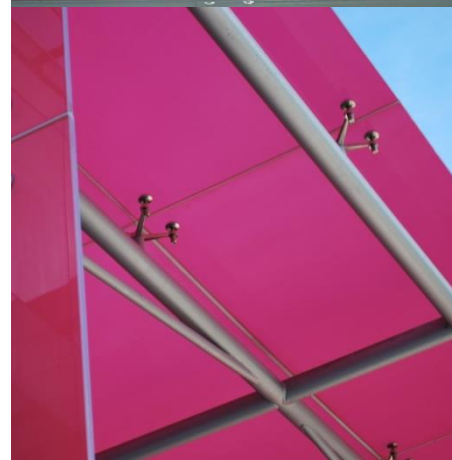
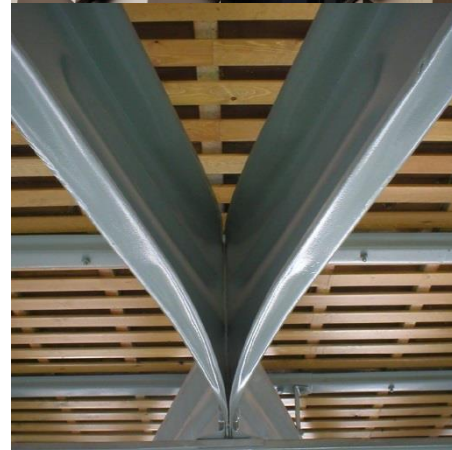


Gresford Road/Straight Mile, Llay

Technical Note 04 – Condition 15

Curtins Ref: 065665-CUR-00-XX-RP-TP-004-V02
Revision: V02
Issue Date: 30 November 2018

Client Name:
Bellway Homes (Northwest Division) Ltd & Anwyl Construction Company Ltd



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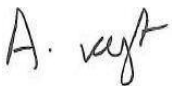
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Control Sheet

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Author	Signature	Date
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Reviewed	Signature	Date
Alex Vogt BSc (Hons) MSc FCIHT TPP Technical Director		30 November 2018

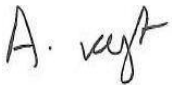
Authorised	Signature	Date
Alex Vogt BSc (Hons) MSc FCIHT TPP Technical Director		30 November 2018

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Drawings

Drawing 65665-CUR-00-XX-DR-TP-03005-P02 – Crown Crossroads Improvements
Drawing 65665-CUR-00-XX-DR-TP-03009-P05 – Gresford Road Improvements

Appendices

Appendix A – LinSig Assessment (Do Nothing Scenario 2026)
Appendix B – LinSig Assessment (Physical and MOVA Scenario 2026)

1.0 Introduction

1.1 Background

- 1.1.1 Curtins has been appointed on behalf of Bellway Homes (Northwest Division) Ltd & Anwyl Construction Company Ltd to provide traffic and transportation advice in relation to the approved residential development of land to the south and east of Straight Mile and Gresford Road in Llay, Wrexham.
- 1.1.2 Under application reference P/2014/0905, outline planning permission for 365 dwellings and erection of 300 square metre retail unit (all detailed matters reserved) was allowed at Appeal.
- 1.1.3 The report by Planning Inspector Richard Duggan allowing the Appeal (dated 11th January 2017, Appeal Reference APP/H6955/A/16/3147116) included the following condition 15 relating to the 'Crown Crossroads' – or the B5102 Straight Mile/B5373 Gresford Road/B5102 Llay Road/B5373 Rackery Lane/Chapel Lane – and the B5373 Gresford Road as a link that fronts the south west site boundary:

“Prior to the commencement of development a detailed scheme to improve the junction of the B5102, the B5373 and Chapel Lane, and a scheme to provide pedestrian footway improvements along Gresford Road shall be submitted to and approved in writing by the Local Planning Authority. The works shall be carried out as approved.”

1.2 Inspector Comments

- 1.2.1 In respect of the submitted improvements to the Crown Crossroads and Gresford Road, the Inspector noted the following in his decision.

[Para 48] “In this instance for example, works to the Crown Junction are proposed that would improve the future traffic situation if the development goes ahead as compared to the “do nothing” scenario without the development. That will be a real benefit to existing residents, and it is because of the size of the scheme that it is capable of making a meaningful difference that might otherwise not come about.”

[Para 208] “Nonetheless, a considerable amount of representations was received that raised concerns with highway safety in the vicinity of the site, and specifically in regards to pedestrian safety, congestion, vehicle speeds as well as increased noise and pollution from vehicles [145-147]. Improvements would be carried out at the Crown Junction through the installation of the MOVA traffic light system that optimises traffic signals in response to the balance of traffic flow at each arm of the junction; there would also be speed limit reductions on Straight Mile and pedestrian footway improvements along Gresford Road [51]. These improvements, other than the speed limit reduction, would be secured through planning conditions.”

[Para 210] “I am satisfied that the assessments and surveys undertaken by the Appellant, and which were assessed by the Council, were carried out using recognised and accepted methodology and

provide sufficient information to understand the potential highway impacts of the development. The Council did not raise a highway objection to the proposal and did not submit evidence on highway grounds to the Inquiry [24, 148]. I have seen no technical evidence to lead me to take a different view to that of the Appellant's witness or the highways experts within the Council."

1.3 Purpose of this Note

- 1.3.1 Considering the site background and planning history, this note has been written to address and discharge condition 15.
- 1.3.2 Namely, it is considered the discharge of condition 15 requires:
- A scheme that improves the operation of the Crown Crossroads; and
 - Pedestrian footway improvements along Gresford Road.
- 1.3.3 Significant discussions have been held with Wrexham Highways over the past 12 months. This note intends to draw the latest information submitted by Curtins to Wrexham Highways into a single document.

2.0 Improvement of the Crown Crossroads

2.1 Proposed Improvement Scheme

- 2.1.1 The proposed scheme of improvements is shown on **Drawing 65665-CUR-00-XX-DR-TP-03005-P02** to the rear of this report. This is an updated version of the drawings that were submitted at the outline planning application and Appeal stages, and has only been revised to better fit the more accurate topographical survey mapping that has now been obtained of the junction.
- 2.1.2 On this basis, implementation of this improvement scheme at the Crown Crossroads was supported by the Planning Inspectorate.
- 2.1.3 The updated drawing with topographic background mapping was provided to Wrexham Highways as part of a letter sent by Curtins in November 2017. The proposed improvement scheme features:
- The installation of 'MOVA' signal control;
 - The introduction of a 40m long left turn lane on the Straight Mile approach to the junction; and
 - The rationalisation of the existing road markings.

2.2 Trip Rates and Development Trips

- 2.2.1 Despite there being no objections raised during the initial planning submission in 2014 and at Appeal in 2016, Curtins was asked in October 2018 to revise the trip generation calculations for the development to account for an existing development at Kensington Grove.
- 2.2.2 Adopting this alternative methodology would account for higher trip rates than those presented at the planning application (within the Transport Assessment) and at the Planning Appeal (as agreed in the Statement of Common Ground).
- 2.2.3 Regardless of any changes that could have occurred locally since the Appeal, the junction mitigation scheme was subject to examination at a Public Inquiry and the Inspector saw fit to approve the development on that basis. There are therefore no grounds on which Wrexham Highways can require a change in development trip generations at the reserved matters stage.
- 2.2.4 Despite this and without prejudice to Curtins' view that revising the trip rates is unwarranted, these higher trip rates have been adopted in order to expedite the discharge of condition process.
- 2.2.5 **Table 2.1** provides a comparison between the trip rates and trip generation associated with the original application, and the trip rates and trip generation associated with the Kensington Grove site as requested by Wrexham Highways:

Previous Trip Rates Used					
AM Peak			PM Peak		
Arrive	Depart	Total	Arrive	Depart	Total
0.140	0.413	0.553	0.387	0.246	0.633
51	151	202	141	90	231
Trip Rates provided by WBC					
AM Peak			PM Peak		
Arrive	Depart	Total	Arrive	Depart	Total
0.124	0.476	0.600	0.482	0.259	0.741
45	173	218	175	94	270

Table 2.1 – Trip Rates and Development Trips

2.2.6 As shown above, the adjustment to the trip rates has resulted in an overall increase of 16 two-way trips in the AM Peak and an increase of 39 two-way trips in the PM Peak.

2.3 Capacity Assessments

2.3.1 Notwithstanding all of the above and still without prejudice to Curtins' view that revising the trip rates is unwarranted, capacity assessments incorporating these revised trip rates were provided to Wrexham Highways in the form of an email by Curtins in October 2018.

2.3.2 The assessments have been undertaken using LinSig for the 2026 AM and PM Base 'Do-Nothing' scenario' and the 2026 AM and PM Base + Development 'Physical Junction Improvements + MOVA' scenario.

2.3.3 The results of these assessments are summarised in **Tables 2.2** and **2.3** below, and the full outputs are provided in **Appendices A** and **B**:

Approach	2026 AM Peak				Difference in Mean Max Queue
	Base Scenario “Do-Nothing”		Base + Development Scenario “Physical Junction Improvements + MOVA”		
	DoS	Mean Max Queue (PCU)	DoS	Mean Max Queue (PCU)	
B5102 Straight Mile	108.2%	30.9	101.2%	16.9	-14.0
B5373 Gresford Road	106.4%	32.3	104.5%	30.5	-1.8
Llay Road	108.6%	70.8	103.7%	52.7	-18.1
Rackery Lane	107.6%	48.2	103.5%	36.4	-11.8
Chapel Lane	27.5%	1.3	26.6%	1.3	-

Table 2.2 – Proposed Crown Crossroads Improvements: AM Peak

Approach	2026 PM Peak				Difference in Mean Max Queue
	<u>Base Scenario</u> “Do-Nothing”		<u>Base + Development Scenario</u> “Physical Junction Improvements + MOVA”		
	DoS	Mean Max Queue (PCU)	DoS	Mean Max Queue (PCU)	
B5102 Straight Mile	104.1%	27.7	97.9%	21.3	-6.4
B5373 Gresford Road	103.7%	19.3	97.6%	14.6	-4.7
Llay Road	77.4%	14.1	98.8%	28.3	+14.2
Rackery Lane	105.4%	49.9	98.3%	30.6	-19.3
Chapel Lane	17.2%	0.8	18.6%	0.9	+0.1

Table 2.3 – Proposed Crown Crossroads Improvements: PM Peak

- 2.3.4 As is evident from the junction assessments above, even when considering increased trip rates based on the Kensington Grove ATC, the mitigation to the junction significantly improves the operation of the Crown Crossroads with respect to both the forecast Degree of Saturation and Mean Max Queues.

2.4 Conclusions

- 2.4.1 The proposed scheme at the Crown Crossroads includes improvements to the signal controls, turning provision and carriageway markings.
- 2.4.2 The improvements were recognised by the Planning Inspector at the Appeal, where the Inspector noted with reference to the proposed improvement at the Crown Crossroads that *"The Council did not raise a highway objection to the proposal"*, and that there, *"...will be a real benefit to existing residents"*.
- 2.4.3 Without prejudice to Curtins' view that revising the trip rates is unwarranted, revised assessments have adopted the higher 'Kensington Grove' trip rates and generation. Even so, the improvement scheme significantly improves the operation of the Crown Crossroads with respect to both the forecast Degree of Saturation and Mean Max Queues.
- 2.4.4 On this basis, there is no reason why discharge of Condition 15 should be withheld with regard to the proposed improvement scheme at the Crown Crossroads.

3.0 Gresford Road Footway Improvements

3.1 Proposed Improvement Scheme

3.1.1 The proposed scheme of improvements is shown on **Drawing 65665-CUR-00-XX-DR-TP-03009-P05** to the rear of this report. This is an updated version following feedback from Highways Officers at Wrexham, and was sent to these officers by email confirming the revisions in October 2018.

3.1.2 The proposed improvement scheme features:

- The installation of a 'Puffin Crossing' between the proposed site access from Gresford road and the Oakfield Park Home Estate access;
- A pedestrian refuge to the west of Meadow Rise;
- The introduction of traffic-calming measures including ARAF/SLOW carriageway markings and 2 x Vehicle Activated Signs (VASs); and
- Carriageway narrowing using central markings.

3.1.3 The zebra crossing over Gresford Road (which was a feature of the previous scheme considered at the Public Inquiry) remains part of the scheme (indicatively), however this will be delivered separately in due course, as the commercial land parcel which it serves is not included within the first reserved matters application boundary (as noted on **Drawing 65665-CUR-00-XX-DR-TP-03005-P02**). Any zebra crossing at this stage would lead to an empty field.

3.2 Conclusions

3.2.1 The proposed scheme along Gresford Road includes improvements to assist in pedestrians and cyclists crossing between the north-eastern and south-western sides of the carriageway.

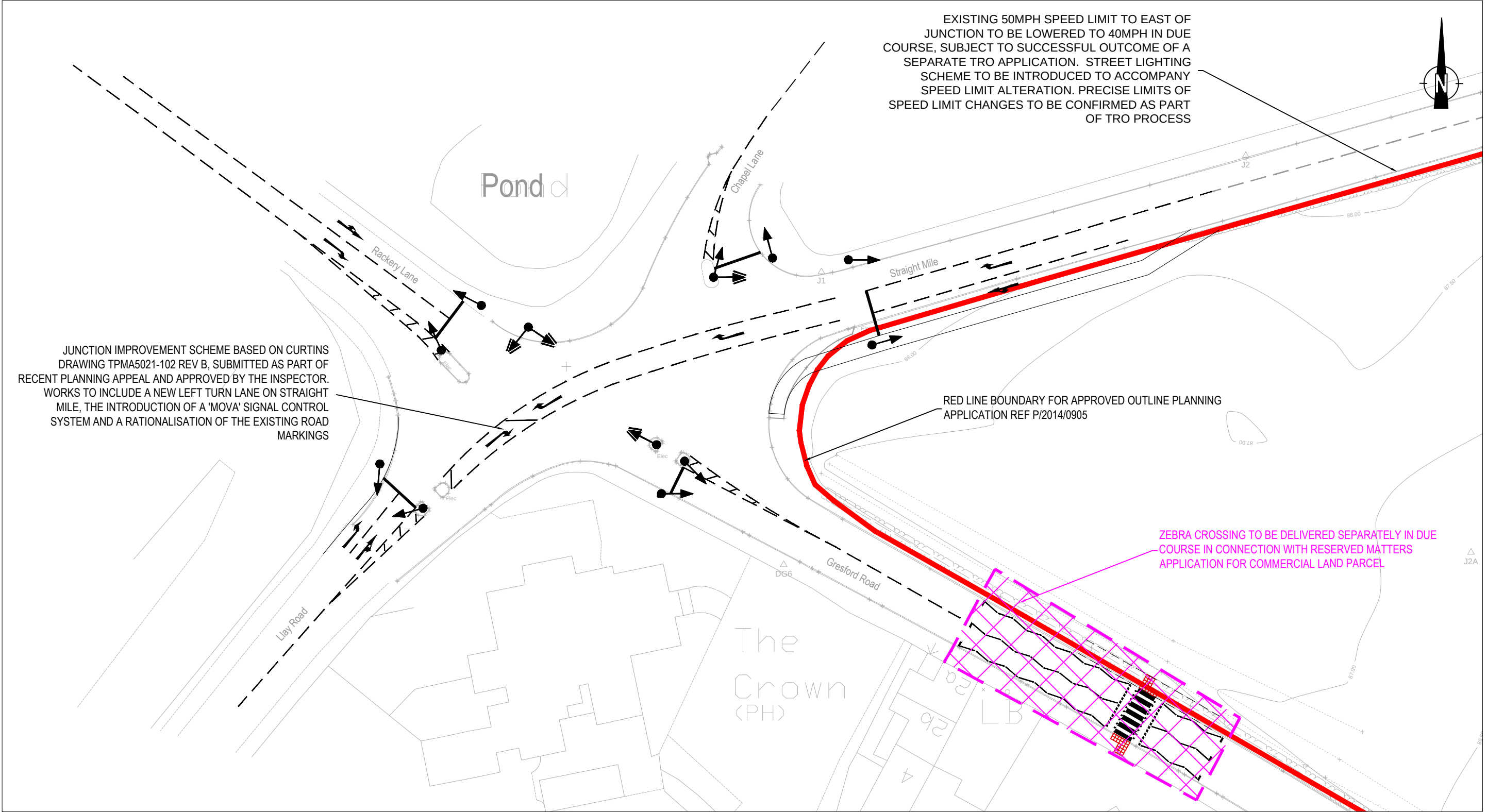
3.2.2 The environment for pedestrians and cyclists would also be improved by virtue of encouraging lower speeds along the link through the proposed traffic calming measures.

