

## **Appendix 65**

AECOM Detailed Modelling Report

**DRAFT**

# Peel Hall Development

Detailed Modelling Results

Highgate Transportation

November 2017

## Quality information

### Prepared by

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Amy Friel  
Consultant

### Checked by

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Duncan Carter  
Senior Consultant

### Approved by

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Catherine Zoeflig  
Associate Director

## Revision History

Revision	Revision date	Details	Authorized	Name	Position
A	October 2017	Final Report		Catherine Zoeflig	Associate Director

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N/A	Yes	Fiona Bennet, David Tighe (Highgate Transportation)

**Prepared for:**

Highgate Transportation

**Prepared by:**

Amy Friel

Consultant

T: +44 161 602 7930

E: amy.friel@aecom.com

AECOM Limited

5<sup>th</sup> Floor, 1 New York Street

Manchester

M1 4HD

UK

T: +44 161 601 1700

aecom.com

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# 1. Introduction

## 1.1 Introduction and Background

This report has been prepared on behalf of Highgate Transportation, and presents the results of a detailed modelling exercise, undertaken in order to assist in defining the mitigation requirements needed to support the proposed Peel Hall mixed use development site. The detailed modelling exercise follows a detailed SATURN modelling process which has identified those junctions that become over-saturated following the inclusion of the development proposals and or the proposed through route. This is discussed within 'Highgate Transportations Technical Note (TN22)' Impact Summary a copy of which is contained within **Appendix A** at the end of this report. This Technical Note, alongside a meeting, which took place on Thursday 28<sup>th</sup> September 2017, have been used as the basis for defining the requirements of the detailed modelling analysis. For background, this Technical Note should also be read in conjunction with the following AECOM reports:

- Peel Hall SATURN model Forecasting Report (September 2017),
- Peel Hall SATURN model Local Model Validation Report (September 2017), and
- Peel Hall SATURN Model Results Technical Note (28<sup>th</sup> September 2017).

The results and conclusions drawn from the SATURN modelling and presented within the Highgate Transportation TN 22 are summarised within the following table:

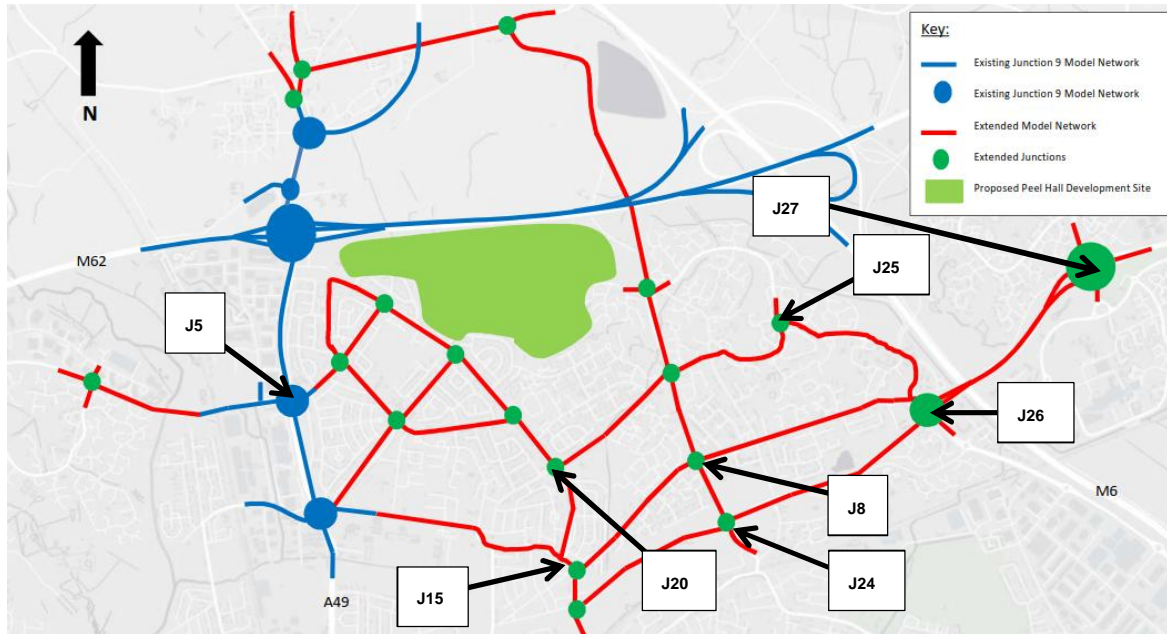
Junction Ref.	Base 2015	Do Minimum 2025	Do Something 2025	Do Minimum 2030	Do Something 2030	Through Route 2030
1	*	*	-	*	-	-
2	*	*	-	*	-	-
3	*	*	*	*	*	*
4		*	-	*	-	-
5		*	*	*	*	*
6	*	*	-	*	-	-
7						
8	*	*	*	*	*	*
9						
10						*
11						
12						
13						
14						
15		*	*		*	*
16						
17						
18						
19						
20			*		*	
21						
22						
23					-	-
24		*	*	*	*	*
25			*		*	*
26		*	*	*	*	*
27	*	*	*	*	*	*
PH1						
PH2						
PH3						
PH4						
PH5						*
PH6						*

