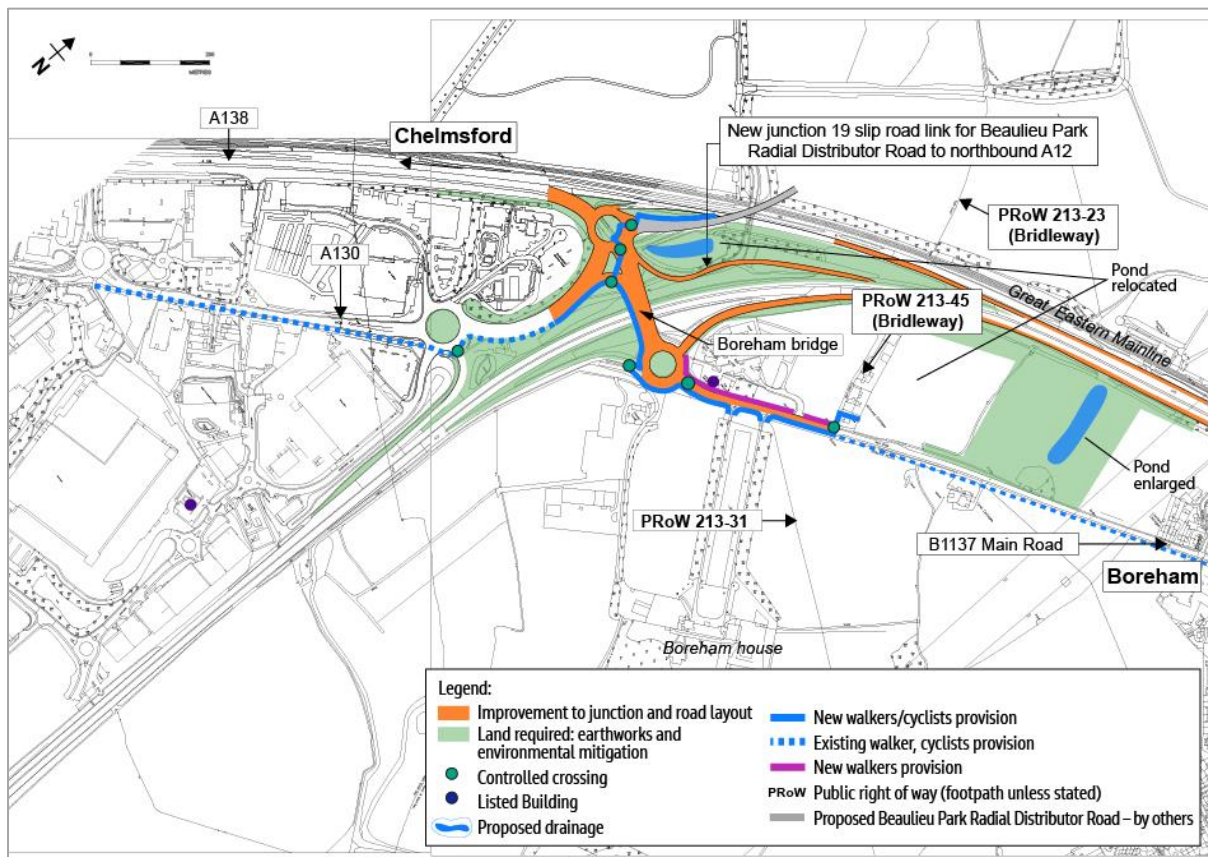


Plate 2-2 Updated design of Junction 19 northbound on-slip road



Impact on traffic flows

- 2.2.3 As described above, the proposed change would mean that traffic from the Beaulieu Park Radial Distributor Road wanting to join the A12 northbound at junction 19 would join the A12 directly via a new slip road, rather than joining via the existing northbound slip road. This would mean a slightly different journey for that traffic, and the traffic on those slip roads would change as a result.
- 2.2.4 However, traffic modelling work predicts that this change would not result in other unaffected drivers changing which routes they take for their journeys. Only the two slip roads and the short section of A12 between the slip roads would see a change in traffic numbers. There would be almost no change in traffic on any other roads. The traffic model does predict very slight changes in traffic on some roads, but these are so extremely small that they have been dismissed as ‘model noise’ and not taken forward for detailed assessments of environmental impacts or capacity calculations.
- 2.2.5 As there are no significant changes in traffic using the roundabouts within junction 19, there would be no effect on the operational performance of the junction as reported in the Transport Assessment.

2.3 Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane

Proposed changes being made

- 2.3.1 In the designs submitted with the DCO application, a segregated left turn lane (SLTL) was proposed for traffic from Inworth Village at the B1023 roundabout. A SLTL is used to provide a link for traffic turning left at roundabouts which bypasses the roundabout itself. This feature allowed traffic from Inworth Village to join the link road to junction 24 without the need to give way to traffic already on the roundabout, reducing the delay for vehicles from this approach. The proposals submitted under the DCO application can be seen on Plate 2-3.
- 2.3.2 The Applicant is proposing the removal of the SLTL from the arrangement of the B1023 roundabout that was presented in the DCO application. Traffic from Inworth Village would instead join the link road to junction 24 by using the B1023 roundabout. This would require traffic on the B1023 to give way to traffic already on the roundabout, as is the case with most roundabouts. The updated design can be seen on Plate 2-4 and sheet 14 of the updated General Arrangement Plans in Map Book 5 [TR010060/EXAM/10.9].

Impact on traffic flows

- 2.3.3 Although traffic joining junction 24 on the approach from Inworth Village would have to use the Inworth Road roundabout itself to access junction 24 rather than a separate left-hand turn lane, this is not predicted to significantly affect the performance of the junction. All arms of the roundabout are still predicted to operate with a Level of Service 'A' (i.e. the best level of operation), the same as was reported in Table 4.1 of the Transport Assessment submitted as part of the DCO application [APP-253]. More detail on the impact on the operational performance of the roundabout in terms of queue lengths and delays is presented in Chapter 3 of this report.
- 2.3.4 The proposed change is not predicted to result in drivers changing their routes to and from the A12, so there would be no change in the amount of traffic on any roads.

Plate 2-3 B1023 roundabout design submitted with DCO application

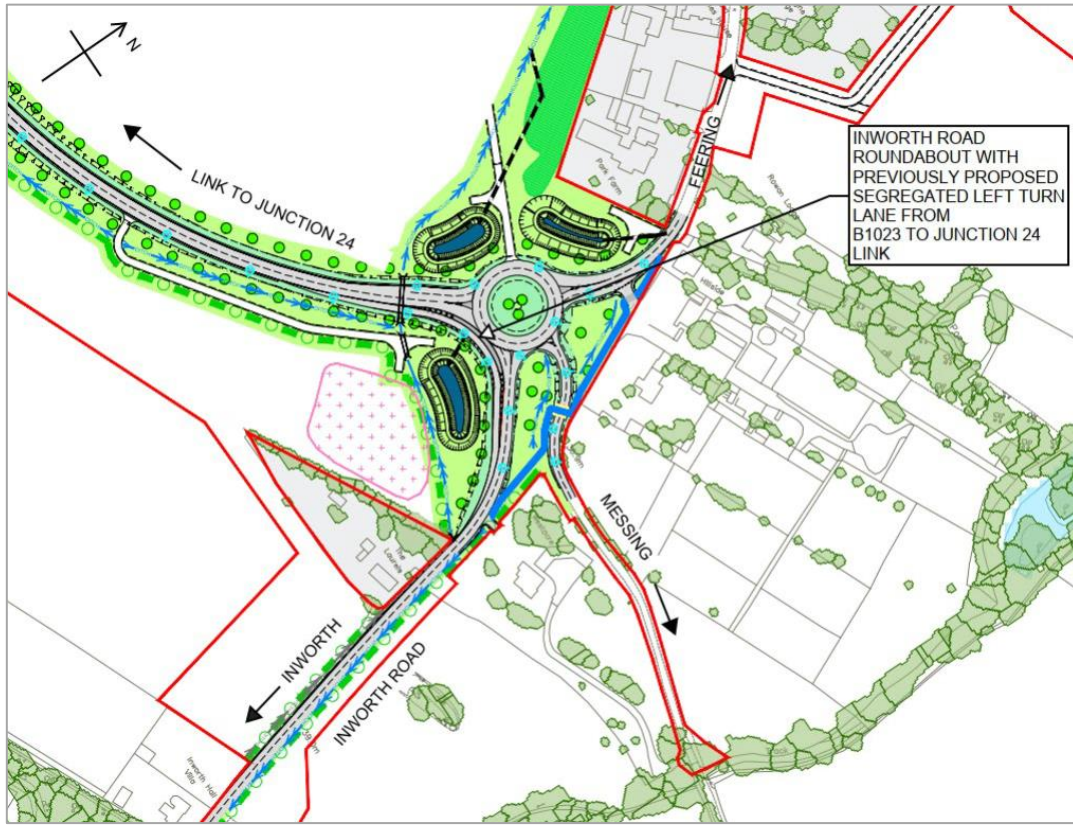


Plate 2-4 Updated B1023 roundabout design



2.4 Junction 25 - Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120/junction 25

Proposed changes being made

- 2.4.1 In the designs submitted with the DCO application, junction 25 was to remain an elevated junction and provide access to the A12 both northbound and southbound. These proposals converted the Old Rectory Junction roundabout to a signalised crossroads. The proposals submitted under the DCO application can be seen on Plate 2-5.
- 2.4.2 The Applicant is proposing to change the configuration of junction 25 to remove the signalised crossroads proposed in the design submitted with the DCO application and implement a partially signalised roundabout design to maximise the use of existing infrastructure and minimise loss of existing trees within the Old Rectory Junction roundabout island. The retention of the roundabout, albeit with its signalisation, requires less land acquisition and has smaller impacts on the proposals for replacement land in this location. There would also be consequential changes to the utility diversions in this area. The updated design can be seen on Plate 2-6 and

