Technical Note E

Project:	Wisbech Area Transport Study	**To:**	FDC
Subject:	Fenland LDF Neighbourhood Planning options	**From:**	Atkins
Date:	13th February 2012	**cc:**	

1. Introduction

This Technical Note summarises the revised requirements of Fenland District Council (FDC) for testing the proposed Local Development Framework options as developed in the neighbourhood planning reports (formerly Shaping Fenland Future Study). It is also based on work to revise the Fenland Communities Development Plan consultation document from July 2011.. An updated brief was provided to ATKINS in December 2011 with revised requirements for growth in Wisbech and additional requirements for testing using the Wisbech Traffic Model were described.

In terms of network development, detailed information on PPM and PPK values in the updating of the Future Year network is provided in Technical Note D – 'TN D Wisbech SFF.pdf ' with an update for year 2031 in the coding of infrastructure for the options.

The forecast year to be modelled is 2031. This is consistent with the recent Fenland Communities Deevlopment Plan consultation document from July 2011 and the Neighbourhood Planning Stage 2 report.

From the information available, the following options were undertaken as an initial assessment of the impacts of the Neighbourhood Planning study, which forms the basis of Fenlands Core Strategy and Local Development Framework for Wisbech:

- Do – Minimum scenarios for 2031, to include all committed developments and background growth, controlled to TEMPRO 6.2 growth projections (DM) for areas outside Wisbech;
- Do – Something 1 scenarios for 2031, to include the DM above, + growth Option 1 controlled to TEMPRO 6.2 growth projections (DS1) for areas outside Wisbech; and
- Do – Something 2 scenarios for 2031, to include the DM above, + growth Option 2 controlled to TEMPRO 6.2 growth projections (DS2) for areas outside Wisbech

2. Local Highway Model – Future Year Network Development

PPM and PPK Values

This section provides detail on the Pence per Minute (PPM) and Pence per Kilometre (PPK) parameters used for the Wisbech Area Transport Study (WATS) – the Neighbourhood Planning options.

The PPM and PPK parameters represent the travellers' valuation of the time and distance of each journey, and the ratio between the two. The interaction of these parameters has significant effect on route choice. If time is highly valued but distance is not, then the quickest route will be chosen no matter how far it is; conversely, if distance is highly valued but time is not, the shortest route would be chosen no matter how slow it is. Generally, the route choice is a balance between the relative importance of time and distance to the traveller.

These parameters are predicted to change through time: they were calculated for the 2008 base year (as described in the WATS Local Model Validation Report), and the following paragraphs outline the methodology used for the forecast years.

Detailed methodology for calculating the PPM and PPK value can be found in document- 'TN19 Wisbech SFF Tech Note.docx ' submitted to FDC in August 2011.

PPM and PPK Parameters: Final Values

When input into the SATURN models, the PPM and PPK values are given as a ratio, rather than absolute values. The final parameters for the 2031 models are given in Table 2.1 below.

Table 2.1 – 2031 PPM and PPK Parameters

User Class	Absolute Values (2002 prices)						Model Parameters					
	AM		IP		PM		AM		IP		PM	
	PPM	PPK	PPM	PPK	PPM	PPK	PPM	PPK	PPM	PPK	PPM	PPK
UC1	13.00	7.12	15.12	7.28	13.96	7.19	1.00	0.55	1.00	0.48	1.00	0.51
UC2	24.95	6.72	16.43	6.42	17.12	6.26	1.00	0.27	1.00	0.39	1.00	0.37
UC3	46.23	10.42	45.96	9.84	58.56	10.07	1.00	0.23	1.00	0.21	1.00	0.17
UC4	15.55	6.78	17.48	6.64	17.68	6.73	1.00	0.44	1.00	0.38	1.00	0.38
UC5	25.75	22.54	25.96	22.20	21.28	22.61	1.00	0.88	1.00	0.86	1.00	1.06
UC6	22.56	42.07	23.20	41.10	21.28	42.23	1.00	1.86	1.00	1.77	1.00	2.98

3. Forecast Year Scenario Definitions

The forecast year for this study is 2031; and the forecast scenarios for this study are Do Minimum (DM), Do Something 1 (DS1) and Do Something 2 (DS2). The definitions of these forecast year scenarios are given in the sections below.

Do Minimum

The DM scenario consists of all committed developments within Wisbech. For light vehicles, the total growth level is controlled to the levels as defined by TEMPRO 6.2 (Trip End Model PROjections) growth forecasts, for areas outside Wisbech. For heavy vehicles, the total growth level is controlled to the levels as defined by National Transport Model (NTM) 2009 (Revised May 2010).

Housing and Employment Developments

The DM scenario consists of all committed housing and employment developments as outlined in the revised brief.

Table 3.1 shows the committed housing developments within Wisbech that have been defined in the updated brief dated December 2011.

Table 3.1 – Housing Growth Figures 2011-2031

Wisbech	Number of Dwellings
Commitments	860
Windfall	600
Total Housings	**1460**

* *Commitments from 2008-2011 is 265 dwelling units as per updated brief*

Where known housing development sites have been identified, the trips associated with the developments have been distributed into specific zones, representative of the geographical location of the sites. For employment developments, existing planning application documents for all committed employment developments have been reviewed. FDC suggested a growth of 500 jobs for DM scenario with Wisbech Stadium and Tesco stores site already being committed. Similar to the housing developments, trips associated with known employment development sites have been distributed into specific zones. The growth of trips outside Wisbech was then controlled to TEMPRO 6.2 levels.