**Table 1 – Junctions operation at or above capacity within the Peel Hall SATURN model**

It was therefore concluded that the following junctions needed to be understood in detail and modelled in a junction modelling package such as LINSIG, Junctions 8, or Junctions 9:

- 1. Junction 5 - A49/Sandy Lane West;
- 2. Junction 8 - Blackbrook Avenue/Insall Road/Hilden Road;
- 3. Junction 15 - A50 Orford Green/Poplars Avenue;
- 4. Junction 20 - Capesthorpe Road/Poplars Avenue;
- 5. Junction 24 - Birchwood Way/Blackbrook Avenue;
- 6. Junction 25 - Enfield Park Road/Crab Lane;
- 7. Junction 26 - Birchwood Way/Crab Lane/Woolston Grange Avenue; and
- 8. Junction 27 - Birchwood Way/Oakwood Gate.

The following figure illustrates the location of the above junctions in the context of the wider network modelled using SATURN:



**Figure 1 – Extent of modelled network showing junctions requiring detailed modelling**

The table below sets out specifically how the above junctions have been modelled and which modelling packages have been utilised:

<b>Peel Hall Detailed Modelling</b>			
	<b>ARCADY</b>	<b>PICADY</b>	<b>LINSIG</b>
Junction 5 - A49 / Sandy Lane (To include Calver Road / Cromwell Avenue)			*
J8 - Blackbrook Avenue / Insall Road / Hilden Road			*
J15 - A50 Orford Green / Poplars Avenue (To include adjacent 4 arm priority roundabout A50 / Hilden Road) Modelled using JUNCTIONS 9 to simulate the interactions between these two junctions	*	*	
J20 - Capesthorne Road / Poplars Avenue (Model to include bypass lane between Poplars Ave S and Capesthorne Road West)	*		
J24 - Birchwood Way / Blackbrook Avenue	*		
J25 - Enfield Park Road / Crabb Lane		*	
J26 - Birchwood Way / Crabb Lane / Woolston Grange Avenue (LINSIG in future years)			*
J27 - Birchwood Way / Oakwood Gate			*

**Table 2 – Modelling method by junction**

## 1.2 Structure of this Report

This introductory chapter is followed by one further chapter and two appendices which are identified as follows:

- **Chapter 2 – Presents the results for each junction and each scenario**
- **Appendix A - Highgate Transportations Technical Note (TN22), and**
- **Appendix B – Modelling Results Outputs**





## 2. Results

### 2.1 Introduction

### 2.2 Junction 5 - A49 / Sandy Lane West

Table 1 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the A49 / Sandy Lane West junction.

