WYG Transport Planning

Bassetlaw District Council

District-Wide Transport Study

Final Report
Publication Draft Growth Scenario

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Executive Summary

This study has been produced following discussions with Bassetlaw District Council, Nottinghamshire County Council and the Highways Agency. It is a strategic study intended to identify the cumulative transport implications of proposed residential and employment growth within the district in order to advise strategic transport infrastructure requirements.

The study considers all modes of transport and has examined the transport implications of future growth at an assessment year of 2026 in order to advise the emerging Local Development Framework (LDF).

This study is the first stage of the Transport Assessment process and it will be necessary for more detailed analysis to be undertaken at the appropriate time. This will include more detailed assessments of the transport implications of all development sites, undertaken either as studies to guide the preparation of Development Plan Documents, or as part of the evidence submitted in support of planning applications.

On the whole, the existing bus, rail, walking/cycling and highway networks within the district currently operate within capacity.

Major highway improvements to grade-separate 3 junctions on the A1 Trunk Road within the district have recently been completed by the Highways Agency at Blyth (A1/A614), Apleyhead (A1/A614/A57) and Markham Moor (A1/A57).

There is one key committed highway improvement scheme within the district; the A1(T) Elkesley Junctions scheme to improve road safety and access to the village. The scheme incorporates a new grade-separated junction onto the A1 to serve the village, with links to local roads.

A new £1.4m bus station was provided in Retford by Nottinghamshire County Council in July 2007.

There is a committed programme of Local Transport Plan funded improvements to existing cycle/pedestrian infrastructure within the district.

Residential and employment growth details have been provided by the District Council, together with details of potential development sites that could accommodate this growth.

Strategic transport impacts as a result of the proposed growth have been identified for all modes of transport and the findings suggest that for sustainable modes (i.e. walking, cycling, bus and rail) forecast demands will largely be accommodated on existing/committed infrastructure and services. However, local infrastructure improvements will be required to integrate development sites and address site-specific impacts.

To help reduce traffic impacts it is recommended that a minimum target modal shift of 7% from car driving to bus use is sought. Bus service enhancements, network and infrastructure improvements will therefore need to be identified on a site-by-site basis in order to achieve this.

Cumulative traffic impacts have been identified on; the A60 to the south west of Worksop, a section of the A57 Worksop Bypass and on the A57 to the north west of Worksop that would need to be addressed by highway infrastructure improvements if traffic congestion and delays are to be avoided. In addition to these links specific junctions around the district have been identified for potential improvement to address the forecast effects of growth traffic.

Possible highway infrastructure improvements have been identified in a preliminary form, together with indicative costs. These are summarised as follows.

Improvement	Indicative Total Costs (£m)	Priority	Likely Funding Sources	Comments
A60/A619 Roundabout	3	1	Developer	Improvements to existing roundabout
A60/A57/B6024 Roundabout	3	1	Developer	Signalisation of existing roundabout
A57/A60 Sandy Lane Roundabout	1.5	1	Developer	Improvements to existing roundabout
A57/Claylands Ave Roundabout	1.5	1	Developer	Improvements to existing roundabout
A57/B6041 Gateford Road Roundabout	3	1	Developer	Improvements to existing roundabout
A1/A614/B6045 Blyth Junction, Harworth[1]	4.5	1	Developer	Signalisation of existing junction
A614/Blyth Road Junction, Harworth[1]	1.5	2	Developer	Signalisation of existing junction
A620/A638 Roundabout, Retford	3	2	Developer	Signalisation of existing junction
Blyth Rd/Scrooby Rd/Main St/Bawtry Rd, Harworth	1.5	3	Developer	Signalisation of existing junction
A614/Scrooby Road Junction, Harworth	0.75	3	Developer	Signalisation of existing junction
B1164/A6075 Junction, Tuxford	0.75	3	Developer	Signalisation of existing junction

It is expected that individual developers will fund any measures or infrastructure improvements required to mitigate the direct transport impacts of developments. In addition, developers will also be required to fund 'nil detriment' improvements at each of the above locations (i.e. to restore the capacity of the highway network to what it would be without proposed growth). Developers will be required to fully fund schemes of mitigation to address only the additional problems they create and are not required to resolve existing congestion problems).

It is recommended that this list of improvements would first need to be worked-up in more detail to enable accurate construction costs and a delivery programme to be identified. The total value of the identified improvements could then be split based on the size of the development proposal (i.e. on a pro-rata basis in accordance with employment floor area and/or numbers of residential units) and this contribution framework would be used for any future developments in the district. This approach to calculating contributions is considered to be consistent with the Community Infrastructure Levy (CIL) methodology.

[1] Likely to be delivered and fully developer funded as part of the Harworth Colliery re-development proposals

1 Objectives and Scope of the Study

1.1 CONTEXT TO THE STUDY AND OBJECTIVES

1.1.1 Bassetlaw District Council has commissioned 'WYG Environment Planning and Transport Ltd' to undertake a district–wide study (see **Figure 1** for study area) to examine the transport implications of alternative locations for development. The outputs from the study will form part of the evidence base to support and inform the emerging Local Development Framework (LDF) for the district. Its primary objectives are to ensure that transport infrastructure does not constrain plans for growth within the district and that appropriate new transport infrastructure is identified and programmed to facilitate growth where necessary.

1.1.2 This study is the first stage of the Transport Assessment process and it will be necessary for more detailed analysis to be undertaken at the appropriate time. This will include more detailed assessments of the transport implications of all development sites, undertaken either as studies to guide the preparation of Development Plan Documents, or as part of the evidence submitted in support of planning applications.

1.1.3 The context for the study is framed by central Government's commitment to a target of building three million homes by 2020. This growth is reflected in the provisions of the East Midlands Regional Plan (EMRP) which was published in March 2009. Bassetlaw District falls within the 'Northern Sub-Area' and the EMRP identifies Worksop as a Sub-Regional centre.

1.1.4 Policy 7 of the EMRP (page 31) states that the economic, social and environmental regeneration of the Northern Sub-area will be a regional priority and that this should be achieved by:

"Significantly strengthening the Sub-Regional Centres of Mansfield-Ashfield, Chesterfield and Worksop by providing new jobs, houses, services and facilities in and around their urban areas"

1.1.5 Policy 13a (Page 42) of the EMRP identifies a target annual average housing provision of 350 dwellings for Bassetlaw District with a total housing provision of 7,000 dwellings within the district between 2006-2026.

1.1.6 The Northern Sub-Regional Strategy of the EMRP (page 143) states that significant levels of growth will be provided for in and adjoining the Sub-Regional Centres of Chesterfield, Mansfield-Ashfield, Newark and Worksop (Worksop includes Worksop, Shireoaks and Rhodesia). It goes on to state that Retford is another urban area which should be considered in the LDF for housing development. Outside of these towns it states that new development will be restricted to small-scale development targeted to meet local needs. However, (page

141) states that there may be a need for regeneration in some of the larger villages in the SRS area, particularly those which have suffered from the decline in the mining industry.

1.1.7 In terms of employment growth the EMRP Northern Sub-Regional Strategy (SRS) 3 (page 147) identifies locations; 'North of Worksop towards Robin Hood Airport Doncaster Sheffield (RHADS), concentrating on the former mining communities and mining operations' for assisting growth and regeneration objectives.

1.1.8 Employment growth is quantified in the Nottinghamshire County Council, East Midlands Northern Sub-Region Employment Land Review report (dated March 2008) which identifies target employment land provision to 2026 for Bassetlaw District as follows;

"It is recommended that the lower part of the 79.5 – 92.5 hectare range (net) should be used to inform Bassetlaw's LDF. As this range presents net employment land figures, the range would need to be supplemented with additional land to take account of losses of employment land to produce gross employment land figures for allocation. Allocations should, however, be weighted towards distribution, small light industry and office uses due to the current level of market demand."

1.1.9 The planned housing and employment development in Bassetlaw, presents opportunities as well as challenges. Well planned and targeted growth and the investment in supporting transport infrastructure has the potential to improve services, facilities and the quality of life for both new and existing communities. It presents an opportunity for a step-change in the long-term sustainability of settlements, built development and lifestyles. Without a robust Transport Study it is likely that the projected growth will not take place or that it will happen piecemeal and be sub-optimal in terms of its sustainability.

1.1.10 The Transport Study will therefore be vital in shaping the options for growth, its location and the design and sustainability aspects of that new development. It will inform and underpin many of the strategic decisions which will be taken in formulating the LDF and provide an on-going reference, in realising sensitive, beneficial and sustainable growth. The Transport Study will be a key component of the evidence base supporting the LDF 'Core Strategy' and indeed other strategic plans and Supplementary Planning Documents (SPDs).

1.1.11 National Planning Policy Statements PPS12 (Local Spatial Planning) and PPS3 (Housing) and the draft PPS4 (Planning for Sustainable Economic Development) advocate the importance of a robust 'evidence-based policy approach' in the preparation of LDFs. In particular these statements provide guidance for the preparation of infrastructure studies. PPS 12 states in section 4:

"4.8 The core strategy should be supported by evidence of what physical, social and green infrastructure is needed to enable the amount of development proposed for the area, taking account of its type and distribution. This evidence should cover who will provide the infrastructure and when it will be provided. The core strategy should draw on and in parallel influence any strategies and investment plans of the local authority and other organisations. Good infrastructure planning considers the infrastructure required to support development, costs, sources of funding, timescales for delivery and gaps in funding. This allows for the identified infrastructure to be prioritised in discussions with key local partners. The infrastructure planning process should identify, as far as possible:

- infrastructure needs and costs;
- phasing of development;
- funding sources; and
- responsibilities for delivery."[2]

1.1.12 This Transport Study for Bassetlaw is prepared within the context of these strategic terms of reference, with the aim of providing a robust assessment of current deficiencies and future requirements, costs, potential funding sources, phasing and delivery issues.

[2] **Source**: Planning Policy Statement 12: creating strong safe and prosperous communities through Local Spatial Planning; CLG, 2008]

1.2 STRUCTURE OF THE REPORT

1.2.1 The structure and content of the remainder of this report is summarised as follows.

Baseline Assessment

1.2.2 This section comprises an overview of the study area, identification of existing transport conditions at the beginning of 2010, travel patterns and existing transport services and infrastructure for the following transport categories:

- Highways & Car Parking
- Bus
- Passenger Rail
- Cycling and walking
- Freight

1.2.3 These categories are applied consistently throughout the subsequent sections of the report.

Committed Schemes/Developments

1.2.4 This section comprises the identification of committed transport schemes and developments that will result in material changes to existing transport conditions within the district and identification of their likely transport effects.

Growth Scenario

1.2.5 This section identifies the proposed growth site locations, presents an audit of their relative sustainability in transportation terms, and identifies modal splits and estimates trip generation and distribution onto existing transport networks.

Impacts of Growth

1.2.6 This section comprises the identification of likely impacts on existing transportation networks as a result of the proposed growth.

Transport Infrastructure Requirements

1.2.7 This section identifies potential infrastructure improvements required to facilitate the proposed development scenario and/or mitigate transportation impacts on existing networks. Potential strategic infrastructure improvements are identified in a preliminary format and these will be subject to detailed assessment and design as and when development proposals are brought forward. Preliminary construction costs have been estimated and comments provided on scheme deliverability and order of priority.

Summary and Conclusions

1.2.8 The final section summarises the findings of the study and presents recommendations.

Figures and Appendices

1.2.9 The Figures referred to in the text are presented after the glossary towards the end of the report. Appendices are attached after the Figures at the end of the report.

2 Baseline Assessment

2.1 INTRODUCTION

2.1.1 This baseline assessment has been prepared using information obtained from a variety of existing published documents which are summarised in the data sources summary box below. For ease of reference, data sources are highlighted throughout this report at the beginning of each section.

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Nottinghamshire County Council's 'State of Nottinghamshire 2009 Report'
- Bassetlaw Core Strategy Issues and Options Consultation, September 2009
- Nottingham City Council's NOMAD Website
- Bassetlaw District Council's Website
- Office for National Statistics (ONS) – 2001 Census Data
- Discussions with Nottinghamshire County Council

Background to the District

2.1.2 Bassetlaw is the northernmost district in Nottinghamshire, bordered by South Yorkshire, Derbyshire and Lincolnshire. It covers approximately 63,700 Hectares and in 2007 had a population of approximately 112,000 (1.76 persons per Ha), which is expected to increase to around 134,000 (2.1 persons per Ha) by 2030[3].

2.1.3 Sitting on the border between the East Midlands and the Yorkshire & Humber regions, Bassetlaw has strong links with South Yorkshire and forms part of the Sheffield City Region.

2.1.4 Bassetlaw itself is a district of contrasts. In simplistic terms, the more expansive rural areas of the district are characterised by a large number of villages and hamlets (several covered by Conservation Areas) scattered across the area. Many of these lie within the floodplains of the Rivers Trent and Idle. While several of the larger villages have a reasonable range of services, including schools and health services, many have lost facilities over recent years and most rely on larger settlements, notably Retford (population 21,500) and Gainsborough (in neighbouring

[3] Source: Bassetlaw Core Strategy Issues and Options Consultation, September 2009

West Lindsey), for major retail and other key services[4]. Bus services connecting most villages to larger centres are regular and, relative to other rural areas, reasonably frequent[4] although there is a marked decrease in the frequency of services across the district as a whole in the evenings and on Sundays. With the exception of the four 'A' roads radiating out from Retford, and the A631 crossing the north of the district, this area is served chiefly by a network of minor roads[5].

2.1.5 The main town within the district is Worksop (population 41,000), followed by Retford. There are two other towns in the district Harworth/Bircotes and Tuxford. Other settlements in the district are villages and rural hamlets villages presenting their own challenges in terms of transport provision. Parts of these settlements, and parts of Worksop such as Manton, suffer from high levels of deprivation[5].

2.1.6 The western edge of Bassetlaw District has significant regeneration potential with ready access to the strategic road network (the A1, M1 and M18); close proximity to the Doncaster/Rotherham/Sheffield conurbation (and Robin Hood Airport (RHADS)); a sizeable and flexible workforce and a good range of potential employment sites[5].

2.1.7 Over the period to 2031, a significant increase in the number of the population in the district aged 60 and over is expected. In 2006, population estimates suggested that the number over 60 was equal to 26,100 or 23.4% of the population[6]. By 2031, population projections suggest that the proportion of the population aged over 60 will be 33,400 or 33.8% of the population[6]. This will bring significant challenges for the delivery of transport services in the rural parts of the district, as car ownership levels are generally lower amongst the over 60's.

Existing Modes of Travel

2.1.8 Data obtained from the Nottinghamshire County Council's State of Nottinghamshire 2009 Report confirms that the percentages of the total district population travelling to work by different modes of transport are as summarised in **Table 1** on the following page (Derived from 2001 Census data). This data represents all journeys to work (i.e. includes trips to work within and outside the district). Percentages for all districts in Nottinghamshire, for the County as a whole, the East Midlands and Great Britain are also provided as a comparison

[4] Source: Bassetlaw Services and Facilities Study (2009).
[5] Source: Bassetlaw Core Strategy Issues and Options Consultation, September 2009.
[6] Source: Nottinghamshire County Council

Table 1 – Transport Indicators

Location	% of People who Travel to Work by Car (2001)	% of People who Travel to Work by Public Transport (2001)	% of People who Walk or Cycle to Work (2001)	% of Jobs Taken by Non-Residents (2001)	Average Travel to Work Time in Minutes (2002-03)
Nottingham	50.85	22.14	18.40	27.02	19.00
Broxtowe	65.66	11.45	13.18	64.25	26.00
Ashfield	68.67	8.62	13.65	49.47	16.00
Mansfield	70.81	8.00	12.11	45.24	16.00
Gedling	64.84	15.78	9.55	64.04	22.00
Bassetlaw	70.82	3.94	14.17	28.92	20.00
Newark & Sherwood	67.94	5.25	14.48	40.65	19.00
Rushcliffe	68.34	10.81	9.39	60.48	22.00
Nottinghamshire	64.06	12.29	13.68	45.61	20.00
East Midlands	67.33	8.03	13.76	40.89	18.35
Great Britain	61.18	14.81	13.03	39.62	20.32
East Midlands[7]	77.00	6.00	14.00	-	-

2.1.9 Bassetlaw District exhibits a slightly higher proportion of the population using private motor vehicles to travel to work than the rest of the county, region and Great Britain as a whole. However, the percentage is similar to that found in other predominantly rural districts within the County such as Newark and Sherwood and Mansfield.

Journeys to Work

2.1.10 The information presented in **Table 1** also demonstrates that at the time of the 2001 Census Bassetlaw had the lowest proportion of jobs within the district taken by non-residents (i.e. commuting into the district was lowest) out of all of the locations presented. Average travel to work time for Bassetlaw was also consistent with the average for Nottinghamshire.

2.1.11 Information on employment destinations is provided in the 2001 Census Travel to Work data. A summary of data for Bassetlaw District is presented in **Table 2** on the following page and this identifies the key employment destinations for travel to work trips originating from within Bassetlaw District.

[7] Latest figures available from the Office for National Statistics Labour Survey Oct 2009

Table 2 – Destinations of Employment Trips Originating in Bassetlaw

Trip Destinations	Trips	Percentages of Total Travel to Work Trips by Mode						
		Train	Bus	Car	M/C	Cycle	Walk	Other
Bassetlaw District	28,587	0	3	73	1	5	16	0
Lincolnshire	1,335	0	3	94	1	1	1	0
Nottinghamshire	31,046	0	3	74	1	5	15	0
Leicestershire	111	3	0	97	0	0	0	0
Derbyshire	989	1	2	93	0	1	3	0
Doncaster	2,229	1	5	91	1	1	1	0
Rotherham	1,497	0	3	93	0	1	2	0
Sheffield	1,786	9	2	87	1	0	1	0
London	174	21	3	57	0	3	3*	12
Other	2,707	3	3	86	1	1	5	2

Notes: Data excludes people working from home.
Car trips include taxi.
* Assumed to represent walking to the railway station.

2.1.12 Information on the origins of employees working in Bassetlaw District has also been summarised and this is presented in **Table 3** below.

Table 3 – Origins of Employment Trips with Destinations in Bassetlaw

Trip Origins	Trips	Percentages of Total Travel to Work Trips by Mode						
		Train	Bus	Car	M/C	Cycle	Walk	Other
Bassetlaw District	28,587	0	3	73	1	5	16	0
Lincolnshire	1,178	0	1	93	1	2	2	1
Nottinghamshire	32,068	0	3	75	1	5	15	0
Leicestershire	105	3	3	91	3	0	0	0
Derbyshire	3,084	1	6	89	2	1	1	0
Doncaster	1,756	0	4	93	2	1	1	0
Rotherham	2,100	0	4	92	2	1	1	0
Sheffield	903	2	5	90	2	0	0	0
London	33	36	27	27	0	0	0	9
Other	1,409	1	3	89	1	1	4	0

Notes: Data excludes people working from home.
Car trips include taxi.

Car Ownership

2.1.13 Data on car and van ownership has been obtained from the Office of National Statistics (ONS) Key Statistics for local authorities in England and Wales 2001 Census summary tables. **Table 4** below details car and van ownership levels for the County and provides a breakdown by District/Borough.

Table 4 – Car and Van Ownership

Area	All Households	Percentage of Households with Numbers of Cars or Vans					Ave' No. Per House	All Cars or Vans in the Area
		None	One	Two	Three	> Four		
Ashfield	46,600	27.96	46.07	21.34	3.61	1.01	1.04	48,515
Bassetlaw	44,690	23.62	45.11	25.06	4.84	1.37	1.16	51,773
Broxtowe	45,445	23.41	46.12	25.29	4.00	1.17	1.14	51,779
Gedling	47,556	22.87	46.92	24.77	4.29	1.15	1.15	54,454
Mansfield	41,601	29.30	45.10	21.28	3.43	0.90	1.02	42,417
Newark & Sherwood	44,465	21.92	44.76	26.75	4.98	1.58	1.20	53,495
Rushcliffe	43,670	16.75	43.40	32.73	5.48	1.63	1.33	57,867
Nottinghamshire County	314,027	23.68	45.38	25.31	4.38	1.26	1.15	360,300

2.1.14 As can be seen from **Table 4** Bassetlaw has the third lowest overall level of car/van ownership in Nottinghamshire (after Mansfield and Ashfield). However, the percentage of numbers of vehicles per household is approximately consistent with the county average.

Road Safety

2.1.15 Personal Injury Accident (PIA) statistics have been provided by Nottinghamshire County Council for the road network within the district (including Trunk Roads) for the period covering 01/01/2006 to 31/12/2008.

2.1.16 For the purposes of this study data covering the 3 year period from 01/01/2006 to 31/12/2008 has been analysed. A summary of the data is presented in **Table 5** on the following page.

Table 5 – Personal Injury Accident Summary

Year	Fatal	Serious	Slight	Total
2006	8	84	369	461
2007	13	63	378	454
2008	11	67	281	359
Total	**32**	**214**	**1,028**	**1,274**

2.1.17 **Figure 2** depicts the locations of all personal injury accidents within the district between 01/01/2006 to 31/12/2008. Accident severities have been colour coded with red representing fatal accidents, blue serious and green slight accidents.

2.1.18 A brief visual analysis of **Figure 2** and the supporting accident data reveals that there are a number of sections along some routes which appear to have high concentrations of accidents; these include the A1 and the A57. These routes are some of the main distributor routes in the area and higher traffic flows and collision rates are expected.

2.1.19 From the visual analysis it appears that a high number of KSI (Killed and Seriously Injured) accidents have occurred on a 2.5km stretch of the A638 to the northeast of Retford between Sutton Lane and Hospital Road. There have been a total of 25 collisions over the study period, five of these resulting in serious injury and one in a fatality. The A1 on a 2km stretch of carriageway close to Tinker Lane saw 11 collisions, 2 serious and 1 fatalities during the study period.

2.1.20 Nottinghamshire County Council defines accident problem sites as locations where there have been 4 or more accidents within 20m in one year, or 12 collisions over three years. Analysis has been carried out using the most up to date data from 2008. Four problem sites have been identified for 2008 which are summarised in **Table 6** below.

Table 6 – Accident Problem Sites

Location	Fatal	Serious	Slight	3 year Total
A(T)1/A57 Markham Moor Roundabout	0	1	20	21
A(T)1/A57 Five Lane Ends Roundabout	0	0	13	13
A57/A60S Mansfield Road	0	2	15	17
A57/B6034 Netherton Road	0	2	7	9

2.1.21 Major highway improvements have recently been carried out by the Highways Agency at some of the major junctions on the A1 within the district. Grade separated junctions have been provided at the junctions of the A1/A614/B6045 Blyth (completed April 2008), A1/A614/A57 Apleyhead (completed May 2008) and the A1/A57/A638 Markham Moor (completed December

2008). These junctions have therefore been excluded from the accident analysis because the improvements provided should significantly improve road safety at these locations.

2.1.22 Remedial measures have also been carried out on both of the A57 problem sites. A high resistance surfacing scheme was implement on the A57/B6034 roundabout to address the predominant loss of control collisions. Yellow bar markings were installed on the A57/A60 roundabout early 2007, however, this location was still a problem site in 2008 but no treatable collision pattern has been identified.

2.1.23 **Figure 3**, **Figure 4** and **Figure 5** show the locations of vulnerable road user collisions. A visual inspection of these figures shows that there are a number of routes where there appear to be higher concentrations of collisions than elsewhere on the network. Identification of these routes may lead to a targeted approach to reducing vulnerable road user collisions in Bassetlaw.

2.1.24 Pedestrian collisions are detailed on **Figure 3** and there appears to be a cluster of collisions around Watson Road in Worksop. No other pedestrian clusters have been identified.

2.1.25 **Figure 4** shows the distribution of pedal cycle collisions throughout Bassetlaw District. Routes that appear to have a higher than average number of pedal cycle collisions, when compared to the rest of the network, are;

- B6040 Cheapside onto Watson Road and Gateford Road towards Worksop town centre, and
- Hallcroft Road to the northwest of Retford

2.1.26 **Figure 5** shows the distribution of motorcycle collisions throughout the district. A brief visual analysis of the motorcycle collisions shows that there is a higher concentration of collisions on;

- A620 Retford Road to the north east of Retford, a high number of these collisions resulted in serious injury,
- A638 North Road to the north west of Retford and
- B6040 Cheapside in Worksop.

2.1.27 Within the district a number of collision sites have been identified and remedial treatments have been constructed or are ready for construction, these schemes are detailed in **Table 7** on the following page.

