
Project:	Rhondda Cynon Taff LDP		
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Subject:	Rhondda Cynon Taff LDP Modelling		

1 Introduction

Mott MacDonald was commissioned by Transport for Wales to undertake an early indicative exercise to prepare inputs for and then analyse the outputs from variable demand model runs of the South East Wales Transport Model (SEWTM). These model runs include assumptions about future development in Rhondda Cynon Taff for the Local Development Plan (LDP), across a range of four do-something scenarios. The model has been run using a methodology and assumptions agreed with Transport for Wales and considered suitable. High-level results are provided in this report.

1.1 Modelled Scenario

The Do-Minimum (DM) scenario is the 2015 base year and the Do-Something (DS) includes the same highway and public transport networks with the only difference being assumptions regarding the demand for transport, i.e., the four LDP scenario housing assumptions. No changes were made to the fixed LGV and HGV matrices.

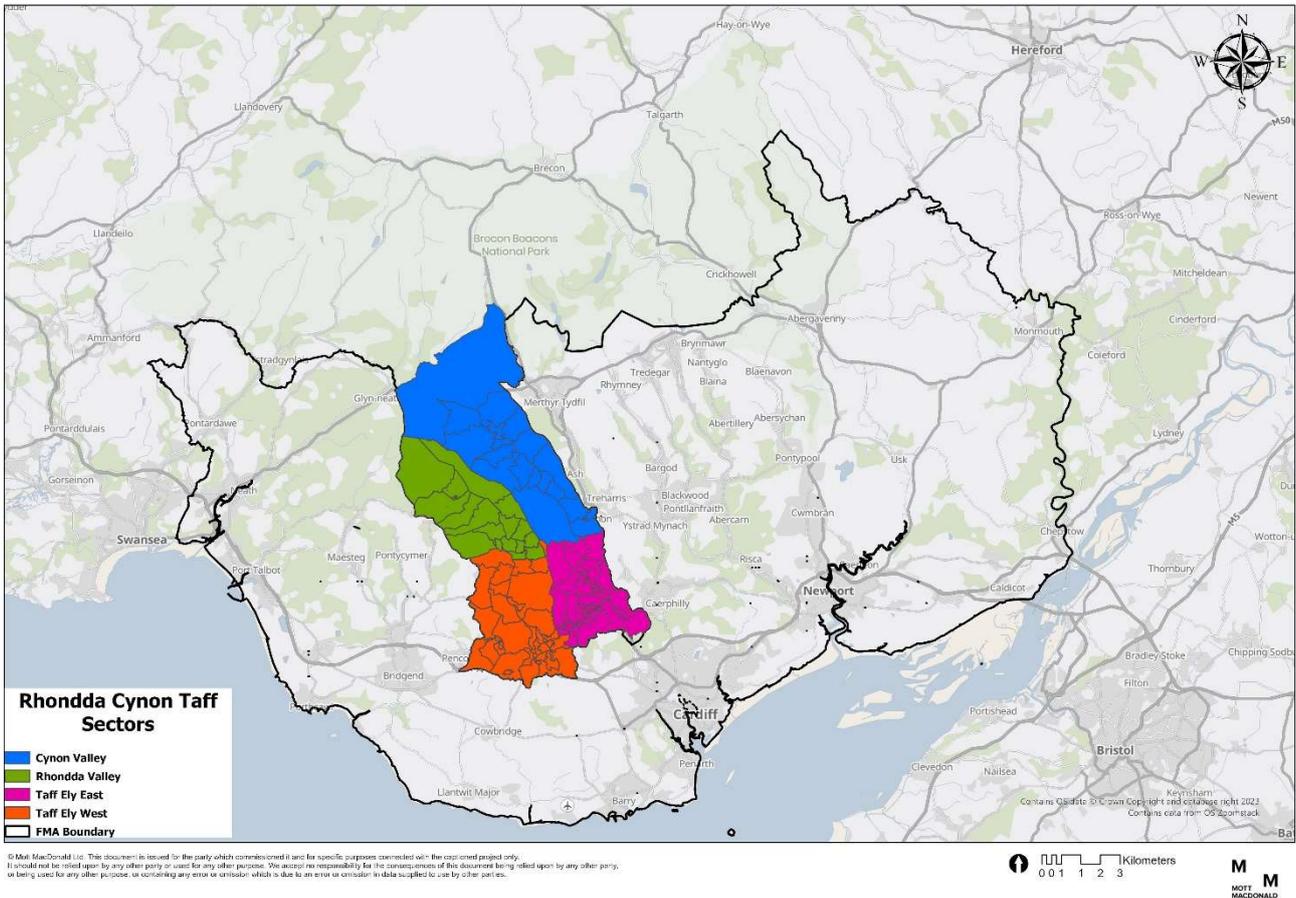
The LDP scenarios modelled were derived from sector-based information (including assignment of SETWM zones to sectors) provided by Transport for Wales in August 2023, as summarised below in Table 1-1. As can be seen from the table, totals of 2,900-5,000 additional dwellings were assumed depending on the scenario.

Table 1-1: Summary of Housing Development Assumptions

Sector	Additional Housing Units			
	Scenario A	Scenario B	Scenario C	Scenario D
Cynon Valley	800	1,000	500	1,000
Rhondda Valley	500	200	200	600
Taff Ely West	2,000	3,000	3,000	800
Taff Ely East	1,000	800	1,000	500
Totals	4,300	5,000	4,700	2,900

The 4 sectors specified by Transport for Wales for the housing inputs (and to disaggregate outputs) are shown below in Figure 1.1.

Figure 1.1: Rhondda Cynon Taff in SEWTM



More detailed information regarding the methodology is provided in Appendix A.

2 Forecast Change in Travel Demand

The following tables provide a summary of the forecast change in demand across SEWTM between the 2015 (DM) and 2015 (DS) scenarios.

The tables in this section are presented in terms of person trips and therefore account for car occupancy, the factors used are shown below in Table 2-1. The tables include changes in demand by car, bus and rail modes combined.

Table 2-1: Car Occupancy, Derived from 2015 Roadside Interview (RSI) Data

Time Period	Car Occupancy
AM	1.2
IP	1.35
PM	1.35
OP	1.4

Table 2-2 shows the overall model-wide change in motorized travel demand for Scenario A. As would be expected, the greatest absolute changes occur in the AM and PM peaks, in line with the pattern of existing demand. The overall change is in the region of 0.5%, or 17,000 trips.

Table 2-2: Summary of Travel Demand (Person Trips) by Assignment Hour and 24Hr - Scenario A

Time Period	Do Minimum (DM)	Do Something (DS)	Difference (DS-DM)	% difference
AM	274,171	275,378	1,207	0.44%
IP	231,920	233,105	1,185	0.51%
PM	318,321	319,776	1,455	0.46%
OP	62,467	62,768	301	0.48%
24 Hr	3,560,432	3,577,547	17,115	0.48%

Table 2-3 shows the change in demand for Scenario B, which has a slightly larger increase compared to Scenario A, at 20,000 trips, or just less than 0.6%. This is in line with the overall change in total households.

Table 2-3: Summary of Travel Demand (Person Trips) by Assignment Hour and 24Hr - Scenario B

Time Period	Do Minimum (DM)	Do Something (DS)	Difference (DS-DM)	% difference
AM	274,171	275,596	1,425	0.52%
IP	231,920	233,301	1,381	0.60%
PM	318,321	320,033	1,712	0.53%
OP	62,467	62,819	352	0.56%
24 Hr	3,560,432	3,580,471	20,039	0.56%

The overall change in demand for Scenario C is shown in Table 2-4. In terms of scale, the increase in trips falls between Scenario A and Scenario B, which is also the case for the change in households.