**Table 1. A49 / Sandy Lane West Peak LinSig Results Summary**

Link		Scenario																													
		2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route													
		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM											
DoS (%)		MMQ		DoS (%)		MMQ		DoS (%)		MMQ		DoS (%)		MMQ		DoS (%)		MMQ		DoS (%)		MMQ									
<b>Junction 5: A49 / Sandy Lane</b>																															
1/1+1/2	A49 North Ahead	74.9	74.9%	12.8	47.2	47.2%	5.0	78.2	78.2%	11.4	50.0	50.0%	5.6	76.9	76.9%	11.7	49.6	49.6%	6.1	80.5	80.5%	12.7	49.5	49.5%	5.3	76.3	76.3%	10.6	49.3	49.3%	5.5
1/3+1/4	A49 North Ahead	79.9	79.9%	15.0	53.6	53.6%	5.3	81.4	81.4%	12.5	57.9	57.9%	6.7	82.4	82.4%	13.9	59.0	59.0%	7.3	81.3	81.3%	13.4	56.8	56.8%	6.0	81.1	81.1%	11.9	58.7	58.7%	6.2
2/1+2/2	Sandy Lane West Left Ahead	86.0	86.0%	9.7	87.0	87.0%	14.5	92.9	92.9%	14.1	94.1	94.1%	19.4	89.6	89.6%	11.6	89.0	89.0%	14.5	97.1	97.1%	18.7	94.6	94.6%	19.9	89.6	89.6%	11.5	86.8	86.8%	13.1
3/2+3/1	A49 South Ahead Left	67.5	67.5%	7.5	89.3	89.3%	15.4	66.3	66.3%	6.3	87.7	87.7%	14.3	66.2	66.2%	6.2	90.4	90.4%	17.8	69.8	69.8%	7.0	91.2	91.2%	16.3	70.5	70.5%	7.8	86.9	86.9%	14.2
3/3+3/4	A49 South Ahead	62.8	62.8%	8.4	87.4	87.4%	13.8	60.0	60.0%	6.9	89.2	89.2%	14.5	60.6	60.6%	6.9	90.2	90.2%	16.6	65.5	65.5%	8.1	92.9	92.9%	16.9	65.8	65.8%	8.8	78.7	78.7%	10.7
4/2+4/1	Cromwell Ave Left	37.5	37.5%	3.3	49.1	49.1%	3.8	36.4	36.4%	3.1	49.6	49.6%	3.4	38.3	38.3%	3.0	51.5	51.5%	3.8	39.1	39.1%	3.8	48.9	48.9%	3.4	43.5	43.5%	3.8	53.2	53.2%	4.4
4/3	Cromwell Ave Ahead	71.4%	9.0	70.2%	8.3	76.4%	9.9	71.5%	7.6	75.1%	10.9	75.4%	8.5	79.8%	12.6	74.0%	7.9	78.8%	11.7	72.1%	9.1	74.0%	7.9	78.8%	11.7	72.1%	9.1	74.0%	7.9	78.8%	11.7
4/4	Cromwell Ave Ahead	53.6%	5.3	66.4%	6.9	55.5%	5.9	64.0%	5.8	55.2%	6.5	70.6%	7.2	60.2%	8.0	67.0%	6.4	60.2%	7.4	68.7%	7.6	60.2%	8.0	67.0%	6.4	60.2%	7.4	68.7%	7.6		
7/1	A49 South (exit)	55.0%	0.7	36.8%	0.3	56.2%	0.9	38.4%	0.3	55.9%	0.7	38.8%	0.3	57.2%	0.8	38.6%	0.3	56.8%	0.9	38.6%	0.3	56.8%	0.9	38.6%	0.3	56.8%	0.9	38.6%	0.3		
7/2	A49 South (exit)	54.7%	0.7	35.5%	0.4	55.4%	0.8	36.6%	0.5	55.9%	0.8	35.5%	0.6	56.7%	0.8	37.3%	0.4	56.0%	0.9	33.8%	0.4	56.0%	0.9	33.8%	0.4	56.0%	0.9	33.8%	0.4		
8/1	Rbout Link 1 Right	67.7%	7.8	29.9%	1.6	78.2%	9.9	32.7%	1.6	69.4%	7.5	30.1%	3.0	79.8%	10.6	35.9%	1.6	71.0%	7.7	26.9%	2.6	35.9%	1.6	71.0%	7.7	26.9%	2.6				
8/2	Rbout Link 1 Right	41.4%	3.8	40.6%	0.6	38.6%	3.5	41.4%	0.6	43.3%	5.1	42.9%	4.5	39.8%	3.9	43.9%	0.6	46.4%	5.4	41.7%	5.9	43.9%	3.9	43.9%	0.6	46.4%	5.4	41.7%	5.9		
8/3	Rbout Link 1 Right	69.4%	7.8	56.9%	1.3	68.0%	8.1	56.4%	0.9	69.4%	8.6	58.6%	6.4	72.1%	10.2	62.3%	1.1	74.8%	9.8	57.3%	7.7	62.3%	1.1	74.8%	9.8	57.3%	7.7				
9/1	Rbout Link 2 Ahead	87.1%	11.5	78.6%	12.4	92.2%	21.6	92.1%	16.1	88.6%	19.7	85.9%	15.1	96.8%	26.8	94.6%	19.0	89.4%	20.0	79.4%	9.8	94.6%	19.0	89.4%	20.0	79.4%	9.8				
9/2	Rbout Link 2 Ahead Right	86.2%	11.5	78.2%	12.5	92.1%	22.7	92.6%	13.7	87.9%	20.3	86.3%	15.7	97.1%	27.7	95.4%	20.7	88.7%	20.5	79.6%	9.6	95.4%	20.7	88.7%	20.5	79.6%	9.6				
9/3	Rbout Link 2 Right	38.9%	2.5	53.9%	7.5	41.4%	2.8	52.5%	4.0	39.9%	2.6	52.2%	6.2	43.2%	6.3	58.0%	5.0	42.2%	2.6	50.5%	4.0	58.0%	5.0	42.2%	2.6	50.5%	4.0				