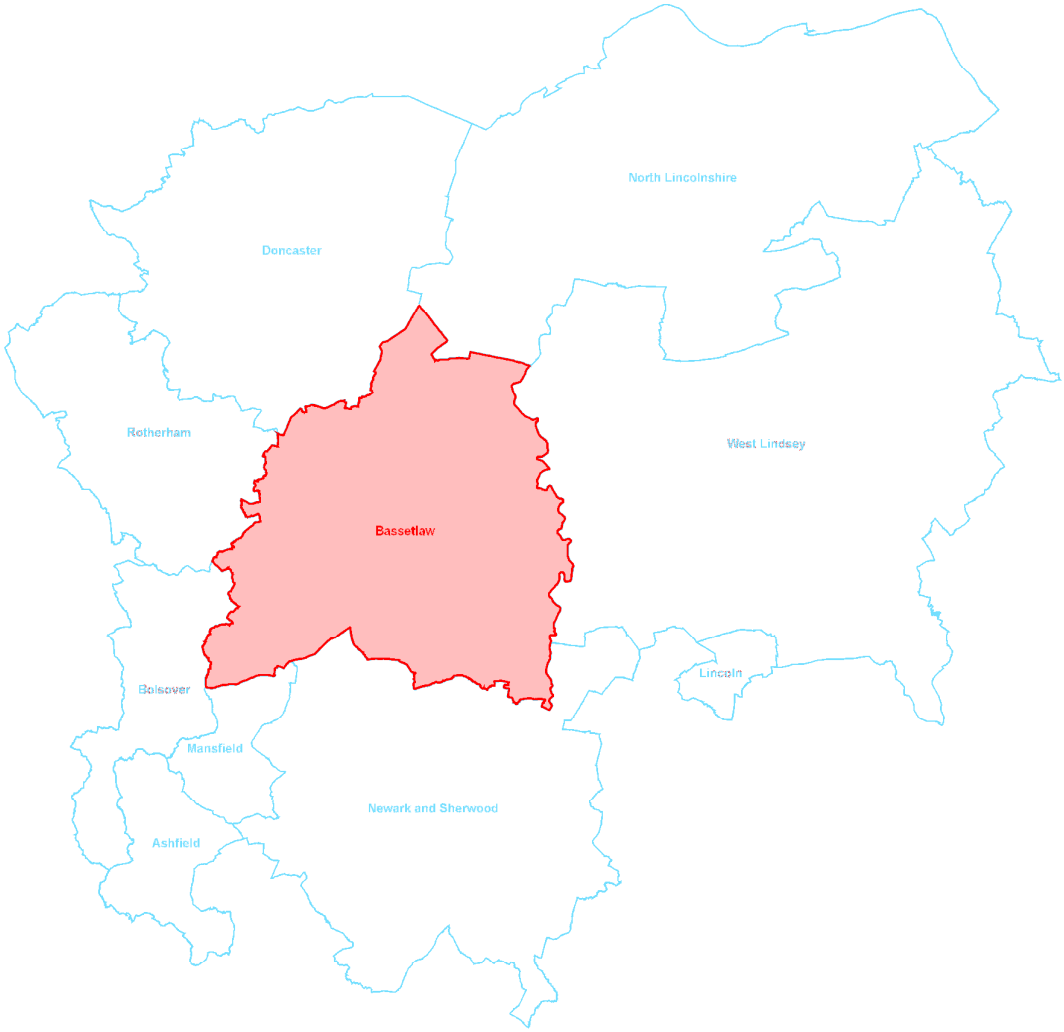
Table 7 – Accident Remedial Treatment Sites in Bassetlaw

Location	Treatment
2008/2009 schemes	
A6075 Ollerton Rd, Kirton Rd to Westwood Far	Surfacing Improvement
A638 Great North Rd, West Drayton	Surfacing Improvement
B6044 Albert Rd, Retford	Lighting Improvement
A638 North Rd, Retford, Randall Way to West Furlong	Lighting Improvement
Woodsetts Ln/Owday Ln, Woodsetts	Signs, Lines, Surfacing
Westgate, Worksop (Newcastle Ave to Park St)	Lining
A638 Great North Rd/Tarmac Works Entrance, Retford	Signing and Lining
2009/2010 schemes	
A60/A616 at Cuckney	Signing and Lining
A620 at North Wheatley	Signs, Speed Limit
Rampton Crossroads	Surfacing Improvement
A57/Gateford Rd/Woodsetts Ln Roundabout	Surfacing, Tree Trimming
B6097 Retford Rd, West of Retford	Signing and Lining
B6034 Ollerton Rd/Lime Tree Ave, Carburton	Signs, Lines, Surfacing
Old London Rd Canal Bridge, Barnby Moor	Signing and Lining
Bank End Rd/Springs Rd, Misson	Signing and Lining
A631 Beckingham Bypass	Safety Cameras
A57/Netherton Rd, Roundabout	Surfacing Improvement
A616/Park Lane, Holbeck	Surfacing Improvement
A60 Doncaster Rd, Oldcotes (bend at Malpass Hill)	Surfacing Improvement
B6041 Thievesdale Ln/Gloucester Rd, Worksop	Surfacing Improvement
Memorial Ave, Worksop (War Memorial to Priorswell)	Lighting Improvement
Wheatley Rd, Clayworth (Bend south of Field Farm)	Drainage and Signing

2.2 STUDY AREA

2.2.1 The study area comprises the administrative boundary of Bassetlaw District as indicated on **Figure 1** . Bassetlaw is the northernmost and second largest district in Nottinghamshire, covering 30% of the County. Lincolnshire County adjoins the district to the east (West Lindsey District), North Lincolnshire (Unitary Authority) to the north east, Doncaster (Unitary Authority) to the north west, Rotherham (Unitary Authority) to the west, Derbyshire County to the south west (Bolsover District) and the Nottinghamshire Districts of Mansfield and Newark and Sherwood to the south.

Bassetlaw District and Adjacent Authorities:



2.2.2 The district is predominantly rural in nature with most areas open countryside in agricultural use. There is a dispersed pattern of settlement. The western part of the district is dominated by the market town of Worksop which is the largest town in the district. Retford, the second

largest town is located in the centre of the district. The town centres of Worksop and Retford contain the greatest concentrations of retail, commercial and business activities in Bassetlaw.

2.2.3 The main feature of Worksop town centre is the north-south axis of Bridge Street and Bridge Place, most of which is pedestrianised. This street accommodates most of the centre's shops. At its southern end it meets the market place. Traffic is mainly confined to Watson Road and two streets that run east-west and cross the pedestrian area. These streets have a mix of commercial, office, retail and residential uses.

2.2.4 The centre of Retford is clearly bounded for the most part by Arlington Way and Amcott Way, the River Idle and the Chesterfield Canal. Within this area retailing is concentrated in the pedestrianised area of Carolgate. This concentration is a notable feature of the town. Almost all retailing occurs in a very limited area and there are no out of centre large shops. The town centre provides a quality and range of shopping opportunities that would not generally be found in a town of this size. This includes a wide choice of relatively large shops each of which has adjacent ground level car parking. The centre is small enough for all the shops to be within easy walking distance of one another. As with Worksop, Retford acts as a commercial focus for the surrounding areas of the district.

2.2.5 The Worksop & Retford Travel to Work Area[8] covers all of the Bassetlaw District, with the exception of the north eastern corner (between the A161, A631 and the district Boundary) which falls within the Lincoln Travel to Work Area by virtue of its close proximity to Gainsborough to the east[9].

2.2.6 The strategic road network includes the A1 Trunk Road/Motorway, and county primary roads; A57, A60, A161, A614, A619, A620, A631, A634, A638 and the A6075. The remainder of the road network connects with locally important centres.

2.2.7 Bassetlaw District's central location means that more than half of the UK's population, estimated at over 23 million, live within three hours' drive[10]. The M1 skirts west Bassetlaw, and is approximately 10 miles from the centre of the district via the A57. This connects Bassetlaw well with the rest of the UK and provides access to the M62 Trans-Pennine route. The A1

[8] Travel to Work Areas are defined by the Office for National Statistics using census data for commuting between wards, based on the different locations of individuals' home and work addresses. A Travel to Work Area is a collection of wards for which "of the resident economically active population, at least 75% actually work in the area, and also, that of everyone working in the area, at least 75% actually live in the area".

[9] Source: ONS United Kingdom Travel to Work Areas, 2001.
[10] Source: Bassetlaw District Council Website.

trunk road runs through the district and links into the A1(M), M18 and the M180. This network gives easy access to the Humber and East Coast ports of Boston, Grimsby, Hull, Immingham and Kings Lynn.

2.2.8 The district has excellent rail links, both North-South and East-West. The GNER East Coast Mainline runs North-South through Retford linking London King's Cross and Edinburgh Waverley stations, via Stevenage, Peterborough, Grantham, Newark, Retford, Doncaster, York, Darlington, Durham, Newcastle, Berwick-upon-Tweed and Dunbar. East-West rail links between Lincoln and Sheffield also connect Retford and Worksop.

2.2.9 The Robin Hood Line provides a direct rail link starting from Worksop through Mansfield to Nottingham. From Nottingham and Sheffield, rail links are available to all the major cities in the UK, including Birmingham, Bristol, Leeds and Manchester. The Sheffield International Rail Freight Terminal (SIRFT) is also just a short drive away to the north of the district (between junctions 33 and 34 on the M1 motorway).

2.2.10 Bassetlaw is also well served for air travel. The district is within a 45 minute drive to Nottingham East Midlands Airport, which serves over 30 European destinations, and 20 minutes from Robin Hood Airport – the new international airport in Doncaster, with long haul potential. Birmingham and Manchester International Airports are also both within 90 minutes drive. Gamston Airport, used for private, charter aircraft, is located to the south of Retford, and Sheffield Airport offers a niche market for general aviation.

2.3 HIGHWAYS

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Nottingham City Council's NOMAD Website
- Highways Agency's TRADS Website
- Bassetlaw District Council's Website
- TA 46/97 'Traffic Flow Ranges for use in the Assessment of New Rural Roads'
- 2001 National Census Data
- Faber Maunsell Bassetlaw District Car Parking Review (2006)
- Discussions with Nottinghamshire County Council

Existing Conditions

2.3.1 Roads within the district fall into two categories; Motorway/Trunk Road (A1(M)/A1) which are the responsibility of the Highways Agency (HA) and County Roads (all other roads in the district) which are the responsibility of Nottinghamshire County Council. The road network examined for the purposes of this study is identified in **Figure 6** . The network includes all 'A' and 'B' Classification roads within the district as well as locally important unclassified roads.

2.3.2 Existing conditions on the study area network have been determined through the examination of relevant data sources (as identified at the beginning of this section) and through discussions with the highway authorities responsible for the road network within the district.

2.3.3 Traffic flow data has been obtained from Nottinghamshire County Council and the HA for all 'A' and 'B' Classification roads and this has been analysed and 'factored' to a common 2009 base year. Details of the data and analysis methodology can be found in **Appendix A** and the resultant flows are illustrated on **Figure 7** and **Figure 8**. Existing conditions are summarised in **Table 8** on the following page.

Table 8 – Summary of Conditions for Existing 'A' Road Network

Road	Standard	Average Annual Daily Traffic (AADT) (2-Way) Flow Range				
		<20,000	20,000 to 40,000	40,000 to 60,000	>60,000	HGV
A1(M)	Dual Carriageway			49,800		12,050
A1(T)	Dual Carriageway			44,400		10,770
A57	Single Carriageway		21,900			2,630
A60	Single Carriageway		20,400			880
A161	Single Carriageway	4,300				270
A614	Single Carriageway	10,400				1,170
A616	Single Carriageway	9,900				500
A619	Single Carriageway	10,600				1,170
A620	Single Carriageway	13,600				1,100
A631	Single Carriageway	14,900				1,000
A632	Single Carriageway	3,100				140
A634	Single Carriageway	4,800				480
A638	Single Carriageway	9,300				770
A6075	Single Carriageway	4,700				490

2.3.4 As can be seen from **Table 8** the road with the highest volume of traffic is the A1 which is as would be expected because this forms part of the strategic road network and therefore tends to carry longer-distance through traffic in addition to local movements.

Traffic Patterns

2.3.5 2001 Census 'Journey to Work' data (**Table 2** on page 11) indicates that 32% of all employment trips originating within the district have a destination outside the district and 68% are internal to the district. Of those with a destination outside the district the majority are travelling by car to destinations within Nottinghamshire, or 'other' destinations.

2.3.6 **Table 3** on page 11 shows that 30% of all employment trips to the district originate from outside the district and 70% are internal to the district. The majority of trips internal to the

district are made by car. Of the trips originating from outside the district the majority are travelling by car from Nottinghamshire and Derbyshire.

2.3.7 The vast majority of commuter trips to/from the district are therefore between locations in Nottinghamshire and the majority of these are made by car.

Network Performance

2.3.8 Network performance for the road network within the study area has been assessed based on link capacity. The prime indicator for road capacity and congestion on rural links is determined by the Congestion Reference Flow (CRF), which is defined in Annex D of TA 46/97 'Traffic Flow Ranges for use in the Assessment of New Rural Roads' as follows:

"The Congestion Reference Flow (CRF) of a link is an estimate of the Annual Average Daily Traffic (AADT) flow at which the carriageway is likely to be congested at peak periods on an average day. For the purposes of calculating the CRF, 'congestion' is defined as a situation when the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link. At this point the effect on traffic is likely to be one or more of the following: flow breaks down with speeds varying considerably, average speeds drop significantly, the sustainable throughput is reduced and queues are likely to form. This critical flow level can vary from day to day and from site to site and must be considered as an average. The CRF is a measure of the performance of a road link between junctions."

"The congestion threshold is a measure of the maximum achievable hourly throughput of a link."

"Any increase in demand above this threshold can lead to flow breakdown, queueing and reduced throughput."

"The threshold may be expressed in terms of annual average daily traffic (AADT) by identifying the likely ratio of peak to daily flow and applying this to the threshold hourly value. The resulting AADT is known as the Congestion Reference Flow (CRF)"[11].

2.3.9 Congestion Reference Flow (CRF) values have been used as a measure of the performance of all links within the study area. Based on these calculated reference capacities link "stress" levels have been identified where "stress" is defined as the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow expressed as a percentage.

2.3.10 A stress level of 100% (i.e. when the demand flow equals the CRF value) is the critical point at which link flows breakdown resulting in queuing and reduced throughput. Therefore for the

[11] Source: Design Manual for Roads and Bridges, Volume 5, Section 1, Part 3 TA 46/97.

purposes of this study the following stress thresholds have been applied to identify when links are approaching, or exceeding their theoretical maximum capacity:

- Less than 90% stress - the link operates within capacity, although journey times may become less reliable over 75% stress (see below).
- Between 90% and 100% stress - The link is approaching capacity and is increasingly susceptible to flow breakdown.
- Greater than 100% stress - The link operates over capacity and is likely to experience flow breakdown on a regular basis.

2.3.11 The above thresholds have been applied to easily identify when link capacity is approaching critical conditions (i.e. 100% stress). However, as stated in the DfT's WebTAG Guidance on the 'New Approach to Appraisal' it should be noted that 75% stress is generally accepted as the threshold level for adverse effects on journey time reliability. Therefore, links with between 75% and 99% stress will still be operating within capacity but journey times are likely to be less reliable than on links with less than 75% stress.

2.3.12 Details of the CRF calculation methodology, data analysis and results can be found in **Appendix A**. and the resultant CRF link values are illustrated on **Figure 9**. The comparison between observed link flows and CRF values is illustrated on the stress plan presented as **Figure 10**.

2.3.13 For ease of reference on **Figure 10**, congestion of less than 75% on links is shown in green, congestion of 75%-89% is shown in black, 90%-99% is shown in amber, and congestion of greater than 100% on links is shown in red.

2.3.14 The stress plan clearly indicates that all links within the district currently operate at less than 90% stress. The A57 to the north west of Worksop has the highest stress within the district (85%) and whilst this is still within capacity it could be expected to experience less reliable journey times. The single carriageway section of the A57 Worksop bypass between Sandy Lane and Claylands Avenue has a stress value of 74%. Stress levels on all other links within the district fall well below 75% and could therefore be expected to operate satisfactorily.

2.3.15 Discussions with Nottinghamshire County Council and the Highways Agency have however highlighted the following locations within the district as experiencing existing congestion problems during the peak periods:

County Highway Network

2.3.16 A meeting was held with the Bassetlaw Area Office of Nottinghamshire County Council in January 2010. Minutes of this meeting are included in **Appendix B** for information and pertinent extracts are summarised as follows:

- **Tuxford** - The B1164/A6075 junction is likely to require traffic capacity improvements, depending on future traffic volumes.
- **Carlton-in-Lindrick** – pedestrian/cyclist connections to Worksop are poor and would require improvement as part of future growth in the area.
- **Harworth** - The A614/Blyth Road junction experiences existing traffic congestion and would require capacity improvements to accommodate material traffic flow increases. The 2 mini-roundabouts on Blyth Road at its junctions with Scrooby Road and Main Street/Bawtry Road would also require capacity improvements. However, the small junction 'footprints' may make it difficult to achieve significant capacity improvements without the need for 'third-party' land. In addition, the A614/Scrooby Road junction to the east of Harworth is also likely to require capacity improvements.
- **Worksop** - The A60 into Worksop from the west is a 'bottleneck' with long queues on the approach to the A57. Eastbound traffic along the A60 towards the A57 regularly queues during peak periods as far as back the A619 junction. Four of the A57 roundabouts at Worksop are also identified as accident problem sites.
- **Retford** - The majority of journeys through Retford go via the A620/A638 roundabout. During peak times, queues often develop along Hospital Road and Amcott Way. In addition to queues at this junction, queues often extend the full length of Arlington Way.

Trunk Road Network

2.3.17 Discussions have yet to take place with the Highways Agency however, based on our discussions with Nottinghamshire County Council the following issues have come to light:

- **Harworth** - The priority roundabouts that link the A1 slip roads to the A614 and B6045 at the A1/A614/B6045 Blyth junction experience peak period congestion and would require improvement to be able to accommodate additional traffic flows as a result of future growth proposals. Discussions are currently ongoing between the Highways Agency and a developer promoting redevelopment of Harworth Colliery with regard to possible improvements at this location.
- **Elkesley** – As part of a proposal for a major B8 distribution centre on the former Bevercotes Colliery site possible improvements to the A1 Twyford Bridge junction are being

discussed between the developer and the Highways Agency but will probably involve either the provision of new roundabouts or signal controlled 'T-junctions' to connect the A1 slip roads to the B6387.

2.3.18 Journey time surveys undertaken in 2008 by Nottinghamshire County Council (see details in **Appendix C**) suggest that the existing urban road networks within Worksop and Retford operate largely satisfactorily with no major congestion problems. The lowest average inbound vehicle speed for all routes surveyed in Worksop was 18.4mph (Inter Peak) whilst the lowest average outbound speed was 19.9mph (PM Peak). In Retford the lowest average inbound vehicle speed for all routes surveyed was 18.8mph (AM Peak) whilst the lowest average outbound speed was 21.8mph (AM Peak).

2.3.19 In Worksop the slowest vehicle speeds on a radial route (in both directions) were recorded on the A60/B6045 Carlton Road where the longest average journey time to cover the 3.1km route distance was 9 minutes 14 seconds. In Retford the slowest vehicle speeds on a radial route (in both directions) were recorded on the A638 London Road where the longest average journey time to cover the 1.7km route distance was 4 minutes 43 seconds. The slowest vehicle speeds on the orbital B6044/A638/A620 Inner Loop Road in Retford were recorded travelling clockwise in the AM peak where the longest average journey time to cover the 1.7km route distance was 5 minutes 45 seconds.

2.3.20 Therefore, on the whole, whilst both towns experience some peak period congestion, the level of congestion is not severe and journey times remain reasonable. The following extracts from the North Nottinghamshire Local Transport Plan 2006/7 to 2010/11 are therefore largely still relevant:

Retford

"*Retford is a compact market town, with very few signalised junctions outside the town centre. Consequently, the average journey times in the peak period are very short: the town centre can be accessed along all of the radial routes in less than 3 minutes*[12]*. As with Newark, local congestion does occasionally occur near the busier signalised junctions and supermarkets, however, it is not considered a high priority amongst the shared priorities.*"

Worksop

"*Again, although average speeds are relatively low, only three junctions in the town suffer delays of more than one minute during the peak period, suggesting that congestion should not be considered a high priority among the shared priorities. The longest journey times into the*

[12] The March 2008 survey data suggests that this figure should be revised to 5 minutes.

town centre were recorded on the B6040 Carlton Road but even here journeys take on average only 10 minutes[13] to reach the town centre from the edge of the urban area. Several routes take less than 5 minutes[13] to travel from the edge of the built up area to the town centre."

Car Parking

Parking in Bassetlaw

2.3.21 There are a total of 13 car parks maintained by the District Council in Worksop. Memorial Avenue car parks (short and long stay) are undergoing refurbishment and are currently closed to the public. Of the car parks currently in use, a total of approximately 1,101 spaces (73 disabled spaces) are provided. Priorswell car park has approximately 100 unmarked spaces. The remaining car parks have 1,001 marked spaces. There are 3 short-stay car parks and 6 long-stay car parks currently in use. In addition, because Priorswell Road and Prospect Precinct car parks operate free of charge, there are no restrictions on the length of stay in either car park.

2.3.22 There are 8 car parks maintained by BDC in Retford. These provide a total of 586 spaces of which 45 are allocated for disabled users. There are 6 short-stay car parks and 2 long-stay car parks. The maximum length of stay in short-stay car parks varies between 2 and 3 hours. Vehicles can park for a full day in long-stay car parks.

2.3.23 All Council maintained car parks in Bassetlaw operate with a pay and display charging mechanism and are open 24 hours a day 7 days a week. However, charges only apply between 08:00 and 18:00 Monday to Saturday (excluding Bank Holidays except Good Friday).

2.3.24 Four tariff structures are operated in the district, varying depending on the location of the car park. The tariff structures are summarised in **Table 9** on the following page and the where each tariff applies are summarised in **Table 10** on the following page. It should be noted that Priorswell Road and Prospect Precinct in Worksop and Carolgate in Retford operate free of charge.

[13] The March 2008 data suggests that these figures are still correct.

Table 9 – Council Maintained Car Parks – Tariff Structures

Waiting Period	Tariff Structure			
	Tariff 1	Tariff 2	Tariff 3	Tariff 4
Up to 1 hour	50p	40p	60p	NA
Up to 2 hours	70p	60p	90p	NA
Up to 3 hours	90p	80p	£1.30	NA
Half day (4 hours)	£1.20	90p	NA	£1.40
Full day	£2.40	£1.80	NA	£2.80
3 month Season Ticket	£107.65	£107.65	£107.65	£107.65
6 month Season Ticket	£200.63	£200.63	£200.63	£200.63
12 month Season Ticket	£364.08	£364.08	£364.08	£364.08

Table 10 – Council Maintained Car Parks – Tariff Locations

Location	Type		Tariff 1	Tariff 2	Tariff 3	Tariff 4	Free
	Short Stay	Long Stay					
Worksop							
Town Hall	✓				✓		
Newgate Street (East)	✓		✓				
Newgate Street (West)		✓	✓				
Queen Street	✓				✓		
Castle Hill		✓	✓				
Central Avenue		✓	✓				
Memorial Avenue	✓	✓	✓				
Lead Hill		✓	✓				
Gateford Road		✓	✓				
Priorswell Road		✓					✓
Farr Park		✓		✓			
Retford							
Chancery Lane (North & South)	✓				✓		
Chapelgate	✓				✓		
New Street	✓				✓		
Churchgate	✓	✓	✓				
West Street		✓				✓	
Carolgate	✓						✓

Privately Operated Public Car Parks

2.3.25 In addition to the Council maintained car parks, there are a number of privately operated off-street public car parks in the district. However, these are generally associated with a specific use such as a rail station or retail park.

Other Car Parks in the District

2.3.26 In addition to parking in Worksop and Retford, public parking is available at other locations in the district appropriate to the facilities and amenities in the area.

On-Street Parking

2.3.27 Areas of on-street parking are available throughout the district. These are free of charge.

Civil Parking Enforcement

2.3.28 Civil Parking Enforcement was implemented in Nottinghamshire on 12 May 2008. Bassetlaw District Council makes up part of the Nottinghamshire Parking Partnership, along with Nottinghamshire County Council and all of the other District and Borough Councils within the County. This means that the partnership has taken over parking enforcement responsibility for all County roads and Council owned car parks from the Police.

2.4 BUS TRANSPORT

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Bus Strategy for North Nottinghamshire 2006/7 - 2010/11 (March 2006)
- Bassetlaw District Council website
- Route and timetable information available from Nottinghamshire County Council
- Route and timetable information available from various websites
- Discussions with Stagecoach East Midlands
- Discussions with Nottinghamshire County Council
- Condition of Nottinghamshire 2009 Study

Existing Conditions

Bus Services

2.4.1 Bus services within the district fall into two distinct groups, commercial and financially supported. Commercial services tend to provide the links between the major settlements in the north of the district; and to key centres located outside of the district – in Lincolnshire and South Yorkshire. However, there is an excellent working partnership between the major commercial operator, Stagecoach East Midlands and Nottinghamshire County Council which ensures that LTP funding is directed to the most appropriate area. (For example in order to improve accessibility, the four vehicles used to operate the 'commercial' town network in Worksop are funded by Nottinghamshire County Council through the LTP. In the northern rural area much of the bus network is financially supported by Nottinghamshire County Council. It is estimated that the County Council currently[14] financially supports approximately 70% of bus services within the district at an annual cost of some £1.5 - £2m. A plan showing the extent of the County supported network is at **Figure 11**.

2.4.2 The commercial network mainly comprises daytime bus services running Mondays to Saturdays between 07:00 and 19:00 hours. The County Council supports a significant level of rural daytime services and evening and Sunday operations where they are deemed necessary. Given the constraints on revenue funding available to support bus services; this funding has to be

[14] It should be noted that funding provided by the County Council may change in the future which could affect service levels. Greater levels of private funding may therefore be necessary in the future to maintain/improve bus service levels.

prioritised against other funding commitments. Nottinghamshire County Council has developed a Performance Management Tool for this purpose.

2.4.3 Within Nottinghamshire approximately 77% of households in rural areas (Parishes with a population of less than 3,000) are within 800 metres walking distance of a bus stop with a bus service with an hourly frequency (or better) on Mondays to Saturdays between 06:00 and 18:00 hours. This is illustrated in **Table 11** as follows.

Table 11 – Accessibility to Existing Bus Services[15]

Area	% of Households within 800m of a Bus Stop With an Hourly (or Better) Weekday (06:00-18:00 hrs) Bus Service	
	Commercial Services	All Services
Nottinghamshire Urban (>3,000 population)	89%	94%
Nottinghamshire Rural (<3,000 population)	53%	77%
All Nottinghamshire County	83%	91%

2.4.4 Stagecoach East Midlands is the dominant commercial bus operator within the district. Bus services are provided from 2 depots, at Worksop and Gainsborough, although only the former is within Bassetlaw District. From the two locations, over 75 vehicles and 200 staff are employed and between them they operate approximately 50 routes in Nottinghamshire, Derbyshire, Lincolnshire and South Yorkshire covering more than 6 million miles and carrying over 5½ million passengers a year.

2.4.5 Worksop has an allocated fleet of 47 buses and a requirement of 41, with 115 drivers and 146 staff in total. The depot runs 3 million miles and carries 4.5 million passengers annually. All the services work in Bassetlaw, but also operate into the neighbouring areas of Derbyshire and South Yorkshire.

2.4.6 Gainsborough which is just over the River Trent and county boundary in Lincolnshire has an allocation of 31 buses with a requirement of 27. Of these there are seven working totally in Bassetlaw, five buses on 96/97 and two on Retford town services 47/47A. In addition there are two peak hour school buses bringing children from Bawtry and Retford to Queen Elizabeth's High School in Gainsborough. The depot runs around 3 million miles per annum and carries just over 1 million passengers.

[15] Bassetlaw District Council is undertaking a separate accessibility study for the District. This study therefore does not cover accessibility issues within the District to avoid any duplication.

2.4.7 Two other major operators within Bassetlaw District are Marshall's Coaches based in Sutton-on-Trent, and Veolia (formerly Dunn-Line) who have bases in Nottingham and Tuxford. Marshall's operate a growing mix of commercial and tendered services whilst Veolia provide mainly tendered services operated on behalf of Nottinghamshire County Council. Given the rural nature of Bassetlaw District, much of the network, particularly in the north of the district is operated under contract to the County Council.

2.4.8 Kettlewell's of Retford, Wilfreda Beehive from Adwick-le-Street near Doncaster and Isle Coaches of Owston Ferry are smaller operators also providing local bus services.

Bus Services - Retford

2.4.9 During weekday daytimes, Retford has a relatively good bus network. There are inter-urban services to Worksop; Newark, Ollerton, Doncaster and Gainsborough and a small local town network provides frequent services to the main housing areas of the town. However, the rural daytime network; evening town network, and Sunday services currently require approaching £2m annual financial subsidy from the County Council.

2.4.10 **Figure 11** illustrates the Retford bus service network and **Table 12** below identifies all bus services operating in the Retford area and gives information relating to the frequency of these services.