sheets 18 and 19 of the updated General Arrangement Plans in Map Book 6 Part 1 of 2 [TR010060/EXAM/10.10].

Plate 2-5 Junction 25 design submitted with DCO application

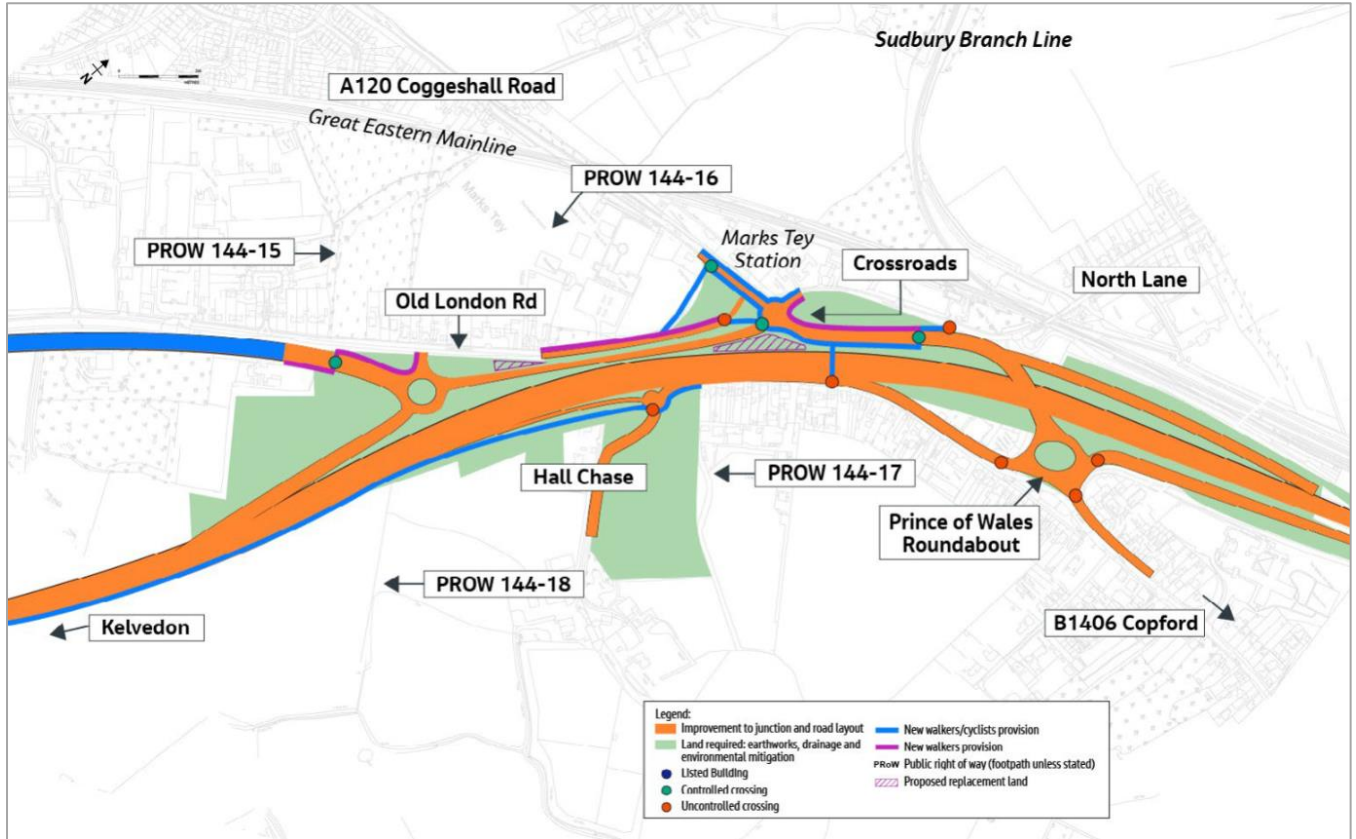
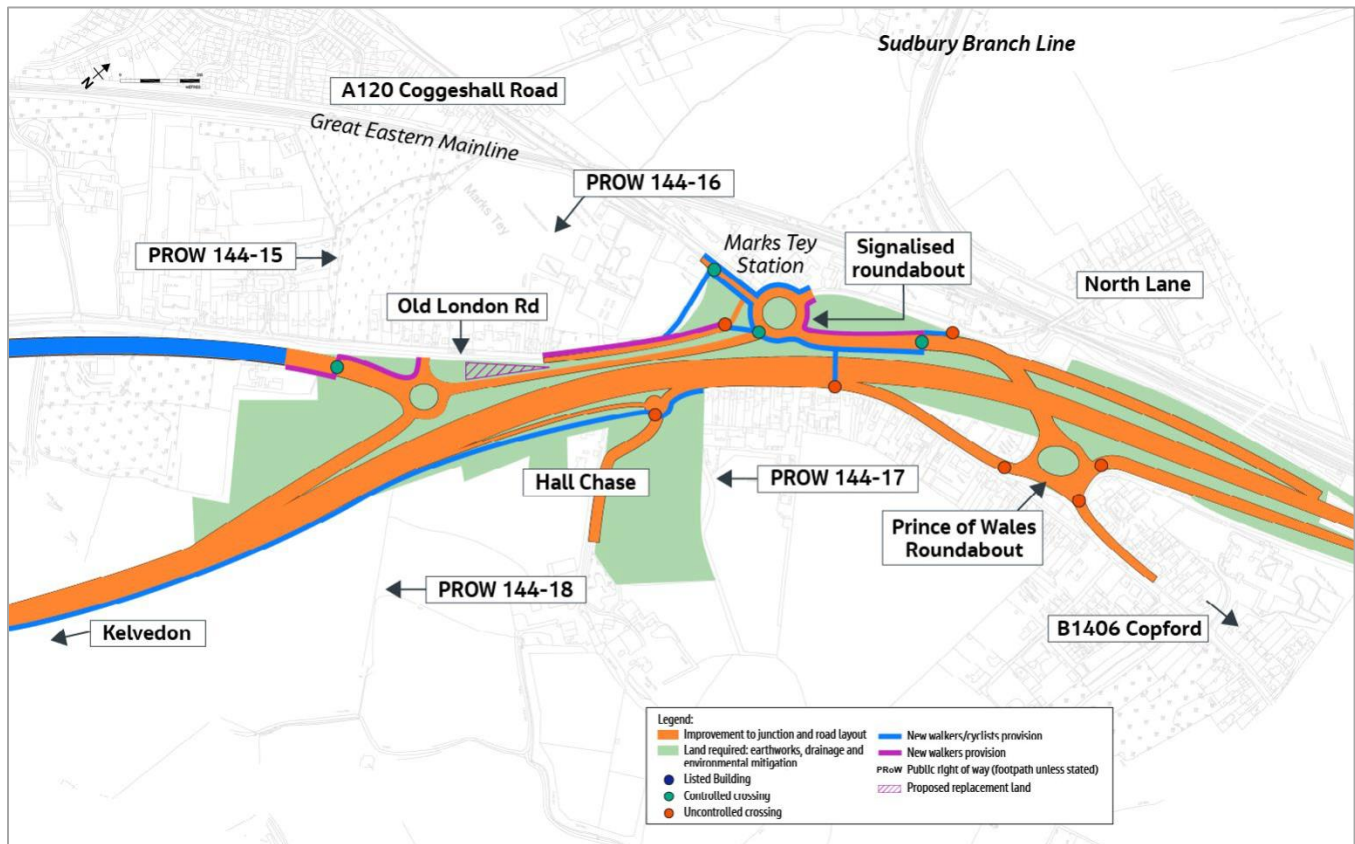