Do Something 1

The DS1 scenario includes all the committed developments included in the DM scenario and developments from option 1. The locations of the sites are shown in Figure 3.1.

The levels of housing and employment developments in the DS option 1 (for 2011 to 2031) are described in table 3.2

Similar to the DM scenario, the overall growth for DS1 scenario outside Wisbech has been controlled to the TEMPRO 6.2 levels.

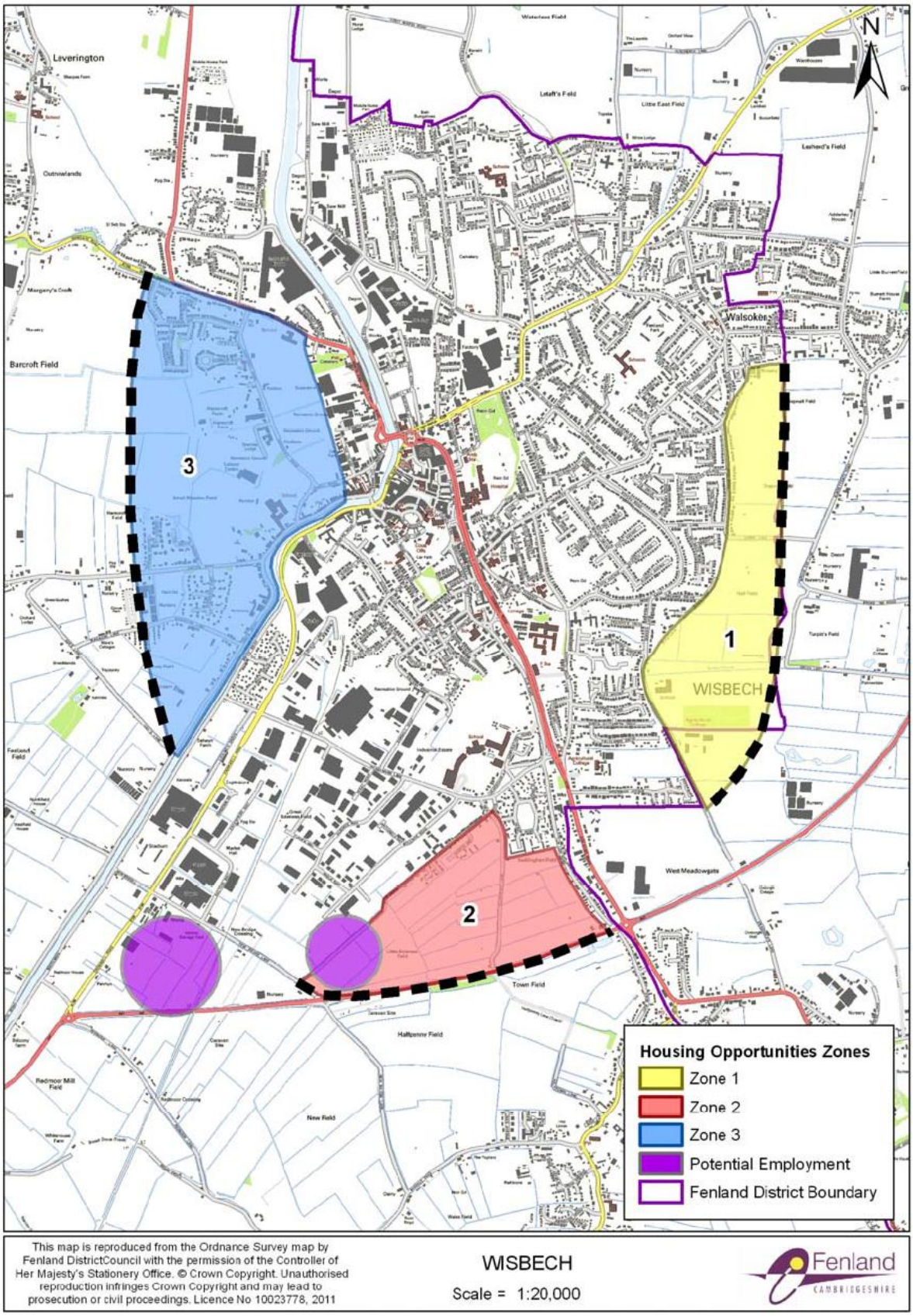
Total jobs increase in DS1 is assumed to be 1304 jobs which are distributed among the proposed employment sites.

Table 3.2 – Option 1 housing Elements

Housing Trajectory Element	No of Dwellings (2011 – 2031)
Commitments	860
Windfall	600
Kings Lynn & West Norfolk – new development	500
Fenland – East Opportunity Zone	1000
Fenland – West Opportunity zone	750
TOTAL Housing	**3710**

* *Commitments from 2008-2011 is 265 dwelling units as per updated brief*

Figure 3.1 – Opportunity Zone Locations


Leverington
Outnwlands
Barcroft Field
Walsoken
WISBECH
West Meadowgate
Town Field
Redmoor Mill Field
New Field
1
2
3
N
Housing Opportunities Zones
Zone 1
Zone 2
Zone 3
Potential Employment
Fenland District Boundary
This map is reproduced from the Ordnance Survey map by Fenland DistrictCouncil with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence No 10023778, 2011
WISBECH
Scale = 1:20,000
Fenland
CAMBRIDGESHIRE

Do Something 2

The DS2 scenario includes all the committed developments included in the DM scenario and developments from option 2. The locations of the sites are shown in Figure 3.1.