3.2.3 On this basis, there is no reason why discharge of Condition 15 should be withheld with regard to the proposed improvement scheme along Gresford Road.

4.0 Summary

- 4.1.1 The proposals at the Crown Crossroads and along Gresford Road presented in this note provide improvements in line with those noted by the Inspector in his Appeal Decision dated 11th January 2017 (Appeal Reference APP/H6955/A/16/3147116).
- 4.1.2 The proposed improvements have been presented to Wrexham Highways in similar forms over the last 12 months. The current situation can be summarised as:
- No technical reasons have been provided by Wrexham Highways as to why the proposals at the Crown Crossroads do not fulfil Condition 15. The drawing that has been provided to Wrexham Highways (appended to the rear of this note) is dated November 2017; and
 - A series of drawings showing a scheme of improvements along Gresford Road has been submitted to Wrexham Highways. The most recent drawing (appended to the rear of this note) has been adapted to suit Wrexham Highways requirements. No technical reasons have been provided by Wrexham Highways as to why the latest proposals along Gresford Road do not fulfil Condition 15.
- 4.1.3 There are no reasons why condition 15 should not be discharged.
- 4.1.4 It is respectfully requested that Wrexham Council does now formally discharge the condition so that development of the site (as allowed on Appeal by the Planning Inspectorate) is not frustrated.

Drawings



EXISTING 50MPH SPEED LIMIT TO EAST OF JUNCTION TO BE LOWERED TO 40MPH IN DUE COURSE, SUBJECT TO SUCCESSFUL OUTCOME OF A SEPARATE TRO APPLICATION. STREET LIGHTING SCHEME TO BE INTRODUCED TO ACCOMPANY SPEED LIMIT ALTERATION. PRECISE LIMITS OF SPEED LIMIT CHANGES TO BE CONFIRMED AS PART OF TRO PROCESS

JUNCTION IMPROVEMENT SCHEME BASED ON CURTINS DRAWING TPMA5021-102 REV B, SUBMITTED AS PART OF RECENT PLANNING APPEAL AND APPROVED BY THE INSPECTOR. WORKS TO INCLUDE A NEW LEFT TURN LANE ON STRAIGHT MILE, THE INTRODUCTION OF A 'MOVA' SIGNAL CONTROL SYSTEM AND A RATIONALISATION OF THE EXISTING ROAD MARKINGS

RED LINE BOUNDARY FOR APPROVED OUTLINE PLANNING APPLICATION REF P/2014/0905

ZEBRA CROSSING TO BE DELIVERED SEPARATELY IN DUE COURSE IN CONNECTION WITH RESERVED MATTERS APPLICATION FOR COMMERCIAL LAND PARCEL

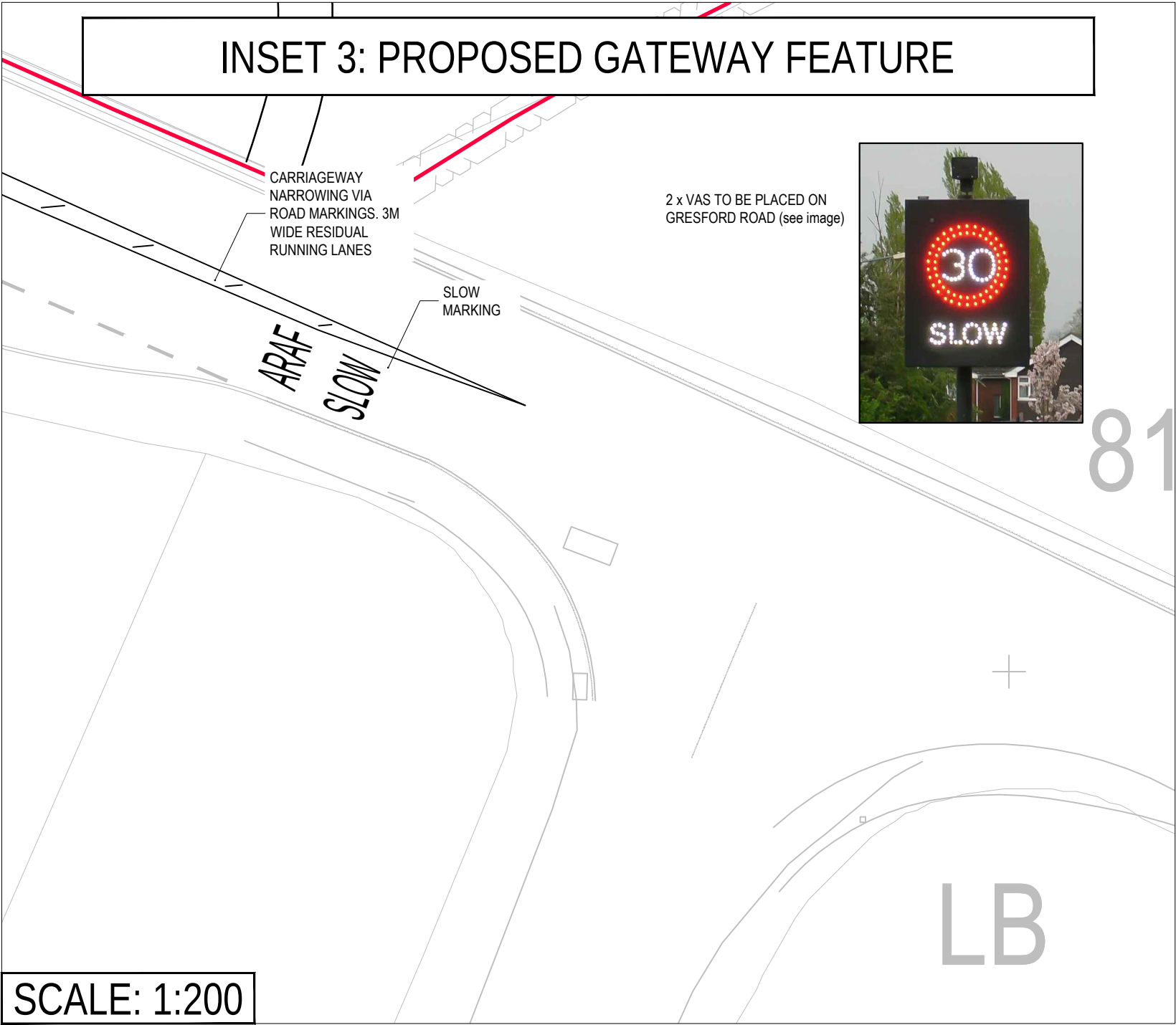
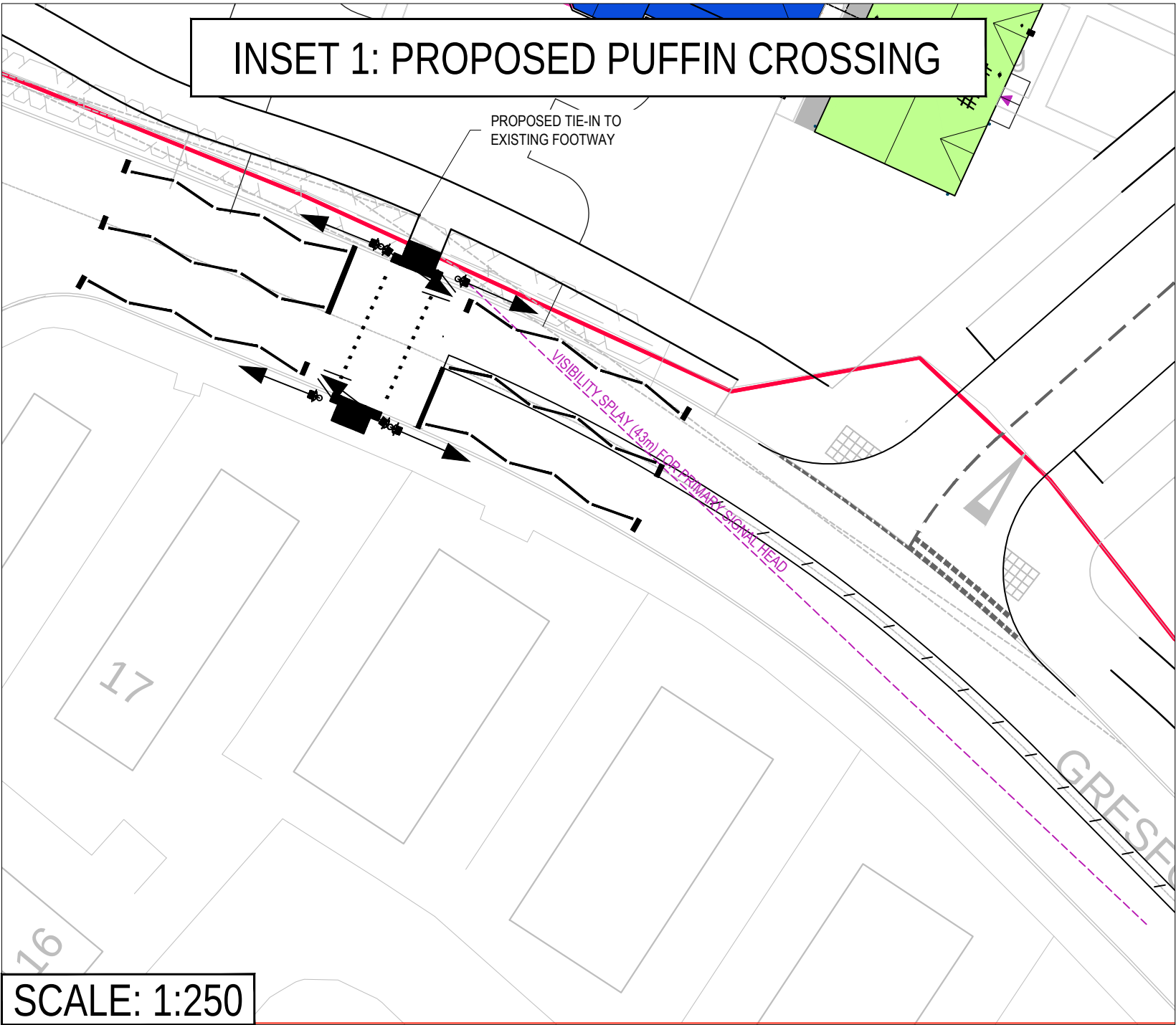
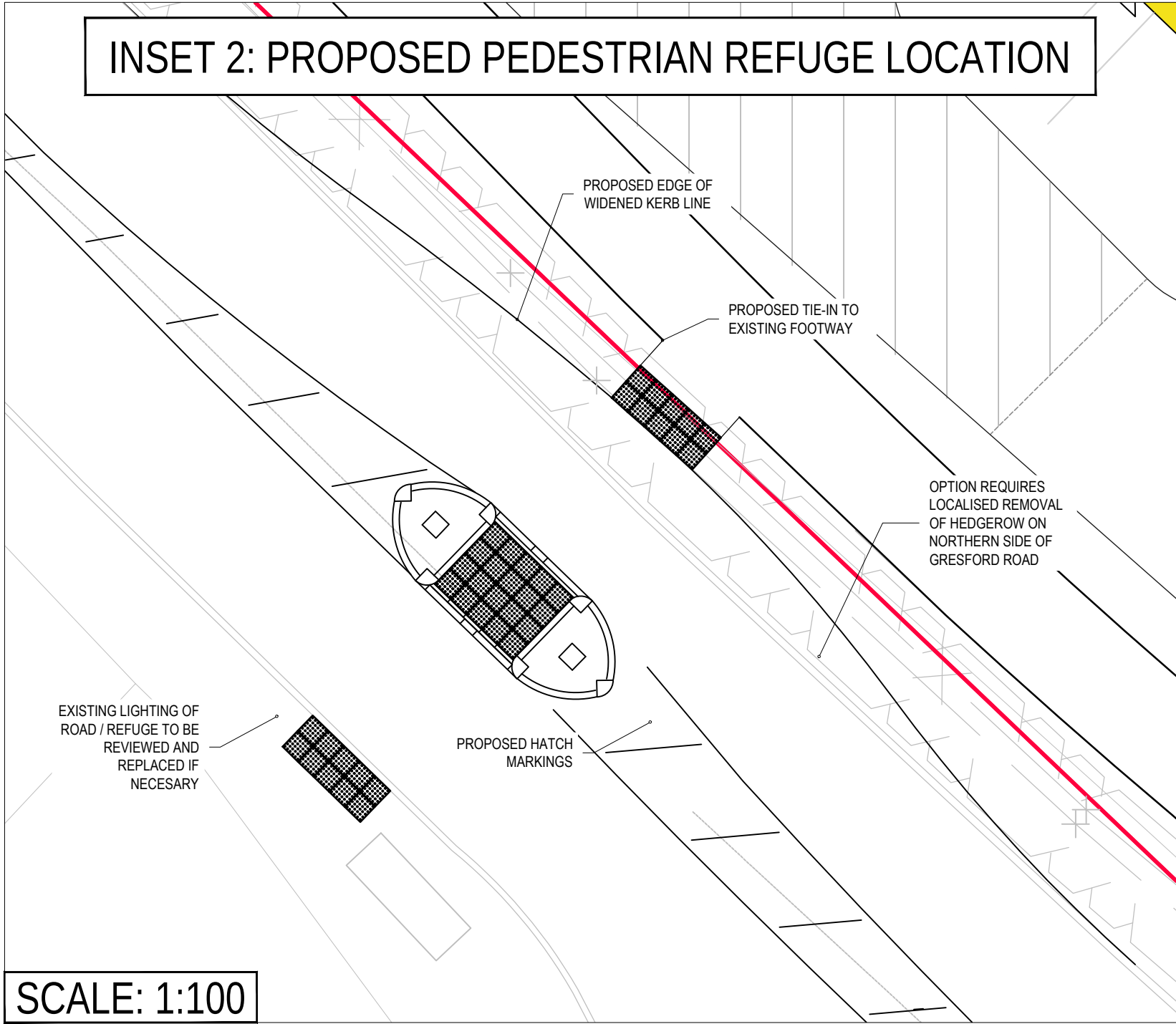
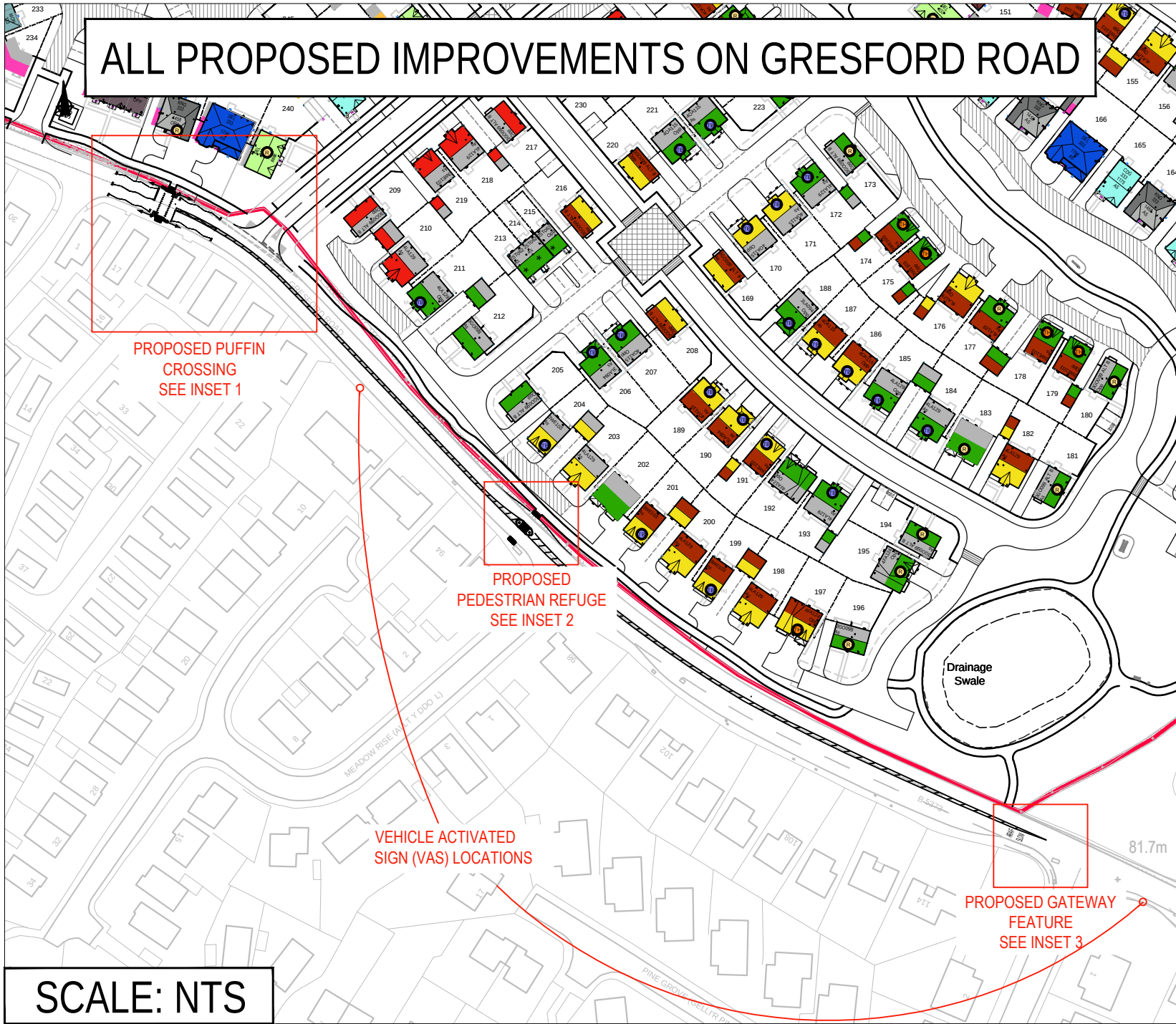


