A.1 APPENDIX A – Detailed Assessment of Options

Objective: Impact on All Users

Sub Objectives: Various Traffic Indicators

Methodology

This objective has considered the following:

Vehicle Hours	Total vehicle hours for trips within the model area
Vehicle Kilometres	Total vehicle kilometres for trips within the model area
Vehicle Speeds	The Average speed for trips within the model area
Average Trip Length	The Average trip length for trips within the model
Development Demand	The total trip demand

Results

	Option1		Option 1 +Additional Housing		Option 2		Option 2 + Additional Housing		Option 3	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Vehicle Hours	22840	21579	23954	22207	22141	20801	23284	21233	22936	21762
% Change Rel to Opt 1	-	-	4.9%	2.9%	-3.1%	-3.6%	1.9%	-1.6%	0.4%	0.8%
Vehicle Kilometres	1337369	1289266	1349342	1299401	1329068	1278528	1340466	1284618	1341495	1294867
% Change Rel to Opt 1	-	-	0.9%	0.8%	-0.6%	-0.8%	0.2%	-0.4%	0.3%	0.4%
Vehicle Speeds (km/hr)	58.6	59.7	56.3	58.5	60.0	61.5	57.6	60.5	58.5	59.5
% Change Rel to Opt 1	-	-	-3.8%	-2.1%	2.5%	2.9%	-1.7%	1.3%	-0.1%	-0.4%
Average Trip Length (km)	18.4	18.8	18.3	18.7	18.5	19.0	18.5	18.9	18.4	18.8
% Change Rel to Opt 1	-	-	-0.3%	-0.4%	1.0%	1.4%	0.8%	0.9%	0.2%	0.2%
Development Demand	72796	68689	73650	69481	71651	67185	72350	67841	72769	68703
% Change Rel to Opt 1	-	-	1.2%	1.2%	-1.6%	-2.2%	-0.6%	-1.2%	0.0%	0.0%

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Development Impacts	Vehicle Hours	3	5	1	3	3
	Vehicle Kilometres	3	5	1	3	3
	Vehicle Speeds	3	5	1	3	3
	Average Trip Length	2.5	1	4.5	4.5	2.5
	Development Demand	3.5	5	1	2	3.5

Objective: Impact on Strategic Routes

Sub Objectives: Flows on the A38

Methodology

This assessment has considered the total flows on the A38 around Burton

Results

	Option1		Option 1 +Additional Housing		Option 2		Option 2 + Additional Housing		Option 3	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A38 South of Burton										
Nortbound	3701	3626	3826	3613	3799	3676	4053	3639	3666	3615
Southbound	2905	3491	2826	3544	2972	3365	2924	3429	2860	3516
Total	6606	7117	6652	7158	6771	7040	6977	7068	6526	7131
% Change Rel Opt 1	-	-	0.7%	0.6%	2.5%	-1.1%	5.6%	-0.7%	-1.2%	0.2%
A38 Through Burton										
Nortbound	2631	3295	2663	3248	2432	2942	2503	2894	2573	3302
Southbound	3013	2487	2890	2506	2643	2394	2627	2372	3101	2443
Total	5644	5782	5553	5754	5075	5336	5129	5266	5674	5745
% Change Rel Opt 1	-	-	-1.6%	-0.5%	-10.1%	-7.7%	-9.1%	-8.9%	0.5%	-0.6%
A38 North of Burton										
Nortbound	3055	4117	2949	4190	2997	3947	2969	4037	3053	4156
Southbound	3659	3217	3751	3263	3598	3137	3774	3133	3740	3242
Total	6713	7334	6699	7452	6595	7084	6742	7170	6793	7398
% Change Rel Opt 1	-	-	-0.2%	1.6%	-1.8%	-3.4%	0.4%	-2.2%	1.2%	0.9%

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Strategic Impact	Flows on the A38	4	4	1	2	4

Objective: Impacts on Development Users

Sub Objectives: Various development Traffic Indicators

Methodology

This objective has considered the following:

