



Shropshire Council

SHREWSBURY NORTH WEST RELIEF ROAD

Option Assessment Report





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Option Assessment Report

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APPENDICES

Appendix A

1. INTRODUCTION

1.1. PURPOSE

- 1.1.1. This report describes the appraisal of options for the Shrewsbury North West Relief Road (NWRR) project. It has been prepared in accordance with Transport Appraisal Guidance¹ (WebTAG) published by the Department of Transport.
- 1.1.2. The Options Assessment Report is one of the documents which will underpin the Outline Business Case for the project.

1.2. PRINCIPLES

- 1.2.1. Following WebTAG, the following principles have informed the appraisal process:
- There must be a **clear rationale** for the proposal, based on a clear presentation of the problems and challenges that establish the need for the scheme.
 - There must be consideration of **genuine, discrete options**, and a range of solutions should be considered across networks and modes.
 - There should be an **auditable, documented process** which identifies the best performing options to be taken forward for further appraisal.
 - There should be an appropriate level of **public and stakeholder participation** and engagement at suitable points in the process. This informs the evidence base which establishes the need for the scheme, guides the option generation, sifting and assessment, and informs the subsequent appraisal.

1.3. OVERVIEW

STAGES OF APPRAISAL

- 1.3.1. WebTAG envisages a three stage process of appraisal:

Stage 1	-	Option Development
Stage 2	-	Further appraisal
Stage 3	-	Implementation, Monitoring and Evaluation

- 1.3.2. This report covers Stage 1 (Option Development). Stage 2 (Further Appraisal) will be covered in the Outline Business Case and other supporting documents.

STEPS IN THE STAGE 1 APPRAISAL

- 1.3.3. WebTAG sets out the steps in the Stage 1 appraisal process. Table 1 describes these steps and shows where they may be found in this report. Figure 1 gives an overview of the process.

¹ *The Transport Appraisal Process*. Transport Appraisal Guidance (TAG) Unit. (Department for Transport, January 2014)

Table 1 - Steps in the Stage 1 appraisal process

	Description	Chapter
Step 1	Understand the current context and conditions in the study area	Chapter 2. Current situation
Step 2	Understand the future conditions in the study area	Chapter 3. Future situation
Step 3	Establish the need for the intervention	Chapter 4. The need for improvement
Step 4a	Identify intervention-specific objectives to address the identified need	Chapter 5. Objectives
Step 4b	Define the geographical area for the intervention to address	Chapter 6. Area of impact
Step 5	Generate options reflecting a range of modes, approaches and scales of intervention	Chapter 7. Options identified
Step 6	Undertake initial sift. Discard options that would fail to address key objectives or are unlikely to pass key viability and acceptability criteria	Chapter 8. Initial sift of options
Step 7	Develop and assess potential options to identify the better performing ones. Undertake public consultation on potential options	Chapter 9. Option development and assessment Chapter 10 Preferred option
Step 8	Document the option development process in an Option Assessment Report (OAR) or similar	
Step 9	Clarify the methodology and scope for further appraisal of better performing options in an Appraisal Specification Report (ASR) or similar.	

GENERAL APPROACH

- 1.3.4. The appraisal process has been undertaken using a wide range of tools and procedures identified in WebTAG, and has been informed throughout by engagement with stakeholders. The results of assessments and public consultation have been fed back into the design and development of the scheme. Steps 1 – 4 have been informed by consideration of local and national policies, and steps 5 – 7 have been informed by the Government’s five-case model for option assessment, anticipating the framework of the Outline Business Case.

1.4. BACKGROUND

- 1.4.1. The issues arising from the lack of a river crossing in the north-west sector of Shrewsbury have been a concern for Shropshire Council and its antecedents for many years, and the idea of providing some form of north-west relief road is not new. Plans have been put forward at various times in the past thirty years. Detailed investigations began in the mid-1980s, and versions of a scheme were included in successive Local

Plans, TPP and LTP documents², as well as forming part of an outline TIF³ package in 2007 (not submitted). Extensive preparatory work was undertaken for a possible MSBC⁴ in 2010, (not submitted).

- 1.4.2. Because of this long history, the NWRR has been the subject of public and stakeholder consultation, scheme investigation and design over a very long period of time. Much of this work (including design, environmental studies, traffic modelling and economic appraisal) was more detailed than is normally required for a Stage 1 appraisal⁵. Although some of it is now out-of-date and needs to be refreshed for the more detailed appraisal at Stage 2, it represents a valuable source of information and insight and has therefore been used, with care, in this OAR to build up a clearer picture of the issues driving the scheme and the relative merits of different solutions.

1.5. IDENTIFYING THE PREFERRED OPTION

- 1.5.1. The process by which a wide range of options has been identified, sifted and assessed over time to identify a preferred solution has therefore been quite complex. Chapters 7, 8 and 9, which describe the identification, sifting and assessment of options, therefore clearly identify the context and timing of each element of the appraisal, showing exactly how it fits into the more linear process set out in Table 1. Finally, Chapter 10 describes how, by 2007, a single preferred option had been identified by means of engineering, environmental and economic assessments and detailed public consultation.
- 1.5.2. Throughout this long process, the NWRR has always been assessed as part of a wider transport strategy for Shrewsbury. However, most of the other identified transport measures have now been, or are being, delivered whilst measures considered as possible alternatives to a NWRR have been tested and found not to be effective or deliverable. The NWRR remains the “missing link” in Shrewsbury’s transport system and the key to addressing current and future congestion problems.

1.6. NEXT STEPS

- 1.6.1. Some 10 years have passed since the preferred route was confirmed. The next stage will be to update the appraisal in line with an Appraisal Specification Report (ASR) and prepare an Outline Business Case⁶ (OBC) for the NWRR setting out in more detail the:

- Strategic case
- Value for money (economic) case
- Financial case
- Commercial case
- Delivery (management) case

² Transport Policies and Programme and Local Transport Plan

³ Transport Innovation Fund

⁴ Major Scheme Business Case

⁵ “Stage 1 is intended to be a desk-based exercise, using readily available data, supported by stakeholder engagement and public consultation” “Best use should be made of information collected previously and care should be taken to minimise the effort needed to collect new information” ... “the presumption is that more complex models will not be needed for Stage 1”. TAG *The Transport Appraisal Process*, (DfT 2014).

⁶ Completed in December 2017

Stage 1 – Option Development

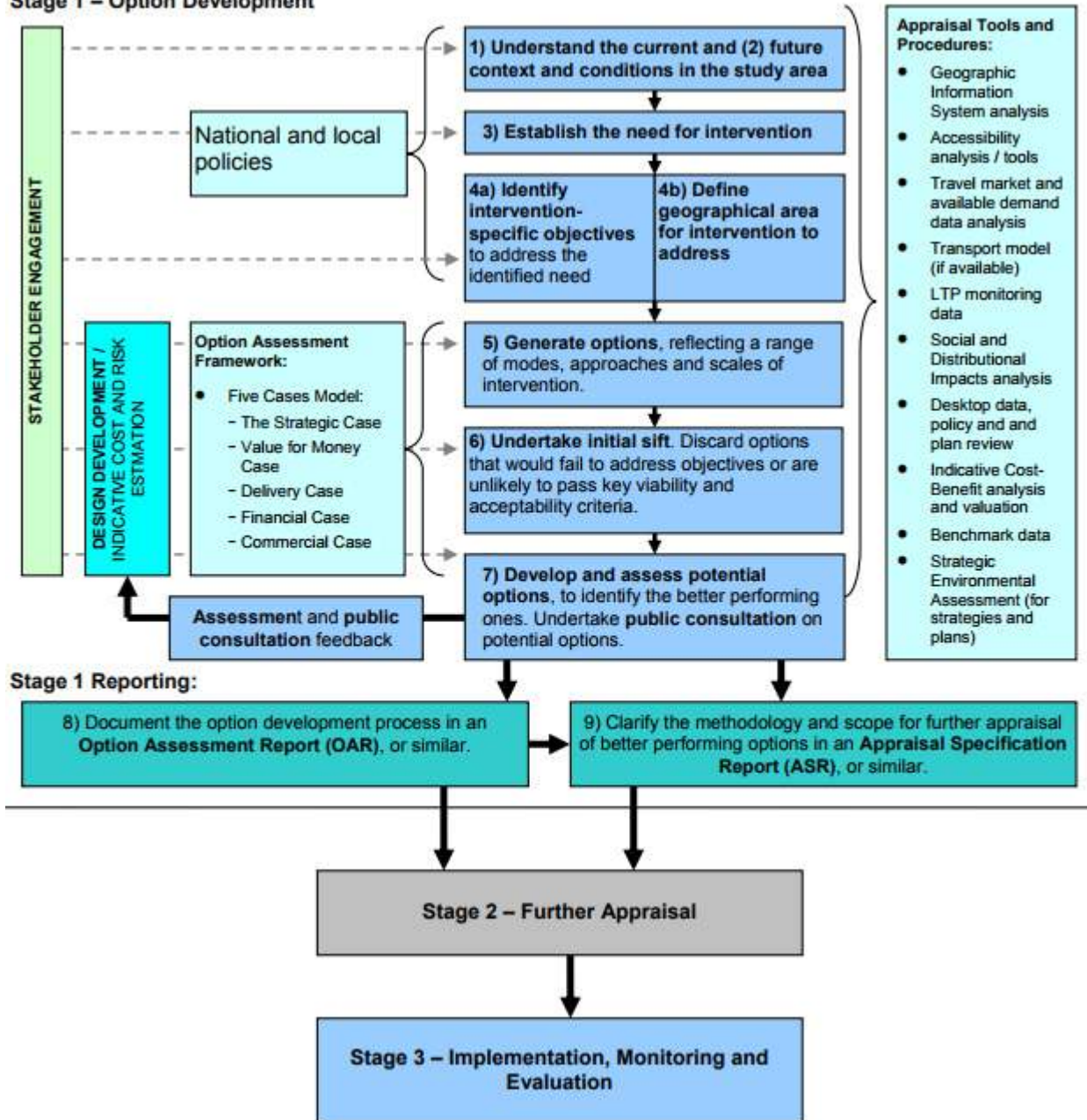


Figure 1 – Steps in the appraisal process

Source – Transport Analysis Guidance: The Transport Appraisal Process, DfT, January 2014

2. CURRENT SITUATION

2.1. INTRODUCTION

2.1.1. This chapter covers Step 1 of the Transport Appraisal Process, as defined in WebTAG:

Understand the current context and conditions in the study area.

2.1.2. It describes:

- The current transport and other policies which form the context for the scheme
- The current demand for transport in the study area
- The current levels of service in the study area

2.1.3. To aid understanding, and to set the rest of this report in context, a brief description of Shrewsbury and its transport system is firstly given below.

2.2. SHREWSBURY AND ITS TRANSPORT SYSTEM

ADMINISTRATIVE ARRANGEMENTS

2.2.1. Shrewsbury has a population of 70,689⁷ and is the principal town and administrative centre of Shropshire. It is an historic market town which serves as a cultural and commercial centre for Shropshire and a large area of mid-Wales.

2.2.2. Shropshire became a unitary council in 2009 and is the local transport authority and local planning authority⁸ for Shrewsbury. Together with Herefordshire and Telford & Wrekin, Shropshire is part of the Marches Local Enterprise Partnership.

2.2.3. Shrewsbury Town Council, established in 2009, provides a range of local services.

2.2.4. Shrewsbury is in the Shrewsbury and Atcham parliamentary constituency.

PHYSICAL CHARACTERISTICS OF THE AREA

2.2.5. Shrewsbury is located about 12 miles east of the Welsh Border, 15 miles west of Telford (population 138,241⁹) and 47 miles west of Birmingham. Its defining physical characteristic is an almost complete natural loop of the River Severn, within which the mediaeval town grew up. The river loop now encloses the present day town centre, which has just three main points of entry by road and a largely unaltered mediaeval street pattern.

2.2.6. To the south west of the town centre, and within the river loop, is the riverside Quarry Park. On the north-west side of the centre, the riverside represents a largely unexploited asset, mainly because it is separated from the town centre by busy roads.

⁷ In 2000

⁸ These functions had previously been the responsibilities of Shropshire County Council and Shrewsbury and Atcham Borough Council.

⁹ In 2001

- 2.2.7. Shrewsbury has over 660 listed buildings which, like the town centre roads, have been adapted over many centuries to serve present day purposes whilst retaining much of their original character.
- 2.2.8. Present day Shrewsbury extends over a much wider area, with development, mainly from the 19th and 20th centuries, extending outward from the river loop. There are out-of-town supermarkets and shopping centres to the north and south. Some traditional industry remains to the north of the town and there are newer employment areas at Battlefield to the north and London Road to the south east. The suburbs of Shrewsbury form a broad crescent from Harlescott in the north to Copthorne and The Mount in the west. Within this crescent lie the main schools, colleges, hospitals, and public and private sector employment areas.
- 2.2.9. By contrast, the north-west sector of the town is almost completely undeveloped.
- 2.2.10. Shrewsbury is moderately hilly, with land rising away from the river. The surrounding area is rural and sparsely populated.



Figure 2 – Aerial view of Shrewsbury

SOCIO-ECONOMIC CHARACTERISTICS OF THE AREA

- 2.2.11. Shropshire’s productivity in 2015, measured as GVA, was £19,299 per head of population¹⁰, 25% less than the national figure (£25,601).
- 2.2.12. In 2015¹¹, average earnings by workplace, at £466 per week, are also well below the regional and national average, although average earnings by residence are significantly higher at £492. This suggests that people tend to live in Shropshire but commute to higher paid jobs in other towns and cities. The 2011 census showed that Shropshire had more resident workers than it does jobs, and consequently net out-commuting was significant (-5,313 people in 2011). However, in-commuting rose more rapidly than out-commuting in the decade to 2011. A tendency to out-commute is more prevalent amongst higher earners, and this factor contributes to the considerable differential between workplace and residents’ earnings. 10.8% of all workers travel more than 30km to their main place of work – this proportion rises to 16.4% amongst those qualified to NVQ level 4 and above. (Census, 2011)
- 2.2.13. Shropshire has a much smaller manufacturing base than its nearest neighbour, Telford, though there has been strong growth in commercial floorspace in recent years due to the development of new business parks. The percentage of people in employment in 2016 was 81.4%, higher than the regional and national averages. Nevertheless, there are significant numbers of economically inactive people who would like to be in employment (10,400 in 2016, Annual Population Survey), suggesting that there is an untapped labour resource within the County. 31% of Shropshire employers report employing staff who have qualifications or skills that are not used in their current role (UKCES Employer Skills Survey, 2015) and levels of part-time employment are exceptionally high (34.8% of all Shropshire jobs in 2015 against 30.9% nationally, BRES). All of these factors are indicative of a level of underemployment within the County.
- 2.2.14. The above figures are for Shropshire, as comparable information is not readily available for Shrewsbury. Nevertheless they bear out a recognisable picture of Shrewsbury as a sub-regional administrative and cultural centre with a moderate standard of living, not much manufacturing industry, reasonably high employment levels but limited opportunities for skilled, full-time employment and significant out-commuting.
- 2.2.15. Car ownership in Shropshire is relatively high, with 84% of households owning at least one car. This higher than that for the West Midlands region or for England and Wales as a whole. This indicates a relatively high degree of car dependence.

Table 2 - Car ownership 2011 (Source: 2011 census)¹²

	Shropshire	West Midlands	England and Wales
No car	15.8%	24.7%	25.6%
1 car	42.2%	41.5%	42.2%
2 or more cars	42.0%	33.8%	32.1%

¹⁰ <https://shropshire.gov.uk/media/7027/skills-evidence-for-shropshire-2017.pdf>

¹¹ <http://shropshire.gov.uk/media/5320/shropshire-council-key-facts-and-figures-2016-17.pdf>

¹² 2011 Census, Table KS404EW

LOCAL HIGHWAY NETWORK

- 2.2.16. Shrewsbury lies at the intersection of the A5 and A49 trunk roads. A bypass of the original A5, completed in 1933, now forms a section of a partial inner ring road (the B4380). More recently constructed, modern roads, originally part of the A49, extend this partial ring to serve the east and north of the town.
- 2.2.17. In the 1990s, new outer bypasses for the A5 and A49 were built on the south and east sides of the town respectively, and the A5 was realigned to form a high capacity link between Shrewsbury and the M54 at Telford. As a result, Shrewsbury is well connected by road to the West Midlands and the national motorway network.

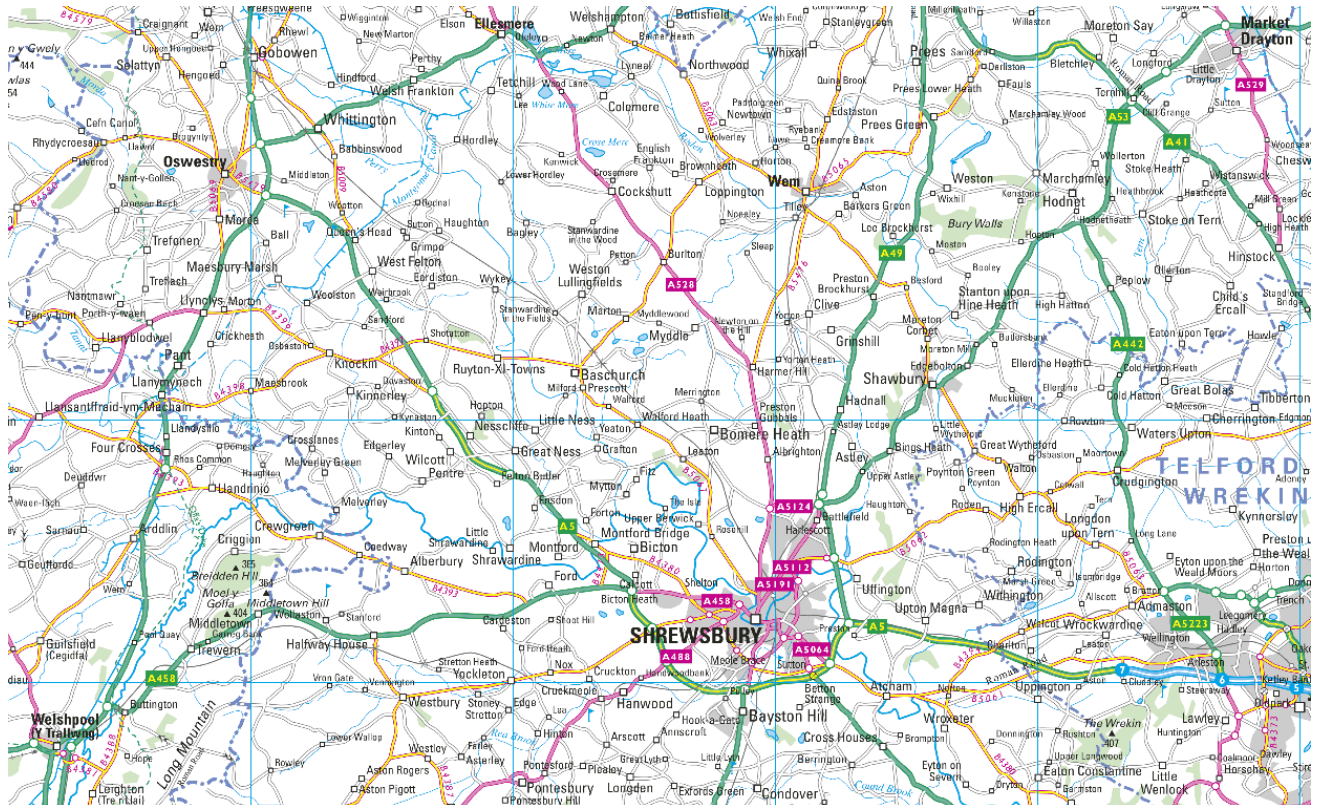


Figure 3 – Local Highway Network



Figure 4 – Local highway network: Shrewsbury

2.2.18. In this report, the following descriptions (or similar terms) will be used frequently to describe key components of Shrewsbury's highway network, insofar as it provides routes for traffic between the north and west of Shrewsbury:

- The western approach roads
- The town centre route
- The northern approach routes
- The outer bypasses
- The distributor ring road
- The rural rat-runs in the north-west sector

2.2.19. These are illustrated below.

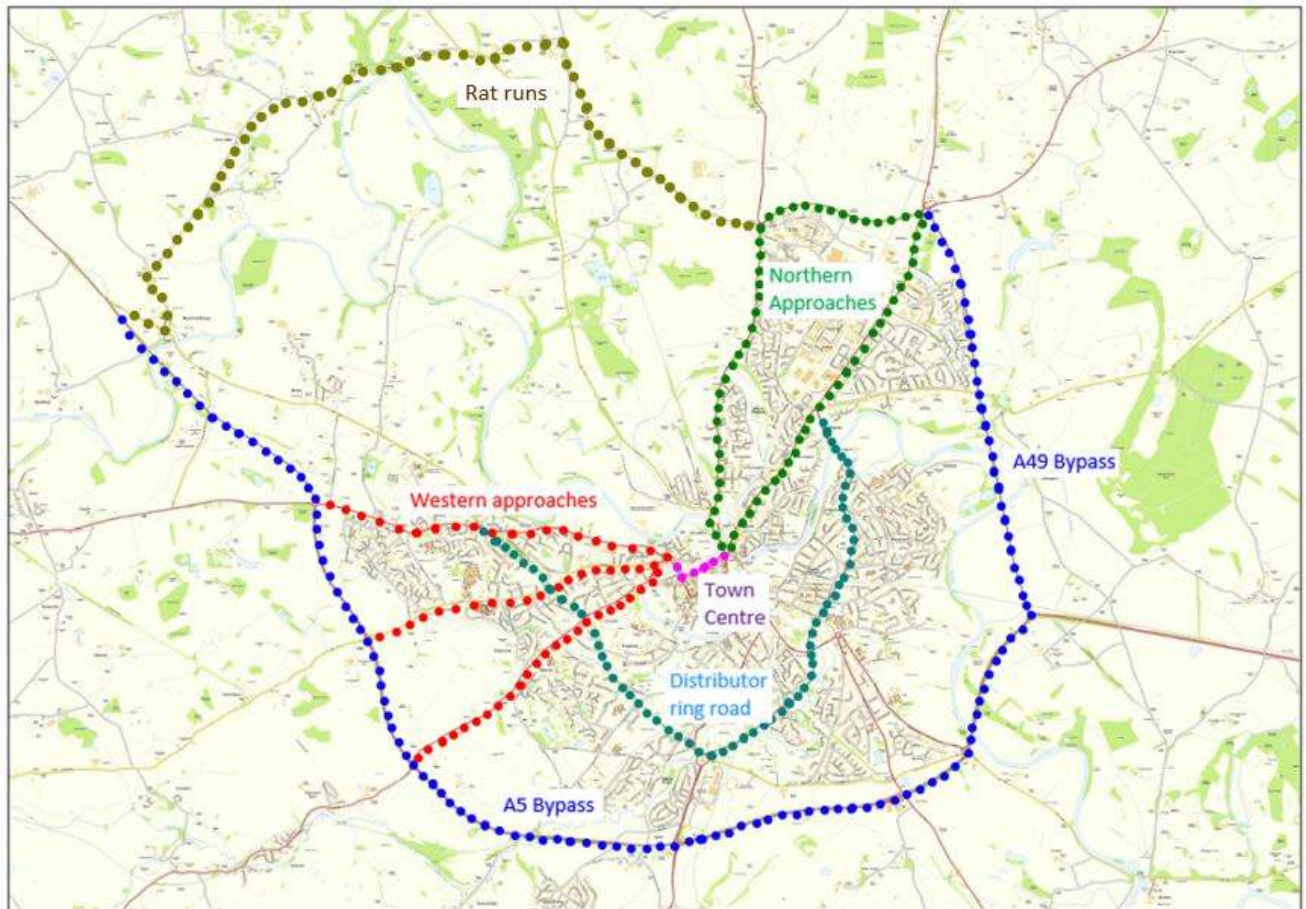


Figure 5 – Shrewsbury’s highway network – descriptions used

- 2.2.20. The present direct route for traffic between the north and west of the town is entirely composed of single carriageway roads. Outside of the town centre, these include residential and shopping streets which also carry through traffic. The shortest route from the A5/A49 Churncote Roundabout in the west to the A49/A53 Battlefield Roundabout in the north is described below.

Western approach roads

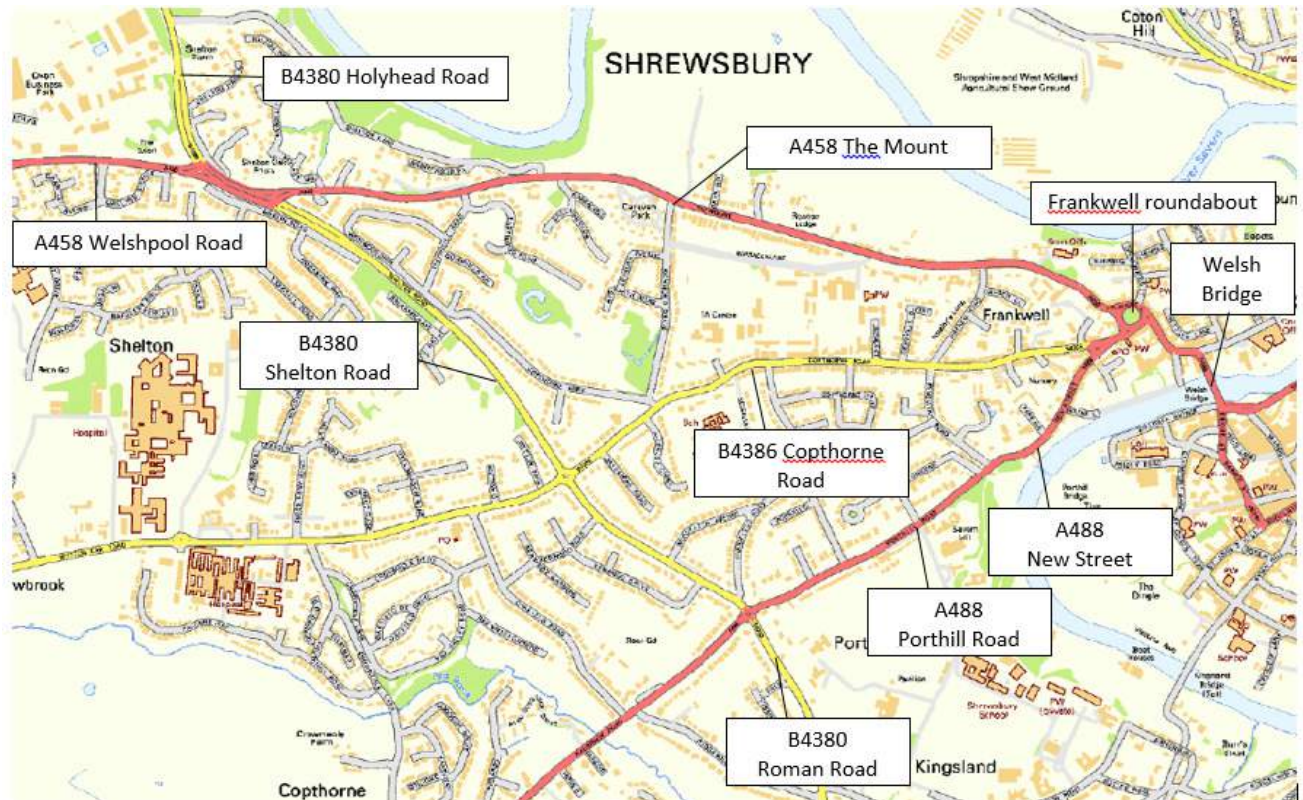


Figure 6 – Western approaches to Shrewsbury town centre

Churncote to Shelton (A458 Welshpool Road)

- 2.2.21. This section starts as a rural/edge of town single carriageway, subject to 40 mph speed limit, becoming built up with frontage development at Shelton end (30 mph). It gives access to Oxon Park and Ride, a caravan park, local shops, houses, and a dental surgery.

Shelton to Frankwell (A458 The Mount)

- 2.2.22. The amount is a mainly residential, single carriageway suburban road with frontage access and on-street parking, especially approaching Frankwell Roundabout. It becomes narrow and hilly with narrow footways at the Frankwell end, and has a 30 mph speed limit.

Frankwell

- 2.2.23. The large roundabout/gyratory has frontage access, including houses and local shops, and on-street parking. Frankwell serves local shops and some houses, traffic signal junction (with restricted turning) gives access to Frankwell Car Park and Theatre Severn.

Other approach roads to/from the west

- 2.2.24. In addition to A458 The Mount, the **B4386 Cophorne Road** and **A488 Radbrook Road / New Street**, all residential streets, provide alternative routes on the western side.
- 2.2.25. All three routes converge at Frankwell roundabout, before entering the town centre over the Welsh Bridge.

Route through the town centre

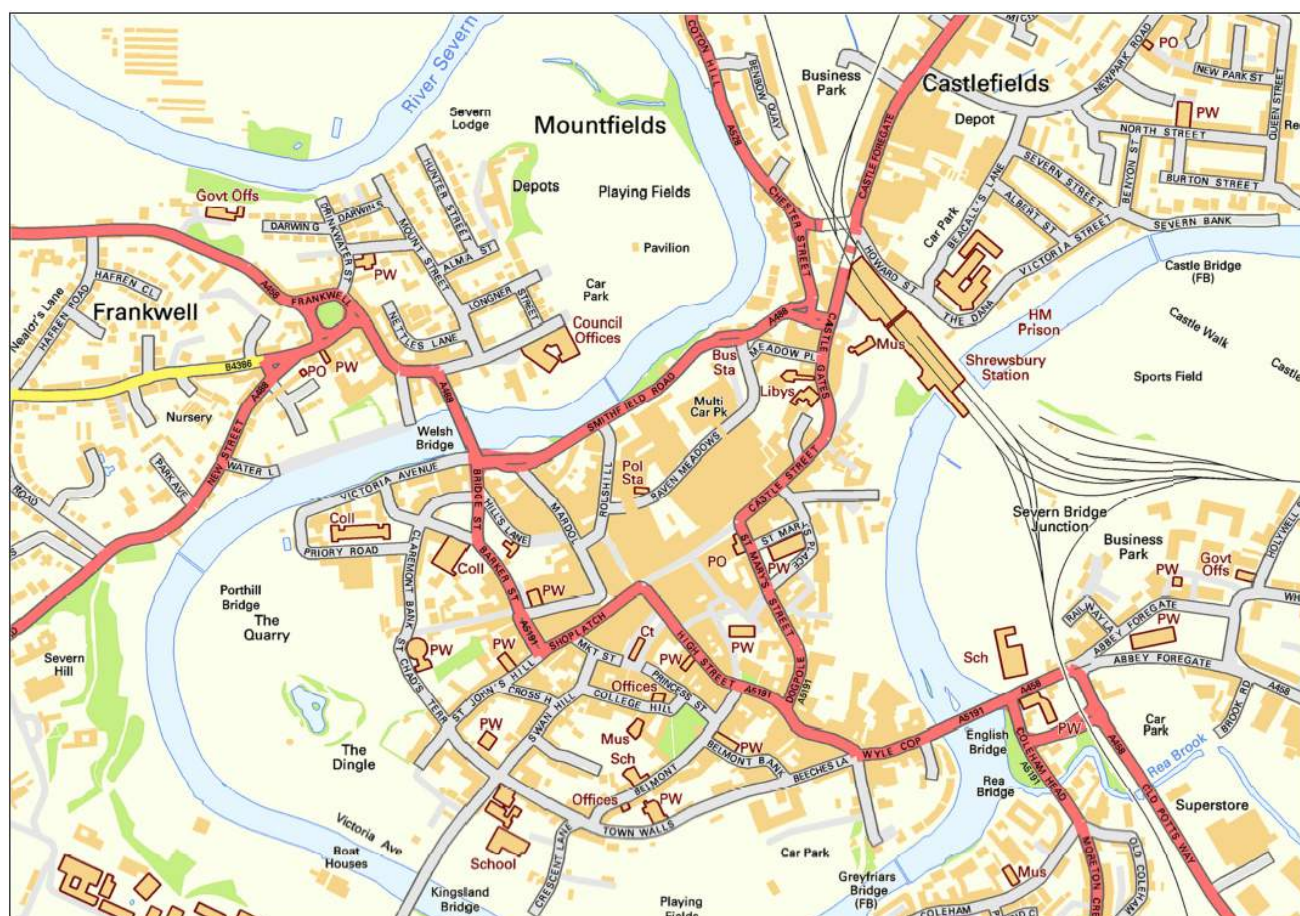


Figure 7 - Town Centre Highway Network

Welsh Bridge

- 2.2.26. The Welsh bridge is a single carriageway historic stone bridge with one lane in each direction. It has footways but no cycle facilities.