Table 2-4: Summary of Travel Demand (Person Trips) by Assignment Hour and 24Hr - Scenario C

Time Period	Do Minimum (DM)	Do Something (DS)	Difference (DS-DM)	% difference
AM	274,171	275,510	1,339	0.49%
IP	231,920	233,224	1,304	0.56%
PM	318,321	319,924	1,603	0.50%
OP	62,467	62,801	334	0.53%
24 Hr	3,560,432	3,579,319	18,887	0.53%

The demand change for Scenario D is shown in Table 2-5. This scenario has a much smaller overall demand change compared to the others, which is reflective of the fact that the increase in households is much less. The overall change in trips is approximately 11,000, or around 0.32%.

Table 2-5: Summary of Travel Demand (Person Trips) by Assignment Hour and 24Hr - Scenario D

Time Period	Do Minimum (DM)	Do Something (DS)	Difference (DS-DM)	% difference
AM	274,171	274,970	799	0.29%
IP	231,920	232,708	788	0.34%
PM	318,321	319,292	971	0.30%
OP	62,467	62,667	200	0.32%
24 Hr	3,560,432	3,571,812	11,380	0.32%

2.1 Change in Travel Demand at a Local Sector Level

2.1.1 Change in Highway Demand at a Sector Level

To better understand the forecast change in demand locally, the sectorised change has been summarised below in terms of car demand (vehicle trips) at an all-day level. A positive value is an increase in demand in the Do-Something. In general, the most significant changes are observed between sectors in Rhondda Cynon Taff, though there are also reasonable levels of change with adjacent local authorities. Small reductions in travel between external sectors reflect a redistribution of trips in response to the population changes modelled.

For Scenario A, the most significant sectorised change in car trips occurs within Taff Ely West, both in absolute and percentage terms, as shown below in Table 2-6 and Table 2-7 respectively. This would be expected given that this is the sector which has the greatest increase in in households (in both absolute and proportional terms). The absolute number of trips entirely within the Cynon Valley increases more than in Taff Ely East in this scenario, despite that Taff Ely East has a greater increase in population. This derives from the fact that Taff Ely East is better connected to population centres in other local sectors and therefore there is a greater increase in cross-border trips here.

Table 2-6: Sectorised Car Demand Change Scenario A, All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	147	5	-26	-2	232	94	204	425
Caerphilly	8	56	-1	-5	28	-8	97	115
Cardiff	-11	-5	190	-6	33	-7	145	269
Bridgend	10	-2	1	35	4	6	12	280
Cynon Valley	186	24	32	4	1168	58	77	41
Rhondda Valleys	79	-5	-2	5	61	708	73	406
Taff Ely East	227	103	167	16	103	60	1077	441
Taff Ely West	434	103	303	365	41	384	398	2233

As noted above, the largest percentage change in trips occurs within Taff Ely West, representing an increase of 9.5%, which is roughly commensurate with the 8.9% increase in households in this sector. The increases in intra-sector trips for the other Rhondda Cynon Taff sectors are also similar to the change in households.

Table 2-7: Sectorised Car Demand Change Scenario A (%), All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.0%	0.0%	1.8%	1.1%	1.9%	4.0%
Caerphilly	0.0%	0.1%	0.0%	-0.2%	1.4%	-0.7%	1.2%	3.7%
Cardiff	0.0%	0.0%	0.1%	-0.1%	1.6%	-0.3%	1.8%	4.0%
Bridgend	0.0%	-0.1%	0.0%	0.0%	0.8%	0.6%	0.8%	4.2%
Cynon Valley	1.7%	1.4%	1.5%	0.7%	3.3%	2.4%	3.2%	4.8%
Rhondda Valleys	1.1%	-0.4%	-0.1%	0.5%	2.3%	2.3%	1.5%	5.6%
Taff Ely East	1.9%	1.3%	1.9%	0.9%	3.3%	1.4%	4.2%	5.8%
Taff Ely West	4.3%	4.1%	4.5%	4.5%	5.2%	5.9%	5.9%	9.5%

The absolute and percentage changes in highway trips for Scenario B are shown respectively in Table 2-8 and Table 2-9. The greatest change again occurs within Taff Ely West, with an increase of 3330 daily vehicle trips, or 14.1% - again commensurate with the increase in households of 13.3%. The second most significant change occurs within the Cynon Valley, which has the second highest increase in households. There is only

a small increase in trips within the Rhondda Valleys, which has only an additional 200 households – for this sector the increase in trips is driven more by the change in households within Taff Ely West, with an increase of approximately 500 trips between these areas.

Table 2-8: Sectorised Car Demand Change Scenario B, All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	159	5	-15	-5	289	53	150	623
Caerphilly	8	64	-2	-5	32	-19	61	181
Cardiff	1	-7	215	-7	40	-34	102	407
Bridgend	11	-2	2	42	4	-5	-1	406
Cynon Valley	235	29	39	3	1469	55	85	59
Rhondda Valleys	39	-16	-34	-7	55	346	12	517
Taff Ely East	171	73	119	-4	111	9	882	543
Taff Ely West	631	162	454	528	61	501	492	3330

Table 2-9: Sectorised Car Demand Change Scenario B (%), All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.0%	0.0%	2.2%	0.6%	1.4%	5.8%
Caerphilly	0.0%	0.1%	0.0%	-0.2%	1.6%	-1.6%	0.8%	5.8%
Cardiff	0.0%	0.0%	0.1%	-0.1%	2.0%	-1.5%	1.3%	6.1%
Bridgend	0.0%	-0.1%	0.0%	0.0%	0.8%	-0.5%	0.0%	6.1%
Cynon Valley	2.2%	1.7%	1.9%	0.5%	4.1%	2.3%	3.6%	6.9%
Rhondda Valleys	0.5%	-1.4%	-1.3%	-0.7%	2.1%	1.1%	0.2%	7.2%
Taff Ely East	1.5%	1.0%	1.4%	-0.2%	3.6%	0.2%	3.4%	7.2%
Taff Ely West	6.2%	6.4%	6.7%	6.6%	7.7%	7.7%	7.2%	14.1%

For Scenario C, the greatest change in trips again occurs within Taff Ely West, as shown in Table 2-10 in absolute terms and Table 2-11 in percentage terms.

Table 2-10: Sectorised Car Demand Change Scenario C, All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	175	1	-32	-5	144	44	192	615
Caerphilly	4	59	-1	-5	10	-22	75	175
Cardiff	-17	-6	215	-6	18	-36	132	404
Bridgend	11	-2	3	41	-1	-5	4	407
Cynon Valley	106	9	17	-3	766	30	60	48
Rhondda Valleys	29	-19	-37	-8	30	355	22	518
Taff Ely East	215	84	152	3	83	18	1085	577
Taff Ely West	621	157	451	527	52	503	522	3333

For Scenario C the proportional changes in intra-sector trips are again in line with the proportional changes in the number of households.

Table 2-11: Sectorised Car Demand Change Scenario C (%), All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.0%	0.0%	1.1%	0.5%	1.7%	5.8%
Caerphilly	0.0%	0.1%	0.0%	-0.3%	0.5%	-1.9%	0.9%	5.6%
Cardiff	0.0%	0.0%	0.1%	-0.1%	0.9%	-1.5%	1.7%	6.1%
Bridgend	0.0%	-0.1%	0.1%	0.0%	-0.1%	-0.5%	0.3%	6.1%
Cynon Valley	1.0%	0.5%	0.8%	-0.5%	2.1%	1.2%	2.5%	5.7%
Rhondda Valleys	0.4%	-1.7%	-1.4%	-0.8%	1.1%	1.1%	0.5%	7.2%
Taff Ely East	1.8%	1.1%	1.8%	0.1%	2.7%	0.4%	4.2%	7.6%
Taff Ely West	6.1%	6.2%	6.6%	6.5%	6.6%	7.8%	7.7%	14.1%

For Scenario D, the observed pattern in highway vehicle trips is different to the other scenarios, as it is now the Cynon Valley which has the greatest increase in households, leading to an increase of 1430 trips within this sector, compared with an increase of 890 trips within Taff Ely West, as shown below in Table 2-12. In this scenario, the change within the Rhondda Valleys is similar to the change within Taff Ely West in absolute terms.