Vehicle Hours	Total vehicle hours for trips to and from the new developments
Vehicle Kilometres	Total vehicle kilometres for trips to and from the new developments
Vehicle Speeds	The Average speed for trips to and from the new developments
Average Trip Length	The Average trip length within the model area for trips to and from the new developments
Development Demand	The total trip demand to and from the new developments

Results

	Option1		Option 1 +Additional Housing		Option 2		Option 2 + Additional Housing		Option 3	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Vehicle Hours	3497	3901	4661	4841	2888	3292	4094	4123	3704	4142
% Change Rel to Opt 1	-	-	33.3%	24.1%	-17.4%	-15.6%	17.1%	5.7%	5.9%	6.2%
Vehicle Kilometres	122813	137764	148603	165051	104839	120374	129303	146355	134921	150000
% Change Rel to Opt 1	-	-	21.0%	19.8%	-14.6%	-12.6%	5.3%	6.2%	9.9%	8.9%
Vehicle Speeds (km/hr)	35.1	35.3	31.9	34.1	36.3	36.6	31.6	35.5	36.4	36.2
% Change Rel to Opt 1	-	-	-9.2%	-3.4%	3.4%	3.5%	-10.1%	0.5%	3.6%	2.5%
Average Trip Length (km)	10.5	10.3	10.5	10.3	10.1	10.0	10.2	10.0	11.1	10.8
% Change Rel to Opt 1	-	-	0.3%	-0.1%	-3.2%	-3.7%	-2.4%	-3.2%	5.9%	4.4%
Development Demand	11714	13311	14132	15962	10331	12083	12639	14613	12192	13837
% Change Rel to Opt 1	-	-	20.6%	19.9%	-11.8%	-9.2%	7.9%	9.8%	4.1%	3.9%

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Development Impacts	Vehicle Hours	2	5	1	4	3
	Vehicle Kilometres	2	5	1	3	4
	Vehicle Speeds	3	5	1	4	2
	Average Trip Length	3.5	3.5	1	2	5
	Development Demand	2	5	1	4	3

Objective: Network Impacts

Sub Objectives: Impacts on Junctions and Links

Methodology

This objective has considered the following:

Junctions An assessment has been undertaken of the number of junctions with an average V/C of >85%

Links An assessment has been undertaken of the number of links with an average V/C of >85%

Note:

These indicators have been assessed using the SATURN model for the key simulated area

A V/C Ratio of 85% is considered to represent links and junctions which are approaching capacity and hence beyond this significant delays and queuing may occur.

Results

	Option1		Option 1 +Additional Housing		Option 2		Option 2 + Additional Housing		Option 3	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
No of Junctions V/C >85%	12	13	12	19	9	11	9	13	11	13
% Change Rel to Opt 1	-	-	0.0%	46.2%	-25.0%	-15.4%	-25.0%	0.0%	-8.3%	0.0%
No of Links V/C >85%	115	132	117	148	104	115	105	122	115	137
% Change Rel to Opt 1	-	-	1.7%	12.1%	-9.6%	-12.9%	-8.7%	-7.6%	0.0%	3.8%

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Network Impacts	Junctions	4	5	1	2	3
	Links	3	5	1	2	4

Objective: Environment

Sub Objectives: CO2 and NOX

Methodology

An assessment of the levels of both Carbon Dixoide and Nigrogen Oxide has been undertaken. This has used the direct outputs from the SATURN forecast model assignments and hence the accuracy of these results should be considered in this light.

Results

	Option1		Option 1 +Additional Housing		Option 2		Option 2 + Additional Housing		Option 3	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
CO2 (Kg/hour)	36479	35602	37496	36399	35053	33851	36151	34578	36581	35693
NOX (Kg/hour)	842	814	848	829	812	777	818	794	846	821

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Environment	CO2	3	5	1	2	4
	NOX	3	5	1	2	4

Objective: Access to Public Transport

Sub Objectives: Access to existing services

Methodology

Access to Existing Buses

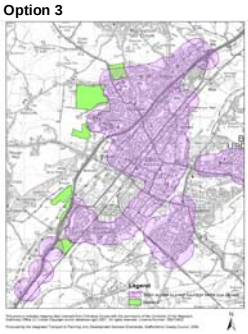
The percentage of an option's land use that is within 350m of any bus stop with at least a 30 minute frequency is used as performance indicator

Key points to note:
The access to a half hourly existing service within a 350m walk is shown in Appendix C and relicated below.