The levels of housing and employment developments in the DS option 2 (for 2011 to 2031) are described in table 3.3.

Similar to the DM scenario, the overall growth for DS2 scenario outside Wisbech has been controlled to the TEMPRO 6.2 levels.

Total jobs increase in DS2 is assumed to be 2000 jobs which are distributed among the proposed employment sites.

Table 3.3 – Option 2 housing Elements

Housing Trajectory Element	No of Dwellings (2011 – 2031)
Commitments	860
Windfall	600
Kings Lynn & West Norfolk – new development	500
Fenland – East Opportunity Zone	1000
Fenland – West Opportunity zone	2000
Fenland – South Opportunity Zone	250
TOTAL	**5210**

* *Commitments from 2008-2011 is 265 dwelling units as per updated brief*

Forecast Year Demand

The methodology to produce the forecast year demands for 2031 demand matrices for the WATS SATURN model are set out below. The process uses several different growth sources:

- TEMPRO 6.2 provides projections of growth over time for use in local and regional transport models. It presents projections of growth in planning data, car ownership, and resultant growth in trip-making by different modes of transport under a constant cost assumption. The information is provided for over 2,500 zones, and can be aggregated into towns, districts or counties. For this study, trip end growth data for Wisbech, Fenland, Cambridgeshire and Rest of Country has been extracted from TEMPRO and is used to provide forecasts of all light vehicle user classes (i.e. UC1 to UC4) for areas outside Wisbech.
- For the heavy vehicle user classes (i.e. UC5 & UC6), trip end growth factors from NTM 2009 (May 2010 revision) was used. The NTM 2009 published by Department for Transport (DfT) provides forecasts of road traffic growth by region and by vehicle type.
- The FDC SHLAA document, 2007 Employment Land Review document and other planning application data provide information on the committed housing and employment developments in and around Wisbech which are included in all forecast year scenarios (i.e. DM, DS1 & DS2).

- The Neighbourhood Planning study provides housing and employment information to be included in the DS1 and DS2 scenarios supplemented by updated housing and employment growth figures provided by FDC in December 2011.
- TRICS (Trip Rate Information Computer System) is a database of surveys from developments across the county, which can be interrogated to provide an estimate of the number of trips that will be generated by a new development. The information can be tailored to suit the individual development, taking into account trends in that area of the country, and/or location of the development within or outside a town, and/or its size etc.
- The forecast year demand matrices were calculated separately for each user class, time period, forecast year and scenario. Table3.4 below summarises the growth approach undertaken for forecasting matrices to 2031

Table 3.4 - Matrix growth factors from 2008 to 2031

Origins /Destinations	Growth Factors
Development sites	TRICS/Fuel/Income
Wisbech Town	Fuel/Income
Rest of Model	TEMPRO/Fuel/Income

Final Forecast Year Matrices

Matrix Totals

Table 3.5 below show the demand matrix totals for all forecast years, time periods and modelled scenarios. As expected, the matrix totals for the DS2 are higher than DS1 which is still higher than DM.

As described in the modelling brief, mode choice factors from the Preferred Public Transport Option detailed in PT Tech Note C dated 6th January 2011 have been taken into account. Thus after creating the demand matrices, a part of the demand which represents the likely ridership due to additional DM Bus Service – Route D has been sieved out from car user classes. Table 3.5 below represents the final matrices after the above mentioned procedure has been applied.

Table 3.6 summarises the PT ridership on the new committed bus service – Route D for various modelled scenarios.

Table 3.5 – Matrix Totals

Scenario		AM	IP	PM
2008 Base		10,459	9,830	11,289
2031 DM		13,442	13,179	14,518
2031 DM – 2008 Base	*Difference*	*2,983*	*3,349*	*3,229*
	% Difference	*28.52%*	*34.07%*	*28.60%*

2031 DS1		14,253	13,813	15,346
2031 DS1 – 2008 Base	*Difference*	*3,794*	*3,983*	*4,057*
	% Difference	*36.28%*	*40.52%*	*35.94%*

2031 DS2		14,830	14,269	15,941
2031 DS2 – 2008 Base	*Difference*	*4,371*	*4,439*	*4,652*
	% Difference	*41.79%*	*45.16%*	*41.20%*

Table 3.6 – PT Ridership on new bus service

	DM	DS1	DS2
AM 2031	79	127	150
IP 2031	26	45	54
PM 2031	80	125	146

4. Forecasting Results

Do-Minimum

The results from each forecast year and time period vary in terms of the level of congestion, delay and overall journey time in and around Wisbech, therefore each value has been taken from the AM, IP and PM time periods, with the worse performing time period highlighted.

Table 4.1 below summarises the key SATURN statistics.