Table 12 – Bus Services in the Retford Area

Service No.	Operator	Route	Service Frequency (Buses per Hour)			
			07:00-09:00	09:00-17:00	17:00-19:00	Evenings
23	SEM	Retford – Carr Hill	-	Infrequent	-	-
24	Veo	Retford – Bracken Lane	-	Infrequent	-	-
26	Veo	Retford - Hallcroft	-	5 journeys	-	-
27/27A	SEM	Retford – Bawtry - Misson	1	1-2 hours	1	-
29/X29	SEM	Retford – Blyth – Bawtry – Robin Hood Airport	1	1	1	Infrequent
35	Veo	Retford – Walesby – New Ollerton	1	1-2 hours	1	-
36	Veo	Retford – Tuxford – New Ollerton	1	1	1	-
37	Marshall	Retford – Tuxford – Newark	1	1	1	Infrequent
38	Veo	Retford – Elkesley – Tuxford	-	½	-	-
42/42A	SEM	Retford – Worksop - Wensleydale	1	1	1	Infrequent
47/47A	SEM/Veo	Hallcroft – Retford - Ordsall	2	2	2	Infrequent
89	Veo	Retford – Dunham - Tuxford	1	1	1	-
91/92	Veo	Retford – Woodbeck – North Leverton - Retford	1	Infrequent	-	-
93	Veo	Retford – Woodbeck - Dunham	-	Infrequent	1	-
94/94A/95/95A/95B	Veo	Retford – Gainsborough	1	-	1	-
96/97/97B	SEM/Veo	Retford – Misterton – Gainsborough	1	1	1	-
98A	Veo	Bawtry – Misterton – Gainsborough	1	-	1	-
99	SEM	Retford - Bawtry – Doncaster	1	1	1	-

Bus Services – Worksop

2.4.11 During weekday daytimes, Worksop enjoys a comprehensive town service network with frequent local services and a respectable inter-urban network with services to Rotherham, Doncaster; Chesterfield and (by connection) to Nottingham.

2.4.12 **Figure 11** illustrates the Worksop bus service network and **Table 13** on the following page identifies all bus services operating in the Worksop area and gives information relating to the frequency of these services.

Table 13 – Bus Services in the Worksop Area

Service No.	Operator	Route	Service Frequency (Buses per Hour)			
			07:00-09:00	09:00-17:00	17:00-19:00	Evenings
4/4A	SEM/Veo	Bassetlaw Hospital – Worksop - Manton	2	3	2	1
5/5A	SEM	Worksop – Gateford - Worksop	2	2	2	-
7/7C	SEM	Worksop – Shireoaks/Rhodesia – Worksop	2	2	2	1
8	Veo	Worksop - Sainsburys	-	1	-	-
9	Veo/SEM	Worksop – Market Warsop - Mansfield	1	Infrequent	1	Infrequent
19/19A/19B	SEM	Worksop – Dinnington – Rotherham	2	2	2	1
22	SEM	Worksop – Langold – Doncaster	2	2	2	1
27/27A	SEM	Retford – Bawtry - Misson	1	1-2 hours	1	-
29/X29	SEM	Retford – Blyth – Bawtry – Robin Hood Airport	1	1	1	Infrequent
X30	SEM	Worksop – Langold – Harworth – Robin Hood Airport	1	1	1	1
31/31A/31X	SEM	Worksop – Bircotes – Tickhill – (Doncaster)	1	1	1	-
34	Veo	Worksop – West Markham – Tuxford				
42/42A	SEM	Retford – Worksop - Wensleydale	1	1	1	-
43/43A	SEM	Wensleydale – Worksop – Manton	1	1	1	2
77	SEM	Worksop – Clowne – Chesterfield	2	2	2	1
83/4	Veo	Worksop – Misterton – Gainsborough/Walkeringham	1	Infrequent	1	-

Other Bus Services Within the District

2.4.13 The majority of bus services operating within Bassetlaw District originate or terminate in either Retford or Worksop. However, there are strong socio-economic links outside of the district and this naturally results in other bus services providing links to key centres located outside of the district – in Lincolnshire and South Yorkshire.

2.4.14 These and other bus services in the north and west of the district are summarised in **Table 14** below.

Table 14 – Bus Services out of the District

Service No.	Operator	Route	Service Frequency (Buses per Hour)			
			07:00 - 09:00	09:00 - 17:00	17:00 -19:00	Evenings
Sherwood Arrow	SEM	Nottingham – Bilsthorpe – Edwinstowe – New Ollerton New Ollerton – Budby - Worksop	1	½	1	Infrequent
9	Veo/SEM	Worksop – Market Warsop - Mansfield	1	Infrequent	1	Infrequent
19/19A/19B	SEM	Worksop – Dinnington – Rotherham	2	2	2	1
22	SEM	Worksop – Langold – Doncaster	2	2	2	1
25	SEM	Doncaster – Bawtry – Haworth	2	2	2	1
29/X29	SEM	Retford – Blyth – Bawtry – Robin Hood Airport	1	1	1	Infrequent
X30	SEM	Worksop – Langold – Harworth – Robin Hood Airport	1	1	1	1
31/31A/31X	SEM	Worksop – Bircotes – Tickhill – (Doncaster)	1	1	1	-
77	SEM	Worksop – Clowne – Chesterfield	2	2	2	1
83/4	Veo	Worksop – Misterton – Gainsborough/Walkeringham	1	Infrequent	1	-
94/94A/95/95A/95B	Veo	Retford – Gainsborough	1	-	1	-
96/97/97B	SEM/Veo	Retford – Misterton – Gainsborough	1	1	1	-
98A	Veo	Bawtry – Misterton – Gainsborough	1	-	1	-
99	SEM	Retford - Bawtry – Doncaster	1	1	1	-

Coach Services

2.4.15 Retford and Worksop are served by one coach service, operated by National Express. Service 450 runs once daily and links Retford to London via Worksop; Nottingham; Leicester and Milton Keynes.

Community Transport and Voluntary Car Schemes

2.4.16 Within the LTP process, Accessibility is identified as one of the four 'shared priorities' that national and regional government agreed with local authorities, and all local transport authorities are required to develop Accessibility Strategies as an integral part of their LTP process. The Accessibility Strategy for North Nottinghamshire supports and complements Nottinghamshire's Community Strategy, 'All Together Better', as set out in the LTP2 document[16]. In February 2010 the strategy was replaced by a new Sustainable Community Strategy 2010 to 2020[17]. The new document retains a strong focus on a greener, safer, healthier and more prosperous Nottinghamshire, in which accessibility has a role in achieving.

2.4.17 It should also be noted that the existing LTP expires on 31 March 2011 and by this time Nottinghamshire County Council must develop and submit LTP3 to the Government Office for the East Midlands[18]. LTP3 will consist of a strategy – which Nottinghamshire County Council proposes to run from 1 April 2011 to 31 March 2026, with reviews at least every five years, and a implementation plan which will run for three year periods, with annual monitoring reviews. The other main change from the current system is that Nottinghamshire County Council will produce one LTP for its entire area of jurisdiction rather than one LTP for North Nottinghamshire and another in conjunction with Nottingham City Council for Greater Nottingham.

2.4.18 Voluntary and community transport schemes are particularly important in the rural parts of the district and provide a key role in meeting the travel needs of people who may not be able to access and use conventional public transport services. All potential users of the service must undergo an initial assessment.

2.4.19 There are a range of community transport services provided by various organisations throughout the district. The range of transport options for people who have difficulty in using

[16] Source: North Nottinghamshire LTP 2006/7 to 2010/11
[17] Source: Nottinghamshire Sustainable Community Strategy: http://www.nottinghamshirepartnership.org.uk/index/sustainable-community-strategy/
[18] Source: Nottinghamshire County Council Report of the Cabinet Member for Transport & Highways ` Development of Third Local Transport Plan' (28 April 2010): http://itsacr02a.nottscc.gov.uk/apps/ce/memman/memman.nsf/FBC8C4650A844634802576100031CD8D/$file/16_Development%20of%20Third%20LTP.pdf

existing public transport services includes social car and minibus schemes; flexible bus services; accessible buses and taxis and shopmobility.

2.4.20 In order to implement economies, the County Council recently proposed to reduce the budget for community transport from £250,000 per annum to £150,000, but has subsequently announced that it will continue to fund it for a further year pending a full review of the service in response to the feedback received from the consultation so far on the authority's budget proposals for 2010/11.

2.4.21 In 2008/9 the two minibus community transport schemes serving Bassetlaw (Clowne and District Community Transport and the Sherwood Countryman) operated 25,755 miles; carried 15,777 passengers and (for 2009/10) are expected to require funding totalling £26,750. In 2009/10, the three voluntary car schemes serving the Bassetlaw District (WRVS; Tuxford and District Dial-a-Trip and Bassetlaw Community Car Scheme) will require funding totalling £61,787 and are expected to carry 16,277 passengers and operate 143,706 miles[19].

Demand

2.4.22 Throughout most of the country, bus services are generally are in decline. However, within Bassetlaw, the partnership between Stagecoach and Nottinghamshire County Council is reporting a 15% increase in the number of customers. This undoubtedly results from the initiatives and improvements in the bus infrastructure noted elsewhere in this section and possibly the introduction of the national Concessionary Fares scheme in 2008.

2.4.23 There is a strong Bus Quality Partnership (BQP) between Nottinghamshire County Council and bus operators in Bassetlaw and North Nottinghamshire. In 2007 Stagecoach East Midlands provided under contract to the County Council, two high profile routes between Worksop, Carlton, Langold, Bircotes, Harworth and Bawtry to Robin Hood Airport (X30) and Retford, Barnby Moor, Ranskill, Bircotes, Harworth, Bawtry to Robin Hood Airport (X29). The new core routes were supported by careful integration into the existing commercial bus network, upgrading and coordinating adjacent timetables to deliver journey connections, and easing travel opportunities through flexible ticketing. The core routes are branded Airport Lynx with the supporting routes branded Local Lynx.

2.4.24 Six brand new buses were provided by Nottinghamshire County Council for Stagecoach East Midlands to deliver the core services, and to support these improvements, Stagecoach drafted in a number of newer low floor buses from other subsidiaries across the UK to convert additional bus routes to low floor operation. These routes included service 22 Worksop to

[19] Figures supplied by NCC Public Transport Unit.

Doncaster via Carlton, Tickhill and Wadworth, service 27 Retford to Bawtry via Lound and Mattersey, services 96/97 Gainsborough to Retford via Misterton and Clayworth, and service 99 Retford via Bawtry to Doncaster.

2.4.25 The Airport Lynx and Local Lynx network has delivered an overall improvement in patronage of 7% with around 110,000 passenger journeys per month.

2.4.26 In January 2008 the Stagecoach East Midlands and Nottinghamshire County Council joined with Bassetlaw Primary Care Trust to enhance the Retford town services. Operated to traditional route patterns, with conventional step entry buses, patronage on these services was in decline. Joint investment with a three year grant from the PCT has resulted in two dedicated, branded low floor buses entering service under the name "Retford Bus About Town" on a simplified route pattern with connection opportunities, flexible ticketing, new bus stop infrastructure, better timetable information provision, and regular drivers. This initiative also coincided with the investment by Nottinghamshire County Council in a new Retford Bus Station, reference to which is made in paragraph 2.4.29. Patronage on the route has increased by 15% to 13,500 journeys per month.

2.4.27 In June 2008 Stagecoach East Midlands worked with Nottinghamshire County Council to deliver 'Worksop Bus About Town'. This has seen six new low floor single deck buses enter service on routes serving Larwood, Shireoaks, Rhodesia, Valley Road and Coniston Road, four funded by Nottinghamshire County Council and two by Stagecoach. In addition, Services 42/43 linking Retford and Worksop via Manton have been extended to Bassetlaw Hospital to provide the link between both Bassetlaw town networks and, in November 2009, low floor double deck buses were assigned to these routes. Around 60,000 journeys a month are being taken on the 'Worksop Bus About Town' buses.

2.4.28 Nottinghamshire County Council supports bus operators through the Bus Quality Partnership with good quality bus stop infrastructure and timetable information at stops. The Council also funds services covering Sundays and evenings, making the pattern of operation consistent. Nottinghamshire County Council is also working with South Yorkshire Passenger Transport Executive (PTE) to "bolt" onto their real-time passenger information (RTPI) system for bus routes to the north of Bassetlaw.

Bus Stations

2.4.29 There is an existing bus station in Retford. The bus station adjacent to Arlington Way is a newly-built facility which was provided by Nottinghamshire County Council in 2006 as part of a programme of upgrade, rebuild and refurbishment of the county's bus stations. The station was highly commended at the 2007 UK Bus Awards for its modern and comfortable design,

which has boosted passenger safety and acted as a catalyst for growth and change in the town centre. The station cost £1.4m to construct and offers a huge improvement for passengers compared to the previous layout.

2.4.30 Hardy Street in Worksop although conveniently located for the town centre is really only a collection of on-street bus stops and shelters, as opposed to a purpose built bus station facility. As part of the County Council policy to upgrade; rebuild or redesign the county's bus stations, a working party is looking at proposals for a new facility in Worksop.

Network Performance

2.4.31 As outlined earlier, Stagecoach has indicated that some of their network within Bassetlaw is showing a small year-on-year growth in the number of passengers travelling. However, given that 46% of customers are travelling using Free Concessionary passes, the burden of funding for this travel will fall to the concessionary reimbursement arrangements which are the subject of ongoing dialogue between the bus operators; District and County Councils.

2.4.32 Nottinghamshire County Council is responsible for funding much of the rural network, at an estimated cost of £1.5 - £2m per annum. The current network was introduced after a major tendering exercise undertaken in 2006. Contracts are in place until 2011, and the County Council expects to review the network again in 2010 when it expects to make some economies from the current network, mainly through the expeditious use of buses providing school services[20].

Accessibility to Services and Key Destinations

2.4.33 **Figure 12** shows the location of every bus stop within the district[21]. Each bus stop location is shown with a 400m and 800m buffer zone surrounding the stop to provide an indication of accessibility to bus services within the district. These buffers represent typical 5 and 10 minute walking distances respectively.

2.4.34 As could be expected there are clear bus service corridors that follow major transport routes throughout the district. The areas where bus service coverage is at its highest are within the towns of Retford and Worksop, a corridor between Retford and Worksop, a corridor between Retford and Newark, and outside of the district to Chesterfield; Doncaster and Gainsborough.

2.4.35 The district generally has a very good coverage of bus stops, although in some of the more rural areas of the district, walking distances to bus services are much greater.

[20] At the time of writing, NCC confirmed that this was still the current position.
[21] Source: Nottinghamshire County Council.

2.5 PASSENGER RAIL

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Route and timetable information available on various websites
- Network Rail ECML (Route 8) Route Utilisation Strategy (RUS) (February 2008) and CP4 Route Delivery Plans (March 2009).
- Network Rail's East Midlands and Yorkshire and Humberside Route Utilisation Strategies (RUS) (Spring 2008).
- Network Rail's South Cross Pennine and Midland Main Line (Routes 11 and 19) CP4 Delivery Plans (March 2009).
- Consultation with Nottinghamshire County Council's rail manager.
- National Rail Trends – Office of Rail Regulation (ORR).
- National Rail Travel Survey – Final Report – 2008.
- The Office of Rail Regulation (ORR) decision on a series of applications for track access rights for passenger services on the East Coast Main Line
- East Midlands Trains website (www.eastmidlandstrains.co.uk)

Existing Conditions

2.5.1 **Figure 13** shows the passenger rail network within Bassetlaw District. The district is served by three passenger routes, the East Coast Mainline which runs north-south down the centre of the district served through Retford station; the Robin Hood line which terminates at Worksop and the Northern Rail Sheffield to Lincoln line which runs in a broadly easterly direction passing through Worksop and Retford stations.

2.5.2 The East Coast Main Line (ECML) is the high-speed link between London, Yorkshire, the North East and Edinburgh. It also handles cross-country, commuter and local passenger services, and carries heavy tonnages of freight traffic, particularly over the northern sections. The route forms a key artery on the eastern side of the country and parallels the A1 Trunk Road. It links London, the South East and East Anglia, with the Yorkshire and Humber and North East Regions, and Eastern Scotland. It also carries key commuter flows for the north side of London.

2.5.3 The line's current principal operator East Coast is formally known as the East Coast Mainline Company Ltd, whose services include regular trains from King's Cross to Leeds and Edinburgh. 'East Coast' is the trading name of this wholly-owned subsidiary of a new UK government-owned company called Directly Operated Railways Ltd. 'East Coast' replaced National Express East Coast Ltd on 14 November 2009. The government has stated that it intends to re-tender the franchise in 2010.

2.5.4 The current normal weekday level of operation of long distance trains in and out of King's Cross comprises approximately 2 trains per hour (TPH) to/from the North East and Edinburgh, up to 2 TPH to/from Leeds and a train roughly every two hours between Hull and King's Cross. This level of service increases to 5 or 6 TPH at peak times. Some of the Leeds and Edinburgh trains extend to/from Bradford, Harrogate, Skipton, Glasgow Central, Inverness and Aberdeen.

2.5.5 However, not all trains serve Retford and the timetables are not clock-face (i.e. train times do not coincide with easy to remember intervals such as 10 past the hour etc); but the general frequency gives 1 train per hour southbound to London during Monday to Saturday daytimes. The fastest journey is just 1 hour 34 minutes which is a very competitive journey time given the distance involved. Northbound services are also approximately hourly.

2.5.6 Northern Rail (often referred to simply as Northern) is the train operating company that has operated local passenger services in the north of England since 12th December 2004. Northern run a mix of commuter routes, rural routes and some longer distance services around Cheshire, Co. Durham, Cumbria, Greater Manchester, Lancashire, Merseyside, Northumberland, Tyne and Wear and Yorkshire. Northern's services also extend to the north Midland counties of Derbyshire, Lincolnshire, Nottinghamshire and Staffordshire.

2.5.7 Northern trains operate a service from Meadowhall (Sheffield) to Lincoln running via Woodhouse; Shireoaks; Worksop; Retford and Gainsborough. Generally on Mondays to Fridays and Saturdays trains operate hourly in each direction. On Saturdays there are occasional journeys to Grimsby and Cleethorpes.

The Robin Hood Line

2.5.8 The Robin Hood Line is the railway line which runs from Nottingham to Worksop. At Nottingham there are frequent onward connections to London, Birmingham, Derby, Leicester, Manchester Norwich and other centres.

2.5.9 Passenger services are operated by East Midlands Trains. Currently, the Robin Hood Line operates frequent services, on Mondays to Saturdays between 05:40 and 23:05. During the day, trains run at half hourly intervals between Nottingham and Mansfield Woodhouse, with

one service an hour continuing to Worksop. On Sundays, a more limited service is provided between 07:30 and 20:30 hours.

2.5.10 In addition to being an important commuter service, used by over 3,500 people a day, the line also offers access to a number of attractions in Nottinghamshire and Derbyshire.

Demand

2.5.11 The East Coast Main Line Route Utilisation Strategy (RUS) identifies the issues that are currently faced on these routes and those that are predicted to arise over the next decade. The purpose of the Route Utilisation Strategy is to identify a strategy for the railway to meet expected future requirements in a way that is deliverable, affordable and consistent with performance and safety improvements. Included within the East Coast Main Line Route Utilisation Strategy, which was published by Network Rail in February 2008, are selected and broad demand patterns.

2.5.12 The East Coast Main Line Route Utilisation Strategy encompasses all long distance high speed and London commuter services into King's Cross and Moorgate (via Finsbury Park), all local services in North East England and various other regional and longer distance services covering parts of the route. It also includes all freight services within or traversing the Route Utilisation Strategy area and has interfaces with the East Midlands Route Utilisation Strategy and the Yorkshire and Humberside Route Utilisation Strategy. For the purposes of this study only information in respect of Retford is of relevance.

2.5.13 The Route Utilisation Strategy classifies passengers from Retford into LDHS (Long Distance High Speed) category. It estimates that 1,200 journeys per weekday are made to and from Retford. The counts are total passengers in both directions and are summarised between stations. The daily total flow from north of Retford is 25,000 and from south of Retford is 26,200. Similar methodology is used to identify capacity, with the number of seats available south of Doncaster identified as 63,390 per weekday.

2.5.14 The Route Utilisation Strategy comments that demand is highest between London and Peterborough and this key flow has shown very strong growth in recent years. The highest rate of growth, on individual flows, has generally been between London and stations within an approximate 90-minute journey time of King's Cross, reflecting an increase in commuting from areas further away from London. However, the historic rate of growth, particularly at Grantham, Newark and Retford, appears to have stabilised over the last few years.

2.5.15 **Table 15** on the following page highlights the growth in the number of passenger journeys from the top 4 stations on the East Coast Main Line.

Table 15 – Growth in Rail Journeys to/from London

Passenger Journeys to/from London Between 1998/99 – 2004/05			
Station	1998/99	2004/05	% Change
Grantham	235,000	420,000	80
Hull	120,000	210,000	75
Newark	250,000	430,000	70
Retford	55,000	85,000	60

2.5.16 The demand and supply measurements used in the Route Utilisation Strategy are generalised in that no attempt is made to selectively identify capacity problems at stations or times of the day/week. The Route Utilisation Strategy comments "Services on Fridays are used by higher numbers of passengers – by business, commuter and weekday leisure travellers (as for the rest of the week) plus weekend travellers."

2.5.17 East Coast Main Line services suffer from significant overcrowding at certain times. On the busiest trains it is not uncommon for passengers to have to stand, especially between London and Peterborough with average current peak loadings between 70 to 80 percent in this area. Standing can extend to Leeds and York or further on some busy weekend trains.

Network Performance

2.5.18 In order to formulate and monitor policy a variety of statistics are collected and published. The Office of Rail Regulation has overall responsibility for rail statistics and produces the key industry statistics publication. The Office of Rail Regulation collects and publishes Rail Statistical information on a quarterly basis. Two main measures are used – Public Performance Measure (PPM) and complaints and handling.

2.5.19 The Public Performance Measure was introduced in 2000 to give a better indication of the actual performance of Britain's passenger railways. It combines figures for punctuality and reliability into a single performance measure. It covers all scheduled services, seven days a week. PPM measures the performance of individual trains against their planned timetable. This may differ from the published timetable. PPM is therefore the percentage of trains 'on time' compared to the total number of trains planned.

2.5.20 A train is defined as on time if it arrives within five minutes (i.e. four minutes 59 seconds or less) of the planned destination arrival time for London, South East and regional operators; or ten minutes (i.e. nine minutes 59 seconds or less) for long distance operators. Where a train fails to run its entire planned route, calling at all timetabled stations, it will either be shown as

cancelled (if it runs less than half its planned mileage) or will be added to the trains in the '20 minutes or more' lateness band.

2.5.21 Trains which complete their journey as planned are measured for punctuality at their final destination. A train's performance is generally recorded by the automated monitoring systems which log performance using the signalling equipment.

2.5.22 The latest results available from the Office of Rail Regulation were published in January 2009 and relate to second quarter 2008 (July to September). In addition to the quarterly PPM figure; the Office of Rail Regulation also publishes moving annual averages (MAA) which allows for comparisons between train operating companies. Unfortunately due to changes to franchise arrangements introduced in December 2007 – MAA comparisons are not representative.

2.5.23 **Table 16** shows information relating to the PPM for the three rail networks. This information has been extracted from National Rail Trends data published by the Office of Rail Regulation.

Table 16 – Summary of Public Performance Measure

Train Operating Company	2008/9 Q1 (April - June)	2009/10 Q1 (April - June)	MAA to 31/3/2009	MAA to 30/6/2009
National Express East Coast	86.1	90.4	86.9	88.0
East Midlands Trains	89.1	93.0	89.3	90.3
Northern Trains	92.1	93.6	89.8	90.2

2.5.24 The number of complaints received is a useful addition to the range of performance indicators. Unlike other system-based measures, the number of complaints reflects direct feedback from passengers. Used in conjunction with other performance measures, such as the PPM, a more comprehensive description of rail industry service and passenger satisfaction is reported.

2.5.25 A complaint is defined as 'any expression of dissatisfaction by a customer or potential customer about service delivery or about company or industry policy'. Train operating company's record and report complaints made by letter, fax, e-mail, pre-printed form or telephone. As some train operating companies carry more passengers than others, this data is expressed as a rate per 100,000 passenger journeys.

Table 17 – Summary of Train Operator Complaints[22]

Train Operating Company	2008/9 Q1 (April – June)	2008/9 Q2 (July – Sept)	2008/9 Q3 (Oct – Dec)	2008/9 Q4 (Jan – March)
National Express East Coast	243	329	236	190
East Midlands Trains	136	137	115	118
Northern Trains	28	35	55	45

2.5.26 **Table 17** above shows the number of complaints received per 100,000 customers for the three train operating companies serving Retford. As with the PPM, comparisons between the current and former franchisees are unrepresentative given the constitution of the franchises.

Rail Stations

2.5.27 For a town of its size, Retford has an unusually large rail station. The first railway station in Retford was built by the Sheffield and Lincolnshire Junction Railway which opened in July 1849 on their line between Sheffield and Gainsborough. The Great Northern Railway line from Doncaster arrived in September 1849 crossing the Sheffield and Lincolnshire Junction Railway on the level. For the first few years the two stations were separate, but in July 1859, the Sheffield and Lincolnshire Junction Railway began using the Great Northern Railway station via a short connecting curve, and closed its original station.

2.5.28 Retford station is managed by East Coast and has parking spaces for 79 cars. The daily car parking charge is £5 per day. Discounted rates are available for monthly; 3 monthly and annual passes. The higher-level platforms (numbered 1 and 2) respectively serve southbound and northbound East Coast Main Line trains calling at Retford. Between the two platform tracks there are two further lines, used by fast trains not booked to call here. The lower-level platforms (numbered 3 and 4) were added in the 1960s when the flat crossing between the two lines was removed and the Sheffield – Lincoln tracks were lowered to pass beneath the London – Edinburgh route.

2.5.29 Worksop railway station was also opened in July 1849 by the Sheffield and Lincolnshire Junction Railway. It is now an intermediate stop on the regional service from Lincoln to Sheffield operated by Northern Rail and the northern terminus of East Midlands Trains' Robin

[22] 2008/9 data is in the table presented because 2009/10 data is distorted by changes to the information supplied to the Office of Rail Regulation by the Train Operating Companies.

Hood Line from Nottingham and Mansfield (the section from the latter town was re-opened to passengers on 25 May 1998). Worksop station is managed by Northern Rail and has parking spaces for 100 cars.

2.5.30 The only other railway station (Shireoaks Station) within the district is also located on the Lincoln to Sheffield line at Shireoaks, 2km east of Worksop.

2.5.31 A summary of facilities available at all stations within the district is presented in **Table 18**.

Table 18 – Summary of Station Facilities

Facility	Retford	Worksop	Shireoaks
Station Operator	East Coast	Northern Rail	Northern Rail
Accessibility customer help points	Yes	No	No
Hearing loop	Yes	No	No
Accessible ticket machines	Yes	No	No
Accessible booking office counter	No	No	No
Ramp for train access	Yes	No	No
Accessible taxis	Yes	No	No
Accessible public telephones	Yes	No	No
National key toilet	Yes	Yes	No
Step-free access to whole station	Yes	Partial	No
Impaired mobility set-down	Yes	No	No
Accessible car park equipment	Yes	Yes	No
Wheelchairs available	Yes	No	No
Staff help available	Yes	Partial	No
Facilities CCTV	Yes	Yes	Yes
First class lounge	No	No	No
Seated area	Yes	Yes	No
Waiting room	Yes	No	No
Toilets	Yes	Yes	No
Baby changing facility	Yes	Yes	No
Additional travel car park	No	No	No
Taxi Rank	Yes	Yes	No
Cycle storage spaces	20	-	-
Cycle storage CCTV	Yes	-	-
Cycle Hire	No	No	No

Accessibility to Services & Key Destinations

2.5.32 **Figure 13** indicates 800m and 3.2km (straight line) catchment distances to all existing rail stations within the district These represent the typical distances covered in 10 minutes walking or cycling respectively (see **Appendix D** for details).

