



Caerphilly County Borough
2nd Replacement Local Development Plan 2020-2035

EB14: High-Level Transport Modelling

October 2026

Caerphilly Local Development Plan Transport Modelling Report

Project:	Caerphilly LDP		
Prepared by:	Andrew Dawe	Date:	24/09/2026
Approved by:	Sansaka Sirivadidurage	Checked by:	Norbert Dokoupil
Subject:	Caerphilly LDP Modelling		

This Report has been prepared solely for use by the party which commissioned it (the 'Client') in connection with the captioned project. It should not be used for any other purpose. No person other than the Client or any party who has expressly agreed terms of reliance with us (the 'Recipient(s)') may rely on the content, information or any views expressed in the Report. This Report is confidential and contains proprietary intellectual property and we accept no duty of care, responsibility or liability to any other recipient of this Report. No representation, warranty or undertaking, express or implied, is made and no responsibility or liability is accepted by us to any party other than the Client or any Recipient(s), as to the accuracy or completeness of the information contained in this Report. For the avoidance of doubt this Report does not in any way purport to include any legal, insurance or financial advice or opinion.

We disclaim all and any liability whether arising in tort, contract or otherwise which we might otherwise have to any party other than the Client or the Recipient(s), in respect of this Report, or any information contained in it. We accept no responsibility for any error or omission in the Report which is due to an error or omission in data, information or statements supplied to us by other parties including the Client (the 'Data'). We have not independently verified the Data or otherwise examined it to determine the accuracy, completeness, sufficiency for any purpose or feasibility for any particular outcome including financial.

Forecasts presented in this document were prepared using the Data and the Report is dependent or based on the Data. Inevitably, some of the assumptions used to develop the forecasts will not be realised and unanticipated events and circumstances may occur. Consequently, we do not guarantee or warrant the conclusions contained in the Report as there are likely to be differences between the forecasts and the actual results and those differences may be material. While we consider that the information and opinions given in this Report are sound all parties must rely on their own skill and judgement when making use of it.

Information and opinions are current only as of the date of the Report and we accept no responsibility for updating such information or opinion. It should, therefore, not be assumed that any such information or opinion continues to be accurate subsequent to the date of the Report. Under no circumstances may this Report or any extract or summary thereof be used in connection with any public or private securities offering including any related memorandum or prospectus for any securities offering or stock exchange listing or announcement.

By acceptance of this Report you agree to be bound by this disclaimer. This disclaimer and any issues, disputes or claims arising out of or in connection with it (whether contractual or non-contractual in nature such as claims in tort, from breach of statute or regulation or otherwise) shall be governed by, and construed in accordance with, the laws of England and Wales to the exclusion of all conflict of laws principles and rules. All disputes or claims arising out of or relating to this disclaimer shall be subject to the exclusive jurisdiction of the English and Welsh courts to which the parties irrevocably submit.

1 Introduction

Mott MacDonald was commissioned by Transport for Wales (TfW) to undertake a modelling exercise to assist with the Caerphilly County Borough 2nd Replacement Local Development Plan (2RLDP). The modelling uses the South East Wales Transport Model (SEWTM) to test the high-level impacts of a set of developments provided by Caerphilly County Borough Council (the Council) on the 2035 and 2045 forecast highway networks. The model has been run using a methodology and assumptions agreed with TfW and considered suitable. The method and results have been presented to the Council and are outlined in this report.

2 SEWTM Base and Forecast Models

2.1 Base review

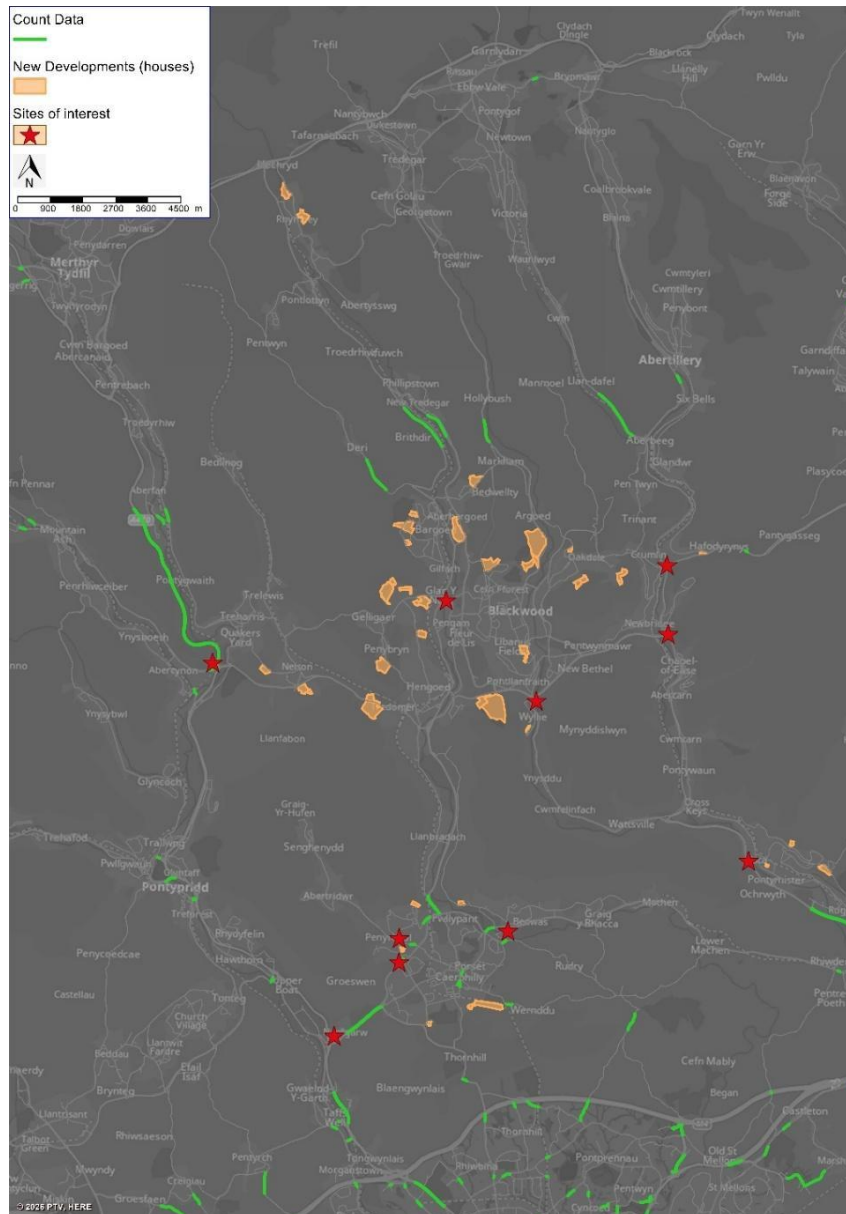
A review has been undertaken of the 2022 base model calibration within Caerphilly County Borough. This is to ensure that the model is representative of observed traffic conditions and to understand its strengths and limitations for use in this assessment. A total of 55 counts across 33 links were identified as being close to at least one of the LDP developments.

Traffic count data that was collated for use in development of the base model has been utilised for the review. Figure 2.1 shows the count locations used and their proximity to a development, and a summary of the calibration statistics against TAG criteria is presented in Table 2.1. This covers the highway assignment modelled hours:

- AM peak hour 0800-0900
- IP average hour 0930-1500
- PM peak hour 1630-1730
- OP average hour 1800-0700

Full calibration statistics for these 55 sites can be found in Appendix A.

The validation and review for this level of assessment have been deemed acceptable, though if further detailed modelling is required at the next stage of works a local calibration with more count representation would be recommended, particularly increasing count representation around the Blackwood area.

Figure 2.1: Traffic count locations**Table 2.1: Base highway calibration statistics**

Criteria		AM	IP	PM	OP
GEH <5	Number	49	50	49	55
	Percentage	89%	91%	89%	100%
TAG Flow Range	Number	50	52	51	55
	Percentage	91%	95%	93%	100%
Overall Pass	Number	50	52	51	55
	Percentage	91%	95%	93%	100%

Table 2.1 shows that the link volume calibration statistics for these sites is good, and in all peaks is above the TAG requirement¹ of 85% of links passing.

2.2 Forecast model

SEWTM has do-minimum (DM) forecast models for 2032 and 2042. These models take the 2022 base and apply growth, through implementation of committed schemes and developments identified as being “Near certain” in the uncertainty log. The growth is then normalised using the core scenario of NTEM 8.0 as a basis.

No additional highway or public transport improvements have been added for this LDP analysis, so the DM is the core SEWTM DM held and developed by TfW in 2025. These DM models form the basis of this assessment, with the impacts of the developments outlined in Section 3.1 compared against them.

3 Caerphilly 2RLDP Model Updates

3.1 Adding 2RLDP developments

In order to represent the developments required for the 2RLDP, it was necessary to update the population and employment databases, which are a key input for SEWTM. None of the developments were explicitly modelled in a new dedicated zone, and instead they were added to the SEWTM zones that they sit in geographically. At this level of assessment, no access arrangements to the proposed development sites were included and all development traffic uses the existing network, so no changes were made to the highway or public transport networks for the assessment.

The population and employment data required by the demand model for the Fully Modelled Area (FMA) to generate forecasts is more detailed than can usually be provided based on developer plans only, with the employment data required as total, service and retail categories, and splits for the population data required, including age, gender, employment status and income.

So that the required information can be generated, the Council have provided potential gross dwellings, jobs, and pupil changes, alongside donor postcode locations to use as a sample for the detailed splits for each dwelling. These sample locations are areas which are considered to have similar characteristics to the developments. These postcodes have been mapped to model zones, and the splits have been adopted from the forecast population data. The development trip rates are therefore based on these characteristics, and a result of the trip rate calibration to NTEM values. If different specific trip rates are to be assumed, this will need to be adjusted in future modelling exercises.

Table 3.1 shows potential developments as provided by the Council. These were added to the existing zones in the 2032 and 2042 DM models using the above methodology, hence there are no network changes compared to the DM. Note, the HOV109 and HOV008 change in enrolments are due to existing schools relocating within the zones they sit in, so no change in enrolments were modelled.