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Project: GRESFORD ROAD, LLAY		Status: PRELIMINARY	
Drg Title: PROPOSED IMPROVEMENTS TO CROWN JUNCTION		Drawn By: JM	Checked By: LK
		Designed By: JM	Date: 24/11/17
		Scale: 1:500	
Project No:	Originator:	Zone:	Level:
	Type:	Discipline:	Category / Number:
65665	- CUR	- 00	- XX
- DR	- TP	- 03005	-P02

GENERAL NOTES:	P02	Speed limit updated	30/11/18	DD
	Rev:	Description:	Date:	By:



GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- FOR GENERAL NOTES REFER TO DRAWING.

KEY:

- PROPOSED KERB LINE
- PROPOSED VISIBILITY SPLAY (SUBJECT TO BONNET LENGTH)
- PROPOSED ROAD MARKINGS
- SITE BOUNDARY

P05	VARIOUS TRAFFIC CALMING FEATURES AMENDED	17/10/18	JM	LK
P04	VARIOUS TRAFFIC CALMING FEATURES AMENDED	13/09/18	LK	LK
P03	PEDESTRIAN REFUGE RELOCATED	14/08/18	LL	LK
P02	MINOR CHANGES	13/08/18	LL	LK
Rev:	Description:	Date:	By:	Chkd:



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Status:

PRELIMINARY

Project:

GRESFORD ROAD, LLAY

Drg Title:

GRESFORD ROAD
PROPOSED PEDESTRIAN LINKAGE
AND TRAFFIC CALMING IMPROVEMENTS

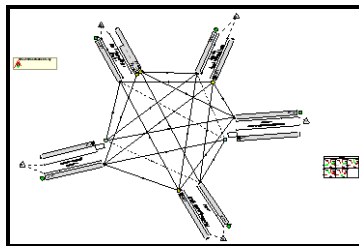
Size:	Date:	Drawn By:	Designed By:	Checked By:			
A2	08/08/2018	LL	LL	LK			
Scale: AS INDICATED							
Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
65665 - CUR - 00 - XX - DR - TP - 03009 - P05							

Appendix A – LinSig Assessment (Do Nothing Scenario 2026)

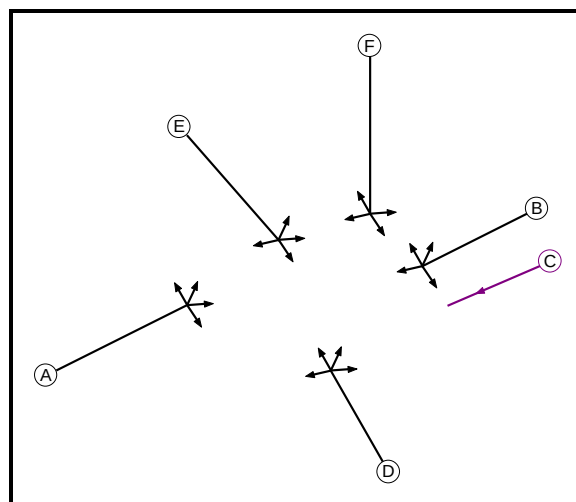
User and Project Details

Project:	Home Farm Residential Development
Title:	Crown Crossroads at Llay
Location:	Llay Wrexham LL12 0NT
Additional detail:	Do Nothing
File name:	65665 - Do Nothing Scenario (Crown Crossroads 2026).lsg3x
Author:	GlanvilleJB
Company:	Curtins
Address:	Manchester

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Ind. Arrow	B	4	4
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7

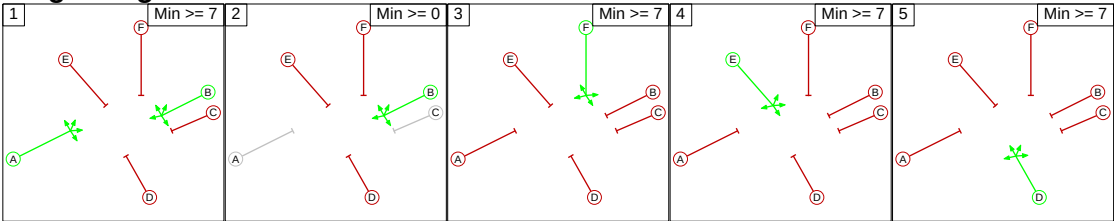
Phase Intergreens Matrix

Terminating Phase	Starting Phase						
		A	B	C	D	E	F
	A		-	4	5	5	9
	B	-		-	7	10	5
	C	2	-		5	10	5
	D	7	6	5		6	9
	E	6	5	5	5		9
	F	9	5	5	7	8	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	B
3	F
4	E
5	D

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage	To Stage					
		1	2	3	4	5
	1		0	9	10	7
	2	2		5	10	7
	3	9	5		8	7
	4	6	5	9		5
	5	7	6	9	6	

Give-Way Lane Input Data

Junction: Crown Crossroads at Llay											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (B5102 Straight Mile)	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left) To 10/1 (Left)	3.00	3.00	0.50	3	3.00
	10/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 10/1 (Left)					
3/1 (Llay Rd)	6/1 (Right)	1439	0	1/1	1.09	To 6/1 (Left) To 7/1 (Ahead)	3.00	3.00	0.50	3	3.00

Lane Input Data

Junction: Crown Crossroads at Llay												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (B5102 Straight Mile)	O	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Left	9.00
											Arm 7 Ahead	Inf
											Arm 8 Right	11.00
											Arm 10 Right	7.00
2/1 (B5373 Gresford Rd)	U	D	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 5 Right	7.00
											Arm 7 Left	9.00
											Arm 8 Ahead	Inf
											Arm 10 Right	8.00
3/1 (Llay Rd)	O	A	2	3	60.0	Geom	-	5.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	20.00
											Arm 8 Left	18.00
											Arm 10 Left	Inf
4/1 (Rackery lane)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Left	22.00
											Arm 6 Ahead	Inf
											Arm 10 Left	11.00
4/2 (Rackery lane)	U	E	2	3	10.0	Geom	-	3.00	0.00	Y	Arm 7 Right	12.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Chapel Lane)	U	F	2	3	60.0	Geom	-	4.50	0.00	Y	Arm 5 Left	7.00
											Arm 6 Left	20.00
											Arm 7 Right	40.00
											Arm 8 Right	40.00

10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
------	---	--	---	---	------	-----	---	---	---	---	---	---

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM Peak 2014 Surveyed Flows'	07:45	08:45	01:00	
2: 'PM Peak 2014 Surveyed Flows'	16:45	17:45	01:00	
3: 'AM Peak 2019 Base'	07:45	08:45	01:00	
4: 'PM Peak 2019 Base'	16:45	17:45	01:00	
5: 'AM Peak 2019 Base + Com.+Dev.'	07:45	08:45	01:00	
6: 'PM Peak 2019 Base + Com.+Dev.'	16:45	17:45	01:00	
7: 'AM Peak 2024 Base'	07:45	08:45	01:00	
8: 'PM Peak 2024 Base'	16:45	17:45	01:00	
9: 'AM Peak 2024 Base + Com.+Dev.'	07:45	08:45	01:00	
10: 'PM Peak 2024 Base + Com.+Dev.'	16:45	17:45	01:00	
11: 'AM Police Stn'	08:00	09:00	01:00	
12: 'PM Police Stn'	16:45	17:45	01:00	
13: 'AM Base+Police'	08:00	09:00	01:00	F7+F11
14: 'PM Base+Police'	16:45	17:45	01:00	F8+F12
15: 'AM 2026 BASE'	07:45	08:45	01:00	
16: 'PM 2026 BASE'	16:45	17:45	01:00	
17: 'AM 2026 DEV (Base+Com+Dev)'	07:45	08:45	01:00	
18: 'PM 2026 DEV (Base+Com+Dev)'	16:45	17:45	01:00	

Scenario 1: 'AM 2026 BASE' (FG15: 'AM 2026 BASE', Plan 1: 'Chapel Ln in Every Other Cycle')

Traffic Flows, Desired

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	10	64	205	0	279
	B	19	0	75	253	3	350
	C	122	48	0	550	3	723
	D	181	135	338	0	1	655
	E	2	1	7	8	0	18
	Tot.	324	194	484	1016	7	2025

Traffic Lane Flows

Lane	Scenario 1: AM 2026 BASE
Junction: Crown Crossroads at Llay	
1/1	279
2/1	350
3/1	723
4/1 (with short)	655(In) 317(Out)
4/2 (short)	338
5/1	324
6/1	194
7/1	484
8/1	1016
9/1	18
10/1	7

Lane Saturation Flows

Junction: Crown Crossroads at Llay								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile)	3.50	0.00	Y	Arm 6 Left	9.00	3.6 %	1776	1776
				Arm 7 Ahead	Inf	22.9 %		
				Arm 8 Right	11.00	73.5 %		
				Arm 10 Right	7.00	0.0 %		
2/1 (B5373 Gresford Rd)	3.40	0.00	Y	Arm 5 Right	7.00	5.4 %	1864	1864
				Arm 7 Left	9.00	21.4 %		
				Arm 8 Ahead	Inf	72.3 %		
				Arm 10 Right	8.00	0.9 %		
3/1 (Llay Rd)	5.00	0.00	Y	Arm 5 Ahead	Inf	16.9 %	1980	1980
				Arm 6 Right	20.00	6.6 %		
				Arm 8 Left	18.00	76.1 %		
				Arm 10 Left	Inf	0.4 %		
4/1 (Rackery lane)	3.00	0.00	Y	Arm 5 Left	22.00	57.1 %	1842	1842
				Arm 6 Ahead	Inf	42.6 %		
				Arm 10 Left	11.00	0.3 %		
4/2 (Rackery lane)	3.00	0.00	Y	Arm 7 Right	12.00	100.0 %	1702	1702
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane)	4.50	0.00	Y	Arm 5 Left	7.00	11.1 %	1950	1950
				Arm 6 Left	20.00	5.6 %		
				Arm 7 Right	40.00	38.9 %		
				Arm 8 Right	40.00	44.4 %		
10/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'PM 2026 BASE' (FG16: 'PM 2026 BASE', Plan 4: 'Chapel in Every Four Cycle')**Traffic Flows, Desired****Desired Flow :**

	Destination						
Origin	A	0	26	148	221	1	396
	B	8	0	59	164	0	231
	C	99	76	0	357	5	537
	D	213	170	455	0	2	840
	E	2	2	3	1	0	8
	Tot.	322	274	665	743	8	2012

Traffic Lane Flows

Lane	Scenario 2: PM 2026 BASE
Junction: Crown Crossroads at Llay	
1/1	396
2/1	231
3/1	537
4/1 (with short)	840(In) 385(Out)
4/2 (short)	455
5/1	322
6/1	274
7/1	665
8/1	743
9/1	8
10/1	8

