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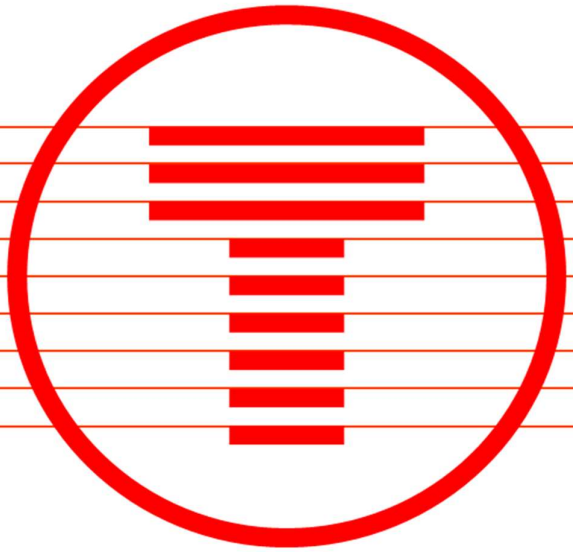
SEWTM:

Monmouthshire Strategic Transport Assessment

FINAL



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1 Introduction

This document has been produced by Transport for Wales (TfW) for Monmouthshire County Council (MCC) as a non-technical note outlining the findings of transport modelling work undertaken in support of the Monmouthshire Strategic Transport Assessment (STA).

TfW alongside Mott McDonald, TfW's transport modelling consultants for the South East Wales Transport Model (SEWTM), were commissioned to undertake a high-level strategic transport assessment for Monmouthshire's future development plans. MCC provided detailed assumptions about aspirations for housing numbers and locations within the county over the Replacement Local Development Plan (RLDP) period. These assumptions were inputted into SEWTM to determine their impact on the transport network across the County and also within the South East Wales Region.

SEWTM was used to understand the potential impact on both the highway and public transport network within the Local Authority (LA). Mott McDonald provided a technical note outlining the methodology to undertake the assessment in the SEWTM and detailed modelling results – this can be found in Appendix A.

Two scenarios have been run using SEWTM and these have been used within this note. The scenarios are:

- **Do-Minimum (DM)** – which represents the baseline transport network within South East Wales in 2022; and
- **Do-Something (DS)** – which represents the DM plus the land development housing assumptions, set out by MCC in the Strategic Transport Assessment (STA).

This document will cover the strategic overview of the results based on these two scenarios as well as the impact on the local highways network, including:

- Chepstow – A48 and A466 (near Highbeech Roundabout);
- Severnside – the A48, B4245, B4245/Crick road/A48 through route junctions) and A48/B4245 (Parkwall roundabout);
- Monmouth – A40, A466 and Dixton Rd; and
- Abergavenny – A465, A40 and A4042 (Hardwick roundabout).