- Transient Queues (in PCU hours) – For example, at traffic signals the transient queue corresponds to the queue that develops during the red phase and then dissipates during the subsequent green phase.
- Over-Capacity Queues (in PCU hours) – These occur only for turning movements in excess of capacity where a permanent queue builds up which is unable to clear in a single cycle.
- Link Cruise Time (in PCU hours) – This is the time spent travelling on links within the model, as distinct from time spent in queues at junctions.
- Total Travel Time (in PCU hours) – This is the sum of Transient Queue time, Over-Capacity Queue time and Link Cruise time.
- Total Distance (in km) – This is the total distance travelled by all vehicles in the network.
- Average Speed (in kph) – This is the average speed of vehicles in the network. (It is simply the Total Distance divided by the Total Travel Time).
- Average Trip Time (in PCU hours) – This is the average length of time taken for each trip. (It is calculated as the Total Travel Time divided by the number of trips.)
- Average Trip Distance (in km) – This is the average distance covered by each trip. (It is calculated as the Total Distance divided by the number of trips.)

The SATURN summary statistics from Table 4.1 clearly show that as demand increases on the Do-Minimum network from the 2008 base to the forecast years, the level of congestion and delay increases through time as expected. This is reflected in the increase of the Total Travel Time, Transient and Over-Capacity queues, along with the decrease in Average Speed across the network.

Table 4.1– Summary of SATURN Statistics

Indicator	Time Period	2008	2031 DM	2031 DS1	2031 DS2
Transient Queues (PCU hrs)	Am	283	609	694	743
	IP	232	518	556	644
	Pm	318	668	768	854
Over-Capacity Queues (PCU hrs)	Am	20	337	571	840
	IP	1	376	485	661
	Pm	4	594	763	1007
Link Cruise Time (PCU hrs)	Am	1432	2010	2090	2156
	IP	1342	1964	2022	2067
	Pm	1582	2177	2270	2354
Total Travel Time (PCU hrs)	Am	1735	2956	3355	3738
	IP	1575	2858	3063	3372
	Pm	1904	3438	3800	4216
Total Distance (km)	Am	92224	123164	127492	131105
	IP	87130	121595	124785	127437
	Pm	100980	132327	137080	141390
Average Speed (kph)	Am	53.2	41.7	38	35.1
	IP	55.3	42.5	40.7	37.8
	Pm	53	38.5	36.1	33.5
Average Trip Time (PCU hrs)	Am	0.17	0.22	0.24	0.25
	IP	0.16	0.22	0.22	0.24
	Pm	0.17	0.24	0.25	0.26
Average Trip Distance (km)	Am	8.82	9.16	8.94	8.84
	IP	8.86	9.23	9.03	8.93
	Pm	8.95	9.11	8.93	8.87
Trips Loaded	Am	10459	13442	14253	14830
	IP	9830	13179	13813	14270
	Pm	11289	14518	15346	15941

Table 4.2 below compares the earlier 2026 DM model with the latest 2031 DM forecast. It should be noted that the earlier model uses NTEM 6.1 forecasts which have slightly higher growth rates than the latest NTEM 6.2 dataset. Also, earlier modelling was constrained to TEMPRO whereas 2031 is constrained to TEMPRO only for trips outside Wisbech. As expected without constraint to TEMPRO 2031 DM scenario has less trips than 2026 DM scenarios modelled earlier.

Table 4.2– Comparison of DM 2031 SATURN Statistics with earlier 2026 model

Indicator	Time Period	2026 DM	2031 DM	Difference	percentage
Transient Queues (PCU hrs)	Am	660	609	-51	-8%
	IP	516	518	2	0%
	Pm	740	668	-72	-10%
Over-Capacity Queues (PCU hrs)	Am	453	337	-115	-25%
	IP	456	376	-79	-17%
	Pm	664	594	-70	-11%
Link Cruise Time (PCU hrs)	Am	2052	2010	-42	-2%
	IP	1918	1964	46	2%
	Pm	2269	2177	-92	-4%
Total Travel Time (PCU hrs)	Am	3165	2956	-209	-7%
	IP	2928	2858	-70	-2%
	Pm	3673	3438	-234	-6%
Total Distance (km)	Am	124626	123164	-1462	-1%
	IP	120039	121595	1556	1%
	Pm	136996	132327	-4669	-3%
Average Speed (kph)	Am	39.4	41.7	2.3	6%
	IP	41	42.5	1.5	4%
	Pm	37.3	38.5	1.2	3%
Average Trip Time (PCU hrs)	Am	0.23	0.22	-0.01	-3%
	IP	0.22	0.22	0.00	0%
	Pm	0.24	0.24	-0.01	-3%
Average Trip Distance (km)	Am	8.94	9.16	0.22	3%
	IP	8.90	9.23	0.33	4%
	Pm	9.06	9.11	0.05	1%
Trips Loaded	Am	13942	13442	-500	-4%
	IP	13489	13179	-309	-2%
	Pm	15122	14518	-604	-4%

Key Junctions:

Key junctions within the study area have been identified and have been monitored in terms of delays and flows to provide an indication of the stress at each junction under each scenario. The ten key junctions are set out in paragraph 2.3 of Technical Note B, but are repeated here for convenience.