Lane Saturation Flows

Junction: Crown Crossroads at Llay								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile)	3.50	0.00	Y	Arm 6 Left	9.00	6.6 %	1807	1807
				Arm 7 Ahead	Inf	37.4 %		
				Arm 8 Right	11.00	55.8 %		
				Arm 10 Right	7.00	0.3 %		
2/1 (B5373 Gresford Rd)	3.40	0.00	Y	Arm 5 Right	7.00	3.5 %	1862	1862
				Arm 7 Left	9.00	25.5 %		
				Arm 8 Ahead	Inf	71.0 %		
				Arm 10 Right	8.00	0.0 %		
3/1 (Llay Rd)	5.00	0.00	Y	Arm 5 Ahead	Inf	18.4 %	1984	1984
				Arm 6 Right	20.00	14.2 %		
				Arm 8 Left	18.00	66.5 %		
				Arm 10 Left	Inf	0.9 %		
4/1 (Rackery lane)	3.00	0.00	Y	Arm 5 Left	22.00	55.3 %	1844	1844
				Arm 6 Ahead	Inf	44.2 %		
				Arm 10 Left	11.00	0.5 %		
4/2 (Rackery lane)	3.00	0.00	Y	Arm 7 Right	12.00	100.0 %	1702	1702
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane)	4.50	0.00	Y	Arm 5 Left	7.00	25.0 %	1893	1893
				Arm 6 Left	20.00	25.0 %		
				Arm 7 Right	40.00	37.5 %		
				Arm 8 Right	40.00	12.5 %		
10/1	Infinite Saturation Flow						Inf	Inf

Scenario 3: 'AM 2026 DEV' (FG17: 'AM 2026 DEV (Base+Com+Dev)', Plan 1: 'Chapel Ln in Every Other Cycle')

Traffic Flows, Desired**Desired Flow :**

	Destination						
Origin	A	0	10	78	218	0	306
	B	19	0	104	276	3	402
	C	127	56	0	555	3	741
	D	185	142	340	0	1	668
	E	2	1	7	8	0	18
	Tot.	333	209	529	1057	7	2135

Traffic Lane Flows

Lane	Scenario 3: AM 2026 DEV
Junction: Crown Crossroads at Llay	
1/1	306
2/1	402
3/1	741
4/1 (with short)	668(In) 328(Out)
4/2 (short)	340
5/1	333
6/1	209
7/1	529
8/1	1057
9/1	18
10/1	7

Lane Saturation Flows

Junction: Crown Crossroads at Llay								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile)	3.50	0.00	Y	Arm 6 Left	9.00	3.3 %	1782	1782
				Arm 7 Ahead	Inf	25.5 %		
				Arm 8 Right	11.00	71.2 %		
				Arm 10 Right	7.00	0.0 %		
2/1 (B5373 Gresford Rd)	3.40	0.00	Y	Arm 5 Right	7.00	4.7 %	1854	1854
				Arm 7 Left	9.00	25.9 %		
				Arm 8 Ahead	Inf	68.7 %		
				Arm 10 Right	8.00	0.7 %		
3/1 (Llay Rd)	5.00	0.00	Y	Arm 5 Ahead	Inf	17.1 %	1980	1980
				Arm 6 Right	20.00	7.6 %		
				Arm 8 Left	18.00	74.9 %		
				Arm 10 Left	Inf	0.4 %		
4/1 (Rackery lane)	3.00	0.00	Y	Arm 5 Left	22.00	56.4 %	1843	1843
				Arm 6 Ahead	Inf	43.3 %		
				Arm 10 Left	11.00	0.3 %		
4/2 (Rackery lane)	3.00	0.00	Y	Arm 7 Right	12.00	100.0 %	1702	1702
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane)	4.50	0.00	Y	Arm 5 Left	7.00	11.1 %	1950	1950
				Arm 6 Left	20.00	5.6 %		
				Arm 7 Right	40.00	38.9 %		
				Arm 8 Right	40.00	44.4 %		
10/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: 'PM 2026 DEV' (FG18: 'PM 2026 DEV (Base+Com+Dev)', Plan 4: 'Chapel in Every Four Cycle')
Traffic Flows, Desired
Desired Flow :

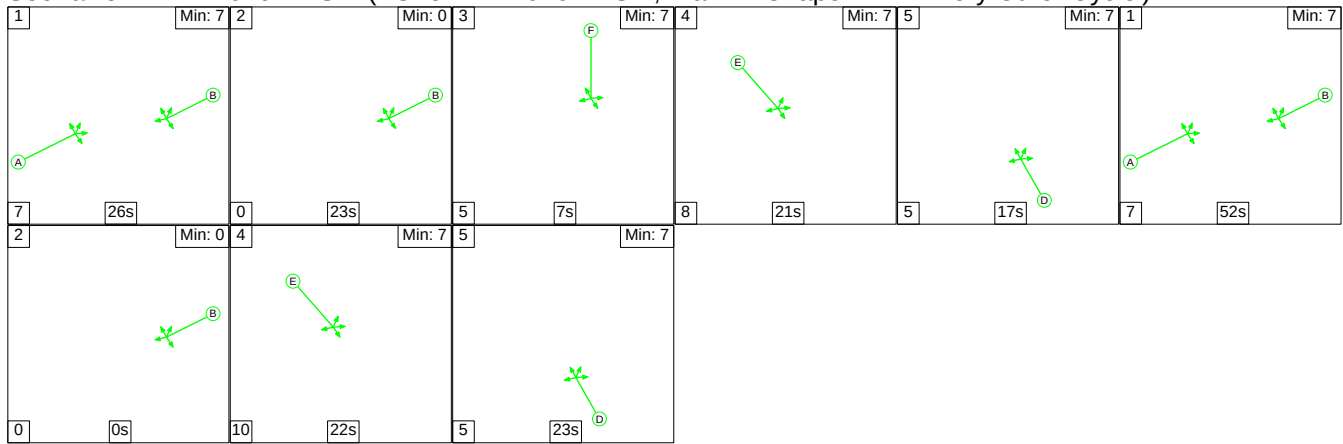
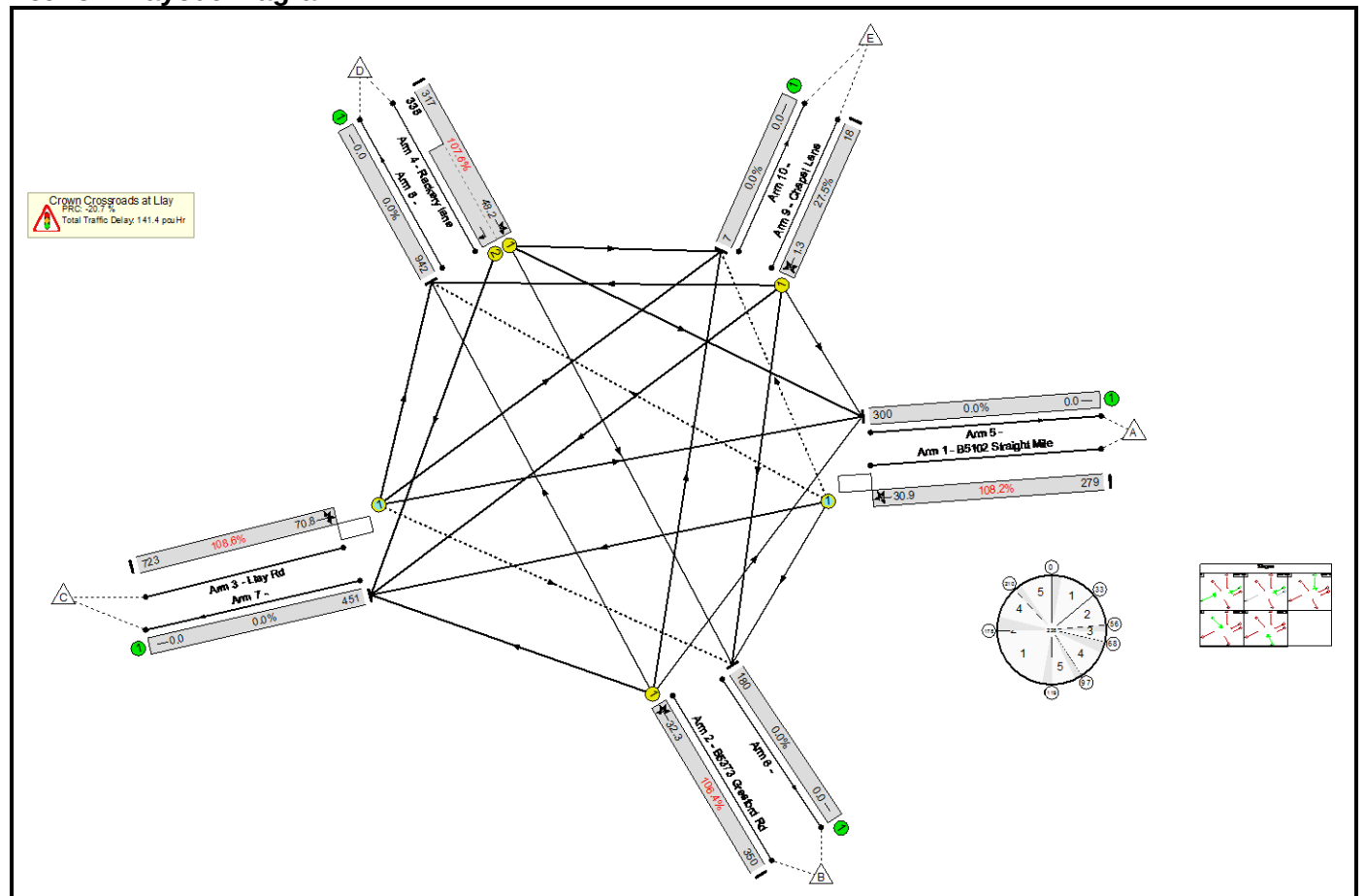
Desired Flow:							
	Destination						
Origin		A	B	C	D	E	Tot.
	A	0	26	157	228	1	412
	B	8	0	75	177	0	260
	C	114	105	0	357	5	581
	D	225	193	459	0	2	879
	E	2	2	3	1	0	8
	Tot.	349	326	694	763	8	2140

Traffic Lane Flows

Lane	Scenario 4: PM 2026 DEV
Junction: Crown Crossroads at Llay	
1/1	412
2/1	260
3/1	581
4/1 (with short)	879(In) 420(Out)
4/2 (short)	459
5/1	349
6/1	326
7/1	694
8/1	763
9/1	8
10/1	8

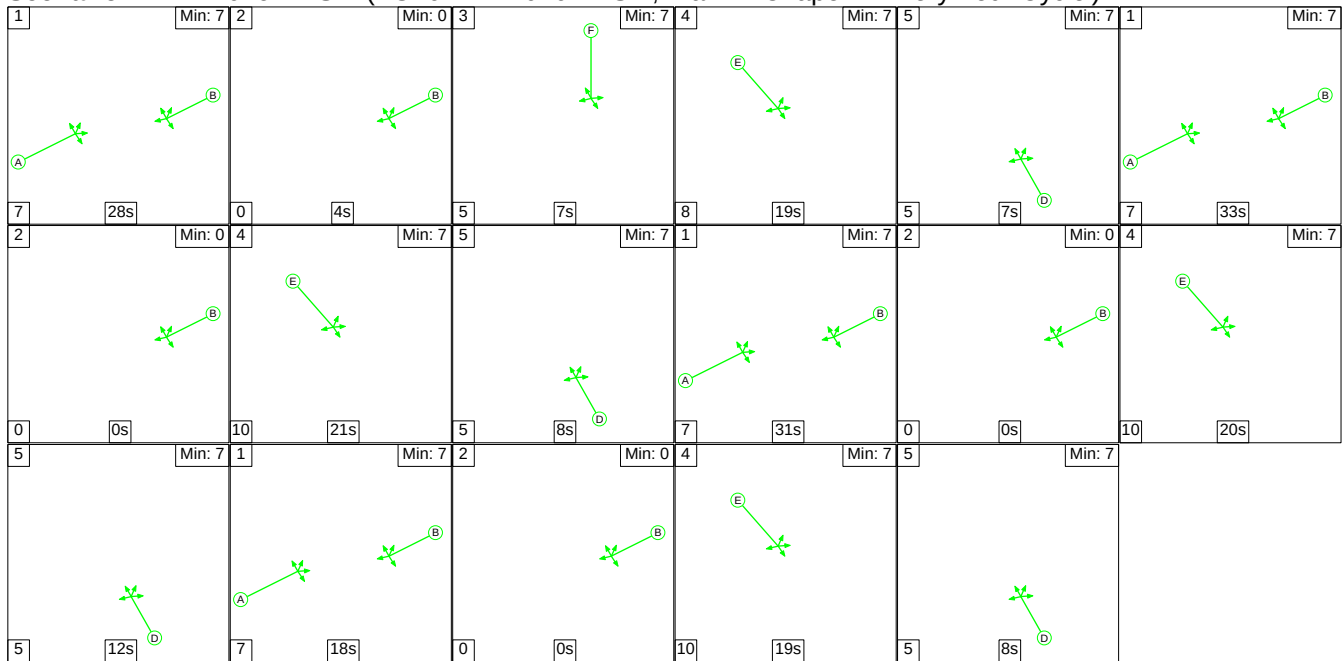
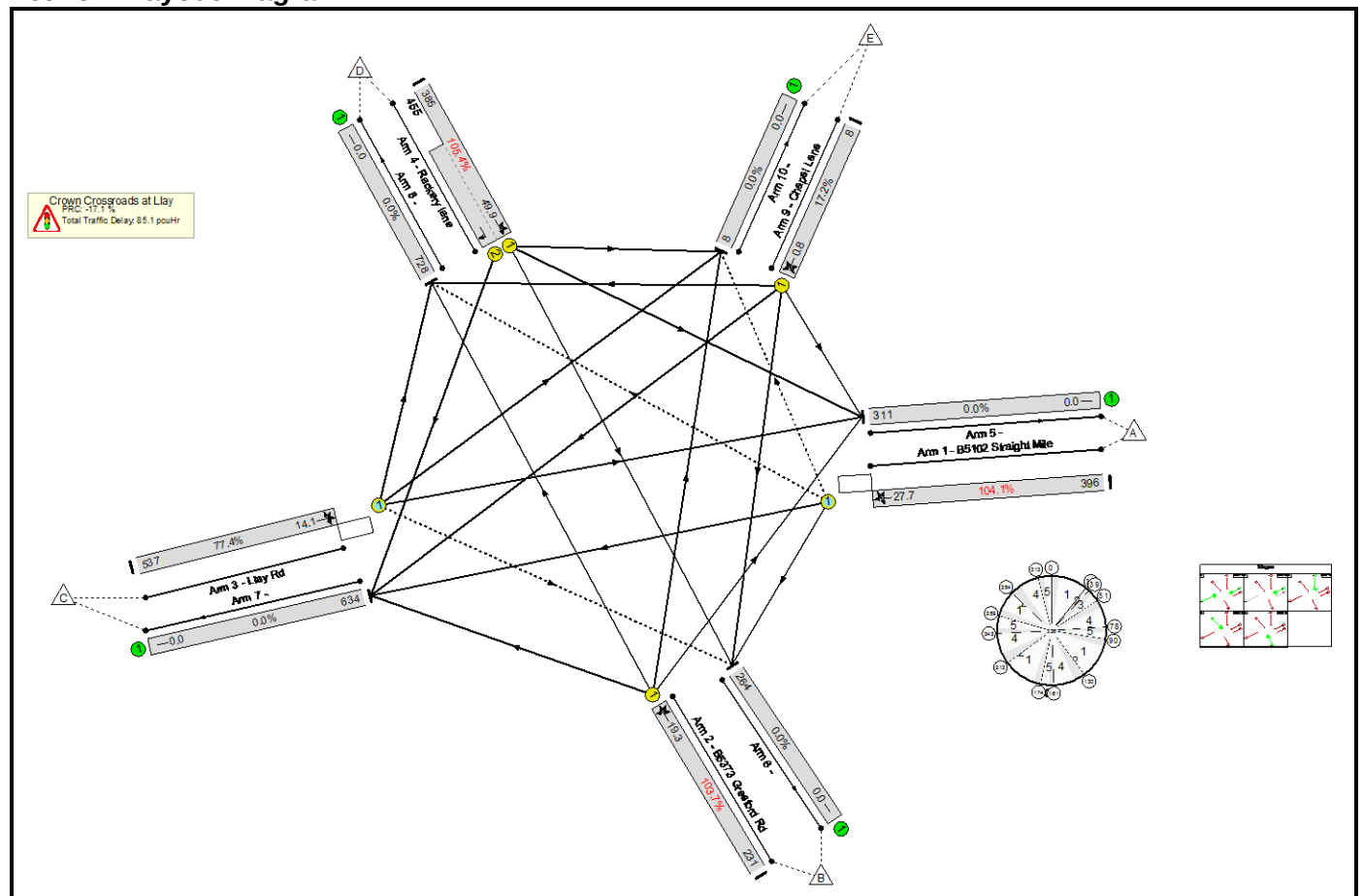
Lane Saturation Flows