Plate 2-6 Updated junction 25 design



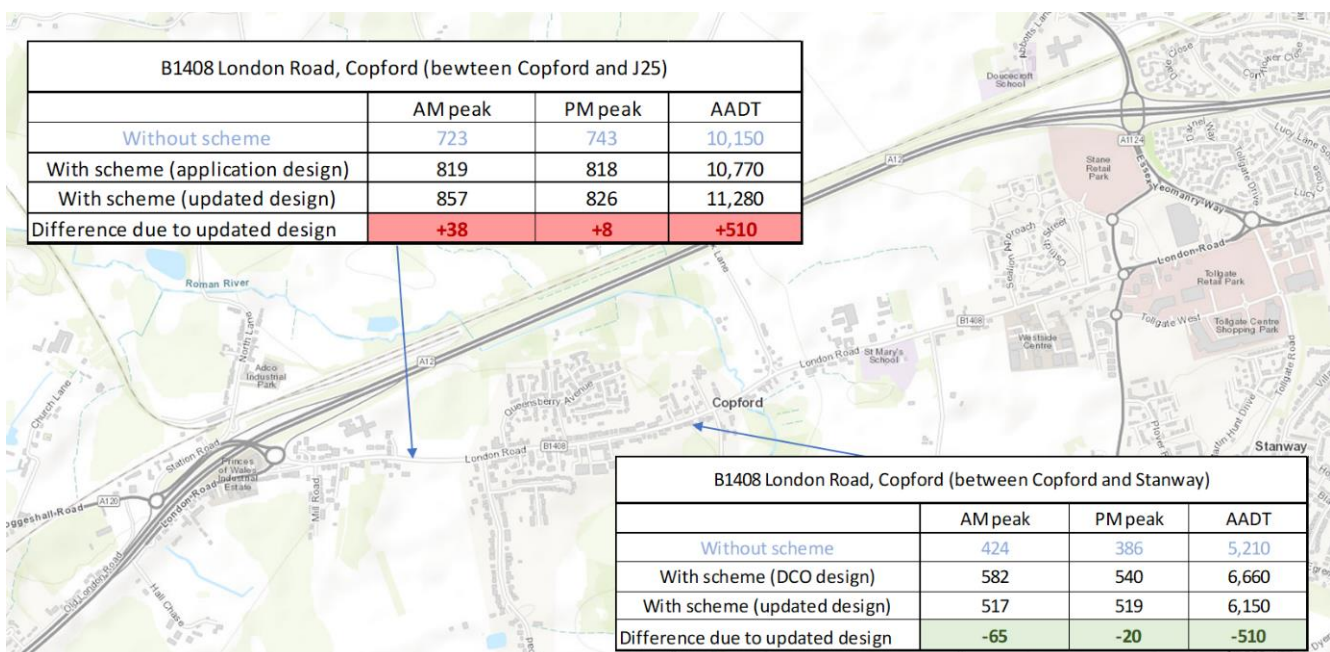
Impact on traffic flows

- 2.4.3 The impact that the proposed change in design would have on the operational performance of junction 25 in terms of queues and delays is presented in Chapter 4 of this report.
- 2.4.4 In terms of traffic flows, the proposed change is predicted to result in some changes in traffic flows on the A12 itself and on local roads. This is because of slight changes in how long it takes to travel through the junction from different approach arms.
- 2.4.5 The main predicted change in traffic flows is that more traffic from Copford would use junction 25 (Marks Tey) to access the A12 northbound, instead of travelling via B1408 London Road and joining the A12 at junction 26 (Stanway). This is because it is easier to make this movement if the Old Rectory Junction was a partially-signalised roundabout than if it was a signalised crossroads. Compared to the design presented in the DCO application, this change would therefore cause a slight increase in traffic travelling around both the Prince of Wales roundabout and the Old Rectory Junction, and a slight decrease in traffic on the B1048 London Road between Copford and Stanway.
- 2.4.6 The change in traffic flow on these roads is shown in Plate 27 below. This shows the predicted change in 2027 traffic flows as a result of the new

design. The traffic flows are presented in vehicles per hour in the AM and PM peak, and in vehicles per day (AADT). For example, traffic on the B1408 between Copford and Stanway is predicted to be 65 vehicles per hour lower due to the proposed change than it would have been with the design presented in the DCO application. Further information on the predicted changes in flow, for example including predicted flow changes in 2042, are provided in Appendix C of this report.

2.4.7 Although the traffic model also predicts some changes in traffic on other roads, the largest changes are those described above.

Plate 2-7 Change in traffic around Junction 25 due to proposed change



3 Current network performance and future network performance without the proposed scheme

3.1.1 The proposed changes would have no effect on the current performance of the road network or on the predictions of how the road network would perform without the proposed scheme in place.

4 Future network performance – with the proposed scheme – SRN

4.1 Overview

- 4.1.1 This chapter presents the results of updated junction modelling for any junctions on the Strategic Road Network (SRN) that would be affected as a result of the proposed changes.
- 4.1.2 Where no results are presented for a junction in this chapter, this means the proposed changes would have no impact and the results presented in the Transport Assessment submitted as part of the DCO application are still valid.

4.2 Future operational performance – with the proposed DCO changes – A12 junctions

- 4.2.1 Any A12 junctions which would be affected by the proposed changes in terms of traffic have been assessed for the forecast years of 2027 and 2042, for both the AM and PM peak hours. They have been assessed using Vissim junction modelling software, with all assumptions retained from the earlier Transport Assessment except for those relating to the proposed design changes.
- 4.2.2 The results of the updated assessments show that:
- A12 junction 24: With the proposed changes, this junction would continue to operate satisfactorily. Each roundabout within A12 junction 24 would have a Level of Service A, the same as under the original DCO application layout.
 - A12 junction 25: With the proposed changes, this junction would continue to operate satisfactorily. In the 2027 PM peak and the 2042 AM peak, the Western Roundabout (Old Rectory Junction) would improve from a Level of Service D (categorised as ‘approaching unstable condition’) in the original DCO application to a Level of Service C (categorised as ‘stable flow condition’). Because traffic would be able to flow more freely through the Old Rectory Junction, the adjacent Eastern Roundabout would become slightly busier. This would result in a lowering of the Level of Service from a C to a B, although both Levels of Service C and B are still categorised as having ‘stable flow condition’.
 - A12 junction 25: Detailed arm-by-arm analysis of queues and delays at the Old Rectory Junction (presented in Appendix F of this report) show that the Station Road arm of this junction would reduce from a Level of Service E in the original DCO application to a Level of Service F under the proposed changes. However, the increase in delay that causes this change in Level of Service is only 8 seconds. The A120 Coggeshall Road arm would reduce in delay by 10 to 15 seconds compared to the original DCO application, despite an increase in average queue length.
- 4.2.3 The results of the junction assessments for 2027 and 2042 are summarised in Table 4.1. The results in this table supersede those

presented in Table 4.1 of the Transport Assessment submitted as part of the DCO application. More detailed arm-by-arm queues and delays are presented in Appendix F of this report.

Table 4.1 Summary of junction operation results – SRN – with proposed scheme in place

Junction		Future operation, with scheme 2027		Future operation, with scheme 2042	
		Weekday 07:30-08:30	Weekday 17:00-18:00	Weekday 07:30-08:30	Weekday 17:00-18:00
A12 J24 (new layout)	Western Dumbbell	A	A	A	A
	Eastern Dumbbell	A	A	A	A
	Inworth Road Roundabout	A	A	A	A
A12 J25	Western Roundabout	C	C	C	D
	Eastern Roundabout	B	B	C	C
	London Road Roundabout	A	A	A	A

Key showing operating condition:

LOS (Vissim)	
F	Worst operating conditions
E	
D	
C	
B	
A	Best operating conditions

5 Future network performance – with the proposed scheme – LRN

- 5.1.1 The impact of the proposed changes on traffic flows on the local road network is described in section 2.2 to 2.4 of this report. The impact that these changes in traffic flow would have on noise and air quality in these locations is summarised in the Environmental Statement Addendum [TR010060/EXAM/10.12].
- 5.1.2 The predicted changes in traffic flow due to the proposed changes are not predicted to affect any of the conclusions around the operational performance of local road junctions that were set out in Chapter 5 of the Transport Assessment submitted as part of the DCO application [APP-253].