Mardol Quay

- 2.2.27. The Welsh Bridge gives onto a large traffic signal junction with Mardol Quay and Bridge Street. Mardol Quay is the first section of the riverside route through the town centre. It has two lanes northbound and one southbound, with a short cycle lane at the junction. It provides access shops and a hotel.

A458 Smithfield Road

- 2.2.28. Smithfield Road is the busiest road in the town centre and an important bus route. It runs along the eastern bank of the River Severn and is a three lane single carriageway with traffic signal controlled junctions. It is fronted by shops, a garage, pubs, some houses, a health centre and a large hotel. At its northern end, it gives access to Shrewsbury Bus Station. Despite its river frontage, it is not attractive to pedestrians due to the heavy traffic, and has only limited provision for cyclists.

Northern approach roads

2.2.29. The routes in the north are illustrated below, and described from south to north.

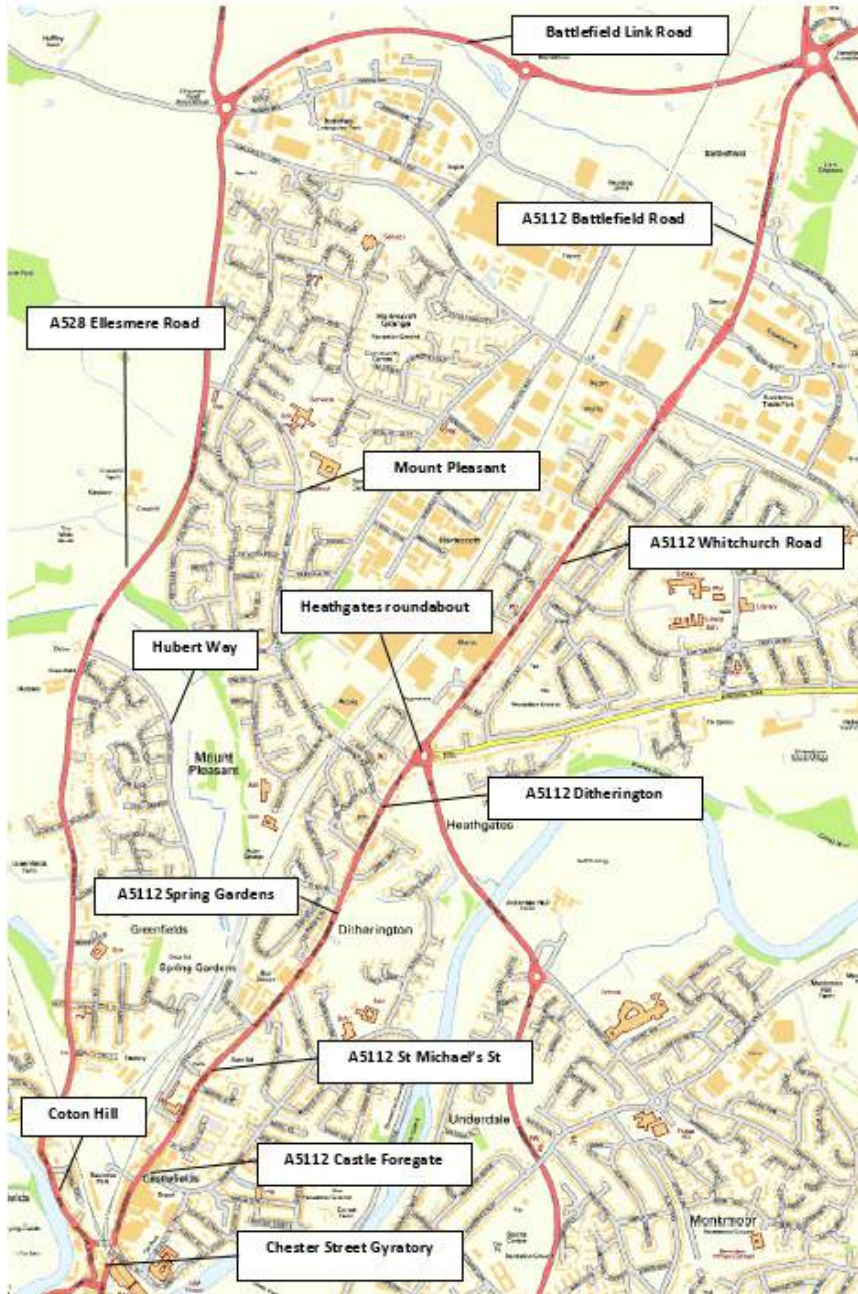


Figure 8 – Northern approaches to Shrewsbury Town Centre

A528 Chester Street Gyratory

2.2.1. The gyratory is traffic signal controlled and restricted by buildings and very low, narrow railway bridges which are frequently struck by large vehicles. Despite the heavy traffic, it is fronted by houses, flats, pubs and

restaurants, with some on-street parking, and the Gateway community arts centre. It provides access to Shrewsbury's railway station. Egress from the railway station forecourt is directly onto the gyratory and is notoriously difficult for cars and taxis, with long delays. Despite recent streetscape improvements, it remains a difficult area for cyclists and pedestrians.

A5191 Castle Foregate

- 2.2.2. Castle Foregate is a two lane single carriageway urban street, fronted by terraced housing, small shops, commercial premises and the town's main postal sorting office. It has on-street parking for some of its length.

A5191 St Michael's Street

- 2.2.3. St Michael's Street is fronted by small terrace houses and commercial properties, as well as the town's fire station and a recreation ground. Few of the houses have private parking and the single carriageway street includes on-street parking.

A5191 Spring Gardens

- 2.2.4. Spring Gardens is fronted by small terrace houses, flats, a pub, and commercial premises. This single carriageway urban street also gives access to the Shrewsbury Flax Mill Maltings, an important historic building which is presently being restored under the supervision of Historic England as part of a major regeneration scheme¹³.

A5191 Ditherington Road

- 2.2.5. Ditherington Road provides frontage access to terraced and semi-detached houses, small shops and commercial premises. Urban in character, it has one lane in each direction and some on-street parking.

A5191/A5112/B5062 Heathgates Roundabout

- 2.2.6. Heathgates is a large, very busy roundabout, fronted by houses and a pub. The Ditherington approach has a three lane flared entry, and there are uncontrolled pedestrian and cycle crossings at the roundabout.

A5112 Whitchurch Road

- 2.2.7. Whitchurch Road is a two lane, urban road with some local widening at junctions and a dedicated cycle track on one side. It is fronted by houses, a large supermarket, a DIY centre, shops and commercial and employment sites, including the large Doncasters Engineering premises (former Sentinel Works). For part of its length, it is flanked by a service road giving local access. It is subject to a 30 mph limit, having previously been 40 mph.

Harlescott Crossroads

- 2.2.8. Harlescott crossroads is a large four arm, multi lane, signal controlled crossroads which has been enlarged in recent years to accommodate new commercial developments including supermarkets and warehouse-type retail outlets.

¹³ <https://historicengland.org.uk/get-involved/visit/shrewsbury-flax-mill/>

Harlescott Crossroads to Battlefield Roundabout (A5112 Battlefield Road)

- 2.2.9. North of Harlescott Crossroads, Battlefield Road has up to four lanes, and provides access to a range of garages and large commercial premises. Further north, it narrows to one lane in each direction, and becomes more suburban / semi-rural in character. It has a 30 mph speed limit.
- 2.2.10. Overall the existing north-west corridor through Shrewsbury comprises a series of roads which, to varying degrees, are not suited to heavy through traffic. Though classified as principal roads, most are also residential streets with homes very close to the road and limited off-street parking. A Shrewsbury NWRR will provide an attractive, purpose built alternative for some of the traffic which presently uses these streets.

Other routes in the north of Shrewsbury

- 2.2.11. In addition to the direct route described above, **Battlefield Link Road** and **A528 Ellesmere Road** together provide an alternative route to and from the north of the town centre. This route is also constrained, upon entering the town centre, by the Chester Street gyratory near the railway station.

Minor roads in the north-west sector

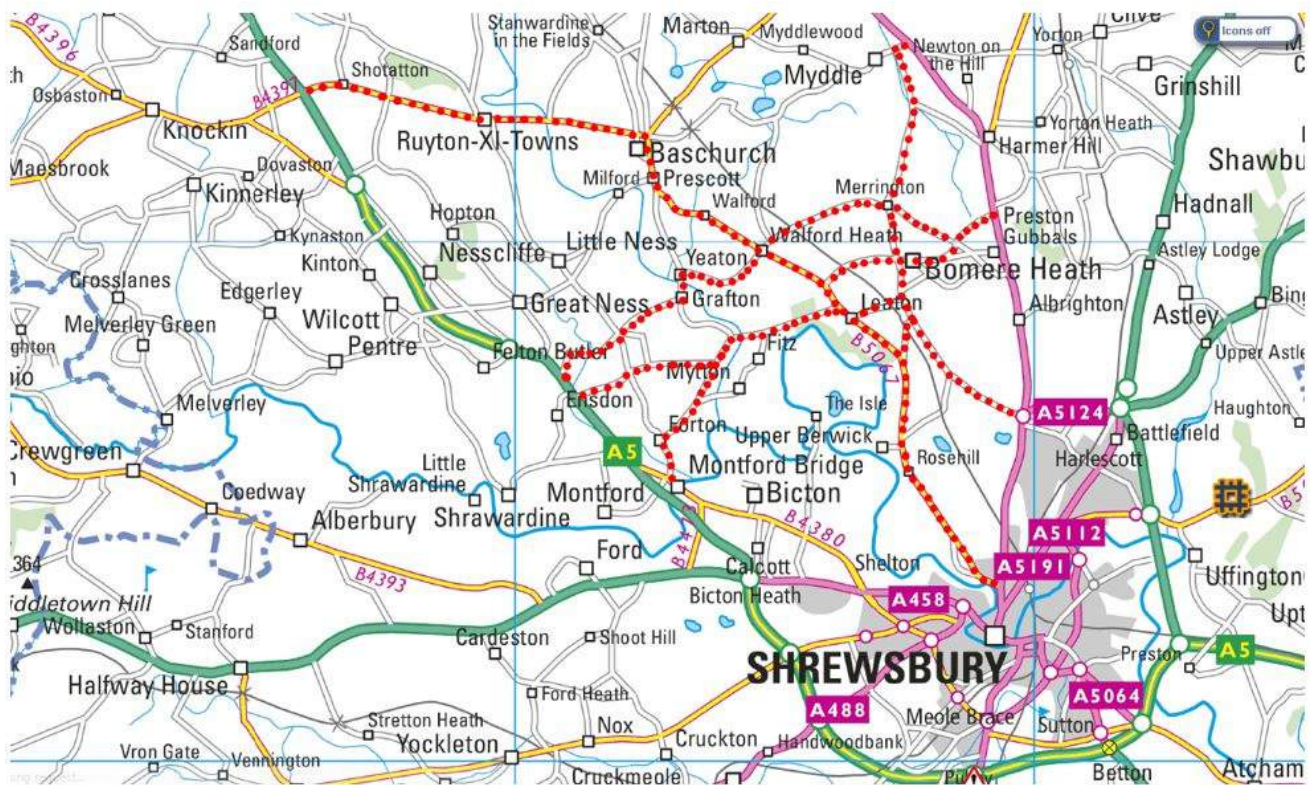


Figure 9 – Minor roads (rat runs) in the north-west sector

- 2.2.12. To the north-west of the town, a number of minor lanes allow traffic to rat between the A5 west of Montford Bridge and the A528, keeping to the north of the meandering River Severn.

The outer bypass and the Distributor Ring Road

- 2.2.13. Because of congestion on the more direct routes, some of the traffic in the N-W corridor also travels around the south and east sides of the town, using the A5/A49 bypasses, or the distributor ring roads which lie between the bypasses and the town centre.

2.3. CURRENT TRANSPORT AND OTHER POLICIES

2.3.1. The current policy context for the scheme is determined from the following national and local policies:

NATIONAL POLICIES AND GUIDANCE

Moving Britain Ahead – the Government’s Transport Investment Strategy¹⁴

2.3.2. The Government’s strategy for transport investment, published in July 2017, sets out the case for continued investment in Britain’s transport infrastructure. Through this investment, the government seeks to:

- create a more reliable, less congested, and better connected transport network that works for the users who rely on it
- build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities
- enhance our global competitiveness by making Britain a more attractive place to trade and invest
- support the creation of new housing

2.3.3. The Shrewsbury NWRR will reduce congestion on both local and strategic roads, and will help create a better connected, more reliable transport network for those who depend on it.

2.3.4. It will also help to support local economic growth and development, make Shrewsbury more attractive to investment, and will connect planned employment and housing development to markets and jobs.

Creating Growth, Cutting Carbon – making sustainable local transport happen¹⁵

2.3.5. This Government White Paper, published in 2011:

- Sets out the Government’s vision for “a transport system that is an engine for economic growth, but one which is also greener, safer and improves quality of life in our communities
- Highlights the need to make transport choices that support society as a whole, as well as needing to reduce our carbon emissions to meet national commitments.
- Highlights the Government’s commitment to more equal access to employment, education and healthcare by increasing social mobility.
- Considers that better design and management of the local network can improve traffic flow and the attractiveness of the local environment.

2.3.6. A Shrewsbury NWRR will support local economic growth and development, and is expected to contribute to reduced carbon emissions.

¹⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627306/transport-investment-strategy.docx

¹⁵ <https://www.gov.uk/government/publications/creating-growth-cutting-carbon-making-sustainable-local-transport-happen>

The Road Investment Strategy 2015/16 to 2019/20¹⁶

2.3.7. The RIS:

- Highlights the need for a national network of modern roads that meets social, economic and environmental aspirations.
- Aims to achieve a network in 2040 that will be smoother for connecting people and businesses to support economic growth:
 - Providing capacity and connectivity to support national and local economic activity to combat congestion.
 - Connecting communities and providing flexible travel.

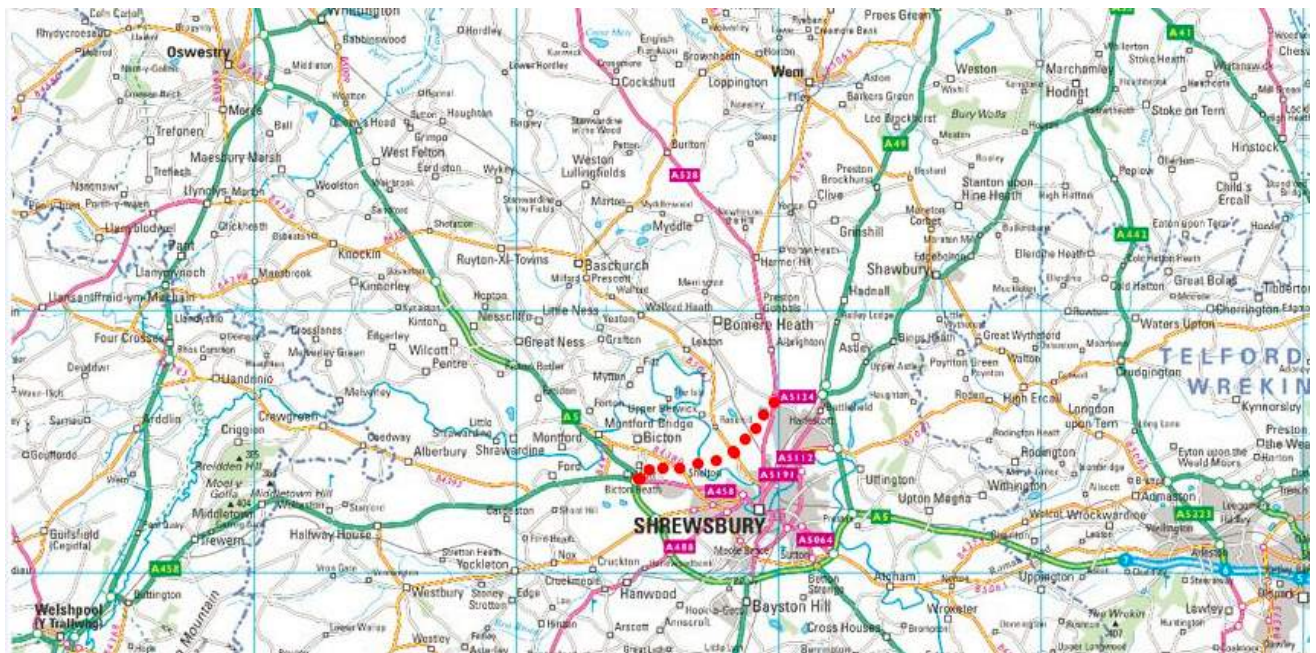


Figure 10 – Shrewsbury NWRR in relation to the SRN and local ‘A’ roads

The National Infrastructure Delivery Plan (2016 – 2021)¹⁷

2.3.8. The Delivery Plan, published in March 2016:

- Outlines the Government’s plans for economic infrastructure over the five year plan period to support the delivery of housing and social infrastructure
- Outlines the Government’s commitment to providing a step change in the capacity of the Strategic Road Network (SRN).
- Local roads are a crucial element of the transport system and their maintenance and improvement is the responsibility of Local Authorities.

¹⁶ <https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period>

¹⁷ <https://www.gov.uk/government/publications/national-infrastructure-delivery-plan-2016-to-2021>

- 2.3.9. A Shrewsbury NWRR will connect the Strategic Road Network to major local roads north of Shrewsbury. It will help reduce congestion on the SRN by providing alternative routes for some journeys which would otherwise use the A5 Shrewsbury Bypass.

Roads Investment: The Roads Funding Package¹⁸

- 2.3.10. The funding package, published by Government in November 2016, states that:
- Roads are the backbone of the United Kingdom, connecting lives, linking communities and boosting business. Quicker and safer journeys help build a stronger economy, promote jobs and enable a country that works for everyone, not just the privileged few.
 - The Government is committed to upgrading and renewing the local highway infrastructure and complementing other investment initiatives to help economic growth both locally and nationally and to ensure that all road users have a well maintained and safe network which is fit for the future.
 - Confirms that Shrewsbury North West Relief Road is one of twelve local major projects to receive funding from the **Large Local Majors Fund** for the development of business cases to determine whether they can be taken forward to construction. The fund is for projects considered too large to be funded through the local Growth Deal (see below).

National Planning Policy Framework (NPPF)¹⁹

- 2.3.11. The Government's National Planning Policy Framework (NPPF, 2012) emphasises the importance of rebalancing the transport system in favour of sustainable transport modes, whilst encouraging local authorities to plan proactively for the transport infrastructure necessary to support the growth of major generators of travel demand.
- 2.3.12. At the heart of the NPPF is the presumption in favour of sustainable development which is seen as 'the golden thread running through both plan making and decision taking'²⁰. The Shrewsbury West Sustainable Urban Extension (SUE), including the planned Oxon Link Road, is located within a sustainable location as identified in the Core Strategy (Paragraph **Error! Reference source not found.**).
- 2.3.13. The Shrewsbury NWRR will support development of the SUE West by extending the Oxon Link Road across the River Severn, improving access between the SUE and the northern side Shrewsbury

¹⁸ <https://www.gov.uk/government/publications/the-roads-funding-package>

¹⁹ <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

²⁰ National Planning Policy framework, paragraph 14, page 4

REGIONAL POLICIES AND GUIDANCE

The Midlands Engine for Growth Prospectus²¹ and Midlands Connect Strategy²²

- 2.3.14. The Midlands Connect Strategy was published in March 2017. Backed by business, local authorities and eleven LEPs, it aims to make the East and West Midlands an engine for growth for the UK economy. It identifies the Birmingham-Shrewsbury-Telford transport corridor as an “intensive growth corridor” in which improvements to connectivity will facilitate business clustering, unlock economic potential, and create jobs.
- 2.3.15. The growth corridors and hubs are illustrated in Figure 11 below.
- 2.3.16. A Shrewsbury NWRR could enhance economic potential in the intensive growth corridor by reducing travel costs and improving connectivity for local businesses.

²¹ <https://www.gov.uk/government/publications/midlands-growth-prospectus>

²² <https://www.midlandsconnect.uk/media/1082/midlands-connect-strategy-march-2017.pdf>

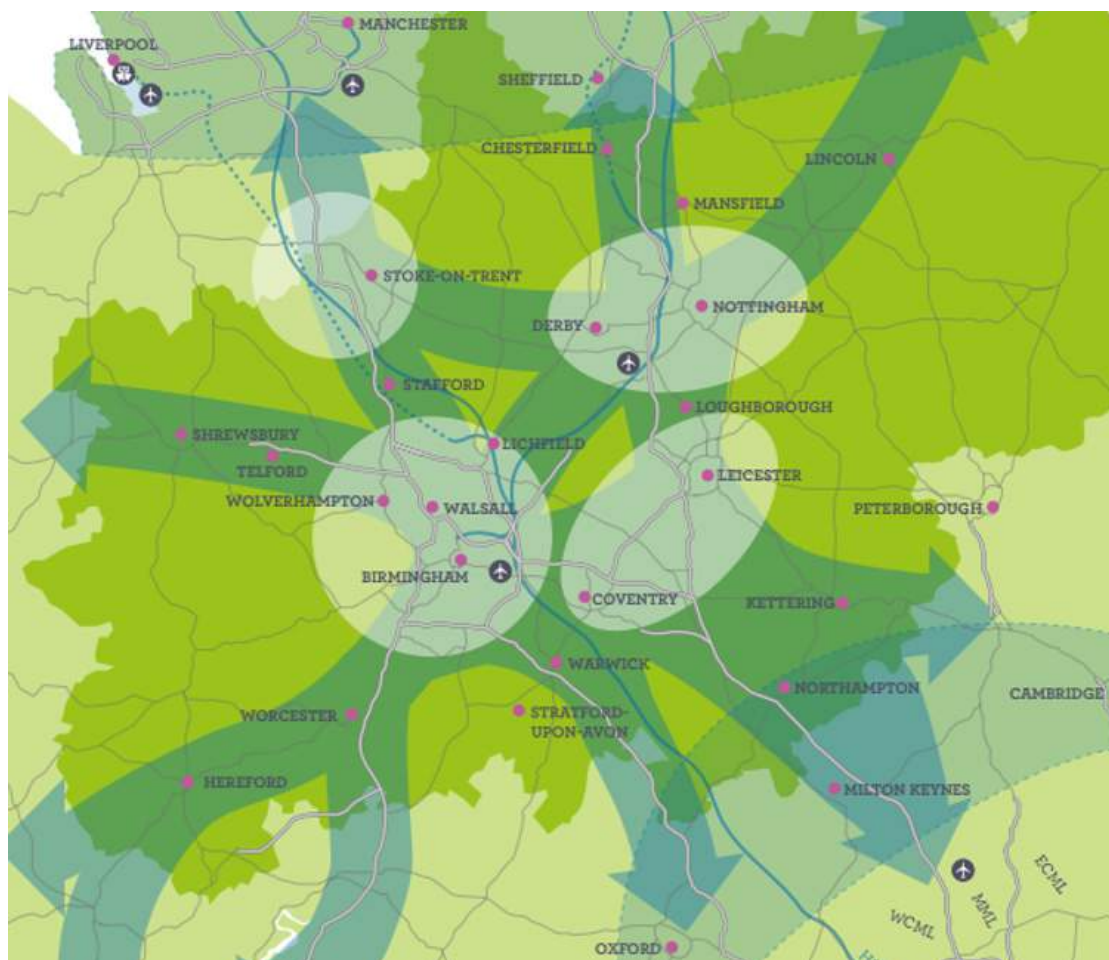


Figure 11 – Midlands Connect Corridors and Hubs

The Marches Strategic Economic Plan: “Accelerating Growth through Opportunity

2.3.17. The SEP, submitted to Government by the Marches LEP in March 2014:

- Presents a vision for “a strong, diverse and enterprising business base, operating in an exceptional and connected environment where innovation, investment and economic growth is fostered”.
- Considers that transport is a barrier to growth in the Marches because of poor accessibility to employment centres, ageing transport infrastructure and congestion.
- Sets strategic objectives for the LEP’s work programme:
 - Supporting business
 - Physical infrastructure
 - Skills investment
 - Low carbon economy
 - Social inclusion
- Identifies the Shrewsbury NWRR as one of six long term infrastructure priorities which would serve the Marches across both urban and rural areas.
- Classifies the NWRR as a “Year 2” project, ready to go in 2016/17

- Considers that a NWRR would help to deliver 2,645 jobs and 2,900 homes, and that it would have “significant benefits for Shrewsbury, and the town centre in particular”.
- Supports the Oxon Link Road as “an incremental step towards the long term provision of the Shrewsbury NWRR.

A NWRR is part of the SEP strategy, and would help deliver its objectives by reducing congestion and improving access to jobs and markets.

The Marches LEP –Strategy for Growth (2013 – 2022)

- 2.3.18. The Marches LEP has developed a ‘Strategy for Growth’, outlining its vision and strategic priorities up to 2022. A priority investment area for The Marches is transport. The strategy recognises that reducing congestion in urban centres, including Shrewsbury, is a major priority. Transport issues limit movement of the workforce and therefore, can prevent access to jobs.
- 2.3.19. The North West Relief Road has the ability to unlock economic potential in the region, by contributing to reductions in travel time costs for businesses and commuters.

The Marches Growth Deal

- 2.3.20. The Marches Growth Deal supports growth in the three urban centres of Hereford, Shrewsbury and Telford, through investment in critical transport and infrastructure improvements. This will enable the development of housing, employment and mixed use development sites, supporting job creation and allowing new homes to be built. The Growth Deal will bring together local, national and private funding as well as new freedoms and flexibilities to focus on two key priority areas:
- Enabling and accelerating new housing and employment sites
 - Growing the local skills and business base
- 2.3.21. The Marches LEP has secured £75.3 million from the Government’s Local Growth Fund to support economic growth, and is expected to draw down at least £20 million from local partners and the private sector.
- 2.3.22. As part of the Growth Deal, the Government agreed priorities and funding allocations for 2016-17 to 2020-21 including:
- Shrewsbury Integrated Transport Package
 - Oxon Link Road, Shrewsbury
- 2.3.23. As explained later in this Options Appraisal Report, the Integrated Transport Package represents the latest phase in delivering transport measures intended to complement and enhance, but not remove the need for, a NWRR. The Oxon Link Road will deliver the first section of a NWRR by providing a link between the A5/A458 junction, west of Shrewsbury, and the B4380 Holyhead Road where it will eventually connect to a new River Severn crossing and the rest of the NWRR.
- 2.3.24. As noted above, the Shrewsbury NWRR is considered by Government to be too large for inclusion in Growth Deal allocations, and has therefore been allocated development funding from the Large Local Majors Fund.

The Marches and Mid-Wales Freight Strategy

- 2.3.25. The Freight Strategy was jointly commissioned by the Marches LEP, the Welsh Government, the Growing Mid-Wales Partnership, and Ceredigion, Gwynedd, Herefordshire, Powys, Shropshire and Telford & Wrekin Councils.
- Its overall aim is “to ensure the efficient movement of freight in the Marches and Mid Wales while minimising impacts on the environment and residents”.
 - Identifies key issues:

- The quality of the single carriageway road network and the resulting slow journey times and lack of journey time reliability;
 - Tailbacks and slower journey times due to the number of farm vehicles that use the network to access farms and fields; and
 - Congestion at some junctions and through some towns and cities.
- Identifies the NWRR as one of eight major road schemes to reduce the bottlenecks on the freight road network, provide journey time savings and increased journey time reliability for freight journeys.

LOCAL POLICIES

Shropshire Local Plan

- 2.3.26. The Local Plan is a set of policy documents (Local Development Documents or LDDs) which consider a wide range of important planning issues such as housing, employment, transport and the environment. It has a crucial role in prioritising and shaping development in Shropshire until 2026.
- 2.3.27. The Core Strategy²³ LDD was adopted in February 2011. It sets out a spatial vision for Shropshire in 2026 in which “Targeted improvements to the County’s transport infrastructure will have taken place to widen transport choices ... improving accessibility and connectivity both within and beyond Shropshire. This will include ... the proposed construction of a Shrewsbury North West Relief Road.”
- 2.3.28. The Core Strategy states that “whilst the condition of the main road network and levels of congestion are generally satisfactory, there are specific concerns with respect to strategic routes such as the A49 and the A5 and around Shrewsbury, where there are also air quality issues. A North-West Relief Road has been proposed to help relieve congestion in Shrewsbury town centre.”
- 2.3.29. Specific policies in the Core Strategy refer to the NWRR, including:
- **Policy CS2. (Shrewsbury – Development Strategy)** The development of the town will have regard to the Shrewsbury Integrated Transport Strategy as advanced through the Shropshire Local Transport Plan, and the proposed Shrewsbury North West Relief Road.
 - **Policy CS7 (Communications and Transport):** ... a range of opportunities for communication and transport which meet social, economic and environmental objectives by improving accessibility, managing the need to travel, offering options for different travel needs and reducing the impacts of transport. This will be achieved by ... promoting and enabling improvements to the strategic and local highway network including improvements to the A5 Shrewsbury and Oswestry bypasses and promotion of the Shrewsbury North West Relief Road.

It considers that “the sub-regional role of Shrewsbury will also be enhanced through the promotion of the North West Relief Road as the final stage of the Shrewsbury bypasses”.

²³ <http://shropshire.gov.uk/media/830904/shropshire-core-strategy-2011-reduced.pdf>

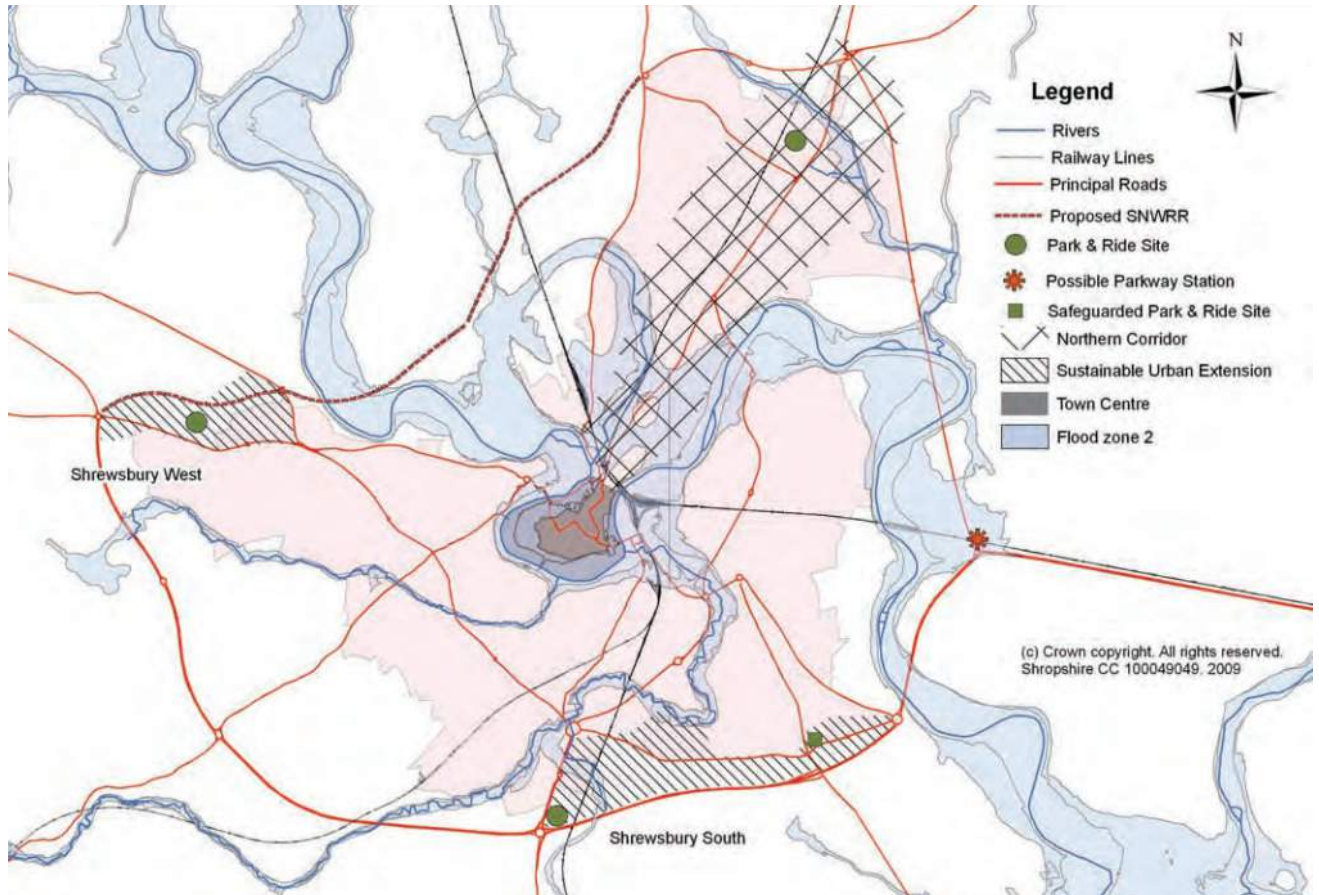


Figure 12 – Shropshire Local Plan – Shrewsbury Key Diagram

- 2.3.1. The Core Strategy identifies proposed “Sustainable Urban Extensions” to the west and south of the town, and notes that “the Shrewsbury West area enables the delivery of a leg of the proposed Shrewsbury North West Relief Road (NWRR) connecting Churncote Island on the A5 and Holyhead Road [the Oxon Link Road] alongside a mix of housing (approximately 700 dwellings to the north of Welshpool Road), employment (approximately 9-12 hectares of additional employment land), and community facilities provision”.
- 2.3.2. The Core Strategy states that “the implementation of the Shrewsbury Integrated Transport Strategy, with a combination of sustainable transport promotion measures including the Park and Ride facilities, quality bus routes and enhanced walking and cycling facilities provision, is key to the sustainable development of the town given the challenges of the constrained access to and through the town centre and the demand for crosstown traffic. The provision of the Shrewsbury North West Relief Road (NWRR) has been identified as an opportunity to tackle some of these issues. ... In terms of the strategic road network, limitations on the capacities of the junctions on the Shrewsbury bypasses are a further consideration”.