Junction: Crown Crossroads at Llay								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile)	3.50	0.00	Y	Arm 6 Left	9.00	6.3 %	1809	1809
				Arm 7 Ahead	Inf	38.1 %		
				Arm 8 Right	11.00	55.3 %		
				Arm 10 Right	7.00	0.2 %		
2/1 (B5373 Gresford Rd)	3.40	0.00	Y	Arm 5 Right	7.00	3.1 %	1854	1854
				Arm 7 Left	9.00	28.8 %		
				Arm 8 Ahead	Inf	68.1 %		
				Arm 10 Right	8.00	0.0 %		
3/1 (Llay Rd)	5.00	0.00	Y	Arm 5 Ahead	Inf	19.6 %	1986	1986
				Arm 6 Right	20.00	18.1 %		
				Arm 8 Left	18.00	61.4 %		
				Arm 10 Left	Inf	0.9 %		
4/1 (Rackery lane)	3.00	0.00	Y	Arm 5 Left	22.00	53.6 %	1846	1846
				Arm 6 Ahead	Inf	46.0 %		
				Arm 10 Left	11.00	0.5 %		
4/2 (Rackery lane)	3.00	0.00	Y	Arm 7 Right	12.00	100.0 %	1702	1702
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane)	4.50	0.00	Y	Arm 5 Left	7.00	25.0 %	1893	1893
				Arm 6 Left	20.00	25.0 %		
				Arm 7 Right	40.00	37.5 %		
				Arm 8 Right	40.00	12.5 %		
10/1	Infinite Saturation Flow						Inf	Inf

Stage Sequence Diagram**Scenario 1: 'AM 2026 BASE' (FG15: 'AM 2026 BASE', Plan 1: 'Chapel Ln in Every Other Cycle')****Network Layout Diagram**

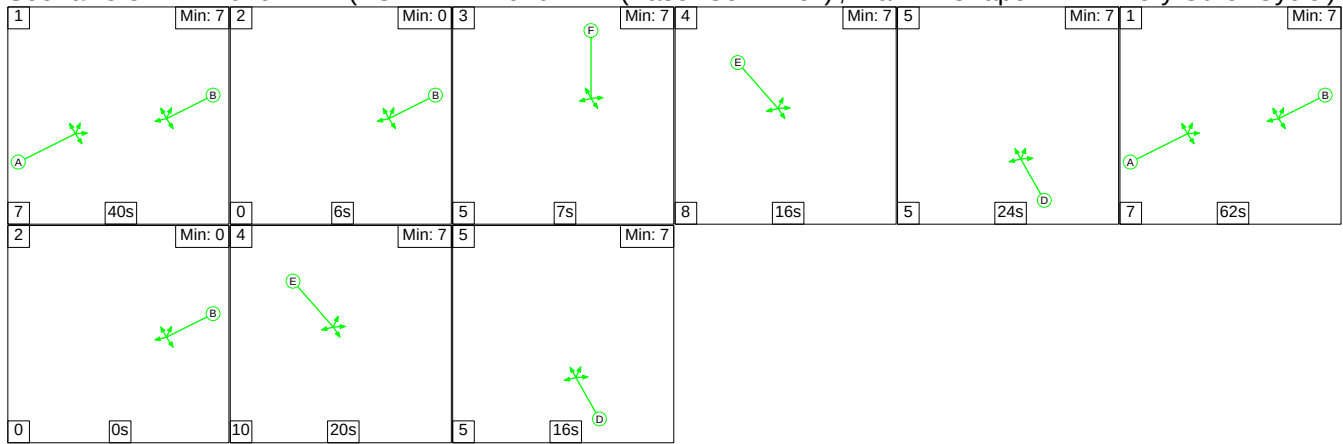
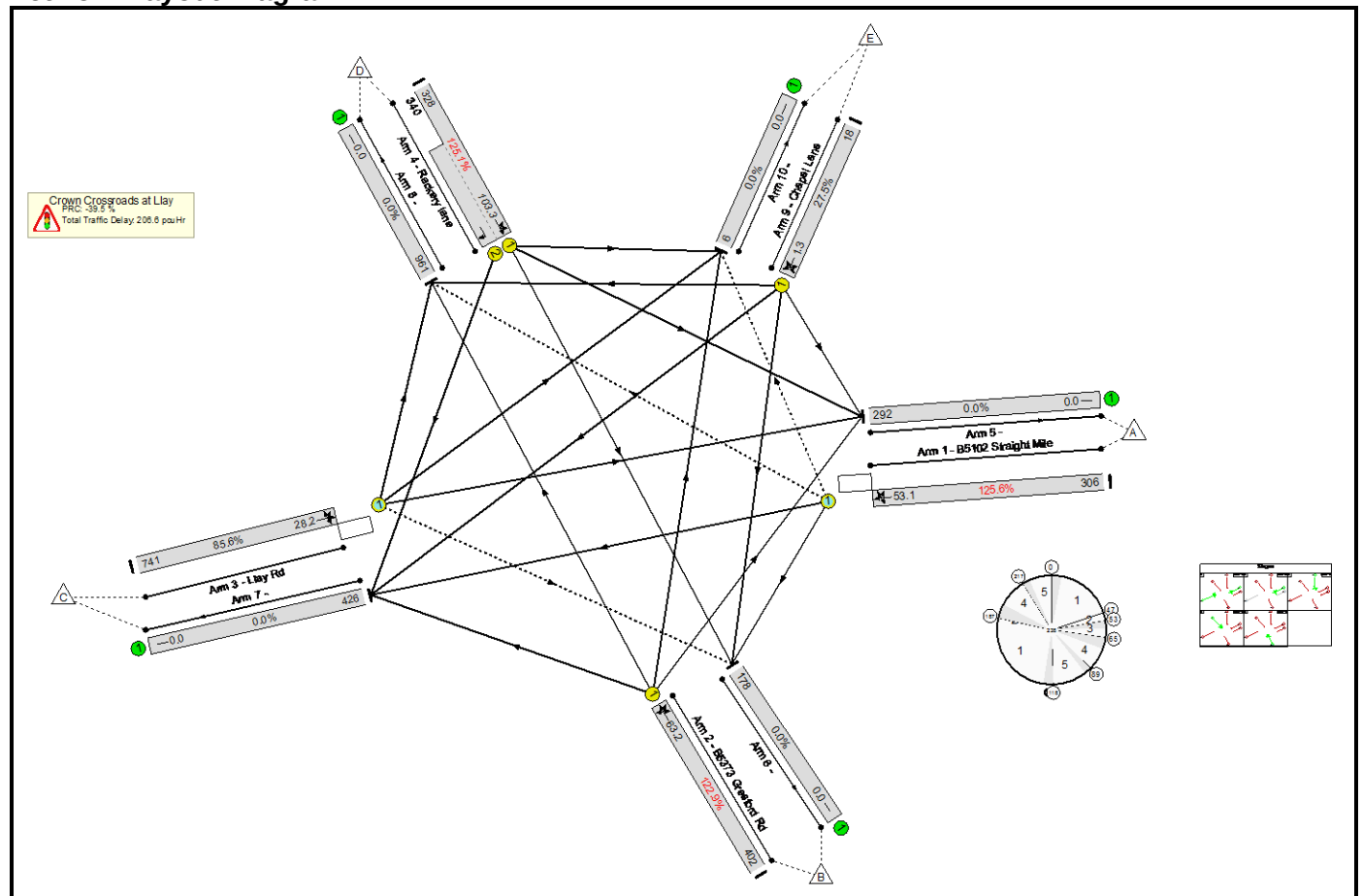
Network Results

Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	108.6%	46.1	94.3	141.4	-	-	-	-
Crown Crossroads at Llay	-	-	-	-	-	108.6%	46.1	94.3	141.4	-	-	-	-
1/1	B5102 Straight Mile Left Ahead Right Right2	B	279	1776	258	108.2%	7.7	15.2	23.9	308.2	15.8	15.2	30.9
2/1	B5373 Gresford Rd Right Left Ahead Right2	D	350	1864	329	106.4%	8.7	16.0	24.7	254.0	16.3	16.0	32.3
3/1	Llay Rd Ahead Right Left Left2	A	723	1980	666	108.6%	15.5	34.0	49.5	246.6	36.7	34.0	70.8
4/1+4/2	Rackery lane Left Ahead Right Left2	E	655	1842:1702	609	107.6%	13.6	28.9	42.5	233.7	19.3	28.9	48.2
9/1	Chapel Lane Left Left2 Right Right2	F	18	1950	66	27.5%	0.6	0.2	0.7	149.8	1.2	0.2	1.3
C1		PRC for Signalled Lanes (%):		-20.7		Total Delay for Signalled Lanes (pcuHr):		141.37		Cycle Time (s): 238			
		PRC Over All Lanes (%):		-20.7		Total Delay Over All Lanes(pcuHr):		141.37					

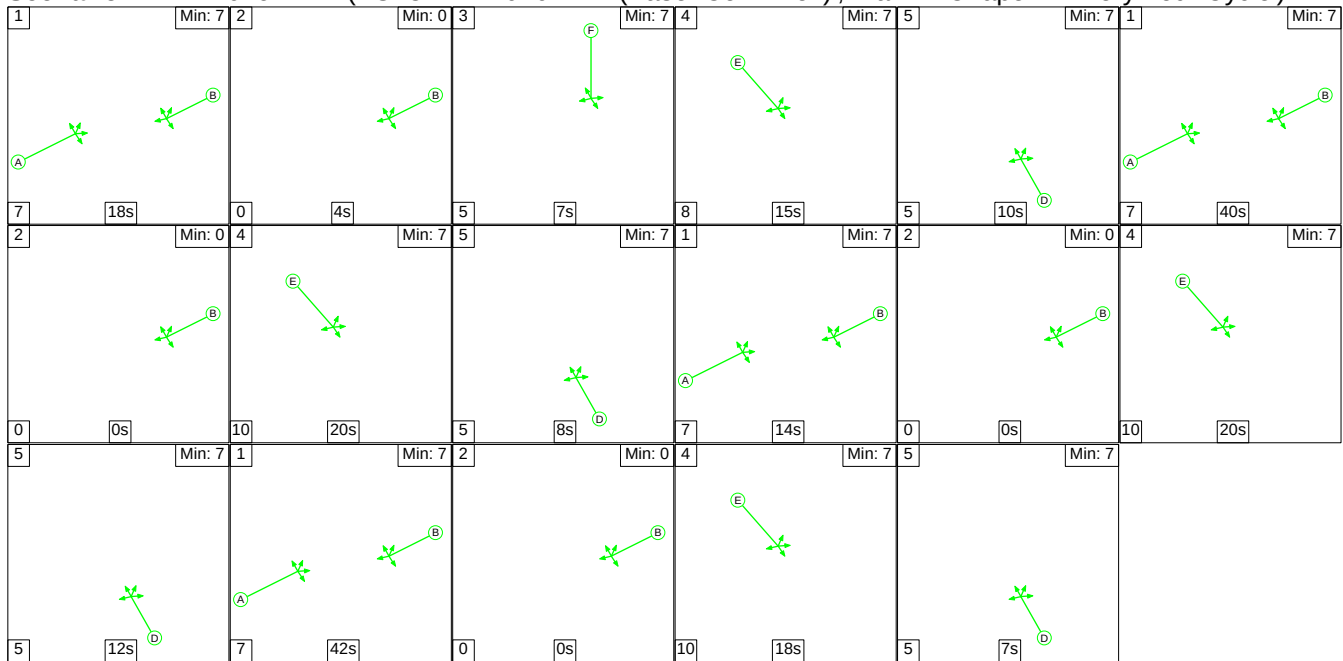
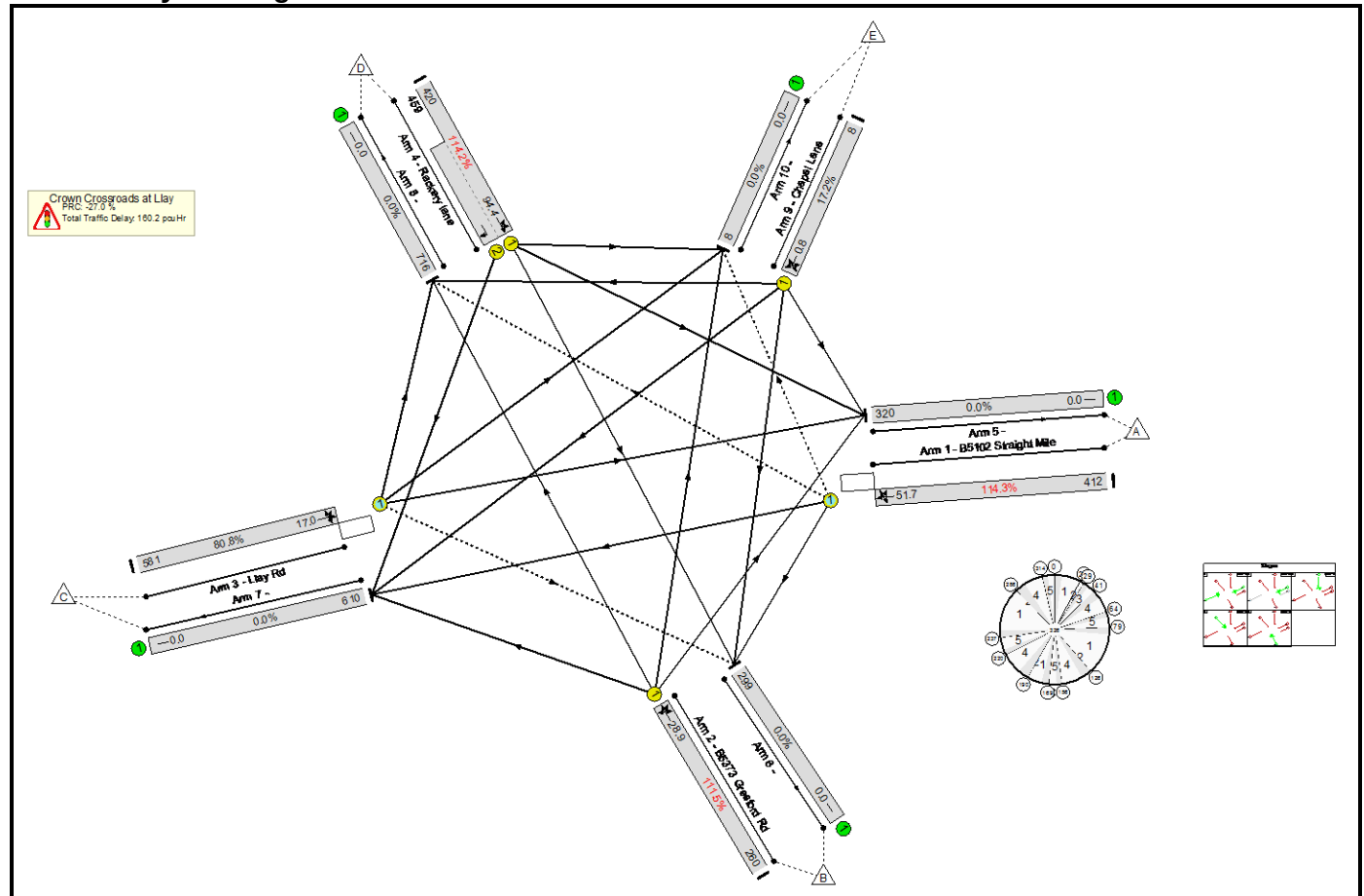
Stage Sequence Diagram**Scenario 2: 'PM 2026 BASE' (FG16: 'PM 2026 BASE', Plan 4: 'Chapel in Every Four Cycle')****Network Layout Diagram**