1.1 Modelled Scenario

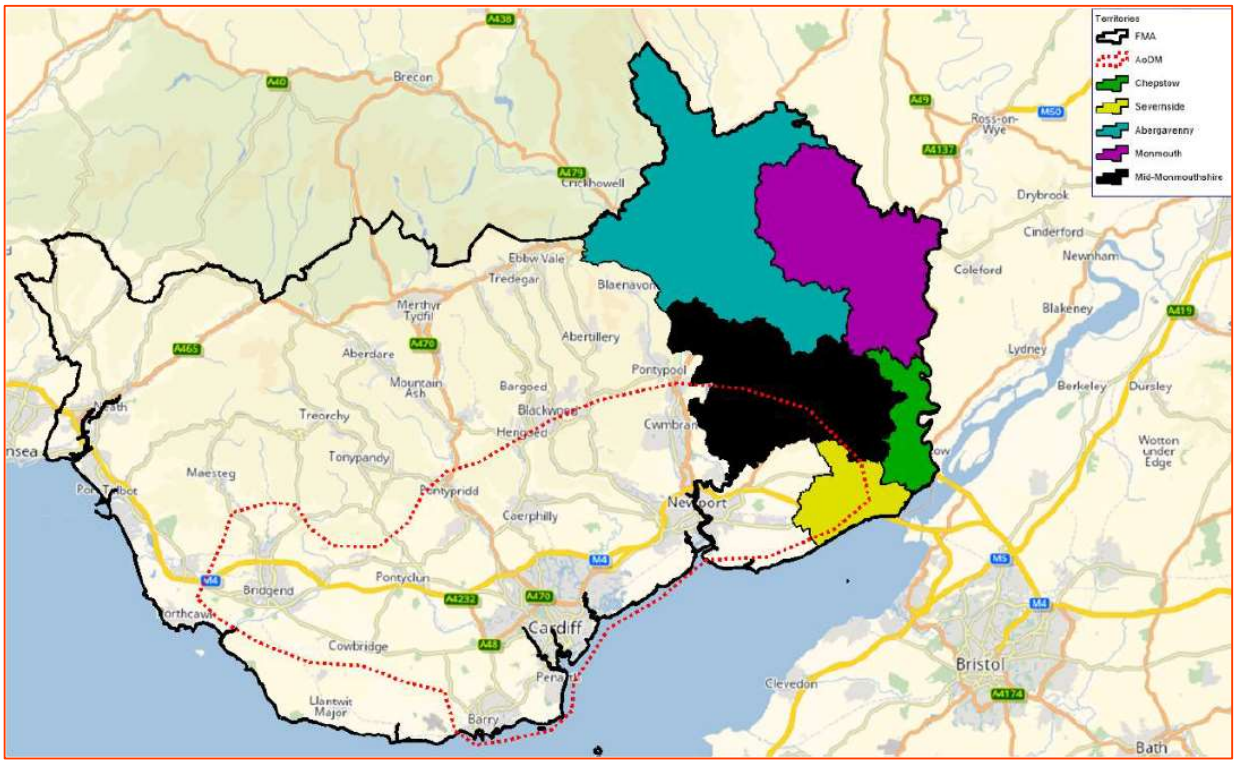
This section outlines the number of newly proposed dwellings set out by MCC for the project. The initial detail provided was an additional 2,273 dwellings as identified in their RLDP at the point of time of this commission.[1](details provided in Motts Technical Note in Appendix A). These 2,273 dwellings are represented in the DS scenario. These dwellings were identified at particular sites and feed into the South East Wales Transport Model at these specific locations in DS scenario.

For the purposes of this project and to analyse the impact on the transport network in simple terms, Monmouthshire has been split into five (5) sectors which have been used to aggregate

[1] New allocations are identified as 2,130 within the Deposit RLDP

the modelled outputs, these sectors are presented in Figure 1.

Figure 1: Monmouthshire Sectors in the SEWTM



The proposed change in the number of dwellings by sector in the DS is presented in Table 1. The table shows the number of dwellings allocated within the county and then the total number of houses that will be represented in the Strategic Transport Assessment (STA). The table shows Severnside has the highest proposed increase in the number of dwellings under the RLDP.

Table 1: Dwelling Change by Sector

Sector	2022 Total Dwellings	Housing Allowance	Strategic Transport Assessment (STA) Dwellings
Chepstow	6632	161	6792
Abergavenny	12859	683	13542
Monmouth	7291	490	7781
Severnside	9402	776	10178
Mid Monmouth	4629	163	4791
Total		2, 273	

*The dwelling numbers presented above are approx. of the final new allocation figures within 2-3%.

1.2 Wales Transport Policy

The analysis presented in this report is representative of the transport network today including public transport and active travel. It is worth considering the Welsh

Transport Strategy (WTS) and the national targets for mode share within Wales over the next 10-15 years. The WTS has a national target of reducing car travel by 40% by 2040 and working alongside LA and Regional Transport Groups, such as the CJC, WG are committed and working towards this potential future. In this case the analysis doesn't represent the potential significant impact on mode share in the region and the reduction in car travel. It is recommended that review of Local and Regional Transport Development Plans be considered alongside this report.