Table 3.1: LDP Developments

Ref	Address	Settlement	Dwellings	Pupils	Employees
CB004	Land at Energlyn	Caerphilly	35		
CB010	Welsh Egg Farm	Caerphilly	41		

¹ TAG Unit M3.1 Table 2

CB017	Land at Pandy Road, Phase 2	Bedwas	45		
CB018	Land at Watford Road	Caerphilly	12		
CB025	Nantycalch Farm (Option A)	Caerphilly	48		
CB028	Land east of Railway Terrace	Caerphilly	160		
GB010	Land at Nant Gau	Oakdale	20		
GB012	Land at Heol y Cefn	Blackwood	281		
GB013	Land east of Oakdale Golf Club	Oakdale	65		
GB023	Pantysgawen Farm	Croespenmaen	144		
GB028	Former Pontllanfraith School and Playing Fields	Pontllanfraith	133		
GB030	Land at Cwmgelli Farm	Blackwood	175		
GB203	Bryn Meadows Golf Club, Maesycwmmmer	Maesycwmmmer	500		
HOV004	Land at Coed-y-Brain House	Aberbargoed	176		
HOV008	Land north of Glan y Nant	Rhymney		500	
HOV015	Land at Park Estate	Bargoed	48		
HOV016	Land opposite Heolddu Grove	Bargoed	55		
HOV019	Aberbargoed Plateau	Aberbargoed	185	200	
HOV105	Argoed Fawr Farm, The Rock	Argoed	400		
HOV109	Heolddu Comprehensive School, Mountain Road	Bargoed		400	
HOV208	Castle Fields, Rhymney (Site 1)	Rhymney	100		
RNC004	Land at Sofrydd Road	Hafodyrynys	22		
RNC017	Land at Snowdon Close, Ty Melyn	Risca	34		
RNC023	Council Service Site, Brookland Road	Risca	23		
RNC025	Land at Elm Drive, Pontymister	Risca	132		
RNC028	Land at Pen-y-Cwarel Road	Wyllie	10		
YM005	DCWW Depot, Pentwyn Road	Nelson	91		
YM010	Land at Rhos Farm	Penpedairheol	210		
YM011	Land north of A472	Tredomen			1,060
YM012	Land south of A472	Tredomen	422		
YM017	Land at Cefn Llwynau Farm, Penallta Road,	Penybryn	175		

YM026	Land at Ty Du Farm	Nelson	150		
YM027	Land adjacent to Tir y Berth Farm, Hengoed Road	Penpedairheol	131		
YM201	Land at Pengam Road, Penpedairheol	Penpedairheol	188		
YM202	Land north of Bryncoed Terrace, Penpedairheol	Penpedairheol	80		
GB021	Former Gellideg Industrial Estate, Maesycwmmmer.	Maesycwmmmer	130		

Once these developments were added to the demographic and employment database the VDM was run for 2032 and 2042, otherwise unchanged from the DM models.

3.2 Updating forecast years

The Council requested that the assessment should be undertaken for the 2035 and 2045 forecast years, in line with their LDP. It was agreed that development of two additional forecast years was not commensurate with the scope of the task. Instead, it was agreed that a linear interpolation/extrapolation exercise would be applied to the 2032 and 2042 highway assignment matrices to estimate demand for 2035 and 2045 for both DM and DS. These were then assigned with calculated 2035 and 2045 cost coefficients.

4 Modelling Results

This section presents the outputs from the modelling, providing demand changes, flow difference plots, and delay plots. This summarises the results already provided to the Council in the form of a slide pack, and a GIS Shapefile.

4.1 Demand changes

Table 4.1 presents the total demand in both the DM and DS models. It shows the change in each modelled time period in the assigned car and PT matrices, along with the 24-hour totals.

Table 4.1: Total Demand Change

		2035			2045		
		DM	DS	Change	DM	DS	Change
Car	AM Peak Hr	230,359	231,728	0.6%	239,918	241,323	0.6%
	IP Average Hr	176,348	177,409	0.6%	184,605	185,697	0.6%
	OP Average Hr	44,047	44,379	0.8%	46,050	46,388	0.7%
	PM Peak Hr	232,921	234,165	0.5%	242,685	243,939	0.5%
	24Hr	2,689,927	2,706,501	0.6%	2,809,261	2,826,197	0.6%
Public Transport	AM Average Hr	13,279	13,352	0.6%	12,510	12,578	0.5%
	IP Average Hr	11,481	11,538	0.5%	10,792	10,845	0.5%

	OP Average Hr	1,893	1,899	0.3%	1,815	1,821	0.3%
	PM Average Hr	14369	14431	0.4%	13516	13573	0.4%
	24Hr	164060	164826	0.5%	154783	155489	0.5%

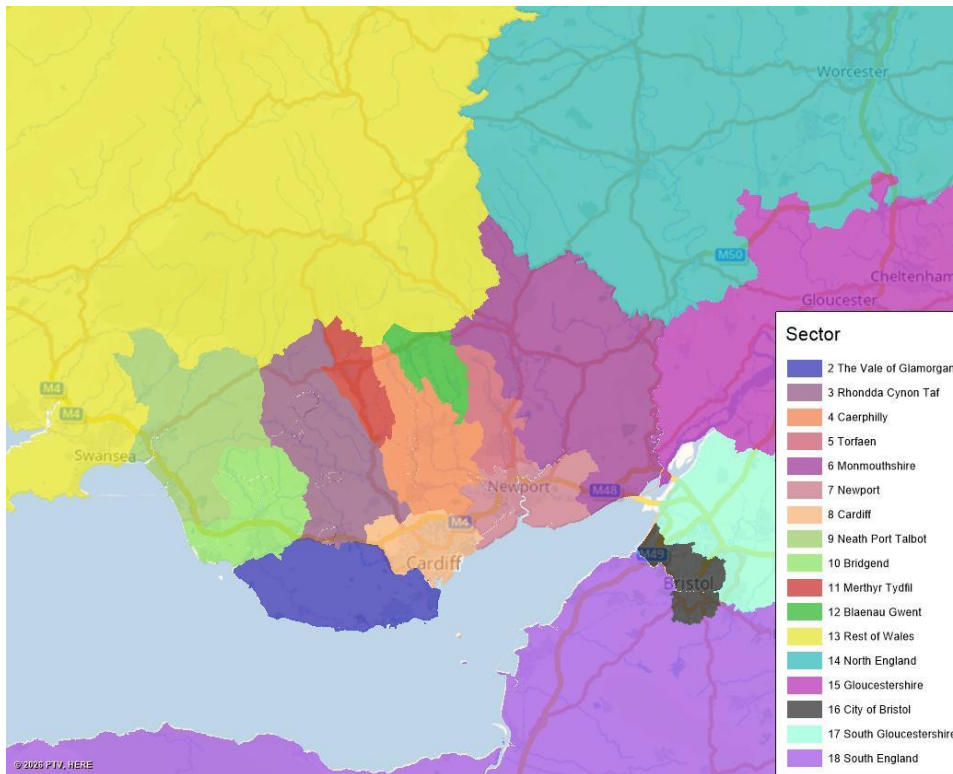
Table 4.2 and Table 4.3 present the sectorised change in total car demand across the day between the DS and the DM, with the sectors shown in Figure 4.1. Both show increases in demand for trips to and from Caerphilly, with the largest change in demand for trips beginning and ending their journey within Caerphilly. The changes also cause some small reductions in demand in other nearby sectors, with the most notable decrease in Rhondda Cynon Taf. This is likely a result of the increase in attractions drawing these trips instead to Caerphilly. It is worth noting that these changes are small, representing under a 0.1% decrease in trips within Rhondda Cynon Taf in both forecast years.

Table 4.2: 2035 sectorised daily car demand change (vehs)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2: The Vale of Glamorgan	9	7	24	0	0	1	11	0	2	2	2	0	0	0	0	0	0
3: Rhondda Cynon Taf	- 7	- 145	540	- 6	- 4	- 11	- 49	- 2	- 8	- 23	- 9	- 3	- 1	- 0	- 1	- 1	- 2
4: Caerphilly	24	602	12,408	14	7	334	249	11	30	391	515	43	11	5	11	13	28
5: Torfaen	- 0	- 7	146	22	- 4	- 5	- 3	- 0	- 0	- 3	- 9	- 0	0	0	- 0	- 0	0
6: Monmouthshire	- 0	- 5	78	- 5	- 7	- 3	- 2	- 0	- 0	- 4	- 6	- 4	- 0	- 1	- 0	- 0	0
7: Newport	- 2	- 18	321	- 6	- 4	23	- 9	- 1	- 1	- 10	- 6	- 0	0	0	- 0	- 0	2
8: Cardiff	- 15	- 49	248	- 2	- 2	- 11	- 15	- 1	- 4	- 14	- 11	- 0	0	- 0	- 0	- 0	1
9: Neath Port Talbot	- 0	- 2	8	- 0	- 0	- 0	- 1	- 3	- 1	- 0	- 0	- 2	- 0	- 0	- 0	- 0	0
10: Bridgend	- 2	- 8	27	- 0	- 0	- 1	- 5	- 1	- 1	- 1	- 1	- 0	- 0	- 0	- 0	- 0	0
11: Merthyr Tydfil	- 1	- 30	432	- 4	- 4	- 6	- 14	- 0	- 1	- 45	- 23	- 1	- 0	- 0	- 2	- 3	- 1
12: Blaenau Gwent	- 1	- 8	475	- 9	- 7	- 6	- 8	- 0	- 1	- 20	- 7	- 2	- 0	- 0	- 0	- 0	0
13: Rest of Wales	- 0	- 3	39	- 1	- 4	- 1	- 2	- 3	- 0	- 1	- 3	-	-	-	-	-	-
14: North England	- 0	- 2	17	- 0	- 0	- 0	- 1	- 0	- 1	- 1	- 0	-	-	-	-	-	-
15: Gloucestershire	- 0	- 1	10	- 0	- 1	- 0	- 0	- 0	- 0	- 0	- 0	-	-	-	-	-	-
16: City of Bristol	- 0	- 1	9	- 0	- 1	- 1	- 1	- 0	- 0	- 0	- 0	-	-	-	-	-	-
17: South Gloucestershire	- 0	- 2	11	- 0	- 1	- 1	- 1	- 0	- 0	- 2	- 0	-	-	-	-	-	-
18: South England	- 1	- 4	30	- 0	- 0	- 1	- 2	- 1	- 1	- 2	- 1	-	-	-	-	-	-