Table 2-12: Sectorised Car Demand Change Scenario D, All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	108	6	-14	0	291	111	105	175
Caerphilly	8	40	-1	-2	42	6	66	50
Cardiff	-3	-5	113	-4	43	15	75	108
Bridgend	5	-1	0	20	9	12	9	122
Cynon Valley	245	37	44	10	1432	75	75	30
Rhondda Valleys	101	7	21	13	80	805	71	222
Taff Ely East	125	69	90	13	97	62	549	194
Taff Ely West	182	44	123	161	28	206	174	891

Scenario D shows a much more balanced change in sector movements in percentage terms, as can be observed in Table 2-13, with changes of 1.5%-4.0% between all Rhondda Cynon Taff sectors. This approximately matches the increase in households of 2%-4%.

Table 2-13: Sectorised Car Demand Change Scenario D (%), All-Day, Vehicles

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.0%	0.0%	2.2%	1.4%	1.0%	1.6%
Caerphilly	0.0%	0.0%	0.0%	-0.1%	2.1%	0.5%	0.8%	1.6%
Cardiff	0.0%	0.0%	0.0%	0.0%	2.1%	0.6%	0.9%	1.6%
Bridgend	0.0%	-0.1%	0.0%	0.0%	1.7%	1.3%	0.6%	1.8%
Cynon Valley	2.3%	2.2%	2.1%	1.8%	4.0%	3.1%	3.2%	3.5%
Rhondda Valleys	1.4%	0.6%	0.8%	1.3%	3.0%	2.6%	1.5%	3.1%
Taff Ely East	1.1%	0.9%	1.0%	0.7%	3.1%	1.5%	2.1%	2.6%
Taff Ely West	1.8%	1.8%	1.8%	2.0%	3.5%	3.2%	2.6%	3.8%

2.1.2 Change in Public Transport Demand at a Sector Level

The sectorised change in public transport demand (bus and rail) has been summarised below in terms of person trips at an all-day level. A positive value represents an increase in demand for travel by public transport. The increases in demand for travel by public transport (PT) are smaller than by highway, reflecting the lower overall mode share. However, the relative changes in public transport trips are commensurate with those observed for highway, reflecting that the Local Authority is reasonably well connected by bus and rail.

Table 2-14 shows the absolute change in sectorised public transport trips in Scenario A and Table 2-15 shows the relative change. As with the highway trips, the highest proportional change is for trips entirely within Taff Ely West (160 trips), which has the greatest increase in households. In absolute terms it is the same as the change entirely within Taff Ely East, but the higher number of do-minimum trips in that sector mean that the proportional change is smaller.

Table 2-14: Sectorised PT Demand Change Scenario A, All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	30	1	34	2	17	12	21	17
Caerphilly	2	3	3	0	1	1	15	6
Cardiff	53	2	17	1	24	29	51	61
Bridgend	3	0	1	2	0	1	1	41
Cynon Valley	15	1	17	0	126	4	16	3
Rhondda Valleys	12	1	17	1	3	57	20	32
Taff Ely East	22	8	44	1	17	27	164	65
Taff Ely West	10	4	73	34	1	29	47	164

Table 2-15: Sectorised PT Demand Change Scenario A (%), All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.2%	0.1%	2.3%	2.8%	2.3%	4.8%
Caerphilly	0.1%	0.0%	0.1%	0.1%	1.9%	1.4%	1.6%	5.9%
Cardiff	0.2%	0.1%	0.0%	0.0%	2.9%	2.5%	3.1%	6.5%
Bridgend	0.1%	0.1%	0.0%	0.0%	2.6%	1.4%	2.1%	5.2%
Cynon Valley	2.1%	2.2%	2.6%	1.9%	3.2%	2.8%	3.4%	4.6%
Rhondda Valleys	2.9%	1.3%	1.8%	1.4%	2.7%	2.2%	2.8%	5.5%
Taff Ely East	2.3%	1.2%	2.8%	1.8%	3.7%	2.8%	4.3%	6.6%
Taff Ely West	3.3%	5.1%	5.5%	4.7%	4.4%	4.5%	6.0%	9.3%

Table 2-16 shows the absolute change in PT trips for Scenario B, with the proportional change shown in Table 2-17. The greatest change is again within Taff Ely West, where the greatest housing increase is.

Table 2-16: Sectorised PT Demand Change Scenario B, All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	34	1	38	3	21	11	20	25
Caerphilly	2	4	3	0	2	0	12	10
Cardiff	59	3	21	1	32	22	46	93
Bridgend	4	0	1	3	1	1	1	60
Cynon Valley	19	1	22	0	163	4	19	5

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Rhondda Valleys	12	0	9	1	3	31	14	41
Taff Ely East	23	6	38	1	20	19	141	84
Taff Ely West	15	7	106	50	2	35	57	248

The most significant proportional increase also occurs within Taff Ely West with an additional 14.1% of trips, in line with the increase in housing. Between Taff Ely West and other sectors there are increases in trips of between 5% and 10%, more than between any other combination of sectors.

Table 2-17: Sectorised PT Demand Change Scenario B (%), All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.1%	0.2%	0.1%	2.8%	2.5%	2.3%	7.0%
Caerphilly	0.1%	0.0%	0.1%	0.1%	2.4%	0.6%	1.3%	8.9%
Cardiff	0.2%	0.1%	0.0%	0.1%	3.8%	1.9%	2.8%	9.8%
Bridgend	0.2%	0.1%	0.1%	0.0%	3.4%	0.6%	1.9%	7.7%
Cynon Valley	2.6%	2.8%	3.4%	2.5%	4.2%	2.6%	4.1%	6.5%
Rhondda Valleys	2.8%	0.6%	1.0%	0.7%	2.9%	1.2%	2.0%	7.1%
Taff Ely East	2.4%	0.9%	2.4%	1.7%	4.5%	2.0%	3.7%	8.5%
Taff Ely West	4.8%	7.7%	8.1%	7.0%	6.0%	5.3%	7.1%	14.1%

The absolute change in PT trips for Scenario C is shown in Table 2-18, with the greatest increase again within Taff Ely West, and the second greatest increase again within Taff Ely East. As shown in Table 2-19, the greatest proportional increase is again within Taff Ely West with greater proportional increases in public transport trips to/from this sector compared to elsewhere.

Table 2-18: Sectorised PT Demand Change Scenario C, All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	33	1	42	3	13	11	21	25
Caerphilly	2	3	3	0	1	0	13	9
Cardiff	64	3	22	1	19	21	53	93
Bridgend	4	0	1	3	0	1	1	60
Cynon Valley	13	1	11	0	88	2	13	3
Rhondda Valleys	11	0	9	1	2	29	15	41
Taff Ely East	23	7	44	2	13	20	170	88
Taff Ely West	14	7	106	50	1	34	61	247

Table 2-19: Sectorised PT Demand Change Scenario C (%), All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.2%	0.1%	1.8%	2.5%	2.4%	6.9%
Caerphilly	0.1%	0.0%	0.1%	0.1%	0.8%	0.4%	1.4%	8.7%
Cardiff	0.3%	0.1%	0.0%	0.1%	2.3%	1.8%	3.3%	9.8%
Bridgend	0.2%	0.1%	0.1%	0.0%	2.4%	0.6%	2.2%	7.7%
Cynon Valley	1.8%	1.3%	1.7%	1.6%	2.2%	1.8%	2.7%	5.0%
Rhondda Valleys	2.7%	0.5%	0.9%	0.7%	1.9%	1.1%	2.1%	7.0%

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Taff Ely East	2.4%	1.1%	2.8%	2.0%	3.0%	2.1%	4.5%	8.8%
Taff Ely West	4.7%	7.6%	8.1%	6.9%	4.4%	5.3%	7.6%	14.0%

As shown in Table 2-20, the most significant sectorised change in public transport trips occurs within the Cynon Valley, where the housing increase is greatest, in Scenario D. It is noteworthy that the change in trips between the Cynon Valley and other sectors is small. There are also small increases in trips between other sectors in Rhonda Cynon Taff, though overall the changes are less significant than in other scenarios, since the overall increase in housing is smallest.