Shropshire Local Transport Plan LTP (2011 – 2026)

- 2.3.3. The Shropshire Local Transport Plan (LTP) 2011-2026 covers all aspects of transport and highways, including walking, cycling, public transport, car-based travel, freight, and the management and maintenance of highways. It focuses primarily on aspects of transport where Shropshire Council has direct responsibilities.
- 2.3.4. The Provisional LTP Strategy (2011-2026) outlines the strategic transport objectives and policies for the period 2011 to 2026.
- 2.3.5. Drafted in 2011, the Provisional LTP Strategy did not at that time expect to be able to deliver the NWRR during the plan period, but stated that the Council would “retain the ability to construct the road in future”. To

this end Policy E7 stated that “any significant new development along the identified line of a possible future North West Relief Road will be required to either construct part of the road to an appropriate standard or protect the line as appropriate, in order that the future provision of the full road would not be compromised”. The planned construction of the Oxon Link Road and SUE (West) reflect this policy.

2.3.6. Other relevant policies in the Provisional Strategy include:

- **Policy E4**, ‘Network capacity management hierarchy’. Outlines a hierarchy of measures to tackle and prevent congestion and delays on the local road network, including “New road links or bypasses”.
- **Policy E6**, ‘Capacity improvements and new roads’. States that where demand and network management measures are not sufficient to deal with network problems building new roads will be considered as a final option.
- **Policy E7**, ‘Tackling Shrewsbury’s Traffic Problems’. Summarises the key elements of the plan designed to significantly improve active transport mode and public transport networks in Shrewsbury, in order to moderate traffic demand and reduce congestion and traffic volumes passing through Shrewsbury town centre.
- **Policy C7**, ‘Improving Air Quality’. Recognises the importance of reducing air pollution, through both general and localised measures. This includes discouraging traffic growth and smoothing traffic flows to reduce vehicle emissions, and reviewing the effectiveness of existing Air Quality Management Area Action Plans (AQMAAPs).
- **Policy C9**, ‘Reducing Environmental Impacts’. Shrewsbury’s high quality natural and built environment are great assets to the town, and traffic related impacts on it should be minimised.

2.4. CURRENT TRAVEL DEMANDS AND LEVELS OF SERVICE

OVERVIEW OF TRAFFIC DEMAND

- 2.4.1. The pattern of traffic movement into and around Shrewsbury is illustrated in Figure 13 and Figure 14 which represent modelled²⁴ a.m. and p.m. peak hour traffic flows in 2017.
- 2.4.2. The A5 and A49 trunk road bypasses carry the highest volumes of traffic, and their smooth functioning is key to ensuring that traffic demand on routes closer to the town centre is manageable.
- 2.4.3. The distributor ring road carries significant volumes of traffic around the south-west and north-east sides of the town, and provides a crucial link between the main residential and employment areas, as well as schools, retail parks and the main hospital.
- 2.4.4. Neither the bypass nor the distributor ring continue around the north-west quadrant. As a result, traffic between north and west has either has to use one of the outer routes, or pass through the town centre. The riverside route, Smithfield Road is by far the busiest road within the “river loop” and is frequently congested.

²⁴ The development of the current traffic model is described in detail in the modelling reports accompanying the Outline Business Case: Report of Survey, Local Model Validation Report, and Forecasting Report



Figure 13 – Modelled demand flows (2017, a.m. peak hour)

- 2.4.5. A number of radial routes provide access to the town centre, which has just three main points of access. Within the distributor road ring, most of these routes are residential in character, with frontage access.

Detailed travel demand and levels of service

- 2.4.6. The current traffic volumes and levels of service on these routes are set out in detail in Section 4.2 (Current transport-related problems) below. Information on key origins and destinations is given in Section 6.5 (Scope of the travel market and key origins and destinations) below.



Figure 14 – Modelled demand flows (2017 p.m. peak hour)

2.5. OPPORTUNITIES AND CONSTRAINTS

2.5.1. The following types of constraint have been taken into account in developing the scheme:

- Physical
- Environmental
- Financial
- Contractual
- Public acceptability

2.5.2. These are summarised below. It is evident that there are no insurmountable constraints on the construction of the Shrewsbury NWR. However, detailed consideration of the physical, environmental and public acceptability constraints was critical to the identification of the preferred route.

PHYSICAL CONSTRAINTS

- 2.5.3. The north-west sector of Shrewsbury is generally undeveloped and comprises mainly agricultural land. Settlement is sparse, with small isolated farmsteads and properties scattered through the landscape. The River Severn meanders through this area, with steep wooded valley slopes and extensive floodplains, forming one of the main physical barriers dividing the landscape. The area is crossed by the Shrewsbury-Chester railway line, and by footpaths and other rights of way.
- 2.5.4. The main physical constraints are
- The need to construct a new crossing of the River Severn
 - The need to cross the Shrewsbury-Chester railway line
 - The need to cross the Marches Way long-distance footpath and other public rights of way
 - The need to tie in with the existing and planned road network – the A5 and Oxon Link Road in the west, B5067 Berwick Road, and the A528 Ellesmere Road and Battlefield Link Road in the north
 - The need to acquire land for the construction of the scheme
- 2.5.5. There are no insurmountable physical constraints on the construction of a NWRR.

ENVIRONMENTAL CONSTRAINTS

- 2.5.6. Whilst there are relatively few physical constraints in the NW sector of Shrewsbury, the undeveloped nature of the area means that there are significant environmental constraints which need to be taken into account in both the design of the scheme and in the appraisal of its costs and benefits. Taking an overall view, the area forms a “green wedge” which penetrates deep into the built up area, extending almost all the way to the town centre. It comprises agricultural land – arable and pastoral – wooded cliff, river terrace, flood plain, and pockets of woodland. Any new road will therefore have a significant and permanent impact upon this area.
- 2.5.7. The NWRR Preferred Route Report (January 2007) stated that “the area to the north west of Shrewsbury is relatively rich in environmental constraints ... however, very few of these would be directly affected by the options under consideration”.
- 2.5.8. The main environmental constraints that have been identified are illustrated in Figure 15 – Environmental constraints and include:
- The River Severn (wildlife site) and its floodplain
 - The Shelton boreholes (for extraction of drinking water) and related source protection zone (SPZ)
 - Other water bodies: Willow Pool, Alkmund Park Pool, a pond in Alkmund Park Wood and Cot Brook
 - The Hencott Pool Conservation Site of International Importance (Ramsar site)
 - The “old river bed” – an ancient course of the River Severn comprising a wildlife site to the west of Ellesmere Road and a Site of Special Scientific Interest (SSSI) to the east of Ellesmere Road
 - Alkmund Park Wood (wildlife site) - an area of ancient woodland.
 - Shelton Rough (wildlife site), adjacent to the River Severn
 - Archaeology, principally the Berwick Cropmark Complex
 - Shrewsbury conservation area, which extends along part of The Mount
 - Listed buildings
 - Registered park and garden of special historic interest (Berwick Hall)
 - Footpaths, cycle routes and other rights of way

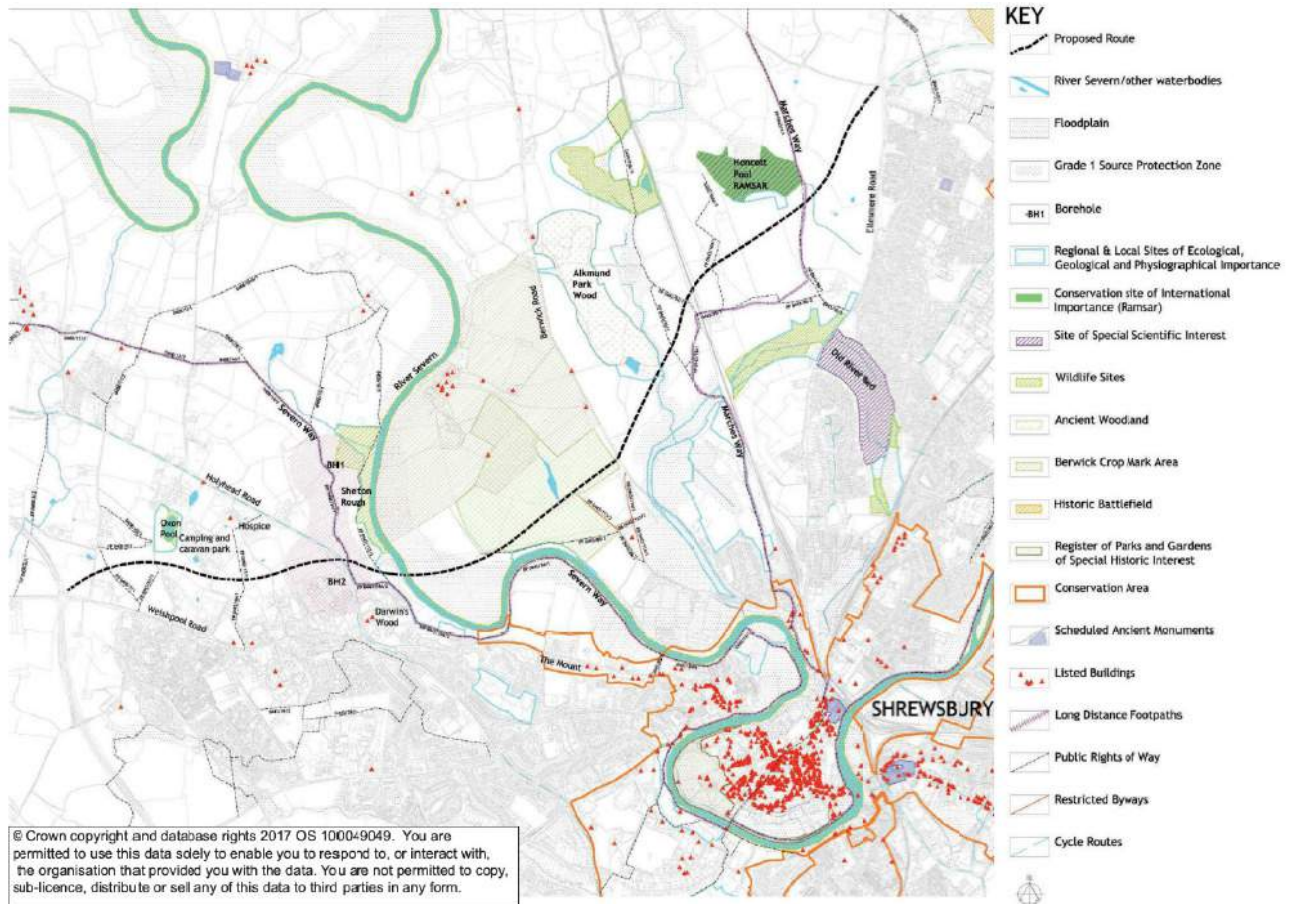


Figure 15 – Environmental constraints

2.5.9. A Stage 2 Environmental Assessment²⁵ was undertaken in 2005, as part of the consideration of a range of six possible options for a NWRR. This considered the impacts of each option on:

- Noise
- Air quality
- Greenhouse gases
- Landscape character
- Townscape character
- Heritage of historic resources: built and archaeological
- Biodiversity
- Water environment: hydrological, chemical and biological
- Physical fitness and accessibility for walkers, cyclists and equestrians

²⁵ Shrewsbury NWRR Stage 2 Environmental Assessment Report (Mouchel Parkman for SCC, May 2005)

- Journey ambience for travellers
- Agriculture
- Integration with government and local policies.

- 2.5.10. A supplementary study²⁶ of geology, including contaminated ground, was undertaken in 2006.
- 2.5.11. The results of the Stage 2 Environmental Assessment are summarised in the Preferred Route Report²⁷ (2007), which also describes the more detailed assessment of the environmental issues which had a key impact on the route location and had been raised during public consultation or in subsequent discussions with interested parties.
- 2.5.12. A further review of the environmental impacts of the current preferred route has been undertaken in 2017, in connection with this Outline Business Case. The appraisal of environmental impacts is discussed further in the Outline Business Case (The Economic Case), together with a summary of the results of the updated appraisal in the Appraisal Summary Table (AST).
- 2.5.13. The scheme will need to include significant mitigation of environmental impacts, and further surveys and investigation will be undertaken in 2018. Subject to this, it is considered that there are no insurmountable environmental constraints on the construction of a NWRR.

FINANCIAL CONSTRAINTS

- 2.5.14. The Council does not have the resources to deliver a North West Relief Road without funding support from the Government. The Marches LEP's guideline threshold²⁸ is £34 million. Schemes costing more than this cannot be funded from regular Growth Deal funding. It would not be possible to deliver a scheme meeting the objectives for less than £34 million. For this reason the delivery of the scheme is dependent upon funding from the Government's Local Majors Fund. Delivery is also dependent upon the receipt of a tender price acceptable to Shropshire Council and the approval by Government of a Full Business Case.
- 2.5.15. Shropshire Council will undertake to contribute towards the capital cost of the scheme, as set out in the Financial Case of the Outline Business Case. Shropshire Council will also undertake to fund in full any costs in excess of the approved DfT funding, and will also fund the future operating and maintenance costs of the scheme. Subject to this, there are no insurmountable financial constraints on the construction of the NWRR.

CONTRACTUAL CONSTRAINTS

- 2.5.16. The Commercial Case of the Outline Business Case describes the type of contract proposed. There are no contractual constraints which the Council considers would inhibit delivery of the scheme.

²⁶ Geology and Soils Impact Assessment (Mouchel Parkman for SCC, 2006)

²⁷ Shrewsbury NWRR Preferred Route Report (Mouchel Parkman for SCC, January 2007)

²⁸ Large Local Major Transport Schemes Guidance Notes, (DfT, 2015)

PUBLIC ACCEPTABILITY CONSTRAINTS

- 2.5.17. Throughout the development of the scheme, and the selection of a preferred route, Shropshire Council has consulted local people and stakeholders repeatedly about the principle of a NWRR, possible alternatives, and the route the road should take if built.
- 2.5.18. The views of local people and stakeholders were given significant weight in the route selection process, and the Council is confident that the selected route is, on balance, the most acceptable of all those considered.
- 2.5.19. With regard to the principle of building a NWRR, the general outcome of past consultations has indicated that a majority of local people believe that a NWRR would benefit Shrewsbury and they would therefore like to see it built on one route or another. However, the same consultations have also indicated that a significant number of people do not think a NWRR should be built, and/or that other measures should be given more priority.
- 2.5.20. The most recent round of consultation, held in October/November 2017 in connection with the preparation of this business case gave people the opportunity to state their views on the route option now proposed. The results are discussed in the Outline Business Case and the key findings are summarised in Table 3 below.

**Table 3 - Consultation results (2017):
"How strongly do you agree that the NWRR preferred route should be built?"**

	Very strongly agree	Strongly agree	Agree	Disagree	Strongly disagree	Very strongly disagree	Don't know
Number	321	58	48	19	35	138	14
Percentage	50.7	9.2	7.6	3.0	5.5	21.8	2.2

- 2.5.21. Overall, 67.5% of the people responding to the consultation agreed that the preferred route should be built, whilst 30.3% disagreed.
- 2.5.22. Full details are set out in the 2017 Consultation Report.

3. FUTURE SITUATION

3.1. INTRODUCTION

3.1.1. This chapter covers Step 2 of the Transport Appraisal Process, as defined in WebTAG:

Understand the future context and conditions in the study area

3.1.2. The Shropshire Local Development Framework sets out the Council's policies for the spatial planning and development of Shrewsbury, including housing, transport, community and environmental policy. The adopted Core Strategy proposes a significant level of housing and economic growth in the plan period (2011 – 2026), linked with infrastructure improvements and measures to protect and enhance the town's role, character and the unique qualities of its historic, built and natural environment.

3.2. FUTURE LAND-USES AND POLICIES

- 3.2.1. Shrewsbury will provide the primary focus for development for Shropshire, providing approximately 25% of its additional housing for the period 2006-2026 (approximately 6,500 dwellings - 325 dwellings per annum) and 90 hectares of employment land.
- 3.2.2. Shrewsbury will develop its role as Shropshire's primary retail, office and commercial centre, and the vitality and viability of the town centre will be promoted, protected and enhanced. The Riverside and West End areas of the town centre will be redevelopment priorities. (These areas will benefit from traffic reductions due to a North West Relief Road.)
- 3.2.3. A further priority is the regeneration of the Shrewsbury Northern Corridor, with the aims of the Regeneration Framework for that area, including the site of the Ditherington Flaxmill, being taken forward through the Shrewsbury Vision. The Corridor area also includes areas of major commercial and employment uses which have been undergoing pressures for change, including in the Lancaster Road, Whitchurch Road, Battlefield Road, Harlescott Lane and Featherbed Lane/Arlington Way areas. (The northern corridor is expected to benefit from traffic reductions associated with a North West Relief Road.)
- 3.2.4. Shrewsbury's strategy recognises the need for the continuing development of high quality business parks on the edge of the town centre and the periphery of the town, including the Battlefield Enterprise Park and Shrewsbury and Oxon Business Parks, and the importance of the Meole Brace and Sundorne retail parks, both of which have scope for enhancement and expansion, if required. (A North West Relief Road would significantly improve access to the Battlefield and Oxon business parks and, by reducing traffic pressure on the A5/A49 bypass junctions, would be of benefit to the Meole Brace and Sundorne retail parks.)
- 3.2.5. Specific priorities for the allocation/release of land for development include bringing forward, on a phased and planned basis, two sustainable urban extensions providing 25% of Shrewsbury's housing growth and 50% of its employment growth:
- Shrewsbury South – land off Thieves Lane/Oteley Road/Hereford Road, to incorporate the expansion of Shrewsbury Business Park (approximately 4 hectares of employment land), the development of a new strategic employment site (approximately 22 hectares) on land adjoining the Shrewsbury Town Football Club, scope for the expansion of Meole Brace Retail Park, if required, and other commercial uses, A5 junction improvements, if needed, and sustainable transport measures, major housing development (approximately 900 dwellings to the north and south of Oteley Road) and green infrastructure improvements (including the Rea Brook Valley)
 - Shrewsbury West – land at Bicton Heath and off Welshpool Road, to incorporate major housing development (approximately 700 dwellings to the north of Welshpool Road), additional employment land

(approximately 9-12 hectares), the provision of a new link road connecting Churncote Island on the A5 to Holyhead Road, enhancement of Park and Ride facilities and other sustainable transport improvements. There is also scope for additional health and care facility provision to complement the existing at the Royal Shrewsbury Hospital, Shelton and Bicton Heath, and the provision of new community facilities. The Shrewsbury West area enables the delivery of a leg of the proposed Shrewsbury North West Relief Road (NWRR) connecting Churncote Island on the A5 to Holyhead Road (The Oxon Link Road).

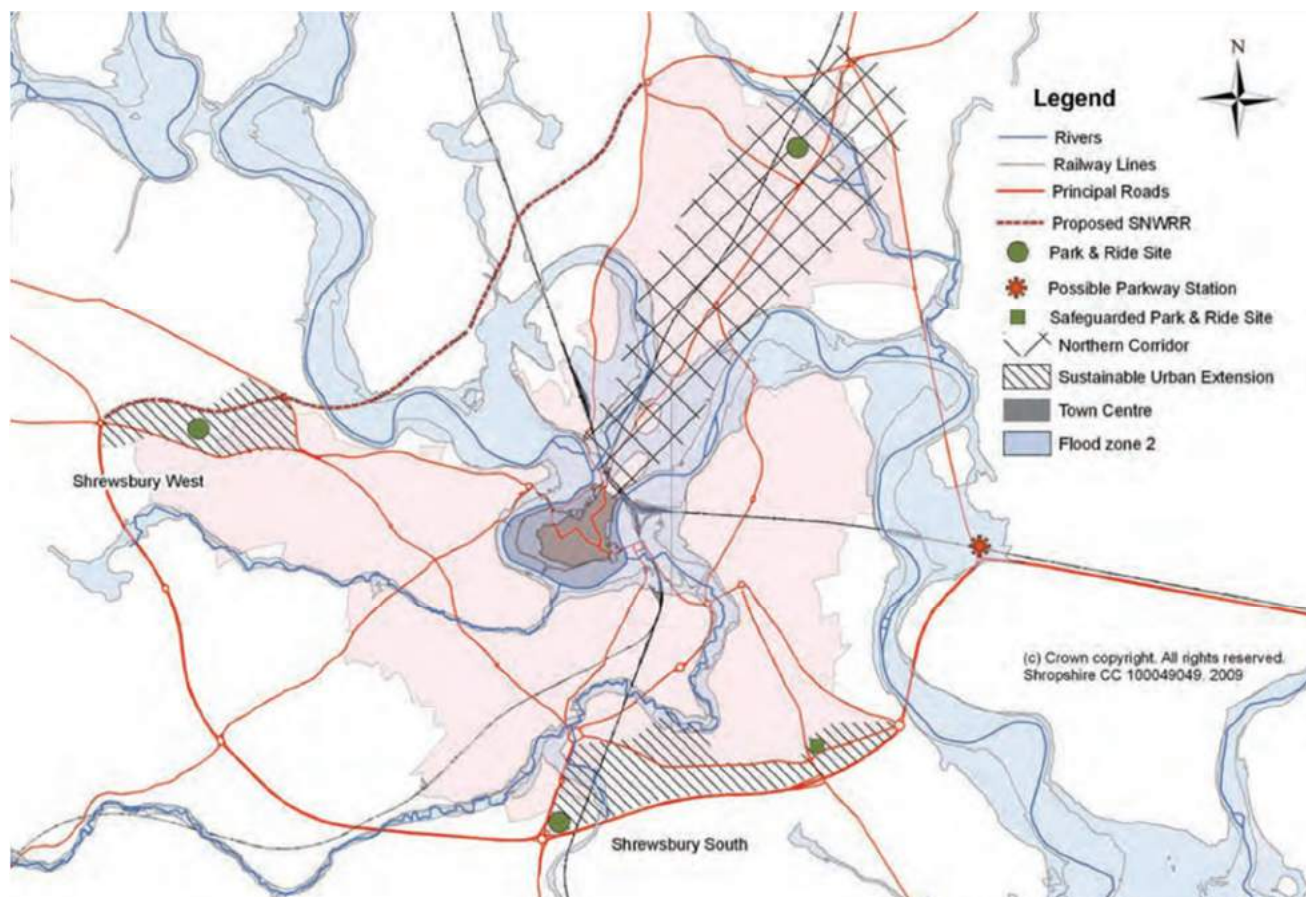


Figure 16 – Sustainable Urban Extensions (West and South)

3.3. FUTURE CHANGES TO THE TRANSPORT SYSTEM

3.3.1. Two major interventions will be completed prior to the delivery of a NWRR:

- **Oxon Link Road.** As noted above, the SUE West will enable the early delivery of a new link between the A5/A458 junction on the Shrewsbury Bypass to a point on the B4380 Holyhead Road. This link will provide direct access between the SUE development and the trunk roads, whilst significantly reducing traffic on the A458 Welshpool Road. It has been designed to form the first stage of a complete north-west relief road. The Oxon Link road was the subject of a successful funding bid in 2016 and will be in place in advance of the NWRR.

- The **Shrewsbury Integrated Transport Package**²⁹ (SITP) is a package of transport measures designed to improve the transport system in Shrewsbury and stimulate a new period of sustainable economic growth within the town and the surrounding area. It includes:
 - **Key junction improvements** at Reabrook Roundabout, Meole Brace Roundabout, English Bridge Gyratory and Coleham Head. These involve upgrading current highway infrastructure, including traffic signals to improve capacity and pedestrian and cycle facilities, with the aim of reducing congestion.
 - **Further phases of the SCOOT**³⁰ **network** to improve traffic signal operation and manage traffic flows on main arterial routes. This would include new VMS (variable message signage), which would direct town centre through-traffic onto the inner relief road or towards car parks and park and ride facilities.
 - **Enhancements to pedestrian and cycle links** to increase accessibility to the town centre for active and sustainable modes of transport and improve awareness of these links in Shrewsbury
 - **improved pedestrian wayfinding*** **within and around the ‘river loop’** to generate a highly accessible and connected town centre for pedestrians
 - **Enhancements to the public realm***, such as Pride Hill, Shrewsbury Square and Mardol to improve the public realm and highlight pedestrian facilities.

²⁹ <https://new.shropshire.gov.uk/roads-and-highways/roadworks-and-road-closures/large-scale-project-works/shrewsbury-integrated-transport-package-sitp/>

³⁰ SCOOT (split cycle offset optimisation technique) is a technology for managing and maximising the efficiency of traffic signal junctions in urban areas.

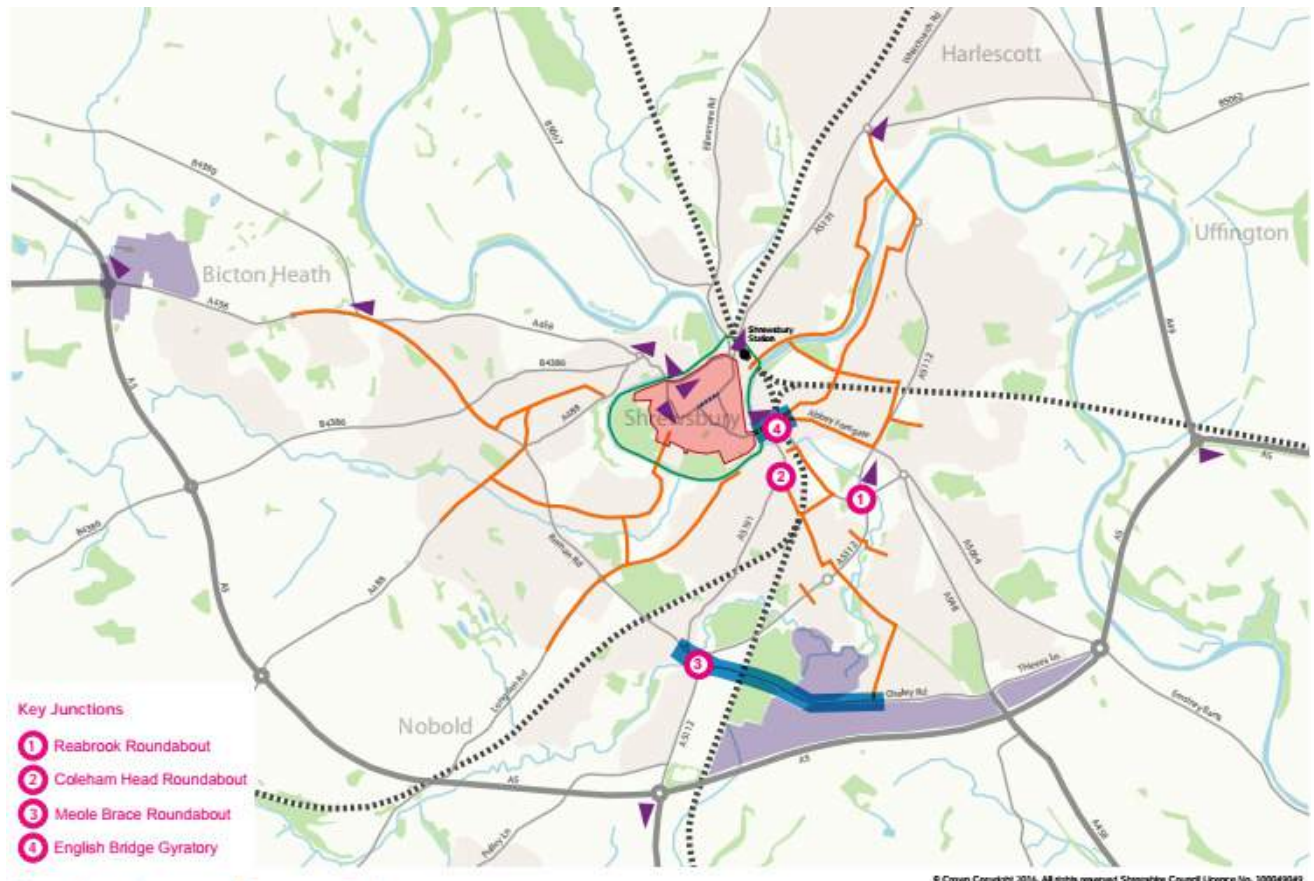


Figure 17 – Shrewsbury Integrated Transport Package – key features

- 3.3.2. Funding for the SITP has been secured from the Regional Growth Fund. A phased delivery programme commenced in 2016 and the package is expected to be completed by 2020.
- 3.3.3. The ITP will complement the proposed NWRR insofar as it will improve conditions on the distributor roads to the south and east of the town centre, and further improve conditions for people walking and cycling in and around the town. It will not, however, address issues in the NW sector of the town which are the focus of the proposed NWRR.
- 3.3.4. The OLR and ITP are included in the “Do Minimum” scenario against which the NWRR will be tested³¹.

3.4. FUTURE CHANGES TO TRANSPORT DEMAND AND LEVELS OF SERVICE

CHANGES TO TRANSPORT DEMAND

- 3.4.1. Overall, it is expected that traffic in Shrewsbury will increase by nearly one fifth over the next 20 years as a result of continuing planned development and general economic growth, placing additional pressure on the road network.

³¹ In the 2017 traffic model.

Table 4 – Forecast traffic growth

	2017 to 2022	2017 to 2037
Forecast traffic growth (Shrewsbury)	7%	24%

3.4.2. Forecast traffic volumes and growth on roads currently used for journeys between the north and west of Shrewsbury (and vice versa) are set out below:

Table 5 – Forecast traffic growth on key links (2017 to 2037)

Link	2017 AADT (modelled)	2037 AADT (forecast)	Forecast growth 2017 - 2037
North Shrewsbury			
Battlefield Link Road (Ellesmere Rd to Battlefield Way)	11,001	14,245	29%
Harlescott Lane (at level crossing)	13,743	18,200	32%
A528 Ellesmere Road (north of Mount Pleasant)	12,919	15,172	17%
A528 Ellesmere Road (Mount Pleasant to Hubert Way)	11,536	13,586	18%
A528 Ellesmere Road (Hubert Way to Berwick Road)	10,662	12,395	16%
A528 Coton Hill	12,200	13,906	14%
Berwick Road	3,194	3,790	19%
A5112 Whitchurch Road	9,798	12,245	25%
A5112 Ditherington	14,835	18,156	22%
A5112 Spring Gardens	13,480	16,707	24%
A5112 St Michael's Street	7,932	9,427	19%
A5112 Castle Foregate	9,755	11,333	16%
Town centre			
Frankwell	21,418	24,088	12%
Welsh Bridge	19,178	21,456	12%
Mardol Quay	22,718	24,552	8%
Smithfield Road	20,021	21,908	9%
Chester Street (part of gyratory)	11,406	13,141	15%
Castle Gates (part of gyratory)	10,898	12,339	13%
West Shrewsbury			
A458 The Mount	7,424	8,554	15%
B4386 Cophthorne Road	7,959	8,572	8%

A488 New Street	6,333	7,727	22%
Distributor ring road			
B4380 Shelton Road	8,795	10,858	23%
B4380 Shelton Road (Mytton Oak Rd to Radbrook Rd)	12,077	14,707	22%
B4380 Roman Road (Radbrook Rd to Longden Rd)	15,672	20,086	28%
B4380 Roman Road (Longden Rd to Meole Brace Isl)	15,987	21,000	31%
A5112 Hazledine Way (Meole Brace to Reabrook RB)	14,703	18,381	25%
A5112 Pritchard Way (Reabrook RB to Old Potts Way)	15,405	19,061	24%
A5112 Bage Way (Old Potts Way to Crowmere Rd)	17,036	21,198	24%
A5112 Robertson Way (Crowmere Rd to Telford Way)	20,980	25,415	21%
A5112 Telford Way	26,005	32,171	24%
Outer bypasses			
A5 (Montford Bridge to Churncote)	17,872	21,124	18%
A5 (Churncote to B3486)	26,060	30,570	17%
A5 (B4386 to A488)	31,056	37,658	21%
A5 (A488 to A49 Dobbies RB)	36,601	44,061	20%
A5 (A49 Dobbies RB to A458 Weeping Cross)	42,998	52,566	22%
A5 (A458 Weeping Cross to B4380 Emstrey)	34,336	40,111	17%
A5 (B4380 Emstrey to Preston Boats)	39,772	47,621	20%
A49 (A5 Preston Boats to B5062)	27,029	33,591	24%
A49 (B5062 to Battlefield)	18,572	22,202	20%

- 3.4.3. The Shrewsbury NWRR will provide an opportunity to reduce traffic on the routes currently being used by traffic between the north the west.