Table 4.3: 2045 sectorised daily car demand change (vehs)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2: The Vale of Glamorgan	23	3	25	0	0	2	4	0	1	2	2	1	0	0	0	0	1
3: Rhondda Cynon Taf	- 4	- 156	558	- 6	- 5	- 16	- 51	- 2	- 12	- 23	- 11	- 3	- 2	- 1	- 1	- 1	- 3
4: Caerphilly	25	622	12,578	155	81	353	256	11	31	400	538	46	12	6	11	13	29
5: Torfaen	- 0	- 8	155	22	- 5	- 4	- 4	- 0	- 0	- 4	- 10	- 1	0	- 0	- 0	- 0	0
6: Monmouthshire	- 0	- 7	83	- 6	- 10	- 3	- 3	- 1	- 1	- 6	- 6	- 5	0	- 1	- 0	- 0	0
7: Newport	- 2	- 25	345	- 6	- 3	64	- 16	- 1	- 2	- 11	- 6	- 0	0	- 0	- 0	- 1	1
8: Cardiff	- 10	- 51	255	- 4	- 3	- 17	- 18	- 1	- 3	- 17	- 12	- 1	0	- 0	- 1	- 1	- 0
9: Neath Port Talbot	- 0	- 2	9	- 0	- 1	- 0	- 1	- 5	- 0	- 0	- 0	- 1	- 0	- 0	- 0	- 0	0
10: Bridgend	- 1	- 12	28	- 0	- 0	- 1	- 2	- 0	- 3	- 1	- 1	- 2	- 0	- 0	- 0	- 0	1
11: Merthyr Tydfil	- 1	- 31	440	- 4	- 6	- 7	- 17	- 0	- 1	- 31	- 32	- 1	- 0	- 0	- 2	- 4	- 1
12: Blaenau Gwent	- 1	- 10	497	- 10	- 6	- 6	- 8	- 0	- 1	- 26	- 0	- 3	- 0	- 0	- 0	- 0	- 0
13: Rest of Wales	- 1	- 4	41	- 1	- 6	- 1	- 0	- 2	- 2	- 1	- 4	-	-	-	-	-	-
14: North England	- 1	- 3	17	- 0	- 0	- 0	- 1	- 0	- 1	- 1	- 0	-	-	-	-	-	-
15: Gloucestershire	- 0	- 2	11	- 0	- 1	- 1	- 1	- 0	- 0	- 1	- 0	-	-	-	-	-	-
16: City of Bristol	- 0	- 2	9	- 0	- 1	- 1	- 1	- 0	- 0	- 0	- 0	-	-	-	-	-	-
17: South Gloucestershire	- 0	- 2	11	- 0	- 1	- 1	- 1	- 0	- 0	- 2	- 0	-	-	-	-	-	-
18: South England	- 1	- 5	31	- 0	- 0	- 1	- 3	- 1	- 1	- 3	- 1	-	-	-	-	-	-

Figure 4.1: SEWTM Sectors

4.2 Flow difference plots

Figure 4.2 and Figure 4.3 show the 2045 traffic volumes in the DM model on the left, and the impact of the addition of the development on the network on the right, in the AM and PM, respectively. Increases in flow are shown in red, and decreases are shown in blue. The plots also highlight key locations, as provided by the Council. Note that the scales are very different between the flow plots and the flow difference plots so that the changes are clearer.

As expected, the largest changes are around where the majority of developments are added, namely around Blackwood and Ystrad Mynach areas. There are also some small reductions in traffic volumes around Cardiff due to the redistribution of some trips, as seen in the sectorised demand in Section 4.1. There is also some re-routing seen, particularly around Llanbradach in the AM peak due to the increase in demand on the A469.

The 2035 plots are not included here, as they are broadly similar to the 2045 results, but with less re-routing due to lower overall demand.

Figure 4.2: 2045 AM flow difference plots

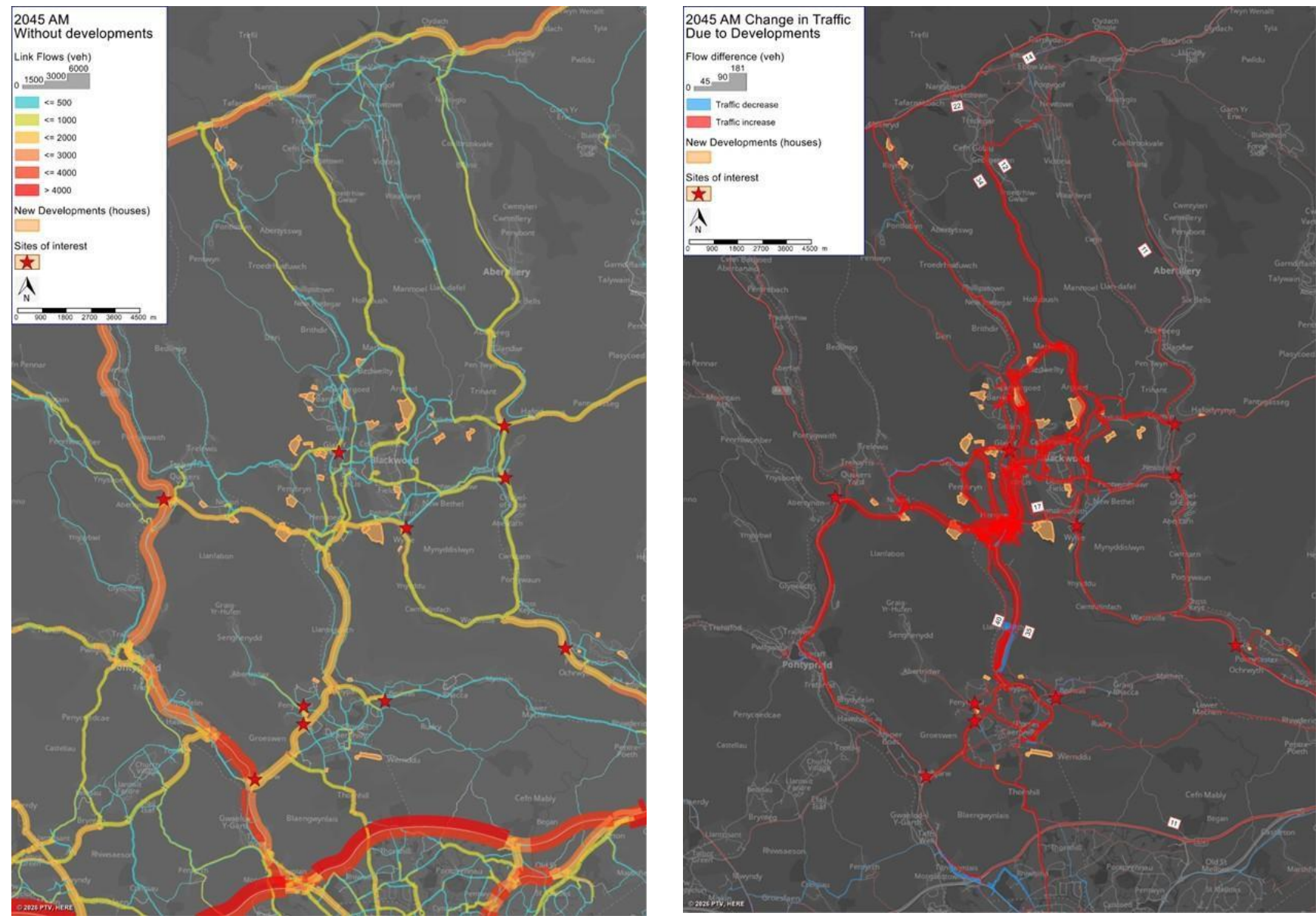


Figure 4.3: 2045 PM flow difference plots

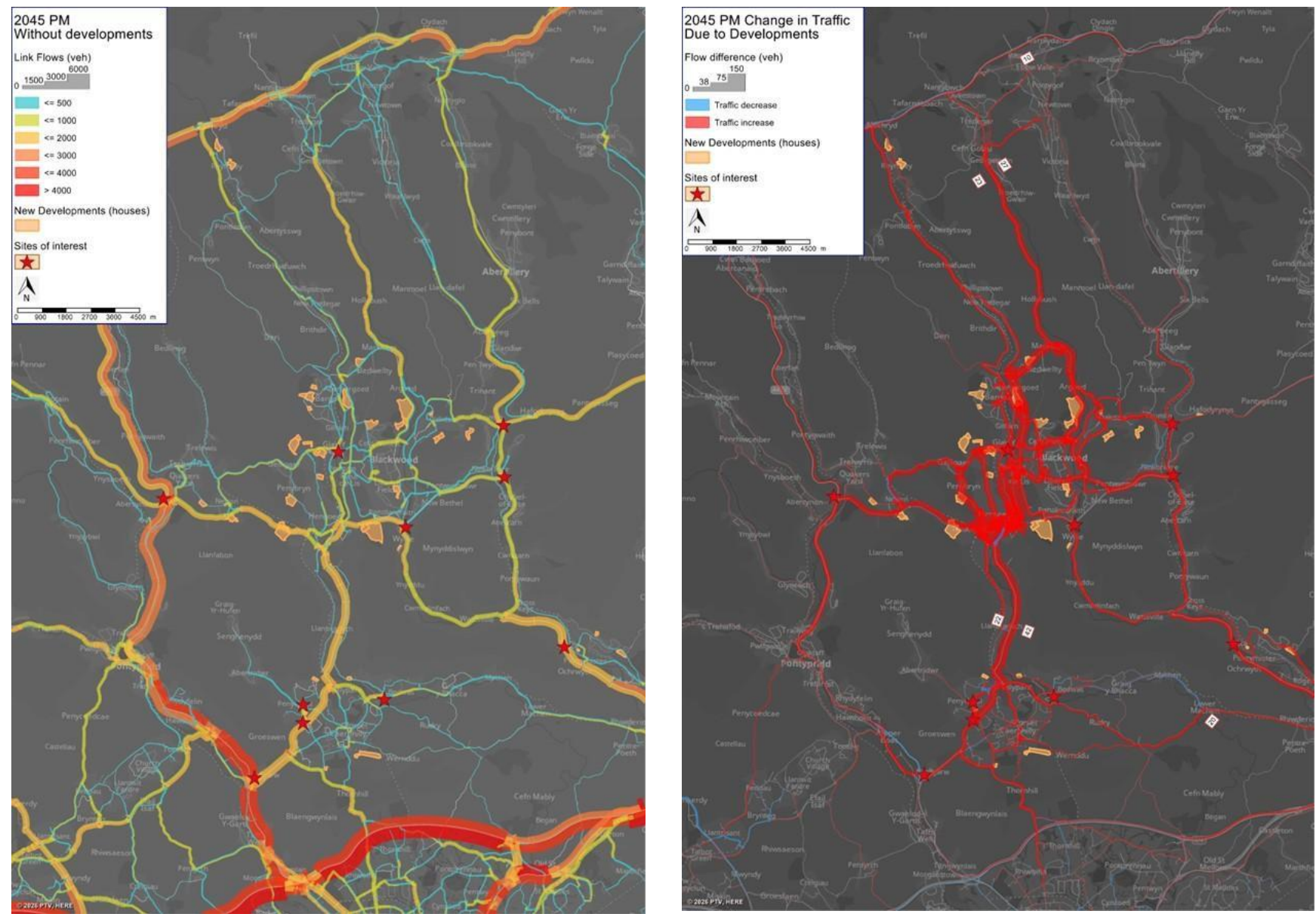


Figure 4.4 and Figure 4.5 show the same plots zoomed in around the Caerphilly town area. As expected, the largest changes are on the strategic routes through the town, as well as on the A469 to the north where most of the new developments are, and around the local developments shown in the figures.