Table 2-20: Sectorised PT Demand Change Scenario D, All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	20	1	17	1	18	10	12	8
Caerphilly	1	3	2	0	2	1	9	3
Cardiff	28	2	11	0	27	28	26	24
Bridgend	2	0	0	1	0	2	1	17
Cynon Valley	15	2	21	0	152	4	16	3
Rhondda Valleys	10	1	20	1	4	65	17	18
Taff Ely East	13	5	23	1	17	24	84	29
Taff Ely West	5	2	30	14	1	19	22	66

The proportional increase in public transport trips for Scenario D is shown in Table 2-21. It can be observed that there is nowhere a change of greater than 4%.

Table 2-21: Sectorised PT Demand Change Scenario D (%), All-Day, Person Trips

	Others	Caerphilly	Cardiff	Bridgend	Cynon Valley	Rhondda Valleys	Taff Ely East	Taff Ely West
Others	0.0%	0.0%	0.1%	0.0%	2.4%	2.3%	1.4%	2.1%
Caerphilly	0.0%	0.0%	0.1%	0.1%	2.9%	1.9%	1.0%	2.6%
Cardiff	0.1%	0.1%	0.0%	0.0%	3.2%	2.4%	1.6%	2.6%
Bridgend	0.1%	0.1%	0.0%	0.0%	2.5%	1.7%	1.1%	2.1%
Cynon Valley	2.1%	2.9%	3.2%	2.0%	3.9%	3.2%	3.5%	3.8%
Rhondda Valleys	2.3%	1.7%	2.1%	1.6%	3.1%	2.5%	2.4%	3.1%
Taff Ely East	1.4%	0.7%	1.5%	0.9%	3.7%	2.5%	2.2%	2.9%
Taff Ely West	1.6%	2.2%	2.3%	1.9%	3.9%	2.9%	2.7%	3.8%

2.2 Forecast Traffic Flow Differences

The following figures illustrate the highway traffic demand flow differences forecast by SEWTM by time period (differences shown are hourly). Red indicates an increase in traffic flow in the DS compared to the DM and the width of the line is relative to the scale of the difference. A consistent scale is used across all plots to ensure easy comparison between time period and scenario. To reduce the visual effects of convergence noise, only increases in demand are shown.

Figure 2.1 shows the change in vehicle flows for Scenario A in the AM peak. The most significant changes occur at the south end of the Local Authority, particularly on the A473 between Pontyclun and Upper Boat, as well as on the A4119 north of Llantrisant.

Figure 2.1: Scenario A -DM Highway Demand Flow Difference – AM

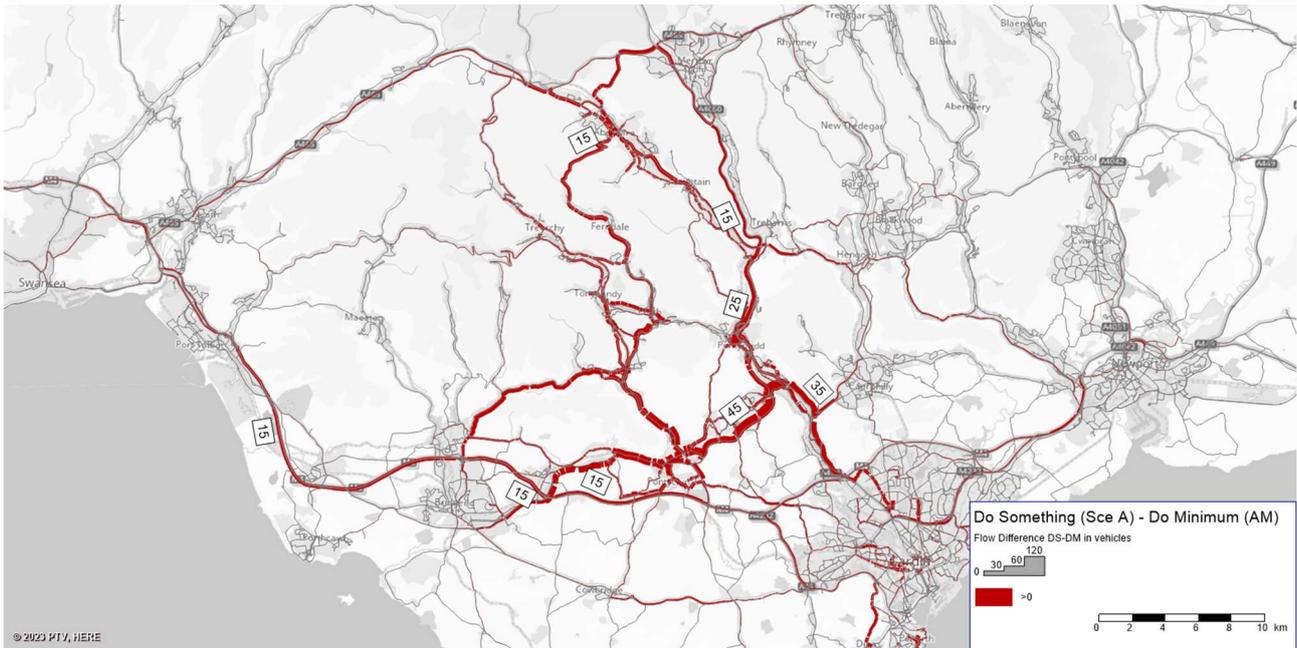
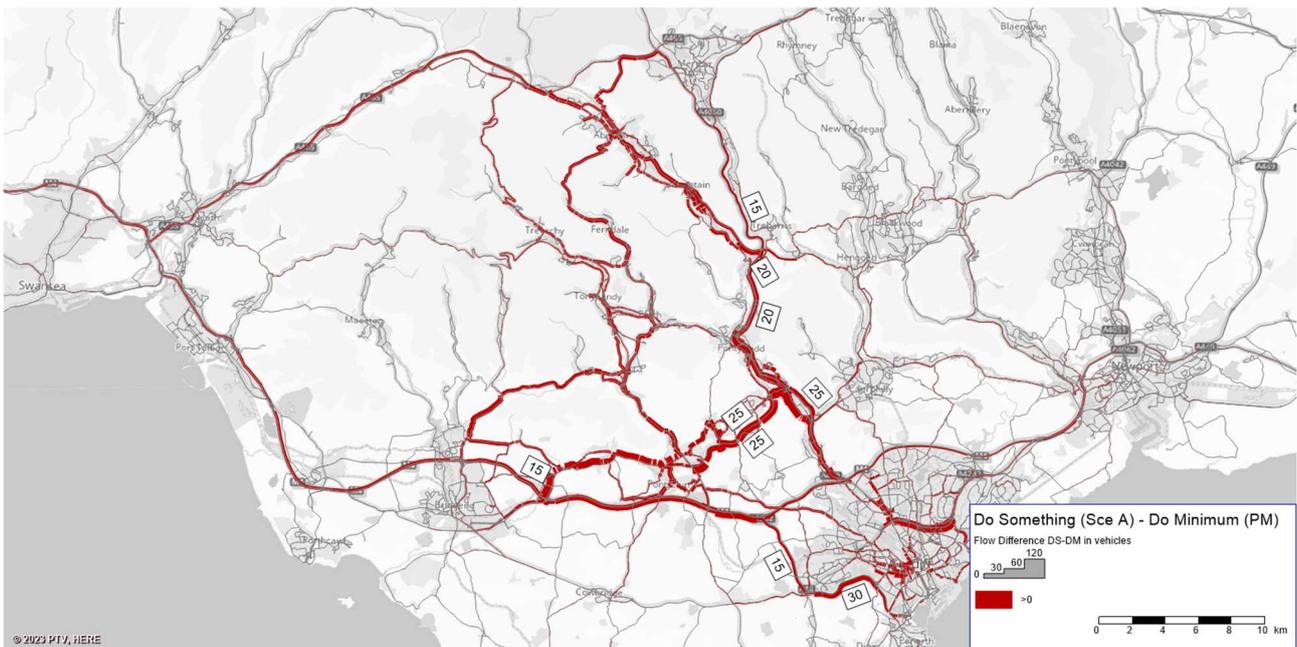


Figure 2.2 shows the change in vehicle flows for Scenario A in the PM peak. The greatest increase in flows occurs in approximately the same locations as in the AM peak, albeit with tidality reversed. In this time period there is a more noticeable change on the M4 between Bridgend and Cardiff.