4. THE NEED FOR IMPROVEMENT

4.1. INTRODUCTION

4.1.1. This chapter covers Step 3 of the Transport Appraisal Process, as defined in WebTAG:

Establish the need for the intervention

4.1.2. The underlying causes of Shrewsbury's main transport problems are described below, together with a summary of the current and expected problems.

4.1. UNDERLYING CAUSES

4.1.1. The lack of a direct road link between the northern and western parts of the town has been a major source of traffic problems for a very long time. Both the northern and western approaches to the town centre are heavily congested at peak times, and the presence of through traffic in the town centre leads to long queues and delays, blocking back through key junctions. None of these routes is suitable for this traffic, but there are no practical alternatives for most trips.

4.1.2. Other problems arise directly from this fundamental weakness in Shrewsbury's transport network. Noise, visual intrusion and poor air quality affect people in residential areas and the town centre, as well as people walking and cycling. Accident rates are higher on roads not designed to modern standards. Journeys to work and for business can be slow and unreliable, adding to the cost of transport (including public transport) and discouraging investment.

4.1.3. Over the past 30 years, Shrewsbury has grown in size and background traffic has increased. This growth has been accommodated through investment in transport links on the north, east and south sides of the town, including the A5/A49 bypass, the distributor ring road and the Battlefield Link Road. Cycle and pedestrian infrastructure has been improved, Park and Ride services introduced and significant enhancements made to the historic centre. By comparison, there has been little or no road investment in the north-west corridor, because this would require a new crossing of the River Severn, and because of this the problems described above remain unresolved.

4.1.4. Shrewsbury continues to grow. New development is under way at the southern Sustainable Urban Extension (SUE), and further growth is planned at the western SUE. Nationally, traffic levels are starting to rise again after the years of recession. The highway network is again under strain. One consequence of this is that incidents on one part of the network quickly lead to traffic backing up, or diverting, causing problems over a wider area. This lack of resilience is a concern. As traffic demand increases, we expect to see more traffic on the north-west corridor through the town, increased congestion, queuing and delay, adverse impacts on noise and air quality and increased transport costs to the regional and local economy.

4.2. CURRENT TRANSPORT-RELATED PROBLEMS

4.2.1. The current transport related problems which the scheme needs to address are:

- Poor connectivity between the north and west of Shrewsbury for all modes of transport
- Traffic congestion in Shrewsbury Town Centre
- Traffic congestion on the northern and western approaches to the town
- Traffic congestion on Shrewsbury's outer bypass and distributor ring roads
- Unreliable journey times and long delays

- “Rat-running” traffic on unsuitable rural roads
- Inefficiency of the transport network, especially for buses
- Lack of network resilience
- Road accidents
- Poor air quality
- Carbon and other greenhouse gas emissions

POOR CONNECTIVITY BETWEEN THE NORTH AND WEST OF SHREWSBURY FOR ALL MODES OF TRANSPORT

- 4.2.2. As the town of Shrewsbury grew in the 19th and 20th centuries, almost all of the development took place in the NE, SE and SW quadrants of the town. Throughout the 20th century, the town’s road infrastructure developed to accommodate this growth – again entirely within the NE, SE and SW quadrants. A bypass of the original A5, completed in 1933, now forms a section of a partial inner ring road (B4380) through the western and southern inter-war suburbs. More recently constructed, modern roads, originally part of the A49, extend this partial ring to serve post-war suburbs in the east and north of the town. In the 1980s, new outer bypasses for the A5 and A49 were built on the south and east sides of the town respectively. As a result, Shrewsbury is well connected to the West Midlands and the national motorway network, and there are good connections into, within and between the NE and SE, and the SE and SW suburbs. There are three road crossings of the meandering River Severn in the town centre, one on the distributor ring road and four on the outer bypasses.
- 4.2.3. Within the NW sector, the picture is completely different. There is no crossing of the River Severn between the Welsh Bridge in the town centre and Montford Bridge on the B4380, some 6 km further east. The area is generally undeveloped, forming a “green wedge” extending almost all the way into the centre.
- 4.2.4. As a result, connectivity across the NW sector is very poor. Consider, for example a journey between the Oxon Business Park and the Battlefield Enterprise Park. The tables below show distances and typical journey times³² for alternative routes.

Table 6 - Journey times and distances, NW sector (Battlefield to Oxon)

Battlefield to Oxon (N-W)	As the crow flies	Via Montford Bridge and Leaton (rat run)	Via A5 and A49 (outer bypasses)	Via B4380 and A5112 (distributor ring)	Via town centre (Welsh Bridge and Smithfield Road)
Journey distance (km)	3.5 miles	10.2 miles	11.9 miles	7.4 miles	5.6 miles
Typical free-flow	-	20 min	18 min	18 min	18 min
Typical a.m.peak period time		18 – 22 min	18 – 35 min	18 – 26 min	16 – 24 min
Typical p.m. peak period time		18 – 24 min	20 – 35 min	20 – 30 min	18 – 26 min

³² based on Google Maps, 23 October 2017

Table 7 - Journey times and distances, NW sector (Oxon to Battlefield)

Oxon to Battlefield (W-N)	As the crow flies	Via Montford Bridge and Leaton (rat run)	Via A5 and A49 (outer bypasses)	Via B4380 and A5112 (distributor ring)	Via town centre (Welsh Bridge and Smithfield Road)
Journey distance (km)	3.5 miles	10.2 miles	11.9 miles	7.4 miles	5.6 miles
Typical free-flow	-	20 min	18 min	18 min	14 min
Typical a.m.peak period time		18 – 22 min	18 – 35 min	18 – 24 min	14 – 20 min
Typical p.m. peak period time		18 – 22 min	18 – 28 min	18 – 26 min	14 – 22 min

- 4.2.5. As can be seen, the lack of connectivity in the NW sector of the town means that these two locations, which are only 3.5 miles apart “ as the crow flies” are nearly six miles apart by the shortest road route, a journey which can take 20 minutes or more at busy times. Drivers have a choice of routes – the shortest distance, 5.6 miles, being via the town centre, which is subject to congestion on the approaches to the “river loop” and on the Smithfield Road corridor. The outer bypasses provide an alternative route, similar in terms of overall time but at 11.9 miles more than twice the distance. Traffic between the N and W sectors of town adds traffic to both the outer bypasses and the partial distributor ring road, reducing the level of service these routes offer to other traffic which they were primarily designed to carry. The journey time examples also illustrate the potential attractiveness at busy times of the 10.2 mile rat-run along minor rural roads via Montford Bridge, Leaton and Huffley Lane.
- 4.2.6. The example journey was selected because it illustrates how two important employment areas of Shrewsbury – the established Battlefield Enterprise Park and the emerging Oxon Business Park – are not as well connected to each other as might at first seem. There is an opportunity to improve this situation by providing a new river crossing and NW link.

TRAFFIC CONGESTION IN SHREWSBURY TOWN CENTRE

- 4.2.7. Shrewsbury’s town centre is almost completely surrounded by a loop of the River Severn. There are just three main points of entry and a largely unaltered mediaeval street pattern. A toll bridge provides a minor additional point of entry from the southern suburbs.
- 4.2.8. The main shopping streets (High Street, Castle Street, Pride Hill) do not form part of the N-W corridor. Traffic on these streets has been managed over recent years by a combination of pedestrian priority, traffic calming and enhancement, and by ensuring alternative routes are available for through traffic. The direct corridor passes though the town centre on the route illustrated in Figure 18 comprising (from west to north):
- Frankwell
 - Welsh Bridge
 - A458 Mardol Quay and Smithfield Road
 - A528 Chester Street Gyratory

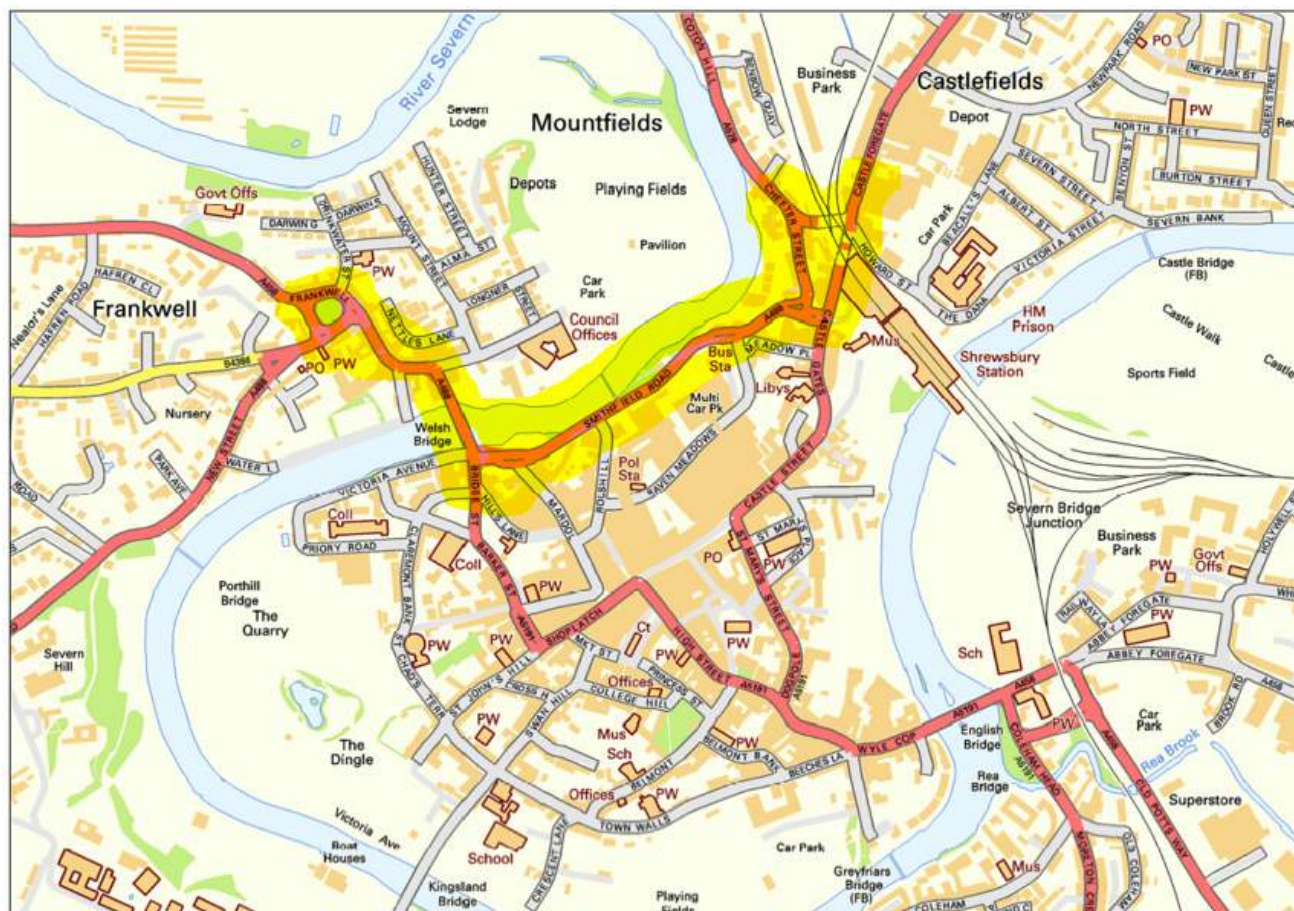


Figure 18 - Town Centre Highway Network – NW corridor

- 4.2.9. These roads are subject to significant congestion in the morning and evening peak periods, and at other busy times of the day.
- At Frankwell, where the traffic island is bordered by local shops, traffic backs up along the Mount and Cophthorne Road, and blocks the junction with New Street. Congestion around Frankwell causes delays to traffic on both the NW corridor and local traffic, including people wanting to access the large Frankwell car park on the north side of the river.
 - The Welsh Bridge has just one lane in each direction. Its junction with Bridge Street, Mardol Quay and Victoria Avenue is controlled by traffic signals, linked to pedestrian crossings and the adjacent junction with Claremont Bank. Despite recent improvements, both these junctions suffer queuing and delay at busy periods, and are a source of frustration to local drivers, including drivers requiring access to town centre car parks in the Bridge Street area.
 - Smithfield Road is subject to queueing and delay at peak periods, and this affects local traffic seeking to access the main town centre car parks (e.g. Raven Meadows) as well as traffic on the NW corridor. It is also a very important bus route, providing the main access to Shrewsbury Bus Station at Meadow Place. Buses represent 3.6% of all traffic. In 2016, the road carried approximately 23,350 motor vehicles³³ over an

³³ Department for Transport Traffic Counts, Count ID 18556 (2016)

average 24-hour period. The Design Manual for Roads and Bridges (DMRB) recommends that two-way daily traffic flows on a typical single carriageway principal road should range between 20,000 and 23,000³⁴. On this basis Smithfield Road is operating at full capacity, with little scope to increase further. It is likely that any additional demand in the NW corridor would put pressure on alternative routes, though the corollary of this is that traffic presently using other routes might re-route to Smithfield Road if capacity was available. 94% of traffic consists of cars, taxis and light goods vehicles. HGVs represent about 1% of traffic.

- Chester Street gyratory is severely constricted by the two large, low railway bridges at the approaches to Shrewsbury Station. Despite some recent improvements, it remains a difficult area for pedestrians and cyclists. At busy times, traffic forms long queues on Chester Street and Castle Foregate, constraining vehicular access to the railway station and other parts of the town centre. This congestion affects buses and taxis, as well as general traffic.

Table 8 - Traffic volume and composition Smithfield Road (24 hrs)

	2016 (vehs)	2016 (%)	2017 (vehs)	2017 (%)
HGV	236	1.0	231	1.0
LGV	2,855	12.0	3,067	13.0
Bus and coach	855	3.6	858	3.6
Car and taxi	19,246	81.6	18,982	80.6
Motorcycles	217	0.9	214	0.9
Pedal Cycles	222	0.9	205	0.9
TOTAL	23,811	100.0	23,557	100.0

(DfT traffic counts 2016 and 2017)

- 4.2.10. There is little scope for further improvement of these roads, due to the historic environment (Frankwell), lack of space and proximity of the river (Smithfield Road), and restrictive railway infrastructure (Chester Street Gyratory).
- 4.2.11. Representative 2-way traffic volumes on sections of the NW corridor within the town centre are set out in Table 9 below.

Table 9 - Smithfield Road Corridor – traffic volumes

Modelled 2-way traffic flow 2017	Frankwell	Welsh Bridge	Mardol Quay	Smithfield Road	Chester Street (part of gyratory)	Castle Foregate (part of gyratory)
a.m. peak	2,088	1,920	2,093	1,753	1,047	1,044
p.m. peak	1,819	1,629	1,891	1,754	913	892
A.A.D.T.	21,418	19,178	22,718	20,021	11,406	10,898

- 4.2.12. Automatic Number Plate Recognition (ANPR) surveys undertaken in March 2012 showed that most of the traffic using the Smithfield Road corridor was “through traffic” in that it did not have an intermediate destination

³⁴ Design Manual for Roads and Bridges, Volume 5 Section 1, Part 3 TA 46/97

in the town centre. The survey did not distinguish between long distance through traffic and “local through traffic” (i.e. between different areas of Shrewsbury). Some 93% of eastbound trips observed at the Welsh Bridge and Coton Hill, and 91% of those observed at Welsh Bridge and Castle Foregate were through trips according to this definition, as were 87% of the eastbound trips observed at Coton Hill or Castle Foregate and Welsh Bridge.

TRAFFIC CONGESTION ON THE NORTHERN APPROACHES TO THE TOWN

- 4.2.13. As noted above, the shortest (though not always the fastest) route for traffic between the north and west sectors of the town is via the river loop. Congestion is a problem on most of the radial routes leading into the town from the north and the west, as described below and in the succeeding section.
- 4.2.14. Two key radial routes approach from the north:
- A528 Ellesmere Road and Coton Hill
 - A5119 Battlefield Road, Whitchurch Road, Ditherington, Spring Gardens, St Michael’s Street and Castle Foregate
- 4.2.15. Representative two-way peak hour traffic volumes on each section of the A528 route are set out in Table 10 below.

Table 10 – Northern approaches (A528) – traffic volumes

Modelled traffic flow, 2017	Ellesmere Road (north of Mount Pleasant)	Ellesmere Road (Mt Pleasant to Hubert Way)	Ellesmere Road (South of Hubert Way)	Coton Hill
a.m. peak	1,188	1,087	1,040	1,228
p.m. peak	1,162	983	905	978
A.A.D.T.	12,919	11,536	10,662	12,200

- 4.2.16. To the north of Hubert Way, A528 Ellesmere Road is semi-rural with no frontage development. South of Hubert Way, this character gradually changes to include some limited frontage development which then becomes denser with terrace housing towards the southern end. Coton Hill has residential frontage development, and as it approaches the town centre skirts the river with recently built houses and flats on its north side.
- 4.2.17. Typical uncongested speeds on the full 2.2 mile long route (from Battlefield Link Road to the Chester Street Gyratory) average about 26 mph. However, at the busiest periods, the average southbound speed can fall to around 15 mph, adding up to 4 minutes to the journey duration. Coton Hill is subject to the most severe queuing and delays, due to the limited capacity of the Chester Street gyratory, and queuing also extends northwards along Ellesmere Road from the junction with B5067 Coton Hill. Congestion on these sections is not limited to peak periods, but can occur at various times of the day, depending on conditions.

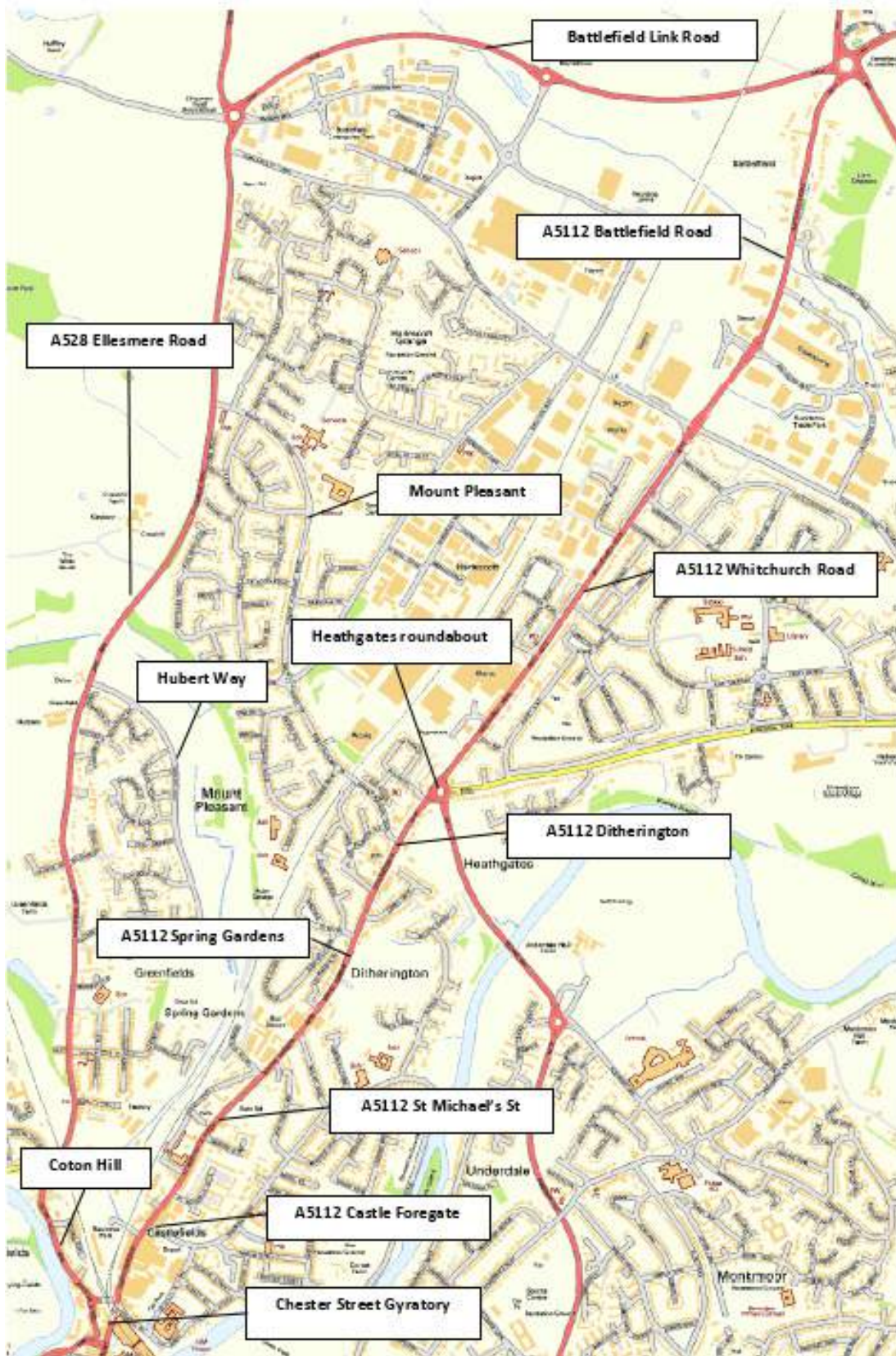


Figure 19 – Northern approaches to Shrewsbury Town Centre

4.2.18. Representative traffic peak hour traffic volumes on the A5112 are set out in Table 11 below.

Table 11 – Northern approaches (A5112) – peak hour traffic volumes

Modelled traffic flow, 2017	Whitchurch Road	Ditherington	Spring Gardens	St. Michael's Street	Castle Foregate
a.m. peak	919	1,288	1,169	604	790
p.m. peak	836	1,351	1,245	685	781
Inter-peak	9,798	14,835	13,480	7,932	9,755

- 4.2.19. Battlefield Road is residential at its northern end, quickly giving way to mixed commercial development, including several car dealerships. South of the Harlescott Lane junction, Whitchurch Road has a mixture of residential frontages, a supermarket and the Doncaster Aerospace Components Factory (former Sentinel works). South of the Heathgates roundabout, Ditherington is mainly residential with some local retail units. Spring Gardens provides access to some traditional housing and extensive newer flats and houses constructed on brownfield sites. It also serves the old Flaxmill (Ditherington Maltings), an important historic building which is currently being restored. St Michael's Street has new and Victorian terraced housing, and is subject to on-street parking. It also gives access to the town's fire station and commercial development. Castle Foregate has Victorian terraced housing with some modern infill, giving way to local shops and business premises on the approach to the Chester Street gyratory.
- 4.2.20. Typical uncongested speeds on the full 2.9 mile length of road average about 22 mph. However, at busy periods, the average southbound speed can fall to as low as 9 mph, adding up to 12 minutes to a typical journey duration. Castle Foregate and St Michael's Street are subject to the most severe queuing and delays, due to the limited capacity of the Chester Street gyratory, and congestion also occurs on Ditherington and Whitchurch Road associated with the busy Heathgates roundabout and Harlescott Lane traffic signals. Congestion is not limited to peak periods, but can occur at various times of the day, depending on conditions.
- 4.2.21. Both the A528 and the A5112 provide routes towards the town centre from the residential and employment areas in north Shrewsbury. Drivers will often choose the route that appears less congested, especially with satellite navigation.

TRAFFIC CONGESTION ON THE WESTERN APPROACHES TO THE TOWN

- 4.2.22. Three radial routes approach the town centre from the west:
- A458 The Mount
 - B4386 Copthorne Road
 - A488 New Street
- 4.2.23. All three of these roads are residential, with frontage development along their full length and some on-street parking. The Mount and New Street are flanked by Victorian and Edwardian houses, whilst Copthorne Road serves inter-war housing and the former army barracks. These roads provide indirect access to the large estates of inter-war housing between the B4380 Roman Road and Frankwell, and to several schools.

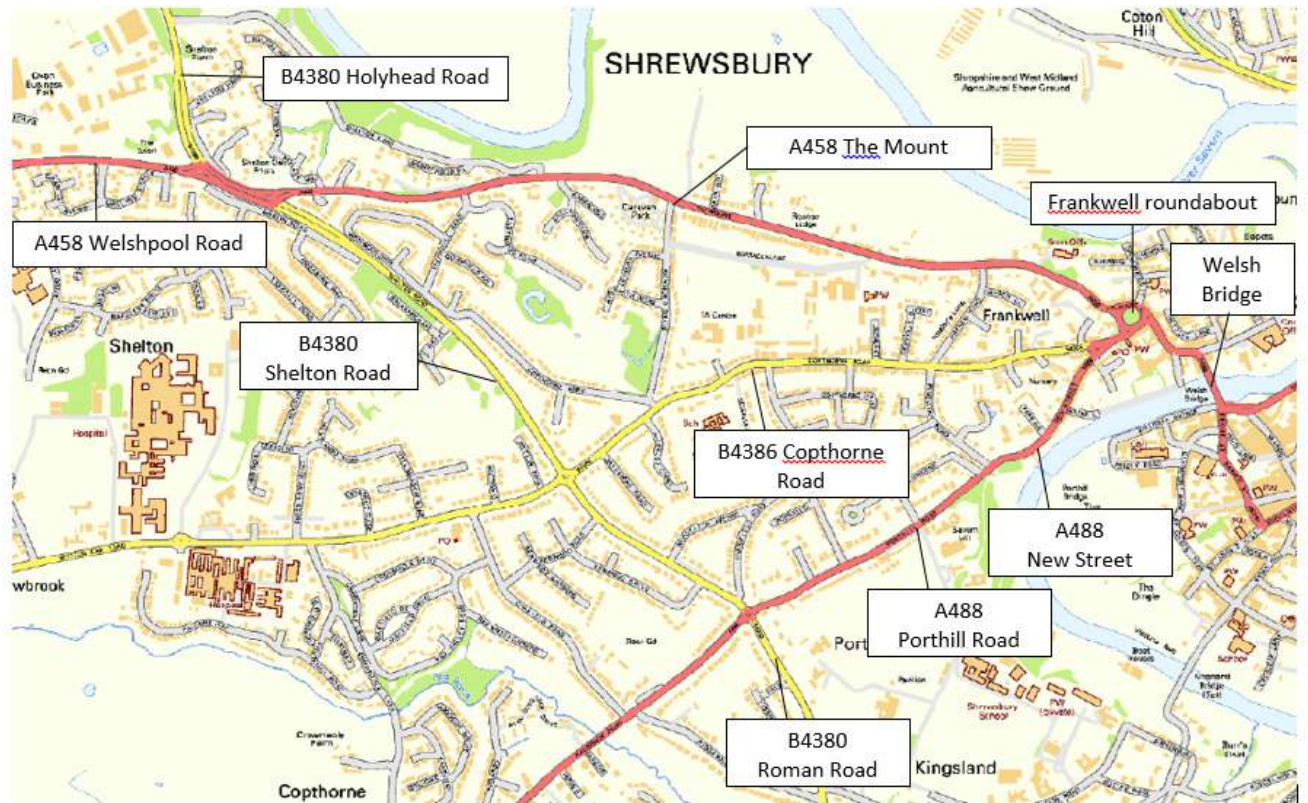


Figure 20 – Western approaches to Shrewsbury town centre

4.2.24. Representative traffic peak hour traffic volumes on the western approaches are set out in Table 12 below.

Table 12 – Western approaches – traffic volumes

Modelled traffic flow, 2017	A458 The Mount	B4386 Copthorne Road	A488 New Street
a.m. peak	670	839	631
p.m. peak	638	717	532
A.A.D.T.	7,424	7,959	6,333

- 4.2.25. Typical uncongested average speeds on these routes (between their junctions with the B4380 and Frankwell) are 15 to 20 mph. These can typically fall to between 9 and 13 mph at the busiest periods, adding up to 2 or 3 minutes to a typical journey.
- 4.2.26. The main cause of congestion on these approaches is queuing at the Frankwell Roundabout, where the three radial roads converge before entering the “river loop” by the Welsh Bridge. At busy times, traffic backs up from the Frankwell Quay junction, through the roundabout and along Copthorne Road. This makes it difficult for traffic on The Mount to enter the roundabout, and this movement has to rely on other drivers giving way. Similarly, traffic queuing on Copthorne Road blocks the exit from New Street onto Copthorne Road, leading to queuing back along New Street. Individual vehicles may try to minimise their delay by using Pengwern Road, a residential street which links New Street and Copthorne Road.
- 4.2.27. Modelled 2017 journey times on the north – west corridor through the town centre (between A5/A458 Churncote Roundabout and A49/A53 Battlefield Roundabout) are summarised in Table 13.

Table 13 – Journey times on north – west corridor via the town centre (2017)

From	To	2017 a.m. peak	2017 inter-peak	2017 p.m. peak
Churncote	Battlefield	1,351 sec	1,224 sec	1,265 sec
Battlefield	Churncote	1,270 sec	1,196 sec	1,265 sec

UNRELIABLE JOURNEY TIMES AND LONG DELAYS

4.2.28. On congested roads and junctions, queueing and congestion is not uniform but can vary from month to month, day to day, or even within peak periods. For this reason, individual journeys may on occasions be delayed by more than the average amounts, and queues can build up and reduce rapidly over a short period of time. This can make perceptions of delay worse than average figures suggest, and means that journey times will be less reliable than on uncongested routes. People travelling to work, for example, or to a fixed appointment need to allow more time to avoid the risk of being delayed.

“RAT-RUNNING” TRAFFIC ON UNSUITABLE RURAL ROADS

4.2.29. The lack of purpose-built road between the north and west of Shrewsbury, and the congestion on the routes into and through the town centre, means that some traffic finds it attractive to use the network of minor roads in the north-west sector, illustrated in Figure 21 below. This has been a longstanding source of concern locally. These routes are, for the most part, unclassified country lanes with, but there are also concerns about through traffic, including HGVs on the B4397 and B5067 through the villages of Baschurch and Ruyton XI Towns, and on the road through Bomere Heath.