- A47/A141 Roundabout
- A47 / B198 Cromwell Road Roundabout
- A47 / A1101 Elm High Road Roundabout
- A47 / B198 Lynn Road Roundabout

- A1101 Leverington Road / B1169 Dowgate Road traffic signals
- Town Bridge traffic signals
- Freedom Bridge Roundabout
- B198 Lynn Road / Mount Pleasant Road traffic signals
- A1101 Elm High Road / Ramnoth Road traffic signals
- B198 Cromwell Road / Weasenham Lane junction.

Tables 4.3 to 4.5 below summarises the flows and delays at key junctions mentioned above. It is to be noted that at some of the junctions the actual flow for DS2 is less than DM2031. This is because some the demand which wants to use the junction is queued up elsewhere on the network. Thus Demand flow at junctions provides a true picture of the traffic which wants to use the junction.

It can also be interpreted from the table that delays at junctions broadly remain the same or increase with increases in demand. There is a slight discrepancy at Cromwell Rd/Weasenham Lane junction and Town Bridge Traffic signals which can be accounted for by the fact that some of the traffic destined for the junction is queued elsewhere and hence lower actual flow in DS2 which leads to slightly less delays.

Table 4.3– AM Peak - Summary of Junction Delay and Flow Comparison

Junction		DM2026	DM2031	DS1	DS2
A47 / A141 rbt	Delay	26	21	21	20
	Actual Flow	3385	3143	3121	3108
	Demand Flow	3579	3284	3320	3340
A47 / B198 Cromwell Road rbt	Delay	18	17	17	17
	Actual Flow	2857	2764	2760	2690
	Demand Flow	3030	2900	2945	2894
A47 A1101 Elm High Road rbt	Delay	149	137	142	134
	Actual Flow	3438	3395	3415	3411
	Demand Flow	3514	3441	3500	3530
A47 / B198 Lynn Road rbt	Delay	16	16	16	16
	Actual Flow	2580	2591	2583	2569
	Demand Flow	2641	2638	2654	2665
A1101 Leverington Road / B1169 Dowgate Road traffic signals	Delay	170	90	261	481
	Actual Flow	1840	1794	1910	1999
	Demand Flow	1859	1804	1951	2061
Town Bridge Traffic signals	Delay	106	95	75	78
	Actual Flow	1677	1626	1719	1698
	Demand Flow	1773	1668	1929	2066

Freedom Bridge rbt	Delay	49	31	69	69
	Actual Flow	3520	3547	3630	3639
	Demand Flow	3681	3608	3896	4146
B198 Lynn Road / Mount Pleasant Road traffic signals	Delay	23	23	24	24
	Actual Flow	946	998	937	939
	Demand Flow	970	1009	979	1014
A1101 Elm High Road / Ramnoth Road traffic signals	Delay	85	81	86	88
	Actual Flow	2611	2514	2622	2647
	Demand Flow	2742	2605	2757	2820
B198 Cromwell Road / Weasenham Lane junction	Delay	224	219	217	195
	Actual Flow	1823	1840	1841	1790
	Demand Flow	1951	1932	2019	2037

Table 4.4– IP Peak - Summary of Junction Delay and Flow Comparison

Junction		DM2026	DM2031	DS1	DS2
A47 / A141 rbt	Delay	19	22	21	21
	Actual Flow	2982	3119	3117	3097
	Demand Flow	3121	3248	3272	3278
A47 / B198 Cromwell Road rbt	Delay	18	18	18	18
	Actual Flow	2835	2945	2960	2907
	Demand Flow	3066	3144	3196	3178
A47 A1101 Elm High Road rbt	Delay	57	54	59	60
	Actual Flow	3393	3425	3449	3454
	Demand Flow	3509	3523	3573	3613
A47 / B198 Lynn Road rbt	Delay	16	16	16	16
	Actual Flow	2169	2300	2309	2306
	Demand Flow	2231	2354	2374	2390
A1101 Leverington Road / B1169 Dowgate Road traffic signals	Delay	98	97	123	175
	Actual Flow	1725	1710	1760	1824
	Demand Flow	1742	1723	1784	1859
Town Bridge Traffic signals	Delay	56	54	57	60
	Actual Flow	1724	1696	1753	1777
	Demand Flow	1841	1791	1904	2037
Freedom Bridge rbt	Delay	30	26	47	55
	Actual Flow	3593	3548	3719	3782
	Demand Flow	3693	3636	3851	4031
B198 Lynn Road / Mount Pleasant Road traffic signals	Delay	19	14	14	13
	Actual Flow	719	852	854	864
	Demand Flow	732	866	876	905
A1101 Elm High Road /	Delay	60	58	58	63