6 Future network performance – the proposed scheme under construction

- 6.1.1 The proposed changes would have no effect on the assessment of construction impacts set out in the Transport Assessment that was submitted as part of the DCO application [APP-253].

7 Road Safety

- 7.1.1 The Road Safety chapter of the Transport Assessment that was submitted as part of the DCO application [APP-253] summarised the economic

assessment of safety that is presented in section 11.8 of the Combined Modelling and Appraisal report [APP-261].

7.1.2 The proposed changes at junction 25 would have an effect on that assessment. This is because, in the safety assessment software used for that assessment, signalised roundabouts are assumed to provide a safety benefit compared to signalised crossroads. The overall safety benefit of the proposed scheme would therefore be improved because of these proposed changes.

7.1.3 Although the proposed changes would represent a safety benefit and improve the economic case for the proposed scheme, the impact would be small and the overall value for money conclusions of the proposed scheme would not be affected.

8 Sustainable Transport

8.1.1 The proposed changes would have no effect on the assessment of sustainable transport set out in the Transport Assessment that was submitted as part of the DCO application [APP-253].

9 Summary and Conclusions

9.1.1 The purpose of this Transport Assessment Addendum is to present an assessment of the new or different transport impacts that are likely to result from the proposed changes to the proposed scheme and to support the Examining Authority in developing an informed view of the likely impacts of the proposed scheme.

9.1.2 This addendum only covers changes from the Transport Assessment submitted for the DCO application, and as such is intended to be read alongside the original Transport Assessment [APP-253 to APP-260] as well as subsequent submissions into the Examination process (which can be found in the Examination Library).

9.1.3 There are six proposed design changes to the DCO application. Only three of these six changes are covered within this Transport Assessment Addendum. The other changes are assumed to have no impact on the conclusions presented in the Transport Assessment submitted as part of the DCO application. This is because they would have no impact on the operational traffic performance of the scheme, and any potential changes in construction traffic impacts would not be higher than the 'worst case' construction traffic assumptions presented in the earlier Transport Assessment.

9.1.4 The three changes covered within this Transport Assessment Addendum are:

- Junction 19 – redesign of north bound on slip road

- Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane
 - Junction 25 - Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120/junction 25
- 9.1.5 At junction 19 there are no significant changes in traffic using the roundabouts, as such, there would be no effect on the operational performance of the junction as reported in the Transport Assessment.
- 9.1.6 At junction 24/Inworth Road B1023, the proposed change is not predicted to result in drivers changing their routes to and from the A12, so there would be no change in the amount of traffic on roads near this junction.
- 9.1.7 The junction modelling shows that removing the segregated left turn lane from the Inworth Road Roundabout has no significant impact on the performance of the junction. For both 2027 and 2042, AM and PM periods, the junction is forecast to operate well within capacity.
- 9.1.8 At junction 25 the proposed changes will result in some changes to traffic flows on the A12 itself and on local roads. This is because of slight changes in how long it takes to travel through the junction from different approach arms.
- 9.1.9 With the partially signalised roundabout, it is predicted more traffic from Copford would use junction 25 (Marks Tey) to access the A12 northbound, instead of travelling via B1408 London Road and joining the A12 at junction 26 (Stanway). This is because it is easier to make this movement if the Old Rectory Junction was a partially-signalised roundabout than if it was a signalised crossroads. Compared to the design presented in the DCO application, this change would therefore cause a slight increase in traffic travelling around both the Prince of Wales roundabout and the Old Rectory Junction, and a slight decrease in traffic on the B1048 London Road between Copford and Stanway.
- 9.1.10 The junction modelling shows that changing the operation of the Old Rectory Junction from a signalised crossroads to a partially signalised roundabout would improve the overall level of service at Old Rectory Junction itself.
- 9.1.11 Detailed arm-by-arm analysis of queues and delays (presented in Appendix F of this report) shows that the Station Road arm of this junction would reduce from a Level of Service E in the original DCO application to a Level of Service F under the proposed changes. However, the increase in delay that causes this change in Level of Service is only 8 seconds. The A120 Coggeshall Road arm would reduce in delay by 10 to 15 seconds compared to the original DCO application, despite an increase in average queue length.
- 9.1.12 Because traffic would be able to flow more freely through a partially signalised Old Rectory Junction compared to a signalised crossroads, the adjacent Eastern Roundabout (Prince of Wales Roundabout) would become slightly busier. This would result in a lowering of the Level of

Service from a C to a B, although both Levels of Service C and B are still categorised as having 'stable flow condition'.

- 9.1.13 Overall, for both 2027 and 2042 AM and PM periods A12 junction 25 is still forecast to operate within capacity under the proposed changes.

Appendix A Junction Modelling Results Summary

Only junctions impacted by the proposed changes are shown in the table below. These results supersede those presented in Appendix A of the original Transport Assessment published as part of the DCO application.

Junction		Software (key statistic used)	Current operation 2019		Construction phase 2025			Future operation, without scheme 2027		Future operation, without scheme 2042		Future operation, with scheme 2027		Future operation, with scheme 2042	
			Weekday 07:30-08:30	Weekday 17:00-18:00	Weekday 07:00-08:00	Weekday Ave 10:00-16:00	Weekday 17:00-18:00	Weekday 07:30-08:30	Weekday 17:00-18:00	Weekday 07:30-08:30	Weekday 17:00-18:00	Weekday 07:30-08:30	Weekday 17:00-18:00	Weekday 07:30-08:30	Weekday 17:00-18:00
A12 J24 (new layout)	Western Dumbbell	Vissim (LOS)	N/A		N/A			N/A (new junction which doesn't exist yet)		A	A	A	A		
	Eastern Dumbbell	Vissim (LOS)	N/A		N/A			N/A (new junction which doesn't exist yet)		A	A	A	A		
	Inworth Road Roundabout	Vissim (LOS)	N/A		N/A			N/A (new junction which doesn't exist yet)		A	A	A	A		
A12 J25	Western Roundabout	Vissim (LOS)	C	C	C	C	E	C	E	D	F	C	C	C	D
	Eastern Roundabout	Vissim (LOS)	A	A	B	A	B	B	B	C	B	B	B	C	C
	London Road Roundabout	Vissim (LOS)	N/A - (new junction which doesn't exist yet)		N/A (new junction which doesn't exist yet)			N/A (new junction which doesn't exist yet)		A	A	A	A		

Key showing operating condition:

LOS (Vissim)	
F	Worst operating conditions
E	
D	
C	
B	
A	Best operating conditions

Appendix B Traffic Flow Diagrams – Overall Model Network

Although the proposed changes would change traffic flows as shown in section 2.2 to 2.4 of this report, these impacts would not make meaningful changes to the high-level traffic flow diagrams shown in Appendix B of the Transport Assessment that was submitted as part of the DCO application [APP-253]. The traffic flow diagrams shown in that Appendix B have therefore not been updated.

Appendix C Traffic Flow Diagrams – Communities and A12 Mainline

The plots on the following pages show the updated impacts of the proposed A12 scheme compared to a ‘without scheme’ scenario, taking into account the impacts of the proposed changes discussed in Chapter 2.

Updated traffic flows are only shown for locations that meet both the following criteria in the AM or PM peak in either 2027 or 2042:

- The proposed changes change peak hour traffic flow by more than 10 vehicles per hour compared to the original DCO application
- The proposed changes change peak hour traffic flow by at least 1% compared to the original DCO application

As described in Chapter 2, only the proposed changes at A12 junction 25 are predicted to affect flows on the local road network. The traffic flow changes shown in the following images are therefore focussed around Junction 25.

A summary of the traffic flow changes due to the proposed changes at A12 junction 25 is also provided in Section 2.4 of this report.

The traffic flows presented in this Appendix supersede those shown in images C.3 and C.9 in Appendix C of the original Transport Assessment [APP-256]. All other images shown in the original Appendix C remain unaffected.

Location 31 (B1408 London Road between Copford and Stanway) was not included in the original Transport Assessment Appendix C due to its proximity to location 29, with both locations being on the same road and both experiencing an increase in traffic under the proposed scheme. However, traffic data is now included for location 31 in this Transport Assessment Addendum. This is because, as described in section 2.4 of this report, location 31 would experience a reduction in traffic due to the proposed change compared to the original assessment, whereas location 29 would experience an increase in traffic.