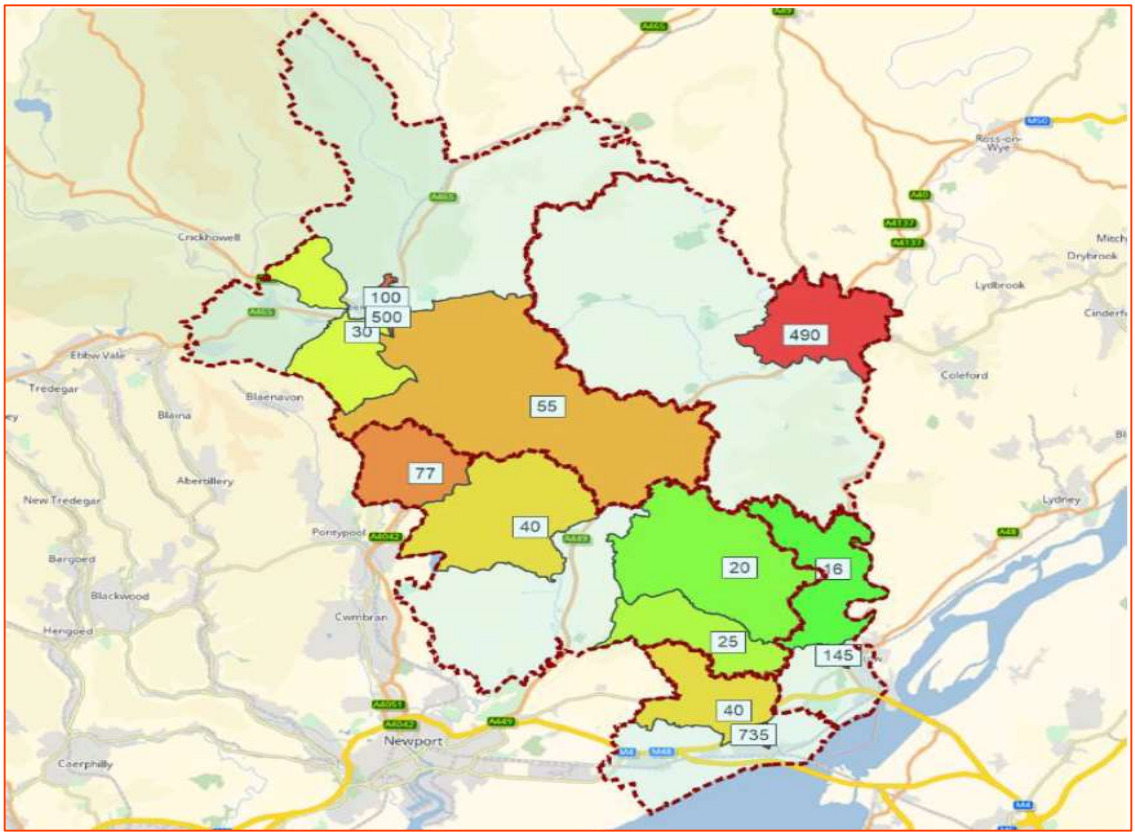
2 Methodology

The detailed methodology used to model the proposed housing increase in SEWTM is provided in the modelling technical note produced by Mott McDonald in Appendix A.

A brief overview of the methodology is provided below:

1. Proposed housing numbers and their locations were provided by MCC and converted into number of trips for each specific site. This conversion is done using the absolute growth in trips from the SEWTM demand model rather than the percentage growth and is outlined in the technical note at Appendix A.;
2. The housing sites were allocated to modelling zones within the South East Wales Transport Model as represented in Figure 2;
3. The additional number of trips were added to the baseline, 2022 demand or DM, within the regional model using the existing distribution at each modelling zone;
4. The new trips are represented on both the highway and public transport network; and
5. The impact of change between the DM and DS scenarios was extracted and presented within this note.

Figure 2: Location of Development Sites (Numbers represent SEWTM modelling zones)



3 Scenario Overview of Results

To better understand the impact of the housing allocation impact in Monmouthshire this section will look at the strategic impact on the highway and public transport network at a sector level.

Table 2 shows a high-level overview of the increase in travel demand across the model for each time period and also a 24hr period. The table shows that over a 24hr period there is an additional 2,717 new trips added onto the transport network, with the PM period seeing the largest trip increase. However across all time periods the increase between the DM and DS scenarios is between 0.2% and 0.3%.