Figure 4.4: 2045 AM impact of developments on traffic volumes - Caerphilly area

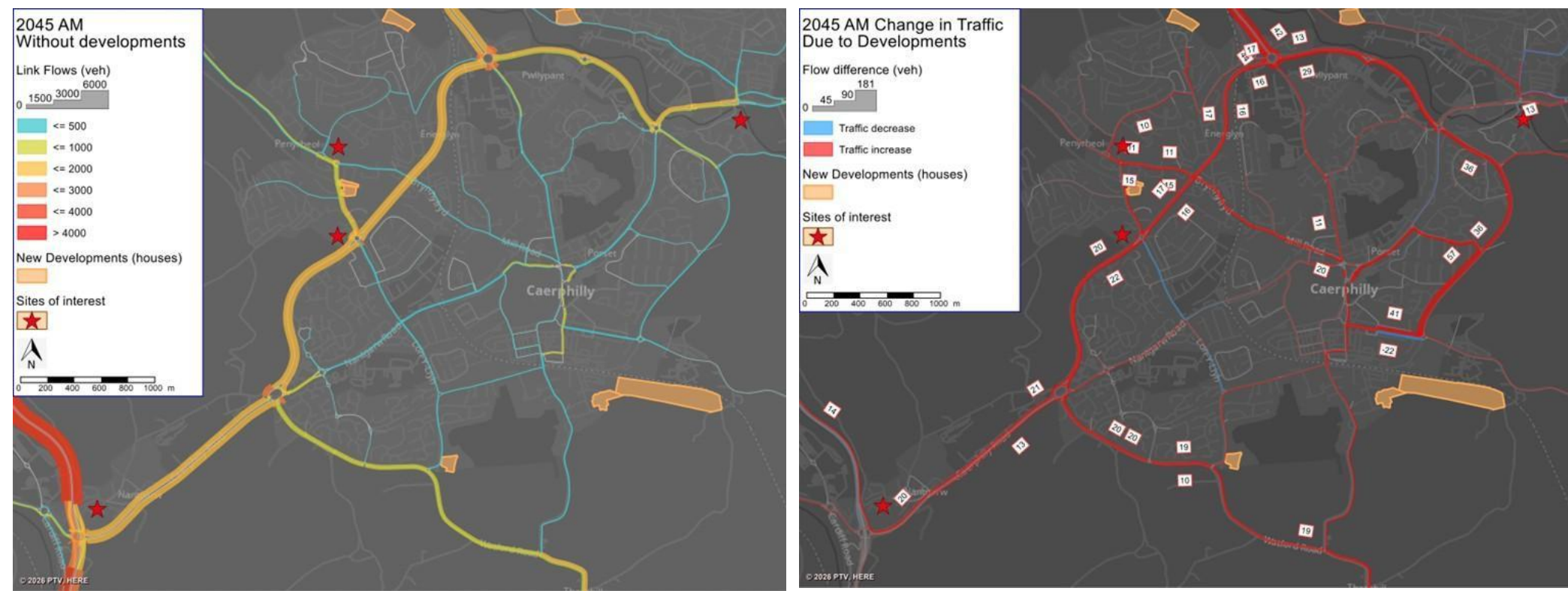


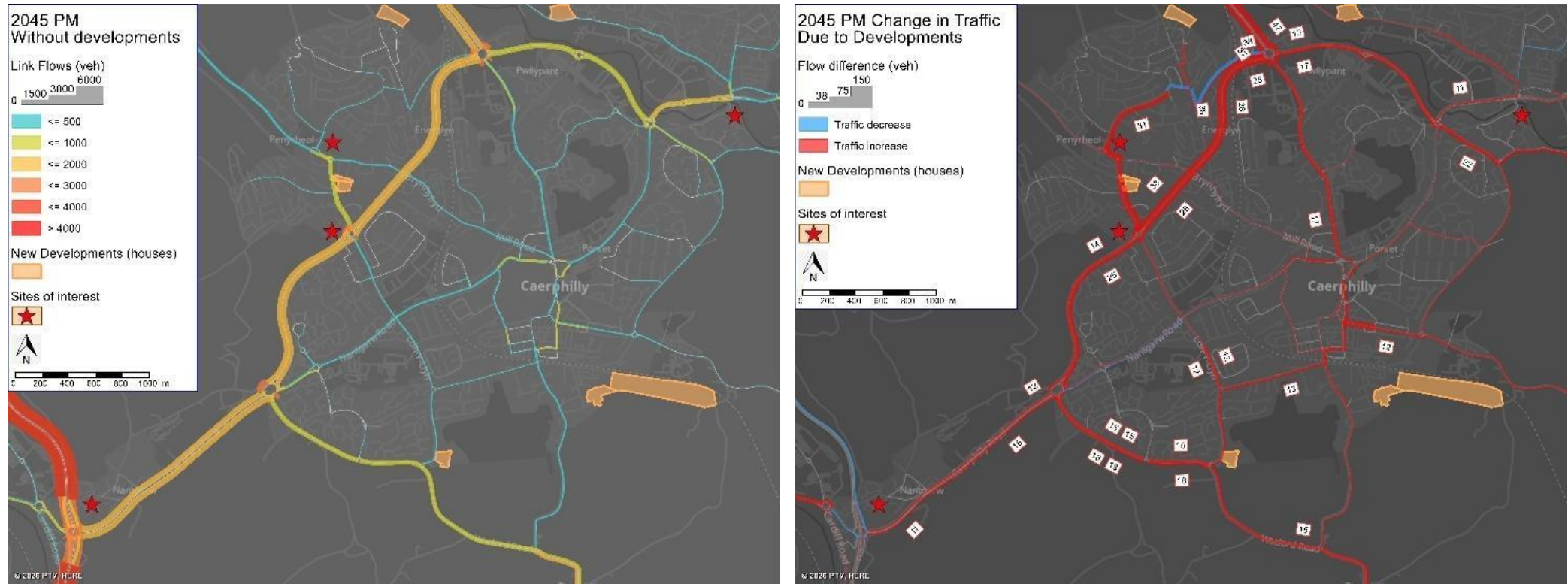
Figure 4.5: 2045 PM impact of developments on traffic volumes - Caerphilly area

Figure 4.6 and Figure 4.7 show the same changes around Blackwood and Ystrad Mynach. The high density of new developments means increases in traffic volumes on most modelled roads within the area. It is worth noting that due to the nature of the strategic model, not all junctions are modelled in detail, with some not generating delay. As a result, in some areas such as Ystrad Mynach, vehicles often take the shortest route rather than the more sensible strategic route, leading to some small-scale unrealistic routes. If further assessment is required to test the impacts, it is recommended that these junctions should be modelled in more detail.

Figure 4.6: 2045 AM impact of developments on traffic volumes - Blackwood area

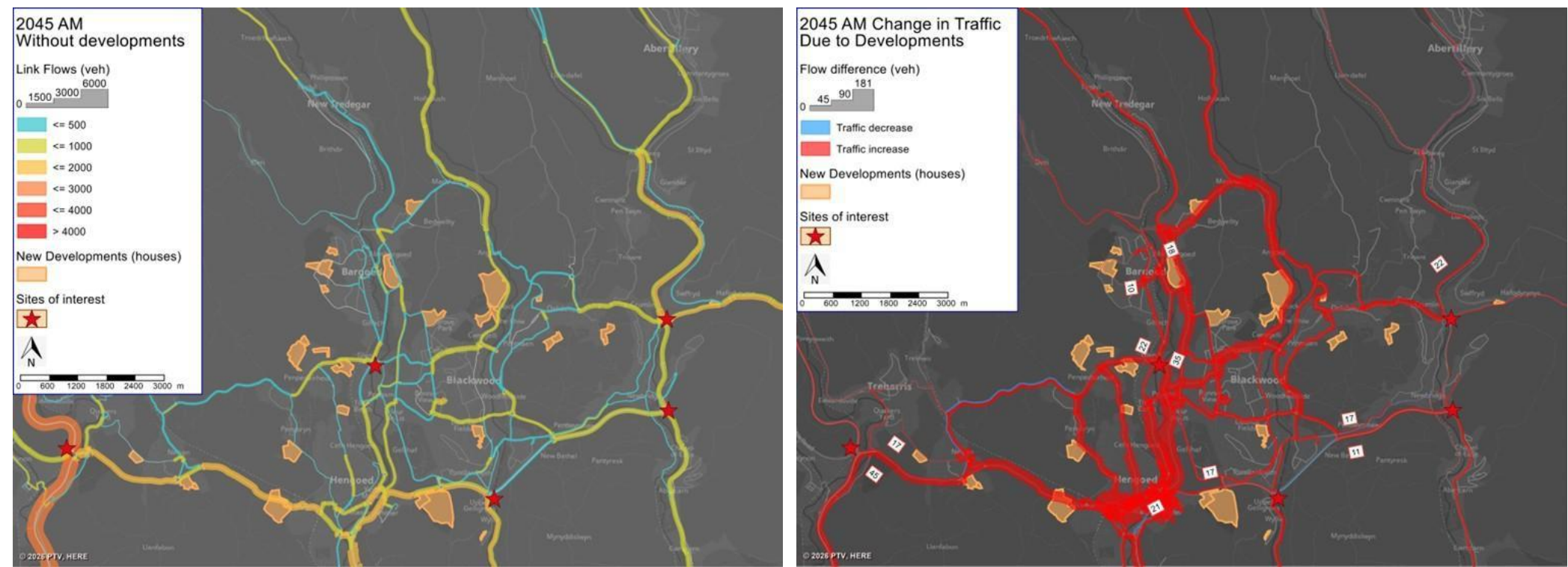
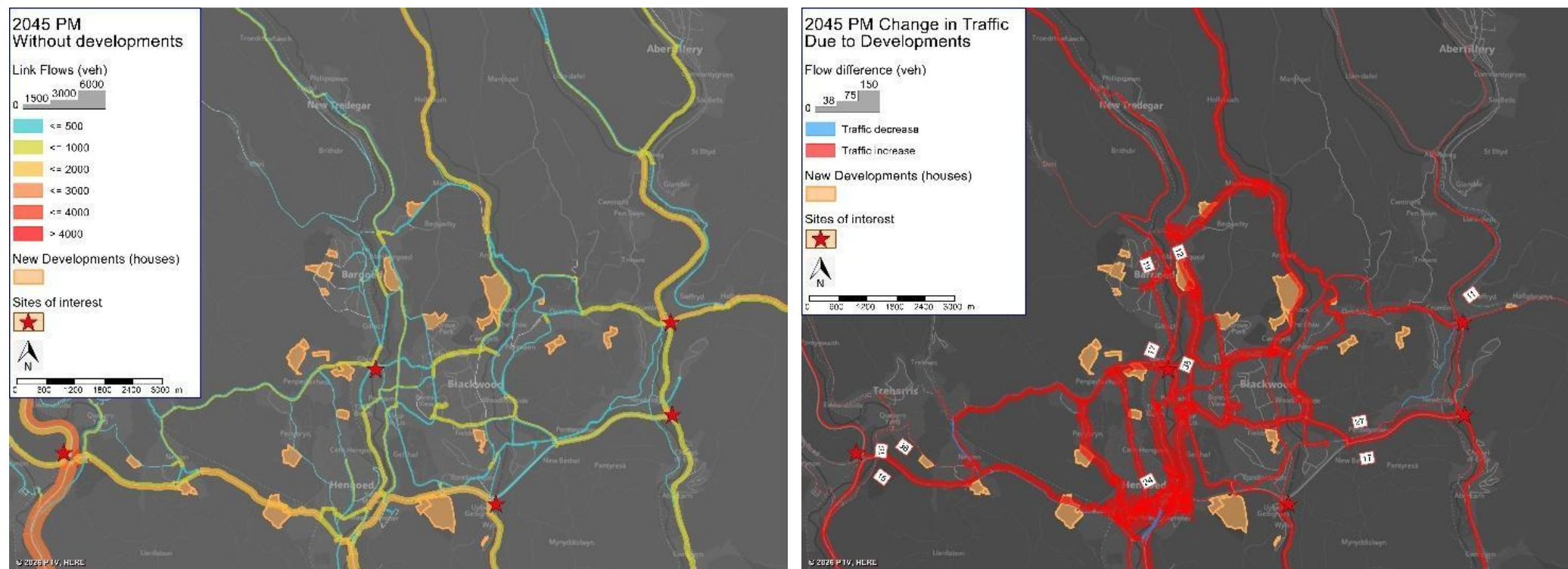


Figure 4.7: 2045 PM impact of developments on traffic volumes - Blackwood area

4.3 Junction and link delay

This section presents average link and node delay in the DM and DS models side by side. Note that delay is not modelled at all junctions represented in the network, with only those that are modelled visible in the plots.