Plate C-1 Traffic flow changes in 2027

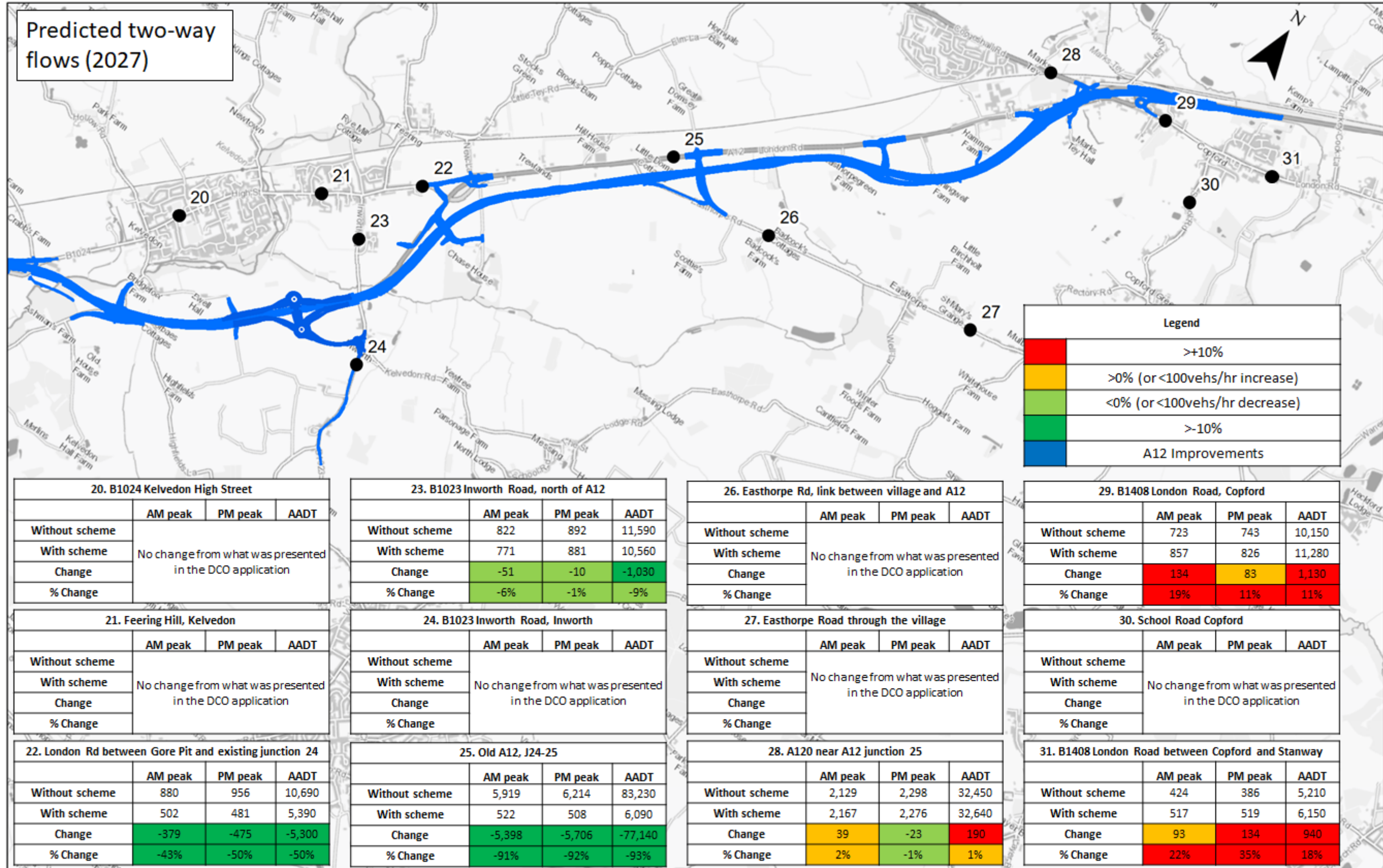
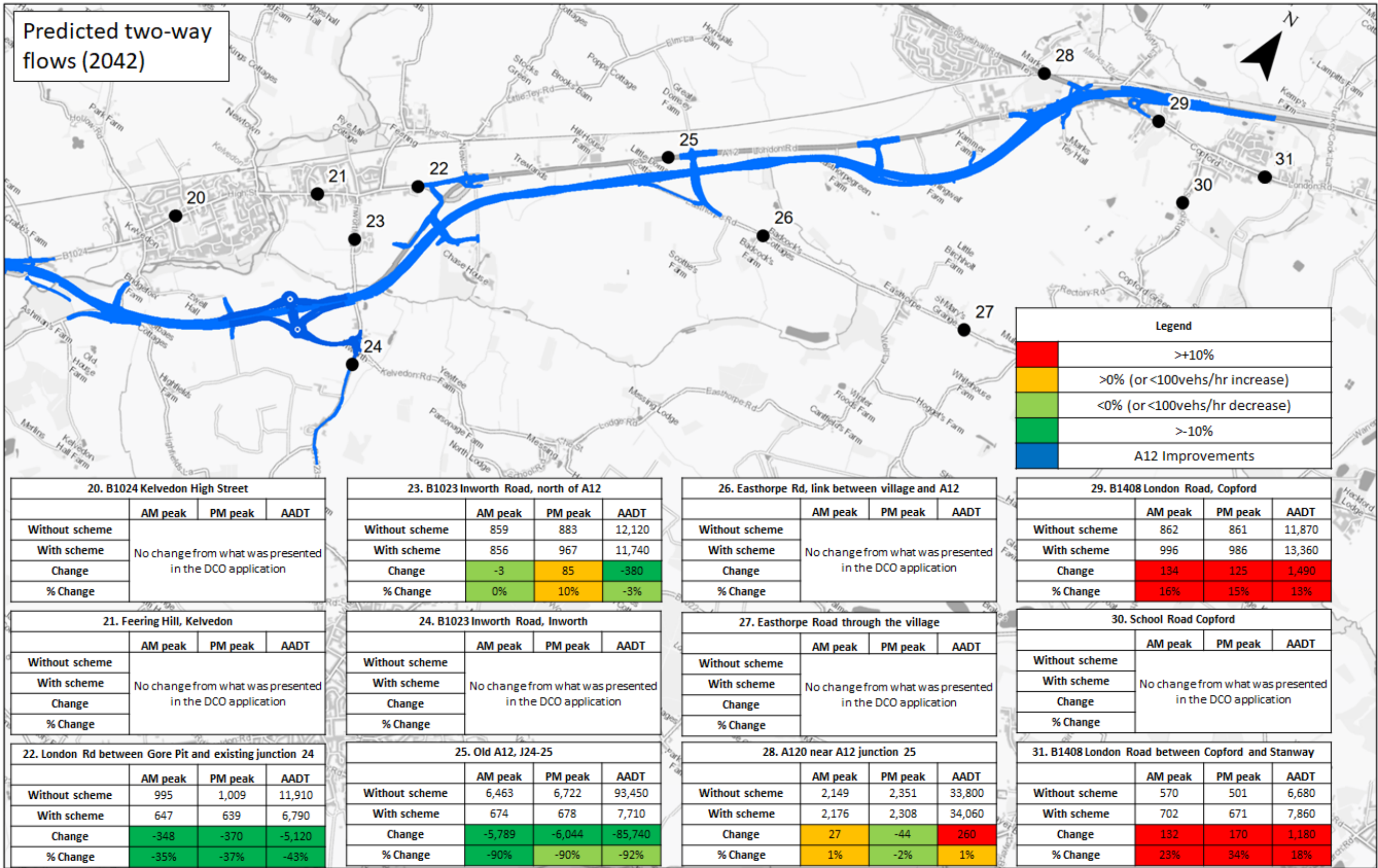


Plate C-2 Traffic flow changes in 2042



Appendix D Construction Traffic Diagrams

The proposed changes would have no effect on the assessment of construction impacts set out in the Transport Assessment that was submitted as part of the DCO application [APP-253].

Appendix E Junction Modelling Technical Notes – Overarching Vissim Methodology

The overarching Vissim methodology set out in Appendix E of the Transport Assessment that was submitted as part of the DCO application [APP-253] was still used during the assessment of the proposed DCO changes.

Appendix F Junction Modelling Technical Notes – A12 Junctions

F.1 Junction 24/Inworth Road B1023 - Removal of the segregated left turn lane

Overview

This section presents an updated methodology and results for the Vissim assessment of the Junction 24, taking into account the proposed changes to the B1023 roundabout. The chapter should be read in conjunction with section F.9 of Appendix F in the Transport Assessment submitted as part of the original DCO application [APP-256]. Any changes to the methodology or results are presented in this chapter, and those results supersede the results presented in the original Transport Assessment.

Model description

Vissim models have been developed based upon the modelling approach set out in Appendix E of the Transport Assessment.

The Vissim model used to assess the future operation of the junction was updated to represent the network changes detailed above; namely the removal of the segregated left turn lane at the Inworth Road Roundabout. The layout of the With Scheme model with proposed changes at Inworth Road Roundabout is shown in Plate F-1.