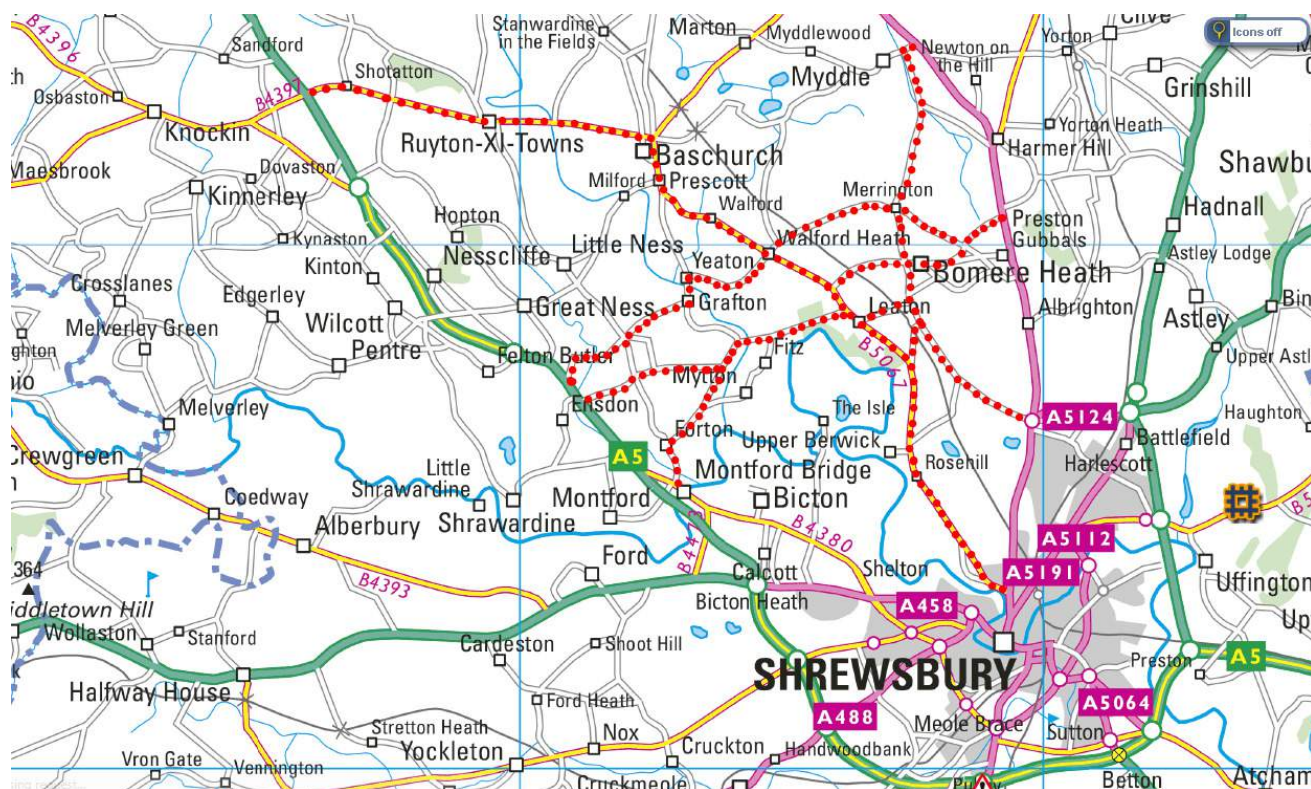


Figure 21 - Rat-runs on minor roads in the N-W sector of Shrewsbury

- 4.2.30. In the absence of a north-west relief road, these routes do provide a tempting alternative for through journeys that do not have either origin or destination in the areas affected, including journeys generated by the Battlefield Enterprise Park and development at Oxon.
- 4.2.31. A registration number survey was undertaken on 21/22 April 2009 to determine how many of the goods vehicles using the B4397 through Ruyton XI towns had neither origin nor destination in the local area. Over an average 7.5 hour period, 204 goods vehicles (two way, LGV and HGV) were observed using the B4397 at Shottaton Crossroads. Examination of registration number matches led to the conclusion that approximately 10% of these were through traffic.³⁵
- 4.2.32. Representative traffic volumes on some of the routes affected are set out in
- 4.2.33. Table 14 below.

Table 14 – “Rat run” routes – traffic volumes

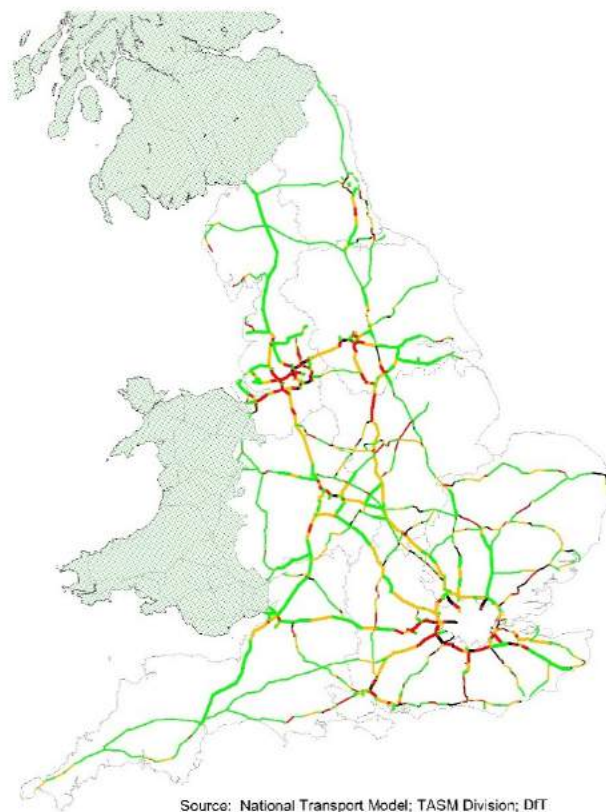
Modelled traffic flow, 2017	a.m. peak (veh)	p.m. peak (veh)	A.A.D.T. (veh)
B4473 Preston Montford Lane	119	149	1,247
North of Montford Bridge	346	299	3,001
West of Leaton	280	229	2,408
North of Leaton	506	636	5,819
East of Leaton	565	641	5,976
Berwick Road, south of Leaton	62	98	879
Huffley Lane	498	607	5,405

TRAFFIC CONGESTION ON SHREWSBURY’S OUTER BYPASS AND DISTRIBUTOR RING ROADS

- 4.2.34. The problem of congestion on the trunk road A5 Shrewsbury Bypass is evident from DfT forecasts of congestion on the Strategic Road Network in 2010 (Figure 22), based on the National Traffic Model (NTM), cited in the Government’s 2017 Transport Investment Strategy³⁶.
- 4.2.35. The section of the A5 bypass between the A49 (south) at Dobbies roundabout and A49 (north) at Preston Boats roundabout, on the eastern side of Shrewsbury, is already subject to regular congestion at peak times. This situation is not improved by the fact that through traffic between north and west, including HGVs, is directed around the bypass because of the lack of suitable routes in the NW sector.

³⁵ Ruyton XI Towns Goods Vehicle Survey Analysis v2, Technical report to Shropshire CC, October 2009

³⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627306/transport-investment-strategy.docx



Source: National Transport Model; TASM Division; DfT
 Scenario:
 (c) Crown Copyright and database rights 2014. Ordnance Survey Licence Number 100039241
 Department for Transport



Figure 22 – Trunk road congestion 2010

4.2.36. Representative traffic volumes on the A5/A49 bypass are set out in Table 15 below.

Table 15 – Traffic volumes on A5/A49 bypasses

Modelled traffic flow, 2017	a.m. peak (veh)	p.m. peak (veh)	A.A.D.T. (veh)
A5 (Montford Bridge to Churncote)	1,655	1,600	17,872
A5 (Churncote to B3486)	2,282	2,386	26,060
A5 (B4386 to A488)	2,942	2,912	31,056
A5 (A488 to A49 Dobbies RB)	3,501	3,422	36,601
A5 (A49 Dobbies RB to A458 Weeping Cross)	4,006	4,156	42,998
A5 (A458 Weeping Cross to B4380 Emstrey)	3,164	3,327	34,336
A5 (B4380 Emstrey to Preston Boats)	3,754	3,819	39,772
A49 (A5 Preston Boats to B5062)	2,518	2,667	27,029
A49 (B5062 to Battlefield)	1,616	1,780	18,572

- 4.2.37. Shrewsbury's outer bypass and its partial ring of distributor roads work together to provide routes for local and longer distance through traffic, and this is key to keeping unnecessary traffic away from the historic town centre. Congestion on the outer bypass can lead to additional pressure on the distributor ring, and this too can become congested at peak times.
- 4.2.38. Representative traffic volumes on the distributor ring road are set out in Table 16 below.

Table 16 – Traffic volumes on distributor ring road

Modelled traffic flow, 2017	a.m. peak (veh)	p.m. peak (veh)	A.A.D.T. (veh)
B4380 Shelton Road (The Mount to Mytton Oak Rd)	948	977	8,795
B4380 Shelton Road (Mytton Oak Rd to Radbrook Rd)	1,195	1,129	12,077
B4380 Roman Road (Radbrook Rd to Longden Rd)	1,484	1,501	15,672
B4380 Roman Road (Longden Rd to Meole Brace Isl)	1,423	1,529	15,987
A5112 Hazledine Way (Meole Brace to Reabrook RB)	1,266	1,271	14,703
A5112 Pritchard Way (Reabrook RB to Old Potts Way)	1,394	1,343	15,405
A5112 Bage Way (Old Potts Way to Crowmere Rd)	1,563	1,543	17,036
A5112 Robertson Way (Crowmere Rd to Telford Way)	1,866	1,821	20,980
A5112 Telford Way	2,300	2,276	26,005

INEFFICIENCY OF THE TRANSPORT NETWORK, ESPECIALLY FOR BUSES

4.2.39. The north-west corridor is heavily used by buses in Shrewsbury. As illustrated in Figure 23, most bus services from north Shrewsbury are concentrated on the A5112 Whitchurch Road approach which is heavily congested at peak times. The town bus station is located at the north-east end of Smithfield Road, near to the railway station, and as a result Smithfield Road carries more buses than any other road in Shrewsbury – between 30 and 35 local buses per hour. The bus station is not used by Park and Ride services, but all three routes use Smithfield Road to complete their circuit around the town centre. The Harlescott and Oxon Park and Ride services respectively use the northern and western approaches to the town, as illustrated in Figure 24. As noted, these routes are congested, particularly at peak times.

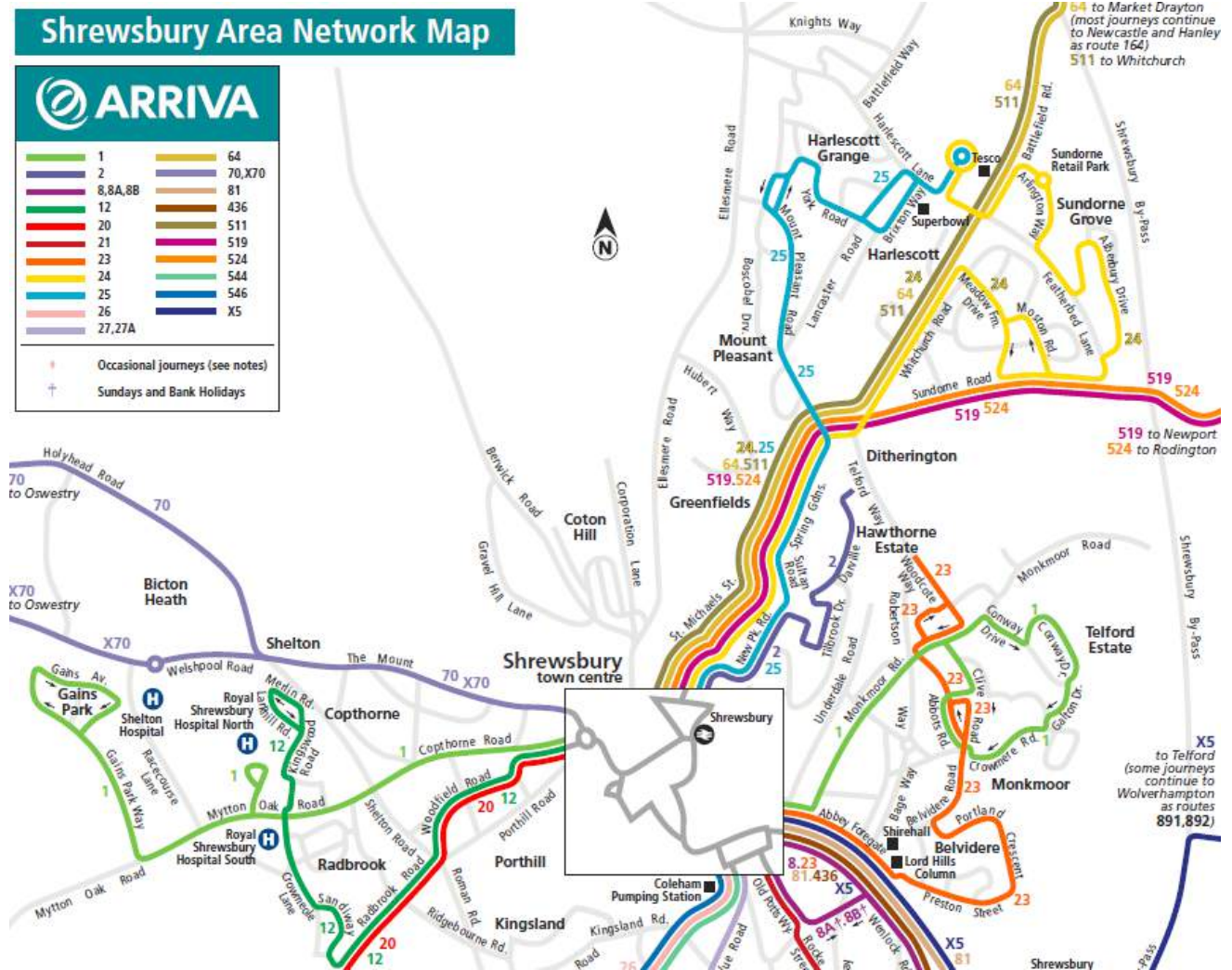


Figure 23 - Bus routes in Shrewsbury

- 4.2.40. Buses have to share local roads with general traffic, so when there is congestion, bus services are also delayed. This makes services less efficient and less reliable, whilst also being more expensive to operate, reducing the attractiveness of this more sustainable mode of transport.
- 4.2.41. Congestion on the northern and western approaches, and on Smithfield Road, makes Shrewsbury's transport network less efficient for other transport users too. It reduces the accessibility of town's railway station for traffic from all directions, and also affects people trying to access the town's main car park at Raven Meadows, off Smithfield Road.

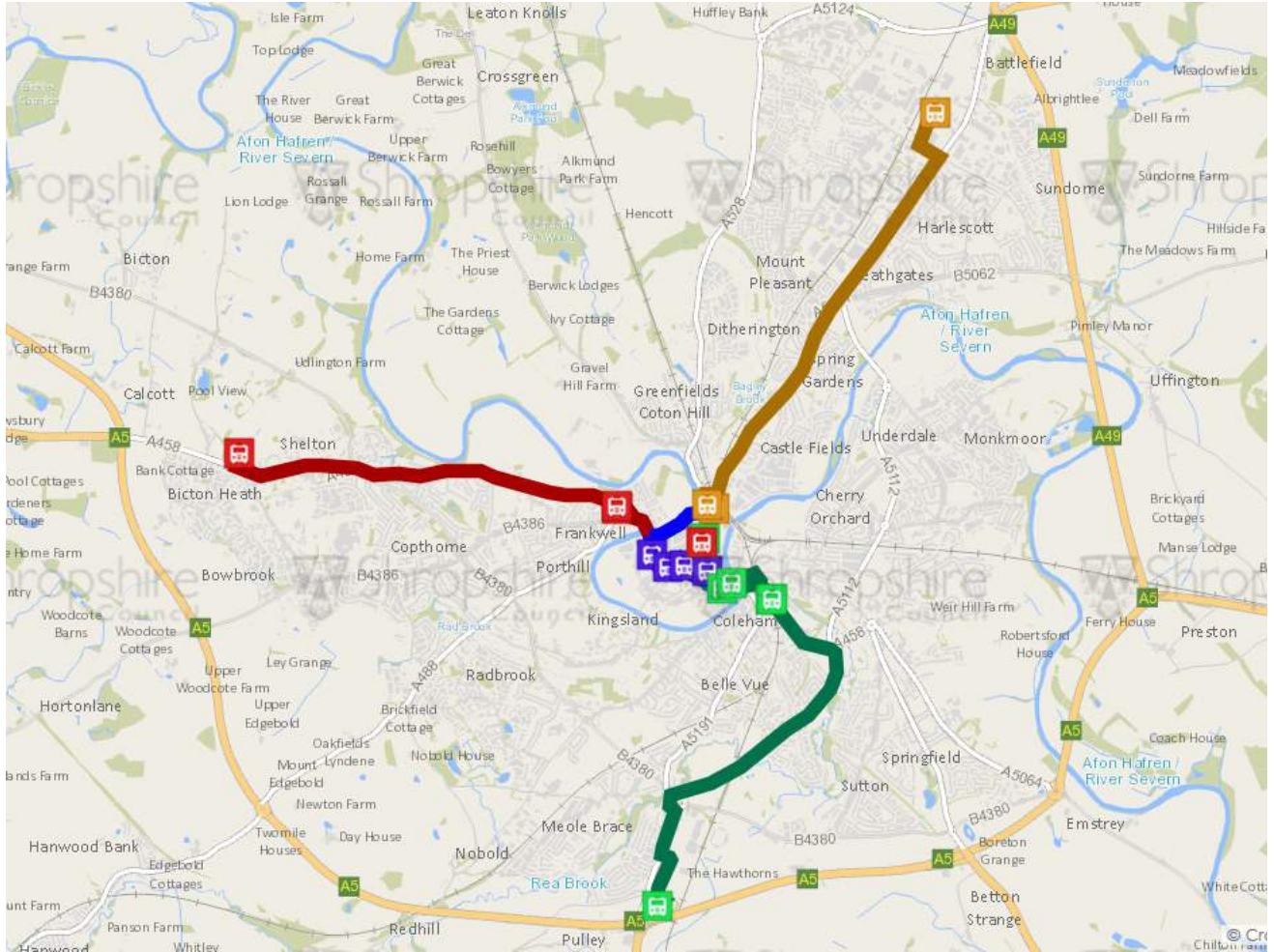


Figure 24 - Park and Ride routes

LACK OF NETWORK RESILIENCE

4.2.42. Resilience in a transport network has been defined³⁷ as “the ability to absorb shocks gracefully”. It may be understood in terms of the way different components of the network work complement each other:

- **Redundancy** Different components serving the same function
- **Diversity** Components are functionally different
- **Efficiency** Network performance is optimised
- **Autonomy** Components are able to function separately
- **Strength** Ability to withstand a disruptive event
- **Collaboration** Information and resources shared amongst components

³⁷ Resilience Theory and System Evaluation, Verification and Validation of Complex Systems: Human Factor Issues, Vol.110, p35-60, Harold Foster (1993)

- **Adaptability** Flexible, able to learn from past experiences
- **Mobility** Ability to reach a chosen destination with an acceptable level of service
- **Safety** Exposes fewer users to hazards
- **Recovery** Level of service can be restored quickly

- 4.2.43. Lack of resilience is a problem if a transport network is unable to cope with disruptive events, such as surges in demand, accidents, extreme weather conditions or road works. The more common the event, the more important it is for the network to be able to recover quickly in order to restore an acceptable level of service and avoid compounding the problem.
- 4.2.44. Lack of network resilience can be a problem in Shrewsbury because of the lack of acceptable alternatives for trips between north and west. The shortest route via the town centre is often congested. The “rat runs” through rural lanes are unacceptable and inefficient. The “longer ways round” via the distributor ring road or outer bypass to the south and east of Shrewsbury use up valuable capacity on these routes, and detract from the primary function of these roads. In terms of resilience, there is a lack of redundancy, diversity and efficiency in the network in the north-west sector.
- 4.2.45. Incidents such as accidents or major roadworks on any of these routes³⁸ can cause more widespread and long-lasting disruption because of the lack of suitable alternative routes. Also, as already noted, journey times to key destinations such as the bus and railway stations can be unpredictable during peak periods. In terms of resilience, there is a lack of strength, recovery and mobility.
- 4.2.46. A north west relief road should increase the resilience of Shrewsbury’s road network. In terms of the factors identified above by facilitating:
- **Redundancy** An alternative, more direct route between north and west
 - **Diversity** A purpose built route and additional river bridge
 - **Efficiency** Shorter, more direct routes for many journeys which currently use inefficient routes
 - **Autonomy** Allows outer bypass and distributor ring to fulfil their intended functions better
 - **Strength** Ability to withstand disruptive events
 - **Mobility** More reliable access to bus and railway stations and town centre car parks
 - **Safety** Shorter journeys on a route designed to modern safety standards
 - **Recovery** Extra capacity allowing level of service to be resumed more quickly after an incident

ROAD ACCIDENTS

- 4.2.47. There is no “acceptable” level of injury accidents, and local authorities have a statutory duty³⁹ to undertake studies into road traffic collisions, and to take steps both to reduce and prevent them. Routes or sites where large numbers of accidents are known to have occurred can offer the greatest potential for improvement.

³⁸ In the recent past, Smithfield Road and Frankwell were often closed due to flooding of the River Severn. The construction of flood defences in 2003 has effectively solved this problem, although the car parks near the river still flood, affecting traffic patterns.

³⁹ Road Traffic Act, 1988

- 4.2.48. Figure 25 shows the location and severity of all personal injury accidents in Shrewsbury during a five year period from June 2012 to June 2017. As might be expected, there is a concentration of accidents within the “river loop” (town centre), where the road network is dense and the potential for vehicle/vehicle and vehicle/pedestrian collisions is high, and at the busiest junctions on the bypass. There is a concentration of accidents along the heavily trafficked Smithfield Road, and at the junctions at each end.
- 4.2.49. On the western approaches to the town centre, there is a concentration of accidents on B4386 Copthorne Road and a cluster at the Frankwell junction. On the northern approaches, there is a concentration of accidents on the A5112 Whitchurch Road and especially at the busy A5112/A5191/B5062 Heathgates roundabout, and also on the A528 Coton Hill and Chester Street approach.

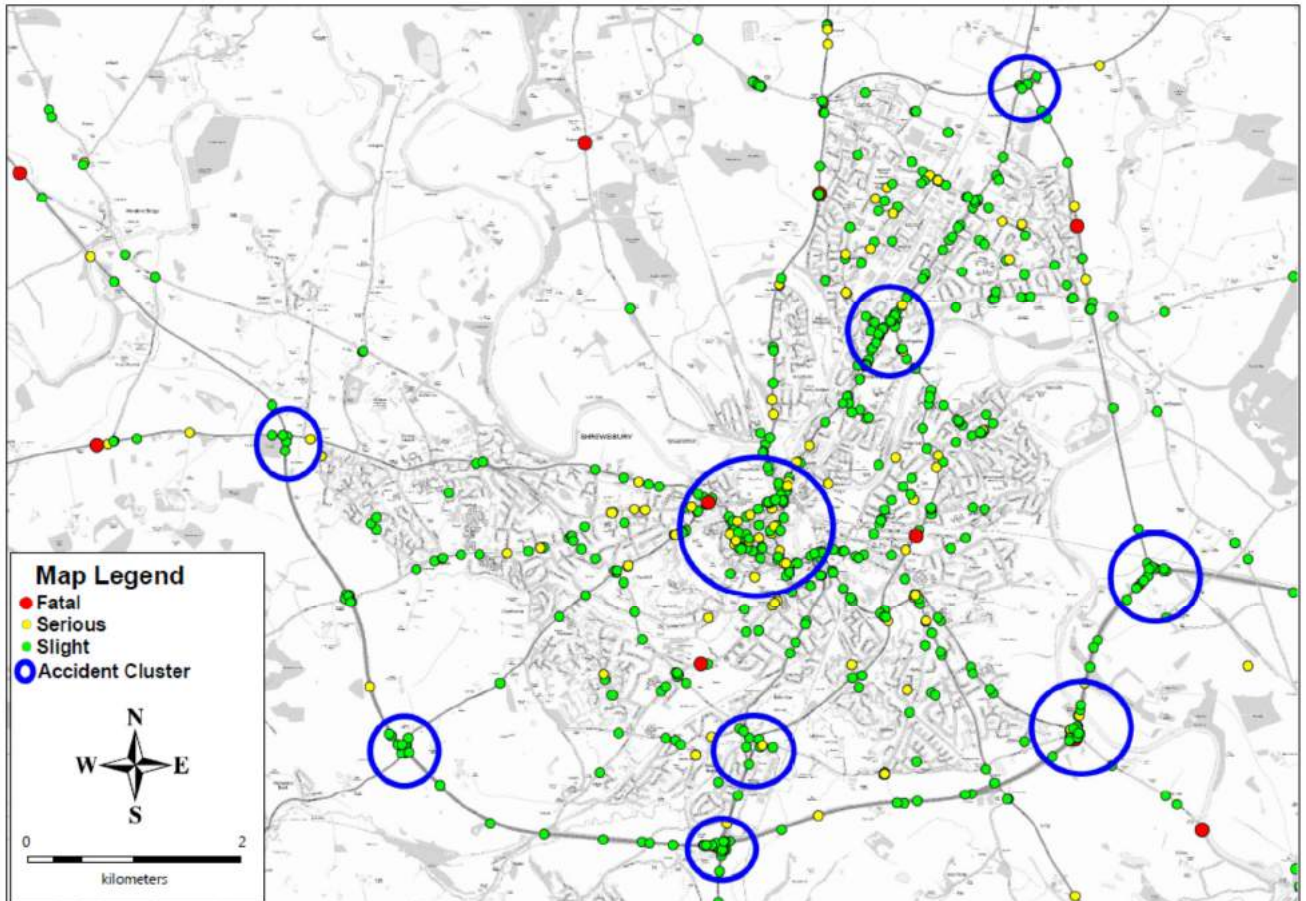


Figure 25 - Injury accidents in Shrewsbury 2012 - 2017

- 4.2.50. Figure 26 similarly shows the location of all personal injury accidents involving pedestrians and cyclists in Shrewsbury during a five year period from June 2012 to June 2017. There are concentrations of collisions involving cyclists and pedestrians in the town centre, including Smithfield Road and the junctions at each end. Also in the north-west corridor, there are concentrations of pedestrian and cycle accidents on B4386 Copthorne Road, A488 New Street, Frankwell, A528 Chester Street, A5112 Whitchurch Road and at the Heathgates roundabout.

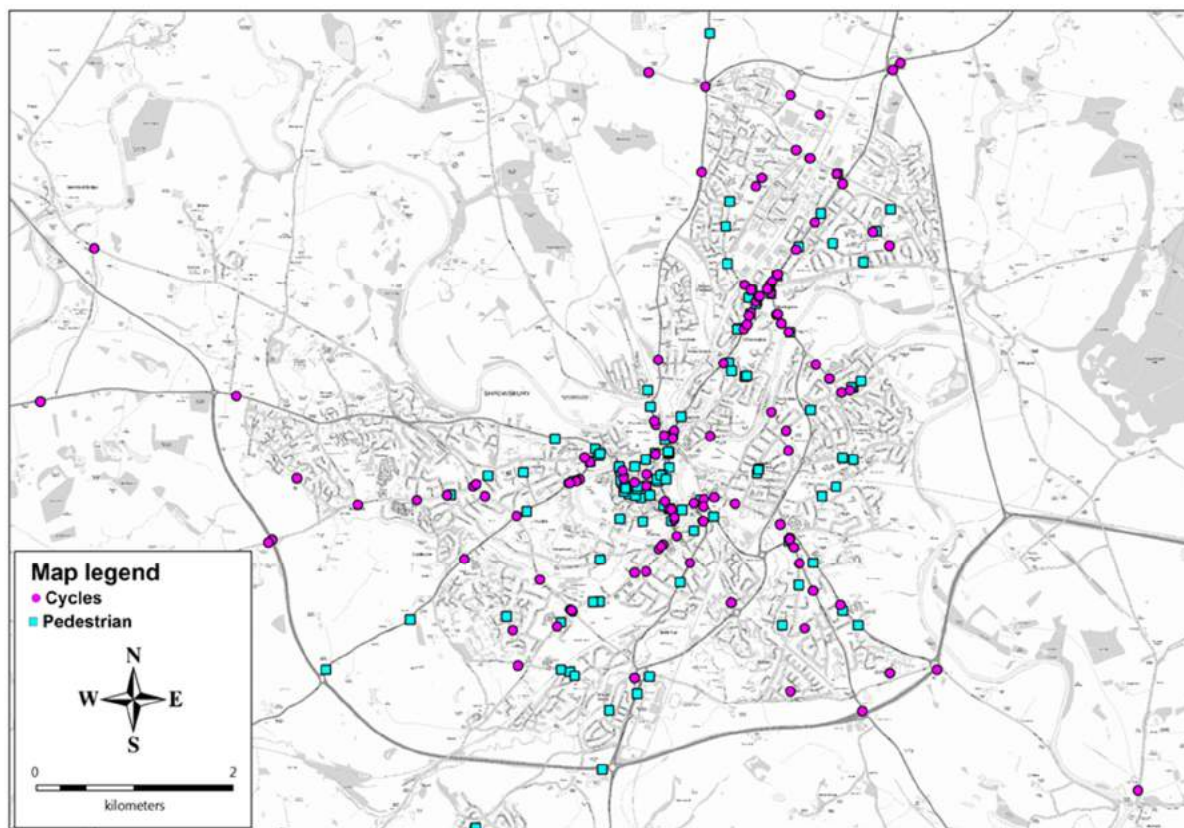


Figure 26 - Pedestrian and cycle injury accidents in Shrewsbury 2012 - 2017

- 4.2.51. A NWRR is expected to reduce traffic on the north-west corridor through the town centre, and it is reasonable to expect that this will lead to a proportional reduction in collisions on these routes, including those involving pedestrians or cyclists. A NWRR is also expected to attract some traffic which currently uses either the outer bypass or the distributor ring road to travel between the north and the west, so it is reasonable to expect that this will lead to a proportional reduction in collisions on these routes too.
- 4.2.52. As a purpose built, modern road with separate cycle facilities low pedestrian use, a NWRR is expected to have a lower accident rate than roads through the built up area. It will also be a shorter distance for north-west traffic than the bypass or distributor ring, so there should be less overall exposure to accident risk and a net reduction in accidents, including those involving pedestrians or cyclists, even allowing for accidents on the NWRR itself and the roads leading to and from it.

POOR AIR QUALITY

- 4.2.53. Under an EU directive and the 1995 Environment Act local authorities have a statutory duty to periodically review and assess the air quality within their area. This involves consideration of present and likely future air quality against air quality standards and objectives. Where the results of this ‘Review and Assessment’ process highlight that the relevant Air Quality Standards and Objectives are not likely to be achieved, the authority is required to declare an Air Quality Management Area (AQMA).
- 4.2.54. There are currently two Air Quality Management Areas in Shrewsbury’s main urban area, including the area around Heathgates Roundabout on the northern approaches to the town centre, and most of Shrewsbury town centre (illustrated in Figure 27 below).

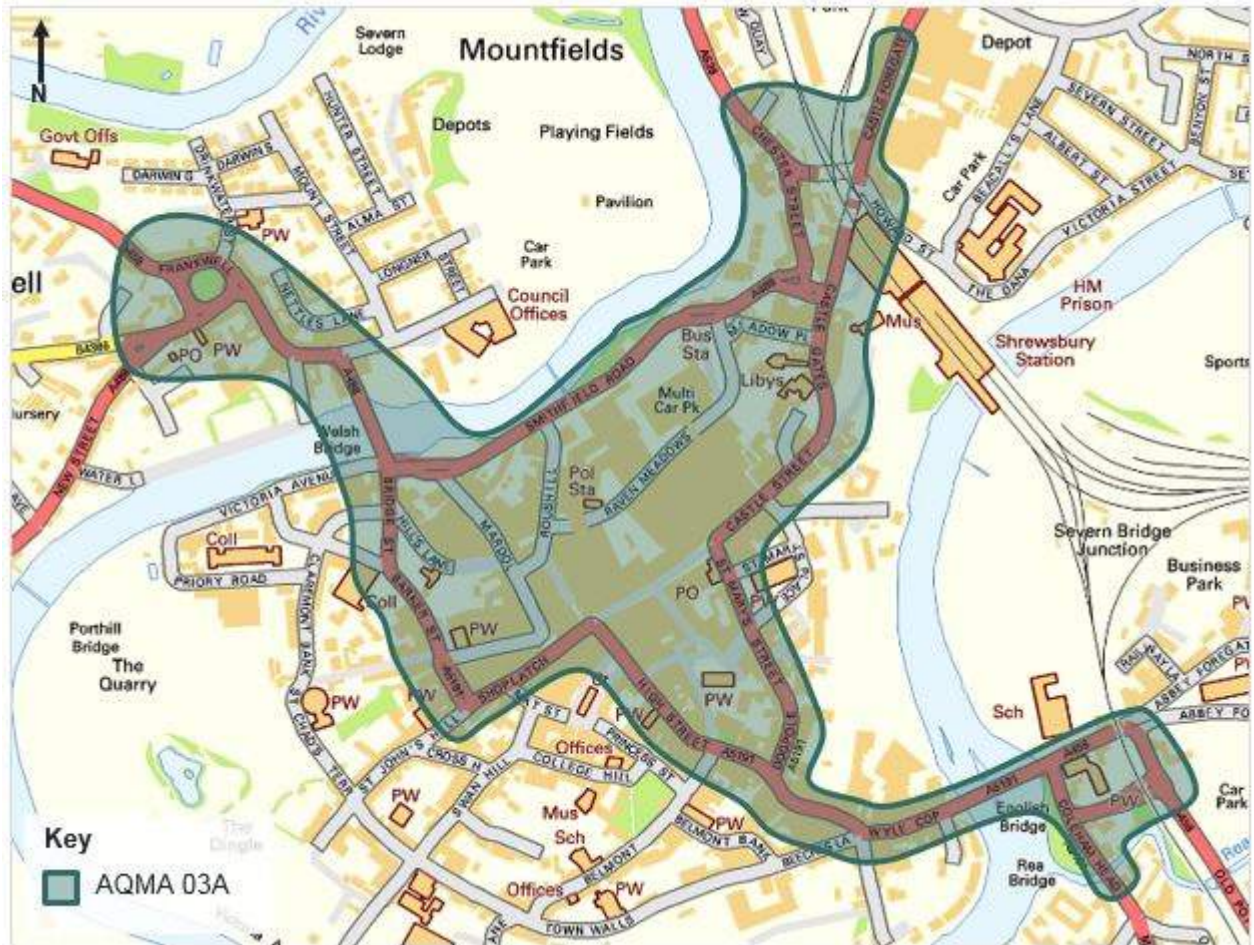


Figure 27 - Shrewsbury Town Centre Air Quality Management Area 03A (Source: UK Air, DEFRA)

- 4.2.55. These sites were declared as AQMAs due to expectations that levels of Nitrogen Dioxide (NO₂) (from traffic emissions), would exceed the EU objective of 40 µg/m³ NO₂ (annual mean). Air quality at these sites is monitored and evaluated.
- 4.2.56. The Shrewsbury Town Centre AQMA covers most of the town centre inside the “river loop” as well as Frankwell and the Welsh Bridge. The original AQMA, declared in 2003, included Frankwell, part of Bridge Street, Smithfield Road, Castle Gates and adjacent land. Following further monitoring, this was further extended in 2006 to cover most of the town centre, including High Street, Wyle Cop, English Bridge, the English Bridge Gyratory and Coleham Head.
- 4.2.57. The Evidence Base for the Shropshire Local Transport Plan (LTP3) reported in 2010 that NO₂ levels were near to the EU objective level of 40µg/m³ at the Heathgates Island AQMA, on the distributor ring road to the north of the town centre. However at Caste Foregate (in the town centre AQMA) annual average NO₂ levels were significantly above the EU objective level, although levels had fallen slightly since 2006, in line with general traffic reductions observed in Shrewsbury town centre in that period.
- 4.2.58. The results of air quality monitoring from 2009 to 2016 are set out in Table 17.