Figure 2.2: Scenario A -DM Highway Demand Flow Difference – PM



The flow differences for Scenario B in the AM peak are shown in Figure 2.3. The patterns observed are similar to those in the same time period for Scenario A, which is unsurprising given the similarity of the housing changes, with large increases on the A473 and A4119.

Figure 2.3: Scenario B -DM Highway Demand Flow Difference – AM

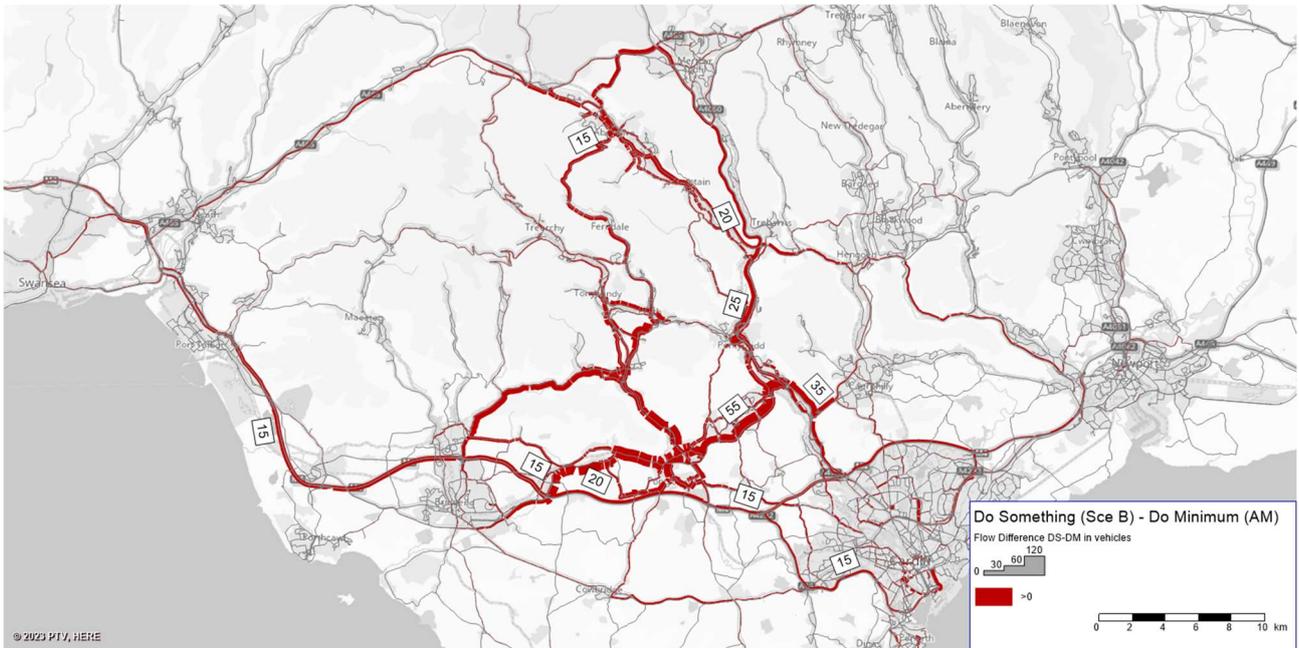


Figure 2.4 shows the flow differences for the PM peak in Scenario B, again displaying key increases on the A4119, the A473 and the M4.

Figure 2.4: Scenario B -DM Highway Demand Flow Difference – PM

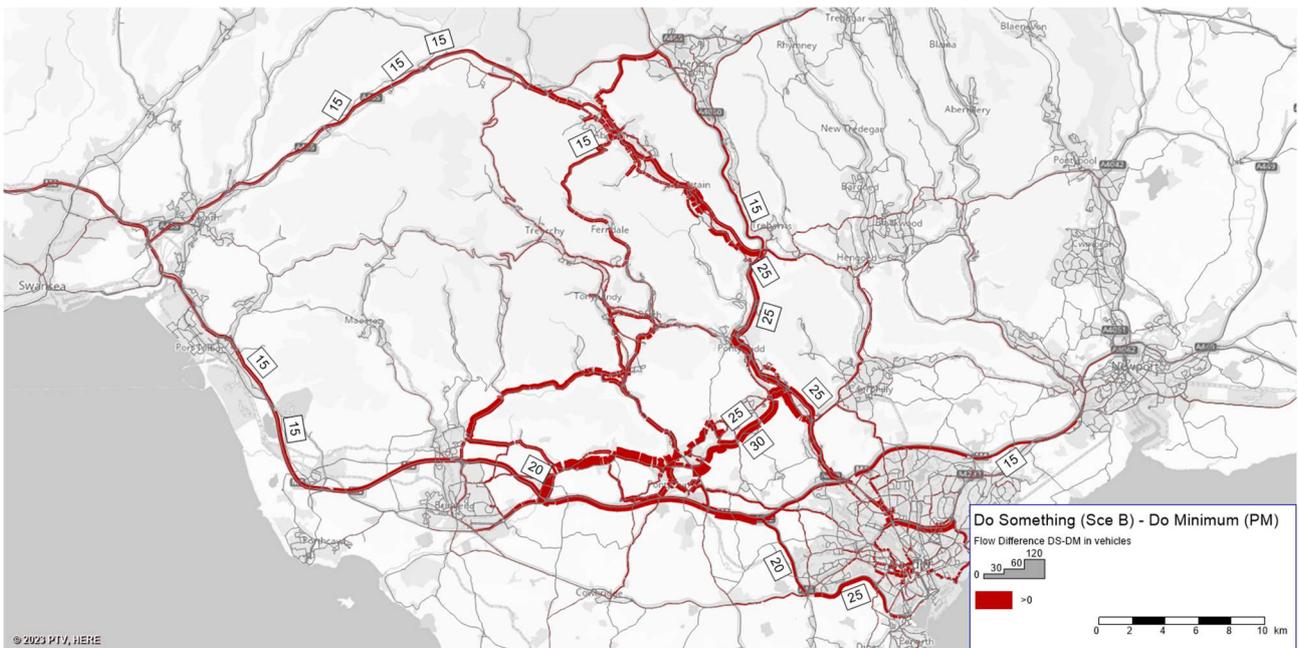


Figure 2.5 shows the flow differences for the AM peak in Scenario C. The changes at the north of Rhondda Cynon Taff are smaller in this scenario, in line with the fact that the housing allocated to the Rhondda and Cynon valleys is smaller. In the south of the Local Authority, key patterns on the A473 and A4119 are again repeated.