It is worth noting that the 24hr demand is scaled up using the data extracted from the regional model which represents the regions busiest periods (AM, IP and PM peaks).

Specific breakdown in terms of peak times is identified, these time periods are;

- AM – 7:45 – 8:45am
- IP – Average hour between 9:30 – 3:30pm
- PM – 4:30 – 5:30pm

Table 2: Forecast Change in Demand

Peak	Time	Do Minimum (DM)	Do Something (DS)	Difference (DS-DM)	% difference
AM	7:45-8:45am	325,612	326,547	935	0.3%
IP	9:30-3:30pm	264,304	264,926	622	0.2%
PM	4:30-5:30pm	332,636	333,640	1,004	0.3%
24hr	Daily	985,743	988,460	2,717	0.3%

The forecast change in travel demand in both highway and public transport across the region and the LA has been split into the identified sectors and presented below. Table 3 shows the modelled increase in highway trips. The table shows significant increases of internal trips within Severnside, Monmouth and Abergavenny (movements that stay within the sector). The largest movement of highway trips outside of the County is from Severnside to Newport, movements between the rest of England and Abergavenny.

Table 3: 24hr Increase in highway traffic

	Torfaen	Newport	Rest of Wales	Rest of England	Chepstow	Abergavenny	Monmouth	Severnside	Mid Monmouthshire
Torfaen	37	10	-1	2	10	87	26	59	61
Newport	5	57	4	4	27	57	45	207	45
Rest of Wales	-11	-11	134	0	30	222	81	184	57
Rest of England	0	1	-3	0	81	42	104	211	26
Chepstow	10	30	33	82	204	6	19	125	22
Abergavenny	87	57	222	40	6	707	37	10	34
Monmouth	26	45	81	102	20	37	626	16	17
Severnside	57	207	178	203	124	10	15	837	28
Mid Monmouthshire	61	46	56	25	22	33	16	28	61

Tables 4 show the increase in public transport trips. SEWTM is a variable demand model which has the capability of identifying the levels of additional trips that would be added to the public transport network based on MCC STA. Public transport trips include bus and rail within the regional model, there is a level of active travel but due to the strategic nature of the regional model this is limited and any detail required around this mode should be assessed using a local model. This analysis is based on the public transport system based on timetables for 2022 and does not include any potential public transport improvements. The largest increase in public transport trips is within the Severnside sector and is seen on bus. The largest rail increase is seen in terms of trips from Severnside into England, 27 trips and the rest of Wales, 21 trips over a 24hr period

Table 4: 24hr Increase in public transport trips

	Torfaen	Newport	Rest of Wales	Rest of England	Chepstow	Abergavenny	Monmouth	Severnside	Mid Monmouthshire
Torfaen	4	2	2	1	1	16	1	5	6
Newport	2	7	3	0	2	8	5	37	2
Rest of Wales	2	2	18	0	2	17	2	23	1
Rest of England	1	0	0	0	3	16	7	28	1
Chepstow	1	2	2	3	16	0	5	24	4
Abergavenny	17	9	19	17	0	102	4	0	4
Monmouth	1	7	3	10	5	4	3	1	2
Severnside	6	42	25	29	27	0	1	189	1
Mid Monmouthshire	7	3	1	1	4	4	2	1	1

Table 5: 24hr Increase in Rail trips

	Torfaen	Newport	Rest of Wales	Rest of England	Chepstow	Abergavenny	Monmouth	Severnside	Mid Monmouthshire
Torfaen	1	1	1	1	0	8	0	3	0
Newport	1	0	1	0	1	6	0	13	0
Rest of Wales	1	1	7	0	1	12	0	20	0
Rest of England	1	0	0	0	2	10	0	26	0
Chepstow	0	1	1	2	0	0	0	2	0
Abergavenny	8	7	12	10	0	0	0	0	0
Monmouth	0	0	0	0	0	0	0	0	0
Severnside	3	13	21	27	2	0	0	2	0
Mid Monmouthshire	0	0	0	0	0	0	0	0	0