2.5.33 As can be seen from the figure large parts of Retford and Worksop have reasonable access to passenger rail. However, the rural areas of the district are less well placed in this regard.

2.5.34 As described earlier in this section the Lincoln to Sheffield line caters predominantly for local movements. The East Coast Mainline serves longer distance destinations between London and

Edinburgh as well as linking into a wider network of cross-country, commuter and local passenger services.

2.5.35 The presence of stations on both of these rail lines in Bassetlaw District therefore provides the opportunity for linked trips which greatly improves general accessibility to a wide range of key rail destinations nationwide.

2.6 CYCLING AND WALKING

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Cycling in Bassetlaw map (Nottinghamshire County Council)
- Nottinghamshire Cycling Design Guide 2006
- Discussions with Nottinghamshire County Council
- Nottinghamshire County Council cycle monitoring results
- Nottinghamshire Highway Network Management Plan
- The State of Nottinghamshire 2009 (Nottinghamshire County Council)
- Nottinghamshire 2001 Census Bassetlaw Ward Results (Nottinghamshire County Council website)

Existing Conditions

Highway Cycle Network

2.6.1 **Figure 14** depicts existing cycling infrastructure within the district. The focus of cycling provision is around Worksop and Retford. The town centres and their environs have fairly comprehensive networks of dedicated cycling infrastructure, pedestrianised streets and quiet roads suitable for cycling.

2.6.2 The focus of the Worksop cycling network stems from the National Cycle Network (NCN) route 6 which follows the southern towpath of the Chesterfield Canal through the centre of the town. This then travels south eastwards through Manton on-road before entering Clumber Park. From this cycling 'spine', the highway authority and its partners have developed a number of other cycle routes in the town. A recent example is the Sparken Hill cycle route which was constructed in 2008. Around the town centre, there are a number of quieter roads identified by the Cycling in Bassetlaw cycle map as being suitable for on-road cycling, with these routes also providing access to the north west of the town such as the Kilton area and Bassetlaw hospital. In the north eastern part of the town, there are cycle lanes either side of Valley Road. This joins with a number of quiet road routes and off-road paths linking the residential area of Gateford via a toucan crossing on Raymoth Lane.

2.6.3 Retford has a similar layout, with the National Byway on-road cycle network providing a link into the south of the town, with the London Road section encompassing dedicated cycle lanes.

The National Byway route also connects with the railway station. At Carolgate a further off-highway route is available along the northern bank of the Chesterfield Canal towards Welham. There are also high quality cycle lanes on North Road and shared use footways on Babworth Road in the north western part of the town.

2.6.4 Much of the rest of the district's cycling infrastructure is made up of off-road leisure based facilities. The exceptions are to the east of Gainsborough on the Bassetlaw side of the Nottinghamshire/ Lincolnshire highway authority boundary, where there are shared footway/ cycleways adjacent to the A620 and A631. Aside from this there is a lack of specific cycling infrastructure within the district.

2.6.5 Longer distance leisure routes are described in more detail below, however in addition to the National Cycle Network and National Byway there are a number of other notable off-road cycle links in the area around the Clumber Park which are ideal for leisure cycling and walking.

National Cycle Network

2.6.6 National Cycle Network (NCN) route 6 passes through the western part of the district. It travels from Shireoaks on the Derbyshire/ Nottinghamshire boundary eastwards through the centre of Worksop before continuing south eastwards into Clumber Park. Route 6 is off-road for the majority of its length within Bassetlaw.

National Byway

2.6.7 The National Byway extends 4,500 miles through the UK's natural environment, providing sign directions along quiet rural lanes. In addition to the main route, there are 50 circular loop rides. Much of the eastern part of Bassetlaw is connected by the National Byway, with a route from Retford rail station south eastwards towards East Markham and north eastwards to Gainsborough.

Footways

2.6.8 **Figure 15** depicts existing public rights of way within the district. Both of the district's main towns have pedestrianised streets within their central areas. This allows good accessibility to their retail offerings and enables safe interchange with buses. Cycling is not permitted within these areas.

2.6.9 Footways are provided in all of the main settlements and within many of the residential areas. As the district is largely rural, footways are not normally provided alongside carriageways in these locations. The reasons for this are due to the cost verses likely low levels of footfall, a lack of available width within the highway corridor to provide footways to current specifications and the aesthetic reason of not wishing to 'urbanise' the countryside.

Patterns of Movement

2.6.10 Bassetlaw has a high level of cycling and walking trips to work based upon the 2001 Census results. 14.17% of trips are made by these modes, which is above the Nottinghamshire average of 13.68% and 13.03% Great Britain average. As indicated in **Table 19** below, the levels of cycling and walking to work varies greatly depending upon which ward within the district the commuter lives in. Both modes are in their highest in the wards surrounding the main conurbations, Retford and Worksop, with the highest level of cycling in Retford South wards (6.83% of trips to work) and the highest level of walking taking place in Retford West (18.66%). The lowest levels of cycling and walking occur in the more rural wards, such as Beckingham, Clayworth and Everton.

Table 19 – Travel to Work by Mode (2001 Census)

Ward	Pedal Cycle (% of Trips)	Walking (% of Trips)
Beckingham	1.54%	3.27%
Blyth	1.51%	5.38%
Carlton	2.36%	8.28%
Clayworth	1.44%	3.32%
East Markham	1.03%	5.50%
Retford East	5.03%	14.71%
Retford North	6.25%	12.45%
Retford South	6.83%	11.11%
Retford West	5.33%	18.66%
Everton	1.06%	4.13%
Harworth	4.07%	11.64%
Langold	2.48%	7.53%
Misterton	3.95%	5.87%
Rampton	2.05%	11.68%
Ranskill	2.30%	5.65%
Sturton	1.55%	4.73%
Sutton	1.84%	9.40%
Tuxford and Trent	1.64%	8.61%
Welbeck	2.39%	9.58%
Worksop East	4.30%	15.39%
Worksop North	3.14%	9.82%
Worksop North East	2.43%	9.70%
Worksop North West	3.63%	12.48%
Worksop South	3.02%	11.55%
Worksop South East	5.87%	16.17%

2.6.11 In addition to the Census results, Nottinghamshire County Council records cycle activity as part of the Local Transport Plan (LTP) monitoring process. Cycle count data has been obtained from the County Council for all monitoring sites available within Bassetlaw District. Counts are typically undertaken over a 6 month period and data for 2008 is presented in **Table 20** on the following page.

2.6.12 The count data confirms Bassetlaw to have higher than average County-wide levels of cycling at several locations. **Table 20** shows that Bridge Place in Worksop is the most trafficked route for cycling in the district, followed by Bridgegate.

2.6.13 The highest number of cyclists within the district was recorded at two sites in Worksop. The lowest number of cyclists was recorded on two off-carriageway routes, the Chesterfield Canal in Retford and National Cycle Network Route 6 (also part of the Chesterfield Canal) in Worksop. However, it should be noted that the cycle counts are predominantly undertaken mid-week (Monday to Friday). Therefore, leisure cycle use, which occurs most at weekends, may be under represented in the survey results.

2.6.14 Cyclist numbers at the site in Harworth were consistent throughout the six month period of data collection at this location, despite there being no dedicated infrastructure within the settlement.

Table 20 – 2008 Cycle Survey Data[23]

Site Name	Month and Survey Results (2-Way)												Ave	Total
	J	F	M	A	M	J	J	A	S	O	N	D	Ave	Total
A638 London Road, Retford				108	109	90	82	68	97				92	554
Bridgegate, Retford	156	168	92	177	177	268	204	175	259	163	46	166	171	2,051
Chesterfield Canal, Retford				14	36	24	27	16	21				23	138
Valley Road, Worksop				81	108	123	196	114	133				126	755
Bridge Place, Worksop	263	163	261	308	258	320	266	298	239	202	265	211	255	3,054
NCN 6 Chesterfield Canal, Worksop				26	11	4	20	16	18				16	95
Scrooby Road, Harworth				95	102	146	217	163	135				143	858
NCN 6 East of B6034, Clumber Park				59	13	61	86	25	95				57	339
County Averages	169	149	126	121	130	147	141	123	135	175	148	142	127	

2.6.15 The County Council also undertakes annual cordon counts (latest calibrated data available was for 2006) and 992 cyclists were recorded in at the 5 cordon sites in Worksop, 681 at the 7 cordon sites in Retford, compared to 2,103 for Newark on Trent and 731 for Mansfield[24].

[23] Source: Nottinghamshire County Council – from 2008 LTP monitoring surveys. Surveys are undertaken once a month for the indicated months. Surveys are undertaken over a 9-hour period on a single day (07:00 to 10:00, 11:00 – 14:00, 15:00 – 18:00 hrs). Survey results are presented as 2-way flows.
[24] All count data presented are annual figures for 2006.

Network Gaps/ Opportunities to increase modal split

2.6.16 Generally the district's main settlements, Worksop, Retford, as well as the western edge of Gainsborough in neighbouring West Lindsey District, are well catered for in terms of cycling infrastructure. The following missing strategic links have been identified through a baseline inspection of existing facilities.

2.6.17 In Worksop there is a lack of north-south connections for cycling. The A60 Turner Road/ Blyth Road/ Babbage Way represents a barrier to connecting the two distinct areas of cycling infrastructure. In particular the narrow carriageway width available underneath the Network Rail bridge on Gateford Road causes the main constraint to allowing an adequate on-road or shared footway link which in turn could allow the development of a link between Valley Road and Gateford Road. Without measures such as imposing one-way traffic flow (which could have adverse traffic capacity impacts), or modifications to the bridge structure (likely to be prohibitively expensive) there appears to be no quick win to resolving this connection issue. The alternative route of Carlton Road has a level crossing, however there is insufficient width within the highway corridor to provide on-road cycle lanes or convert the footways to shared use on this route.

2.6.18 Outside of the two main settlements in the district, there are understandably far fewer cycle facilities due to the rural nature of the district. A combination of factors such as journey distance, physical constraints (i.e. available carriageway space widths), perceived safety, the potential for interchange with buses and the need to retain the conservation value of rural roads all combine to create barriers to encouraging cycling and walking in more rural locations. In terms of value for money for a local highway authority, the provision of wide-spread cycling and walking infrastructure between different rural locations is generally not feasible, simply due to there being far fewer potential users of such routes. Therefore, it is concluded that in general the comprehensive existing network of more leisure-based cycling and walking provision, such as bridleways, cycle tracks and canal towpaths are appropriate for the rural areas of the district.

2.6.19 Areas where it is considered that there may be opportunities to supplement existing infrastructure to encourage more journeys to work on foot and cycle are where settlements in Bassetlaw are situated within reasonable commuting distances of larger neighbouring conurbations. The obvious example is the north west of the district, which is adjacent to Doncaster and the South Yorkshire travel to work area. To achieve such improvements would require close cross-boundary working with partner organisations.

2.6.20 Nottinghamshire County Council submitted a bid to the Big Lottery Fund in 2007 for 'Sherwood: The Living Legend', which was ultimately unsuccessful. One of the elements of the bid was to provide a comprehensive new leisure cycling and walking network to connect with the existing major routes such as the NCN. As part of this a substantial preliminary route investigation was undertaken and it is understood that in 2009–2010 the authority has revisited these proposals to develop future cycling and walking infrastructure, although previous routes which extended into Bassetlaw District are no longer being delivered in the short to medium term.

2.7 FREIGHT

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Network Rail, Freight Route Utilisation Strategy, March 2007
- Transport Statistics Bulletin - Water Borne Freight in the UK (2005) – DfT & ONS
- Freight on Water a New Perspective (2002) - Freight Study Group (DETR)
- River Trent Water Freight Feasibility Study – Peter Brett Associates/MDS Transmodal – (2009)

Road Freight

2.7.1 For the purposes of land use and transport planning the County Council applies the following hierarchy of roads:

- Category 1 – Main Roads (Strategic Road Network) – carry traffic between main towns.
- Category 2 – Major Secondary Roads – carry traffic between and within main towns and connect to the Strategic Road Network.
- Category 3 – Other Secondary Roads – district distributor roads, similar to Category 2 but traffic is not specifically directed to use them.
- Category 4 – Local Roads – local distributor roads and access roads.

2.7.2 The purpose of this hierarchy is to influence traffic to take the most suitable routes and to minimise intrusion in the areas through which it passes.

2.7.3 Heavy goods vehicles are directed to use Category 1 and 2 roads wherever possible and through traffic is not encouraged to use Category 3 and 4 roads. Roads forming the strategic network include all Trunk Roads, County primary roads and County non-primary routes of more than local importance, which in Bassetlaw District are; the A1(M), A1(T), A57, A60, A161, A614, A616, A619, A620, A631, A632, A634, A638 and A6075.

2.7.4 In certain areas heavy goods vehicles are prohibited through the use of location specific or area-wide mandatory vehicle weight limits. All existing weight limits within the district are indicated on **Figure 16**.

2.7.5 The road network within the district is shown in **Figure 7** and **Figure 8**, 2009 AADT flows and 2009 HGV flows are shown respectively. The greatest AADT flows were recorded on the A1(M)

and A1(T) which is unsurprising as these form part of the strategic road network and are a key route through the district. The greatest proportion of HGVs were recorded on the A1(M) and A1(T), with these being greater than 20% throughout its length within the district.

2.7.6 In addition to the A1(M) and A1(T), 2-way AADT flows greater than 10,000 were recorded on the A57, A620 and B6045. However, other routes within the district had a greater proportion of HGVs. Routes with a HGV proportion greater than 10% of 2-way AADT were the A631, A614, A634, A57 and A6075.

Rail Freight

2.7.7 The principal routes for rail freight through the district are the GNER East Coast Mainline which runs North-South through Retford linking Edinburgh, Newark, Newcastle, Peterborough, York and London, and the East-West rail link between Lincoln and Sheffield, also connecting Retford and Worksop. Both of these lines are shared between passenger and freight rail services. In 2004/05 these had Annual Average Daily freight train frequencies of 10 to 19.9 trains per day and 5 to 9.9 trains per day respectively.

2.7.8 The Robin Hood line also provides passenger (and some freight) rail services and forms a direct rail link starting from Worksop through Mansfield to Nottingham. In 2004/05 this line had Annual Average Daily freight train frequencies of 0 to 4.9 trains per day.

2.7.9 Sheffield International Rail Freight Terminal (SIRFT) is located adjacent to Europa Way in the vicinity of M1 Junctions 33 and 34 (M1J33 and M1J34) and provides modern warehousing and distribution facilities. SIRFT is connected to the Sheffield – Doncaster freight line and provides connections to mainland Europe and key destinations in the UK. The close proximity of this facility to Bassetlaw provides good opportunities for freight to be transported to/from the district via rail.

Water-borne Freight

2.7.10 No major UK waterways pass through the district of Bassetlaw. The River Idle and the Chesterfield Canal pass through the district but neither of these are currently used for commercial uses. The scope for using waterways within Bassetlaw for commercial freight movements is therefore very low. As such, the relevance of water-borne freight to this study is negligible and has not been considered further.

3 Committed Infrastructure Schemes and Land-Use Developments

3.1 INTRODUCTION

3.1.1 For the purposes of this study committed infrastructure schemes have been assumed to be any proposed changes to existing transport infrastructure or transport services within the district where funding and/or delivery timescales have been confirmed. As this is a strategic study, smaller scale improvements that are unlikely to significantly alter existing transport conditions have been ignored.

3.1.2 Committed land-use developments within the district have been assumed to be proposed developments with planning permissions yet to be implemented, or developments already under construction but yet to be completed or occupied.

3.1.3 Only land-use development proposals that will result in a material changes to existing transport conditions within the district have been taken into account. The criteria used to identify whether transport effects are material are described later in this section.

3.2 HIGHWAYS

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Highways Agency website (www.highways.gov.uk)
- Nottinghamshire County Council website (www.nottinghamshire.gov.uk)
- Discussions with Nottinghamshire County Council

Scheme Summary

3.2.1 There is one key committed highway improvement scheme within the district; the A1(T) Elkesley Junctions Improvement. A scheme to replace 3 existing at-grade junctions on the A1 (T) through the district with grade-separated junctions was recently completed.

A1 Peterborough to Blyth Junctions

3.2.2 The A1 Trunk Road is a north-south regional route of strategic importance connecting the two sections of the A1(M) at Peterborough in the south and Blyth in the north. Most of this length of the A1 is of a satisfactory standard but there were localised problems at six roundabouts. The HA therefore undertook improvements as part of their Major Scheme Programme to replace the following at-grade roundabouts with grade-separated junctions in order to reduce congestion, queuing and delays and to improve road safety:

- Blyth (A1/A614)
- Apleyhead (A1/A614/A57)
- Markham Moor (A1/A57)
- Gonerby Moor (A1/B1174)
- Colsterworth (A1/A151) and the junction of A1/B6403
- Carpenters Lodge (A1/B1081)

3.2.3 The first 3 of the above junctions are located within Bassetlaw District. Improvements at all of the above junctions have now been completed.

A1 Elkesley Junctions

3.2.4 In addition to the improvements mentioned above the HA also has a proposed improvement scheme for the A1 at Elkesley to improve road safety and access to the village. At Elkesley there are currently three at-grade junctions, two with gaps in the central reserve and the A1

currently provides the only road link to the village so all vehicular trips have to either access or cross the A1 at these junctions. These junctions have a poor safety record so improvement options were developed and following a public consultation exercise a preferred scheme was announced in July 2008. The scheme incorporates a new grade separated junction onto the A1 to serve the village with links to Jockey Lane and a realigned Coalpit Lane. Further details on the proposed improvement can be found in **Appendix E**.

A1/B6387 Twyford Bridge Junction

3.2.5 The HA is also investigating possible future improvements at the A1/B6387 Twyford Bridge junction which is located a short distance to the south of Elkesley. Although no scheme proposals are currently included in the HA's Major Scheme Programme the delivery of a major distribution development is dependent upon this junction being improved. This site has planning consent and conditions attached to the planning permission limit the area of the site that can be developed prior to this junction being improved. It is therefore considered likely that an improvement will be implemented by the end of the plan period (2026).

Other Possible Improvements

3.2.6 The following possible improvements have also been identified by the County Council. The Council is safeguarding land for all of these schemes for possible future construction. However, they do not feature in the LTP for North Nottinghamshire published in March 2006 (2006/07 to 2010/11) and consequently have not been considered as being committed for the purposes of this study.[25]

- A620 Re-alignment at Welham
- A620 Clarborough Bypass
- Westgate, Worksop
- A631 Beckingham to Gainsborough

Delivery Timescale & Funding

A1 Elkesley Junctions

3.2.7 Draft statutory Orders for the Elkesley Junctions scheme were published in October 2009 and the consultation period on the draft Orders is currently ongoing, with a deadline for representations by 22 January 2010. Subsequent scheme progression will be subject to

[25] These schemes are currently being reviewed by NCC as part of the preparation of LTP3 covering the period up to 2026.

completion of the statutory processes and to confirmation of funding[26]. The scheme is being funded by the HA, with partial funding of the realignment of Coalpit Lane by Nottinghamshire County Council.

Network & Traffic Changes

3.2.8 When implemented the Elkesley Junctions Improvement scheme will improve local road safety and accessibility of the village by car and non-car modes of transport but is unlikely to affect Annual Average Daily Traffic (AADT) flows on the A1. As a result the improvement will not affect CRF values on the A1 and for the purpose of this strategic study no specific account has therefore been taken of this improvement.

Car Parking

3.2.9 No committed improvement schemes have been identified that will materially alter existing public parking provision within the district. Any proposed new parking provision associated with committed private developments is assumed to cater for the requirements of the development only and will therefore not materially affect existing parking conditions.

[26] NCC has confirmed that this scheme is currently 'on hold' pending the outcome from the Government's Comprehensive Spending Review. As a result it has been decided to postpone the completion of the statutory processes (Public Inquiry).

3.3 BUS TRANSPORT

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11.
- Nottinghamshire County Council LTP3 from April 2011.
- Nottinghamshire County Council – Strategy; Policy and Plans
- East Midlands Regional Plan – March 2009.
- Discussions with Stagecoach East Midlands
- Discussions with Nottinghamshire County Council

Scheme Summary

3.3.1 Nottinghamshire currently has two LTP's, one for Greater Nottingham and one for North Nottinghamshire. The North Nottinghamshire LTP covers the districts of Ashfield (except Hucknall), Bassetlaw, Mansfield and Newark & Sherwood. The Greater Nottingham LTP was developed jointly with Nottingham City Council to reflect the Greater Nottingham travel to work area and covers the south of the County and the City of Nottingham.

3.3.2 The LTP3 guidance, whilst being less prescriptive, places importance on the delivery of the national goals contained within Delivering a Sustainable Transport System (DaSTS) (which details Government's national priorities for transport), regional goals contained within the East Midlands Regional Plan, and local goals such as those contained within Nottinghamshire's Sustainable Community Strategy[27]. National indicators which are used in both the Local Area Agreement (LAA) and Comprehensive Area Assessment are also primarily determined on a countywide geographical area.

3.3.3 The East Midlands Regional Plan[28] (RSS8) provides a broad development strategy for the East Midlands up to 2026.It is recognised in this Plan, that bus services have a key role in improving public transport provision in the Region's Principal Urban Areas, the Growth Towns and Sub-Regional Centres, and in improving linkages between these settlements. In rural areas, buses are often the only viable form of public transport, and are crucial in promoting linkages between market towns and smaller settlements, and between urban and rural areas generally.

[27] Published by the Nottinghamshire Partnership in 2010 and covering the period 2010 to 2020.
[28] Now revoked.

It is also important that bus services should be better integrated with other forms of public transport, and that they become recognisable as part of a coherent public transport network.

3.3.4 Whilst local authorities must review their LTP's regularly, they no longer have to set the LTP for a five year period. A single Countywide LTP3 will be developed to replace the two existing LTP's from 1 April 2011. The LTP guidance sets out what must be included within LTP3 and also advises on the process to be used to develop the LTP. An LTP must address the five key national transport goals as detailed within Delivering a Sustainable Transport System (DaSTS) published by DfT and the regional transport priorities as detailed within East Midlands DaSTS Stage 1 Report, as well as any locally identified priorities.

3.3.5 The existing North Nottinghamshire Local Transport Plan (LTP2) – 2006/07 – 2010/11 (Bus Strategy for North Nottinghamshire March 2006) provides for the majority of improvements planned to bus services within the district and includes improvements to provide:

- Area wide bus priority – Bus priority including information, marketing, infrastructure and small scale traffic management measures.
- Public Transport Accessibility – Raised kerbs, physical access, bus boarders, bus stop lighting (including solar), information, CCTV and other supporting measures to improve accessibility, safety and security for public transport users.
- Bus location and electronic information – electronic displays and real time information.
- Ticketing – Integrated ticketing, prepaid and smartcard systems.
- Upgrading of interchange facilities – Relocation of bus stops, coordinated information, lighting and footway improvements at key nodes in district/local centres.

Delivery Timescale & Funding

3.3.6 Funding for all schemes is from Nottinghamshire County Council's LTP budget.

3.3.7 Within the district, the option to use bus priority as a solution to relieving traffic congestion for public transport is limited, and currently there are no bus priority proposals outstanding.

3.3.8 Bus stops and on-street bus infrastructure has been reviewed and updated. Bus stop upgrades are ongoing. A policy for the provision of bus stops and shelters in Nottinghamshire has been formulated and the County Council, working in partnership with Bus Operators, Local Members, District and Parish / Town Council's, is committed to raising the quality and profile of

bus travel for current and potential users and ensuring this is matched with high quality bus stops and bus shelters. As a minimum, this means stops will include the following features:

- A bus stop pole complete with flag and timetable case(s)
- A raised kerb. The majority of raised kerbs will have a 3m raised boarding area to give sufficient room for wheelchair/buggy access. As a general rule all kerbs are raised to a height of 180mm, giving direct access to the bus.
- A hard standing area. The hard stand will be constructed using whatever material is common to the surrounding footway. If laid directly onto a grass verge, the surface will be tarmac. The size of the hard stand will depend on whether it is required for a shelter or bus stop pole and pedestrian flows. A hard stand for a shelter site will measure 4m in length by 2m in width, note that the width may be more where a wooden shelter is required. A pole site will measure 2m by 2m.
- A Bus Stop Clearway. Persistent parking adjacent to bus stops frequently causes problems for bus operators and passengers. A programme of bus stop clearways will be introduced in urban areas during 2009 -11 as part of the Bus Quality Partnerships and at other locations highlighted by bus operators as problem sites which delay the operation of their services.

3.3.9 In the past, various types of shelters and poles have been installed which do not necessarily reflect local users needs. The new programme of upgrades and renewals will take account of the needs of the local community, including conservation issues. Where there are no constraints every effort will be made to install a fully enclosed shelter. In addition, timetable information will be placed inside the shelter where it is possible. Lighting will be provided where connections are available and within budget. Solar lighting is an optional extra which will be considered as an alternative. All new bus shelters will be DDA compliant.

3.3.10 Real Time Passenger Information (RTPI), bus location and electronic displays are the subject of an ongoing trial. This equipment is already well-established in adjoining areas of South Yorkshire, where a scheme manufactured by ACIS is in use. Bassetlaw could benefit from the infrastructure already supplied.

3.3.11 To assess the potential for using the South Yorkshire ACIS system, Nottinghamshire County Council is undertaking a trial to establish the extent of the network coverage which is already available. If successful there are proposals to introduce real time information at Retford Bus Station and Worksop, Hardy Street and then give consideration to a network of on-street signs. Nottinghamshire County Council has an aspiration to extend this to other parts of the

district if the trial is a success. The introduction of an integrated ticketing scheme is also under consideration.

3.3.12 In Worksop, Hardy Street although conveniently located for the town centre is really only a collection of on-street bus stops and shelters, as opposed to a purpose-built bus station facility. A customer survey 'The Worksop Public Transport Survey' undertaken in early 2009, identified an overwhelming 96% of customers who said they'd like to see better waiting facilities with more protection from the elements and better night time security. The preferred location for the main bus stopping points was in Hardy Street and ideally people would like to see a new bus station there resembling the one in Retford.

3.3.13 Improvement works were carried out in 2002 to alter the layout of the stops on Hardy Street. As part of the County Council policy to upgrade; rebuild or redesign the county's bus stations, a working party is looking at proposals for a new facility in Worksop. Options to provide a new bus station in the town are still being progressed in discussion with Bassetlaw District Council and the main bus operators.

3.3.14 Bus Quality Partnerships have proved successful in the Greater Nottingham Plan area, and this model has now been introduced in North Nottinghamshire and will play an important part in shaping the LTP programme of measures. The North Nottinghamshire BQP is a thriving voluntary partnership with the two major commercial operators', Stagecoach East Midlands and Marshalls of Sutton-on-Trent actively supporting the County Council.

Network/Service Changes

3.3.15 The bus network within the Bassetlaw District is relatively stable with few changes currently proposed to the commercial network. The County Council supported tendered network is to be reviewed in 2010 ahead of a major retendering exercise scheduled to take place in 2011.