Plate F-1 Inworth Road roundabout with proposed changes

Details of the individual junctions included in the Junction 24 model are described in Table F-1. This table supersedes Table F9-1 presented in the original Transport Assessment Appendix F.

Table F-1 Vissim Model Junctions

Junction	Control type	Entry Arms	Junction Description
Western Dumbbell	Priority control	A12 NB off-slip	New roundabout
		Bridge over A12	Design submitted at DCO
Eastern Dumbbell	Priority control	A12 SB off-slip	New roundabout
		Link Road	Design submitted at DCO
		Bridge over A12	
Inworth Road Roundabout	Priority control	Inworth Road SB	New roundabout
		Kelvedon Road	Design submitted at DCO with proposed changes
		Inworth Road NB	

		Link Road	
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In line with the assessment presented in the original Transport Assessment, the following traffic scenarios have been modelled for the AM (07:30-08:30hr) and PM (17:00-18:00hr) peak periods:

- Future operation with scheme 2027
- Future operation with scheme 2042

Traffic data

The traffic demand for the junction models has been taken from the strategic traffic models. As described in paragraph 2.3.4 of this report, there is no change in levels of traffic caused by the proposed changes, therefore the same demand has been used as was used in the original DCO application. That traffic demand is presented in section F.9.8 of Appendix F of the Transport Assessment.

Vissim error & warning messages

Ten model simulation runs were carried out for each model year and peak hour. There were no warnings or errors reported for the 2027 AM and PM peak models.

Within the ten simulations runs for PM 2042, one vehicle was removed from the model after waiting 60 seconds. This is not considered significant. No other scenarios had vehicles removed.

There were two instances where vehicles were not able to access the network. However, in all cases this did not relate to blocking back within the network, and involved a small number of vehicles. This occurred once in the AM 2042 simulations and once in the PM 2042 simulations. This warning does not impact the results.

Model outputs: Levels of Service overview

The Vissim outputs presented include a Level of Service (LOS) category for each junction approach arm as well as for the junction as a whole. LOS is based upon average vehicle delay and can be used as a guide for how well the junction operates.

Table F-2 Level of Service Categories

LOS	Signalised Junction Delay (s/veh)	Priority Junction Delay (s/veh)	Description of Traffic Operation
A	≤10 sec	≤10 sec	Highly stable, free-flow condition with little or no congestion.
B	10–20 sec	10–15 sec	Stable, free-flow condition with little congestion.
C	20–35 sec	15–25 sec	Stable flow condition, with moderate congestion.

D	35–55 sec	25–35 sec	Less stable Approaching unstable condition with increasing congestion.
E	55–80 sec	35–50 sec	Unstable flow condition, volume at or slightly over capacity, considerable delays.
F	>80 sec	>50 sec	Forced flow condition, volumes exceed capacity; long delays with stop-and-go traffic.

Model outputs: with proposed changes

The LOS, delay, and queue length results of the Vissim junction modelling are presented in Table F-3 and Table F-4. These tables supersede tables F9-4 and F9-5 in the original Transport Assessment.

With the proposed changes, some queues and delays are slightly higher on Inworth Road (B1023) Roundabout than they were in the original DCO application. However, all arms still operate with a Level of Service A, which is the highest possible level of service.

Table F-3 2027 Future Operations with scheme with proposed changes

Junction	Entry arm	Control	AM					PM				
			LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)	LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)
Western Dumbbell	A12 NB off-slip	Priority	A	239	2	0	13	A	439	3	1	22
	Bridge over A12	Priority	A	303	2	0	0	A	288	2	0	0
	Total	Priority	A	542	2			A	727	3		
Eastern Dumbbell	A12 SB off-slip	Priority	A	261	3	0	11	A	386	4	1	16
	Link Road	Priority	A	833	2	0	7	A	563	2	0	7
	Bridge over A12	Priority	A	239	2	0	0	A	439	2	0	0
	Total	Priority	A	1333	2			A	1387	3		
Inworth Road Roundabout	Inworth Road SB	Priority	A	482	4	1	15	A	543	4	2	19
	Kelvedon Road	Priority	A	91	5	0	12	A	21	7	0	6
	Inworth Road NB	Priority	A	770	9	10	65	A	534	6	3	29
	Link Road	Priority	A	500	4	1	19	A	824	4	1	23
	Total	Priority	A	1844	6			A	1922	5		

Table F-4 2042 Future Operations with scheme with proposed changes

Junction	Entry arm	Control	AM					PM				
			LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)	LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)
Western Dumbbell	A12 NB off-slip	Priority	A	285	2	0	14	A	537	4	2	29
	Bridge over A12	Priority	A	324	2	0	0	A	298	2	0	0
	Total	Priority	A	609	2			A	834	3		
Eastern Dumbbell	A12 SB off-slip	Priority	A	300	3	0	12	A	385	5	1	18
	Link Road	Priority	A	912	2	0	9	A	636	2	0	8
	Bridge over A12	Priority	A	286	2	0	0	A	537	3	0	0
	Total	Priority	A	1498	2			A	1559	3		
Inworth Road Roundabout	Inworth Road SB	Priority	A	546	4	1	18	A	586	5	2	22
	Kelvedon Road	Priority	A	95	6	1	13	A	32	7	0	8
	Inworth Road NB	Priority	A	796	10	12	68	A	534	7	4	33
	Link Road	Priority	A	585	4	1	22	A	925	5	2	24
	Total	Priority	A	2021	7			A	2076	5		

Summary

Removing the segregated left turn lane from the Inworth Road Roundabout has no significant impact on the performance of the junction. For both 2027 and 2042, AM and PM periods, the junction is forecast to operate well within capacity.

F.2 Junction 25 – Removal of the signalised crossroads and partial signalisation of the existing roundabout at A120 / junction 25

Overview

This section presents an updated methodology and results for the Vissim assessment of the Junction 25, taking into account the proposed changes Old Rectory Junction from a signalised crossroads to a partially signalised roundabout. The chapter should be read in conjunction with section F.10 of Appendix F in the Transport Assessment submitted as part of the original DCO application [APP-256]. Any changes to the methodology or results are presented in this chapter, and those results supersede the results presented in the original Transport Assessment.

Model description

The operational performance of A12 junction 25 in terms of traffic queues and delays was assessed using Vissim junction modelling software, as reported in the Transport Assessment.

The 'Current Operation' 'Future Operation with Construction' and 'Future Operation without Scheme' models are not affected by the proposed changes, so have not been updated. Any methodologies or results relating to those scenarios are therefore not presented in this Transport Assessment.

For the 'Future Operation with Scheme' scenario, the Vissim model has been updated to reflect the partially-signalised roundabout design.

The Vissim model extents are shown in Plate F-2. Details of the junctions included in the model are described in Table F-5.