Table 6: 24hr Increase in Bus trips

	Torfaen	Newport	Rest of Wales	Rest of England	Chepstow	Abergavenny	Monmouth	Severnside	Mid Monmouthshire
Torfaen	4	1	1	0	0	8	1	3	6
Newport	1	7	2	0	1	2	5	24	2
Rest of Wales	1	1	11	0	0	5	2	3	1
Rest of England	0	0	0	0	1	6	7	2	0
Chepstow	1	2	1	1	16	0	5	22	4
Abergavenny	9	2	7	7	0	102	4	0	4
Monmouth	1	7	3	10	5	4	3	1	2
Severnside	3	29	4	2	25	0	1	187	1
Mid Monmouthshire	7	3	1	1	4	4	2	1	1

In summary the largest increase in terms of highway traffic is from Severnside, Abergavenny and Monmouth and occurs in the PM peak. However for public transport the largest increase would occur in the AM peak and on bus journeys.

Table 7: Peak time increase and mode share for the whole of Monmouthshire

	Time	Bus	Rail	Car	% Bus	% Rail	% Car
AM	7:45 – 8:45am	68	33	834	3%	1%	31%
IP	9:30 – 3:30pm	43	6	573	2%	0%	21%
PM	4:30-5:30pm	47	26	931	2%	1%	34%
Total	24hr	163	67	2,487	6%	2%	92%

Similar to all areas of South East Wales, car has the largest mode share within Monmouthshire which is reflected in the additional new trips with a total share of 92%, with bus following at 6%. Table 8 shows the 2022 mode share analysis for the South East Wales Transport Model for both the DM and DS showing no change in the overall mode share.

Table 8: 2022 South East Wales Transport Model Mode Share

Mode	2022 Mode Share - DM	2022 Mode Share - DS
Car	92%	92%
Rail	2%	2%
Bus	6%	6%

4 Local Analysis

Further to the strategic analysis presented in section 3, this section will focus on several key locations identified by MCC to understand localised impact of the proposed housing allocations identified in the Monmouthshire STA.

Chepstow

For Chepstow the A48 and A466 near Highbeech roundabout were identified as locations of specific local interest. Traffic flows representing the total volume on the link were extracted from the regional model and are presented in Table 9. The location of the vehicle flows around Highbeech roundabout are present in figure 3.