3.4 PASSENGER RAIL

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11.
- Network Rail, Freight Route Utilisation Strategy, March 2007.
- Office of the Rail Regulator, decision on a series of track access rights Feb' 2009.
- Network Rail, ECML Route 8 Route Plan March 2009.
- Network Rail, South Cross-Pennine, South Yorkshire and Lincolnshire Route 11 Route Plan March 2009.
- Network Rail, Midland Mainline Route 19 Route Plan March 2009.
- Network Rail, ECML Route Utilisation Strategy February 2008.
- Consultation with Nottinghamshire County Council's rail manager.

3.4.1 Given the importance of the rail network to the government's transport strategy, and the timescale and costs associated with improvements to the network, rail developments take a more coordinated approach, but need longer timescales to implement.

Scheme Summary, Delivery Timescales and Funding

3.4.2 There are 5 improvement schemes proposed which affect the district and these are described as follows.

Capacity Relief East Coast Main Line

3.4.3 A wide ranging programme of proposals all designed to lead to improved capacity for passenger services on the East Coast Main Line (ECML). The proposals include a level crossing closure programme; gauge enhancements; overhead line equipment enhancement and capacity relief plans to strengthen or upgrade the ECML and alternative routes.

3.4.4 Overall the proposals lead to increased capacity and improved safety and performance across the route. The Level Crossing closure programme includes Bathley Lane crossing, which is situated in the adjoining Newark and Sherwood District, just west of the A1/B6325 junction on an unclassified road linking Bathley to North Muskham.

3.4.5 Gauge enhancements between Peterborough and Doncaster will accommodate the carriage of deep sea container traffic on the East Coast Main Line north of Peterborough. Capacity relief

between Peterborough and Doncaster and enhancement of the GN/GE Joint Line via Spalding and Lincoln will provide increased flexibility by the creation of suitable diversionary and alternative routes.

3.4.6 W10 gauge enhancement from Newark to Doncaster via Swinderby and Gainsborough will also provide the capability to carry deep sea containers on standard deck height wagons and will provide additional capacity when the East Coast Main Line can not carry W10 traffic. These combined schemes are being funded by Network Rail and other contributions and are expected to be implemented over the period from 2009-2014. Estimated cost is £248m.

Nottingham Hub

3.4.7 Nottingham Midland Station is one of the principal gateways into the city. Over five million passengers use the station each year and this figure is expected to increase significantly over the next ten years with its redevelopment as a multi-modal transport interchange. The works include a potential additional platform, improved waiting/retail facilities and enhanced station and interchange facilities. The Office of the Rail Regulator (ORR) has approved a £14m funding package for improvements to Nottingham Midland station with the aim of allowing for bi-directional running in order to increase the overall station capacity.

3.4.8 Additionally a Nottinghamshire County Council sponsored programme of upgrades has been approved with an allocation of £50m funding through the Regional Funding Allocation (RFA) process (one of only 2 schemes funded by the RFA). The programme ties together several aspirations of Nottinghamshire County Council to improve rail services through the County and includes the station redevelopment.

3.4.9 With regard to timescales a 4 year delay to the start date (to 2013) has been required to accommodate the funding requirements of the A46 Newark to Widmerpool highway improvement scheme being brought forward and the A453 highway improvement scheme. Completion of the Nottingham Hub is now likely to be in 2015/16.

3.4.10 There will be limited direct impacts on Bassetlaw District as a result of these improvements. However, indirectly the improvement of Nottingham Midland Station is likely to increase future patronage, which in turn is likely to make more frequent services or future extensions to the Robin Hood line more viable, which may benefit the district.

Robin Hood Line

3.4.11 For the Robin Hood Line it is difficult to justify significant investment for line speed improvements, level crossing modernisation and signalling headways which would make the timetable much more robust. The optimum time to undertake any signalling improvements would be when the Nottingham station area is re-signalled.

3.4.12 However, there are two small scale interventions to provide some performance improvements in the shorter term. By improving line speeds it is considered practical to reduce the overall journey time from Nottingham to Worksop by 5 minutes. This brings benefits to those using the line – particularly commuters travelling regularly and to the reliability of the service overall.

3.4.13 The interventions are in two phases and the first, saving 2 minutes was introduced in November 2009. Design work on the second phase to save a further 3 minutes is currently ongoing.

3.4.14 Nottingham station layout is heavily congested and the Phase 3 of the East Midlands Re-signalling Scheme will aim to relax current signalling controls and provide performance and capacity benefits. The scope is likely to include some bi directional signalling on the Robin Hood Line between Mansfield Junction and Nottingham station.

Line Speeds – Lincoln to Sheffield

3.4.15 It is believed that improvements to this line could raise train speeds considerably and one estimate suggests that 20 minutes could be saved on a journey from Lincoln to Sheffield.

3.4.16 Such a reduction would enable more effective use to be made of the train sets and crews such that the service from Worksop to Sheffield could be doubled in frequency for only marginal cost increases (track access; fuel and maintenance).

3.4.17 This project has yet to be fully costed and the benefits quantified, but currently, work is ongoing to pursue this proposal.

Station Improvement Schemes

3.4.18 The National Stations Improvement Programme (NSIP) will deliver improvements to the passenger environment at medium sized stations in England and Wales. It is a cross-industry programme involving Network Rail, TOC's, DfT, ORR, ATOC, Passenger Focus and other stakeholders working together at national and local level. Significant third party funding contributions to the programme are also expected.

3.4.19 The primary objective of the programme is to bring about a noticeable and lasting improvement in the environment at stations for the benefit of passengers. Improvements will be made to increase passenger perception of security, to improve access and egress, to enhance the overall presentation of the station and to improve information provision and other facilities. Network Rail and train operators are working in close cooperation to develop the programme of improvements.

3.4.20 The programme will concentrate on stations in England and Wales, chosen mainly from the busiest stations on the network measured in terms of arrivals and departures. The specific stations are being chosen to maximise the impact for the travelling public, based on the level of customer satisfaction and footfall.

3.4.21 Retford is one of 150 stations that may benefit from a proposed station enhancement scheme. Funding is earmarked for maintenance and renewal with other improvements at larger stations to include platform lifts, and other items designed to comply with DDA requirements.

3.5 CYCLING AND WALKING

Data Sources

- North Nottinghamshire Local Transport Plan 2006/7 to 2010/11
- Cycling in Bassetlaw map (Nottinghamshire County Council)
- Discussions with Nottinghamshire County Council
- Nottinghamshire Highway Network Management Plan
- Nottinghamshire Cycling Design Guide 2006

Scheme Summary

3.5.1 Nottinghamshire County Council has provided the programme of committed cycling and walking schemes for 2009–2010 and advised of possible schemes which are likely to be developed in the short term period from April 2010 onwards. These are illustrated in **Figure 17**.

Highway-Related Schemes

3.5.2 In the current financial year the following schemes have been or are in the process of being constructed through the County Council's Local Transport Plan Integrated Transport Measures programme:

- Carlton Road to Gateford Road cycle route, Worksop;
- A57 East Markham – new toucan crossing and route signing scheme.

3.5.3 The County Council also has an annual budget for introducing new cycle parking and directional signing for cycle routes. The directional signing may be useful for notifying cyclists of short cuts on quiet roads to new cycle routes and new developments, although for the latter there is likely to be a requirement for the developer(s) to provide this infrastructure if it is directly required from their works. For pedestrians there is also an area-wide programme to implement new dropped crossings and make dropped crossing upgrades at existing junctions. Particular key sites for additional cycle route signing, cycle parking and dropped crossings within the existing highway recommended as part of the Transport Study should be noted as the County Council allocates these schemes based upon the assessment of requests from partner authorities and the public.

Public Rights of Way (PROW) schemes

3.5.4 As part of the LTP budget there is an annual programme for carrying out Rights of Way upgrades and signing/ waymarking improvements throughout the North of Nottinghamshire. Upgrades to PROW typically consist of measures such as surface enhancement and widening, renewing stiles and gates and removal of obstruction or overgrown vegetation.

3.5.5 The County Council and British Waterways are also carrying out improvements to the canal towpath from Shireoaks to Worksop in the current financial year. East Retford bridleway number 46 is being resurfaced to improve connections to three other bridleways in its vicinity.

Sherwood Forest

3.5.6 In 2007 Nottinghamshire County Council submitted an ultimately unsuccessful bid to the Big Lottery Fund to redevelop the Sherwood Forest visitors centre into a major regional attraction. This would have also included a significant multi-user network to connect the visitor centre with settlements throughout the county and outside of its boundary, such as Doncaster, Sheffield, Derby, Lincoln and Gainsborough.

3.5.7 The County Council is still proposing to redevelop the Sherwood Forest visitors centre, however and it is anticipated that this will open in 2010. In conjunction with this, there are still plans to enhance cycling, walking and equestrian routes by providing additional links to the National Cycle Network, National Byway, Public Rights of Way network and local cycle network. At the present time routes within the centre of the County are being developed, however the original proposals included the following key projects relevant to Bassetlaw, which may be revisited in the future:

- Development of a route from Worksop to Doncaster;
- Connect Retford with National Cycle Network route 6 and south eastern Worksop;
- Links to Bolsover and Cresswell from the National Cycle Network just south of the Bassetlaw District boundary;
- Longer distance route to Lincoln, which would be accessed in the district using the National Byway from the east of the district or National Cycle Network in the west of the district.

3.5.8 At the present time precise route alignments are not confirmed as the County Council requires further negotiations with land owners on some of these schemes. Work had begun on this process for the Living Legend Big Lottery bid, however until new funding is confirmed this process is currently on hold. For the Bassetlaw Transport Study, however, it is important that future development sites consider these proposals and try to link in with these to encourage sustainable transport to new homes, leisure and workplaces.

Delivery Timescale & Funding

3.5.9 The primary source for carrying out cycling and walking schemes will be the Local Transport Plan. Schemes currently being developed as part of the 2010/11 North Nottinghamshire Local Transport Plan programme in Bassetlaw District consist of the following schemes:

- Newgate Road, Worksop – footway widening to allow shared use for pedestrians and cyclists;
- Anston Avenue, Worksop – new dropped crossing and build out;
- Netherton Road, Worksop – zebra crossing;
- Cycle parking (North Nottinghamshire wide);
- Cycle direction signing (North Nottinghamshire wide);
- New dropped crossings programme and dropped crossing upgrades at existing junctions (North Nottinghamshire wide).;
- Rights of Way upgrades and signing improvements programme (North Nottinghamshire wide).

3.5.10 The Sherwood Forest access network is likely to be developed through a combination of sources in 2010/11 onwards. From discussions with Nottinghamshire County Council, budgets have not yet been confirmed for the routes, however it seems likely that the routes will now be phased in over a number of years, with the emphasis initially being placed south of the district, closest to the new visitor centre.

3.5.11 Additional funding opportunities for providing infrastructure for further schemes identified for non-motorised users in the district as part of the Transport Study include:

- Inclusion within Local Transport Plan projects which are non-specific cycling/ walking schemes but will benefit these users – e.g. highway improvements, safer routes to school, accident remedial schemes, smarter choices/ accessibility planning, speed limit reviews and local access transport studies. There is a need to ensure that design is suitable for cyclists and pedestrians through documents such as Manual for Streets and Nottinghamshire County Council's Cycling Design Guide.
- Nottinghamshire County Council Local Improvement Scheme fund – for smaller environmental and regeneration schemes but often with an accessibility element involved. In 2010/11 it is envisaged that over 400 schemes will be delivered.
- Section 106 and 278 agreement contributions secured through the planning application process.

- Sustrans Connect2 – Big Lottery Funding to create dedicated, high quality local walking and cycling networks.
- Sustrans Links to Schools fund – to connect schools and their communities to the National Cycle Network to provide the safe routes that young people need to cycle and walk to school.
- Landfill Communities Fund – used to provide environmental benefits and to improve the lives of communities living near landfill sites.
- Aggregates Levy Sustainability Fund – used to reduce the environmental impacts of the extraction of aggregates and to deliver benefits to areas subject to these impacts.
- Schools Travel Plan Capital Grants – used to deliver travel plan measures/initiatives and associated improvement works.
- Coalfields Regeneration Trust – is a regional rather than local funding opportunity and would be geographically limited to former coalfield areas.
- Partnerships with Public Transport Operators and Local Employers, for example to introduce cycle parking near bus stops and employment areas.

3.6 FREIGHT

3.6.1 No specific road or rail freight infrastructure proposals have been identified, other than the rail gauge improvements detailed in paragraphs 3.4.5 and 3.4.6. However there are several B8 development use-class (warehouse/distribution) sites proposed that have been taken into account as committed land-use developments.

3.7 DEVELOPMENTS

Committed Land-Use Developments

3.7.1 For the purposes of the study land-use developments have been split into two categories; committed land-use developments located within the Bassetlaw District and committed land-use developments located in adjacent Districts/Boroughs that are likely to result in trips through Bassetlaw District.

3.7.2 To avoid double counting, trips between origins/destinations within the district and land-use developments outside of the district have been ignored since these are accounted for in the trips to/from committed and future growth within the district (although it is acknowledged that land-use developments in adjacent Districts/Boroughs may change the distribution of trips to/from the district).

Committed Land-Use Developments within the District

3.7.3 Information has been obtained from the planning department at Bassetlaw District Council regarding all committed land-use developments within the district (the majority of these are proposed developments with planning permission yet to be implemented, or developments already under construction but yet to be completed or occupied).

3.7.4 Only committed land-use developments that have the potential to generate material changes in existing transport conditions have been taken into account and 'material' has been defined as housing developments comprising 50 or more dwellings, or employment/retail developments of 1,500sqm or greater floor area. These thresholds are defined in the DfT / DCLG – Guidance on Transport Assessment (March 2007) as the trigger points requiring a Transport Statement to be submitted in support of a planning application. So it is considered reasonable to assume that developments smaller than these thresholds will have no material transport impacts. A summary of the committed developments that have been taken into account is presented in **Table 21** on the following page. **Figure 18** displays the location of these sites.

Table 21 – Committed Development within the District

Settlement	Location	Size of Development by Development Use-Class					
		C3 (Dwellings)	100 sqm Floor Area				Other
			B1	B2	B8	A1	
Retford	Raglan Road Retford	60					
Retford	Heathfield Gardens	137					
Retford	Newlands Retford	132					
Retford	West Carr Road	61					
Retford	Queen St Retford	100					
Harworth	Beverley Road Harworth	85					
Misterton	Church Street, Misterton	100					
Worksop	Keats Crescent	55					
Worksop	Monmouth Road	55					
Worksop	Raymoth Lane	57					
Worksop	Portland School	100					
Retford	Ollerton Road	272					
Retford	Leafield	51					
Retford	Thrumpton Lane	76	1,758				
Gringley	West Wells Lane	80					
Misterton	Marsh Lane	73					
Harworth	Harwoth Colliery	1,096	25,548	25,548	25,548	3,252	
Langold	Costhorpe Colliery	300		1,858	1,858		
Worksop	Streetley		19,950	58,947	33,140		
Harworth	Snape Lane			4,500			
Harworth	Gasworks Site				66,237		
Worksop	High Grounds Road					4,745	
East Markham	Bevercotes Colliery				251,275		
Worksop	Priory Centre					2,772	
Worksop	Sandy Lane					2,745	
Worksop	Carlton Road Tesco					8,124	
Retford	A638 Car Auction Room						15 acre site
Total		2,890	47,256	90,853	378,058	21,638	

Note: Only sites greater than 50 dwellings or 1,500sqm of employment are included (see paragraph 3.7.4)

Committed Land-Use Developments Outside of the District

3.7.5 An assessment has also been undertaken of the likely future traffic effects of committed and likely developments in adjacent Districts/Boroughs. In order to do this we have obtained information on development proposals within all Districts/Boroughs that border Bassetlaw. Data has been obtained from a variety of sources including consultation with the relevant local authority planning departments and relevant planning strategy documents. Data has been obtained for the following Districts/Boroughs (also see **Figure 19** for locations and routes):

- Doncaster
- North Lincolnshire
- West Lindsey
- Newark & Sherwood
- Bolsover
- Mansfield
- Rotherham

3.7.6 Only land-use developments that have the potential to generate material changes in existing transport conditions within Bassetlaw will be taken into account (i.e. greater than 50 dwellings, or greater than 1,500sqm of employment/retail). In accordance with Department for Transport WebTAG guidance the data has been summarised and categorised by likelihood of the development proceeding using the following definitions of probability:

- **Near Certain**: The outcome will happen or there is a high probability that it will happen.
- **More Than Likely**: The outcome is likely to happen but there is some uncertainty.
- **Reasonably Foreseeable**: The outcome may happen, but there is significant uncertainty.
- **Hypothetical**: There is considerable uncertainty whether the outcome will ever happen

3.7.7 The study considers only those sites classified as 'Near Certain' and 'More Than Likely'. A summary of the developments that we have identified as being applicable to the study is presented in **Table 22**. Further details can be found in **Appendix F**.

3.7.8 The study does not take into account Regional Spatial Strategy (RSS) housing targets in adjacent districts that are not included in the 'Near Certain' or 'More Than Likely' categories, as these are considered to be aspirational and by no means certain.

Table 22 – Committed Development outside the District

District/ Unitary Authority	Size of Development by Development Use-Class					
	C3 (Dwellings)	100 sqm Floor Area				C1 (Hotel Beds)
		B1	B2	B8	A1	
Doncaster	5,252	735	699	943	-	-
North Lincs	-	-	-	-	-	-
West Lindsey	2,500	51	84	-	19	-
Newark & Sherwood	4,269	1,834	1,259	1,099	-	-
Bolsover	-	-	-	-	-	-
Mansfield	4,005	3,530	1,490	240	80	-
Rotherham	3,890	932	538	216	85	508
Total	19,916	7,082	4,070	2,497	184	508

4 Growth Scenario

4.1 INTRODUCTION

4.1.1 This study has tested the transport implications of the residential and employment growth detailed in the second columns of **Table 23** and **Table 24**.

4.1.2 Also presented, for information, in **Table 23** and **Table 24** is the growth that featured in the earlier LDF Core Strategy 'Issues and Options' consultation and the growth which has subsequently been included in the LDF Core Strategy Publication Draft[29].

4.1.3 As can be seen from the tables this study examines a slightly lower level of residential and employment growth than is now detailed in the LDF Core Strategy Publication Draft. However, the findings of earlier modelling work undertaken for the 'Issues & Options' growth proposals, which examined higher growth, identified almost identical highway mitigation measures to those detailed later in this report and on this basis it is considered reasonable to assume that the findings of this study will apply equally to the growth detailed in the Publication Draft.

4.2 HOUSING GROWTH

4.2.1 Details of proposed residential growth have been provided by the District Council and this is summarised in the second column of **Table 23** below.

Table 23 – Residential Growth

Settlement	Residential Growth (Dwellings) 2009-2026[30]		
	Growth Tested in this Study	Presented for Information Purposes	
		Issues & Options Modelling Assumptions	As now detailed in the Publication Draft
Worksop	**1,377**	1,400	1,429
Retford	**392**	400	477
Harworth	**1,055**	1,100	1,061
Tuxford	**204**	400	203
Langold/Carlton in Lindrick	**0**	400	0
Misterton	**0**	100	0
Rural Service Centres	**386**	0	459
Total	**3,414**	3,800	3,629

[29] Confirmed post completion of this study.

[30] Some dwelling numbers were rounded up to the nearest 100 which gave slightly higher overall totals.

4.3 EMPLOYMENT GROWTH

4.3.1 Details of proposed employment growth have been provided by the District Council and this is summarised in the second column of **Table 24** below.

Table 24 – Employment Growth

Settlement	Employment Growth Total Site Areas (Ha) 2009-2026		
	Growth Tested in this Study	Presented for Information Purposes	
		Issues & Options Modelling Assumptions	As now detailed in the Publication Draft
Worksop	**36**	57.2	44
Retford	**16**	17.9	19
Harworth	**28**	46.5	34
Tuxford	**0**	10.7	0
Langold/Carlton in Lindrick	**0**	10.7	0
Misterton	**0**	0	0
Rural Service Centres	**0**	0	0
Total	**80**	143	97

4.3.2 For employment sites gross floor area (GFA) has been estimated as 40% of the total site areas supplied by the District Council (unless site layout plans with more accurate details were available).

4.4 GROWTH SITE LOCATIONS

4.4.1 Potential growth site locations have been supplied by the District Council. These are indicated in **Figure 25** and are summarised in **Table 25** on the following page which also details the nature of use identified for each site.

Table 25 – Growth Site Details

Ref	Settlement	Location	Use	Use Class
1	Worksop	Osberton Estate	Residential	C3
2	Worksop	Site East of Blyth Road	Either	C3/B8
3	Worksop	Ashes Park Avenue	Residential	C3
4	Worksop	Shireoaks Common	Either	C3/B8
5	Worksop	B6079 Triangular Site North of Railway and Industrial	Employment	B8
6	Worksop	Land South of Manton Wood	Employment	B8
7	Worksop	Claylands Avenue	Either	C3/B8
8	Worksop	Land to rear of Carlton Forest Distribution Centre	Employment	B8
9	Worksop	North of Thievesdale Lane	Either	C3/B8
10	Worksop	North of Mansfield Road	Residential	C3
12	Worksop	Site East of A57 (Canal Corridor)	Employment	B1
13	Worksop	Land at Haggonfields, Rhodesia	Residential	C3
15	Worksop	Shireoaks Common	Residential	C3

16	Worksop	Rhodesia	Either	C3/B2
17	Worksop	Westerdale	Residential	C3
18	Worksop	Canal Road Workshops (Canal Corridor)	Employment	B1
19	Worksop	West of Dukeries Court, Retford Road (Canal Corridor)	Employment	B1
20	Worksop	Shireoaks Common	Residential	C3
28	Retford	Land either side of Ollerton Road	Residential	C3
29	Retford	Brecks Road Retford	Residential	C3
30	Retford	Trinity Park Industrial Estate	Employment	B2
31	Retford	Trinity Park Industrial Estate	Employment	B2
32	Retford	Willow Field	Employment	B2
33	Retford	North Road Retford	Residential	C3
35	Retford	Bigsby Road Retford	Residential	C3
37	Retford	Tiln Lane Retford	Residential	C3
40	Retford	Welham Road Retford	Residential	C3
42	Retford	Grove Coach Road	Residential	C3
44	Retford	Park Drive, Retford	Residential	C3
45	Retford	Newlands Retford	Residential	C3
52	Harworth	Bawtry Road Site	Employment	B8
53	Harworth	Plumtree Farm Estate expansion land	Residential	C3
54	Harworth	East of Tickhill Road, South of Bawtry Road	Residential	C3
57	Harworth	Plumtree Farm Estate expansion land	Employment	B2
58	Harworth	North of Snape Lane	Residential	C3
59	Harworth	Plumtree Farm Estate expansion land	Either	C3/B2
61	Harworth	Common Lane Harworth	Residential	C3
62	Harworth	Styrrup Road Harworth	Residential	C3
63	Harworth	Arundel Walk Bircotes	Residential	C3
64	Harworth	Styrrup Road Harworth	Residential	C3
71	Tuxford	Lane North of Lodge Lane	Either	C3/B2
72	Tuxford	Ollerton Road	Employment	B2
73	Tuxford	North of North Road	Employment	B2
74	Tuxford	Lexington Gardens	Residential	C3
75	Tuxford	Great North Road Tuxford	Either	C3/B2
76	Tuxford	Eldon Street Tuxford	Residential	C3
77	Tuxford	Ashvale Road	Employment	B2
79	Tuxford	Eldon Street Tuxford	Residential	C3
80	Misterton	Land west of Grovewood Road	Residential	C3
81	Misterton	Ashdown Wy Misterton	Residential	C3
83	Misterton	Gravelholes Lane	Residential	C3
85	Misterton	Land West of Gringley Road	Residential	C3
86	Misterton	Grange Drive Misterton	Residential	C3
88	Misterton	Gringley Road Mister	Residential	C3
89	Misterton	Bramley Way Misterton	Residential	C3
91	Misterton	Fox Covert Road Mist	Residential	C3
92	Carlton in Lindrick	Site East of Doncaster Road	Either	C3/B2
94	Carlton in Lindrick	North of Long Lane	Either	C3/B2
95	Carlton in Lindrick	North of Long Lane	Residential	C3
96	Carlton in Lindrick	A60, Carlton	Residential	C3
97	Carlton in Lindrick	Doncaster Rd Carlton	Residential	C3

Note: Missing site reference numbers relate to sites that were removed from the original list supplied by the District Council because they were either already developed/substantially developed, or have been taken into account in the assessment as committed land-use developments.

4.5 DISTRIBUTION OF GROWTH

4.5.1 The total growth in each settlement as detailed in **Table 23** and **Table 24** has been distributed on a pro-rata basis, according to site area, across the sites identified for each settlement as summarised in **Table 25**.

4.5.2 All potential development sites in each settlement have been included in the study (even if development on all of these sites is unlikely to occur in practice). The target growth for each settlement was distributed across all potential development sites in each settlement on a pro-rata basis in accordance with the likely maximum capacity of each site (maximum capacities were either supplied by the District Council or estimated from gross site areas using typical development densities). Full details of these calculations can be found in **Appendix H**.

4.6 GROWTH DISTRIBUTION SCENARIO TESTED

4.6.1 One growth distribution scenario has been tested at the 2026 assessment year this assumes that all of the sites that could be developed for either residential or employment uses are developed for residential. This is a total of 5 sites in Worksop (sites 2, 4, 7, 9, 19) and 1 site in Harworth (site 59). There is no employment growth proposed in Tuxford or Carlton in Lindrick, the other locations where 'either' sites are located. Four out of the five sites in Worksop are identified for either residential or B8 employment use, of which residential would be the higher trip generator so assuming that all 'either' sites are developed as residential represents the 'worst case', although an earlier version of this study which also examined all 'either' sites developed with employment uses demonstrated that the difference between the two scenarios is small.

5 Forecast Years and Background Traffic Growth

5.1.1 A forecast year of 2026 has been applied which is consistent with the end of the Local Development Framework plan period. No growth factor has been applied to the 2009 background traffic flows in order to estimate 2026 flows as traffic flows from committed developments have been calculated separately and added to the 2009 base flows in order to obtain 2026 baseline flows. The study assesses the following:

- 2009 Base Year (see **Figure 7** for assessment flows)
- 2026 Base + Committed (see **Figure 23** for assessment flows)
- 2026 Base + Committed + Growth (see **Figure 27** for assessment flows)

5.1.2 For the sake of completeness a comparison has been undertaken between the growth assumptions included in the Department for Transport's TEMPRO computer programme (which provides summaries of National Trip End Model (NTEM) forecast data for transport planning purposes). Details of which can be found in **Appendix G**.

5.1.3 This analysis confirms that the combination of 'Committed + Growth' assumptions for Bassetlaw District applied in this study (residential and employment combined) exceeds the future growth assumptions contained within the National Trip End Model[31]. As a result the assessment is considered to be robust and no additional allowance for 'background' traffic growth is considered necessary.

5.1.4 It is also worth noting that as this study is assessing proposed LDF allocations for the district the information contained within this study on proposed future growth is more up to date than the assumptions in the National Trip End Model, which will need to be updated to reflect the adopted LDF Core Strategy Document.