10/1	Rbout Link 3 Ahead	30.7%	4.1	58.3%	8.3	36.9%	5.6	67.4%	6.1	35.3%	5.3	64.9%	8.4	40.5%	6.3	66.9%	5.5	34.3%	5.8	75.2%	10.0	66.9%	5.5	34.3%	5.8	75.2%	10.0				
10/2+10/3	Rbout Link 3 Right Ahead	63.8	63.8%	8.0	90.4	90.4%	7.9	71.8	71.8%	6.1	92.9	92.9%	18.2	71.3	71.3%	6.3	90.0	90.0%	14.5	72.3	72.3%	4.2	95.0	95.0%	20.9	66.2	66.2%	5.1	88.0	88.0%	11.0
11/1	Rbout Link 4 Ahead	57.6%	6.0	41.1%	4.9	63.5%	7.6	49.8%	6.9	61.9%	7.3	42.7%	3.9	64.8%	3.2	51.6%	6.9	56.4%	6.4	44.8%	5.1	51.6%	6.9	56.4%	6.4	44.8%	5.1				
11/2	Rbout Link 4 Ahead	63.6%	7.2	71.6%	3.1	67.2%	8.5	75.6%	2.7	65.3%	8.5	71.4%	11.9	68.3%	2.3	75.0%	2.8	63.3%	7.6	68.5%	11.1	68.3%	2.3	75.0%	2.8	63.3%	7.6	68.5%	11.1		
11/3	Rbout Link 4 Ahead Right	67.2%	8.3	72.9%	11.5	69.6%	7.2	75.9%	8.7	68.7%	8.2	72.7%	10.7	71.1%	9.0	76.1%	8.3	62.5%	7.3	68.0%	9.9	76.1%	8.3	62.5%	7.3	68.0%	9.9				
12/1	Cromwell Ave (exit) Ahead	26.9%	1.3	44.2%	5.8	28.2%	1.1	47.6%	5.6	28.0%	1.1	47.2%	6.4	30.8%	1.1	48.5%	5.6	28.4%	3.0	48.9%	2.9	48.5%	5.6	28.4%	3.0	48.9%	2.9				
12/2	Cromwell Ave (exit) Ahead	32.9%	1.0	45.8%	5.9	33.6%	1.0	43.5%	6.4	33.7%	0.9	45.0%	6.8	34.1%	1.0	45.4%	6.2	36.5%	2.6	45.4%	3.0	45.4%	6.2	36.5%	2.6	45.4%	3.0				
13/1	Sandy Lane Crossing Left	40.4%	4.5	31.8%	1.5	48.5%	6.2	34.9%	1.7	44.3%	4.5	32.7%	1.5	52.6%	6.9	37.0%	1.8	45.5%	4.2	29.5%	1.4	45.5%	6.9	37.0%	1.8	45.5%	4.2	29.5%	1.4		
<b>Junction 5: Cromwell Avenue / Calver Road</b>																															
1/1	Cromwell Ave (East) Ahead	47.4%	5.5	71.8%	8.9	49.2%	6.1	73.1%	10.9	48.8%	6.9	73.7%	9.3	51.9%	10.5	75.6%	13.2	52.0%	6.2	75.9%	11.7	75.6%	13.2	52.0%	6.2	75.9%	11.7				
1/2	Cromwell Ave (East) Right	71.9%	9.4	57.4%	11.2	79.2%	10.5	61.1%	11.4	77.6%	10.5	59.9%	11.3	85.8%	12.6	61.2%	11.8	82.0%	10.9	60.0%	11.3	61.2%	11.8	82.0%	10.9	60.0%	11.3				
2/2+2/1	Cromwell Ave (West) Ahead Left	85.5	85.5%	24.4	74.3	74.3%	11.5	87.9	87.9%	27.7	72.5	72.5%	11.4	87.7	87.7%	26.7	75.8	75.8%	12.0	90.2	90.2%	30.4	76.8	76.8%	12.3	89.6	89.6%	28.9	77.0	77.0%	12.2
3/1	Calver Road Left	64.9%	14.6	56.8%	14.2	67.6%	15.1	59.8%	15.3	68.4%	15.6	59.9%	15.4	71.5%	16.2	61.6%	16.0	69.9%	15.8	60.6%	15.8	69.9%	15.8	60.6%	15.8						
Cycle Time		120s		120s		120s		120s		120s		120s		120s		120s		120s		120s		120s		120s		120s		120s			
C1: Stream 1 PRC for Signalised Lanes		33.3%	-0.4%	25.3%	-3.2%	26.3%	-0.5%	24.4%	27.7%	2.3%																					
C1: Stream 2 PRC for Signalised Lanes		26.1%	23.4%	17.8%	18.5%	19.8%	12.8%	18.2%	14.2%	24.8%																					
C1: Stream 3 PRC for Signalised Lanes		12.7%	58.3%	10.5%	55.3%	9.3%	52.5%	10.6%	44.5%	53.4%																					
C1: Stream 4 PRC for Signalised Lanes		3.4%	3.5%	-3.2%	-4.6%	0.4%	-1.1%	-7.9%	-6.0%	3.7%																					
C1: Stream 5 PRC for Signalised Lanes		123.0%	183.3%	85.5%	158.0%	103.1%	175.6%	71.1%	143.3%	97.7%	204.7%																				
C1: Stream 6 PRC for Signalised Lanes		36.6%	144.4%	60.0%	134.2%	60.9%	131.7%	57.5%	133.3%	58.5%	132.9%																				
C1: Stream 7 PRC for Signalised Lanes		173.2%	96.6%	168.2%	88.9%	166.8%	90.7%	164.2%	85.4%	146.7%	84.1%																				
C2: PRC for Signalised Lanes		5.3%	21.1%	2.4%	23.1%	2.6%	18.7%	-0.3%	17.2%	0.5%	16.8%																				
PRC Over All Lanes		3.4%	-0.4%	-3.2%	-4.6%	0.4%	-0.5%	-7.9%	-6.0%	0.4%	2.3%																				