Figure 3: Chepstow key highway Network

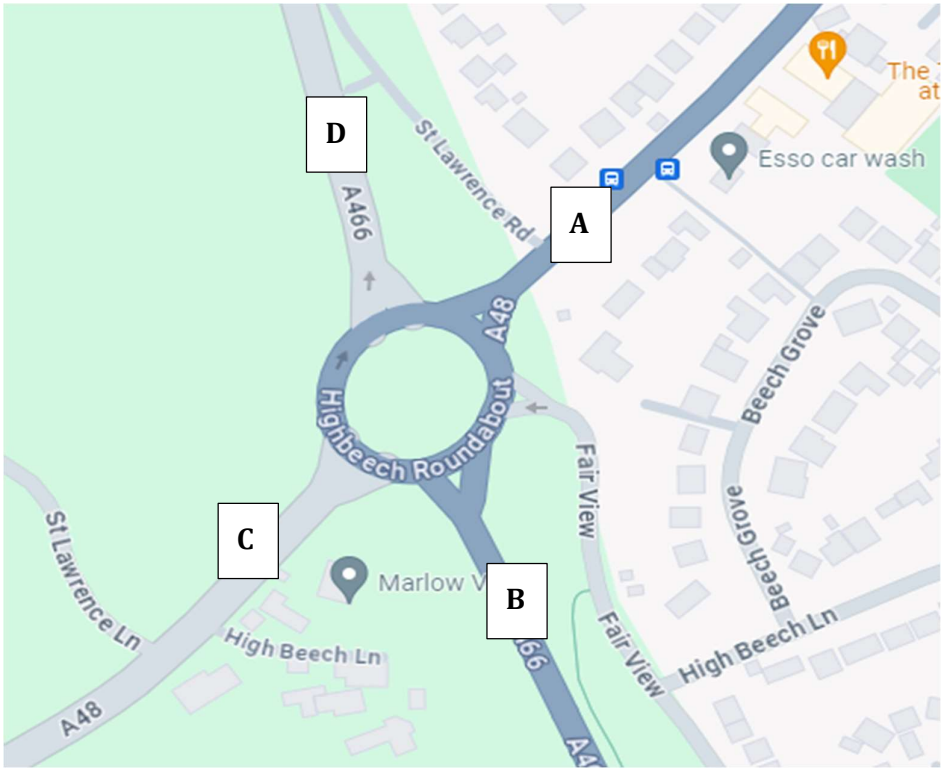


Table 9: Chepstow Localised Analysis

Time Period	AM	PM	Daily 24hr
DM			
A	1215	1175	27754
B	1686	1887	41862
C	1472	1496	34571
D	952	1069	23683
DS			
A	1181	1158	27185
B	1723	1922	42697
C	1529	1563	36028
D	1000	1109	24696
Difference			
A	-34	-17	-569 (-2%)
B	37	35	835 (2%)
C	57	67	1457 (4%)
D	48	40	1013 (4%)

The detailed analysis shows that three out of the four roads around Highbeech roundabout see an increase in traffic flow with the largest increase along the A48 to the west. However, there is a decrease in traffic flow along the A48 into Chepstow, further analysis shows this decrease is out of Chepstow in the AM peak and into Chepstow in the PM which represents the tidal flow. This is likely due to individuals deciding to re-route their journeys around Chepstow due to the increased congestion at the Highbeech Roundabout in the DS scenario.

Severnside

Further to the strategic overview of Severnside presented in Section 3, this section will look at three key routes identified within Severnside, the A48, B4245 and Parkwall Rd (A48), as presented in the figure 4. The analysis will present the traffic volume along the routes for the DM and DS.

Figure 4: Severnside key highway Network

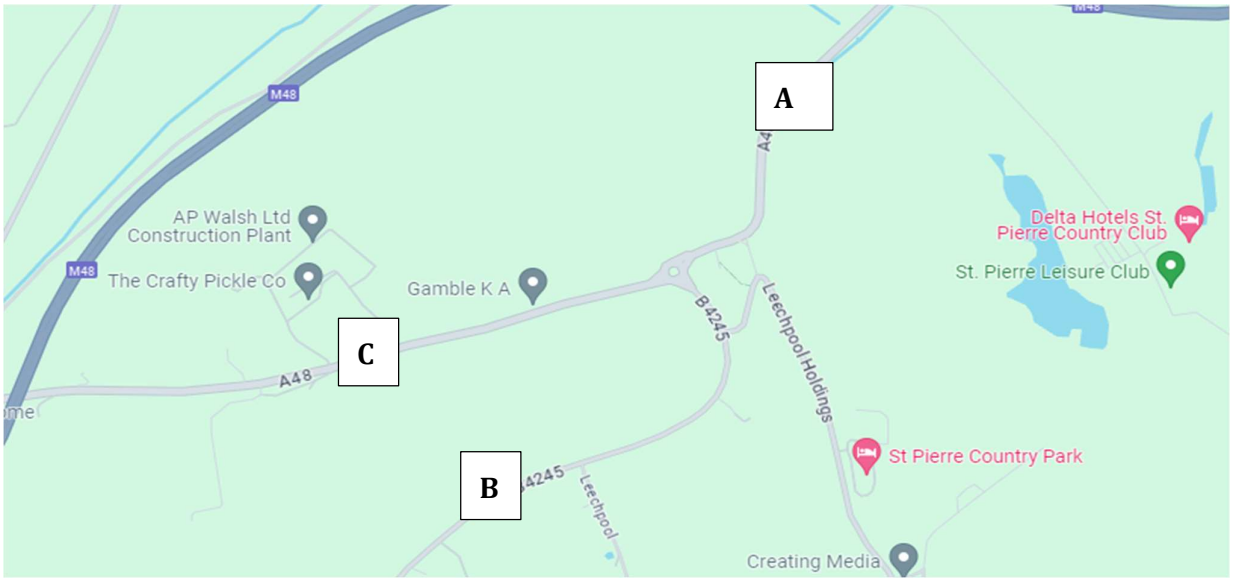


Table 10: Servenside Localised Analysis

Time Period	AM	PM	Daily 24hr
DM			
A	1359	1369	31758
B	726	738	17053
C	640	643	14934
DS			
A	1416	1437	33229
B	783	785	18249
C	641	669	15284
Difference			
A	57	68	1470 (5%)
B	57	47	1196 (7%)
C	1	26	350 (2%)