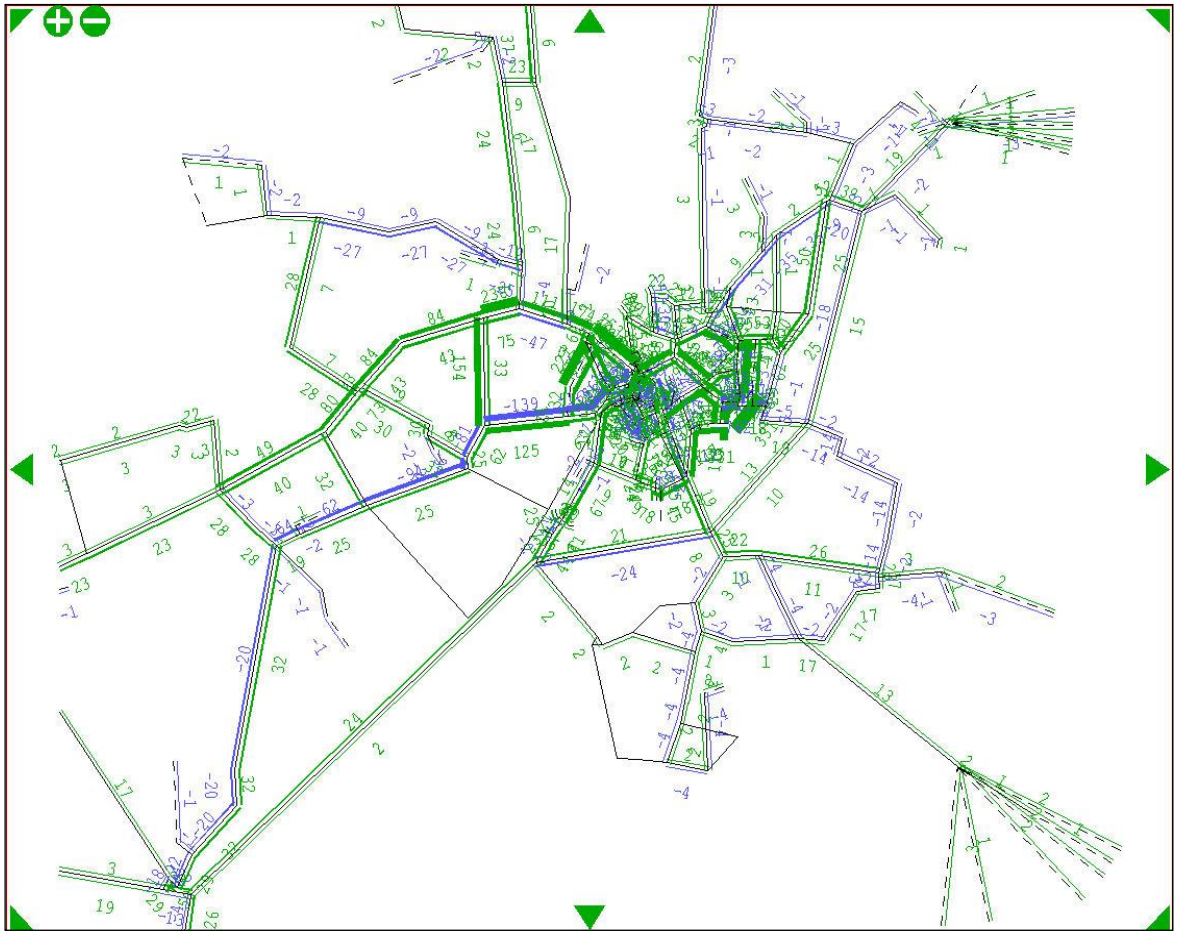
Ramnoth Road traffic signals	Actual Flow	2128	2042	2077	2196
	Demand Flow	2179	2093	2143	2291
B198 Cromwell Road / Weasenham Lane junction	Delay	134	105	114	113
	Actual Flow	1692	1666	1664	1645
	Demand Flow	1840	1795	1825	1850

Table 4.5– PM Peak - Summary of Junction Delay and Flow Comparison

Junction		DM2026	DM2031	DS1	DS2
A47 / A141 rbt	Delay	22	21	22	22
	Actual Flow	3446	3343	3370	3383
	Demand Flow	3635	3511	3567	3596
A47 / B198 Cromwell Road rbt	Delay	119	120	137	141
	Actual Flow	3259	3183	3200	3202
	Demand Flow	3449	3350	3417	3453
A47 A1101 Elm High Road rbt	Delay	189	166	173	171
	Actual Flow	3812	3685	3694	3701
	Demand Flow	3956	3821	3883	3936
A47 / B198 Lynn Road rbt	Delay	18	17	18	18
	Actual Flow	2973	2790	2808	2795
	Demand Flow	3108	2903	2952	2966
A1101 Leverington Road / B1169 Dowgate Road traffic signals	Delay	132	109	143	274
	Actual Flow	1682	1662	1745	1898
	Demand Flow	1725	1698	1805	2006
Town Bridge Traffic signals	Delay	72	66	87	116
	Actual Flow	1758	1716	1645	1714
	Demand Flow	1915	1856	1842	1962
Freedom Bridge rbt	Delay	41	34	53	68
	Actual Flow	3661	3590	3792	3924
	Demand Flow	3822	3722	4015	4272
B198 Lynn Road / Mount Pleasant Road traffic signals	Delay	21	19	21	20
	Actual Flow	1162	1179	1198	1190
	Demand Flow	1203	1211	1251	1265
A1101 Elm High Road / Ramnoth Road traffic signals	Delay	90	79	89	94
	Actual Flow	2444	2268	2353	2337
	Demand Flow	2548	2350	2458	2511
B198 Cromwell Road / Weasenham Lane junction	Delay	49	46	53	56
	Actual Flow	1408	1424	1441	1441
	Demand Flow	1582	1593	1637	1659

Figures 4.1 to 4.4 below shows the flow and delay difference plots for DS1/DS2 scenarios as compared to DM. Flow difference plots highlight the areas within Wisbech where additional developments are going in each of the respective scenario.
Figure 4.1 shows trips loading from the Eastern and Western developments in AM peak hour. Figure 4.2 highlights the junctions which experience large delays due to the additional traffic in DS1. It can be seen that most of the delays are experienced due to Western development.