### 2.3 Junction 8 - Blackbrook Avenue/Insall Road/Hilden Road

Table 2 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the Blackbrook Avenue / Insall Road Hilden Road junction.

**Table 2. Blackbrook Avenue/Insall Road/Hilden Road Peak LinSig Results Summary**

Link	Scenario																			
	2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ
<b>Junction 8: Blackbrook Avenue / Insall Road / Hilden Road</b>																				
1/1 Blackbrook Ave S ahead / right / left	88.90%	13.6	88.70%	12.1	89.80%	14	92.30%	13.7	91.90%	14.9	88.30%	14.9	96.00%	17.6	92.10%	16.1	100.60%	21.3	90.40%	15.9
2/1 Hilden Rd left / ahead / right	53.90%	6.6	87.00%	10.5	69.40%	9	88.30%	10.9	58.20%	7.2	90.00%	12.8	57.30%	7	90.40%	13	51.50%	6.4	87.20%	11.4
3/1 Blackbrook Ave N left / ahead / right	88.50%	14.8	85.60%	11.9	91.10%	16.1	89.30%	13.3	93.00%	18.8	86.80%	15.6	97.10%	22.1	90.90%	17.9	97.00%	22.1	89.20%	17.1
4/1 Insall Rd right / left / ahead	88.20%	14	76.20%	8.3	93.50%	16.8	77.30%	8.5	95.30%	17.9	75.50%	9.4	100.80%	23.6	90.70%	13.6	97.00%	20	79.90%	9.9
Cycle Time	112s		99s		112s		99s		115s		115s		115s		115s		115s		115s	
PRC Over All Lanes	1.2%		1.4%		-3.9%		-2.5%		-5.9%		0.0%		-12.0%		-2.3%		-11.7%		-0.5%	

### 2.4 Junction 15 - A50 Hilden Road/Orford Green/Poplars Avenue

Table 3 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the A50 Hilden Road/Orford Green/Poplars Avenue junction as individual junctions.

**Table 3. A50 Hilden Road/Orford Green/Poplars Avenue (Separate)**

Link	Scenario																			
	2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
<b>Junction 15: A50 Orford Road / Hilden Road</b>																				
Hilden Road	0.36	0.60	0.31	0.50	0.37	0.60	0.33	0.50	0.38	0.60	0.33	0.50	0.45	0.80	0.41	0.70	0.45	0.80	0.32	0.50
A50 Orford Road	0.79	3.60	0.84	4.90	0.85	5.30	0.93	10.30	0.83	4.60	0.85	5.30	0.91	8.40	0.93	9.90	0.91	8.40	0.92	9.40
Smith Drive	0.35	0.50	0.63	1.60	0.36	0.60	0.67	2.00	0.36	0.60	0.66	1.90	0.38	0.60	0.71	2.30	0.39	0.60	0.70	22.00
A50 Orford Green	0.98	18.50	0.92	9.60	1.00	22.80	1.05	40.10	1.01	25.40	0.97	16.50	1.05	40.00	1.00	22.80	1.06	44.50	1.01	25.80
<b>Junction 15: A50 Orford Green / Poplars Avenue</b>																				
Poplars Ave left turn	0.98	15.00	0.42	0.70	1.01	20.70	0.61	1.50	0.97	13.70	0.49	0.90	1.04	26.70	0.50	1.00	1.04	27.60	0.64	1.70
A50 Orford Green WB right turn	0.57	1.70	0.63	2.30	0.66	2.60	0.80	6.70	0.59	1.90	0.64	2.50	0.69	3.10	0.80	6.80	0.68	2.90	0.79	6.10

Table 4 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the A50 Hilden Road/Orford Green/Poplars Avenue junction as linked junctions.

**Table 4. A50 Hilden Road/Orford Green/Poplars Avenue (Linked)**

Link	Scenario																			
	2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)
<b>Junction 15: A50 Orford Road / Hilden Road</b>																				
Hilden Road	6.14	0.60	6.16	0.60	6.22	0.60	7.38	0.70	6.17	0.60	6.72	0.60	7.33	0.90	9.43	1.00	7.65	0.80	7.39	0.60
A50 Orford Road	21.01	5.40	32.17	9.10	31.36	8.60	102.00	34.70	24.40	6.00	36.43	10.60	56.41	16.40	116.71	38.20	52.91	16.30	103.66	35.60
Smith Drive	7.44	0.60	14.68	2.00	7.81	0.60	19.40	2.80	7.64	0.60	17.07	2.40	8.22	0.70	23.57	3.30	8.53	0.70	21.46	3.20
A50 Orford Green	8.64	2.40	9.40	2.50	8.52	2.30	10.13	2.70	8.44	2.30	9.95	2.80	9.09	2.50	9.89	2.70	9.17	2.40	10.06	2.70
<b>Junction 15: A50 Orford Road / Hilden Road</b>																				
A50 Orford Green EB	2.06	0.30	5.44	1.60	1.61	0.30	8.35	2.10	1.40	0.20	10.00	2.60	1.93	0.50	9.56	2.50	1.99	0.30	5.37	1.40
Poplars Ave left turn	667.09	102.20	120.11	9.00	591.19	95.50	513.04	54.90	493.49	82.20	385.47	34.10	806.02	129.40	339.63	30.50	824.20	133.40	367.07	42.60
A50 Orford Green WB right turn	4.47	1.50	5.55	1.80	5.61	1.80	8.06	2.60	4.61	1.40	5.65	1.90	6.38	2.10	8.19	2.70	6.25	2.00	8.11	2.60

## 2.5 Junction 20 - Capesthorpe Road/Poplars Avenue

Table 5 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the Capesthorpe Road / Poplars Avenue junction.