[31] **Note**: The current TEMPRO land-use dataset is 5.4, however this is due to be replaced with dataset 6.1 in Spring 2010. The assessment detailed in Appendix G therefore applies both datasets. Using the 5.4 dataset the residential growth assumptions in TEMPRO exceed the growth assumed in this study by 1,070 dwellings. However, the growth in employees assessed in this study exceeds those assumed in TEMPRO by a factor of 3. Therefore, overall it is considered that the growth assumptions applied in this study exceed those in the 5.4 TEMPRO dataset. The residential and employment growth assumptions applied in this study exceed those in the 6.1 TEMPRO dataset.

6 Trip Generation, Distribution & Assignment

6.1 TRIP GENERATION

Committed Development Trip Generation

6.1.1 Traffic flows from committed developments within the district have either been extracted from the Transport Assessments submitted in support of planning applications for each of the developments or generated using TRICS Version 2010(a) vehicle trip rates for those sites where no Transport Assessment is available. These calculations are summarised in **Appendix F**. For committed developments outside of the district traffic flows have also been estimated using vehicle trip rates obtained from the TRICS Version 2010(a) database. Detailed TRICS printouts for each relevant development use-class can be found in **Appendix F**.

Residential Growth Trip Generation

6.1.2 Residential person trip generation has been estimated using TRICS Version 2010(a) 'average'[32] person trip rates for Houses Privately Owned. Average trip rates have been used as there is a large sample of over 50 similar sites within the TRICS database and therefore potentially unrepresentative individual sites aren't likely to unduly bias the average trip rate calculation. A comparison of the 'average' and the 'median' trip rates indicates there is very little difference between the two.

Employment Growth Trip Generation

6.1.3 Employment person trip generation have been estimated using TRICS Version 2010(a) 'median' person trip rates for either B1 Business Parks, B2 Industrial Estates, or B8 Warehouse/Distribution, whichever is most appropriate (see summary table in **Appendix H** for details of the assumptions applied). Median rates have been used for employment uses as there is only a relatively small sample of similar sites available from the TRICS database and therefore 'average' trip rates are more likely to be biased by individual sites. Use of the median trip rate in this instance will therefore provide a more robust assessment of likely trip generation.

Modal Splits

6.1.4 Modal split percentages derived from National Census 2001 'Travel to Work Data' have been examined from 6 representative wards which are summarised in **Table 26** on the next page.

[32] Nottinghamshire County Council has confirmed that average trip rates are sufficiently robust for this area-wide transport study. However, it may be necessary to consider a sensitivity test using 85th percentile trip rates when transport assessments for individual sites are prepared.

These wards have been chosen because they either contain the majority of the proposed growth sites and/or they are most representative in terms of the proposed land-use splits. Analysis demonstrates that there is very little difference between the average modal splits for these 6 wards and the overall modal split average for the whole district. district-wide averages have therefore been applied for the purposes of the study, so as not to unnecessarily complicate the calculations.

6.1.5 Trips by each mode of transport have been estimated by applying modal split percentages derived from National Census 2001 'Travel to Work Data' to the person trips derived using TRICS. Separate modal splits have been derived for 'daytime population' and 'resident population' and applied to employment and residential related trips respectively. Details of the person trip generation and modal split calculations can be found in **Appendix H.**

6.1.6 It should be noted that the trip generation calculations presented in this study apply observed modal splits based on 2001 Census data. This is considered to represent a 'worst case' in terms of vehicular trip generation since no allowance has been made for future modal shifts that may occur as a result of initiatives to reduce travel demand (i.e. parking policy, fiscal measures, smarter choices etc) or initiatives to achieve modal shifts to sustainable transport (i.e. encouraging more walking and cycling, lower speed limits, public transport improvements etc).[33]

6.2 TRIP DISTRIBUTION & ASSIGNMENT

6.2.1 Trip distribution has been based on 2001 National Census Travel to Work statistics for representative wards within the district. **Figure 25** illustrates the locations of the proposed growth sites being assessed and indicates ward boundaries within the district. The choice of representative wards to be applied for trip distribution purposes is summarised in **Table 26** together with explanations for the choice of each ward:

Table 26 – Representative Wards for Trip Distribution

Location of Growth	Ward to be Applied	Comments
Worksop	Worksop North West	Representative of residential and employment uses
Retford	Retford North	Representative of residential and employment uses
Langold & Carlton in Lindrick	Carlton	Contains majority of proposed growth
Harworth	Harworth	Contains majority of proposed growth

[33] It should be noted that the traffic generation rates of individual development sites could be greater than those applied for the purposes of this strategic study depending on the specific nature of each development. Detailed Transport Assessments will therefore be required in support of developments at the planning application stage.

Tuxford	Tuxford & Trent	Contains all proposed growth
Misterton	Misterton	Contains majority of proposed growth

6.2.2 In order to distribute trips onto the existing transport networks the representative wards have been treated as origins for residential development and destinations for employment development. Travel to work data for these wards has then been used to identify respective destination and origin wards and modal splits.

6.2.3 Routes between the identified origins and destinations for each representative ward have been identified using an 'all or nothing' trip assignment on a basic representation of the district's highway network (as detailed in **Figure 6**) modelled using VISUM software. This process applies the shortest route available in terms of time and distance ignoring any delays due to network performance.

6.2.4 It should be noted that this methodology presents a 'worst case' assessment of traffic impacts at specific locations on the highway network since it assumes that no vehicle trips will deviate to avoid delays and congestion on the network. In reality vehicle trips would re-assign to alternative routes to avoid congested areas of the network (i.e. drivers tend to follow the 'path of least resistance').[34]

6.2.5 Committed development trips generated outside the district that pass through the district have also been distributed based on National Census 2001 Travel to Work data. **Figure 19** indicates the locations of adjacent authorities and the key routes assumed for the purposes of distributing these trips through the district.

6.2.6 All vehicle trips have been assigned onto the road network within the district using VISUM. The resultant data has then been read into GIS and represented graphically on a plan of the study area. Generated trips have been presented graphically using network 'stress plans' where "stress" is defined as the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow expressed as a percentage.

6.2.7 **Figure 20** and **Figure 21** depict traffic flows within the district as a result of committed developments located in Bassetlaw and adjacent districts. **Figure 22** depicts the total committed development flows within Bassetlaw.

6.2.8 **Figure 23** depicts the 2026 base flows plus the total committed development flows and **Figure 24** presents the resultant stress plan for 2026 'base + committed'. The stress plan clearly indicates that all links within the district are forecast to operate at less than 90% stress

[34] It should be noted that whilst this approach represents the 'worst case' at already congested junctions it ignores nearby junctions which may be adversely impacted as a result of trips diverting onto alternative routes.

except for the A57 to the north west of Worksop which has a stress level of 94%. This link is therefore forecast to be approaching its capacity and would be increasingly susceptible to flow breakdown and less reliable journey times.

6.2.9 The single carriageway section of the A57 Worksop bypass between Sandy Lane and Claylands Avenue has a forecast stress value of 87% and the A60 to the south west of the A57 has a forecast stress value of 84%. Whilst both of these links have forecast stress of less than 90% both could be expected to experience less reliable journey times.

6.2.10 Stress levels on all other links within the district fall well below 75% and could therefore be expected to operate satisfactorily.

6.2.11 **Figure 26** depicts traffic flows within the district as a result of the proposed growth **Figure 27** depicts the sum of 2026 base traffic flows plus committed flows plus growth flows for the growth scenario. The resultant network stress is discussed in Section 7.

7 Impacts of Growth

7.1 MULTI-MODAL IMPACTS

7.1.1 The estimated trip generation by mode of transport is summarised in **Table 27** and **Table 28**.

Table 27 – Total 2-Way Trips by Mode

Ward	Train	Bus, minibus or coach	Driving a car or van	Bicycle	On foot
Beckingham	0	1	30	2	5
Blyth	3	26	480	27	80
Carlton	0	0	0	0	0
Clayworth	0	1	15	1	3
East Markham	0	1	30	2	5
East Retford East	1	3	65	4	11
East Retford North	4	32	609	35	101
East Retford South	3	9	198	11	34
East Retford West	0	0	0	0	0
Everton	1	2	45	2	8
Harworth	13	48	985	55	167
Langold	0	0	0	0	0
Misterton	0	0	0	0	0
Rampton	0	1	15	1	3
Ranskill	0	1	30	2	5
Sturton	1	2	45	2	8
Sutton	0	1	30	2	5
Tuxford and Trent	3	9	182	10	31
Welbeck	1	2	45	2	8
Worksop East	7	24	501	28	85
Worksop North	5	15	324	18	55
Worksop North East	1	3	64	4	11
Worksop North West	4	23	447	25	75
Worksop South	1	2	35	2	6
Worksop South East	4	40	741	42	123
Totals	50	247	4,916	276	826

Notes:
1. Bus includes, bus, minibus or coach.

Table 28 – Summary of Impacts on Sustainable Transport Modes

Maximum Increase in Passengers per Train Carriage[1]	Estimated Additional Buses Required to Meet Demand		Cycling – New Trips[3]		Walking – New Trips[3]	
	District[2]	Worksop[2]	District	Worksop	District	Worksop
3	5	2	276	119	826	354

Notes:
1. See paragraph 7.1.7 for assumptions applied.
2. See paragraph 7.1.2 for assumptions applied.
3. Maximum figures presented.

Impacts on Bus Transport

7.1.2 A maximum of some 247 new bus trips are forecast with approximately 40% (107) originating in Worksop Wards (total of Worksop wards). Assuming a notional bus occupancy of 50 persons per bus would equate to approximately 5 additional buses in the AM peak hour to accommodate the total anticipated demand across the district with 2 buses required to meet the additional demands in Worksop during the AM peak hour.

7.1.3 The next highest generator of bus trips is Harworth with a maximum of 48 trips in the AM peak period. This equates to approximately 1 additional bus.

7.1.4 Developers will be required to fund new/improved bus services in order to meet the additional travel demands generated by new developments. Given the scale of the forecast increase in demand for bus travel this should be easily accommodated through a combination of using any spare capacity on existing services, providing additional buses to increase capacity on existing service routes, or through the provision of new bespoke services.

7.1.5 Increases across the remaining rural areas of the district are relatively small with less than a single bus load estimated from any one location during the AM peak hour. As a result these should be easily accommodated on the existing bus network, with suitable developer-funded capacity enhancements where necessary.

Impacts on Passenger Rail

7.1.6 The maximum additional demand for rail is 50 trips in the AM peak with 21 trips originating within Worksop. Assuming that the total demand is split equally between Retford station (served by the East Coast Mainline and providing a link to London) and Worksop station (served by the Robin Hood Line and providing a link to Nottingham) this would equate to an additional demand of approximately 25 trips through each station.

7.1.7 Considering that this demand will be spread over a 1 hour period (at least 2 trains per hour at Worksop and 1 train per hour at Retford) the additional demand per train is likely to be small. For example at Worksop assuming the trips are split over 2 trains gives an additional 13 persons per train, which if split between say 5 carriages would be approximately 3 persons per carriage. While at Retford 25 trips on a single train of 5 carriages would be approximately 5 persons per carriage. This level of anticipated increased demand for rail travel should be accommodated on existing services and would be insufficient to itself justify any improvements to rail infrastructure or services.

Impacts on Cycling & Walking

7.1.8 The number of walking trips generated is 826 and 354 of these are generated within Worksop, the next highest being 167 generated in Harworth. These trips would be distributed across the district on existing pedestrian networks. However, this should be considered in further detail at the planning application stage as part of the Transport Assessments prepared for individual developments.

7.1.9 In particular, the origins and destinations of walking trips to/from development sites should be examined to determine where enhancements to existing pedestrian networks may be required to safely accommodate additional trips. Developers will be required to deliver new/improved pedestrian infrastructure to provide access to individual development sites and to provide safe connections to existing networks, including the provision of new crossing facilities, capacity enhancements and other appropriate infrastructure, as necessary.

7.1.10 Forecast cycling trips are 276 across the whole district and these are split mainly between Worksop (119) and Harworth (55). As for walking trips these would be distributed across the district on existing cycle networks and the impacts of these increases should be considered in further detail at the planning application stage as part of the Transport Assessments prepared for individual developments and new/improved cycling infrastructure provided as necessary.

7.2 HIGHWAY LINK IMPACTS

7.2.1 As discussed in Section 2 of this report Congestion Reference Flow (CRF) values have been used as a measure of the performance of all links within the study area. Based on these calculated reference capacities link "stress" levels have been identified where "stress" is defined as the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow expressed as a percentage.

7.2.2 For the purposes of this study the following stress thresholds have been applied to identify when links are approaching, or exceeding their theoretical maximum capacity:

- Less than 90% stress - the link operates within capacity, although journey times may become less reliable over 75% stress.
- Between 90% and 100% stress - The link is approaching capacity and is increasingly susceptible to flow breakdown.
- Greater than 100% stress - The link operates over capacity and is likely to experience flow breakdown on a regular basis.

7.2.3 For the purposes of this study it has been assumed that any link with a 'stress' level exceeding 90% will require some form of improvement in order to continue operating in a satisfactory manner. Network 'stress' levels for 2026 'Base + Committed' flows are illustrated in **Figure 24** and network 'stress' levels for 2026 'Base + Committed + Growth' flows are illustrated in **Figure 28**. For ease of reference 'stress' levels have been colour coded and any links coloured Amber (90% to 99% Stress) or Red (>100% Stress) are assumed to require some form of capacity improvement. These are summarised in **Table 29**.

Table 29 – Critical Links

Link Description	Percentage 'Stress'	
	Base + Committed	With Growth
A60 between A619 & A57, Worksop	95%	103%
A57 between Sandy Lane & Claylands Ave, Worksop	87%	105%
A57 to north west of B6041 Gateford Road, Worksop	94%	109%

7.2.4 As can be seen from **Table 29** there are a total of 3 links that are forecast to exceed their theoretical capacity.

7.3 HIGHWAY JUNCTION IMPACTS

7.3.1 CRF is a link-based assessment that does not take into account junction capacity. In practice, junction operation usually determines the overall performance of a highway corridor and junctions will exceed their capacity and exhibit congestion and queuing problems long before a

link does. As a result, the junctions on those links identified as being close to, or at capacity, are likely to require some form of capacity improvement in advance of consideration of link widening/dualling. These are summarised in **Table 30** below.

Table 30 – Key Junctions on Links that are approaching, or over Capacity

Junction Description	Comments
A60 Mansfield Road/A619 south west of Worksop*	A60 Link is over capacity
A57 Worksop Bypass/A60 Mansfield Road*	A60 Link is over capacity
A57 Worksop Bypass/A60 Sandy Lane*	A57 Link is over capacity
A57 Worksop Bypass/Claylands Ave	A57 Link is over capacity
A57 Worksop Bypass/B6041 Gateford Road*	A57 Link is over capacity

7.3.2 Existing peak period turning count information was available for the four junctions marked with asterisks in the above table. The operation of these junctions has therefore been assessed using appropriate junction modelling software and preliminary mitigation measures identified, where necessary. This is discussed further in Chapter 9 and details of the capacity calculations can be found in **Appendix I**.

7.3.3 It should be noted that this Transport Study examines cumulative transport impacts across the whole district in order to identify strategic transport improvements that are likely to be required in order to allow LDF growth to proceed. This study does not consider detailed traffic impacts at all junctions and these will need to be determined as part of the Transport Assessments submitted in support of development proposals, as and when planning applications are submitted, and appropriate transport infrastructure improvements secured through the planning process.

7.3.4 It is expected that individual developers will fund any measures or infrastructure improvements required to mitigate the direct transport impacts of developments (via S106 Agreements). In addition to addressing the direct transport implications of developments, it is recommended that developers also provide financial contributions through planning tariffs (Community Infrastructure Levy) towards the delivery of the strategic transportation improvements identified for developer funding in this report.

8 Demand Management

8.1 INTRODUCTION

8.1.1 From a traffic and highways perspective it is favourable to seek to reduce traffic impacts by managing travel demand thereby reducing/removing the requirement for highway improvement works.

8.1.2 Ideally residential and employment uses should therefore be complementary in order to provide local employment opportunities and reduce the need to travel, especially by private motor vehicle.

8.1.3 Demand for travel by private car is also managed through the application of appropriate car parking standards. By limiting car parking provision fewer trips are generated. However, there is a careful balance to be struck between limiting parking provision and meeting reasonable demand in order to prevent on-street parking in inappropriate locations. Bassetlaw District Council is currently in the process of reviewing car parking standards for new development within the district and updated guidance will form part of the LDF Core Strategy Document[35].

8.2 MODAL SHIFT

8.2.1 Demand for car trips can also be reduced by encouraging use of sustainable transport modes (i.e. walking, cycling, bus etc) and in accordance with PPG13, Travel Plans will be required in support of planning applications for all major developments. It is expected that the Travel Plans developed and implemented for each site will complement the strategic infrastructure improvements detailed in this report in order to increase use of modes of transport other than the private car. Travel Plans should be prepared in accordance with the guidance contained within the Department for Transport 'Good Practice Guidelines' documents; "The Essential Guide to Travel Planning", March 2008, "Making Residential Travel Plans Work", September 2005, "Delivering Travel Plans Through the Planning Process", April 2009 and Nottinghamshire County Council guidance on Travel Plans that can be found on the council's website here: http://www.nottinghamshire.gov.uk/home/traffic_and_travel/strategy-policy/travel_plans.htm

8.3 SMARTER CHOICES

8.3.1 The publication of the "Smarter Choices – Changing the Way We Travel" report by the Department for Transport in July 2004 reinforced the stature of 'soft factors' within the overall

[35] The review covers residential and employment parking standards.

context of transport planning. These 'soft factors' encompass workplace and residential plans, as well as other initiatives such as car sharing schemes, car clubs, personalised journey planning, tele-working, tele-conferencing, information and marketing, and home shopping.

8.3.2 Outlined in the following paragraphs is a menu of measures which could be expected to be included within the Travel Plans developed for each site. It is not meant to be an exhaustive list (since at this stage the end users on these sites are not known and hence exact measures and costs cannot be defined) but is intended to act as a guide as to the types of measures that could be expected to be included in Travel Plans.

8.4 TRAVEL PLANNING

Travel Plans for Employment Uses

8.4.1 Although primarily aimed at staff, it will be expected that the Travel Plans developed will also cover visitors and deliveries to each employment site. The key measure to include within an employment-use development Travel Plan is the appointment of a Travel Plan coordinator to oversee the implementation, monitoring and evaluation of the Travel Plan. Initiatives that the Travel Plan coordinator would oversee include:

- Setting up a car sharing database.
- Implement car-sharing initiatives for staff including dedicated parking bays.
- Provide Public Transport timetable information in public areas/restrooms/changing rooms.
- Negotiations with public transport operators to adjust timetables to fit shift times and discounted fares.
- Personalised journey planning.
- Staff salary incentives for adoption of 'green' travel behaviour.
- Provide loans for season tickets, cycle purchase etc.
- Use of local suppliers and rationalisation of delivery movements.
- Set up cycle clubs, secure cycle parking, storage lockers, shower/changing facilities, negotiate discounts with local cycle shops.
- Design and maintenance of walking and cycling routes within the site to ensure good links to bus stops, cycle routes and adjacent footways.
- Undertake Travel Plan monitoring and reporting to determine whether target modal shares are being achieved. As part of this process the County Council will require multi-modal

travel surveys to be undertaken (compatible with the TRICS survey format) and site specific trip generation rates to be calculated for all modes.

Travel Plans for Residential Uses

8.4.2 Again the key measure to include within a residential-use development Travel Plan is the appointment of a Travel Plan coordinator to oversee the implementation, monitoring and evaluation of the Travel Plan. Initiatives that the Travel Plan coordinator would oversee include:

- Preparation and distribution of travel information packs to residents including walking, cycling and public transport maps.
- Cycle parking provided within residences.
- Low cost cycle purchase initiatives.
- Design and maintenance of walking and cycling routes within the site to ensure good links to bus stops, cycle routes and adjacent footways.
- Encourage home working through provision of Wi-Fi coverage, Broadband etc.
- Personalised journey planning.
- Provision of public transport travel information hubs.
- Undertake Travel Plan monitoring and reporting to determine whether target modal shares are being achieved. As part of this process the County Council will require multi-modal travel surveys to be undertaken (compatible with the TRICS survey format) and site specific trip generation rates to be calculated for all modes.

Modal Share Targets

8.4.3 It is expected that Travel Plans will set out mode share targets against which the effectiveness of the Travel Plans will be measured to enable corrective actions to be identified when targets are not met. Targets for each site will be different depending on the particular end-user and the travel plan measures identified. Bassetlaw District Council may also impose planning obligations comprising financial penalties, or require a 'penalty fund' to be paid as part of a Section 106 Agreement, to pay for the delivery of additional sustainable travel measures/initiatives in the event that modal share targets are not achieved. Developers will be required to fund and implement smarter choices measures, public transport service reliability improvements, and bus priority measures as well as sustainable transport infrastructure improvements in order to achieve modal split targets.

8.4.4 Existing modal splits for the district derived from 2001 Census data are summarised in **Table 1** (page 10) and as discussed in Section 2 the district exhibits a slightly higher proportion of the population using private motor vehicles to travel to work than the rest of the county, region and Great Britain as a whole. However, the percentage is similar to that found in other predominantly rural districts within the County such as Newark and Sherwood and Mansfield. Cycling and walking to work is slightly higher within the district than the county, region and Great Britain as a whole, however travelling to work by public transport is lower.

8.4.5 Achieving modal shift away from the car is most likely to require an increase in use of public transport as the level of walking and cycling in the district is already relatively high and there is likely to be limited opportunity to further encourage walking and cycling in the rural areas of the district where longer journey distances are likely to discourage significant additional use of these modes.

8.4.6 It should be reasonable to assume that, as an initial target, car use should aim to be reduced from the existing level (70.82%) to the same level as the County average (64.06%) and a 6.76% increase in use of public transport within the district would achieve this if walking and cycling remained constant at 14.53% (taking public transport use to approximately 11%, which is still below the County average of 12.29%).

8.4.7 However, it should be noted that the County Council currently funds approximately 70% of bus services within the district and the level of public funding may change in the future which could affect service levels. Greater levels of private funding may therefore be necessary in the future to maintain/improve current bus service levels.

8.4.8 Estimated total vehicle trips are summarised in **Table 27** on page 81 and 6.76% of the total 2-way trips in the AM peak hour (4,916) would equate to a reduction of 332 vehicle trips (4,916 to 4,584 vehicle trips). This, whilst helpful, would not materially reduce the impacts forecast on the district highway network so this should therefore be treated as a minimum target, with more stringent targets applied to individual travel plans, where appropriate.

On-Going Travel Plan Monitoring

8.4.9 It is essential that the Travel Plans identify a long term[36] plan for continually monitoring and reviewing the Travel Plan and taking corrective actions where necessary and agreeing these with Bassetlaw District Council.

Travel Plan Costs

8.4.10 It is assumed that all costs associated with developing, implementing, managing and monitoring Travel Plans will be met by developers/applicants and it is expected that these costs will be identified at the planning application stage and secured as part of a Section 106 Agreement with Bassetlaw District Council. The Council may also require a 'penalty fund' to be paid by the developers/applicant to enable the Council to implement further sustainable travel measures/initiatives in the event that modal shift targets are not achieved. Such funds are typically time limited and refunded to the developer/applicant in the event that they are not required.

[36] Timescale should be agreed with the planning and highway authorities on a site by site basis, but in any case should be a minimum of 5 years post opening of the development.

9 Transport Infrastructure Requirements

9.1 INTRODUCTION

9.1.1 This section identifies likely infrastructure improvements that will be required in order to address the cumulative impacts of the proposed growth that has been assessed. Potential improvements are described in outline only at this stage and more detailed assessments will be required in order to identify definitive improvement proposals.

9.1.2 Scheme costs have been identified in preliminary form and these are intended to give an **approximate** 'order of cost'. Allowance has been made for standard design fees etc in accordance with Nottinghamshire County Council's standard method of estimation and details of these calculations can be found in **Appendix J**. All costs exclude utilities and land acquisition.

9.2 BUS TRANSPORT

New/Improved Infrastructure

9.2.1 The promotion and marketing of existing public transport services to potential residents/employees should form part of the initial 'soft' travel plan measures implemented by developers to ensure that existing services are used as much as possible before new transport infrastructure is proposed. This will require careful assessment at the planning application stage to determine whether existing services have sufficient capacity to accommodate forecast demands. The cost of extensions to existing services to meet additional demand as a result of development will be the responsibility of developers.

New/Improved Infrastructure

9.2.2 As can be seen from **Table 28** on page 81 the demand forecasts for bus as a result of growth within the district are very low (based on existing modal splits). Even factoring in the 7% modal shift target discussed in Section 8 would only add approximately 10 extra buses to these totals[37]. It is therefore anticipated that forecast demand for bus travel will primarily be met through available capacity on existing services and enhancements/extensions to existing services.

9.2.3 Improvements to bus services may take several forms. In most cases the extension of an existing route or increase in frequency of existing services will be sufficient to improve

[37] Calculated as 7% of the total 7,081 2-way person trips in the AM peak, divided by a notional bus capacity of 50 persons per bus.

facilities. In other instances the addition of a new route to supplement the existing network may be required. It is recommended that improvements for each development site are formulated separately, but with an overview, so that where it might be possible to coordinate improvements to more than one site, economies of scale are not missed.

9.2.4 An important consideration for any new or additional services to/ from Worksop is the proposal for a new bus station in the town. It has been estimated that around 5 additional daily services will serve the town if the growth and modal split predictions for the District are achieved and it is expected that these buses would be additional services on existing or only slightly modified routes. From discussions with Nottinghamshire County Council, we have been advised that the new bus station could accommodate additional buses utilising existing routes (i.e. those already proposed to/ from Worksop bus station), however for any new routes a balance would need to be struck between planning for additional service growth and limiting the amount of additional bus bays which will have an impact upon additional land acquirement, which in turn increases scheme costs for the development.

9.2.5 Larger developments will be able to justify and support the extension of existing bus facilities or the provision of new bespoke services. The exact requirements will vary from site to site, but for each location a range of options can be prepared. Some of the smaller sites will not support such infrastructure improvements.

9.2.6 Consultation with existing bus service providers is always recommended to test the commerciality of (and therefore reduce the subsidy required for) any potential service improvements.

9.2.7 In respect of the provision of bus services, the 63 Growth Site Locations in Bassetlaw District as identified in paragraph 4.4.1 and **Table 25** fall broadly into 6 main areas. These are within Worksop; Retford; Harworth; Tuxford; Misterton and Carlton-in-Lindrick/Langold.

9.2.8 Although both Residential and Employment growth sites require servicing by bus transport; it is Residential sites which are most likely to be served without financial support, as a commercial operator may see the potential for a viable service. Employment sites are more difficult to service effectively, often due to the diverse nature of businesses on site; the shift patterns employed and the wide geographic distribution of employees. Comments on a settlement-by-settlement basis are provided as follows.

Worksop

9.2.9 Worksop town enjoys a network of relatively frequent bus services and as journey times are low, it is possible to provide comprehensive services with a modest infrastructure.

9.2.10 The growth scenario detailed in Section 4 focuses the majority of planned growth within Worksop. Potential development site locations encircle the town (see **Figure 25**) and none is likely to be more than a 20 minute bus journey from the town centre.

9.2.11 The Osberton Estate site (site 1) to the east of the town adjoins existing residential development and is considered to be easily served by modifications to the existing bus network. Additional resources would though be required.