All routes in Severnside see an increase ranging from 2% to 7% in daily traffic, this would be expected due to the significant level of housing allocation in the area. It is generally considered that an impact greater than 5% could potential be meaningful and should be considered in more detail on a local level. This would be suggested for the B4245 and associated junctions along the route. The strategic modelling results have identified this location as a potential pinch point on the local network. Due to the strategic nature of the Regional Transport Model it is limited to provide accurate analysis at a local level. It it

recommended that additional local analysis be undertaken at the local as part of the development Transport Impact Assessment.

In the sector analysis presented in Section 3 Severnside shows the largest increase in highway traffic, both the A48 and B4245 have a large increase of over 1,000 additional vehicles in a 24hr period.

Monmouth

For Monmouth the following key routes, A40, A466 and Dixton Rd, have been identified as part of the localised analysis. Figure 5 shows the locations of the key routes in Monmouth and table 10 shows the impact of the housing on trip levels

Figure 5: Monmouth key highway Network

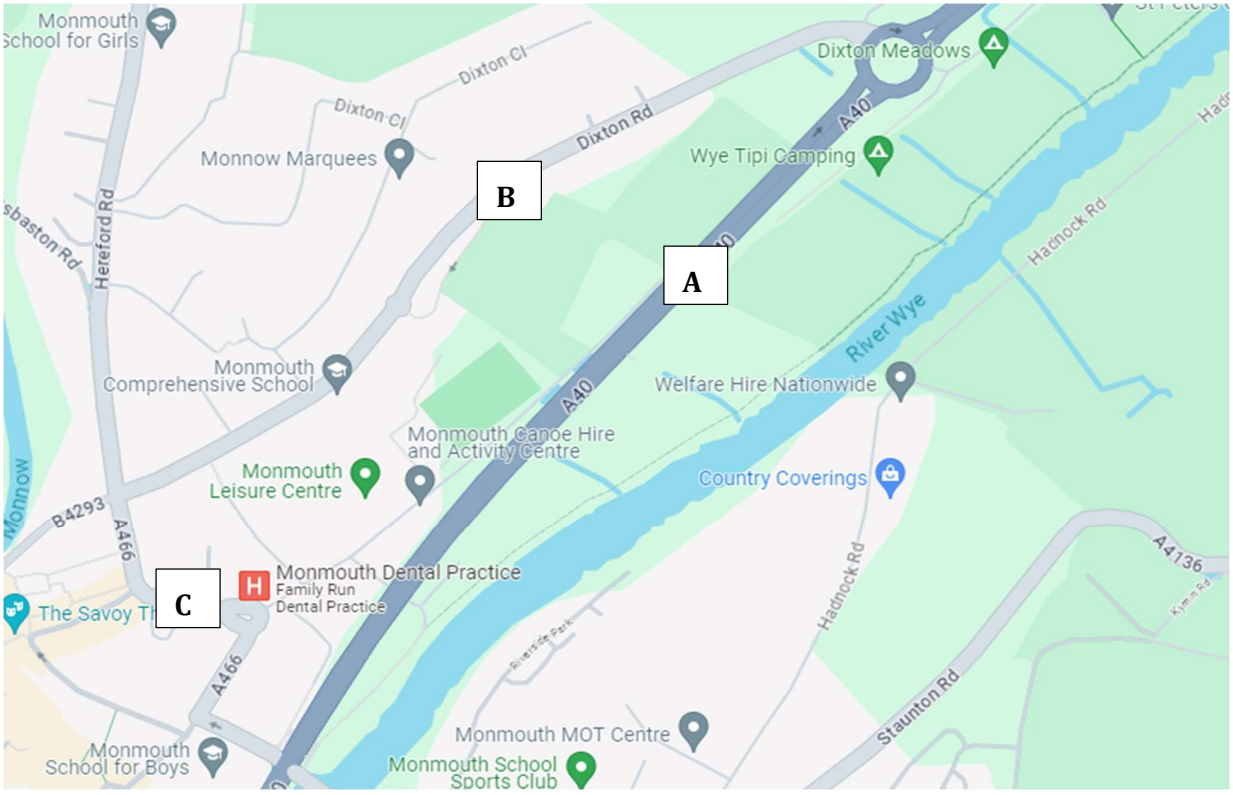


Table 11: Monmouth Localised Analysis

Time Period	AM	PM	24hr
DM			
A	2617	2654	61388
B	829	878	19933
C (one way)	481	414	10320
DS			
A	2670	2665	62073

B	865	890	20457
C (one way)	481	422	10424
Difference			
A	53	11	685 (1%)
B	36	12	524 (3%)
C (one way)	0	8	104 (1%)

Monmouth has the second largest growth in terms of traffic outlined in section 3 and this is equivalent to between 1% and 3% along the A40 and Dixton Road. The analysis shows that the largest impact is along Dixton Road and through the Monmouth town rather than around the town with an additional 524 trips over a 24 hour period.

Abergavenny

Further analysis was also requested in Abergavenny along key highway links, these included A465, A40 and A4042 Hardwick Roundabout. The figure below presents the locations of the links identified.

Figure 6: Abergavenny key highway Network

Table 11 presents the total traffic volume along the key routes south of Abergavenny.

Table 12: Abergavenny Localised Analysis

Time Period	AM	PM	24hr
DM			
A	476	460	10869
B	472	463	10867
C	1022	961	22989
D	2534	2588	59679
E	1826	1756	41583
DS			
A	476	460	10869
B	483	468	11045
C	1052	987	23635
D	2566	2623	60463
E	1892	1831	43236
Difference			
A	0	0	0
B	11	5	178 (2%)
C	30	26	646 (3%)
D	32	35	784 (1%)
E	66	75	1654 (4%)