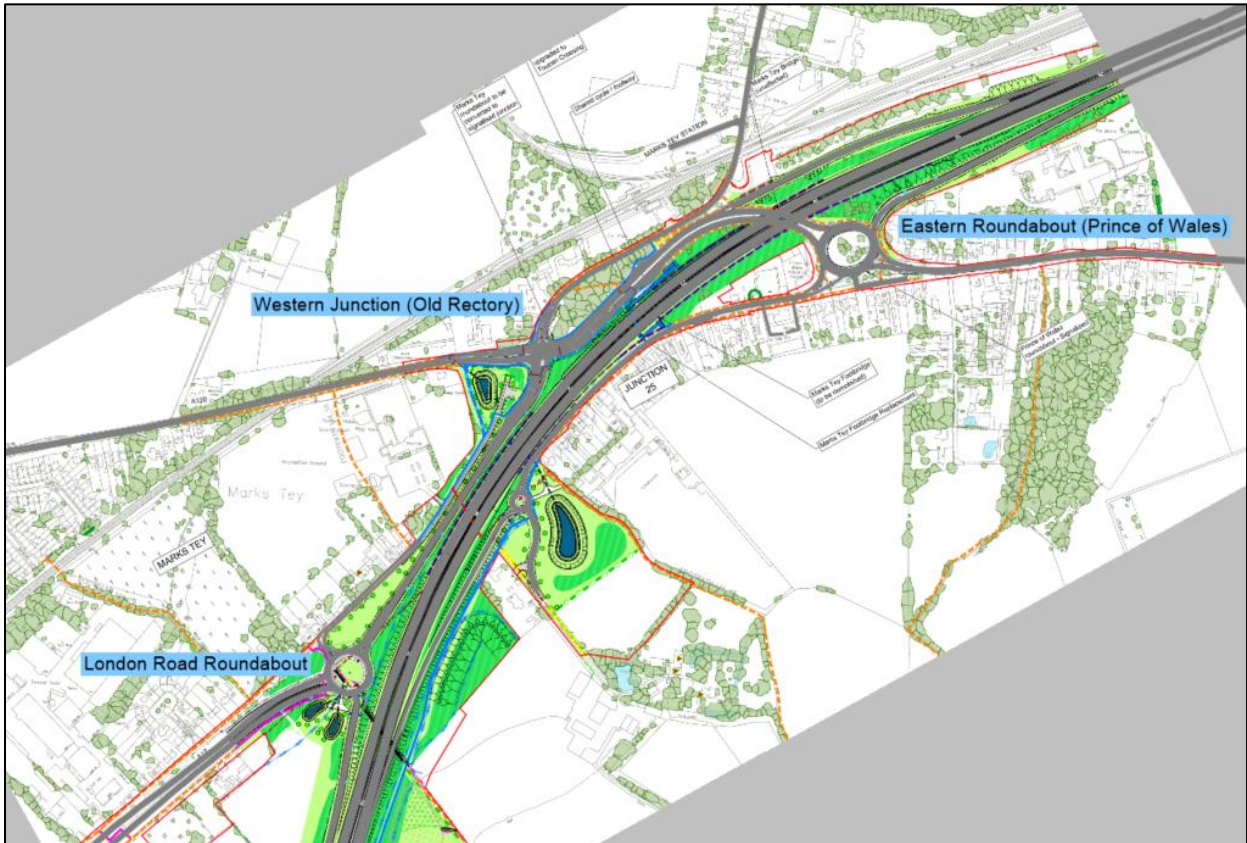


Plate F-2 Junction 25 with Scheme Vissim Model Extents

Details of the individual junctions included in the Junction 25 model are described in Table F-5. This table supersedes Table F10-2 presented in the original Transport Assessment Appendix F.

Table F-5 DS - DCO Modelled Junctions

Junction	Entry Arms	Junction Description
Old Rectory Roundabout	Western Link	Design submitted at DCO with proposed changes – Partially signalised roundabout.
	A120 Coggeshall Road	
	Station Road	
	Marks Tey interchange	
Eastern Roundabout (Prince of Wales)	A12 SB Off slip	No change to the existing layout. Priority controlled junction.
	B1408	
	London Road (A12 Slip)	
	Marks Tey interchange	
London Road Roundabout	A12 Off slip	Design submitted at DCO. Priority controlled junction.
	Southern Link (Old A12)	
	Western Link	
	Old London Road	

Greater detail of the junction 25 Western Roundabout (Old Rectory Junction) model layout is shown in Plate F-3.

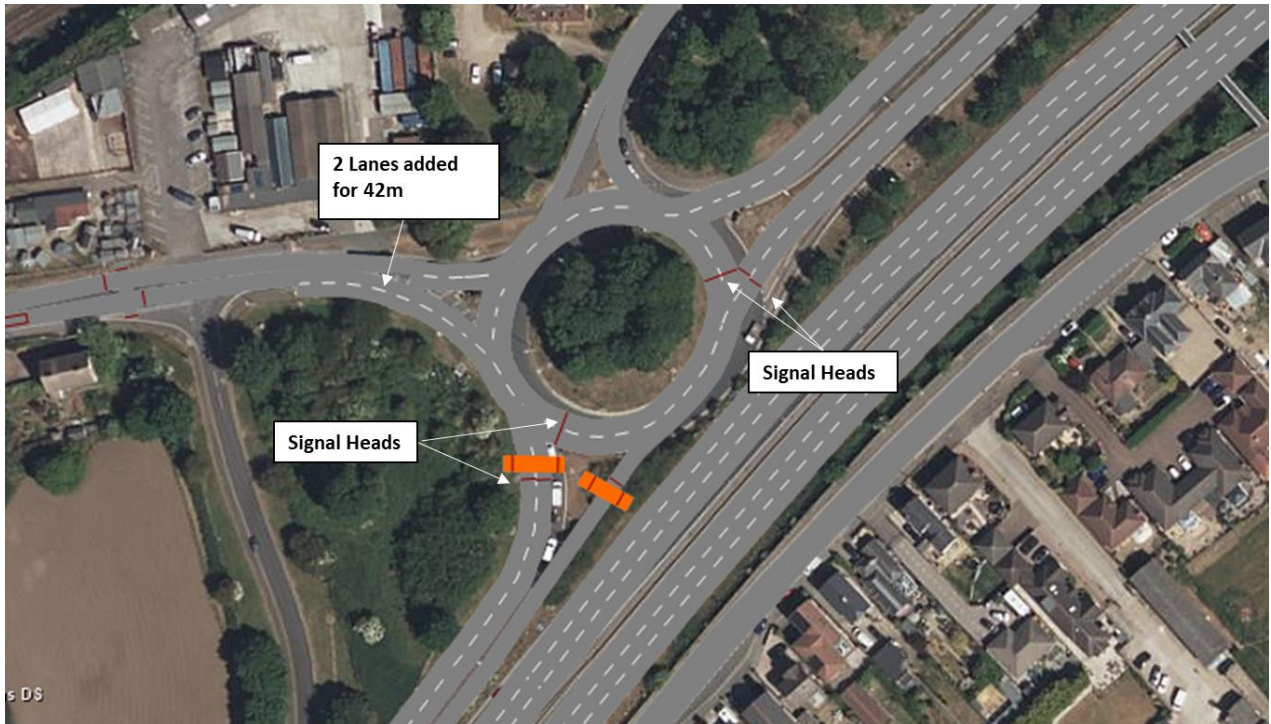


Plate F-3 Junction 25 Partially Signalised Roundabout

Traffic data

The proposed design change was modelled in the strategic traffic model to assess the impact of traffic re-routing. The resultant change in traffic flows is described in section 2.4 of this report. Those flows were extracted from the strategic model and used in this updated junction assessment in Vissim. A cordon of the updated strategic model was made which matched the Vissim model network. Flows were then extracted from the strategic model and used as the traffic demand and routing inputs in the Vissim models. The volume of vehicles approaching each arm of every individual junction within junction 25 is provided in the results tables in Tables F-7 and F-8 below.

Vissim error & warning messages

Ten model simulation runs were carried out for each model scenario and peak hour.

Within the ten simulations runs for PM 2042, two vehicles were removed from the model after waiting 60 seconds. This is not considered significant. No other scenarios had vehicles removed.

There were a few instances where vehicles were not able to access the network. However, in all cases this did not relate to blocking back within the network, and involved a small number of vehicles. This occurred once in the PM 2027 simulations, once in the AM 2042 simulations and three times in the PM 2042 simulations. This warning does not impact results.

Model outputs: Levels of Service overview

The Vissim outputs presented include a Level of Service (LOS) category for each junction approach arm as well as for the junction as a whole. LOS is based upon average vehicle delay and can be used as a guide for how well the junction operates.

Table F-6 Level of Service Categories

LOS	Signalised Junction Delay (s/veh)	Priority Junction Delay (s/veh)	Description of Traffic Operation
A	≤10 sec	≤10 sec	Highly stable, free-flow condition with little or no congestion.
B	10–20 sec	10–15 sec	Stable, free-flow condition with little congestion.
C	20–35 sec	15–25 sec	Stable flow condition, with moderate congestion.
D	35–55 sec	25–35 sec	Less stable Approaching unstable condition with increasing congestion.
E	55–80 sec	35–50 sec	Unstable flow condition, volume at or slightly over capacity, considerable delays.
F	>80 sec	>50 sec	Forced flow condition, volumes exceed capacity; long delays with stop-and-go traffic.

Model outputs: with proposed changes

LOS, delay, and queue length results of the Vissim junction modelling are presented in Table F-7 and Table F-8. These tables supersede the results shown in Tables F10-13 and F10-14 in Appendix F of the original Transport Assessment.

In the 2027 PM peak and the 2042 AM peak, the Old Rectory Junction (Western Junction) would improve from a Level of Service D (categorised as ‘approaching unstable condition’) in the original DCO application to a Level of Service C (categorised as ‘stable flow condition’). Because traffic would be able to flow more freely through the Old Rectory Junction, the adjacent Eastern Roundabout would become slightly busier. This would result in a lowering of the Level of Service from a C to a B, although both Levels of Service C and B are still categorised as having ‘stable flow condition’.

In the 2042 PM peak, the Station Road arm of the Western Junction (Old Rectory Junction) would reduce from a Level of Service E in the original DCO application to a Level of Service F under the proposed changes. However, the increase in delay that causes this change in Level of Service is only 8 seconds.