9.2.12 The Ashes Park Avenue development site to the north-west of the town (site 3), is also adjacent to the existing bus network, as services 5/5A currently run along Ashes Park Avenue, and provide a daytime half-hourly link to the town. The new site would easily be served by a small amendment to the existing network.

9.2.13 Sites numbered 10 and 13 (North of Mansfield Road and Land at Haggonfields, Rhodesia) although smaller, are also small extensions to the existing urban area and may easily be served by a deviation to the current bus network.

9.2.14 Employment sites 5, 6 and 8 on the extremity of the current urban area are likely to present the most difficulties in terms of bus transport.

Retford

9.2.15 As with Worksop, Retford also has a network of relatively frequent bus services provided with a modest infrastructure. Unlike Worksop, which has a bespoke town service network, residential areas on the periphery of Retford are generally served by inter-urban bus services as they enter or leave the town.

9.2.16 Residential growth in Retford is expected to provide fewer than 400 new dwellings during the plan period. Similarly, employment growth at 16 Ha is low compared to Worksop.

9.2.17 The two largest residential sites; Land either side of Ollerton Road (site 28) and Brecks Road (site 29) are both to the south of the town. These represent an extension to the existing urban area. Ollerton Road is served by a half-hourly bus service which passes the proposed sites and this frequency could easily be increased to meet additional demand, if necessary.

9.2.18 Employment sites 30, 31 and 32 and residential development 33 are all located on North Road, to the north of the extremity of the current urban area. Bus services terminate close to these sites, but would require additional investment to extend into the new growth sites.

Harworth

9.2.19 Although in Nottinghamshire, being located at the extreme northern edge of the County, economically, Harworth (and Bircotes) are closer to South Yorkshire and this is replicated in the provision of bus services.

9.2.20 Haworth has relatively frequent services to and from Doncaster. Inter-urban services from other parts of Bassetlaw pass through, whilst a half-hourly commercial service is operated from Harworth and Bircotes.

9.2.21 Second only to Worksop and reflecting its position close to South Yorkshire, Harworth is suggested to provide almost 1,055 of the 3,414 new dwellings required in the plan period. Also, Harworth is expected to provide 28 Ha of employment growth.

9.2.22 An extension to the Plumtree Farm Estate (site 53), is the largest potential residential development in Harworth. Currently, bus services both terminate in the town and serve existing residential development off Essex Road and Milne Road adjacent to site 53. It is expected that a service into site 53 could be provided at marginal cost as an extension of these existing services. As many of the services within Harworth are provided commercially, it is recommended that developers hold early discussions with Stagecoach East Midlands to investigate the potential for new/improved bus services to serve individual sites.

Tuxford

9.2.23 Although Tuxford is well connected in terms of bus services to key important local towns (there are buses to Worksop; Ollerton; Newark and Retford); frequencies are generally very low with, at best, hourly daytime frequencies.

9.2.24 Residential growth in Tuxford is expected to provide 204 new dwellings during the plan period with no employment growth.

9.2.25 The sites identified in Tuxford are clustered close to the existing village centre and the junction of the A1 and A6075. Given the current situation in respect of bus services and frequencies, it is considered unlikely that improvements to bus services for Tuxford could achieve the critical

mass required for bus services to be commercially viable and therefore it is expected that any improvements made will require ongoing financial support.

Rural Service Centre

9.2.26 The balance of the proposed residential growth of 386 dwellings is proposed across numerous rural service centres. No employment growth is proposed in these locations. There are a total of 21 rural service centres so splitting 386 dwellings across these equally results in less than 20 dwellings in each location. This level of development should be accommodated on existing bus services in these areas of the district.

All Locations

9.2.27 In addition to new/improved bus services there will also be a requirement for new/improved supporting infrastructure in the form of additional bus stops, shelters, seating etc for all locations. Further enhancements such as real-time passenger information systems should also be explored as these offer good potential to further increase bus patronage.

9.2.28 General consideration should also be given to bus priority measures, where appropriate, in order to improve bus journey times and journey time reliability.

Delivery Timescale

9.2.29 Unlike rail, where improvements have long implementation timescales, improvements to bus services can usually be introduced with relatively short notice.

9.2.30 Consultation with existing bus service providers is always recommended to test the commercial viability of (and therefore reduce the subsidy required for) any potential new or improved services.

9.2.31 Complementary infrastructure improvements should also be considered as and when development sites are progressed and more accurate estimates of bus passenger demands, likely routes and infrastructure requirements can be determined.

9.2.32 With regard to timing it is essential to implement new and improved bus services and infrastructure very early in the life of a development, ideally before any units on the site are occupied, so that facilities are available and operational for new residents and employees to use immediately. This is an important aspect of establishing good, sustainable travel behaviour and should be a conditional requirement of planning permissions for new development.

9.2.33 Detailed investigations should be undertaken at the planning application stage in order to identify the appropriate level of new/improved bus services and complementary infrastructure improvements required in order to cater for forecast demands and achieve modal split targets. Delivery of an appropriate package of improvements should be a conditional requirement of planning permission and should be implemented prior to development occupation in order to encourage good, sustainable travel behaviour.

9.2.34 Improvements to bus networks/infrastructure should therefore be timed to coincide with developments in order to meet forecast demands.

Indicative Costs

9.2.35 The cost of providing additional resources will be site specific and will be dependent upon the details of the bus contract specifications, numbers of vehicles required, routes, service frequencies and any new/improved infrastructure required.

9.2.36 However, as a general 'rule of thumb' a new bus service with a single vehicle costs in the order of £300 per day to operate, or approximately £100,000 per vehicle per annum for a 7-day service.

9.2.37 Generally speaking improvements are funded to a specified level for specific time periods and are not therefore "open-ended" (usually secured via a Section 106 Agreement). A worthwhile option to pursue is the implementation of improvements funded by "seed corn" money where the commercial operator or local authority will take over the risk attached to providing improvements to bus services after a designated period of time.

Potential for Park & Ride

9.2.38 Park & Ride facilities are typically used to manage car demands on congested urban networks by encouraging drivers to park on the outskirts of a city or town and travel into the centre using a more sustainable mass transit mode of transport such as bus or light rail.

9.2.39 To be commercially viable Park & Ride schemes typically require a significant resident population outside of the town centre who work and shop in the town centre.

9.2.40 Park & Ride sites also need to be located conveniently close to the existing major highway network, and on radial routes with public transport priority. They must also serve a centre with high parking charges and/or limited parking supply.

9.2.41 Within the district, Worksop is the largest town and it currently does not experience traffic congestion or parking demand problems to the extent that a Park & Ride facility would be warranted. However, it is suggested that this situation is monitored for possible future investigation.

9.3 PASSENGER RAIL

New/Improved Infrastructure

9.3.1 As detailed in **Table 27** on page 81 the demand forecasts for rail as a result of growth within the district are very low based on existing modal splits (50 person trips) and would not, on its own justify any additional investment in rail infrastructure.

9.3.2 Typically, a High Speed Train (HST) as used by East Coast on services to London, will have seating capacity for 550. A class 142/144 Pacer, as used by Northern Rail on services from Retford and Worksop to Sheffield and Lincoln will have a seating capacity for between 100 and 125 passengers. A class 153 or 156 Super Sprinter as used by East Midlands Trains on the Robin Hood Line will have a passenger capacity of between 75 and 125.

9.3.3 On weekdays during the morning peak period, there are 4 trains departing Retford for London; 4 from Worksop to Nottingham; 3 from Retford to Sheffield and 3 from Worksop to Lincoln. A reasonable assumption is that these trains will have a total capacity for approximately 3,450 passengers, although of course there are existing customer movements to consider. Given this wider perspective, the predicted level of rail usage is not significant and should be comfortably accommodated by existing services.

9.4 CYCLING AND WALKING

New/Improved Infrastructure

9.4.1 As can be seen from **Table** 28 on page 81 the forecast increase in use of all sustainable transport modes based on existing modal splits is relatively modest. An increase of 276 2-way cycle trips and 826 walking trips when spread across the whole district and throughout the AM peak hour would result in very low increases in any specific location. For example 826 walking trips per hour is equivalent to 14 trips per minute which when divided by the total of 61 growth sites (Table 25 on page 73) is equivalent to an average of 1 walking trip every 4 minutes per site. For cycling this would equate to an average of approximately 1 cycle trip every 13 minutes per site. As a result it is anticipated that, on the whole, existing pedestrian and cycle networks will have sufficient capacity to accommodate forecast increases.

9.4.2 However, demand for these modes should be assessed on a site-by-site basis as part of the Transport Assessments submitted in support of planning applications as there may be specific growth sites where considerable levels of walking and cycle movements will be generated which may warrant improvements to existing infrastructure. There are a number of obvious gaps in the existing cycle network, for example around Carlton-in-Lindrick and contributions to this infrastructure may be required from developers of future sites in affected areas. Additionally, where the provision of adjacent off-site cycling or walking infrastructure enhancement is appropriate for future development sites, contributions to longer distances or area-wide cycling and walking projects may be required.

9.4.3 All developments must also make adequate provision for on-site cycle-related infrastructure including; cycle parking, secure and covered cycle storage, cyclist shower/changing/storage facilities etc to fully encourage cycle use as a sustainable means of travel. Details will need to be identified on a site specific basis and designed and implemented in accordance with current standards and best practice guides such as the Nottinghamshire Cycling Design Guide, the Nottinghamshire, Leicestershire and Derbyshire County Council's 'Highways Transportation and Development' document and the Department for Transport's Local Transport Note 2/08 'Cycle Infrastructure Design'. Provision of such facilities should be a conditional requirement of planning permission.

9.4.4 Internal access roads should give priority to cycles and pedestrians wherever possible. New infrastructure connections from developments onto the existing cycle network will also be required, including new controlled crossings at locations where major roads present barriers to cyclists and pedestrians.

9.4.5 For pedestrians, facilities should be included to connect the developments to existing footways and where appropriate provide additional crossing facilities. Consideration of gradients for wheelchair users and pushchair users must be made. Personal security and street lighting is also of importance for pedestrian trips, as well as ensuring that footways are wide enough to accommodate the increased levels of usage, particularly at bus stops. Connections to public transport are essential concerns. At sites where there may be high levels of visitors, direction signing to bus and train interchanges may be appropriate in order to encourage walking to these locations ahead of the use of private car.

Delivery Timescale

9.4.6 Improvements to cycling/walking infrastructure should therefore be timed to coincide with developments in order to meet forecast demands.

Indicative Costs

9.4.7 At current prices[38], indicative construction costs for developing new cycling and walking facilities are in the region of:

- New footway/ cycleway – £150,000 to £300,000 per km particularly dependant upon the number and complexity of side road junctions
- New on carriageway cycle lane – £25,000 to £50,000 per km depending upon number of junctions/ signalised junctions, existing highway layout, on street parking constraints etc
- Rural/ off carriageway route – £50,000 to £100,000 per km primarily dependant upon surfacing material required
- Controlled crossing (toucan) in urban area – £60,000 per site (likely to be higher if on higher speed road or requires Pegasus arrangement to cater for equestrian use also)
- New pair of dropped (uncontrolled) crossings – £2,500 per site.

9.4.8 All figures quoted are broad estimates and do not consider utilities diversion costs, drainage, particular site topography, temporary traffic management or design fees. Signing and lining costs may also vary greatly upon the surrounding site conditions and junctions. Costs for off-highway routes will also alter depending upon the material preferred and future maintenance arrangements and costs should be considered as part of this estimate if the route is not be maintained by the Highway Authority.

[38] Cost estimates based upon figures included in Sustrans Connect 2 Greenway Design Guide, Chapter 17 'Costs and Sources of Funding': http://www.sustransconnect2.org.uk/resources/17%20costs%5B1%5D.pdf

9.5 HIGHWAYS INFRASTRUCTURE

9.5.1 This section of the report outlines potential strategic infrastructure improvements that could be implemented to provide additional traffic capacity at locations that have been identified to be operating close to, or over capacity as a result of the proposed growth (see **Table 29** on page 84 and **Table 30** on page 85). Improvements are summarised in **Table 33** at the end of this section. All cost estimates presented in this report are approximate and are intended to provide an 'order of cost'. Allowance has been made for standard design fees etc in accordance with Nottinghamshire County Council's standard method of estimation and details of these calculations can be found in **Appendix J**. All costs exclude utilities and land acquisition.

A60 between A619 & A57, Worksop

9.5.2 The image below shows the alignment and character of the A60 between its junctions with the A619 and the A60.

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9.5.3 This 1.4km section of the A60 is a single carriageway highway with a continuous central hatched 'ladder marking'. There is continuous residential frontage development situated along its northern side with individual dwellings taking direct access from the highway. There are

also three side-road junctions to the north comprising; an unnamed farm access lane, St Anne's Drive which is a residential estate road, and Mansfield Road, a short residential cul-de-sac. On its southern side there are woods and a single side-road junction providing access to Worksop Manor. All side-road junctions on this section of the A60 are simple priority junctions. A total of 7 personal injury accidents have occurred on this link in the last 3 years, 3 of which related to vehicles turning in/out of private drives.

9.5.4 In the 'Base + Committed' Scenario a stress level of 95% is forecast, this increases to 103% with the addition of growth traffic. Therefore the link is forecast to be operating very close to capacity without any growth development and over its theoretical capacity with growth traffic. As a result, link capacity problems could be expected with the growth in place.

9.5.5 Providing significant additional link capacity would involve widening the carriageway to a dual carriageway standard. However, this is unlikely to be a favourable option due to the constraints imposed by the existing residential frontage development to the north and the abundance of trees immediately to the south.

9.5.6 An alternative option would be to consider smaller scale improvements designed to remove or reduce any impediment to ahead movements on the link such as the provision of 'Ghost-Island' right turn facilities at all side road junctions and the provision of bus laybys, both of which would require localised carriageway widening and would be subject to whether suitable layouts could be achieved without interfering with existing private accesses. Such improvements would however only be likely to offer relatively minor additional traffic capacity, since turning movements to/from the numerous residential accesses to the north of the A60 would still occur and could still impede ahead movements on the link.

9.5.7 Nottinghamshire County Council has confirmed that these types of small scale improvements would be unlikely to provide any meaningful improvement in traffic capacity or road safety and the provision of bus laybys is against the Council's current policy and would therefore not be supported. The Council has therefore recommended that the future performance of this link be monitored; particularly once the junction improvements at either end have been implemented (discussed in the following paragraphs). On this basis no improvements are required to this link in the short term.

A60/A619 Roundabout, Worksop

9.5.8 The image below shows the existing layout of the A60/A619 roundabout.

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9.5.9 The junction comprises a priority controlled roundabout however, the give-way markings are currently on the circulatory carriageway of the roundabout, rather than on the entry arms. The junction therefore effectively operates as 3 priority junctions rather than a true roundabout and has presumably been marked out in this manner because there is little or no entry path deflection on the approach arms and therefore high entry speeds could be a safety concern (Nottinghamshire County Council has confirmed that the existing junction layout operates very safely in accident terms and there are no observed capacity limitations at this time).

9.5.10 The operation of the existing junction layout has been assesed using PICADY computer software which is the 'industry standard' tool for assessing the operation of priority T-junctions (see **Appendix I**). The assessment takes into account improvements to the junction proposed as part of the 'Streetley Site' committed land-use development, details of which have been obtained from the Transport Assessment submitted in support of this proposal. The results demonstrate that the existing junction layout is forecast to operate over capacity with the additional traffic as a result of the proposed growth, even with the commited improvements taken into account.

9.5.11 Further analysis has therefore been undertaken using ARCADY software (the 'industry standard' tool for assessing the operation of priority roundabouts) to consider how the junction would operate if it were re-modelled as a 'traditional' roundabout of similar geometry (i.e. assuming that each entry arm gives way to the circulatory carriageway of the roundabout).

9.5.12 Nottinghamshire County Council has confirmed that reconfiguring the existing junction to a 'traditional' roundabout would be acceptable provided the necessary geometric changes comply with the relevant nationally adopted design standards. The Council also commented that an improvement to a priority roundabout would be preferable over the introduction of signal control at this location.

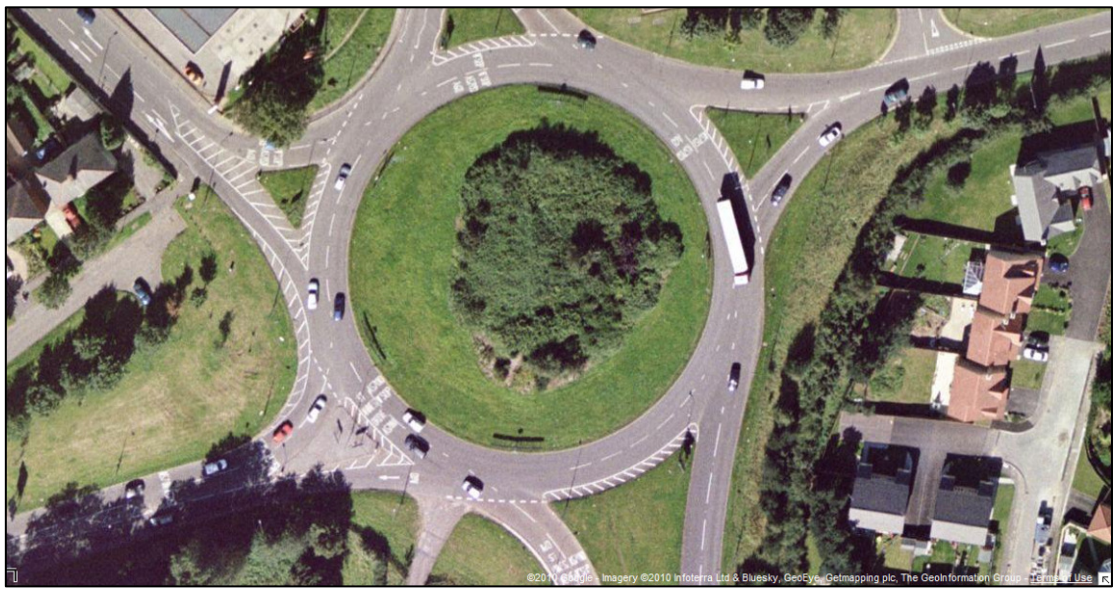
9.5.13 Two sketch priority roundabout layouts have therefore been prepared and details are included in **Appendix I**. the first option comprises a priority roundabout that retains the elongated 'egg shape' of the existing junction. This layout maintains access to the property immediately to the north of the junction in it's existing location. The second option is a more 'traditional' circular roundabout. However, in order to provide a safe access into the property to the north this layout would require the existing access to be re-located to the west (i.e. work involving 'third-party' land would be required).

9.5.14 The operation of the modified roundabouts has been assessed with ARCADY (see in **Appendix I**) and the results of these assessments demonstrate that either option would have sufficient traffic capacity to operate satisfactorily and accommodate the forecast traffic flows as a result of the proposed growth.

9.5.15 Based on these sketch layouts it is anticipated that the total cost to improve the junction could be circa £3m (excluding any utilities or land acquisition costs) and as these improvements are required to mitigate growth impacts it is expected that these would be developer funded.

A60/A57/B6024/St. Anne's Drive Roundabout, Worksop

9.5.16 The image below shows the existing layout of the A60/A57/B6024 roundabout.



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9.5.17 The junction comprises a priority controlled roundabout with 2 lanes on the circulatory carriageway. A total of 20 personal injury accidents have occurred at the junction in the last 3 years. The operation of the existing junction layout has been assesed using ARCADY computer software which is the 'industry standard' tool for assessing the operation of priority roundabouts. The assessment takes into account improvements to the junction proposed as part of the 'Streetley Site' committed land-use development, details of which have been obtained from the Transport Assessment submitted in support of this proposal. The results demonstrate that the junction is forecast to operate over capacity with the additional traffic as a result of the proposed growth, even with the commited improvements taken into account.

9.5.18 Further analysis has therefore been undertaken using ARCADY software (the 'industry standard' tool for assessing the operation of priority roundabouts) to consider if geometry changes would provide sufficient capacity to accommodate the foreacst design flows. This suggests that the diameter of the roundabout would need to be increased significantly in order to increase the capacity of the roundabout and deliver 'nil detriment' (i.e. the operation of the junction would be no worse with the improvements and growth traffic than it would be without the growth traffic). However, the scale of the increase (circa 35m) looks unlikley to be achieveable without the requirement for third party land. As a result an alternative junction layout, possibly providing signal control on the exiating roundabout, or replacing the existing

roundabout with a signal controlled crossroads junction is likley to be required. (ARCADY outputs are included in **Appendix I** for information)

9.5.19 Assuming that signal control of the existing roundabout is required it is anticipated that the total cost to improve the junction could be circa £3m (excluding any utilities or land acquisition costs) and as these improvements are required to mitigate growth impacts it is expected that these would be developer funded.

A57/A60 Sandy Lane/Highgrounds Road Roundabout

9.5.20 The image below shows the existing layout of the A60/A60 Sandy Lane roundabout.

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9.5.21 The junction comprises a priority controlled roundabout with 2 lanes on the circulatory carriageway (not marked on the carriageway). The operation of the existing junction layout has been assessed using ARCADY computer software which is the 'industry standard' tool for assessing the operation of priority roundabouts (See **Appendix I**). The results demonstrate that the A57 arms of the roundabout are forecast to operate over capacity with the additional traffic as a result of the proposed growth.

9.5.22 Potential improvements have therefore been considered and these are indicated in a sketch layout provided in **Appendix I**. The improvements comprise widening the A57 and A60 Sandy Lane entries to the roundabout Further analysis with ARCADY suggests that the indicated improvements would achieve 'nil detriment'.

9.5.23 It is anticipated that the total cost to improve the junction could be circa £1.5m (excluding any utilities or land acquisition costs) and as these improvements are required to mitigate growth impacts it is expected that these would be developer funded.

A57 between Sandy Lane & Claylands Ave, Worksop

9.5.24 The image below shows the alignment and character of the A57 between its junctions with Sandy Land and Claylands Avenue.

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9.5.25 This 1.75km section of the A57 is a single carriageway highway with no side-road junctions or direct accesses. Short lengths of dual carriageway (approximately 200m long) are provided on the immediate approaches to the roundabout junctions at either end of the link. A significant section of the highway is supported on bridge structures as it crosses 2 railway lines, 3 roads (Shireoaks Road, Tylden Road and Tranker Lane), the Chesterfield Canal and the edge of a small lake.

9.5.26 In the 'Base + Committed' Scenario a stress level of 87% is forecast, this increases to 105% with the addition of growth traffic. Therefore the link is forecast to be operating within capacity without any growth development and over its theoretical capacity with growth. As a result, link capacity problems could be expected with growth in place.

9.5.27 The Congestion Reference Flow (CRF) calculation that forms the basis for the stress level assessment is based on the assumption that the highway link is rural in character and CRF values are calculated as daily flows. By way of a comparison urban link capacity has also been considered for both daily and peak hour flows and a summary is presented in the following table.

Table 31 – A57 Link Capacity Summary

Rural Link Capacity		Urban Link Capacity	
Daily (VPD)	Peak (VPH)	Daily (VPD)	Peak (VPH)
26,179	2,618	26,500	2,650

9.5.28 In **Table 31** above rural link capacity has been taken from the CRF value for the link presented in **Figure 9** which is a daily (AADT) value. Peak period capacity has been approximated by dividing the AADT value by 10. The urban link capacity has been taken from TA 79/99 "Determination of Urban Road Capacity" and assumes that the A57 at this location is classed as an Urban All Purpose 1 (UAP1) category road with a carriageway width of 7.3m. Table 2 from TA 79/99 provides a one-way hourly flow capacity of 1,590 VPH for the busiest direction of flow assuming a 60/40 directional split. Therefore the two-way flow capacity is estimated as 2,650 VPH in the peak hour. Multiplying this by 10 gives an approximation of the two-way daily (AADT) flow capacity presented in **Table 31**.

9.5.29 As can be seen from **Table 31** the link flow capacities for rural and urban links are very similar in this instance. Comparing this to the estimated 'Base + Committed + Growth' flows in **Table 32** below it can be seen that the flows exceed the highest link capacities presented in **Table 31** (stress value of 104%) and as a result flow breakdown could be expected.

Table 32 – Forecast Base + Committed + Growth A57 Link Flows

Forecast Base + Committed + Growth A57 Link Flows	
Daily (VPD)	Peak (VPH)
27,500	2,750

9.5.30 Providing significant additional link capacity would involve widening the carriageway to a dual carriageway standard. The existing short section of dual carriageway immediately to the north of the A57/A60 Sandy Lane roundabout could be extended approximately 600m further north before the first highway structure is encountered. However, this in isolation would be unlikely to provide significant additional link capacity and a comprehensive improvement would involve widening or replacing the existing bridge structures supporting the carriageway to allow the whole link to be widened to dual carriageway standard.

9.5.31 This would be a costly exercise. However, there are no alternative options available since there is insufficient highway width available over the existing structures, even if the footways were removed, to allow an alternative carriageway configuration to be provided.

9.5.32 Assuming a notional on-line carriageway widening cost of £1,000 per linear metre (assumes on-line widening to dual 2-lane carriageway, excludes; significant earthworks, drainage works, highway structures, third-party land costs, contingencies etc) would equate to a cost of approximately £1.75m. Assuming an average cost of £5m per bridge structure and assuming a total of 3 new free-standing structures would be required could add £15m to this total so a total construction cost in the range £20m to £30m is not inconceivable once land acquisition and other factors are taken into account.

9.5.33 However, in reality, it is likely that as this section of the A57 approaches its theoretical capacity regular users would modify their travel behaviour, either by using alternative routes, or travelling at alternative times when the network is less busy (i.e. peak spreading) in order to avoid congestions and delay. The methodology applied in this study is unable to take these factors into account and the forecast stress levels should therefore be considered a 'worst case' assessment.

9.5.34 Discussions with Nottinghamshire County Council confirm the view that an expensive widening scheme to provide additional traffic capacity on this link would have a very low delivery priority and that by addressing capacity at the roundabout junctions at either end of the link (combined with the trip re-assignment and travel time effects mentioned in the previous paragraph) it should continue to operate satisfactorily with the addition of growth traffic. On this basis it is recommended that no improvements are proposed to the link but that it's operation should continue to be monitored.

A57/Claylands Avenue Roundabout, Worksop

9.5.35 The image below shows the existing layout of the A57/Claylands Avenue roundabout.

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9.5.36 The junction comprises a priority controlled roundabout with 2 lanes on the circulatory carriageway (not marked on the carriageway). No existing peak period traffic count data is available for this junction so it has not been possible to assess its operation further at this stage. However, based on the assessment of the other existing roundabouts on the A57 Worksop Bypass it is considered reasonable to assume that traffic capacity could be increased at this location either through revisions to the existing junction geometry, or possibly through the introducion of signal control. Observation of the image above suggests that there is highway land available on all approaches to the junction within which modest widening/geometry revisions could be delivered.

9.5.37 Based on relatively modest geometry changes to the roundabout being required it is anticipated that the total cost to improve the junction could be circa £1.5m (excluding any utilities or land acquisition costs), more if signals are required, and as these improvements are required to help mitigate growth impacts it is expected that these would be developer funded.