The local analysis around Abergavenny shows that all routes increase in terms of traffic volume except for the A465 which shows no increase in trip volumes. This could be due to rerouting through Abergavenny rather than along the A465 or no direct developments to the north of the A465. However the increase along the key routes identified is minimal with the largest seen within Abergavenny itself.

5 Additional Windfall Housing Allowances

Monmouthshire County Council informed TfW that some additional housing allowances were excluded from the original RLDP data provided at the start of the commission. Through discussions with MCC it was shown that the RLDP allowance didn't include the small sites, windfall and rural settlement allowance that is included within MCCs RLDP Housing Supply Component . However these additional housing (small sites, windfall and rural settlements allowance) do not currently have specific locations. In the absence of specific locations and sizes the additional housing cannot be represented as developments within the South East Wales Regional Transport Model.

Furthermore the percentage difference in each sector caused by the windfall allowances predicted is less than 5% it is deemed minimal and would have no significant impact on the strategic transport network. However it is generally considered that an impact greater than 5% could potential be meaningful and should be considered in more detail on a local level.

6 Conclusion

The analysis presented in this document is to provide a non-technical narrative of the detailed transport modelling results presented in the Technical Note in Appendix A prepared by Motts. The analysis in this document shows the impact of the proposed RLDP housing allocations using the SEWTM for Monmouthshire STA on the transport network.

The main conclusion is as follow;

- The largest impact is seen within Severnside and Abergavenny;
- The largest growth in highway traffic is seen as internal movements within large settlements such as Abergavenny and Severnside;
- The largest growth in public transport demand is also seen in Severnside and Abergavenny on the bus network;
- The largest growth in rail demand is seen travel to and from Severnside where the largest growth in housing is expected;
- There is limited mode shift [2]following the additional housing developments – majority of trips are seen on the highway network; and
- There is no change in the overall transport mode share within the region.

[2] Mode shift is based on existing public transport and active travel provision. The analysis does not represent the potential significant impact on mode share as a result of national aspirations to make public transport and active travel improvements to the network by 2040.