4.3.1 Caerphilly town

Figure 4.8 and Figure 4.9 show the average delay in the 2045 AM peak on the links and nodes, respectively, in the Caerphilly town area. The plots show that the impact of the developments on the network is limited in this area. The areas that already have delay in the DM models show slightly increased delay in the DS, but the increase in link and node delay is small. The PM shows similar patterns to the AM, as seen in Figure 4.10 and Figure 4.11.

Figure 4.8: 2045 AM impact of development on link delay - Caerphilly area

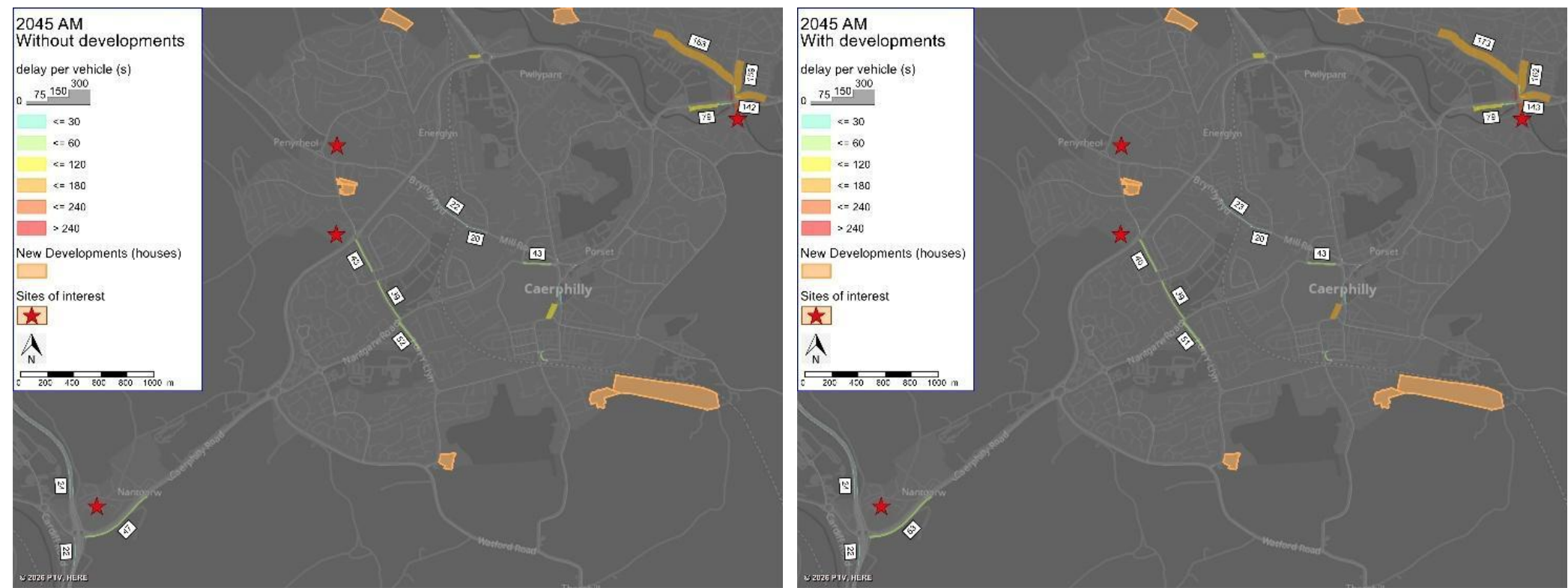


Figure 4.9: 2045 AM impact of development on node delay - Caerphilly area

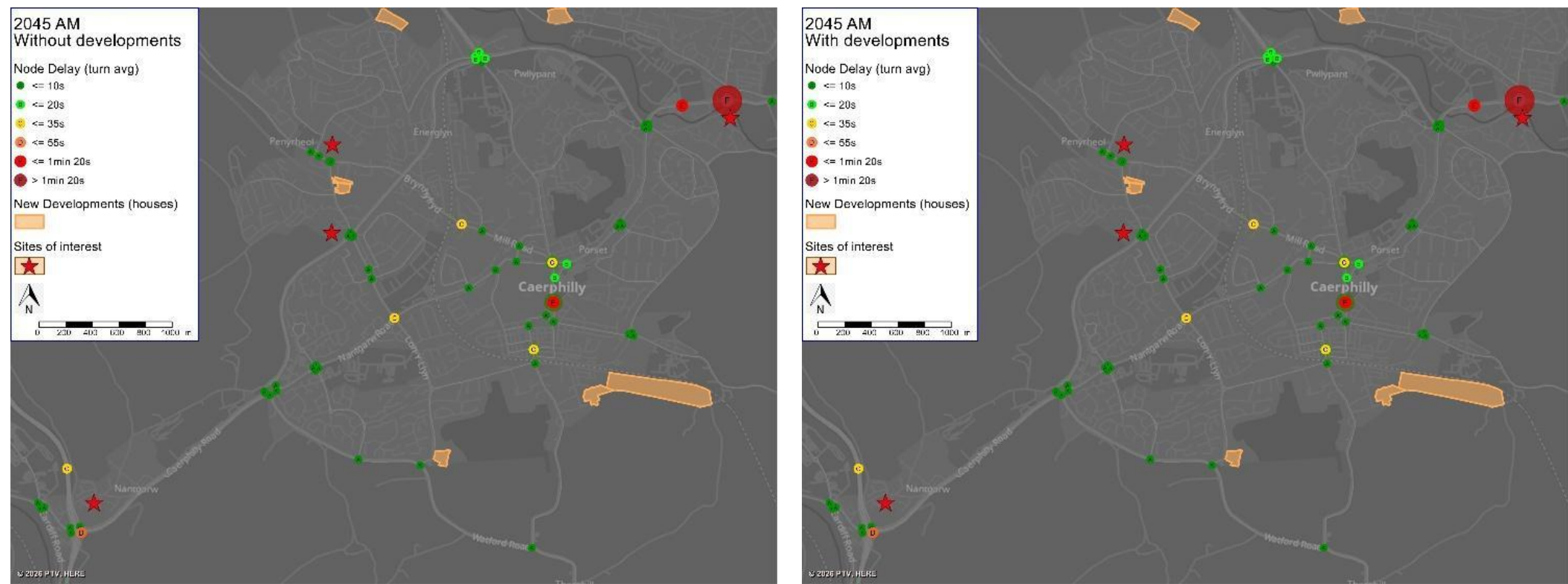


Figure 4.10: 2045 PM impact of development on link delay - Caerphilly area

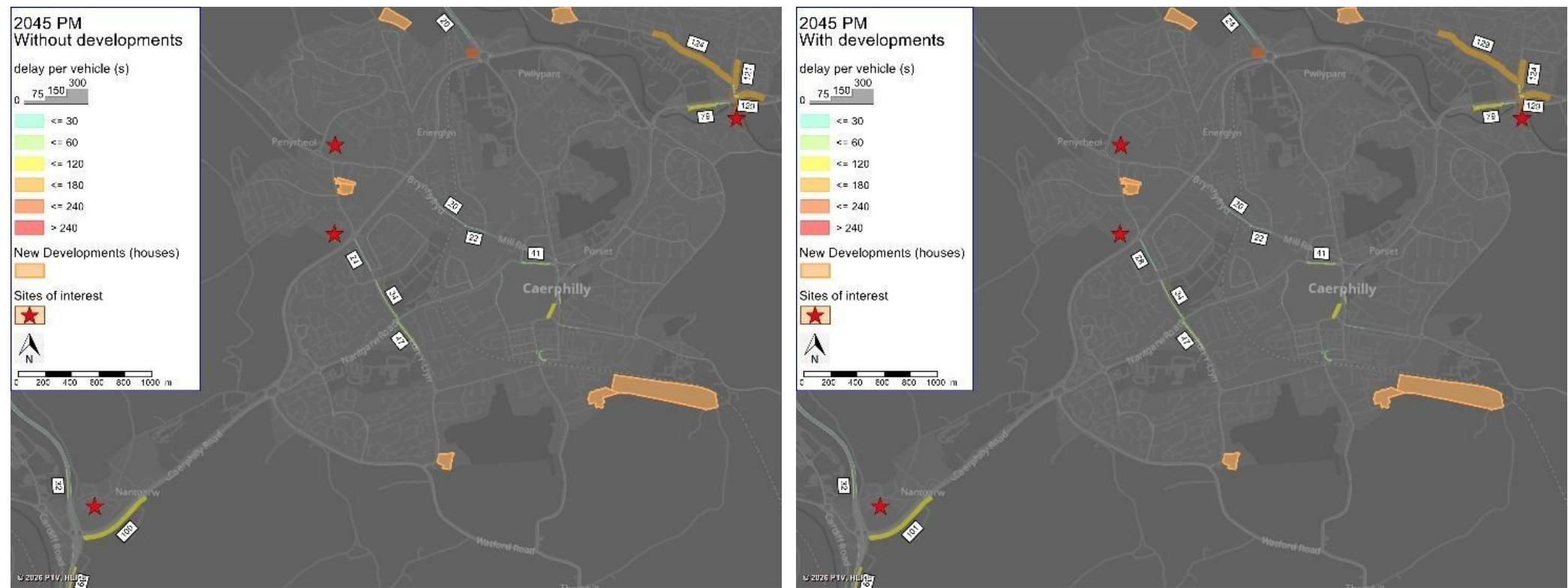
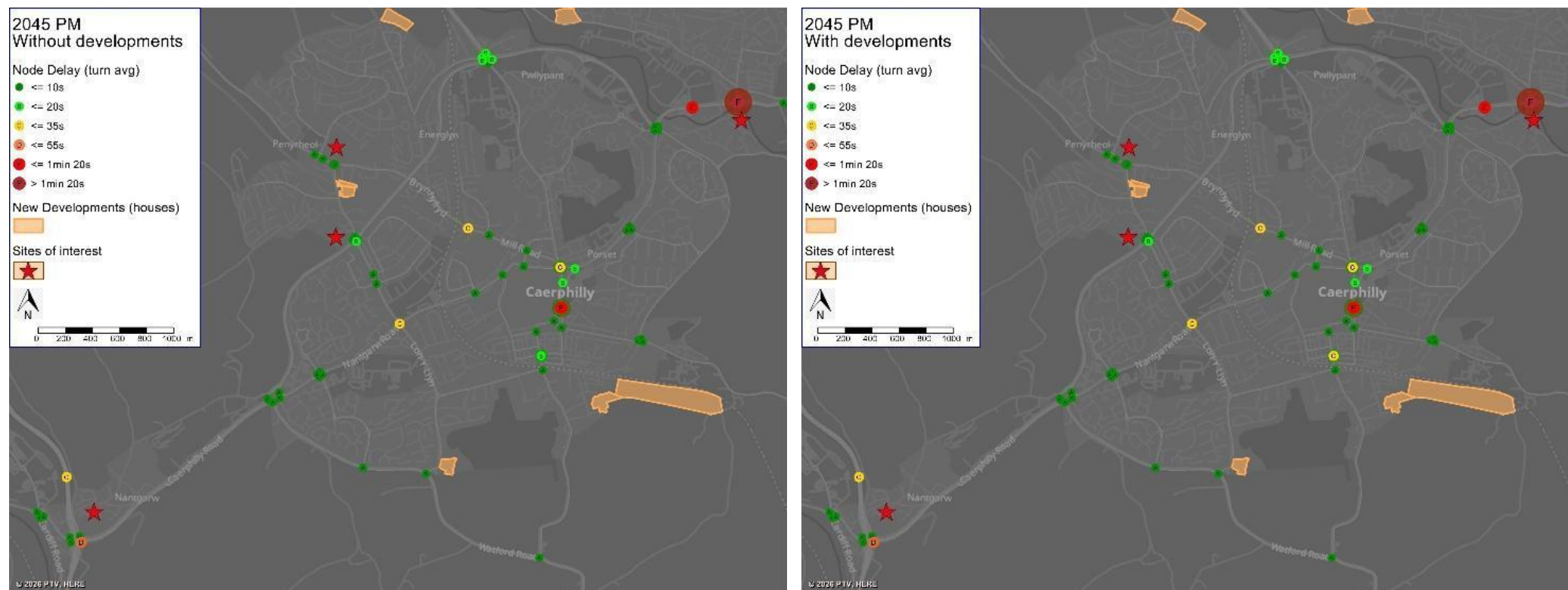