Figure 2.5: Scenario C -DM Highway Demand Flow Difference – AM

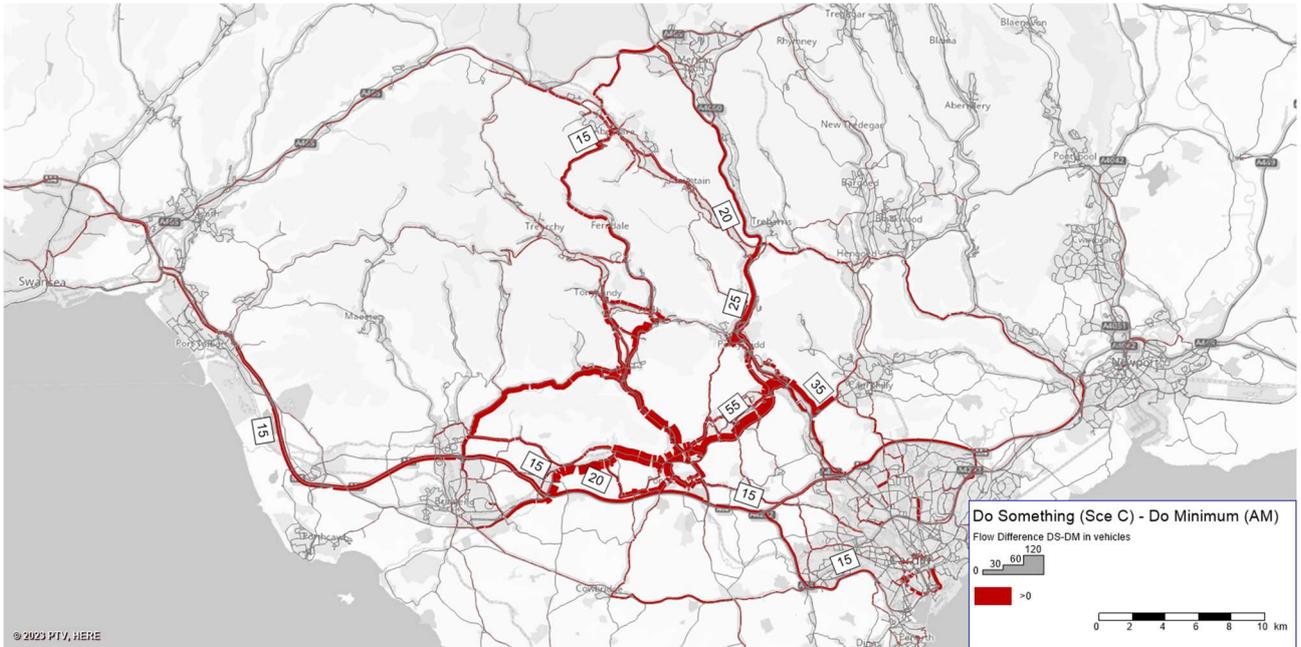


Figure 2.6 shows the PM peak flow differences for Scenario C. Key patterns are again repeated.

Figure 2.6: Scenario C -DM Highway Demand Flow Difference – PM

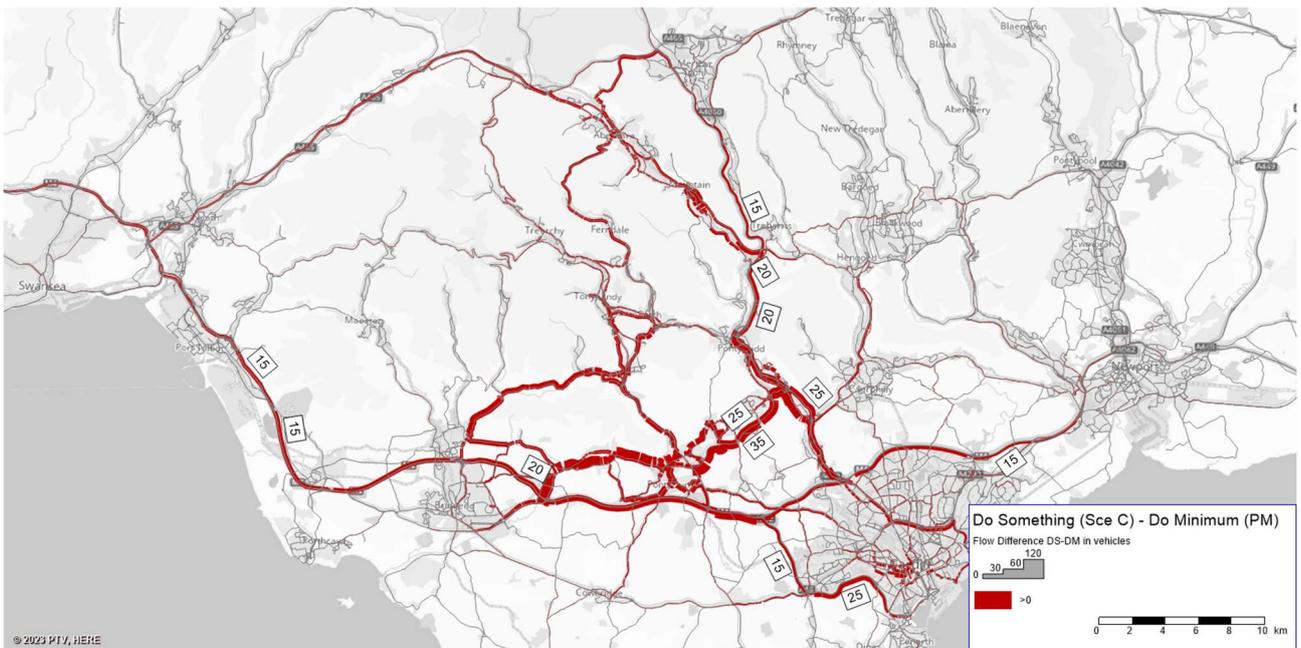


Figure 2.7 shows the flow differences for Scenario D in the AM peak. The impact on traffic flows is much smaller than for the other scenarios, deriving from the smaller change in housing. In this scenario, the scale of change is larger at the north of the Local Authority, with the greatest flow changes occurring around Aberdare.

Figure 2.7: Scenario D -DM Highway Demand Flow Difference – AM

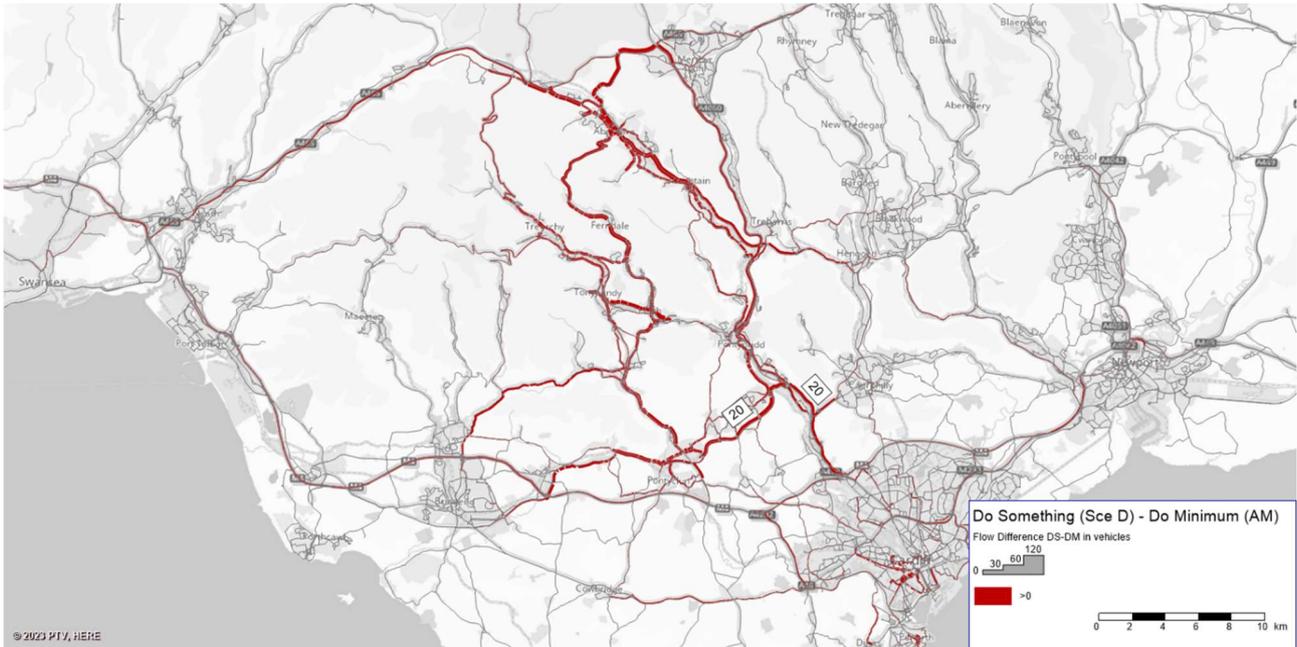
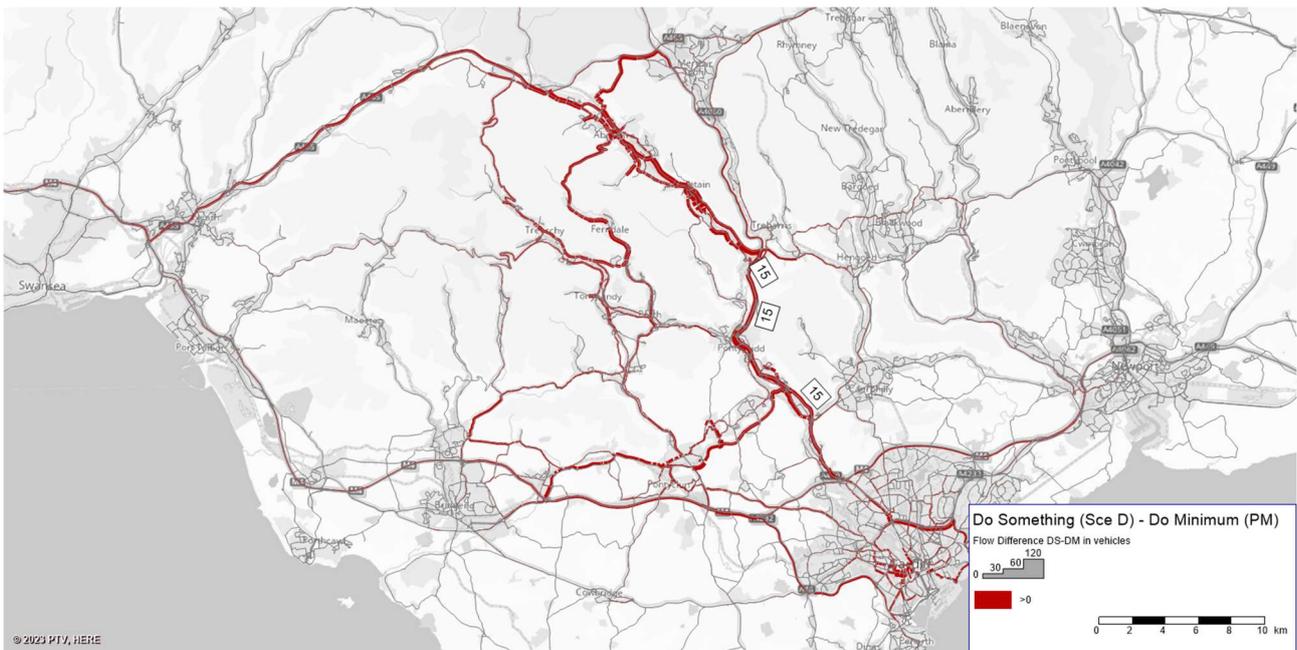