Network Results

Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	105.4%	29.3	55.0	85.1	-	-	-	-
Crown Crossroads at Llay	-	-	-	-	-	105.4%	29.3	55.0	85.1	-	-	-	-
1/1	B5102 Straight Mile Left Ahead Right Right2	B	396	1807	380	104.1%	6.4	14.6	21.8	197.9	13.2	14.6	27.7
2/1	B5373 Gresford Rd Right Left Ahead Right2	D	231	1862	223	103.7%	5.1	9.9	15.0	234.1	9.3	9.9	19.3
3/1	Llay Rd Ahead Right Left Left2	A	537	1984	694	77.4%	3.6	1.7	5.3	35.4	12.4	1.7	14.1
4/1+4/2	Rackery lane Left Ahead Right Left2	E	840	1844:1702	797	105.4%	13.9	28.7	42.6	182.6	21.2	28.7	49.9
9/1	Chapel Lane Left Left2 Right Right2	F	8	1893	46	17.2%	0.3	0.1	0.4	202.4	0.7	0.1	0.8
C1		PRC for Signalled Lanes (%):		-17.1		Total Delay for Signalled Lanes (pcuHr):		85.15		Cycle Time (s): 326			
		PRC Over All Lanes (%):		-17.1		Total Delay Over All Lanes(pcuHr):		85.15					

Stage Sequence Diagram**Scenario 3: 'AM 2026 DEV' (FG17: 'AM 2026 DEV (Base+Com+Dev)', Plan 1: 'Chapel Ln in Every Other Cycle')****Network Layout Diagram**

Network Results													
Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	125.6%	59.5	145.8	206.6	-	-	-	-
Crown Crossroads at Llay	-	-	-	-	-	125.6%	59.5	145.8	206.6	-	-	-	-
1/1	B5102 Straight Mile Left Ahead Right Right2	B	306	1782	244	125.6%	11.8	33.4	46.5	546.7	19.6	33.4	53.1
2/1	B5373 Gresford Rd Right Left Ahead Right2	D	402	1854	327	122.9%	15.6	39.9	55.6	497.7	23.3	39.9	63.2
3/1	Llay Rd Ahead Right Left Left2	A	741	1980	865	85.6%	6.3	2.9	9.2	44.7	25.3	2.9	28.2
4/1+4/2	Rackery lane Left Ahead Right Left2	E	668	1843:1702	534	125.1%	25.2	69.5	94.6	509.9	33.9	69.5	103.3
9/1	Chapel Lane Left Left2 Right Right2	F	18	1950	66	27.5%	0.6	0.2	0.7	149.8	1.2	0.2	1.3
C1		PRC for Signalled Lanes (%):			-39.5	Total Delay for Signalled Lanes (pcuHr):			206.61	Cycle Time (s): 238			
		PRC Over All Lanes (%):			-39.5	Total Delay Over All Lanes(pcuHr):			206.61				

Stage Sequence Diagram**Scenario 4: 'PM 2026 DEV' (FG18: 'PM 2026 DEV (Base+Com+Dev)', Plan 4: 'Chapel in Every Four Cycle')****Network Layout Diagram**

Network Results

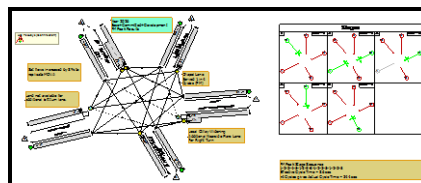
Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	114.3%	52.4	107.0	160.2	-	-	-	-
Crown Crossroads at Llay	-	-	-	-	-	114.3%	52.4	107.0	160.2	-	-	-	-
1/1	B5102 Straight Mile Left Ahead Right Right2	B	412	1809	360	114.3%	12.9	29.3	43.0	376.1	22.4	29.3	51.7
2/1	B5373 Gresford Rd Right Left Ahead Right2	D	260	1854	233	111.5%	7.9	17.2	25.1	347.7	11.7	17.2	28.9
3/1	Llay Rd Ahead Right Left Left2	A	581	1986	719	80.8%	4.3	2.0	6.3	39.3	15.0	2.0	17.0
4/1+4/2	Rackery lane Left Ahead Right Left2	E	879	1846:1702	770	114.2%	26.9	58.3	85.2	349.1	36.1	58.3	94.4
9/1	Chapel Lane Left Left2 Right Right2	F	8	1893	46	17.2%	0.3	0.1	0.4	202.4	0.7	0.1	0.8
C1		PRC for Signalled Lanes (%):		-27.0		Total Delay for Signalled Lanes (pcuHr):		160.19		Cycle Time (s): 326			
		PRC Over All Lanes (%):		-27.0		Total Delay Over All Lanes(pcuHr):		160.19					

Appendix B – LinSig Assessment (Physical and MOVA Scenario 2026)

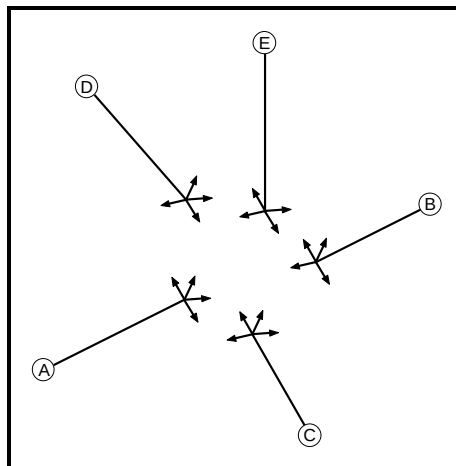
User and Project Details

Project:	Home Farm Residential Development
Title:	Crown Crossroads at Llay
Location:	Llay Wrexham LL12 0NT
Additional detail:	Physical Junction Improvements and MOVA
File name:	65665 - Physical and MOVA Scenario (Crown Crossroads 2026).lsg3x
Author:	GlanvilleJB
Company:	Curtins
Address:	Manchester

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7

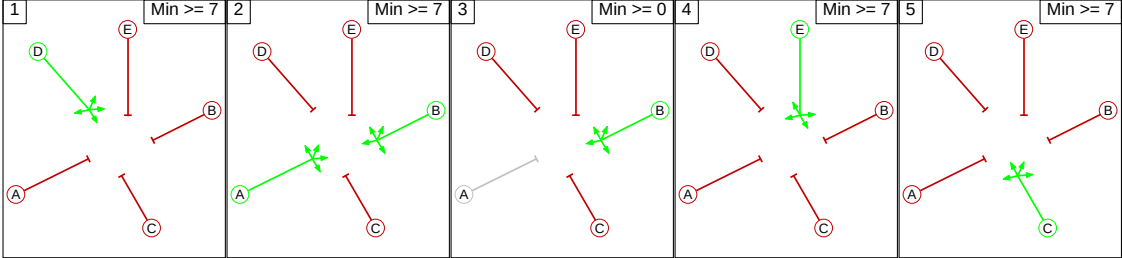
Phase Intergreens Matrix

Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		-	5	5	9
	B	-		7	10	5
	C	7	6		6	9
	D	6	5	5		9
	E	9	5	7	8	

Phases in Stage

Stage No.	Phases in Stage
1	D
2	A B
3	B
4	E
5	C

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage	To Stage					
		1	2	3	4	5
	1		6	5	9	5
	2	10		0	9	7
	3	10	2		5	7
	4	8	9	5		7
	5	6	7	6	9	

Give-Way Lane Input Data

Junction: Llay Fiveways (near Wrexham)											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/2 (B5102 Straight Mile)	8/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00
	10/1 (Right)	1439	0	3/1	1.09	All					
3/1 (Llay Rd)	6/1 (Right)	1439	0	1/1	1.09	All	2.00	2.00	0.50	2	2.00
				1/2	1.09	All					

Lane Input Data

Junction: Llay Fiveways (near Wrexham)												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (B5102 Straight Mile)	U	B	2	3	5.0	User	2033	-	-	-	-	-
1/2 (B5102 Straight Mile)	O	B	2	3	60.0	User	2000	-	-	-	-	-
2/1 (B5373 Gresford Rd)	U	C	2	3	60.0	User	2001	-	-	-	-	-
3/1 (Llay Rd)	O	A	2	3	60.0	User	2143	-	-	-	-	-
4/1 (Rackery lane)	U	D	2	3	60.0	User	1994	-	-	-	-	-
4/2 (Rackery lane)	U	D	2	3	10.0	User	1838	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Chapel Lane)	U	E	2	3	60.0	User	1976	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM Peak 2014 Surveyed Flows'	07:45	08:45	01:00	
2: 'PM Peak 2014 Surveyed Flows'	16:45	17:45	01:00	
3: 'AM Peak 2019 Base'	07:45	08:45	01:00	
4: 'PM Peak 2019 Base'	16:45	17:45	01:00	
5: 'AM Peak 2019 Base + Com.+Dev.'	07:45	08:45	01:00	
6: 'PM Peak 2019 Base + Com.+Dev.'	16:45	17:45	01:00	
7: 'AM Peak 2024 Base'	07:45	08:45	01:00	
8: 'PM Peak 2024 Base'	16:45	17:45	01:00	
9: 'AM Peak 2026 Base + Com.+Dev.'	07:45	08:45	01:00	
10: 'PM Peak 2026 Base + Com.+Dev.'	16:45	17:45	01:00	
11: 'AM Dev 2026'	07:45	08:45	01:00	
12: 'PM Dev 2026'	16:45	17:45	01:00	
13: 'AM Base 2026'	07:45	08:45	01:00	
14: 'PM Base 2026'	16:45	17:45	01:00	

Scenario 1: 'AM Design 2026' (FG11: 'AM Dev 2026', Plan 1: 'Chapel Ln in Every Other Cycle')

Traffic Flows, Desired

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	10	78	218	0	306
	B	19	0	104	276	3	402
	C	127	56	0	555	3	741
	D	185	142	340	0	1	668
	E	2	1	7	8	0	18
	Tot.	333	209	529	1057	7	2135

Lane	Scenario 1: AM Design 2026
Junction: Llay Fiveways (near Wrexham)	
1/1 (short)	88
1/2 (with short)	306(In) 218(Out)
2/1	402
3/1	741
4/1 (with short)	668(In) 328(Out)
4/2 (short)	340
5/1	333
6/1	209
7/1	529
8/1	1057
9/1	18
10/1	7

Junction: Llay Fiveways (near Wrexham)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile Lane 1)	This lane uses a directly entered Saturation Flow						2033	2033
1/2 (B5102 Straight Mile Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
2/1 (B5373 Gresford Rd Lane 1)	This lane uses a directly entered Saturation Flow						2001	2001
3/1 (Llay Rd Lane 1)	This lane uses a directly entered Saturation Flow						2143	2143
4/1 (Rackery lane Lane 1)	This lane uses a directly entered Saturation Flow						1994	1994
4/2 (Rackery lane Lane 2)	This lane uses a directly entered Saturation Flow						1838	1838
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane Lane 1)	This lane uses a directly entered Saturation Flow						1976	1976
10/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'PM Design 2026' (FG12: 'PM Dev 2026', Plan 4: 'Chapel in Every Four Cycle')**Traffic Flows, Desired****Desired Flow :**

	Destination						
Origin		A	B	C	D	E	Tot.
	A	0	26	157	228	1	412
	B	8	0	75	177	0	260
	C	114	105	0	357	5	581
	D	225	193	459	0	2	879
	E	2	2	3	1	0	8
	Tot.	349	326	694	763	8	2140

Traffic Lane Flows

Lane	Scenario 2: PM Design 2026
Junction: Llay Fiveways (near Wrexham)	
1/1 (short)	183
1/2 (with short)	412(In) 229(Out)
2/1	260
3/1	581
4/1 (with short)	879(In) 420(Out)
4/2 (short)	459
5/1	349
6/1	326
7/1	694
8/1	763
9/1	8
10/1	8

Lane Saturation Flows

Junction: Llay Fiveways (near Wrexham)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile Lane 1)	This lane uses a directly entered Saturation Flow						2033	2033
1/2 (B5102 Straight Mile Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
2/1 (B5373 Gresford Rd Lane 1)	This lane uses a directly entered Saturation Flow						2001	2001
3/1 (Llay Rd Lane 1)	This lane uses a directly entered Saturation Flow						2143	2143
4/1 (Rackery lane Lane 1)	This lane uses a directly entered Saturation Flow						1994	1994
4/2 (Rackery lane Lane 2)	This lane uses a directly entered Saturation Flow						1838	1838
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane Lane 1)	This lane uses a directly entered Saturation Flow						1976	1976
10/1	Infinite Saturation Flow						Inf	Inf

Scenario 3: 'AM Base 2026' (FG13: 'AM Base 2026', Plan 1: 'Chapel Ln in Every Other Cycle')**Traffic Flows, Desired****Desired Flow :**

		Destination					
Origin		A	B	C	D	E	Tot.
	A	0	10	64	205	0	279
	B	19	0	75	253	3	350
	C	122	48	0	550	3	723
	D	181	135	338	0	1	655
	E	2	1	7	8	0	18
	Tot.	324	194	484	1016	7	2025

Traffic Lane Flows

Lane	Scenario 3: AM Base 2026
Junction: Llay Fiveways (near Wrexham)	
1/1 (short)	74
1/2 (with short)	279(In) 205(Out)
2/1	350
3/1	723
4/1 (with short)	655(In) 317(Out)
4/2 (short)	338
5/1	324
6/1	194
7/1	484
8/1	1016
9/1	18
10/1	7