Figure 4.1– Do Something 1 – Do Minimum demand flow difference plot



Figures 4.3 and 4.4 shows the extra developments in Western zones leads to more congestion on adjacent junctions. There is not much increase in flow and delays between DM and DS options along Southern Wisbech development zones though DS options are slightly more congested.

Figure 4.2 – Do Something 1 – Do Minimum delay difference plot

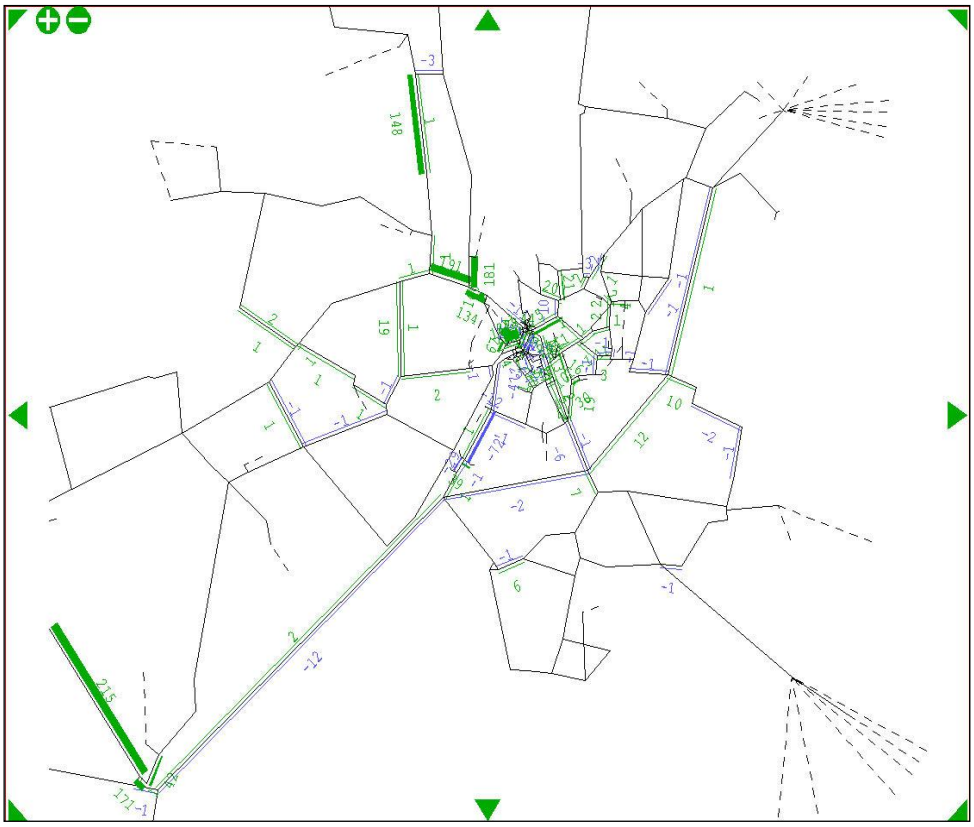


Figure 4.3 – Do Something 2 – Do Minimum demand flow difference plot

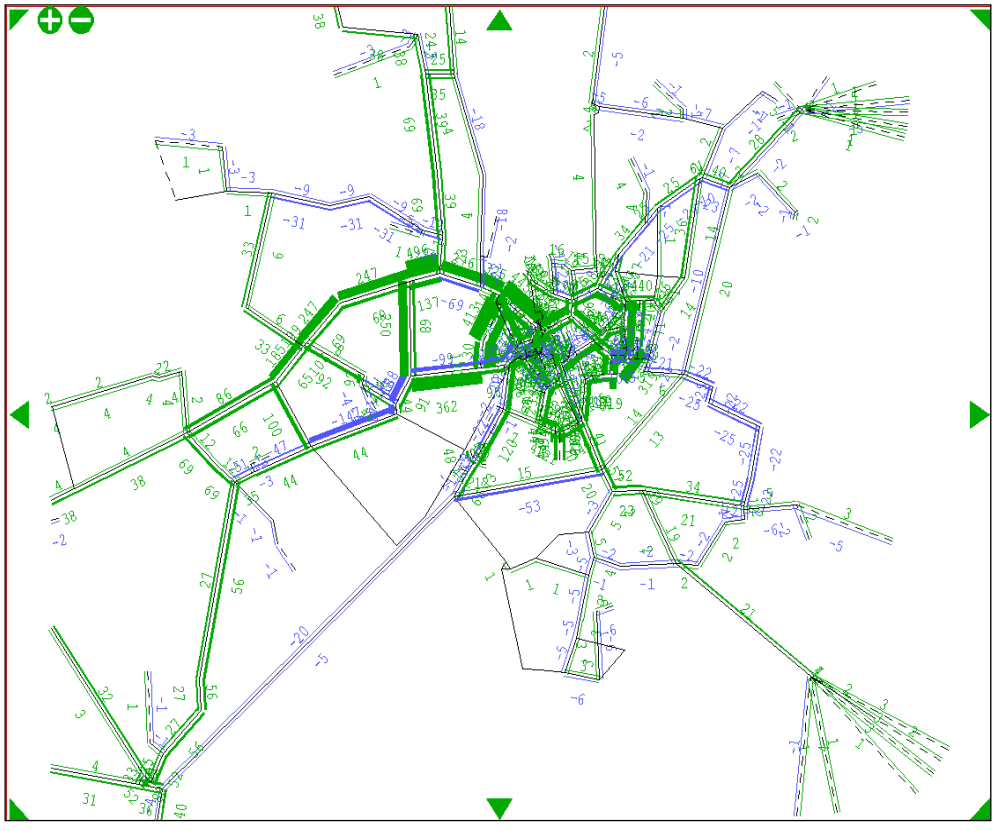
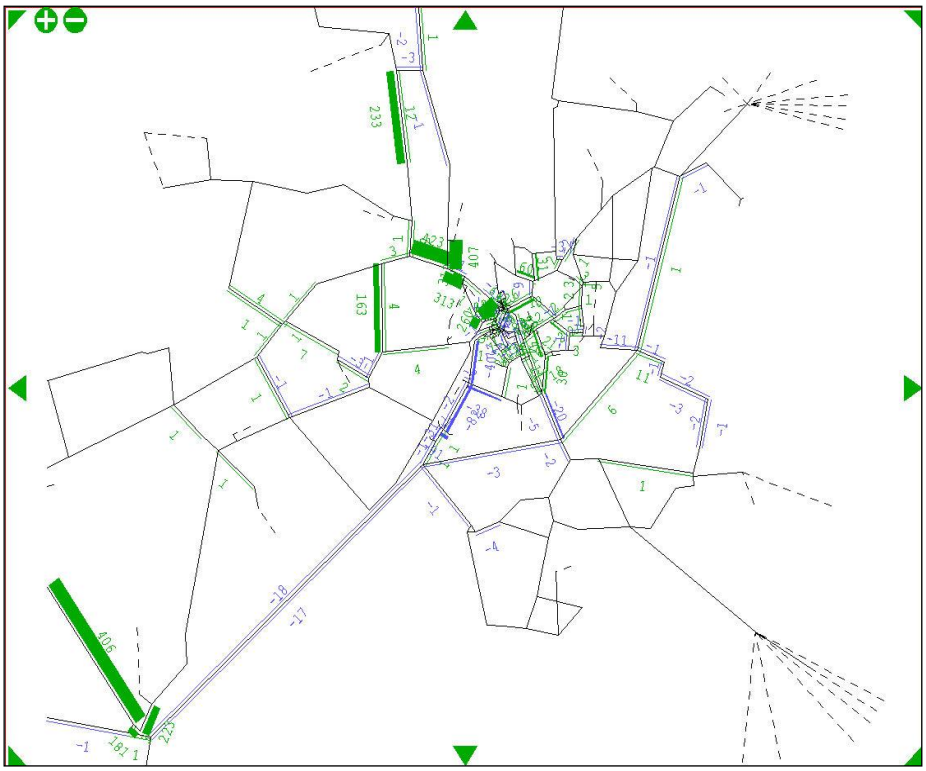


Figure 4.4 – Do Something 1 – Do Minimum delay difference plot



5. Conclusion

The Neighbourhood Planning Study identified three locations in support of the Local Development Framework. Further work by FDC identified 2 different development options which have been forecasted and tested for year 2031. In addition a DM for 2031 was also developed for a low growth scenario.

All the options have been based on TEMPRO 6.2 car growth for areas outside Wisbech and specific developments have been used for forecasting trips within Wisbech using the TRICS database.

NTM model have been used for forecasting OGV1 and OGV2 user classes.

From the analysis undertaken on the SATURN summary statistics, junction delay and traffic flow of the ten key junctions in the Wisbech Urban area, it can be seen that the performance of the network degrades as we compare DM to DS1 and DS2. However, the main increase in congestion from 2008 to 2031 is caused by DM growth, which highlights the fact that most of the congestion within Wisbech by 2031 will be caused due to the background growth which is dependent upon changes is fuel cost, income levels and trips making behaviour of the people.

The congestion in DS1 and DS2 is in line with development assumptions and could be mitigated with network improvement measures to bring it to DM levels. The main problem that the model highlights lies is the fact that something needs to be done for the DM scenario to make it work and reduce delays to acceptable levels.

DS1 and DS2 assessments show a very small decrease in overall network average speeds by 2031, indicating that compared to the DM they have the potential to cause increased journey times and junction delays.

Comparing the DM, DS1 and DS2 plots shows that similar areas of the network are showing signs of stress in all cases, with the 2031 networks showing the highest number of links with a volume over capacity (VoverC) value in excess of 85%, with the same links being highlighted in the DS1 and DS2 options, with the worst time period being AM peak for DS2 scenario.

From the analysis undertaken it is clear that a number of links and junctions in the Wisbech area will present capacity issues under a Do-Minimum scenario particularly in 2031, applying the Neighbourhood Planning Study options produces similar results to the DM situation, but with a greater number of links approaching capacity, increased junction delays and lower average speeds across the network.

It should be stressed that no major infrastructure improvements have been modelled, and that localised junction improvements may result in reducing the level of delays and link capacities observed in the options assessed so far.