Table 17 - Selected NO₂ diffusion tube monitoring locations and concentrations (µg/m³) in Shrewsbury⁴⁰

(Source: Shropshire Council Public Protection Service)

Tube Location Descriptor		Concentration of NO ₂ (µg/m ³)							
		2009	2010	2011	2012	2013	2014	2015	2016
Town Centre	Severn Steps	36.3	34.2	33.0	32.1	29.6	31.4	26.7	28.2
	Britannia Inn, Castle Foregate	37.2	37.0	35.8	34.3	36.4	40.6	39.5	43.5
	Frankwell	29.8	31.7	27.2	28.0	27.9	27.2	26.6	28.0
	Raven Meadows	37.6	37.6	33.4	32.9	35.1	34.8	30.4	32.4
	Smithfield Road	38.0	38.9	34.4	34.1	33.9	33.7	30.1	31.7
	Station Hotel, Castle Gates	76.8	75.5	61.8	74.2	64.6	53.6	57.9	59.8
	The ALB Public House	36.7	37.9	33.2	39.8	42.7	38.4	35.6	38.4
Inner Relief Road	Oteley Road (Stadium)	-	-	-	-	19.6	19.7	15.3	15.5
	Meole Brace	30.3	32.5	30.4	32.6	27.5	26.3	24.6	31.8
	Heathgates Public House	25.9	28.1	25.6	27.1	26.1	25.0	22.9	24.9

- 4.2.59. Air quality is a serious problem. High levels of nitrogen dioxide are linked to heart and lung disease and are estimated to contribute to the early deaths of 40,000 people a year in the UK.
- 4.2.60. Traffic is the main cause of air pollution in Shrewsbury. Areas of poor air quality tend to be where there are high volumes of stationary traffic, and /or stop-start movements in built up areas where the ability for pollution to disperse is limited. Different vehicles emit different levels of pollutants depending on vehicle and engine size and efficiency. Older, heavy diesel vehicles tend to be the most polluting. For example one older style diesel bus can emit the same pollution as 40 cars. Improved vehicle technology and reductions in traffic can both improve air quality.
- 4.2.61. By reducing the volume of north-west traffic using roads in the town centre, and by reducing congestion on the busy northern approaches to the town centre, a NWRR is expected to contribute to an improvement in air quality in this area.

CARBON AND OTHER GREENHOUSE GAS EMISSIONS

- 4.2.62. The build-up of greenhouse gases, especially CO₂ and methane, in the atmosphere is contributing to global warming. Unless action is taken to reduce emissions of greenhouse gases, the world's climate could change, increasing the frequency and intensity of heatwaves, floods, droughts and storms.
- 4.2.63. The Climate Change Act (2008) set a long-term legally binding framework for greenhouse gas reduction in the UK. The Act requires the UK Government to reduce greenhouse gas emissions by at least 34% by 2020 and 80% by 2050 from 1990 levels in the UK. The Government has set out its plan of action for greenhouse gas

⁴⁰ Annual average data is corrected by a bias factor defined by Defra (excluding 2014)

reduction in the Carbon Plan (December 2011). The plan identifies that transport has a critical role in meeting the Climate Change Act (2008) obligations.

- 4.2.64. Transport accounts for about a quarter of the UK's emissions of greenhouse gases. The CO₂ emissions of a car are directly proportional to the quantity of fuel consumed by an engine, so any reduction in motorised traffic will also reduce CO₂ emissions. In the short term, the most significant greenhouse gas savings from transport are likely to come from improving the fuel efficiency of conventional vehicles and increased use of sustainable biofuels.
- 4.2.65. Because the Shrewsbury NWRR would provide shorter, more efficient routes for some journeys, it could contribute to a reduction in CO₂ emissions, although there would also be a carbon cost associated with its construction.

4.3. FUTURE TRANSPORT-RELATED PROBLEMS

- 4.3.1. In the future, as the town grows and background traffic demand increases, if nothing is done it is expected that all of the above problems will worsen. Traffic congestion is likely to get worse and journey times will become longer and less predictable as the network becomes less resilient, affecting both public and private transport. Rat-running could increase, as could accidents. In addition:
- Junctions on the existing bypasses (especially A5/A49 Dobbies Island) will become increasingly congested
 - The Shrewsbury West Sustainable Urban Extension will suffer from poor accessibility to the north, making it less attractive to new development
 - New transport investments, especially the proposed Oxon Link Road, will not achieve their full potential as a transport link.
- 4.3.2. The problem of increasing congestion on the trunk road A5 Shrewsbury Bypass is evident from DfT forecasts of congestion on the Strategic Road Network in 2010 and 2040, based on the National Traffic Model (NTM), cited in the Government's 2017 Transport Investment Strategy⁴¹.
- 4.3.3. The section of the A5 bypass between the A49 (south) at Dobbies roundabout and A49 (north) at Preston Boats roundabout, on the eastern side of Shrewsbury, is already subject to regular congestion at peak times. This situation is not improved by the fact that through traffic between north and west, including HGVs, is directed around the bypass despite it being the "long way round", because of the lack of suitable routes in the NW sector.
- 4.3.4. The NTM forecasts indicate that this section of the A5 could be subject to severe congestion by 2040, as a result of expected traffic growth. This would be a serious problem for Shrewsbury, as the efficiency of its transport system depends on each part of the road hierarchy performing its function. Congestion on the outer bypass can push additional traffic on the town's distributor ring, whilst congestion on the distributor ring can encourage local traffic to use less appropriate streets in the historic town centre.
- 4.3.5. Because the Shrewsbury NWRR would provide a shorter, more appropriate, purpose-built route for some of the traffic which currently uses the trunk road bypass, it is expected to lead to a reduction in traffic demand on this section of the A5, helping to reduce congestion. This would provide a benefit for both long distance and local traffic.

⁴¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627306/transport-investment-strategy.docx

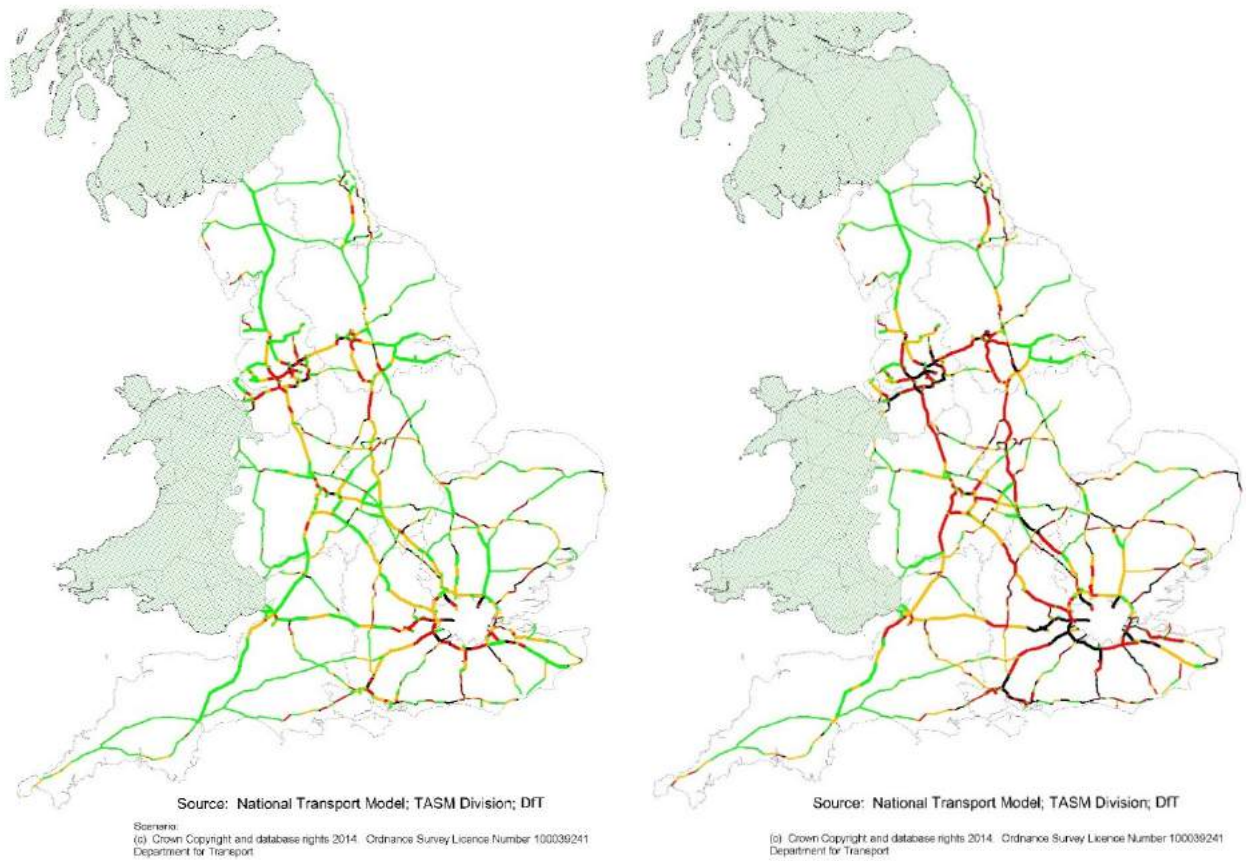


Figure 28 - Congestion on the strategic road network in 2010 (left) and forecast in 2040 (right)

5. OBJECTIVES

5.1. INTRODUCTION

5.1.1. This chapter covers Step 4a of the Transport Appraisal Process, as defined in WebTAG:

“Identify intervention-specific objectives to address the identified need”

5.1.2. In order to achieve the Council’s aims, and in response to the problems and opportunities identified, clear objectives have been established for the scheme. In doing this, a distinction has been drawn between the desired high level or strategic outcomes, the specific or intermediate objectives, and the operational objectives:

5.2. HIGH LEVEL OR STRATEGIC OUTCOMES

5.2.1. The **desired high level or strategic** outcomes are:

- To reduce congestion
- To support the economic competitiveness of Shrewsbury and Shropshire
- To support the delivery of planned growth and development in Shrewsbury
- To enhance the benefits of other transport investment
- To protect and enhance Shrewsbury’s built and natural environment
- To contribute towards a reduction in greenhouse gas emissions
- To improve the quality of life for people in Shrewsbury
- To improve road safety
- To support sustainable modes of transport

5.3. SPECIFIC OR INTERMEDIATE OBJECTIVES

5.3.1. The **specific or intermediate** objectives are:

- To improve connectivity and accessibility between the north and west of Shrewsbury for all modes of transport
- To reduce traffic congestion
- To improve the reliability of journey times and reduce unforeseen delays
- To reduce the amount of traffic rat-running on unsuitable rural roads
- To improve the efficiency of Shrewsbury’s transport network for all modes of transport.
- To improve the resilience of Shrewsbury’s transport network.
- To enhance the benefits of the Oxon Link Road and Integrated Transport Plan schemes.
- To reduce the number of people killed or seriously injured on roads in Shrewsbury.
- To improve air quality, especially in the built-up areas of Shrewsbury
- To reduce net emissions of CO2 and other greenhouse gases.

5.4. OPERATIONAL OBJECTIVES

5.4.1. The **operational** objectives are:

- To provide a new river crossing between the western and northern parts of the town, linking the A5 (west) to the A49 (north).
- To significantly reduce journey times and distances between the north and west of Shrewsbury
- To significantly reduce the amount of traffic unnecessarily crossing the town centre
- To provide traffic relief to key junctions on the existing bypasses, including the A5/A49 Dobbies Island.
- To reduce traffic congestion in Shrewsbury town centre, on the north and west approaches to the town, and on the bypasses
- To significantly improve the accessibility of the Shrewsbury West Sustainable Urban Extension.

6. AREA OF IMPACT

6.1. INTRODUCTION

6.1.1. This chapter covers Step 4b of the Transport Appraisal Process, as defined in WebTAG:

“Define the geographical area for the intervention to address”

6.2. AREA OF IMPACT

6.2.1. The geographical area of impact of the scheme is important in determining the geographical scope of the options to be considered, and in determining the study area for the subsequent transport and environmental assessments.

6.2.2. It is determined by:

- The extent of the current and future transport problems which the scheme needs to address
- The location of existing and planned development driving the scheme
- The scope of the travel market and key origins and destinations

6.3. EXTENT OF CURRENT AND FUTURE TRANSPORT PROBLEMS

6.3.1. The main transport problems which the scheme seeks to address relate to:

- the existing “direct” routes between the North and West of Shrewsbury
- the distributor ring road
- junctions on the trunk road bypasses
- rural lanes in the NW sector (rat runs).

6.3.2. These routes are illustrated in Figure 35.

6.3.3. Firstly the NWRR will provide direct traffic relief to the existing N-W corridor which comprises the radial routes which approach Shrewsbury from the north and west, together with the A458 Welsh Bridge, Smithfield Road and the Chester Street/Castle Foregate gyratory within the town centre.

6.3.4. Secondly, a NWRR will provide an alternative route for some traffic which currently uses either the existing distributor ring road, or the existing trunk road bypasses. It is expected to provide a “safety valve” for these routes, taking pressure off junctions which are already congested and which would otherwise become more congested in the future.

6.3.5. Thirdly, a NWRR will provide traffic relief to the lanes and country roads which are presently used as rat-runs in the NW sector.

6.3.6. Finally, a NWRR will have a ‘knock on’ effect on routes throughout Shrewsbury’s urban area, as traffic patterns adjust to the additional capacity that will become available on the routes relieved of N-W through traffic. These impacts may be small, but they need to be taken into account, together with any potential adverse impacts on roads close to the end points of a NWRR.

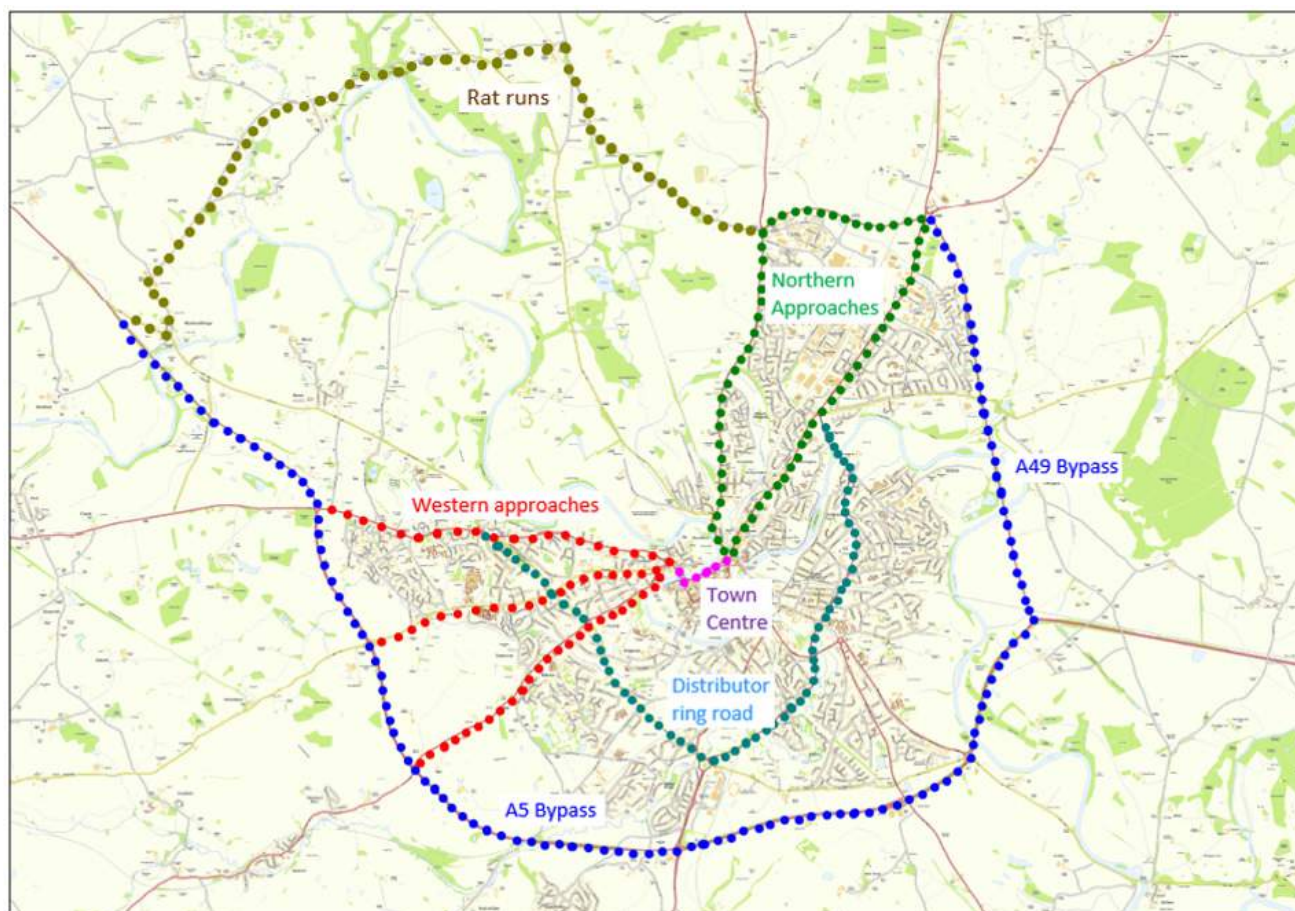


Figure 29 – Area of impact of the NWRR – route corridors used by N-W traffic.

6.4. EXISTING AND PLANNED DEVELOPMENT DRIVING THE SCHEME

6.4.1. As outlined in Chapters 2 and 3 above there is significant development planned, or under construction in Shrewsbury. Key development areas are described in Paragraph 3.2.5 above.

- Shrewsbury Sustainable Urban Extension (West)
- Shrewsbury Sustainable Urban Extension (South)

6.5. SCOPE OF THE TRAVEL MARKET AND KEY ORIGINS AND DESTINATIONS

6.5.1. Scheme options have been tested using the Shrewsbury Traffic Model. As the assessment of options has been undertaken over a considerable time, different versions of the model have been used at different times. The development and use of the current SATURN model, which is used in support of the 2017 Outline Business Case, is described in detail in the modelling reports:

- Data collection report
- Local Model Validation Report (SATURN)
- Forecasting Report (SATURN)

6.5.2. The model study area was defined to capture the impacts of the proposed scheme. It covers the County of Shropshire and surrounding towns, including Welshpool to the west and Telford to the east. The modelled area is illustrated below:

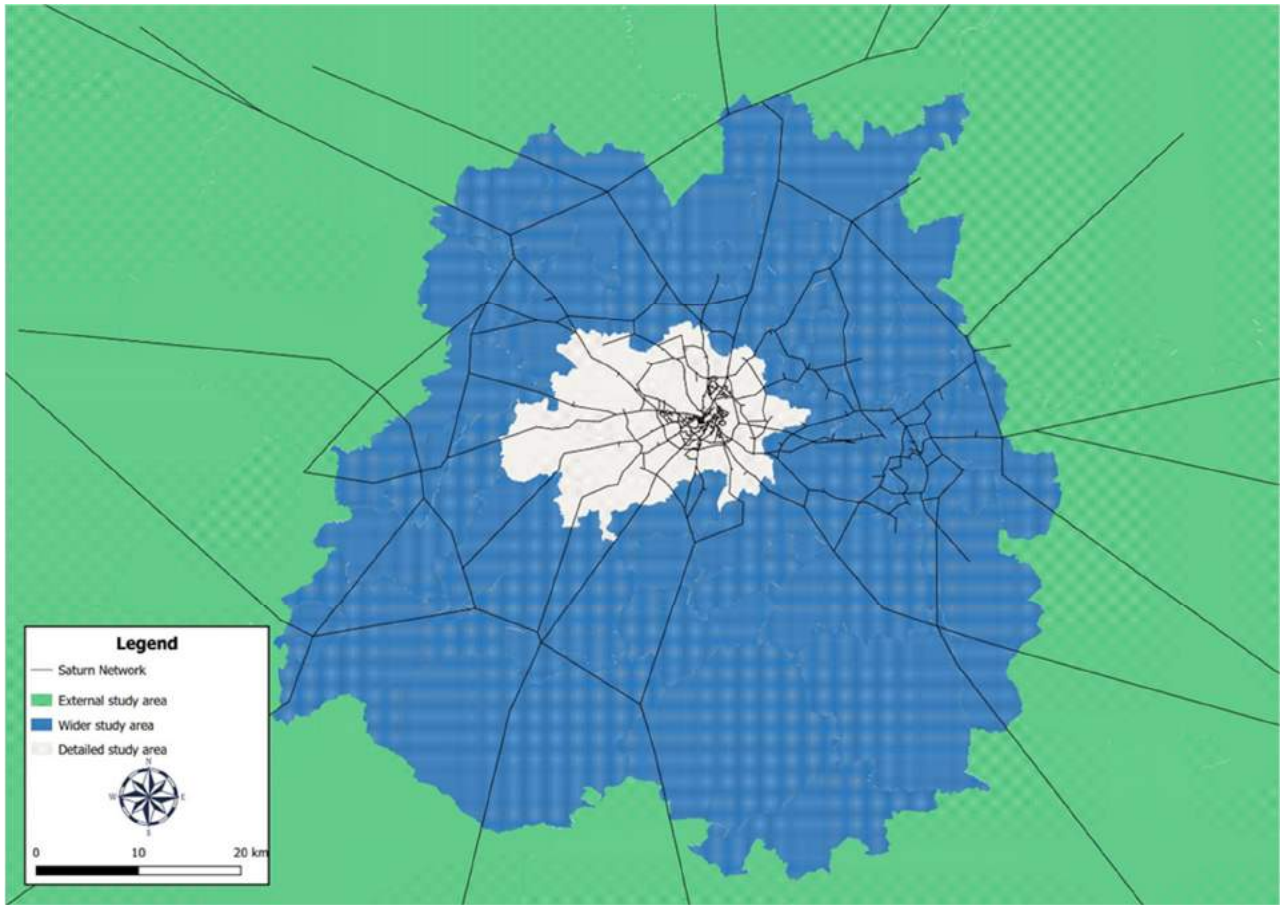


Figure 30 – Model study area

- 6.5.3. The extent of the study area was defined from a consideration of the potential impacts of the proposed scheme, primarily in terms of changes in traffic routings and flows. This was assessed using the previous SATURN traffic model of Shrewsbury as described in the Local Model Validation Report.
- 6.5.4. The scheme was coded into the model and a traffic assignment was carried out and flow changes assessed. This indicated that the majority of the impacts were internal to Shrewsbury i.e. within the outer ring road. It was therefore determined that this area should form the basis for the detailed modelling.
- 6.5.5. The detailed simulation area is illustrated below. It includes all of Shrewsbury with the A5 Felton Roundabout in the North West, Ellesmere Roundabout and the Battlefield Roundabout in the North, A5/ A49 Preston Island Roundabout in the East and A5 corridor in the South.

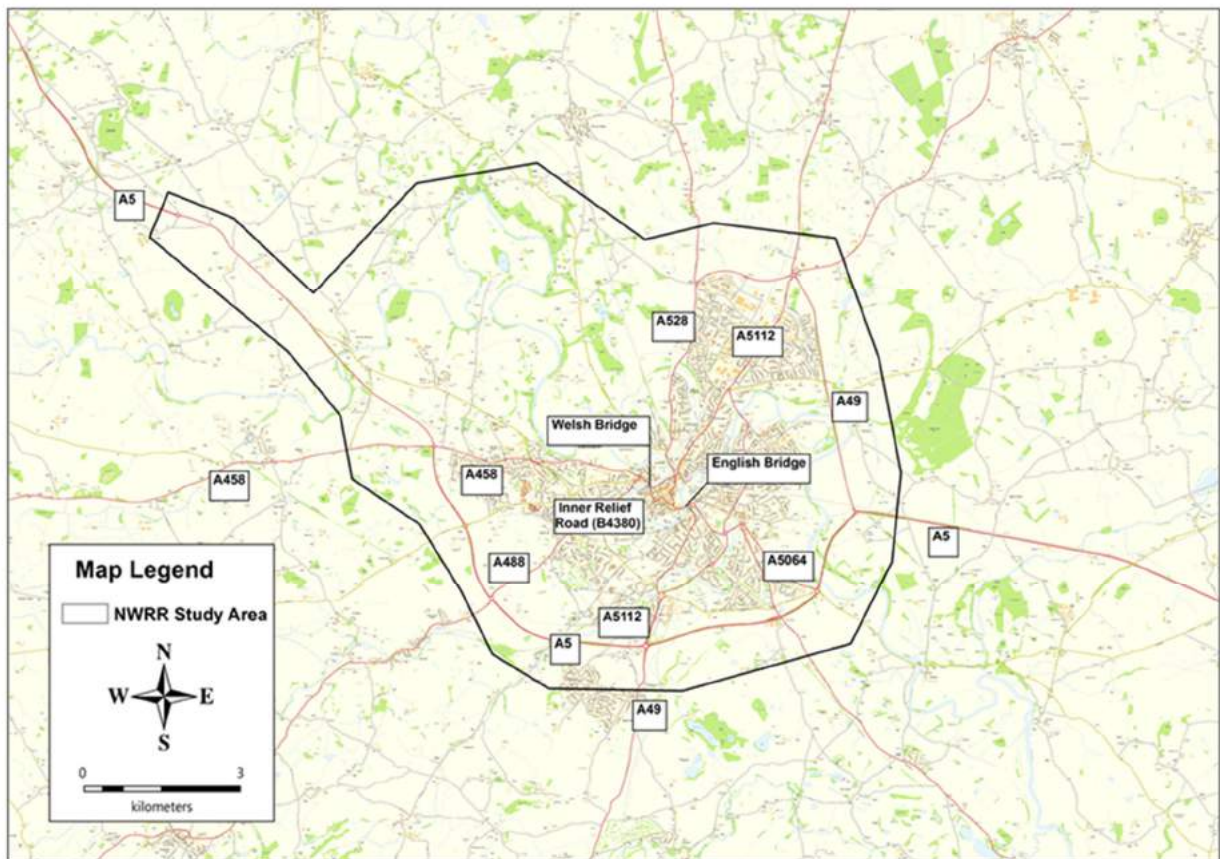


Figure 31 – Detailed study area

7. OPTIONS IDENTIFIED

7.1. INTRODUCTION

7.1.1. This chapter describes the potential options that have been identified for the scheme, including non-car or non-road options, in line with Step 5 of the Transport Appraisal Process, as defined in WebTAG:

“Generate options reflecting a range of modes, approaches and scales of intervention“

7.1.2. The generation and appraisal of options has taken place over a considerable period of time, and according to the standards of the day. This scene-setting chapter introduces the options which have been identified and assessed in each decade since the 1970s. The sifting, and subsequent assessment of options is then described in Chapters 8 and 9, and the preferred option is described in Chapter 10.

7.2. BACKGROUND (1970-1979)

TRAFFIC PROBLEMS AND EARLY SOLUTIONS IDENTIFIED

7.2.1. A review of Shrewsbury’s traffic and transport⁴² in 1971, which looked ahead to 1976, highlighted “severe congestion on the three main approach roads to the town centre” (west, north and east). It did not mention a north-west relief road, but focused instead on the need for new high standard relief roads to the east of the town centre, as illustrated in Figure 32 and listed below:

- **Meole Brace to the Column:** (Hazeldine Way and Pritchard Way)
- **The Column to Telford Way:** (Bage Way)
- **The Column to English Bridge:** (Old Potts Way)

7.2.2. All of these roads have since been completed⁴³. Together with the B4380 (formerly the A5) and Telford Way they provide a partial ring road on the south and east sides of the Shrewsbury.

7.2.3. This partial ring connects major residential, commercial, educational, healthcare and employment areas, and remains critical to the distribution of traffic. However, it does not address the problems which had been identified on the northern and western approaches to the town, and which are far less tractable.

7.2.4. The 1971 review also identified a wide range of traffic management and parking solutions, many of which (such as the closure of Pride Hill) have been implemented.

⁴² Traffic and Transport Report for Shrewsbury, R. W. Gibb, Borough Surveyor, January 1971

⁴³ Hazeldine Way, Pritchard Way and Bage Way were opened in 19##. Old Potts Way was opened in 19##.

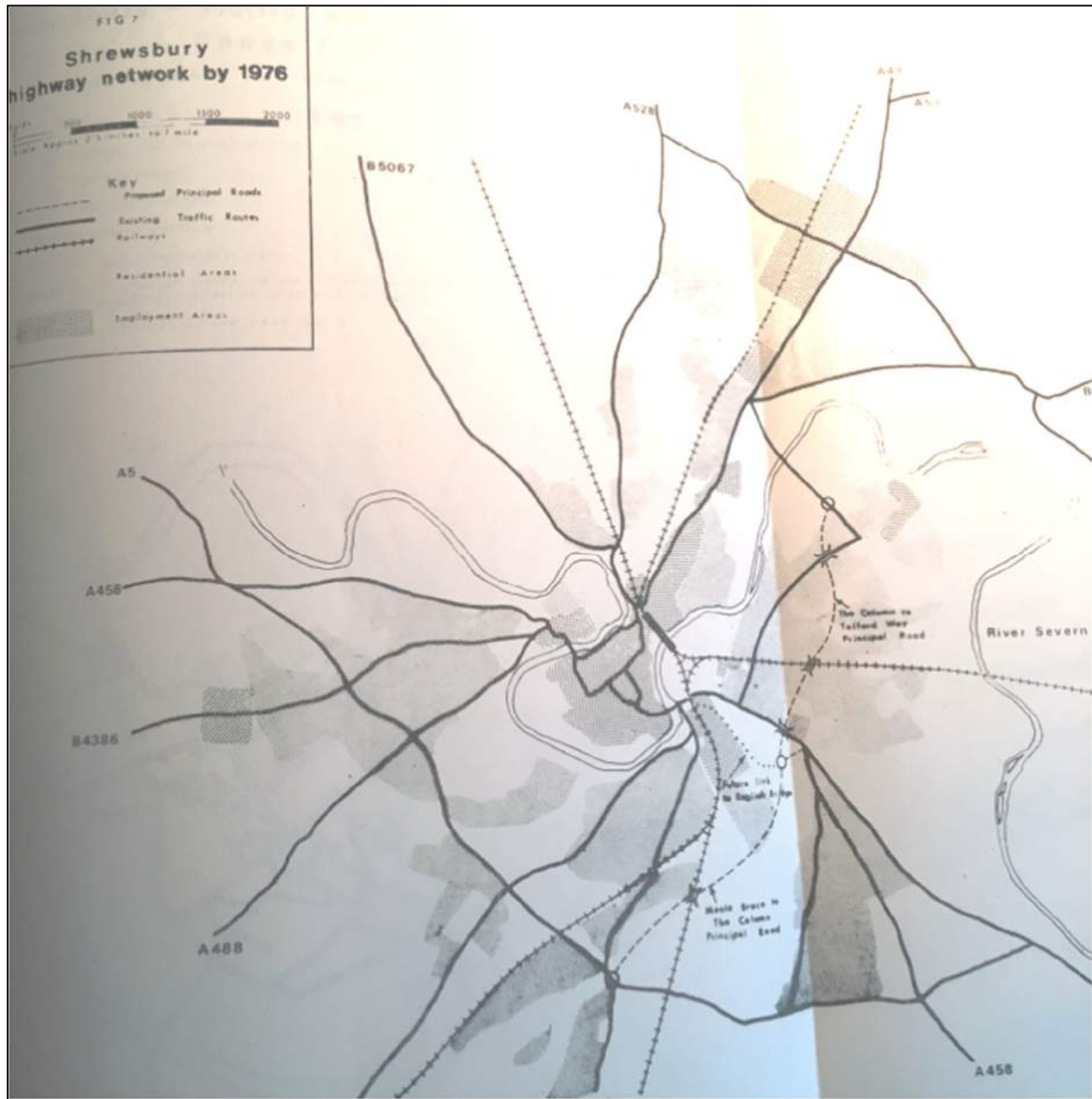


Figure 32 - Shrewsbury's strategic highway network 1976, as envisaged in 1971

7.3. OPTIONS IDENTIFIED (1980 – 1989)

INITIAL OPTIONS FOR A NORTH-WEST RELIEF ROAD

- 7.3.1. By the mid-1980s the idea of a new road link between the northern and western parts of the town was being considered as a possible solution to traffic problems in Shrewsbury. A technical report⁴⁴, published by Shropshire County Council in 1988, identified a number of route options which were evaluated according to

⁴⁴ Shrewsbury North West Relief Road, Technical Appraisal Report, SCC County Surveyor's Department, September 1988

the standards of the day. Public consultations were held to assess support for the scheme, and to help identify possible routes for a north-west relief road (NWRR).