Figure 4.11: 2045 PM impact of development on node delay - Caerphilly area

4.3.2 Blackwood

Figure 4.12 and Figure 4.13 present the average delay in the 2045 AM peak on the links and nodes, respectively, in the Blackwood area. Again, the plots show the only roads and junctions that experience significant delay in the DS models are already showing delay in the DM. The PM shows similar patterns to the AM, as seen in Figure 4.14 and Figure 4.15.

Figure 4.12: 2045 AM impact of development on link delay - Blackwood area

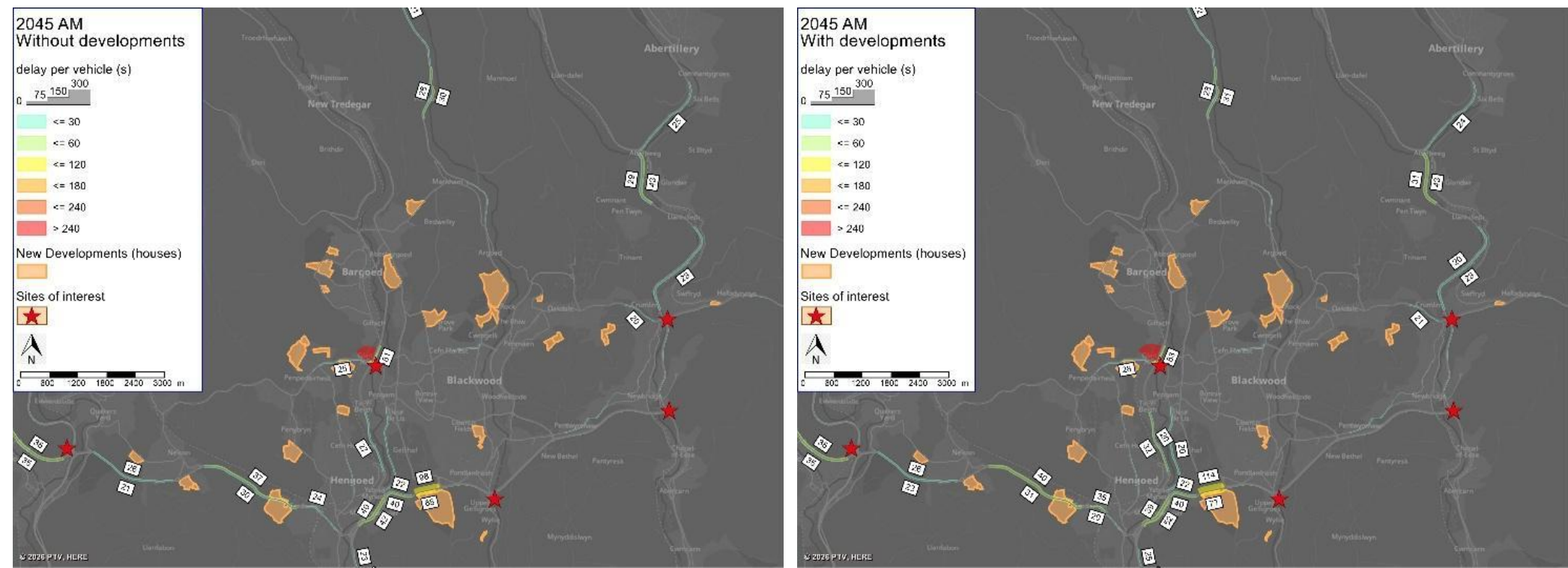


Figure 4.13: 2045 AM impact of development on node delay - Blackwood area



Figure 4.14: 2045 PM impact of development on link delay - Blackwood area

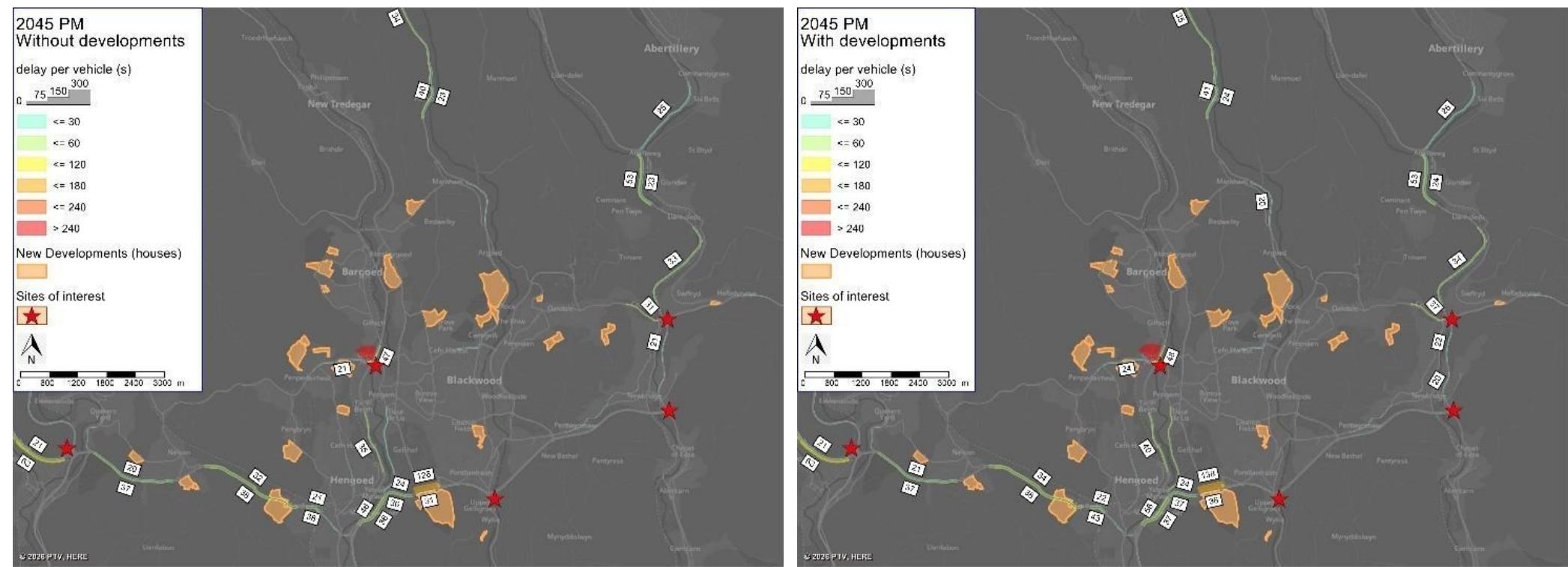
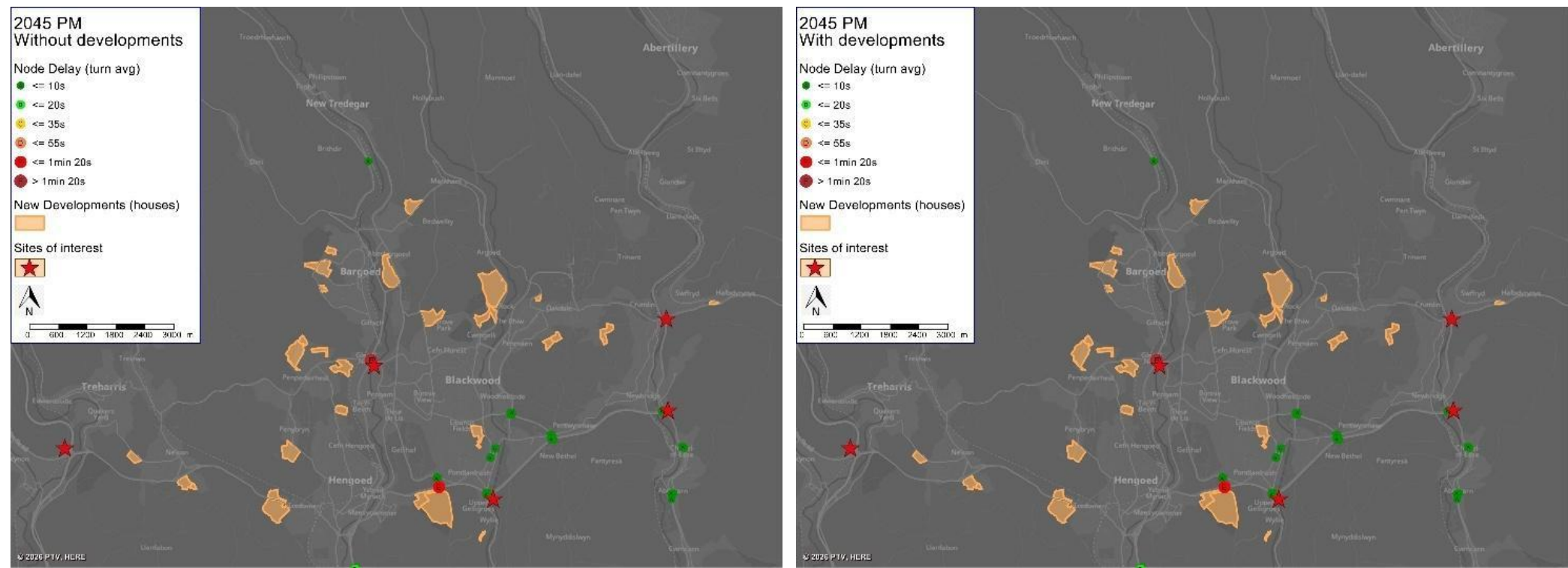


Figure 4.15: 2045 PM impact of development on node delay - Blackwood area



5 Summary

This report has presented a strategic transport modelling assessment to support the 2RLDP, using the South East Wales Transport Model. The proposed LDP developments were incorporated into the model through updates to population and employment data, with impacts assessed for the 2035 and 2045 forecast years against Do-Minimum scenarios. The assessment shows that the developments lead to an increase in highway demand, primarily for trips within Caerphilly, consistent with the scale and location of the proposed growth.