Option 1

Option 2

Option 3



Access to Rail

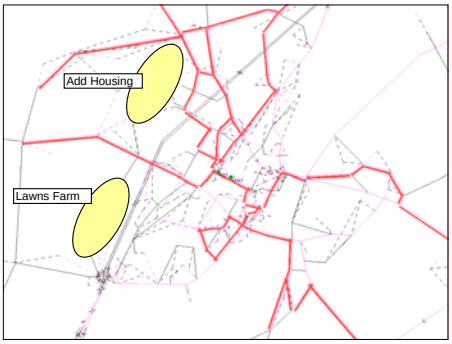
Qualitative Statement

Existing direct bus services which pass the rail Station are:

1, 2, 3, 5, 10, 21, 402, X38 V

The routes are shown opposite.

It is noted that limited direct access is viable from Lawns Farm and the additional Housing sites to the Station. Those routes which are available have limited frequencies



Results

	Option1	Option 1 +Additional Housing	Option 2	Option 2 + Additional Housing	Option 3
% of option within 350m of a half hourly or better bus service	9%	11%	21%	13%	18%

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Access to Public Transport	Bus	5	4	1	3	2
	Rail	4	4	1	1	3

Objective: Access to Non Motorised Modes

Sub Objectives: Access to existing Cycle Network

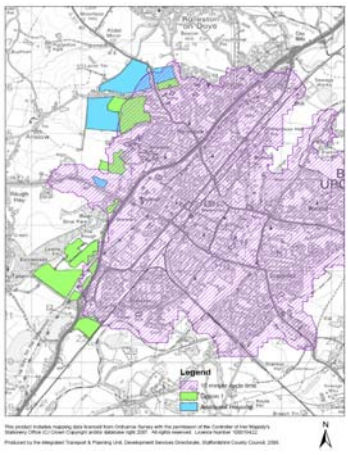
Methodology

Access to the Cycle Network

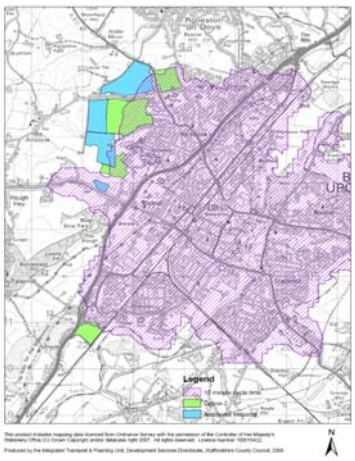
Percentage of option that can reach the town centre by cycling within 15 minutes. This assumes a cycle speed of 16kph and no access to the A38. As calculated by Accession

Key Points: Accession plot of 15 minute access is provided in Appendix D and replicated below

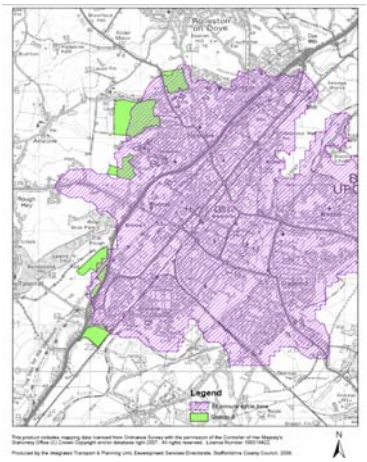
Option 1



Option 2



Option 3



Results

	Option1	Option 1 +Additional Housing	Option 2	Option 2 + Additional Housing	Option 3
% of option within 15 mins cycle travel time of town centre	41%	34%	60%	38%	56%

Overall Score

Objective	Sub Objective	Options				
		Option 1	Option 1 +Additional Housing	Option 2	Option 2 +Additional Housing	Option 3
Access for Non Motorised Modes	Access to town centre	3	5	1	4	2
	Access to the Cycle Network	3	5	1	4	2