Lane Saturation Flows

Junction: Llay Fiveways (near Wrexham)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile Lane 1)	This lane uses a directly entered Saturation Flow						2033	2033
1/2 (B5102 Straight Mile Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
2/1 (B5373 Gresford Rd Lane 1)	This lane uses a directly entered Saturation Flow						2001	2001
3/1 (Llay Rd Lane 1)	This lane uses a directly entered Saturation Flow						2143	2143
4/1 (Rackery lane Lane 1)	This lane uses a directly entered Saturation Flow						1994	1994
4/2 (Rackery lane Lane 2)	This lane uses a directly entered Saturation Flow						1838	1838
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane Lane 1)	This lane uses a directly entered Saturation Flow						1976	1976
10/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: 'PM Base 2026' (FG14: 'PM Base 2026', Plan 4: 'Chapel in Every Four Cycle')**Traffic Flows, Desired****Desired Flow :**

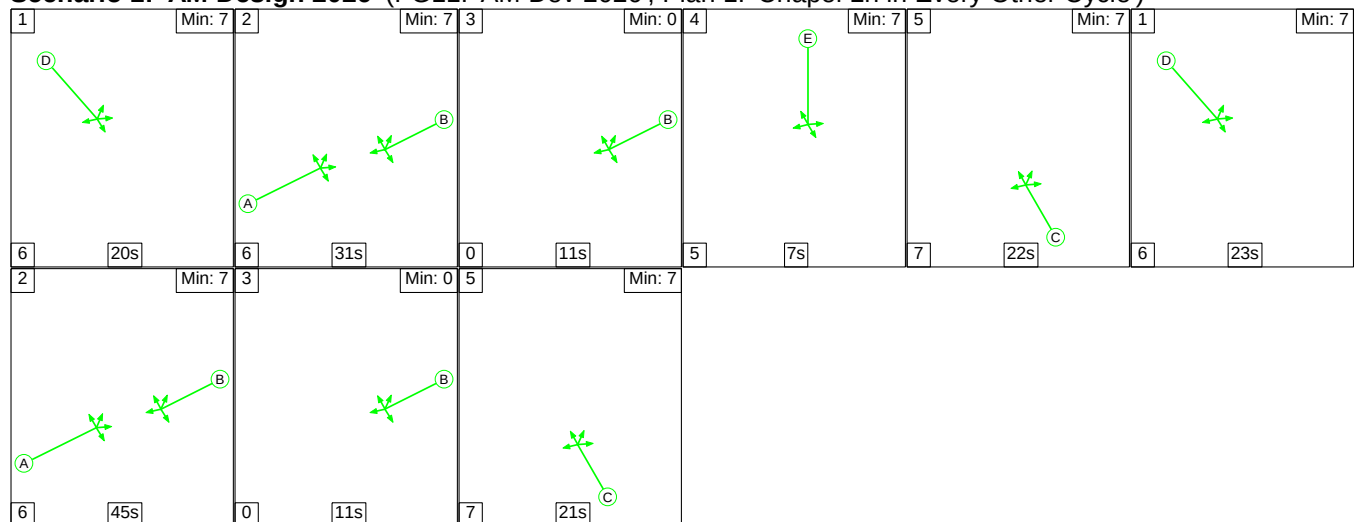
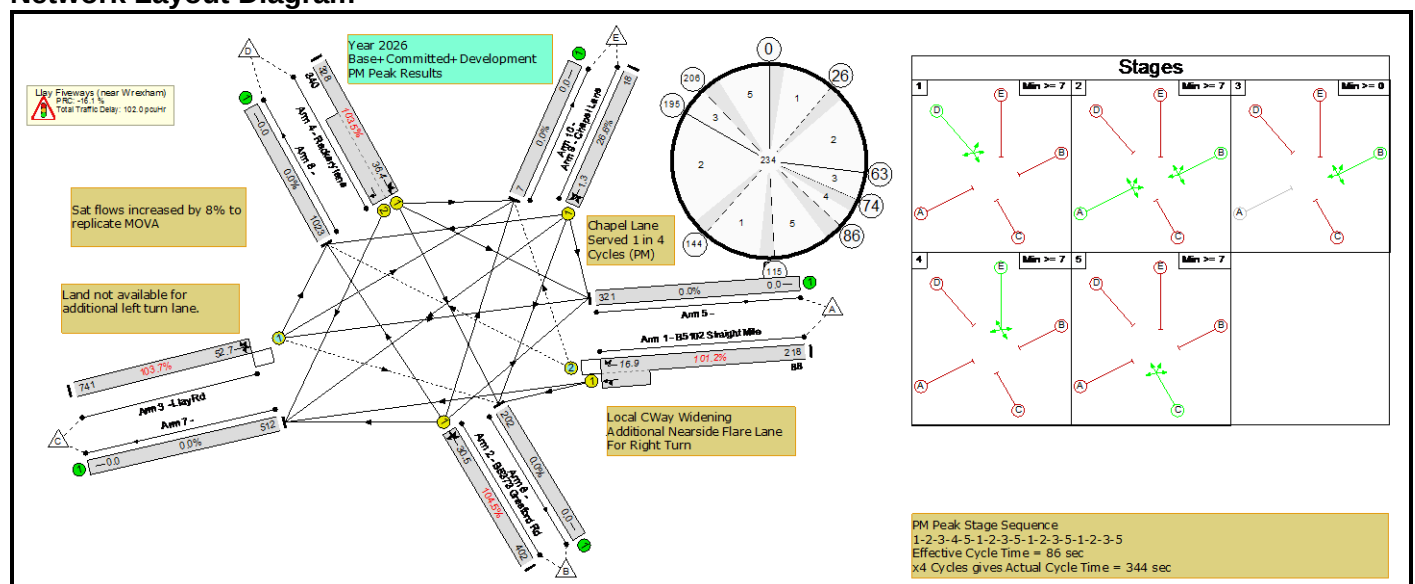
	Destination						
Origin		A	B	C	D	E	Tot.
	A	0	26	148	221	1	396
	B	8	0	59	164	0	231
	C	99	76	0	357	5	537
	D	213	170	455	0	2	840
	E	2	2	3	1	0	8
	Tot.	322	274	665	743	8	2012

Traffic Lane Flows

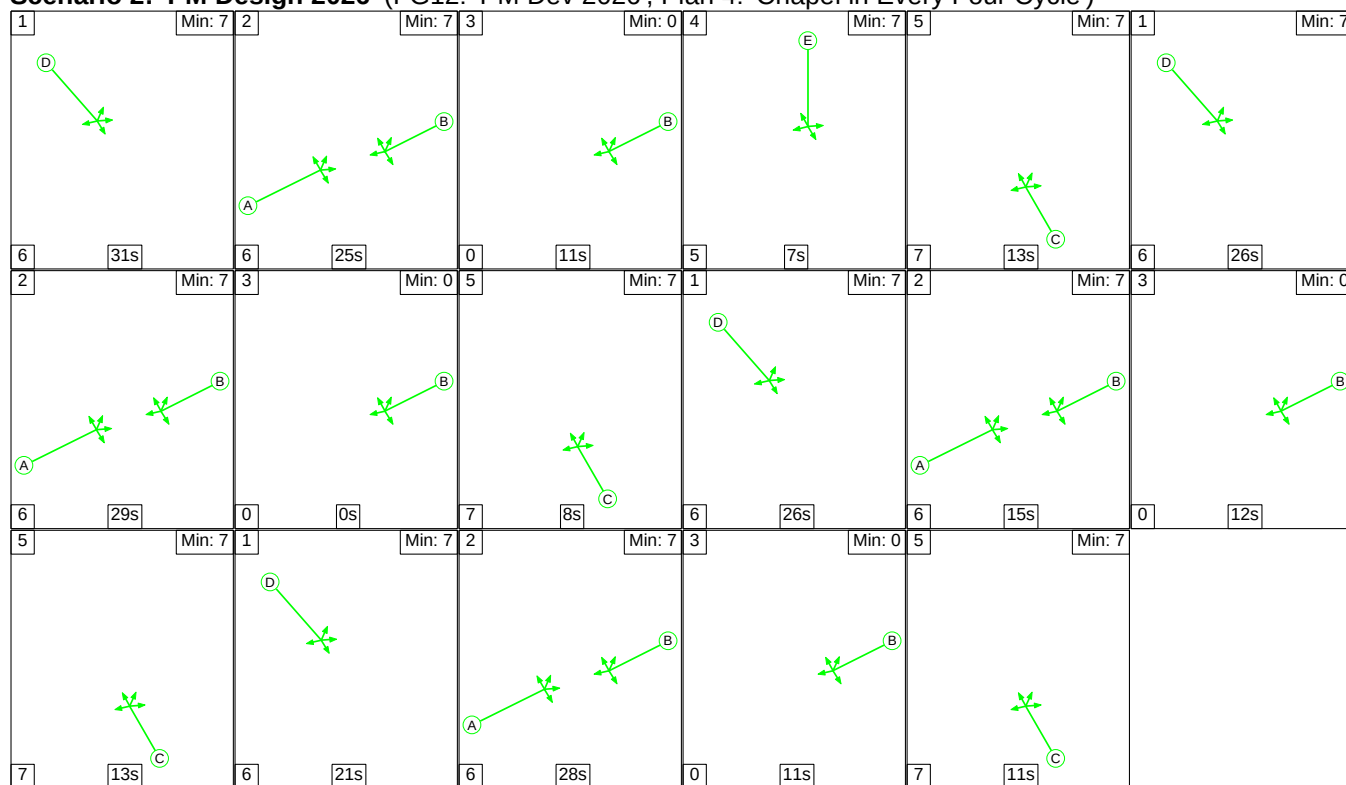
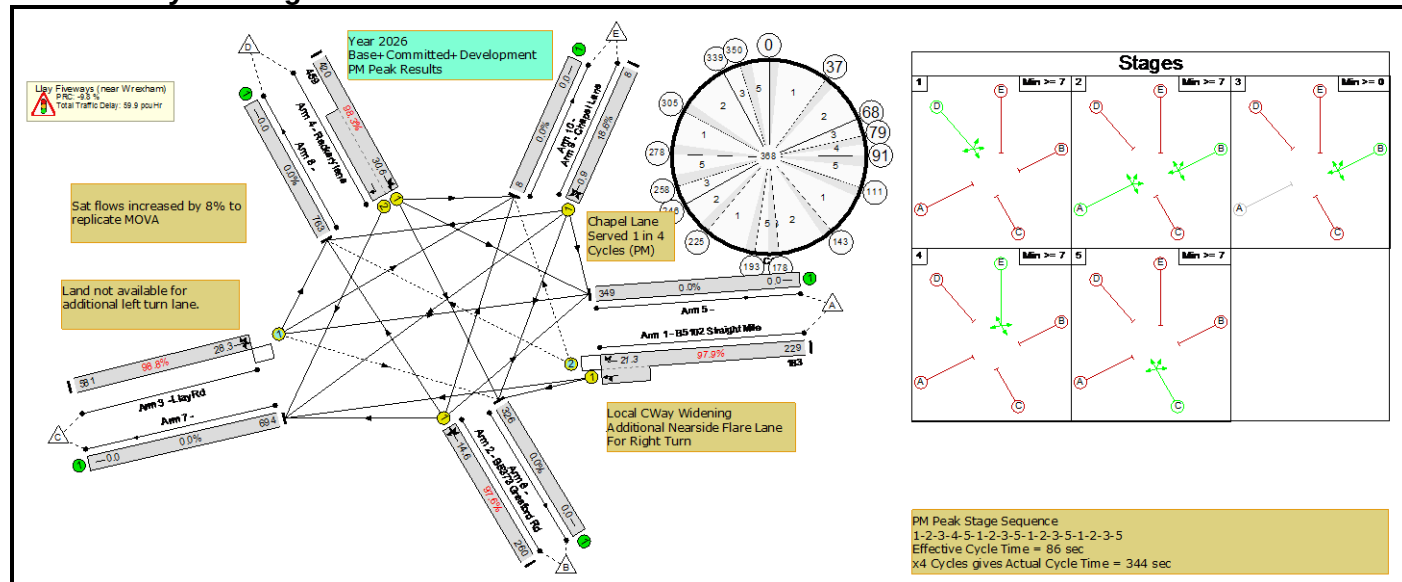
Lane	Scenario 4: PM Base 2026
Junction: Llay Fiveways (near Wrexham)	
1/1 (short)	174
1/2 (with short)	396(In) 222(Out)
2/1	231
3/1	537
4/1 (with short)	840(In) 385(Out)
4/2 (short)	455
5/1	322
6/1	274
7/1	665
8/1	743
9/1	8
10/1	8