At a strategic level, the resulting impacts on traffic flows and network performance are generally modest and concentrated around the main development areas, particularly Blackwood and Ystrad Mynach. In Caerphilly town and other key locations, small increases in delay are observed where congestion already exists, but no widespread or severe network impacts are identified. The relatively small changes in modelled delay should however be interpreted in the context of the strategic nature of SEWTM. As junctions are not consistently modelled in detail across the network, some localised congestion effects and operational constraints may not be fully captured, which may partially explain the limited change in delay predicted by the model.

Overall, the results indicate that the 2RLDP developments can be accommodated on the strategic highway network at this stage of assessment. However, further work would be beneficial to better understand localised impacts and to support more detailed decision making. This could include:

- Review and update the highway network to better represent roads and junctions within Caerphilly.
- Undertake a comprehensive local calibration and validation exercise, including matrix estimation, supported by additional traffic counts and journey time surveys.
- Use bespoke trip rates for larger developments to better reflect their specific characteristics and provide a more robust assessment.
- Undertake local modelling at critical junctions using either microsimulation or junction models to better understand vehicle interactions, delay, and queuing.

A. Validation Check

Table A.1: 2022 Base Calibration Check - AM Peak

Road	Direction	Obs	Mod	Diff	GEH	Flow	Pass/Fail
B4591, Cern Road, Rogerstone, Newport 1	Into Newport	407	451	11%	2	PASS	PASS
B4591, Cern Road, Rogerstone, Newport 1	Out of Newport	573	637	11%	3	PASS	PASS
A4046- North Aberbeeg	NB	466	470	1%	0	PASS	PASS
A4046- North Aberbeeg	SB	398	412	3%	1	PASS	PASS
A469 - Near Brithdir	SB	37	46	24%	1	PASS	PASS
A469 - Near Brithdir	NB	40	45	14%	1	PASS	PASS
A4048 - North Markham	SB	820	766	-7%	2	PASS	PASS
A4048 - North Markham	NB	770	688	-11%	3	PASS	PASS
A467 - Near Abertillery 2	EB	538	560	4%	1	PASS	PASS
A467 - Near Abertillery 2	WB	730	746	2%	1	PASS	PASS
New Road - south of Deri	SB	122	124	2%	0	PASS	PASS
New Road - south of Deri	NB	99	100	1%	0	PASS	PASS
A4049 - Near Cwmsyfiog	NB	242	304	26%	4	PASS	PASS
A4049 - Near Cwmsyfiog	SB	304	338	11%	2	PASS	PASS
A470 - Near Aberfan	SB	1445	1407	-3%	1	PASS	PASS
A467	Out of Newport	1825	1625	-11%	5	PASS	PASS
A467	Into Newport	1009	1039	3%	1	PASS	PASS
Caerphilly Road	Out of Caerphilly	1528	1589	4%	2	PASS	PASS
Maes-Y-Bryn Road	Out of Cardiff	22	66	200%	7	PASS	PASS
Maes-Y-Bryn Road	Into Cardiff	135	168	25%	3	PASS	PASS
B4285 Nixonville	NB	164	160	-2%	0	PASS	PASS
B4285 Nixonville	SB	173	171	-1%	0	PASS	PASS
A469 North of Caerphilly	Into Caerphilly	1908	1835	-4%	2	PASS	PASS
A469 North of Caerphilly	Out of Caerphilly	1360	1370	1%	0	PASS	PASS
A4054 - Near Merthyr Vale	SB	100	144	44%	4	PASS	PASS
A4054 - Near Merthyr Vale	NB	149	175	17%	2	PASS	PASS

Energlyn Terrace	Into Caerphilly	355	337	-5%	1	PASS	PASS
Energlyn Terrace	Out of Caerphilly	223	159	-29%	5	PASS	PASS
Van Road	Out of Caerphilly	71	70	-1%	0	PASS	PASS
Van Road	Into Caerphilly	70	78	12%	1	PASS	PASS
B4263	SB	850	830	-2%	1	PASS	PASS
Heol Pwllypant	Into Caerphilly	308	248	-19%	4	PASS	PASS
Heol Pwllypant	Out of Caerphilly	161	160	-1%	0	PASS	PASS
Bedwas Road	Out of Caerphilly	1121	1021	-9%	3	PASS	PASS
Bedwas Road	Into Caerphilly	1217	917	-25%	9	FAIL	FAIL
Unnamed Road East of Caerphilly	Into Caerphilly	181	220	22%	3	PASS	PASS
Unnamed Road East of Caerphilly	Out of Caerphilly	73	68	-7%	1	PASS	PASS
B4275, Taff Bridge, Pontcyon	WB	206	199	-4%	1	PASS	PASS
B4275, Taff Bridge, Pontcyon	EB	509	565	11%	2	PASS	PASS
St. Johns Crescent 1	Out of Newport	88	137	56%	5	PASS	PASS
St. Johns Crescent 1	Into Newport	115	101	-12%	1	PASS	PASS
Groes Road	Out of Newport	274	262	-4%	1	PASS	PASS
Groes Road	Into Newport	330	458	39%	6	FAIL	NEARPASS
St Cenydd Road	Out of Caerphilly	690	772	12%	3	PASS	PASS
St Cenydd Road	Into Caerphilly	876	899	3%	1	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Out of Cardiff	579	684	18%	4	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Into Cardiff	861	881	2%	1	PASS	PASS
Castle Street Caerphilly	NB	736	369	-50%	16	FAIL	FAIL
A4059 - A4059/A470 Junction	EB	1042	873	-16%	5	FAIL	NEARPASS
A4059 - A4059/A470 Junction	WB	851	866	2%	1	PASS	PASS
A472	EB	735	782	6%	2	PASS	PASS
A472	WB	1080	1034	-4%	1	PASS	PASS
A470 - Near Aberfan	NB	1595	1497	-6%	3	PASS	PASS
Bedwas Road, Central Caerphilly	SB	1181	943	-20%	7	FAIL	NEARPASS
Caerphilly Road	Into Caerphilly	1401	1457	4%	1	PASS	PASS

Table A.2: 2022 Base Calibration Check - IP

Road	Direction	Obs	Mod	Diff	GEH	Flow	Pass/Fail
B4591, Cern Road, Rogerstone, Newport 1	Into Newport	373	385	3%	1	PASS	PASS
B4591, Cern Road, Rogerstone, Newport 1	Out of Newport	363	403	11%	2	PASS	PASS
A4046- North Aberbeeg	NB	287	291	1%	0	PASS	PASS
A4046- North Aberbeeg	SB	273	278	2%	0	PASS	PASS
A469 - Near Brithdir	SB	25	37	47%	2	PASS	PASS
A469 - Near Brithdir	NB	36	44	21%	1	PASS	PASS
A4048 - North Markham	SB	589	522	-11%	3	PASS	PASS
A4048 - North Markham	NB	667	580	-13%	3	PASS	PASS
A467 - Near Abertillery 2	EB	429	448	4%	1	PASS	PASS
A467 - Near Abertillery 2	WB	451	460	2%	0	PASS	PASS
New Road - south of Deri	SB	83	83	0%	0	PASS	PASS
New Road - south of Deri	NB	90	91	1%	0	PASS	PASS
A4049 - Near Cwmsyfiog	NB	197	234	19%	3	PASS	PASS
A4049 - Near Cwmsyfiog	SB	219	258	18%	3	PASS	PASS
A470 - Near Aberfan	SB	906	890	-2%	1	PASS	PASS
A467	Out of Newport	969	926	-4%	1	PASS	PASS
A467	Into Newport	952	938	-1%	0	PASS	PASS
Caerphilly Road	Out of Caerphilly	1137	1165	2%	1	PASS	PASS
Maes-Y-Bryn Road	Out of Cardiff	25	52	109%	4	PASS	PASS
Maes-Y-Bryn Road	Into Cardiff	23	61	165%	6	PASS	PASS
B4285 Nixonville	NB	85	102	21%	2	PASS	PASS
B4285 Nixonville	SB	83	100	21%	2	PASS	PASS
A469 North of Caerphilly	Into Caerphilly	1169	1093	-7%	2	PASS	PASS
A469 North of Caerphilly	Out of Caerphilly	1138	1053	-7%	3	PASS	PASS
A4054 - Near Merthyr Vale	SB	85	109	28%	2	PASS	PASS
A4054 - Near Merthyr Vale	NB	90	115	28%	2	PASS	PASS
Energlyn Terrace	Into Caerphilly	197	193	-2%	0	PASS	PASS
Energlyn Terrace	Out of Caerphilly	221	195	-12%	2	PASS	PASS
Van Road	Out of Caerphilly	34	31	-10%	1	PASS	PASS