Figure 2.8 shows the flow differences for Scenario D in the PM peak, with the greatest changes observed on the A4059 between Aberdare and Abercynon.

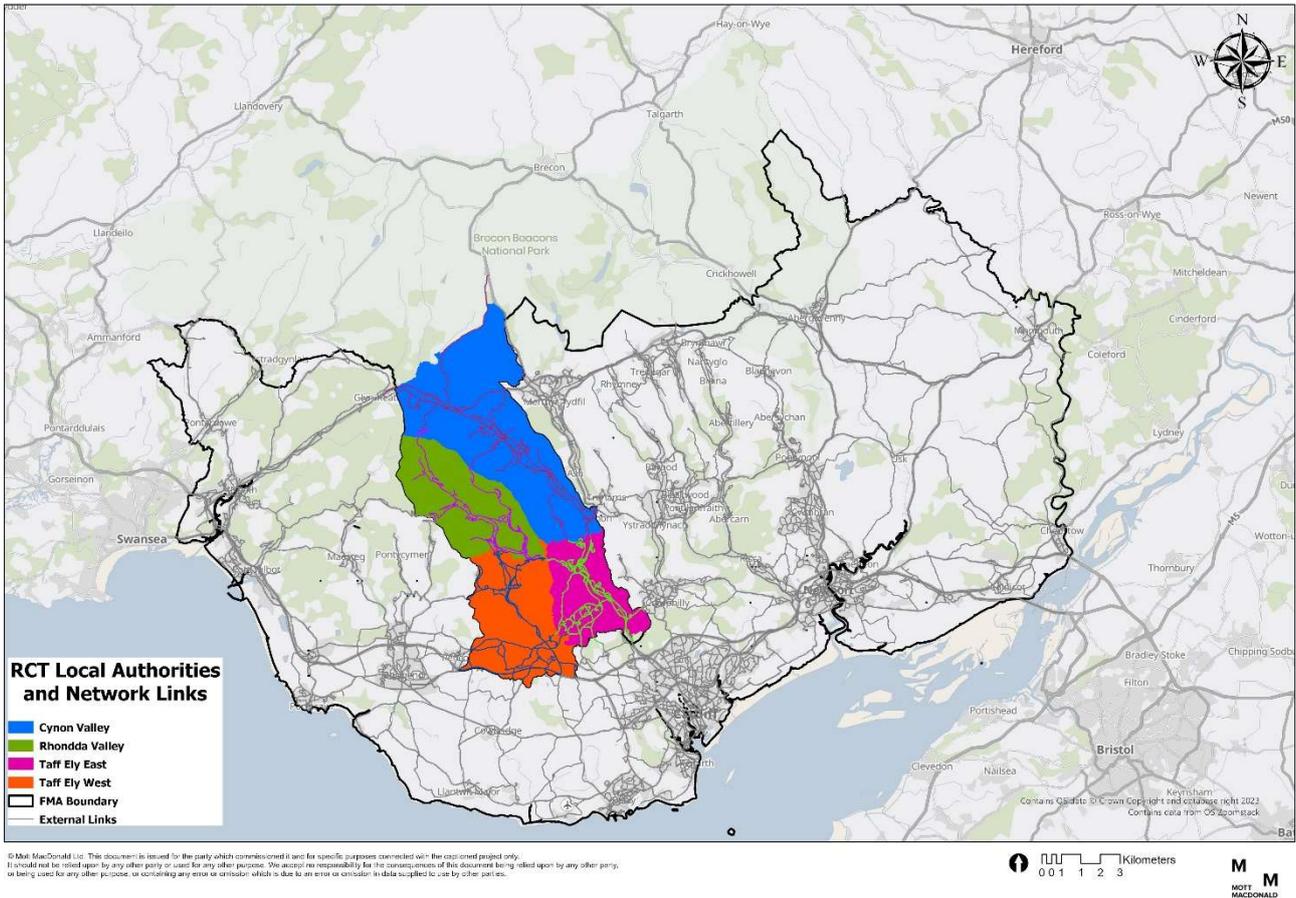
Figure 2.8: Scenario D -DM Highway Demand Flow Difference – PM



2.3 Vehicle Kilometres Travelled

The following tables indicate the changes in vehicle kilometres travelled forecast by SEWTM by car, LGV and HGV combined (with LGV and HGV changes resulting only from changes in route). Figure 2.9 illustrates the areas and road links to which the forecast change in vehicle kilometres travelled have been allocated. The road links illustrated are those modelled within SEWTM.

Figure 2.9: Rhondda Cynon Taff Sectors and SEWTM Network links



The scale of the increase varies by area and is the product of both an increase in demand for travel and the roads used by trips from the proposed development areas. The overall change in vehicle-km by scenario is much smaller proportionally to the change in car trips to/from the sectors. This is because the highway links also facilitate movements between other locations, and the change in vehicle-km also includes goods vehicles, the demand for which has not been modified.

Table 2-22 shows the change in vehicle-km for Scenario A. The most significant absolute change occurs in Taff Ely West, which has the greatest change in housing, but also facilitates movements between the other sectors and Cardiff. The smallest change is in the Rhondda Valley, which has the smallest increase in housing. The greatest absolute changes generally occur in the AM and PM peaks.