Table F-7 2027 Future Operations with scheme with proposed changes

Junction	Entry arm	Control	AM					PM				
			LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)	LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)
Old Rectory Junction Roundabout	Western Link	Signalised	C	572	21	14	46	C	873	28	26	70
	A120 Coggeshall Road	Priority	D	1152	31	68	236	D	1142	31	55	191
	Station Road	Priority	C	216	22	7	32	E	205	37	9	34
	Marks Tey Interchange	Signalised	C	1545	21	26	113	C	1506	30	37	118
	Total	Signalised	C	3486	24			C	3726	31		
Eastern Roundabout	A12 SB off slip	Priority	B	1277	14	24	85	B	1150	14	16	66
	B1408 London Road	Priority	B	563	15	8	47	B	416	10	2	26
	London Road (A12 slip)	Priority	A	89	7	0	9	A	123	8	0	11
	Marks Tey Interchange	Priority	A	624	8	0	9	A	705	9	0	12
	Total	Priority	B	2554	13			B	2393	12		
London Road Roundabout	A12 NB offslip	Priority	A	252	5	0	9	A	575	6	0	13
	Southern Link - Old A12	Priority	A	303	2	0	12	A	277	3	1	15
	Western Link	Priority	A	288	2	0	4	A	284	3	0	4
	Old London Road	Priority	A	58	2	0	6	A	63	4	0	8
	Total	Priority	A	901	3			A	1199	4		

Table F-8 2042 Future Operations with scheme with proposed changes

Junction	Entry arm	Control	AM					PM				
			LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)	LOS	Vehicles	Vehicle Delay (s)	Average Queue (m)	Average Maximum Queue (m)
Old Rectory Junction Roundabout	Western Link	Signalised	C	668	23	17	53	D	976	35	41	94
	A120 Coggeshall Road	Priority	D	1206	33	100	288	E	1190	39	113	300
	Station Road	Priority	D	243	27	11	40	F	233	68	25	57
	Marks Tey Interchange	Signalised	B	1527	20	27	118	C	1627	34	55	151
	Total	Signalised	C	3643	25				D	4025	38	
Eastern Roundabout	A12 SB off slip	Priority	D	1258	28	52	123	C	1222	24	34	95
	B1408 London Road	Priority	D	669	25	27	94	B	525	13	5	39
	London Road (A12 slip)	Priority	A	99	8	0	10	A	138	9	1	12
	Marks Tey Interchange	Priority	A	727	9	0	11	B	794	10	0	14
	Total	Priority	C	2752	22				C	2679	17	
London Road Roundabout	A12 NB offslip	Priority	A	319	6	0	12	A	671	7	1	18
	Southern Link - Old A12	Priority	A	341	2	0	14	A	286	4	1	17
	Western Link	Priority	A	421	3	0	6	A	447	3	0	8
	Old London Road	Priority	A	63	3	0	7	A	68	5	0	8
	Total	Priority	A	1144	3				A	1473	5	

Model outputs: summary of LOS at each junction

A summary of the LOS and delay results for each of the modelled junctions at junction 25 are shown in Table F-9 and Table F-10. To aid comparison, the Without Scheme scenario results have also been provided. These tables supersede the results shown in Table F10-15 and F10-16 in Appendix F of the original Transport Assessment, although the presentation of the results have been updated slightly.

Table F-9 LOS & Delay Summary - 2027

Junction	Scenario	AM		PM	
		LOS	Veh Delay (s)	LOS	Veh Delay (s)
Old Rectory Junction	Without Scheme	C	24	E	46
	With Scheme with proposed changes	C	24	C	31
Eastern Roundabout	Without Scheme	B	14	B	12
	With Scheme with proposed changes	B	13	B	12
London Road Roundabout	Without Scheme	-	-	-	-
	With Scheme with proposed changes	A	3	A	4

Table F-10 LOS & Delay Summary - 2042

Junction	Scenario	AM		PM	
		LOS	Veh Delay (s)	LOS	Veh Delay (s)
Old Rectory Junction	Without Scheme	D	29	F	64
	With Scheme with proposed changes	C	25	D	38
Eastern Roundabout	Without Scheme	C	17	B	14
	With Scheme with proposed changes	C	22	C	17
London Road Roundabout	Without Scheme	-	-	-	-
	With Scheme with proposed changes	A	3	A	5

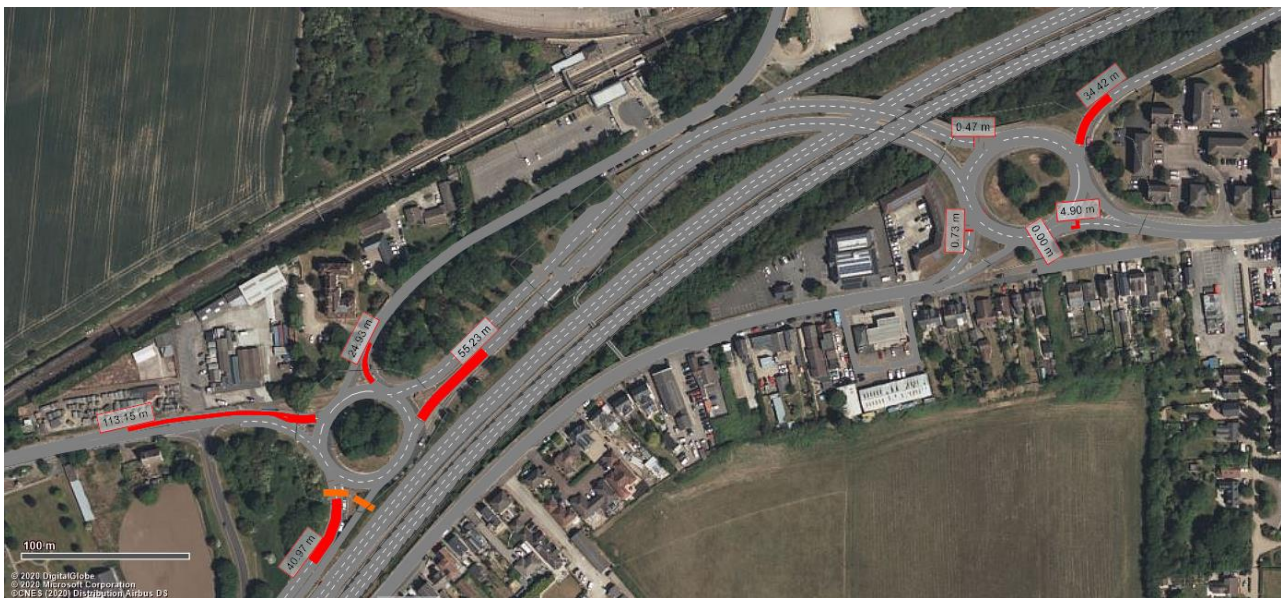
Queue lengths

Plate F-4 and F-5 illustrate the average queue lengths on each approach to the Old Rectory Junction roundabout and Eastern roundabout at junction 25 for the AM and PM peaks respectively, for 2042. The average queue lengths are identifiable by the red blocks and the queue length distance is also reported (m). These images supersede Plates F10-15 and F10-16 in Appendix F of the original Transport Assessment.

Plate F-4 1 2042 AM Peak Future Operations with Scheme Average Queue Lengths



Plate F-5 2 2042 PM Peak Future Operations with Scheme Average Queue Lengths



In 2042 the queues at the Old Rectory Junction on the A120 Coggeshall Road approach are predicted to be 100m in the AM peak and 113m in the PM peak. This compares to 30m in the AM peak and 40m in the PM peak in the original DCO application. However, the actual delay per vehicle on this arm reduces by 10 to 15 seconds with the proposed changes compared to the original DCO application..

Summary

For both 2027 and 2042, AM and PM periods, the Old Rectory Junction is forecast to operate within capacity with the proposed change to a partially signalised roundabout.

The overall level of service at Old Rectory Junction is predicted to improve compared to the original DCO application. At the adjacent Prince of Wales roundabout (Eastern roundabout) the level of service is predicted to get slightly worse as a result of the improved flow through the Old Rectory Junction, although it would still operate at a stable condition.

Detailed arm-by-arm analysis of queues and delays shows that the Station Road arm of the Old Rectory Junction would reduce from a Level of Service E in the original DCO application to a Level of Service F under the proposed changes. However, the increase in delay that causes this change in Level of Service is only 8 seconds. The A120 Coggeshall Road arm would reduce in delay by 10 to 15 seconds compared to the original DCO application, despite an increase in average queue length.

Appendix G Junction Modelling Technical Notes – Local Road Junctions

The predicted changes in traffic flow due to the proposed changes are not predicted to affect any of the conclusions around the operational performance of local road junctions that were set out in Appendix G of the Transport Assessment submitted as part of the DCO application [APP-253].