Van Road	Into Caerphilly	37	50	35%	2	PASS	PASS
B4263	SB	673	641	-5%	1	PASS	PASS
Heol Pwllypant	Into Caerphilly	149	142	-5%	1	PASS	PASS
Heol Pwllypant	Out of Caerphilly	143	138	-4%	0	PASS	PASS
Bedwas Road	Out of Caerphilly	959	837	-13%	4	PASS	PASS
Bedwas Road	Into Caerphilly	951	764	-20%	6	FAIL	NEARPASS
Unnamed Road East of Caerphilly	Into Caerphilly	75	50	-33%	3	PASS	PASS
Unnamed Road East of Caerphilly	Out of Caerphilly	61	40	-34%	3	PASS	PASS
B4275, Taff Bridge, Pontcyon	WB	197	191	-3%	0	PASS	PASS
B4275, Taff Bridge, Pontcyon	EB	200	250	25%	3	PASS	PASS
St. Johns Crescent 1	Out of Newport	81	85	5%	0	PASS	PASS
St. Johns Crescent 1	Into Newport	66	63	-4%	0	PASS	PASS
Groes Road	Out of Newport	136	161	19%	2	PASS	PASS
Groes Road	Into Newport	131	196	50%	5	PASS	PASS
St Cenydd Road	Out of Caerphilly	534	560	5%	1	PASS	PASS
St Cenydd Road	Into Caerphilly	562	556	-1%	0	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Out of Cardiff	375	436	16%	3	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Into Cardiff	391	400	2%	0	PASS	PASS
Castle Street Caerphilly	NB	694	415	-40%	12	FAIL	FAIL
A4059 - A4059/A470 Junction	EB	636	590	-7%	2	PASS	PASS
A4059 - A4059/A470 Junction	WB	671	678	1%	0	PASS	PASS
A472	EB	607	616	2%	0	PASS	PASS
A472	WB	626	639	2%	1	PASS	PASS
A470 - Near Aberfan	NB	942	908	-4%	1	PASS	PASS
Bedwas Road, Central Caerphilly	SB	994	826	-17%	6	FAIL	NEARPASS
Caerphilly Road	Into Caerphilly	1087	1110	2%	1	PASS	PASS

Table A.3 2022 Base Calibration Check - PM Peak

Road	Direction	Obs	Mod	Diff	GEH	Flow	Pass/Fail
B4591, Cern Road, Rogerstone, Newport 1	Into Newport	619	711	15%	4	PASS	PASS
B4591, Cern Road, Rogerstone, Newport 1	Out of Newport	437	487	11%	2	PASS	PASS
A4046- North Aberbeeg	NB	447	493	10%	2	PASS	PASS
A4046- North Aberbeeg	SB	403	420	4%	1	PASS	PASS
A469 - Near Brithdir	SB	35	44	27%	1	PASS	PASS
A469 - Near Brithdir	NB	53	60	13%	1	PASS	PASS
A4048 - North Markham	SB	721	641	-11%	3	PASS	PASS
A4048 - North Markham	NB	1034	943	-9%	3	PASS	PASS
A467 - Near Abertillery 2	EB	753	763	1%	0	PASS	PASS
A467 - Near Abertillery 2	WB	562	581	3%	1	PASS	PASS
New Road - south of Deri	SB	116	114	-2%	0	PASS	PASS
New Road - south of Deri	NB	141	141	0%	0	PASS	PASS
A4049 - Near Cwmsyfiog	NB	271	312	15%	2	PASS	PASS
A4049 - Near Cwmsyfiog	SB	290	339	17%	3	PASS	PASS
A470 - Near Aberfan	SB	1572	1499	-5%	2	PASS	PASS
A467	Out of Newport	1228	1314	7%	2	PASS	PASS
A467	Into Newport	2080	1842	-11%	5	PASS	PASS
Caerphilly Road	Out of Caerphilly	1620	1683	4%	2	PASS	PASS
Maes-Y-Bryn Road	Out of Cardiff	89	123	38%	3	PASS	PASS
Maes-Y-Bryn Road	Into Cardiff	28	100	259%	9	PASS	PASS
B4285 Nixonville	NB	155	163	5%	1	PASS	PASS
B4285 Nixonville	SB	112	122	9%	1	PASS	PASS
A469 North of Caerphilly	Into Caerphilly	1423	1443	1%	1	PASS	PASS
A469 North of Caerphilly	Out of Caerphilly	1827	1738	-5%	2	PASS	PASS
A4054 - Near Merthyr Vale	SB	172	196	14%	2	PASS	PASS
A4054 - Near Merthyr Vale	NB	130	155	19%	2	PASS	PASS
Energlyn Terrace	Into Caerphilly	228	224	-2%	0	PASS	PASS
Energlyn Terrace	Out of Caerphilly	380	320	-16%	3	PASS	PASS
Van Road	Out of Caerphilly	53	45	-14%	1	PASS	PASS

Van Road	Into Caerphilly	94	126	34%	3	PASS	PASS
B4263	SB	720	656	-9%	2	PASS	PASS
Heol Pwllypant	Into Caerphilly	202	139	-31%	5	PASS	PASS
Heol Pwllypant	Out of Caerphilly	252	223	-11%	2	PASS	PASS
Bedwas Road	Out of Caerphilly	1045	954	-9%	3	PASS	PASS
Bedwas Road	Into Caerphilly	1279	923	-28%	11	FAIL	FAIL
Unnamed Road East of Caerphilly	Into Caerphilly	174	182	4%	1	PASS	PASS
Unnamed Road East of Caerphilly	Out of Caerphilly	106	75	-29%	3	PASS	PASS
B4275, Taff Bridge, Pontcyon	WB	594	538	-10%	2	PASS	PASS
B4275, Taff Bridge, Pontcyon	EB	230	300	31%	4	PASS	PASS
St. Johns Crescent 1	Out of Newport	162	137	-15%	2	PASS	PASS
St. Johns Crescent 1	Into Newport	84	82	-2%	0	PASS	PASS
Groes Road	Out of Newport	283	310	9%	2	PASS	PASS
Groes Road	Into Newport	324	395	22%	4	PASS	PASS
St Cenydd Road	Out of Caerphilly	705	757	7%	2	PASS	PASS
St Cenydd Road	Into Caerphilly	630	680	8%	2	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Out of Cardiff	787	948	20%	5	FAIL	NEARPASS
A469, Thornhill Road-Near Coed y Briwnant	Into Cardiff	569	665	17%	4	PASS	PASS
Castle Street Caerphilly	NB	812	467	-42%	14	FAIL	FAIL
A4059 - A4059/A470 Junction	EB	812	729	-10%	3	PASS	PASS
A4059 - A4059/A470 Junction	WB	1334	1188	-11%	4	PASS	PASS
A472	EB	1258	1188	-6%	2	PASS	PASS
A472	WB	716	853	19%	5	PASS	PASS
A470 - Near Aberfan	NB	1365	1337	-2%	1	PASS	PASS
Bedwas Road, Central Caerphilly	SB	1027	817	-20%	7	FAIL	NEARPASS
Caerphilly Road	Into Caerphilly	1533	1593	4%	2	PASS	PASS

Table A.4: 2022 Base Calibration Check - OP

Road	Direction	Obs	Mod	Diff	GEH	Flow	Pass/Fail
B4591, Cern Road, Rogerstone, Newport 1	Into Newport	131	121	-8%	1	PASS	PASS
B4591, Cern Road, Rogerstone, Newport 1	Out of Newport	120	116	-3%	0	PASS	PASS
A4046- North Aberbeeg	NB	80	79	-2%	0	PASS	PASS
A4046- North Aberbeeg	SB	85	80	-6%	1	PASS	PASS
A469 - Near Brithdir	SB	5	10	105%	2	PASS	PASS
A469 - Near Brithdir	NB	8	10	25%	1	PASS	PASS
A4048 - North Markham	SB	140	124	-11%	1	PASS	PASS
A4048 - North Markham	NB	167	144	-14%	2	PASS	PASS
A467 - Near Abertillery 2	EB	125	124	-1%	0	PASS	PASS
A467 - Near Abertillery 2	WB	133	129	-3%	0	PASS	PASS
New Road - south of Deri	SB	26	25	-3%	0	PASS	PASS
New Road - south of Deri	NB	28	27	-4%	0	PASS	PASS
A4049 - Near Cwmsyfiog	NB	65	64	-2%	0	PASS	PASS
A4049 - Near Cwmsyfiog	SB	71	67	-5%	0	PASS	PASS
A470 - Near Aberfan	SB	63	79	26%	2	PASS	PASS
A467	Out of Newport	70	87	24%	2	PASS	PASS
A467	Into Newport	100	116	16%	2	PASS	PASS
Caerphilly Road	Out of Caerphilly	371	366	-1%	0	PASS	PASS
Maes-Y-Bryn Road	Out of Cardiff	7	8	15%	0	PASS	PASS
Maes-Y-Bryn Road	Into Cardiff	6	6	3%	0	PASS	PASS
B4285 Nixonville	NB	29	32	9%	0	PASS	PASS
B4285 Nixonville	SB	33	35	7%	0	PASS	PASS
A469 North of Caerphilly	Into Caerphilly	359	348	-3%	1	PASS	PASS
A469 North of Caerphilly	Out of Caerphilly	335	327	-2%	0	PASS	PASS
A4054 - Near Merthyr Vale	SB	28	37	33%	2	PASS	PASS
A4054 - Near Merthyr Vale	NB	23	34	48%	2	PASS	PASS
Energlyn Terrace	Into Caerphilly	54	53	-2%	0	PASS	PASS
Energlyn Terrace	Out of Caerphilly	65	61	-6%	0	PASS	PASS
Van Road	Out of Caerphilly	7	6	-19%	1	PASS	PASS

Van Road	Into Caerphilly	8	7	-14%	0	PASS	PASS
B4263	SB	150	160	7%	1	PASS	PASS
Heol Pwllypant	Into Caerphilly	40	39	-2%	0	PASS	PASS
Heol Pwllypant	Out of Caerphilly	45	41	-9%	1	PASS	PASS
Bedwas Road	Out of Caerphilly	272	262	-4%	1	PASS	PASS
Bedwas Road	Into Caerphilly	220	212	-4%	1	PASS	PASS
Unnamed Road East of Caerphilly	Into Caerphilly	15	8	-50%	2	PASS	PASS
Unnamed Road East of Caerphilly	Out of Caerphilly	16	9	-44%	2	PASS	PASS
B4275, Taff Bridge, Pontcyon	WB	65	51	-22%	2	PASS	PASS
B4275, Taff Bridge, Pontcyon	EB	68	77	13%	1	PASS	PASS
St. Johns Crescent 1	Out of Newport	25	14	-44%	3	PASS	PASS
St. Johns Crescent 1	Into Newport	16	12	-24%	1	PASS	PASS
Groes Road	Out of Newport	39	45	17%	1	PASS	PASS
Groes Road	Into Newport	38	50	31%	2	PASS	PASS
St Cenydd Road	Out of Caerphilly	194	189	-3%	0	PASS	PASS
St Cenydd Road	Into Caerphilly	194	185	-5%	1	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Out of Cardiff	45	75	67%	4	PASS	PASS
A469, Thornhill Road-Near Coed y Briwnant	Into Cardiff	32	62	95%	4	PASS	PASS
Castle Street Caerphilly	NB	186	154	-17%	2	PASS	PASS
A4059 - A4059/A470 Junction	EB	39	67	71%	4	PASS	PASS
A4059 - A4059/A470 Junction	WB	65	92	41%	3	PASS	PASS
A472	EB	220	213	-3%	0	PASS	PASS
A472	WB	237	227	-4%	1	PASS	PASS
A470 - Near Aberfan	NB	60	73	22%	2	PASS	PASS
Bedwas Road, Central Caerphilly	SB	213	193	-9%	1	PASS	PASS
Caerphilly Road	Into Caerphilly	387	380	-2%	0	PASS	PASS