**Table 5. Capesthorpe Road / Poplars Avenue Junctions 8 Results Summary**

Link	Scenario																			
	2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
<b>Junction 20: Capesthorpe Road / Poplars Avenue</b>																				
Capesthorpe Road (W)	0.30	0.43	0.35	0.54	0.33	0.48	0.42	0.71	0.32	0.46	0.37	0.59	0.37	0.58	0.45	0.80	0.36	0.56	0.39	0.65
Poplars Avenue (N)	0.36	0.55	0.24	0.31	0.46	0.84	0.42	0.71	0.38	0.62	0.26	0.34	0.54	1.16	0.43	0.75	0.42	0.72	0.23	0.30
Capesthorpe Road (E)	0.56	1.25	0.70	2.27	0.65	1.82	0.94	11.67	0.57	1.32	0.79	3.57	0.80	3.77	0.96	14.80	0.77	3.29	0.79	3.71
Poplars Avenue (S)	0.22	0.28	0.41	0.69	0.30	0.42	0.58	1.34	0.24	0.31	0.43	0.76	0.34	0.52	0.58	1.37	0.33	0.49	0.56	1.28

## 2.6 Junction 24 – A574 Birchwood Way/Blackbrook Avenue

Table 6 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the Birchwood Way / Blackbrook Avenue junction.

**Table 6. A574 Birchwood Way / Blackbrook Avenue Junctions 8 Results Summary**

Link	Scenario																			
	2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
<b>Junction 24: Birchwood Way / Blackbrook Avenue</b>																				
A574 (E)	0.52	1.06	0.67	1.97	0.53	1.10	0.64	1.75	0.53	1.11	0.66	1.94	0.54	1.18	0.64	1.79	0.53	1.11	0.68	2.06
Blackbrook Avenue (N)	0.48	0.93	0.43	0.75	0.53	1.13	0.47	0.89	0.51	1.03	0.45	0.80	0.51	1.04	0.50	1.00	0.51	1.04	0.48	0.90
A574 (W)	0.67	2.03	0.67	1.97	0.68	2.07	0.72	2.47	0.65	1.85	0.70	2.27	0.74	2.81	0.73	2.62	0.74	2.81	0.71	2.36
Blackbrook Avenue (S)	0.52	1.08	0.50	0.99	0.53	1.14	0.56	1.25	0.53	1.13	0.52	1.09	0.57	1.33	0.57	1.33	0.57	1.32	0.57	1.32

## 2.7 Junction 25 - Enfield Park Road/Crab Lane

Table 7 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the Enfield Park Road / Crab Lane junction.

**Table 7. Enfield Park Road / Crab Lane Junctions 8 Results Summary**

Approach	Scenario																			
	2025 Do Minimum				2025 Do Something				2030 Do Minimum				2030 Do Something				2030 Do Something Through Route			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC
<b>Junction 25: Enfield Oark Road / Crab Lane</b>																				
Crab Lane left turn	0.41	0.29	1.99	0.67	0.48	0.33	12.52	0.96	0.42	0.30	2.96	0.75	0.58	0.37	25.78	1.02	0.61	0.38	23.98	1.02
Crab Lane right turn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enfield Park Rd NB right turn	1.39	0.59	0.97	0.49	2.84	0.75	1.40	0.59	1.59	0.62	1.04	0.51	7.04	0.90	1.90	0.66	9.95	0.94	1.97	0.67

## 2.8 Junction 26 - Birchwood Way/Crab Lane/Woolston Grange Avenue

Table 8 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the Birchwood Way / Crab Lane / Woolston Grange Avenue junction.