7.3.2. The route options which had been identified by the end of the 1980s are shown in Figure 33 and described below.

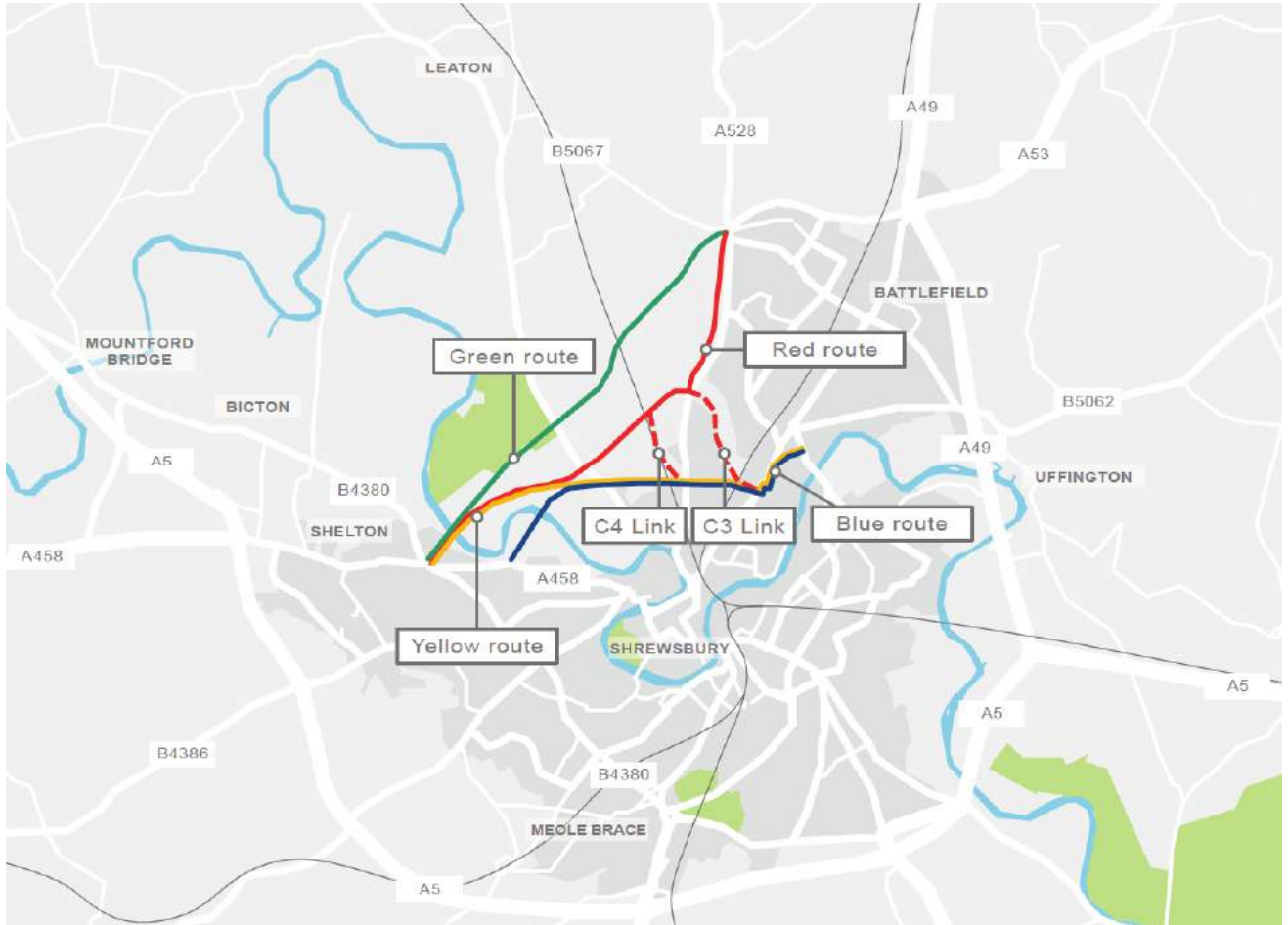


Figure 33 - Route options (1988)

- **Green Route** – a new road between the A5/A458 at Shelton and the A528 Ellesmere Road near Harlescott Lane
- **Red Route** – a new road between the A5/A458 at Shelton and the A528 Ellesmere Road, closer to the town centre, together with an online improvement of A528 Ellesmere Road to Harlescott Lane
- **Red Route + C3** – as above, but with the addition of a link between A528 Ellesmere Road and the (then) A49 Spring Gardens following the line of the old river bed and bridging the Shrewsbury-Crewe railway line.
- **Red Route + C4** – as Red, but with the addition of a link between the NWRR and the (then) A49 Spring Gardens, having a junction with A528 Ellesmere Road, and crossing the Shrewsbury Crewe railway line, on a more southerly alignment
- **Yellow Route** – a new road between the A5/A458 at Shelton and the (then) A49 Spring Gardens, having a junction with A528 Ellesmere Road, and crossing the Shrewsbury Crewe railway line, on a more southerly alignment
- **Blue Route** – as above, but starting from a point on The Mount, east of Shelton.

7.3.3. The 1988 technical report included a cost-benefit analysis of options, using the models available at that time, from which the BCRs in Table 18 have been calculated. Costs, benefits and net present value (NPV) were estimated at 1987 prices, discounted to 1987.

Table 18 - Cost-benefit analysis of options (1988)

	Low growth		High growth		Weighted	
	NPV	BCR	NPV	BCR	NPV	BCR
Red + C3	16,781,000	6.30	24,649,000	8.79	19,928,000	7.30
Red	14,579,000	6.44	20,555,000	8.67	16,969,000	7.33
Yellow	14,907,000	6.43	20,323,000	8.40	17,073,000	7.22
Blue	13,633,000	6.14	20,124,000	8.59	16,229,000	7.12
Green	10,922,000	5.58	15,223,000	7.38	12,642,000	6.30

7.3.4. It was concluded that the “Red + C3” route option was the best of the six road options considered, as it offered the highest net present value (benefits minus costs). Red + C4 was not considered further at this stage, as it would have adverse impacts on proposed housing development. The “blue” and “yellow” inner routes were considered the least acceptable because of their adverse impact on local roads and the built environment.

7.4. OPTIONS IDENTIFIED (1990 – 1999)

DEVELOPING OPTIONS FOR A NORTH-WEST RELIEF ROAD, 1991.

7.4.1. Following public consultation and further investigations between 1989 and 1992, the County Council decided to undertake further investigation of two options, which were detailed in its TPP submission for 1992/93⁴⁵. These are shown in Figure 34.

⁴⁵ Shropshire Transport Policies and Programme (TPP) for 1992/93, SCC, July 1991

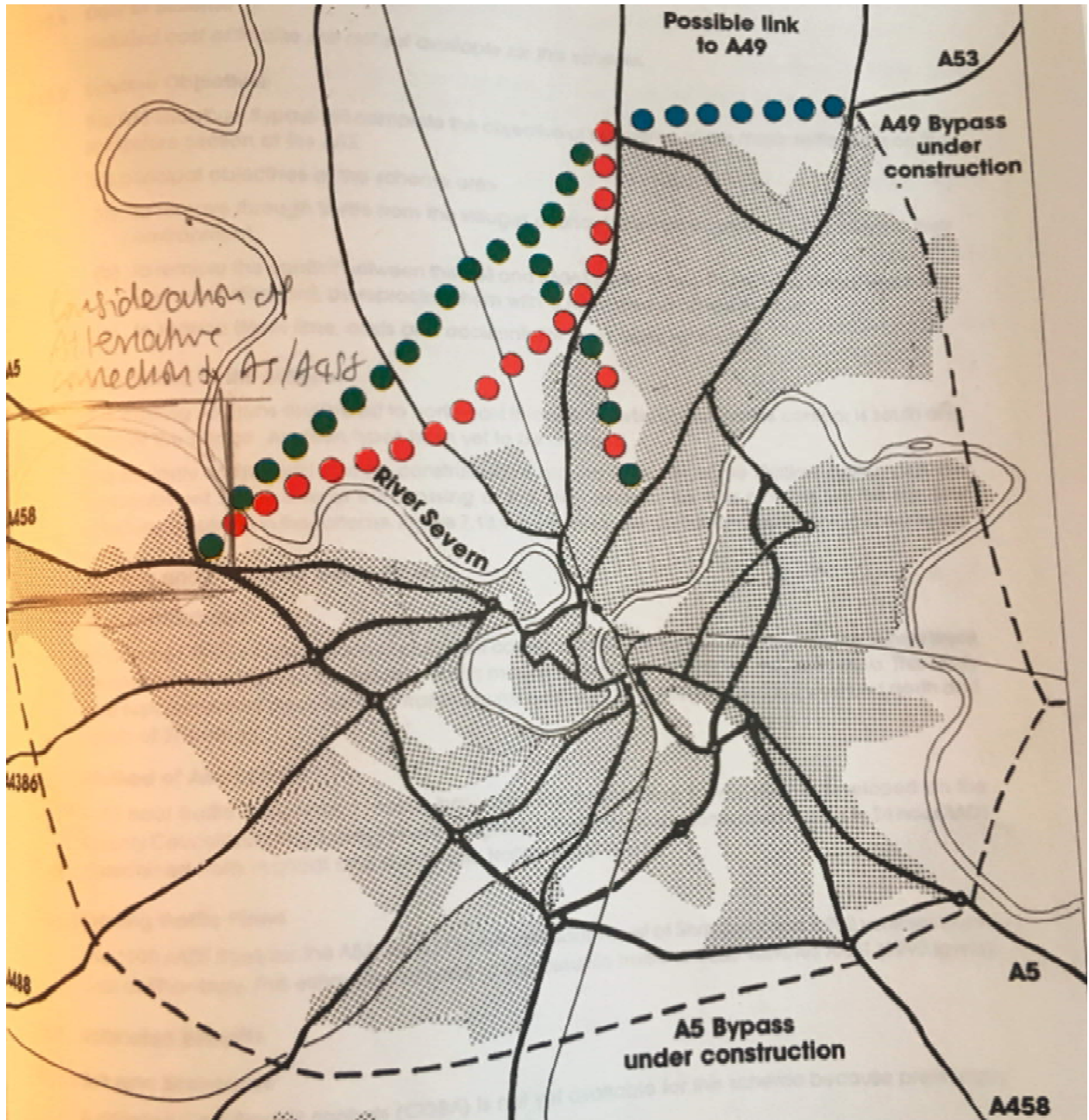


Figure 34 - NWRR route options identified in 1991

7.4.2. The route options identified in 1991 were:

- **Red Route + C3** – a new road between the A5/A458 at Shelton and the A528 Ellesmere Road, with an online improvement of A528 Ellesmere Road to Harlescott Lane, and a link between A528 Ellesmere Road and Spring Gardens following the line of the old river bed and bridging the Shrewsbury-Crewe railway line.
- **Green Route + C3** – a new road between the A5/A458 at Shelton and the A528 Ellesmere Road near Harlescott Lane, together with a link to Spring Gardens, crossing Ellesmere Road and following the line of the old river bed and bridging the Shrewsbury-Crewe railway line.

7.4.3. Whilst “Red + C3” remained the preferred option, the introduction of a “Green + C3” variant reflected the views of some consultees that an “outer” route would be more acceptable. The inclusion of a connection to Ellesmere Road and a link to Spring Gardens addressed some of the deficiencies of the original “Green”

route. However, a further feasibility study and economic assessment confirmed “Red + C3” as the preferred option for inclusion in the County Council’s 1992 TPP submission.

- 7.4.4. In 1992, new bypasses for the A5 and A49 trunk roads were opened to the south and west of Shrewsbury, connecting the town to the M54 motorway (which had been completed in 1985). This removed long-distance through traffic from the “old” A5/A49 route (the partial ring road described above), enabling it to function better as a local distributor road. Despite these benefits, the trunk road bypasses did not address long-standing problems on the northern and western approaches to the town.
- 7.4.5. In order to maximise the benefits of a NWRR, by connecting it to the new trunk road bypasses, additional options were identified:
- **Battlefield Link Road** – a direct connection between the northern end of the proposed NWRR at Ellesmere Road and the new A49 bypass, at the A49/A53 junction.
 - **Alternative junction at Shelton** – an alternative location for the junction between the western end of the proposed NWRR and the A458.
- 7.4.6. Although originally conceived as an extension to a NWRR, the **Battlefield Link Road (A5124)** was actually completed in 1998. It provides access to a major employment area - the Battlefield Enterprise Park - and allows traffic to avoid the level crossing on Harlescott Lane.
- 7.4.7. An investigation of alternative junction locations at the western end of the NWRR in 1996 confirmed the plan for a tie-in at The Mount (A5/A458)⁴⁶. This has since been superseded by the proposal for an Oxon Link Road (Paragraphs 7.6.7 to 7.6.12).

THE NORTH-WEST RELIEF ROAD AS PART OF AN INTEGRATED TRANSPORT PLAN, 1994 - 2000

- 7.4.8. From an early stage in its development, the need for a north-west relief road has always been considered in the context of an integrated transport plan involving all modes of transport, and all parts of the town.
- 7.4.9. The Integrated Transport Plan for Shrewsbury⁴⁷ was set out as a “package proposal” in the County Council’s TPPs from 1994/1995 until 1999/2000. The overall aims of the package were:
- “To improve the accessibility of Shrewsbury for people ... in ways that do not increase dependence on the private car, and
 - To make Shrewsbury as safe and attractive as possible ... in ways which respect and enhance its historic character.”
- 7.4.10. The Integrated Transport Plan included:
- Shrewsbury North West Relief Road
 - Ellesmere Road – Spring Gardens Link
 - Battlefield Link Road
 - St Julian’s Relief Road

⁴⁶ Shrewsbury NWRR – Review of alternative routes from Shelton to Berwick Road. Report to Environment, Planning and Transport Committee (SCC, 24 October 1996).

⁴⁷ Shropshire Transport Policies and Programme (TPP) for 1994/95, Integrated Transport Plan for Shrewsbury (Package Proposal), SCC July 1993, and all TPPs until 1999/2000

- Development of a town-wide cycle network
- Development of a comprehensive Park and Ride system
- Introduction of on-street parking charges and a balanced parking strategy
- Improvements for pedestrians, including comprehensive public realm enhancements in the historic core zone
- Improved facilities and information for bus passengers
- School safety schemes and workplace travel plans

7.4.11. All of these improvements have now been delivered to a significant degree, except for the North-West Relief Road and associated link to Spring Gardens.

7.4.12. The NWRR has never been seen as an alternative to other initiatives to manage demand and improve accessibility and the environment, but always as a longer term component of an integrated transport strategy. At the same time, it seemed clear that there were some problems which could not be fully resolved without building a new road between the northern and western parts of the town.

7.4.13. From the 1990s onwards, the appraisal of the NWRR has had therefore had two complementary aspects:

- Appraisal of various possible route options for a NWRR
- Appraisal of a range of complementary measures or alternatives to constructing a new road.

7.4.14. In successive stages of appraisal, the various options and alternatives have been tested objectively, by analysis of their likely impact on traffic and the environment, and subjectively, by means of extensive public and stakeholder consultation.

CARRIAGEWAY STANDARD OPTIONS, REVIEWED IN 1994 AND 1997

7.4.15. Although originally conceived as a single carriageway road, the high levels of traffic growth envisaged in national traffic forecasts led to the consideration of a dual carriageway option for the main part of the NWRR. A technical report⁴⁸ in 1994 compared forecast traffic flows with the then current DoT Technical Directive TD 20/85 and concluded that a dual carriageway would be more appropriate for the NWRR, with a 10m single carriageway for the Battlefield Link and a 7.3m single carriageway for the “C3” link.

7.4.16. This option was reviewed in 1997 in the light of concerns about the affordability and appropriateness of a dual carriageway solution.

Table 19 - Estimated costs of dual and wide single carriageway options at 1996 prices (January 1997)

Option	Dual carriageway	Wide single carriageway
Price base	1996 Q2	1996 Q2
Works	£35,714,751	£26,912,600
Land	£5,620,000	£5,440,000
Total cost	£41,334,751	£32,352,600

⁴⁸ Shrewsbury NWRR New Traffic Assignments. SCC County Surveyor’s Department internal report, 6 January 1994.

- 7.4.17. An economic assessment⁴⁹ using the models available at the time indicated that a 10m wide single carriageway would have a better benefit-cost ratio than a dual carriageway. It would also be significantly cheaper and require less land for construction. The scheme was taken forward as a wide single carriageway.

Table 20 - Economic analysis of dual and wide single carriageway options (January 1997)

Option	Dual carriageway		Wide single carriageway	
	Low	High	Low	High
Growth				
PVC	20,236	20,236	15,717	15,717
PVB	38,521	95,866	35,827	89,002
BCR	1.90	4.74	2.28	6.66
Weighted BCR	3.04		3.63	

ELLESMERE ROAD TO SPRING GARDENS (C3 LINK) OPTION, REVIEWED IN 1997

- 7.4.18. The western section of the proposed link between Ellesmere Road and Spring Gardens was constructed as a 7.3m single carriageway perimeter road (now known as Hubert Way) to serve a new housing development, but it does not extend all the way to Ellesmere Road. The remaining section included a proposed bridge under the Shrewsbury-Crewe railway line, and would have passed immediately south of the Ditherington Flax Mill, a Grade 1 listed building known locally as “The Maltings”.

⁴⁹ Shrewsbury North West Relief Road, Wide Single Carriageway Traffic Assignments and COBA analysis (Internal technical report, Shropshire County Council, 8 January 1997).



Figure 35 - Ellesmere Road - Spring Gardens Link (C3)

7.4.19. Together with the NWRR, an Ellesmere Road-Spring Gardens link would provide Shrewsbury with a complete “inner ring” road. However it would also increase traffic pressure on Spring Gardens (between the new link and Telford Way) which is built-up and has limited scope for improvement. Even with Hubert Way in place, the cost of completing the Ellesmere Road-Spring Gardens link would have been high due to the need for a new railway bridge and accommodation works at the Flax Mill.

Table 21 - Estimated cost of NWRR and C3 Link at 1996 prices (January 1997)

Option	NWRR	NWRR + C3 link	C3 link (incremental)
Price base	1996 Q2	1996 (Q2)	1996 (Q2)
Works	18,264,400	£26,912,600	8,648,200
Land	3,905,000	£5,440,000	1,535,000
Total cost	22,169,400	£32,352,600	10,183,200

7.4.20. A cost-benefit analysis in January 1997, using the traffic model available at that time, showed that including the “C3” link would reduce the overall benefit-cost ratio⁵⁰.

Table 22 - Cost-benefit analysis of C3 link (January 1997)

Option	NWRR without C3		NWRR with C3 link		C3 link (incremental)	
	Low	High	Low	High	Low	High
PVC	10,749	10,749	15,717	15,717	4,968	4,968
PVB	30,401	83,861	35,827	89,002	5,426	5,141
BCR	2.83	7.80	2.28	6.66	1.09	1.03
Weighted BCR	4.82		3.63		1.07	

7.4.21. From 1997 onwards, therefore, the “C3” link was dropped as a part of the proposed NWRR scheme. It was reasoned that a NWRR without this link would be more achievable and cost-effective due to:

- Significant cost savings
- Increased benefit-cost ratio
- Avoidance of adverse impacts on Grade 1 listed Flax Mill
- Avoidance of adverse traffic impacts on Spring Gardens

7.4.22. In February 1997, a report to the Council’s Environment Planning and Transport sub-committee recommended that the NWRR should be developed as a single carriageway road, without the Ellesmere Road-Spring Gardens link. The County Council’s TPP⁵¹ confirmed that the NWRR “should not include a link between Ellesmere Road and Spring Gardens, as this would be difficult to justify in economic terms”, and this was later reflected in the County Structure Plan⁵². Without the C3 link it would not be possible to complete the inner ring road, although a link between a NWRR and the A49 would still be provided by the A5124 Battlefield Link Road, completed in 1998.

7.5. OPTIONS IDENTIFIED (2000- 2009)

PROTECTED ROUTE (2001)

7.5.1. A corridor for a north-west relief road was identified and protected in the Shrewsbury and Atcham Local Plan, which was adopted in 2001. It was based on the “Red route”, (Paragraph 7.4 above) but now excluding the “C3” link to Spring Gardens.

⁵⁰ Shrewsbury North West Relief Road, Wide Single Carriageway Traffic Assignments and COBA analysis (Internal technical report, Shropshire County Council, 8 January 1997).

⁵¹ Shropshire Transport Policies and Programme (TPP) for 1998/99, Integrated Transport Plan for Shrewsbury (Package Proposal), SCC July 1997

⁵² Major Highway Schemes in the New Structure Plan, Report to Environment, Planning and Transportation Committee (SCC 6 February 1998)

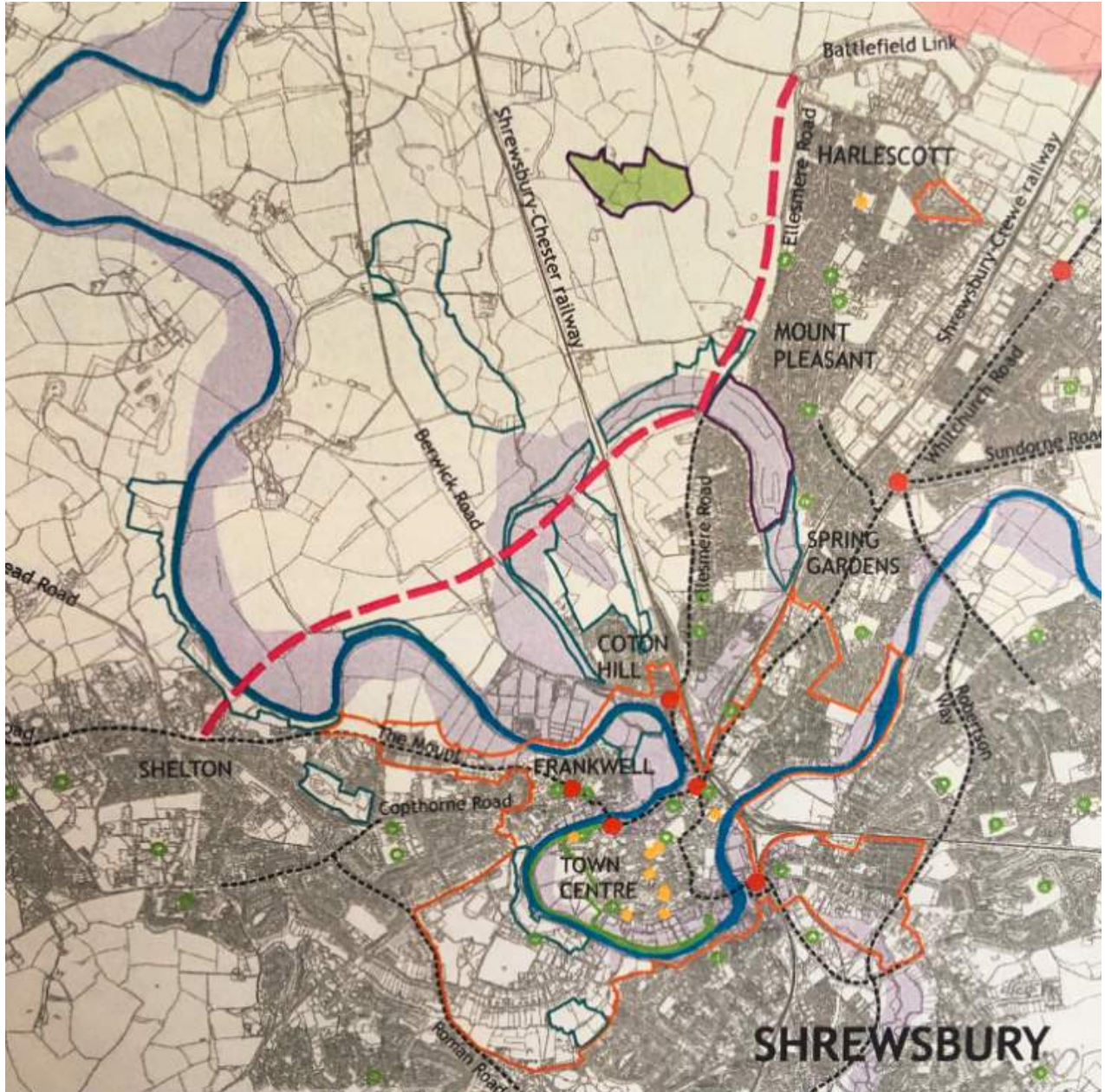


Figure 36 - NWRR corridor protected in 2001 Local Plan

7.5.2. In its first Local Transport Plan (LTP1) the County Council made a commitment to review the NWRR scheme during the plan period, 2000/01 – 2005/06.

REVIEW OF OPTIONS (2002)

7.5.3. In 2002 a review was undertaken of the engineering, transport and environmental aspects of a north-west relief road. This took as its starting point the protected road corridor identified in the 2001 Local Plan (Paragraph 7.5.1), together with the other routes previously considered (Paragraphs 7.3.1 to 7.4.7).

7.5.4. The review also considered a range of alternative [or complementary] “non-car” options and opportunities, as listed below:

- Non-car alternatives to a NWRR

- Development of a light rail or guided bus transit system
- Improvements to the existing bus network
- Improvements in the existing passenger rail system
- Investment in cycling infrastructure
- Investment in pedestrian infrastructure
- HGV improvements, including rail freight
- Demand management measures, including car park pricing strategy, traffic management and travel plans for schools and businesses
- A package of measures to encourage non-car use including investment in bus, rail, cycling and walking facilities
- Non-car opportunities afforded by a NWRR
 - Road space re-allocation
 - Improved access to rail station
 - Bus priority measures
 - Enhanced pedestrian and cycle facilities
 - Traffic management
 - Travel planning / demand management (including car park strategy)
 - Freight strategy
 - Town centre enhancements

7.5.5. The assessment of these options is summarised in Chapter 8.

PUBLIC AND STAKEHOLDER CONSULTATION 2003.

As part of the above review, a wide ranging public consultation exercise was undertaken in 2003⁵³. The outcomes of this consultation are summarised in Chapter 8.

OPTION DEVELOPMENT 2004 – 2005

7.5.6. Following on from the initial appraisal and consultation, six route options were developed. These were further refined after two workshops with local landowners and stakeholders in February 2004. More detailed engineering layouts were produced for each option, and a Stage 2 Environmental Assessment was undertaken and published in 2005.

7.5.7. The six routes are shown in Figure 37 and are described briefly below:

- **Blue Route** – connecting The Mount (near Richmond Drive) to Ellesmere Road (south of Hubert Way). Crosses the River Severn west of the West Midlands Showground. Length 2.2 km.
- **Red Route (Option 1)** – connecting the A5 Shrewsbury Bypass at the Churncote Roundabout to the Holyhead Road (north of the Shelton Water Tower) and then to the Battlefield Link Road. Crosses the River

⁵³ Shrewsbury NWRR Public Consultation Report, Mouchel for SCC July 2003

Severn at Shelton Rough and follows Laundry Terrace between the river and Berwick Road. Follows an alignment to the south of Cross Hill between the Berwick Road and Battlefield Link Road. Length 6.5 km.

- **Red Route (Option 2)** – connecting Shelton Road at its junction with The Mount. Crosses the River Severn at Shelton Rough. Length 4.7 km.
- **Green Route** – connecting the A5 Shrewsbury Bypass at the Churncote Roundabout to the Holyhead Road (north of the Shelton Water Tower). Crosses the River Severn at Shelton Rough. Follows an alignment to the north of Cross Hill between the Berwick Road and the Battlefield Link Road. Length 6.3 km.
- **Black Route** – connecting the A5 Shrewsbury Bypass at the Churncote Roundabout to the Holyhead Road (north of the Shelton Water Tower). Crosses the River Severn at Shelton Rough and then runs parallel to Laundry Terrace between the river and Berwick Road and links with Battlefield Link Road. Length 6.4 km.
- **Orange Route** – similar to Red route (option 1), but with an additional connection to Ellesmere Road, north of Hubert Way. Length 6.6 km.

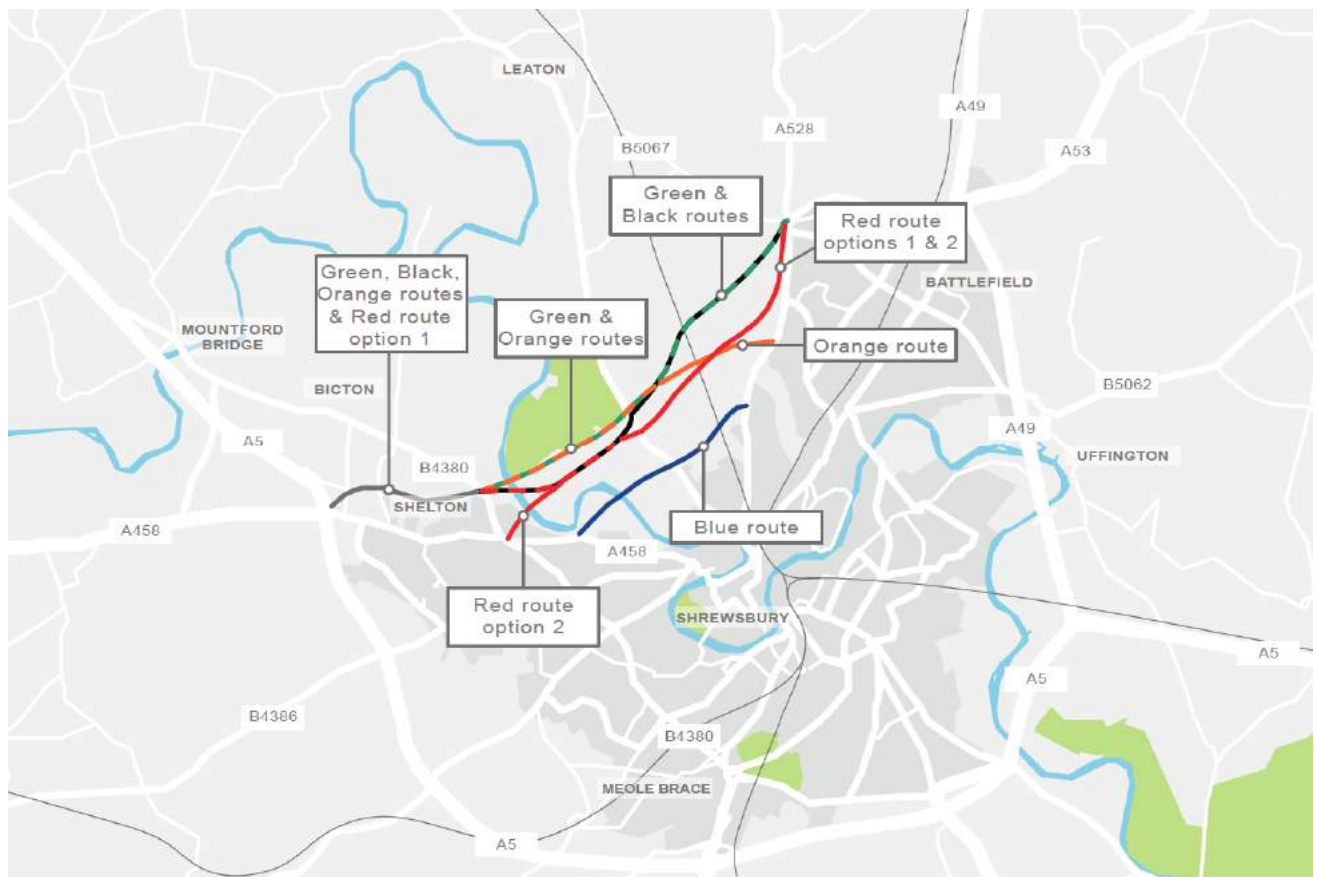


Figure 37 - NWRR route options assessed in 2004

7.5.8. At the same time, further investigation was undertaken of possible alternatives to building a new road. Whereas the earlier work was essentially qualitative, this further assessment made use of an updated traffic model and other information to allow a more quantitative assessment of alternatives in the following categories:

- Walking
- Cycling
- Public transport – light rail or guided bus

- Public transport – rail
- Public transport – bus
- Public transport – park and ride
- Freight solutions
- Traffic management
- Demand management

7.5.9. The results of the technical assessment of the six route options are set out in detail in the Route Study Report (April 2005). The results of the assessment of alternative strategies are set out in the Non-road Options Report (2005). Both are summarised in Chapter 9.