Lane Saturation Flows

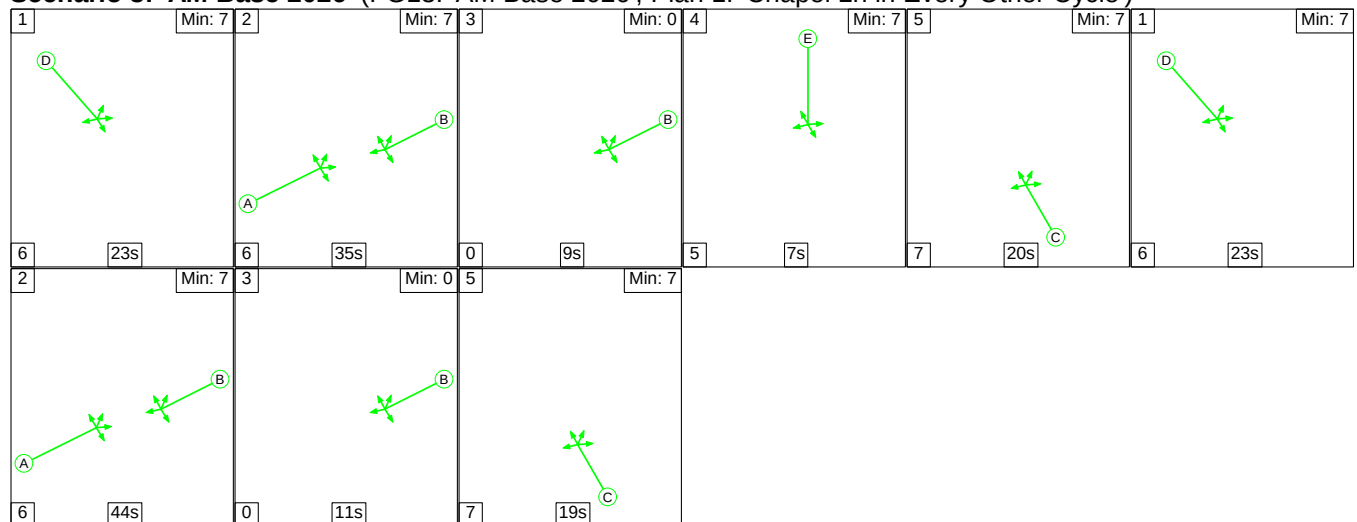
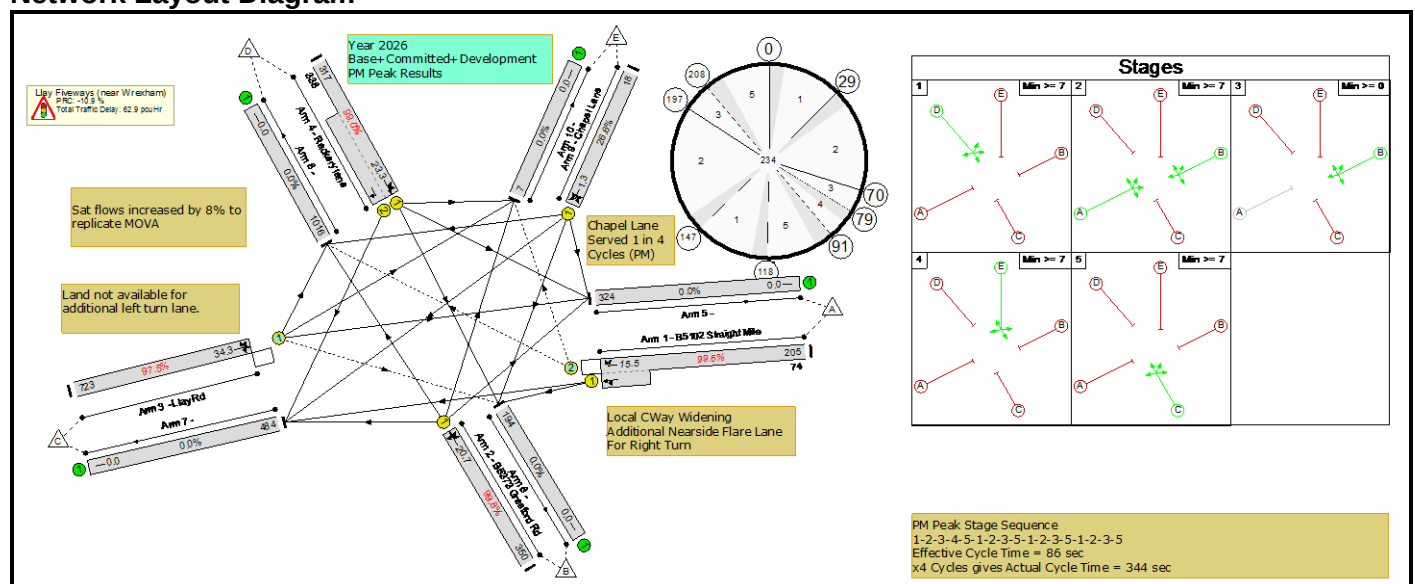
Junction: Llay Fiveways (near Wrexham)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (B5102 Straight Mile Lane 1)	This lane uses a directly entered Saturation Flow						2033	2033
1/2 (B5102 Straight Mile Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
2/1 (B5373 Gresford Rd Lane 1)	This lane uses a directly entered Saturation Flow						2001	2001
3/1 (Llay Rd Lane 1)	This lane uses a directly entered Saturation Flow						2143	2143
4/1 (Rackery lane Lane 1)	This lane uses a directly entered Saturation Flow						1994	1994
4/2 (Rackery lane Lane 2)	This lane uses a directly entered Saturation Flow						1838	1838
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Chapel Lane Lane 1)	This lane uses a directly entered Saturation Flow						1976	1976
10/1	Infinite Saturation Flow						Inf	Inf

Stage Sequence Diagram**Scenario 1: 'AM Design 2026'** (FG11: 'AM Dev 2026', Plan 1: 'Chapel Ln in Every Other Cycle')**Network Layout Diagram**

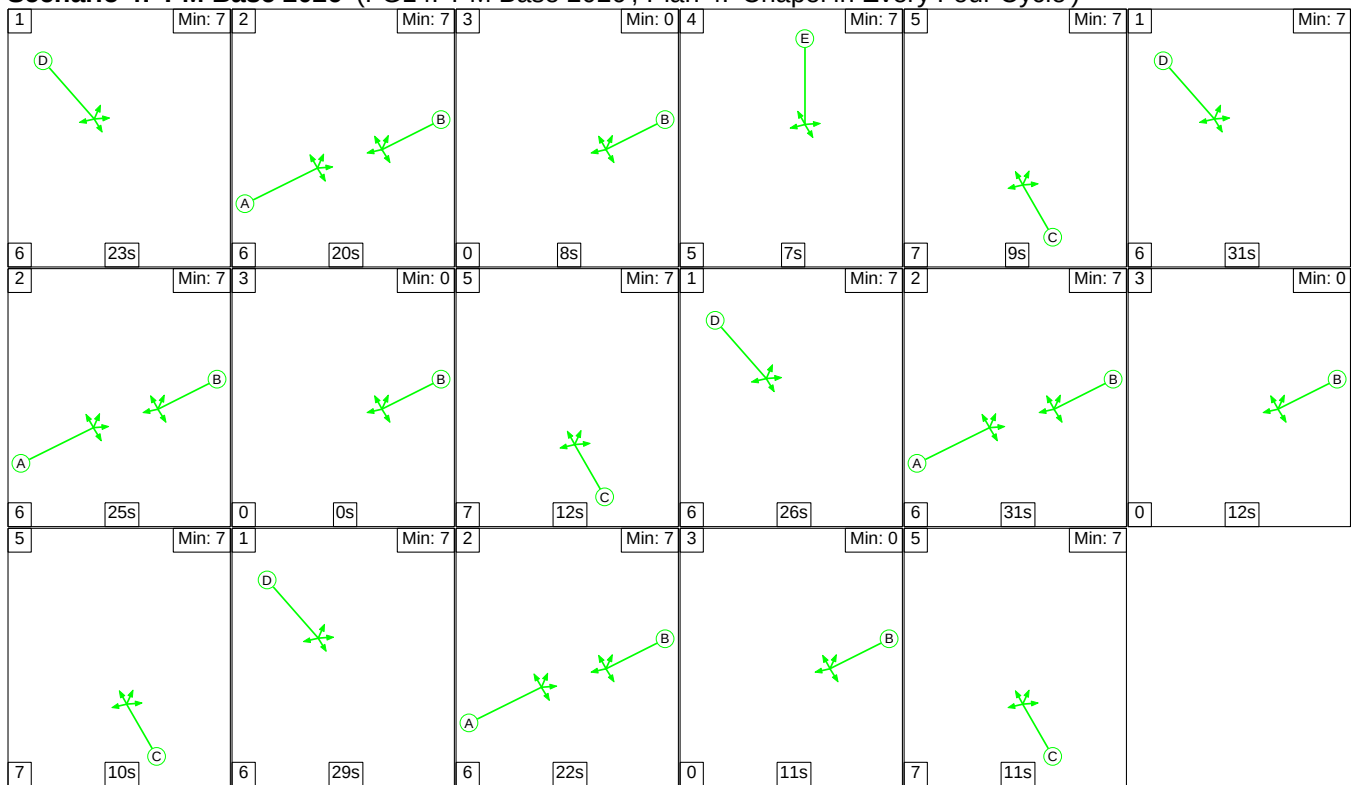
Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	104.5%	34.6	66.7	102.0	-	-	-	-
Llay Fiveways (near Wrexham)	-	-	-	-	-	104.5%	34.6	66.7	102.0	-	-	-	-
1/2+1/1	B5102 Straight Mile Left Ahead Right Right2	B	306	2000:2033	302	101.2%	4.0	9.7	14.4	169.9	7.2	9.7	16.9
2/1	B5373 Gresford Rd Right Left Ahead Right2	C	402	2001	385	104.5%	7.6	15.2	22.8	204.1	15.2	15.2	30.5
3/1	Llay Rd Ahead Right Left Left2	A	741	2143	714	103.7%	11.3	21.8	33.2	161.2	30.8	21.8	52.7
4/1+4/2	Rackery lane Left Ahead Right Left2	D	668	1994:1838	645	103.5%	11.1	19.8	30.9	166.4	16.7	19.8	36.4
9/1	Chapel Lane Left Left2 Right Right2	E	18	1976	68	26.6%	0.6	0.2	0.7	146.2	1.1	0.2	1.3
C1		PRC for Signalised Lanes (%):			-16.1	Total Delay for Signalised Lanes (pcuHr):			102.00	Cycle Time (s): 234			
		PRC Over All Lanes (%):			-16.1	Total Delay Over All Lanes(pcuHr):			102.00				

Stage Sequence Diagram**Scenario 2: 'PM Design 2026'** (FG12: 'PM Dev 2026', Plan 4: 'Chapel in Every Four Cycle')**Network Layout Diagram**

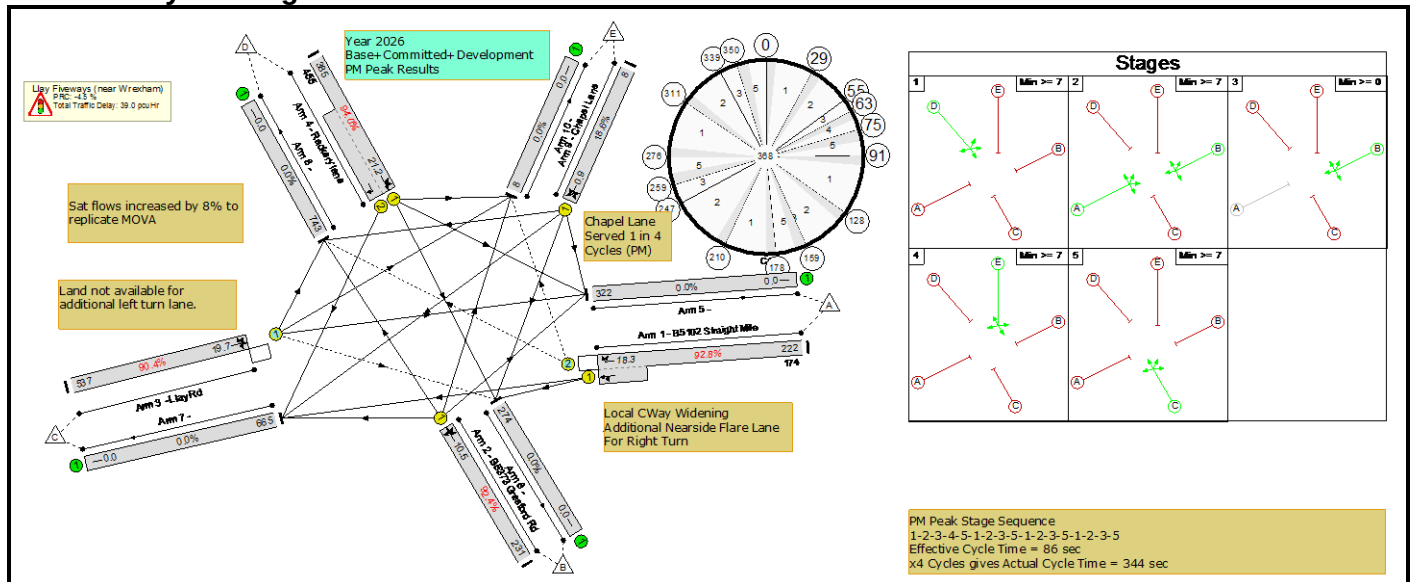
Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	98.8%	22.5	36.7	59.9	-	-	-	-
Llay Fiveways (near Wrexham)	-	-	-	-	-	98.8%	22.5	36.7	59.9	-	-	-	-
1/2+1/1	B5102 Straight Mile Left Ahead Right Right2	B	412	2000:2033	421	97.9%	4.9	8.1	13.6	119.1	13.2	8.1	21.3
2/1	B5373 Gresford Rd Right Left Ahead Right2	C	260	2001	266	97.6%	3.2	6.6	9.8	136.2	8.0	6.6	14.6
3/1	Llay Rd Ahead Right Left Left2	A	581	2143	588	98.8%	5.9	10.4	16.3	101.2	17.9	10.4	28.3
4/1+4/2	Rackery lane Left Ahead Right Left2	D	879	1994:1838	895	98.3%	8.1	11.4	19.5	80.0	19.2	11.4	30.6
9/1	Chapel Lane Left Left2 Right Right2	E	8	1976	43	18.6%	0.4	0.1	0.5	228.0	0.8	0.1	0.9
C1			PRC for Signalled Lanes (%):		-9.8	Total Delay for Signalled Lanes (pcuHr):			59.85	Cycle Time (s): 368			
			PRC Over All Lanes (%):		-9.8	Total Delay Over All Lanes(pcuHr):			59.85				

Stage Sequence Diagram**Scenario 3: 'AM Base 2026'** (FG13: 'AM Base 2026', Plan 1: 'Chapel Ln in Every Other Cycle')**Network Layout Diagram**

Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	99.8%	23.9	38.3	62.9	-	-	-	-
Llay Fiveways (near Wrexham)	-	-	-	-	-	99.8%	23.9	38.3	62.9	-	-	-	-
1/2+1/1	B5102 Straight Mile Left Ahead Right Right2	B	279	2000:2033	280	99.6%	2.8	8.1	11.6	150.2	7.4	8.1	15.5
2/1	B5373 Gresford Rd Right Left Ahead Right2	C	350	2001	351	99.8%	4.8	9.2	14.0	143.7	11.5	9.2	20.7
3/1	Llay Rd Ahead Right Left Left2	A	723	2143	742	97.5%	7.7	9.5	17.2	85.6	24.8	9.5	34.3
4/1+4/2	Rackery lane Left Ahead Right Left2	D	655	1994:1838	662	99.0%	8.1	11.3	19.4	106.6	12.0	11.3	23.3
9/1	Chapel Lane Left Left2 Right Right2	E	18	1976	68	26.6%	0.6	0.2	0.7	146.2	1.1	0.2	1.3
C1		PRC for Signalled Lanes (%):			-10.9	Total Delay for Signalled Lanes (pcuHr):			62.94	Cycle Time (s): 234			
		PRC Over All Lanes (%):			-10.9	Total Delay Over All Lanes(pcuHr):			62.94				



Network Layout Diagram



Item	Lane Description	Full Phase	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Crown Crossroads at Llay	-	-	-	-	-	94.0%	18.8	19.7	39.0	-	-	-	-
Llay Fiveways (near Wrexham)	-	-	-	-	-	94.0%	18.8	19.7	39.0	-	-	-	-
1/2+1/1	B5102 Straight Mile Left Ahead Right Right2	B	396	2000:2033	427	92.8%	4.0	4.9	9.5	86.6	13.5	4.9	18.3
2/1	B5373 Gresford Rd Right Left Ahead Right2	C	231	2001	250	92.4%	2.7	4.2	6.9	107.0	6.3	4.2	10.5
3/1	Llay Rd Ahead Right Left Left2	A	537	2143	594	90.4%	4.9	4.1	9.0	60.5	15.6	4.1	19.7
4/1+4/2	Rackery lane Left Ahead Right Left2	D	840	1994:1838	893	94.0%	6.8	6.4	13.1	56.2	14.9	6.4	21.2
9/1	Chapel Lane Left Left2 Right Right2	E	8	1976	43	18.6%	0.4	0.1	0.5	228.0	0.8	0.1	0.9
C1			PRC for Signalled Lanes (%):		-4.5	Total Delay for Signalled Lanes (pcuHr):			39.04	Cycle Time (s): 368			
			PRC Over All Lanes (%):		-4.5	Total Delay Over All Lanes(pcuHr):			39.04				

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