**Table 8. Birchwood Way / Crab Lane / Woolston Grange Avenue LinSig Results Summary**

Link	Scenario																				
	2025 Do Minimum				2025 So Something				2030 Do Minimum				2030 So Something				20230 Do Something Through Route				
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		
	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	
<b>Junction 26: Birchwood Way / Crab Lane / Woolston Grange Avenue</b>																					
1/1	Birchwood Way WB left	41.8%	5.2	76.1%	10.8	43.5%	4.3	82.2%	12.8	43.8%	4.2	82.7%	12.5	46.4%	4.8	87.4%	14.5	47.1%	4.9	86.6%	14.4
1/2+1/3	Birchwood Way WB left / ahead	55.7 : 55.7%	8.3	84.7 : 84.7%	21.8	57.4 : 57.4%	7	89.0 : 89.0%	23.1	62.4 : 62.4%	8.4	90.4 : 90.5%	29.8	60.1 : 60.1%	8	92.7 : 92.7%	30.5	62.6 : 62.6%	8.5	92.4 : 92.4%	26.3
2/1	Woolston Grange Ave NB ahead / left	76.9%	11.4	78.0%	9.5	79.0%	12.1	79.7%	10	79.9%	12.3	80.6%	10.2	84.0%	13.9	83.8%	11.1	84.0%	13.9	88.9%	12.5
2/2	Woolston Grange Ave NB ahead	77.9%	11.7	78.9%	9.7	80.3%	12.5	84.7%	11.4	81.2%	12.9	82.5%	10.7	85.0%	14.2	87.5%	12.5	85.2%	14.3	90.9%	13.7
3/1	Birchwood Way EB left	76.9%	7.7	64.1%	6.1	79.0%	7.7	69.1%	6.7	78.5%	7.5	66.7%	6.6	80.2%	8.0	80.2%	8.0	81.7%	8.2	85.7%	8.9
3/2	Birchwood Way EB left	76.4%	7.6	64.1%	6.1	80.0%	7.9	69.1%	6.7	78.1%	7.5	66.3%	6.5	80.0%	7.9	80.2%	8.0	81.0%	8.1	85.3%	8.7
4/1	Crab Lane SB ahead / left	54.7%	2.3	62.8%	3.4	64.5%	3.2	65.6%	4	62.2%	2.5	66.2%	3.5	69.0%	3.5	73.1%	5.0	67.3%	3.5	78.6%	5.8
4/2	Crab Lane SB ahead	36.1%	0.9	58.3%	2.9	43.6%	1.1	57.6%	3	43.8%	1.1	59.6%	2.6	51.6%	1.7	60.8%	3.3	51.2%	1.7	66.3%	3.9
5/1	R't SB circulatory ahead / right	42.4%	2.7	87.3%	8.7	38.2%	2.6	84.8%	8	32.7%	2.1	84.8%	7.9	35.3%	2.4	86.8%	8.6	35.8%	2.4	94.3%	11.8
5/2	R't SB circulatory ahead / right	52.5%	3.5	86.7%	8.5	53.6%	3.8	85.3%	8.1	57.6%	4.2	85.7%	8.1	61.5%	4.5	88.0%	8.9	61.3%	4.5	94.7%	12.0
7/1	R't NB circulatory ahead	80.6%	6.2	66.5%	4.4	80.1%	12.1	80.1%	9.9	82.0%	9.0	69.7%	5.8	85.5%	9.6	84.3%	11.1	85.6%	10.1	81.9%	11.2
7/2	R't NB circulatory ahead	80.5%	4.1	63.8%	1.1	80.1%	2.7	65.9%	1.4	80.9%	3.2	66.7%	1.1	84.8%	4.2	63.2%	1.6	85.0%	4.3	60.4%	1.0
10/1	R't WB circulatory right / ahead	76.1%	4.5	64.2%	6.2	77.0%	4.5	71.6%	7.1	82.3%	6.3	67.4%	7.3	80.6%	6.1	76.3%	8.0	83.2%	5.9	75.5%	8.3
10/2	R't WB circulatory right / ahead	80.6%	4.8	78.2%	5.8	80.8%	5.9	80.1%	7.0	80.2%	7.8	72.3%	8.4	81.5%	8.0	87.2%	8.8	83.2%	8.5	87.8%	8.8
<b>Junction 26: Crab Lane / Fearnhead Lane Pedestrian Crossing</b>																					
1/2+1/1	Fearnhead Lane right / left	25.9 : 25.9%	0.2	32.0 : 32.0%	0.5	31.3 : 31.3%	0.2	31.6 : 31.6%	0.5	41.1 : 41.1%	0.3	33.6 : 33.6%	0.5	32.4 : 32.4%	0.3	24.6 : 24.6%	0.5	25.4 : 25.4%	0.3	42.1 : 42.1%	1.4
2/1	Crab Lane SB	20.4%	2.4	32.1%	4.3	24.9%	3.1	33.7%	4.7	21.2%	2.5	32.4%	4.3	27.9%	3.6	38.3%	5.5	28.8%	3.7	38.6%	5.5
3/1	Crab Lane NB (@ Fearnhead Lane)	43.2%	1.0	32.0%	2.3	45.6%	1.0	44.1%	2.8	45.3%	1.0	33.8%	2.4	48.1%	0.8	48.8%	3.2	48.1%	0.7	49.1%	3.0
6/1	Crab Lane NB (@ ped crossing)	35.3%	0.3	26.6%	0.3	36.6%	0.4	38.0%	0.5	36.3%	0.4	28.1%	0.2	38.9%	0.5	43.2%	0.5	40.1%	0.5	42.9%	0.6
7/1	Crab Lane SB (@ Fearnhead Lane)	16.8%	0.1	26.5%	0.2	20.9%	1.2	27.8%	0.2	17.5%	0.1	26.8%	0.2	23.8%	1.8	31.6%	0.2	24.5%	1.8	31.9%	0.2
<b>Cycle Time</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>	
C3: Stream 1 PRC for Signalised Lanes		61.5%		3.1%		56.7%		1.1%		44.2%		-0.6%		46.3%		-3.0%		43.8%		-5.2%	
C3: Stream 2 PRC for Signalised Lanes		11.6%		14.0%		11.4%		6.3%		9.3%		9.1%		5.9%		2.9%		5.6%		-1.0%	
C3: Stream 3 PRC for Signalised Lanes		11.6%		35.4%		12.4%		12.4%		9.8%		29.2%		5.3%		6.7%		5.1%		5.0%	
C4: PRC for Signalised Lanes		108.4%		180.6%		97.4%		104.3%		98.8%		166.5%		86.9%		84.4%		86.9%		83.2%	
<b>PRC Over All Lanes</b>		<b>11.6%</b>		<b>3.1%</b>		<b>11.4%</b>		<b>1.1%</b>		<b>9.3%</b>		<b>-0.6%</b>		<b>5.3%</b>		<b>-3.5%</b>		<b>5.1%</b>		<b>-5.2%</b>	

## 2.9 Junction 27 - Birchwood Way / Oakwood Gate / Birchwood Park Avenue

Table 9 below summarise the results of the 2025 and 2030 Do Minimum and Do Something Scenarios in the AM and PM peak periods at the Birchwood Way / Oakwood Gate / Birchwood Park Avenue junction.