Table 2-22: Scenario A Vehicle-km Travel Difference by Time-Period

Sector	Scenario A – DM			Scenario A – DM (%)		
	AM	IP	PM	AM	IP	PM
Cynon Valley	1,272	981	1,452	1.38%	1.52%	1.50%
Rhondda Valley	817	572	838	1.79%	1.59%	1.77%
Taff Ely East	1,705	1,368	1,475	1.26%	1.52%	1.12%
Taff Ely West	2,118	2,210	2,219	1.40%	2.29%	1.46%

The change in vehicle-km for Scenario B is shown in Table 2-23. As with Scenario A, the most significant changes occur in Taff Ely West, and the smallest changes occur in the Rhondda Valley, again commensurate with the changes in population modelled.

Table 2-23: Scenario B Vehicle-km Travel Difference by Time-Period

Sector	Scenario B – DM			Scenario B – DM (%)		
	AM	IP	PM	AM	IP	PM
Cynon Valley	1,515	1,153	1,733	1.65%	1.79%	1.79%
Rhondda Valley	704	434	718	1.55%	1.21%	1.52%
Taff Ely East	1,803	1,379	1,664	1.34%	1.53%	1.26%
Taff Ely West	2,859	2,872	2,822	1.89%	2.97%	1.86%

Table 2-24 shows the change in vehicle-km for Scenario C, with Taff Ely West again experiencing the greatest absolute change, and larger changes generally observed in the AM and PM peaks.

Table 2-24: Scenario C Vehicle-km Travel Difference by Time-Period

Sector	Scenario C – DM			Scenario C – DM (%)		
	AM	IP	PM	AM	IP	PM
Cynon Valley	939	694	1,074	1.02%	1.08%	1.11%
Rhondda Valley	627	388	658	1.38%	1.08%	1.39%
Taff Ely East	1,808	1,416	1,652	1.34%	1.57%	1.26%
Taff Ely West	2,857	2,874	2,831	1.89%	2.97%	1.86%

The change in vehicle-km for Scenario D is shown in Table 2-25. In contrast to the other scenarios, the greatest change occurs in the Cynon Valley, which for this scenario has the greatest increase in population.

Table 2-25: Scenario D Vehicle-km Travel Difference by Time-Period

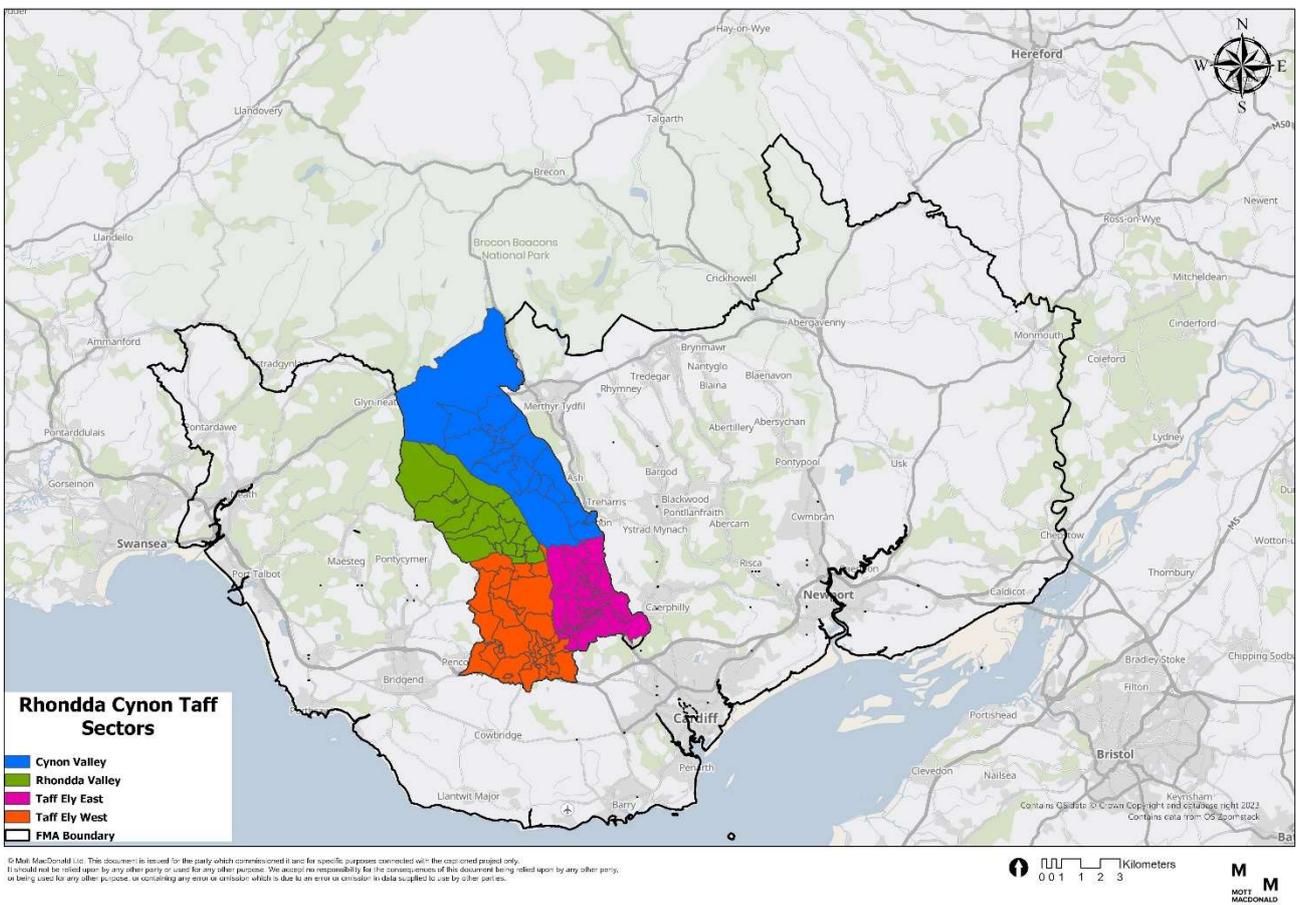
Sector	Scenario D – DM			Scenario D – DM (%)		
	AM	IP	PM	AM	IP	PM
Cynon Valley	1,433	1,122	1,614	1.56%	1.74%	1.66%
Rhondda Valley	814	577	792	1.79%	1.61%	1.68%
Taff Ely East	1,056	856	854	0.78%	0.95%	0.65%
Taff Ely West	1,000	1,050	1,077	0.66%	1.09%	0.71%

A. Methodology

A.1 Background

Figure 2.10 below (repeated from Figure 1.1) indicates the location of Rhondda Cynon Taff in the context of the South East Wales Traffic Model’s Fully Modelled Area (FMA). Within the FMA, the majority of the Local Authority falls within the Rest of the Fully Modelled Area (RoFMA), with some parts at the very south being in the Area of Detailed Modelling (AoDM). The RoFMA is the area over which the modelled impacts of interventions are considered quite likely. It is characterised by representation of all trip movements, somewhat larger zones and less network detail than for the AoDM, and speed/flow curve modelling. To the north of the Local Authority zone are larger and to the south more detailed.

Figure 2.10: Rhondda Cynon Taff in SEWTM



A.2 Variable Demand Methodology

It was agreed with TfW that runs of the South East Wales Transport Model (SEWTM) would be for a base year of 2015 and that these would comprise variable demand model runs.

It should be noted that no attempt has been made to verify the validation of the highway model locally for this exercise, i.e., no checks made to compare the modelled traffic flows and observed traffic counts in or in the vicinity of Rhondda Cynon Taff.

A.3 Allocation of Development Sites

A series of factors was derived for each of the four sectors and applied to the constituent zones to increase the population, accounting for the additional housing. The demographic characteristics of each zone were kept the same, i.e., the split between the number of people in different age groups, full time / part time worker splits, household type (persons per household) etc.

Once the updated demographics had been calculated, these were input to the demand model. A variable demand model run was then undertaken, and results checked for sensibility and consistency with the 2015 base year model.