A57/B6041 Gateford Road Roundabout, Worksop

9.5.38 The image below shows the existing layout of the A57/B6041 Gateford Road roundabout.

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9.5.39 The junction comprises a priority controlled 4-arm roundabout with 2 lanes on the circulatory carriageway (not marked on the carriageway). However, it should be noted that there is currently a planning application registered with Bassetlaw District Council to develop land to the west of the roundabout. This proposal includes for the provision of a 5th arm onto the western side of the roundabout to provide access into the proposed development (see sketch layout in **Appendix I**).

9.5.40 The operation of the proposed 5-arm roundabout has been assessed using ARCADY. The results demonstrate that the A57 arms of the roundabout and the B6041 are forecast to operate over capacity with the additional traffic as a result of the proposed growth (see **Appendix I**).

9.5.41 Potential improvements have therefore been considered and these are indicated in a sketch layout provided in **Appendix I**. The improvements comprise widening the A57 entries to the roundabout and providing a free-flow left-turn lane from the B6041 arm to the A57 south. Further analysis with ARCADY suggests that the indicated improvements would achieve 'nil detriment'.

9.5.42 If the free-flow left-turn lane can not be accomodated within the existing highway boundary then an alternative junction layout, possibly providing signal control on the existing

roundabout, or replacing the existing roundabout with a signal controlled crossroads junction is likley to be required to bring the junction to within operational capacity.

9.5.43 Based on the indicated geometry changes to the roundabout being required it is anticipated that the total cost to improve the junction could be circa £3m (excluding any utilities or land acquisition costs) and as these improvements are required to help mitigate growth impacts it is expected that these would be developer funded.

A57 to North West of B6041 Gateford Road, Worksop

9.5.44 The image below shows the alignment and character of the section of the A57 to the north west of the A57/B6041 Gateford Road roundabout that falls within Bassetlaw District.

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9.5.45 Between the A57/B6041 Gateford Road Roundabout and the M1 Motorway (approximately 10km to the west) the A57 is single carriageway highway. The Bassetlaw District boundary is situated approximately 450m to the north west of the A57/B6041 Gateford Road Roundabout (approximately level with the north western edge of the wooded area in the image above). To the west of this point the A57 passes through the Unitary Authority Area of Rotherham.

9.5.46 In the 'Base + Committed' Scenario a stress level of 94% is forecast on this section of the A57, this increases to 109% with the addition of growth traffic. Therefore the link is forecast to be operating very close to capacity without any growth traffic and over its theoretical capacity with the addition of growth traffic. As a result, link capacity problems could be expected even without any growth and this would be compounded by the provision of additional traffic.

9.5.47 Providing significant additional link capacity would involve widening the existing A57 carriageway to a dual carriageway standard. However, widening just the initial 450m section of the A57 to the district boundary would be unlikely to offer any significant benefits and a more comprehensive scheme to widen the whole length to the M1 Motorway is likely to be required. This would involve a joint scheme between Rotherham Unitary Authority and Nottinghamshire County Council as the highway authorities responsible for their respective sections of the A57.

9.5.48 Rotherham Unitary Authority already has a programmed improvement to upgrade the section of the A57 between the M1 motorway and the cross-roads junction with the B6364 at Todwick (approximately the first 2km section of the A57 east from the M1). However, there is nothing programmed for the remaining section of the A57 between Todwick and the boundary with Bassetlaw District.

9.5.49 Improving this whole length of the A57 to dual carriageway would be problematic due to the constraints imposed by a combination of Lindrick Golf Course (which abuts both sides of the highway) and existing frontage development at Lindrick Dale and in the settlement of South Anston.

9.5.50 An alternative option could be to consider smaller scale improvements designed to remove or reduce any impediment to ahead movements on the A57 such as the provision of 'Ghost-Island' right-turn facilities at side road junctions, improvements to existing junctions to prioritise ahead movements and the provision of bus laybys etc. Any such improvements would need to be developed and jointly agreed with Rotherham Unitary Authority.

9.5.51 Responsibility for funding improvements to this section of the A57 would fall to a combination of Rotherham Unitary Authority and Nottinghamshire County Council to address any existing capacity issues on their respective sections of the A57 and developers to address any additional traffic impacts as a result of future growth.

9.5.52 A notional improvement cost of £8m (rounded up from £7.8m) has therefore been assumed, which has been estimated on the basis of widening the A57 between the A57/B6463 Todwick crossroads and the A57/B6041 Gateford Roundabout (a distance of approximately 7.8km) to dual carriageway standard. This assumes a notional on-line carriageway widening cost of £1,000 per linear metre (assumes on-line widening to dual 2-lane carriageway, excludes; significant earthworks, drainage works, highway structures, third-party land costs, contingencies etc).

9.5.53 However, in reality, it is likely that as this section of the A57 approaches its theoretical capacity regular users would modify their travel behaviour, either by using alternative routes, or travelling at alternative times when the network is less busy (i.e. peak spreading) in order to avoid congestions and delay. The methodology applied in this study is unable to take these factors into account and the forecast stress levels should therefore be considered a 'worst case' assessment.

9.5.54 Discussions with Nottinghamshire County Council confirm the view that an expensive widening scheme to provide additional traffic capacity on this link would have a very low delivery priority and that by addressing capacity at junctions (combined with the trip re-assignment and travel time effects mentioned in the previous paragraph) it should continue to operate satisfactorily with the addition of growth traffic. On this basis it is recommended that no improvements are proposed to the link but that it's operation should continue to be monitored.

Other Locations

9.5.55 Although not specifically identified by the network stress analysis (which is a link based assessment) there are several other junctions with known safety/capacity issues that may need to be improved in order to accommodate growth traffic (these junctions were identified by NCC and are discussed in paragraph 2.3.16 and paragraph 2.3.17). Where these junctions have been forecast to experience 2-way AADT flow increases of 10% or more then further comments are provided in the following section. Percentage increases in 2-way AADT flows are depicted in **Figure 29** where links experiencing an increase of 10% or greater are coloured red for ease of reference. However, it should be noted that many links have relatively low background traffic flows so modest increases in traffic flow can result in significant percentage increases. This section of the report only examines those junction that have been identified by NCC as having existing issues, not all locations that have been identified with percentage increases of 10% or greater, which would be beyond the scope of this study.

B1164/A6075 Junction, Tuxford

9.5.56 The A6075 through the B1164/A6075 junction (see image below) is forecast to experience material increases in 2-way traffic flows as a result of growth traffic (See **Figure 29**) and is likely to require traffic capacity improvements as a result.

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9.5.57 The existing junction is a priority T-junction with existing residential development up to the back of the footway on all sides (see above). The most obvious form of improvement would therefore be to introduce traffic signal control and assuming this to be the case it is anticipated that the total cost to improve the junction could circa £0.75m (excluding any utilities or land acquisition costs). As these improvements are required to mitigate growth impacts it is expected that these works would be developer funded.

Pedestrian/Cycle Connections between Carlton-in-Lindrick and Worksop

9.5.58 Pedestrian/cyclist connections to Worksop are poor and would require improvement as part of future growth in the area. It is therefore expected that future developments within Carlton-in-Lindrick (sites 92 to 97) would be expected to contribute financially towards the provision of suitable pedestrian and cyclist infrastructure to link Carlton-in-Lindrick to Worksop. Details will need to be established as part of the Transport Assessments prepared in support of individual development sites and improvements secured by the District Council through planning conditions or Section 106 Agreement financial contributions.

A614/Blyth Road Junction, Harworth

9.5.59 The A614/Blyth Road junction (see image below) experiences existing traffic congestion and would require capacity improvements to accommodate material traffic flow increases.

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9.5.60 The Blyth Road arm of the junction is forecast to experience material increases in 2-way traffic flows as a result of growth traffic (see **Figure 29**) and is likely to require traffic capacity improvements as a result.

9.5.61 The existing junction is a priority T-junction and the most obvious form of improvement would therefore be to introduce traffic signal control, possibly with some localised carriageway widening. Assuming this to be the case it is anticipated that the total cost to improve the junction could be circa £1.5m (excluding any utilities or land acquisition costs). Nottinghamshire County Council has confirmed that there is no confirmed LTP scheme to improve this junction and developers would be expected to deliver improvements to achieve 'nil detriment'. As a result it is expected that improvements to address the impacts of growth would be developer funded[39].

[39] At the time of writing proposals are being discussed with a developer regarding the re-development of the Harworth Colliery site. This development is likely to deliver capacity improvements at this junction as part of a package of off-site mitigation.

A1/A614/B6045 Blyth Junction, Harworth

9.5.62 The priority roundabouts that link the A1 slip roads to the A614 and B6045 at the A1/A614/B6045 Blyth junction which was recently improved by the Highways Agency (see image below which shows the junction mid-improvement) already experience peak period congestion and will require improvement to be able to accommodate additional traffic flows as a result of future growth proposals.

9.5.63 It is understood that discussions are currently ongoing between the Highways Agency and a developer promoting the redevelopment of Harworth Colliery with regard to possible improvements at this location. The Highways Agency has undertaken an assessment of the proposed junction improvement and determined that it will have sufficient traffic capacity to accommodate the Harworth Colliery redevelopment as well as forecast traffic as a result of future growth in the area[40].

9.5.64 As a result the Highways Agency has confirmed that no additional capacity improvement works will be required at the junction once the Harworth Colliery scheme is implemented.

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[40] At the time of writing proposals are being discussed with a developer regarding the re-development of the Harworth Colliery site. This development is likely to deliver capacity improvements at this junction as part of a package of off-site mitigation. The full cost of the improvement works will therefore be met by the developer.

Blyth Road/Scooby Road and Main Street/Bawtry Road, Harworth

9.5.65 The 2 mini-roundabouts on Blyth Road at its junctions with Scrooby Road and Main Street/Bawtry Road (see image below) also suffer from existing capacity issues. The Blyth Road through the junctions is forecast to experience material increases in 2-way traffic flows as a result of growth traffic (see **Figure 29**). Capacity improvements are therefore likely to be required.

9.5.66 However, the small junction 'footprints' may make it difficult to achieve significant capacity improvements without the need for 'third-party' land.

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9.5.67 The most obvious form of improvement would therefore be to remove the mini-roundabouts and replace with traffic signal control, although the limited distance available between the two junctions may cause complications. Assuming that signal control is feasible it is anticipated that the total cost to improve the junction could be circa £1.5m (excluding any utilities or land acquisition costs). Nottinghamshire County Council has confirmed that there is no confirmed LTP scheme to improve this junction and developers would be expected to deliver improvements to achieve 'nil detriment'. As a result it is expected that improvements to address the impacts of growth would be developer funded.

A614/Scrooby Road Junction, Harworth

9.5.68 The Scrooby Road arm of the junction is forecast to experience material increases in 2-way traffic flows as a result of growth traffic (see **Figure 29**) and is likely to require traffic capacity improvements as a result.

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9.5.69 The form of junction improvement required could involve the provision of a 'Ghost-Island' right turn facility with localised carriageway widening or the introduction of signal control. Assuming that signal control is required with localised carriageway widening it is anticipated that the total cost to improve the junction could be circa £0.75m (excluding any utilities or land acquisition costs). Nottinghamshire County Council has confirmed that there is no confirmed LTP scheme to improve this junction and developers would be expected to deliver improvements to achieve 'nil detriment'. As a result it is expected that improvements to address the impacts of growth would be developer funded.

A620/A638 Roundabout, Retford

9.5.70 Retford - The majority of journeys through Retford go via the A620/A638 roundabout. During peak times, queues often develop along Hospital Road and Amcott Way. In addition to queues at this junction, queues often extend the full length of Arlington Way. Material increases in 2-way traffic flows as a result of growth traffic are foreasct on the A620 through this junction (see **Figure 29**). Any increase in traffic through the already congested A620/A638 roundabout is likley to require capacity improvements to the junction. The existing junction is a 5-arm priority roundabout with existing residential development on all sides which constrains options for improvement (see image below).

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9.5.71 Options to influence modal splits in the area (i.e. increasing use of sustainable transport in order to reduce car trips through the junction) should therefore be fully explored as part of all future development proposals that will impact on this junction. This should include consideration of contributions twards new/improved public transport infrastructure and services.

9.5.72 In the event that modal shift alone can not address forecast impacts at this junction then the most likely form of improvement that could be delivered would be either the introduction of signal control on the roundabout or replacing the junction with a signal-controlled crossroads. However, both of these options would be very difficult to deliver in practice due to the

constrained nature of the junction, so modal shift should be the initial priority. Assuming that signal control of the existing roundabout is required it is anticipated that the total cost to improve the junction could be circa £3m (excluding any utilities or land acquisition costs). Nottinghamshire County Council has confirmed that there is no confirmed LTP scheme to improve this junction and developers would be expected to deliver improvements to achieve 'nil detriment'. As a result it is expected that improvements to address the impacts of growth would be developer funded.

9.6 FUNDING

9.6.1 Potential sources of funding have been identified as follows:

- Developer – funding provided in full by developers to address transport impacts as a result of development proposals.
- LTP/Developer – funding split between the Local Transport Plan (LTP) budget and developer(s) to address existing transport issues on the County highway network that will be exacerbated by development proposals. (See text below).

9.6.2 Costs identified to be Nottinghamshire County Council (NCC) funded are subject to NCC approval. Future Local Transport Plan (LTP) funding levels are not guaranteed and any schemes put forward would need to be assessed and prioritised through the appropriate scheme programme process.

9.6.3 The current LTP plan period commits funding to 2010/11, beyond this date funding levels and priorities are unknown. Nottinghamshire County Council has confirmed that none of the highway improvement schemes discussed in this report are currently being safeguarded or committed through the LTP by the County Council. In the absence of LTP funding then the County Council has confirmed that developers will be expected to restore link and/or junction capacity to the state it would have been without a development proceeding (i.e. achieve nil detriment). Such works will therefore need to be fully developer funded.

9.6.4 Other possible funding sources are discussed in paragraph 3.5.11 of this report. However, Funding major transport infrastructure improvements is not the primary purpose of these sources and any funding received is therefore likely to be limited to providing relatively small scale accessibility improvements as part of other projects (e.g. local enhancements to cycle and walking facilities as part of a school travel Plan etc). These funding sources have therefore not been considered a realistic method of delivering the strategic transport infrastructure improvements identified in this study.

Developer Contribution Methodology

9.6.5 It is expected that individual developers would fund any travel plan measures/initiatives (including marketing and promotion) or transport infrastructure improvements required to mitigate the direct transport impacts of developments. This would include funding for items such as; Smarter Choices measures and initiatives, Travel Plans, on and off-site cycling and walking infrastructure, bus and rail network/infrastructure enhancements and/or bespoke bus

services, and any off-site highway infrastructure improvements required to mitigate traffic impacts.

9.6.6 In addition to addressing the direct transport implications of developments developers will also be required to fund 'nil detriment' improvements at each of the strategic locations identified in this report (i.e. to restore the capacity of the highway network to what it would be without the proposed growth). It is recommended that developers provide financial contributions through S106 Agreements or planning tariffs (CIL) towards the delivery of the strategic transportation improvements identified in **Table 33** on page 125.

9.6.7 In terms of the apportionment of funding between developments the total value of the identified improvements would be split based on the size of the development proposal (i.e. on a pro-rata basis in accordance with employment floor area and/or the number of residential units).

9.6.8 The aim of this methodology is to provide an equitable, transparent and fair system to enable developers to provide funding for the identified strategic infrastructure improvements. The list of improvements would first need to be worked-up in more detail, accurate construction costs identified and a delivery programme identified. It is also proposed that this list would become a 'live document' which would be reviewed on a regular basis to take into account future changes.

9.6.9 It is proposed that this contribution framework would be used for any future developments in the district. This approach to calculating contributions is increasingly being used by a number of local authorities (for example Milton Keynes Council and Hinckley & Bosworth Borough Council) and is considered to be consistent with the Community Infrastructure Levy methodology.

9.7 IMPROVEMENT PRIORITIES

9.7.1 The delivery of any measures or infrastructure improvements required to mitigate the direct transport impacts of developments would need to be timed to coincide with the development and this would be the responsibility of developers.

9.7.2 The strategic improvements summarised in **Table 33** are required to address the cumulative traffic impacts of multiple developments. **Table 29** on page 84 demonstrates that all links operate within capacity without growth traffic. However, the A57 to the north west of the A57/B6041 Gateford Roundabout and the A60 to the south west of A57/A60 roundabout are

very close to their theoretical capacity. On this basis, it can be concluded that improving the capacity of the A57/B6041 Gateford Roundabout, followed by the other junctions on the A57 Worksop Bypass and the A60 to the south west of Worksop should take highest priority because these are the locations on the network that have the least available capacity to accommodate additional traffic and the A57 also forms an important link between the district and the M1 motorway to the west.

9.7.3 Further detailed consideration will need to be given to the likely delivery programme for growth across the district by development location and time in order to be able to estimate the 'build-up' of cumulative traffic impacts. An estimate of thresholds could then be made that would 'trigger' the requirement for the improvements summarised in **Table 33**. It would then be possible to prioritise scheme delivery more accurately, balancing the requirement for strategic improvements against development requirements which would also help to identify when financial contributions are required from developers and identify any funding shortfalls etc.

Table 33 – Summary of Strategic Transport Improvements

Improvement	Indicative Total Costs (£m)	Priority	Likely Funding Sources	Comments
A60/A619 Roundabout	3	1	Developer	Improvements to existing roundabout
A60/A57/B6024 Roundabout	3	1	Developer	Signalisation of existing roundabout
A57/A60 Sandy Lane Roundabout	1.5	1	Developer	Improvements to existing roundabout
A57/Claylands Ave Roundabout	1.5	1	Developer	Improvements to existing roundabout
A57/B6041 Gateford Road Roundabout	3	1	Developer	Improvements to existing roundabout
A1/A614/B6045 Blyth Junction, Harworth[41]	4.5	1	Developer	Signalisation of existing junction
A614/Blyth Road Junction, Harworth[41]	1.5	2	Developer	Signalisation of existing junction
A620/A638 Roundabout, Retford	3	2	Developer	Signalisation of existing junction
Blyth Rd/Scrooby Rd/Main St/Bawtry Rd, Harworth	1.5	3	Developer	Signalisation of existing junction
A614/Scrooby Road Junction, Harworth	0.75	3	Developer	Signalisation of existing junction
B1164/A6075 Junction, Tuxford	0.75	3	Developer	Signalisation of existing junction
Total Costs (£m)	24.0			

[41] Likely to be delivered and fully developer funded as part of the Harworth Colliery re-development proposals.

10 Summary

10.1 PREAMBLE

10.1.1 This study has been produced following discussions with Bassetlaw District Council, Nottinghamshire County Council and the Highways Agency. It is a strategic study intended to identify the cumulative multi-modal transport implications of future housing and employment growth within the district in order to advise strategic transport infrastructure requirements.

10.2 EXISTING CONDITIONS

10.2.1 Existing transport conditions within the district have been identified which involved a review of existing walking, cycling, bus, rail and road transport. Traffic flow data has been obtained for all 'A' and 'B' Classification roads in the district and this has been analysed and 'factored' to a common 2009 base year.

10.2.2 The performance of the road network within the district has been assessed based on link capacity. Congestion Reference Flow (CRF) values have been used as a measure of the performance of highway links and based on these calculated reference capacities link "stress" levels have been identified where "stress" is defined as the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow expressed as a percentage.

10.2.3 The analysis reveals that on the whole, the existing bus, rail, walking/cycling and highway networks within the district currently operate within capacity. However, discussions with the highway authorities has identified a requirement for improved pedestrian/cyclist links between Carlton-in-Lindrick and Worksop and has highlighted a few locations on the highway network that may require improvement in order to be able to handle additional development traffic. These are the:

- A1/A614/B6045 junction at Blyth.
- A1 Twyford Bridge junction at Elkesley.
- B1164/A6075 junction at Tuxford.
- A614/Blyth Road junction at Harworth.
- Blyth Road/Scrooby Road junction at Harworth.
- Blyth Road/ Main Street/Bawtry Road junction at Harworth.
- A614/Scrooby Road junction at Harworth

- A60 to the southwest of the A57 at Worksop.
- A620/A638 roundabout at Retford.

10.2.4 The district generally has a very good coverage of bus stops which are well served by a combination of commercial and financially supported bus services and bus passenger numbers are reported to be increasing.

10.2.5 A newly-built £1.4m bus station facility was provided in Retford by Nottinghamshire County Council in 2006. This has been highly commended for its modern and comfortable design and has boosted passenger safety and acted as a catalyst for growth and change in the town centre.

10.2.6 There are 3 rail stations within the district at Worksop, Retford and Shireoaks and the district is served by three passenger rail routes, the East Coast Mainline which runs north-south down the centre of the district served through Retford station; the Robin Hood line which terminates at Worksop and the Northern Rail Sheffield to Lincoln line which runs in a broadly easterly direction passing through Worksop and Retford stations. Large parts of Retford and Worksop therefore have reasonable access to passenger rail. However, the rural areas of the district are less well placed in this regard.

10.2.7 The focus of existing cycling infrastructure provision is around Worksop and Retford. The town centres and their environs have fairly comprehensive networks of dedicated cycling infrastructure, pedestrianised streets and quiet roads suitable for cycling. Much of the rest of the district's cycling infrastructure is made up of off-road leisure based facilities.

10.2.8 Both of the district's main towns have pedestrianised streets within their central areas which allow good accessibility to their retail offerings and enables safe interchange with buses. Footways are provided in all of the district's main settlements and within many of the residential areas. Footways are not however, provided alongside carriageways in many of the rural areas of the district.

10.2.9 Bassetlaw has a high level of cycling and walking trips to work based upon the 2001 Census results with 14.17% of trips being made by these modes. This is above the Nottinghamshire average of 13.68% and 13.03% Great Britain average. As could be expected, levels of cycling and walking to work vary across the district with the highest levels in the wards surrounding Retford and Worksop and the lowest levels in the more rural wards.

10.3 COMMITTED INFRASTRUCTURE/LAND-USE DEVELOPMENTS

10.3.1 Committed infrastructure and land-use developments that are likely to materially affect existing transport conditions within the district within the plan period have been researched and taken into account in the study. Committed land-use developments within the district and within all adjacent districts have been taken into account.

10.3.2 There is one key committed highway improvement scheme within the district; the A1(T) Elkesley Junctions Improvement. A scheme to replace 3 existing at-grade junctions on the A1 (T) through the district with grade-separated junctions was recently completed by the Highways Agency.

10.3.3 There is a committed programme of Local Transport Plan funded improvements to existing cycle/pedestrian infrastructure within the district.

10.4 PROPOSED GROWTH

10.4.1 Residential and employment growth targets to the end of the LDF plan period (2026) have been provided by the District Council, together with details of potential development sites that could accommodate this growth.

10.5 TRANSPORT IMPACTS

10.5.1 Strategic transport impacts as a result of the target growth have been identified for all modes of transport and the findings suggest that for sustainable modes (i.e. walking, cycling, bus and rail) forecast demands will largely be accommodated on existing/committed infrastructure and services. However, local improvements will be required to integrate development sites. Improvements to existing bus networks and infrastructure will be required to meet additional demands, and encouraging bus use will have an important role to play in reducing car travel within the district.

10.5.2 Cumulative traffic impacts have been identified on; the A60 to the south west of Worksop, a section of the A57 Worksop Bypass and the A57 to the north west of Worksop that would need to be addressed by highway infrastructure improvements if traffic congestion and delays are to be avoided. In addition to these links specific junctions around the district have been identified for potential improvement to address the forecast effects of growth traffic.

10.5.3 To help reduce traffic impacts it is recommended that a minimum target modal shift of 7% from car driving to bus use is sought. Bus service enhancements, network and infrastructure

improvements will therefore need to be identified on a site-by-site basis in order to achieve this

10.6 STRATEGIC INFRASTRUCTURE REQUIREMENTS

10.6.1 Possible highway infrastructure improvements have been identified in a preliminary form, together with indicative costs. These are summarised in the following table.

Improvement	Indicative Total Costs (£m)	Priority	Likely Funding Sources	Comments
A60/A619 Roundabout	3	1	Developer	Improvements to existing roundabout
A60/A57/B6024 Roundabout	3	1	Developer	Signalisation of existing roundabout
A57/A60 Sandy Lane Roundabout	1.5	1	Developer	Improvements to existing roundabout
A57/Claylands Ave Roundabout	1.5	1	Developer	Improvements to existing roundabout
A57/B6041 Gateford Road Roundabout	3	1	Developer	Improvements to existing roundabout
A1/A614/B6045 Blyth Junction, Harworth[42]	4.5	1	Developer	Signalisation of existing junction
A614/Blyth Road Junction, Harworth[42]	1.5	2	Developer	Signalisation of existing junction
A620/A638 Roundabout, Retford	3	2	Developer	Signalisation of existing junction
Blyth Rd/Scrooby Rd/Main St/Bawtry Rd, Harworth	1.5	3	Developer	Signalisation of existing junction
A614/Scrooby Road Junction, Harworth	0.75	3	Developer	Signalisation of existing junction
B1164/A6075 Junction, Tuxford	0.75	3	Developer	Signalisation of existing junction

10.6.2 Strategic transport improvements have been described in outline only at this stage and more detailed assessments will be required in order to identify definitive improvement proposals and delivery priorities. Scheme costs are also only identified in preliminary form and these are intended to give an **approximate** 'order of cost'. As a result, no reliance in terms of preferred scheme selection should be placed on the cost estimates presented in this report.

10.6.3 This study has identified cumulative traffic impacts on the existing highway network as a result of future growth planned within the district. The strategic transport improvements that have been identified are aimed at addressing these cumulative impacts. Individual development sites may trigger the need for further transport infrastructure/service improvements depending on their nature, size and location (for example the sensitive locations summarised in paragraph 10.2.3).

10.6.4 Detailed Transport Assessments and Travel Plans will therefore be required in support of planning applications for each development site and these should identify specific site access arrangements, on-site transport infrastructure requirements and specific off-site transport measures/infrastructure in order to mitigate their respective transport impacts.

[42] Likely to be delivered and fully developer funded as part of the Harworth Colliery re-development proposals

10.6.5 It is expected that individual developers will fund any measures or infrastructure improvements required to mitigate the direct transport impacts of developments. In addition, developers will also be required to fund 'nil detriment' improvements at each of the strategic locations identified in this report (i.e. to restore the capacity of the highway network to what it would be without the proposed growth). Developers will be required to fully fund schemes of mitigation to address only the additional problems they create and are not required to resolve existing congestion problems).

10.6.6 It is recommended that the list of improvements would first need to be worked-up in more detail with accurate construction costs and delivery programme identified. The list would then become a 'live document' which would be reviewed on a regular basis to take into account future changes. The total value of the identified improvements would be split based on the size of the development proposal (i.e. on a pro-rata basis in accordance with employment floor area and/or number of residential units) and this contribution framework would be used for any future developments in the district. This approach to calculating contributions is considered to be consistent with the Community Infrastructure Levy (CIL) methodology.

GLOSSARY

FIGURES

Appendix A – Base Data

Appendix B – Nottinghamshire County Council Meeting Minutes

Appendix C – Nottinghamshire County Council Journey Time Data

Appendix D – Walking & Cycling Assumptions

Appendix E – A1 Elkesley Junction Improvement

Appendix F – Committed Development

Appendix G – Comparison with TEMPRO

Appendix H – Growth Details

Appendix I – Preliminary Junction Capacity Calculations

Appendix J – Preliminary Cost Estimates