**Table 9. Birchwood Way / Oakwood Gate / Birchwood Park Avenue LinSig Results Summary**

Link	Scenario																				
	2025 Do Minimum				2025 So Something				2030 Do Minimum				2030 So Something				20230 Do Something Through Route				
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		
	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	
<b>Junction 27: Birchwood Way / Oakwood Gate / Birchwood Park Avenue</b>																					
1/1	Birchwood Way WB ahead / left	63.1%	6.9	77.4%	10.2	66.6%	7.2	85.5%	11.9	68.7%	7.5	84.7%	12.0	68.9%	7.5	88.8%	13.2	67.0%	7.4	93.1%	15.4
1/2	Birchwood Way WB ahead	65.0%	7.7	79.2%	11.4	68.6%	8.0	86.2%	12.8	71.1%	8.5	85.5%	13.0	71.2%	8.5	89.5%	14.3	68.9%	8.4	94.0%	16.9
2/1	Oakwood Gate NB ahead / left	33.1%	1.1	51.4%	2.3	33.7%	1.2	53.4%	2.4	41.8%	1.6	55.4%	3.2	36.0%	1.3	58.7%	3.0	36.9%	1.3	58.3%	3.4
2/2	Oakwood Gate NB ahead	34.4%	1.1	27.7%	1.0	34.5%	1.2	29.1%	1.0	36.7%	1.3	29.9%	1.1	36.8%	1.3	32.5%	1.1	37.2%	1.3	32.2%	1.1
3/1	Birchwood Way EB left	53.2%	6.0	26.0%	2.4	54.3%	6.5	26.3%	2.4	55.1%	6.5	27.5%	2.7	56.1%	6.9	28.2%	2.5	57.7%	7.3	28.9%	2.7
3/2+3/3	Birchwood Way EB ahead	69.4 : 69.4%	9.0	52.8 : 52.8%	5.6	69.9 : 69.9%	9.5	53.6 : 53.6%	5.6	72.2 : 72.2%	9.8	55.9 : 55.9%	6.2	74.6 : 74.6%	10.7	56.4 : 56.4%	6.1	73.9 : 73.9%	10.7	57.4 : 57.4%	6.3
4/2+4/1	Birchwood Park Ave SB ahead / left	62.0 : 62.0%	3.7	58.6 : 58.6%	2.8	62.6 : 62.6%	3.8	68.1 : 68.1%	4.4	63.1 : 63.1%	3.8	64.4 : 64.4%	3.7	69.3 : 69.3%	4.7	75.1 : 75.1%	5.8	66.7 : 66.7%	4.3	75.1 : 75.1%	5.9
4/3	Birchwood Park Ave SB ahead	69.2%	4.7	75.1%	5.7	70.8%	4.9	80.2%	7.5	75.9%	6.4	78.4%	6.5	74.1%	5.9	88.0%	10.1	75.9%	6.2	87.3%	9.9
5/1	R't SB circulatory right / ahead	78.1%	9.7	86.1%	15.2	75.9%	10.2	87.5%	16.5	77.1%	12.7	88.4%	17.4	79.9%	10.8	93.1%	17.8	80.2%	10.6	90.2%	18.5
5/2	R't SB circulatory right	41.2%	5.1	52.6%	4.7	40.3%	4.6	52.1%	5.0	42.8%	3.6	51.8%	4.5	40.8%	4.8	55.7%	6.6	43.4%	5.1	53.7%	5.6
8/1	R't NB circulatory ahead	73.6%	6.9	65.6%	7.2	77.1%	9.0	65.6%	7.2	76.4%	10.5	68.1%	7.6	80.0%	9.3	68.1%	6.8	80.0%	9.3	64.7%	7.3
8/2	R't NB circulatory right	32.1%	2.8	24.6%	1.9	33.6%	2.6	24.6%	1.9	33.3%	2.9	25.7%	2.0	34.9%	2.8	25.7%	2.0	34.9%	2.8	24.4%	1.9
<b>Cycle Time</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>		<b>60s (120s for J3)</b>	
C1: PRC for Signalised Lanes		22.3%		37.3%		16.7%		37.3%		17.9%		32.1%		12.5%		32.1%		12.5%		39.1%	
C2: PRC for Signalised Lanes		15.3%		4.6%		18.6%		2.8%		16.7%		1.8%		12.7%		-3.5%		12.2%		-4.4%	
<b>PRC Over All Lanes</b>		<b>11.6%</b>		<b>3.1%</b>		<b>11.4%</b>		<b>1.1%</b>		<b>9.3%</b>		<b>-0.6%</b>		<b>5.3%</b>		<b>-3.5%</b>		<b>5.1%</b>		<b>-5.2%</b>	