FURTHER PUBLIC AND STAKEHOLDER CONSULTATION (2005)

7.5.10. A further round of consultation was undertaken in May 2005. Its aims were:

- To update people on the assessment work undertaken to date, and to achieve a wide public involvement
- To set the NWRR in the context of integrated transport issues
- To determine the level of support for, or opposition to, the possible route options and non-road options.

7.5.11. The results are set out in the 2005 Public Consultation Report⁵⁴ and summarised in Chapter 9.

PREFERRED ROUTE (2007)

7.5.12. Based on the technical and environmental assessments, and the results of public and stakeholder consultation, a new “preferred route” was agreed by Shropshire Council in January 2007⁵⁵, subject to minor modifications in December 2007⁵⁶. This is shown in Figure 38.

⁵⁴ Shrewsbury NWRR Public Consultation Report 2005 (Mouchel for SCC, October 2005)

⁵⁵ Shrewsbury NWRR Preferred Route Report, Mouchel, January 2007

⁵⁶ Shropshire Council, Council Report 14 December 2007



Figure 38 - NWRR Preferred route approved by SCC December 2007

OPTIONS IDENTIFIED AS PART OF AN INNOVATIVE TRANSPORT STRATEGY (2006 - 2007)

- 7.5.13. Shropshire was one of ten local authorities which took part in the Government's "Transport Innovation Fund" (TIF) initiative, designed to encourage development of smarter and more innovative transport strategies which would:
- Tackle congestion
 - Improve public transport
 - Introduce road pricing
- 7.5.14. The County Council developed and tested a package of innovative measures which included:
- A North West Relief Road
 - A "first class public transport system" with new buses, improved services and new passenger facilities
 - Flexible road pricing (tolling on town centre approaches and, as an option, on the NWRR)
 - Environmental and other improvements, especially in the historic town centre
- 7.5.15. Each component was, on its own, considered to be either difficult to achieve, expensive or controversial (and some were all of these). The TIF project sought to demonstrate that together they could form a virtuous circle. In simple terms, road pricing would generate the income needed to support improved public transport, encouraging mode change and reducing congestion. The NWRR would remove long distance traffic from the town centre, further reducing congestion and allowing improvements to be made for buses, pedestrians and cyclists.

- 7.5.16. Although none of the TIF projects, including the one developed by Shropshire, came to fruition, the exercise is significant in that it enabled the NWRR to be evaluated both against a package of radical alternative options, and as part of such a package.
- 7.5.17. Details of the measures considered and the results of the analysis are set out in the Transport Innovation Fund Study Final Report (2007) and summarised in Chapter 9.

NWRR AS PART OF A FLOOD DEFENCE SCHEME FOR SHREWSBURY

- 7.5.18. The possibility of combining the construction of a NWRR with the delivery of a large scale flood defence scheme was considered by the Council, working closely with the Environment Agency. A combined scheme was developed in outline, but was found to offer no financial advantage over separate relief road and flood defence projects⁵⁷.

7.6. OPTIONS IDENTIFIED (FROM 2010)

- 7.6.1. No new options for the alignment of the NWRR have been identified since the preferred route was adopted in 2007. However there have been changes to the context for future appraisal of the NWRR as a result of planned development and two new transport schemes approved as part of the Marches LEP Growth Deal:
- Shrewsbury Integrated Transport Package (ITP)
 - Oxon Link Road
- 7.6.2. The implications of these for the NWRR are discussed briefly below.

SHREWSBURY INTEGRATED TRANSPORT PACKAGE (ITP) (2015)

- 7.6.3. Following approval of an Outline Business Case in 2015, Shropshire Council is currently delivering a programme of schemes to reduce congestion on Shrewsbury's distributor ring road, on the main routes into the town centre, and within the town centre, and to improve the mode share for sustainable transport modes.
- 7.6.4. The improvements are associated with delivery of the Shrewsbury South Sustainable Urban Extension (SUE). The package measures are illustrated in Figure 39 and summarised below:
- **Improvements to key junctions** at Reabrook Roundabout, Meole Brace Roundabout, English Bridge Gyrotory and Coleham Head
 - **Further phases of the SCOOT network** to improve traffic sign operation and manage traffic flow on arterial routes. This includes variable message signs, to re-distribute town centre through-traffic onto the distributor ring road or, towards car parks and Park and Ride sites
 - **Traffic management**, including new pedestrian crossings and more shared space in the town centre
 - **Public realm enhancements** and improvements to the pedestrian environment in the town centre, including Pride Hill, The Square and Mardol
 - **Improved pedestrian and cycle links** to enhance the accessibility of the town centre for active and sustainable modes of transport
 - **Improved pedestrian wayfinding** in and around the 'river loop' to create a more accessible and connected town centre.

⁵⁷ Shropshire Council Cabinet Report, 18 November 2009

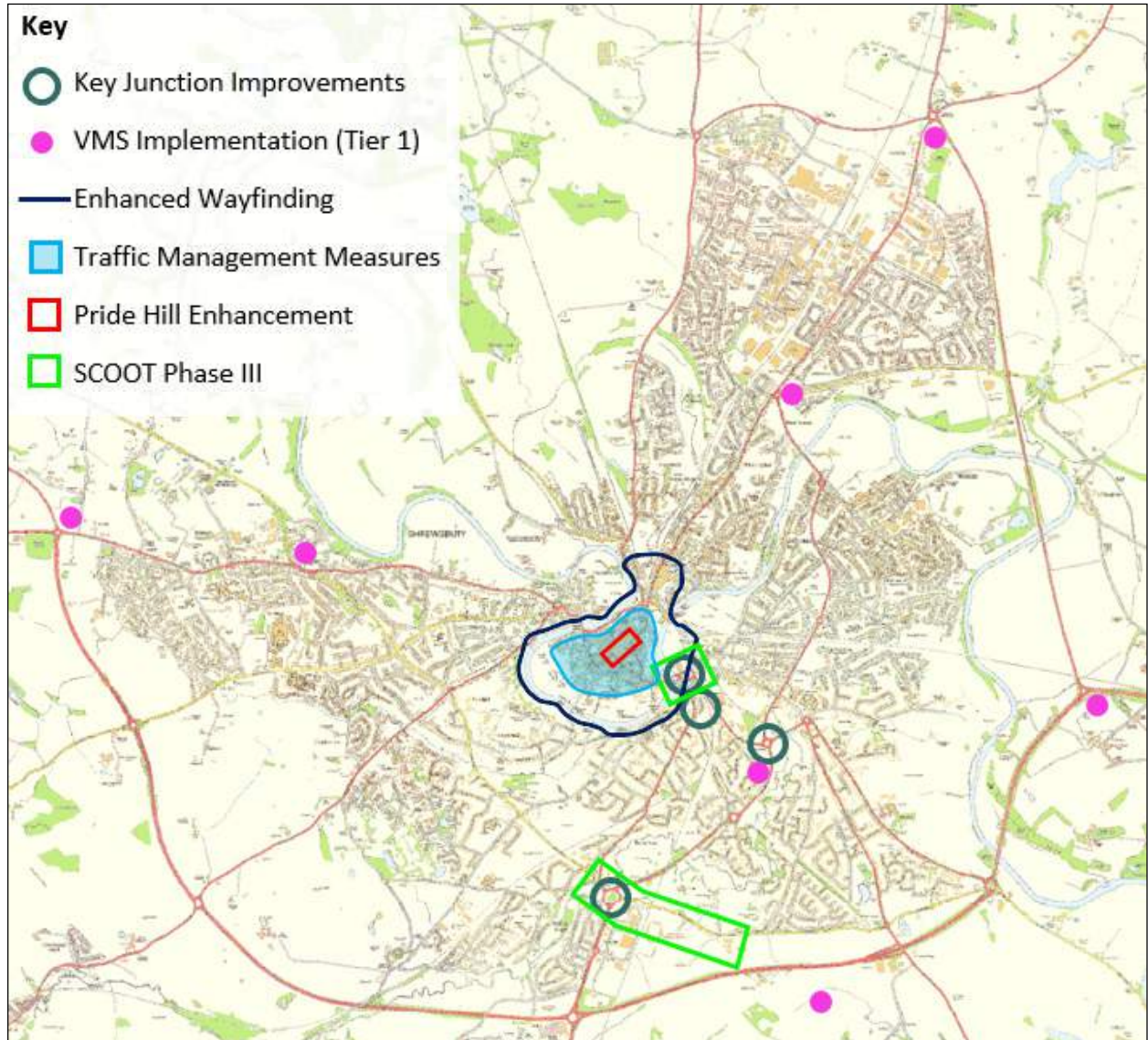


Figure 39 - Integrated Transport Plan proposals (2015)

- 7.6.5. The ITP does not include, or depend on, a north-west relief road, but is intended to address more immediate issues associated with the growth of employment and housing in Shrewsbury. Nor does it directly address the long-standing problems in the north-west sector of the town.
- 7.6.6. The ITP and the SUE (south) will become part of the “do minimum” scenario against which the NWRR will be appraised in future.

OXON LINK ROAD (OLR)

- 7.6.7. The preferred alignment for the NWRR, adopted in 2007, included a link from the A5/A458 Churncote Roundabout on the Shrewsbury Bypass to the B4380 Holyhead Road. This would allow NWRR traffic to avoid the A458 Welshpool Road which is considered unsuitable for additional traffic.
- 7.6.8. An Oxon Link Road was included as a separate scheme in the Marches Strategic Economic Plan⁵⁸, and has been awarded funding in the Growth Deal⁵⁹. It is programmed to be delivered by 2021, and will open up 12 ha of employment land, and facilitate the development of 750 new homes, as part of the Shrewsbury West Sustainable Urban Extension. The proposed scheme generally follows the line of the NWRR approved route (2007). However, as part of the Outline Business Case for the OLR, the alignment and junction strategy of this section has been developed in more detail.
- 7.6.9. The current scheme is illustrated in Figure 40.

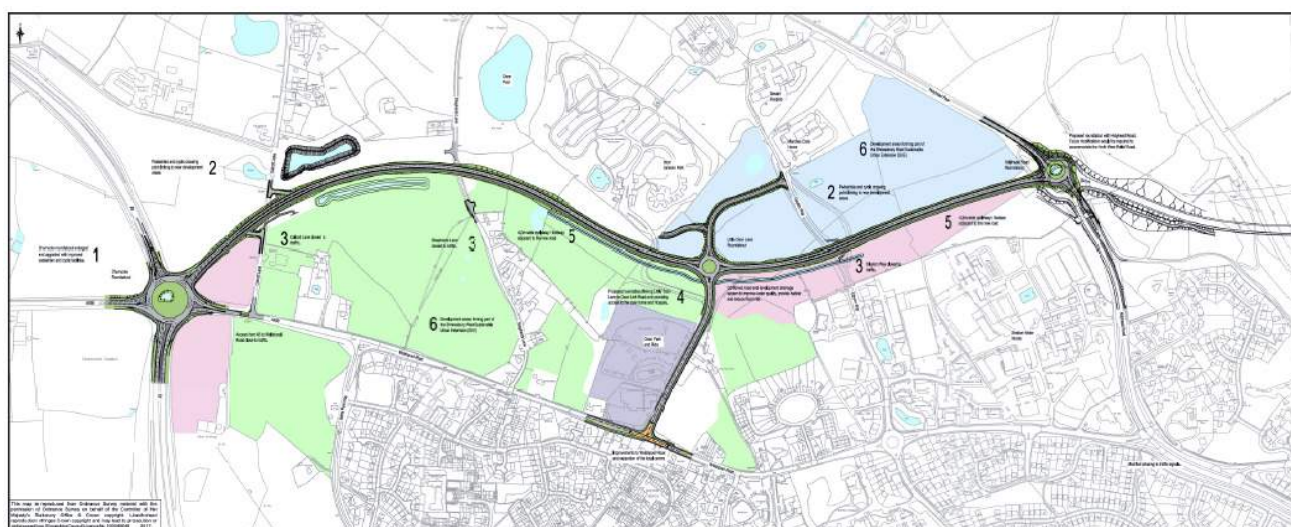


Figure 40 - Proposed Oxon Link Road

- 7.6.10. The anticipated provision of the Oxon Link Road does not in any way reduce the need for a NWRR, as it does not address the long-standing problems in the north-west sector of the town. Rather – as with the Battlefield Link Road in the north – it means that another section of the NWRR will have been provided early.
- 7.6.11. The OLR and the SUE (west) will become part of the “do minimum” scenario against which the NWRR will be appraised in future.
- 7.6.12. With the Battlefield Link Road now in place, and the Oxon Link Road due for completion by 2021, the north-west link will be the last remaining gap in the strategic road network that was first envisaged more than 30 years ago.

⁵⁸ Accelerating Growth through Opportunity – the Marches Strategic Economic Plan. Marches Local Enterprise Partnership, 31 March 2014

⁵⁹ The Marches Growth Deal, July 2014.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/398881/36_The_Marches_Growth_Deal.pdf

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/399433/The_Marches_Factsheet.pdf

8. INITIAL SIFT OF OPTIONS

8.1. INTRODUCTION

8.1.1. This chapter describes in more detail the initial appraisal of options which took place between 2000 and 2003. As this process was, for the most part, qualitative and led to the discarding of some less feasible solutions, it generally fulfils Step 6 of the Transport Appraisal Process, as defined in WebTAG:

“Undertake initial sift. Discard options that would fail to address key objectives or are unlikely to pass key viability and acceptability criteria”

8.1.2. The main purpose of the initial sift was therefore:

- To determine whether there were any viable alternatives to constructing a north-west relief road
- To identify which routes would be most acceptable to local people and stakeholders

8.1.3. The initial appraisal culminated in a comprehensive public and stakeholder consultation in 2003, followed by further consultation with landowners in 2004.

8.1.4. The more detailed development and appraisal of options from 2004 onwards is described in Chapter 9

8.2. OPTIONS CONSIDERED

8.2.1. The following options, both road-based and non-car, were considered in the initial sift:

ROAD-BASED OPTIONS

- A new road within the corridor protected in the 2001 SABC Local Plan (Figure 36)
- All route options previously considered (Figure 33)
- Additional route options identified by consultees

NON CAR OPTIONS – ALTERNATIVES TO A NWRR

- Development of a light rail or guided bus transit system
- Improvements to the existing bus network
- Improvements in the existing passenger rail system
- Investment in cycling infrastructure
- Investment in pedestrian infrastructure
- HGV improvements, including rail freight
- Demand management measures, including car park pricing strategy, traffic management and travel plans for schools and businesses
- A package of measures to encourage non-car use including investment in bus, rail, cycling and walking facilities

NON-CAR OPTIONS – OPPORTUNITIES AFFORDED BY A NWRR

- Road space re-allocation

- Improved access to rail station
- Bus priority measures
- Enhanced pedestrian and cycle facilities
- Traffic management
- Travel planning / demand management (including car park strategy)
- Freight strategy
- Town centre enhancements

8.3. QUALITATIVE ASSESSMENT OF NON-CAR OPTIONS

8.3.1. The initial appraisal of non-car options is described in the 2002 Non-car Options Report⁶⁰, and summarised in Table 23 and Table 24.

Table 23 - Initial appraisal of non-car options (2002) – alternatives to a NWRR

Measure	Assessment	Conclusion
Development of a light rail transit or guided bus system	Would be subject to significant constraints including practical, political, environmental and financial concerns.	The traffic reduction effects of a NWRR scheme are unlikely to be matched even on the basis of a significantly higher level of investment.
Improvements to the existing bus network	Could benefit local, cross-town and long distance travel	It is likely that a package approach combining bus infrastructure and service upgrading could increase patronage and bring about a modest level of modal transfer from the private car.
Improvements in the existing passenger rail system	Could potentially benefit long distance journeys into Shrewsbury and (to a lesser extent) through travel, but would be of limited relevance for local trips.	Rail improvements could potentially lead to some increase in patronage, however the potential for modal transfer is likely to be more limited than for bus investment and there are concerns regarding the deliverability of rail infrastructure improvements under present circumstances
Investment in cycling infrastructure	Likely to benefit local and cross-town journeys. A significant level of enhancement could be provided for an equivalent investment to the NWRR.	Would be of limited benefit for long distance and through trips.
Investment in pedestrian infrastructure	As a result of the relatively short range of walking trips, this is likely to be of principal benefit to local journeys only.	The development of pedestrian facilities could however play a significant role in enhancing accessibility by other non-car modes.

⁶⁰ Shrewsbury North West Relief Road: Non-car Options Report. Mouchel for Shropshire CC, November 2002

HGV improvements, including rail freight	A relatively low proportion of heavy vehicle movements between western and northern areas are likely to use town centre routes at present as a result of height restrictions. Hence the effect of any investment in alternatives may not be noticeable in terms of reduced flows through the central area.	While the development of the proposed rail freight terminal at Harlescott could bring about local benefits, the proportion of road freight that could potentially be converted to rail is low overall.
Demand management measures including car park pricing strategy, traffic management and travel plans for schools and businesses	Can potentially restrain traffic in combination with other complementary measures.	Potential effects of such measures to be assessed in greater detail.
A package of measures to encourage non-car use including investment in bus, rail, cycling and walking facilities	Could be provided for an equivalent sum to the NWRR proposals. These might potentially be complemented by demand management techniques such as revised car parking charges and traffic management measures.	Whilst a modest level of modal transfer could be achieved, a NWRR is likely to facilitate a significantly higher level of traffic reduction in the town centre and on northern and western radial routes than is likely to be achieved by non-road measures even in combination.

Table 24 - Initial appraisal of non-car options (2002) – opportunities afforded by a NWRR

Measure	Assessment	Conclusion
Road space reallocation	Implementation of a NWRR scheme is expected to significantly reduce traffic flows in Shrewsbury town centre and on northern and western radial routes, providing the opportunity for re-allocation of road space to benefit pedestrians, cyclists and public transport.	The potential for road space reallocation is recognised in Local Authority publications including the Integrated Transport Plan for Shrewsbury as a key benefit of the NWRR proposals. The principal public transport operator also supports the scheme on this basis.
Improved access to rail station	The reduction of traffic flows associated with NWRR proposals would provide the opportunity for improving access to Shrewsbury rail station as desired by the Local Authorities and operators of bus and train services.	Provision of the NWRR scheme itself is unlikely to adversely affect rail patronage since few local journeys are made by rail.
Bus priority measures	The reduction in traffic flows resulting from a NWRR would facilitate the development of bus priorities both in the town centre and on key northern and western radial routes.	While a NWRR route itself is unlikely to be used by many bus services, it could form part of the route of a future orbital service connecting outlying areas of Shrewsbury.
Enhanced pedestrian and cycle facilities	The reduction in traffic flows in the town centre and on key radial routes resulting from the NWRR proposals would provide an enhanced environment for pedestrians and cyclists and hence would encourage the use of these modes. Road space could be reallocated to pedestrian and cycle facilities including on the	The provision of a high quality cycle route as part of the NWRR proposals could open up new journey opportunities by this mode and form part of an integrated cycle network for Shrewsbury.

	Smithfield Road corridor and in the area of the rail station and bus station in the town centre.	
Traffic management	A reduction in traffic flows on northern and western corridors and in the town centre would be facilitated by a NWRR scheme	This would provide the opportunity for traffic management measures to be introduced in these areas.
Travel planning / demand management (including car park strategy)	The provision of a NWRR as part of the Integrated Transport Plan for Shrewsbury would enhance the existing transport system with the effect of increasing travel choices.	This could be exploited through the continued development of demand management measures including Travel Plans for schools and businesses and car parking strategies.
Freight Strategy	Provision of a NWRR scheme would enhance the orbital road system for Shrewsbury which would help to reduce the impact of delivery vehicles in the town centre	This would allow the Freight Transport Strategy proposed by the Local Authorities to be delivered more easily.
Town centre enhancements	An enhanced town centre environment could be achieved as a result of reduced traffic flows and improved conditions for non-car travel	Likely to make Shrewsbury a more attractive place to live, work, shop and do business.

8.3.2. The outcomes of the assessment are summarised in Table 25.

Table 25 - Initial (2002) assessment of non-car options vs. NWRR - summary

Non-car intervention (compared with a NWRR)	Limited impact or limited opportunity	Potential for significant impact	Opportunity in combination with NWRR
Light rail or guided bus	●		
Improve existing bus network		●	
Improve existing rail system	●		
Invest in cycle infrastructure	●		
Invest in pedestrian infrastructure	●		
HGV improvements / rail freight	●		
Demand management & road pricing		●	●
Package to encourage non-car use		●	●
Road space re-allocation			●
Improved access to rail station	●		●
Bus priority measures			●
Enhance pedestrian & cycle facilities			●
Traffic management			●
Freight strategy			●
Town centre enhancements			●

8.3.3. The overall conclusion at this stage was that:

- the provision of non-car options alone would be unlikely to provide equivalent benefits to the NWRR
- a package of demand management measures including road pricing and investment in alternative modes, especially public transport, could have a significant impact and would be worth investigating
- the implementation of a NWRR scheme could itself provide significant opportunities for the delivery of improvements in non-car accessibility.

8.4. PUBLIC AND STAKEHOLDER CONSULTATION - 2003

8.4.1. A major public consultation exercise was undertaken during January and February 2003. Exhibitions were held in five locations, and an information leaflet and questionnaire were made available. The objectives were:

- To update the public on work undertaken to date and achieve a wider public involvement in the development of the scheme
- To set the NWRR within a wider transport policy context
- To explore attitudes towards travel and transport in Shrewsbury, and determine the level of support for a NWRR in principle
- To determine the level of support for the protected alignment and to allow people to suggest alternatives.

8.4.2. The number of questionnaires returned was 829. The number of people attending the exhibitions is likely to have been higher than this. A petition of 331 signatures was also received.

8.4.3. Full details of the consultation materials provided and responses received are set out in the Public Consultation Report⁶¹, and summarised briefly below.

8.4.4. Most people agreed that traffic is a problem in the NW sector of Shrewsbury (Table 26).

Table 26 - Traffic problems (2003 consultation)

Issue – traffic problems (2003)	% agree or strongly agree
Traffic congestion is a problem in N & W Shrewsbury	75%
There is too much traffic on the main roads into town	72%
The traffic makes the town a less attractive place	62%

8.4.5. All of the top five problem areas identified were in the NW sector of Shrewsbury (Table 27).

Table 27 - Problem areas (2003 consultation)

Top 5 locations identified as problem areas (2003)	No. of times mentioned
Smithfield Road	136
Castle Gates gyratory	103
Frankwell	100
Chester Street / Coton Hill	99
Welsh Bridge	84

⁶¹ Shrewsbury NWRR, Public Consultation Report. Report No. 1051/14/4 (Mouchel Parkman, July 2003)

8.4.6. People placed a high value on the built and natural environment (Table 28).

Table 28 - Attitudes to environment (2003 consultation)

Attitudes to the environment (2003)	% agree or strongly agree
The existing environment in / around Shrewsbury is valuable	85%
It is important to protect and improve wildlife habitats	87%
The “green wedge” to the NW of Shrewsbury is an important asset	75%

8.4.7. The most frequent comment about the environment was: “The green wedge and green areas are important and should not be degraded” (91 comments).

8.4.8. People’s responses to questions about the best way to tackle transport problems are summarised in Table 29.

Table 29 - Dealing with traffic problems (2003 consultation)

Attitudes to dealing with transport problems (2003)	% agree or strongly agree	% don’t know, neutral, or no reply	% disagree or strongly disagree
It is important to deal with the transport problems of NW Shrewsbury and the town centre.	78%	11%	11%
The best way to deal with the problems is:			
<ul style="list-style-type: none"> Improve public transport services and facilities? 	82%	13%	5%
<ul style="list-style-type: none"> Improve footpaths / crossing points for pedestrians? 	77%	18%	5%
<ul style="list-style-type: none"> Create more cycle paths and cycle lanes? 	64%	23%	13%
<ul style="list-style-type: none"> People should use their cars less 	59%	23%	19%
<ul style="list-style-type: none"> Build more roads, e.g. a North West Relief Road? 	58%	13%	29%
<ul style="list-style-type: none"> Increase charges for car parking in the town centre? 	26%	21%	53%
<ul style="list-style-type: none"> Do nothing? 	8%	19%	73%

8.4.9. A majority (58%) of respondents agreed that new roads, such as a NWRR, were a good way to solve transport problems, but there were higher levels of support for other solutions.

8.4.10. Specific answers to questions on a possible NWRR gave a further insight into this (Table 30).

Table 30 - Attitudes to a possible NWRR (2003 consultation)

Attitudes to a possible North West Relief Road (2003)	% agree or strongly agree	% don’t know or no reply	% disagree or strongly disagree
A NWRR should be built	58%	12%	31%
A NWRR should be built, but only if:			
<ul style="list-style-type: none"> The environment and landscape are protected 	62%	31%	7%

• Public transport is also improved	51%	37%	12%
• Access for pedestrians and cyclists is improved	48%	40%	12%
• The town centre is enhanced	48%	43%	9%
• Traffic is reduced in the town centre	59%	33%	8%
• It does not increase traffic on other roads	54%	39%	7%
If a NWRR is to be built, the protected line is the best option	34%	29%	37%
A different route should be considered	41%	35%	24%

8.4.11. Again, 58% of respondents supported the idea of a NWRR. People’s main concerns related to protecting the environment and reducing traffic.

8.4.12. The preferred route (the line then being protected in the Shrewsbury and Atcham Local Plan) was supported by 34% of respondents, but 41% said that a different route should be considered. A very large number of alternative routes were suggested by people visiting the exhibitions or returning questionnaires, as illustrated in Figure 41 - Alternative routes suggested by the public, 2003. This shows that, although no single alternative was as popular as the preferred route, many people preferred routes further away from the built-up area.

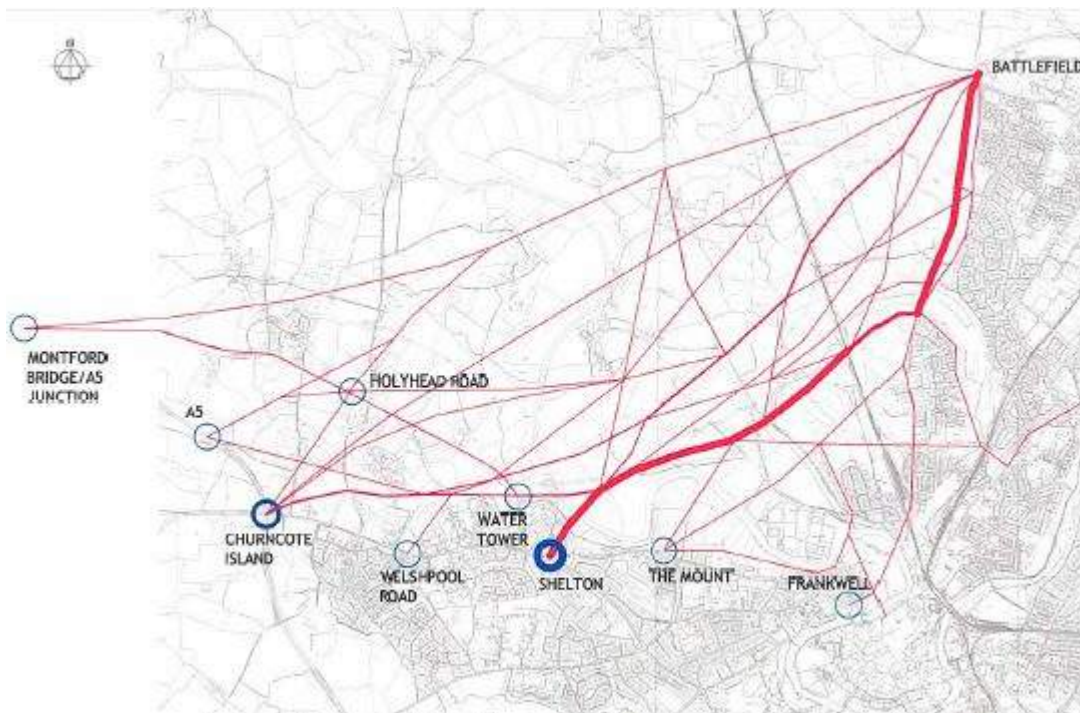


Figure 41 - Alternative routes suggested by the public, 2003

8.4.13. The top five comments made by people on the issue of the NWRR route are shown in Table 31.

Table 31 - Problem areas (2003 consultation)

Top 5 comments on NWRR route (2003)	Times mentioned
Impact on the Shelton / Bicton Heath / Mount areas should be avoided	145

The environment is too important to build a road	100
If the NWRR is built, it should be designed as a bypass	64
Whatever other considerations there are, a NWRR should be built	56
Money could be better spent	55

8.4.14. The Public Consultation Report (2003) gives more detail on the responses and comments, including petitions signed by people opposing the scheme.

8.4.15. The 2003 public consultation showed that:

- People felt the problems were real and that solutions needed to be found
- A majority of people were in favour of building a NWRR
- There should be further consideration of alternative routes further away from the built up area
- Consideration should be given to a route avoiding the Welshpool Road through Bicton Heath, and connecting directly to the A5 bypass
- A significant minority did not support building a NWRR.
- There was significant support for other transport measures, especially public transport, either as an alternative or in addition to a road solution.

8.5. OPTIONS TAKEN FORWARD FOR FURTHER ASSESSMENT

8.5.1. As detailed above, the initial sift of options (2000 – 2003) was based on a qualitative assessment of a wide range of non-car options, a review of the all the route options previously considered, and an extensive public consultation in 2003 seeking people’s views on both non-car and roads-based options. From this work, it was concluded by the County Council that:

- A short list of possible routes should be developed, reflecting the wide range of views and suggestions obtained from consultees and stakeholders.
- A range of non-road measures should be developed, including:
 - Public transport initiatives
 - Road user charging
 - A package of investment in non-car options on the A5/A458 corridor
- The road and non-road options should be assessed in more detail, including traffic, economic and environmental assessments
- Further public and stakeholder consultation should be undertaken.

SHORT-LISTED ROUTE OPTIONS

8.5.2. The very large number of route options suggested by consultees, in addition to those previously considered, were rationalised into six representative route options for further assessment, as described in Paragraph 7.5.6 to 7.5.9, and illustrated in Figure 42.

8.5.3. The routes fall into two distinct groups with different concepts:

- **Blue and Red (Option 2)** are shorter routes which rely on parts of the existing road network.
- **Green, Black, Orange and Red (Option 1)** are longer routes which would provide a completely new road between the Battlefield Link Road and Churncote on the A5.

- 8.5.4. The public view, expressed in the 2003 consultation, that Welshpool Road should be relieved of through traffic between Shelton and Bicton Heath led to the development of the longer route options.
- 8.5.5. A smaller number of responses to the 2003 public consultation had suggested alignments in an even more northerly corridor, linking Battlefield Roundabout directly to various points on the A5 between Churncote and Montford Bridge (Figure 41). However, initial tests showed that these routes would not perform as well in traffic terms as the routes closer to the town. A Stage 1 Landscape Assessment⁶² concluded that they would have a **Large Adverse** impact on landscapes associated with the River Severn and Substantial visual impacts for outlying communities. For these reasons, these “northerly” routes were not represented in the shortlist.

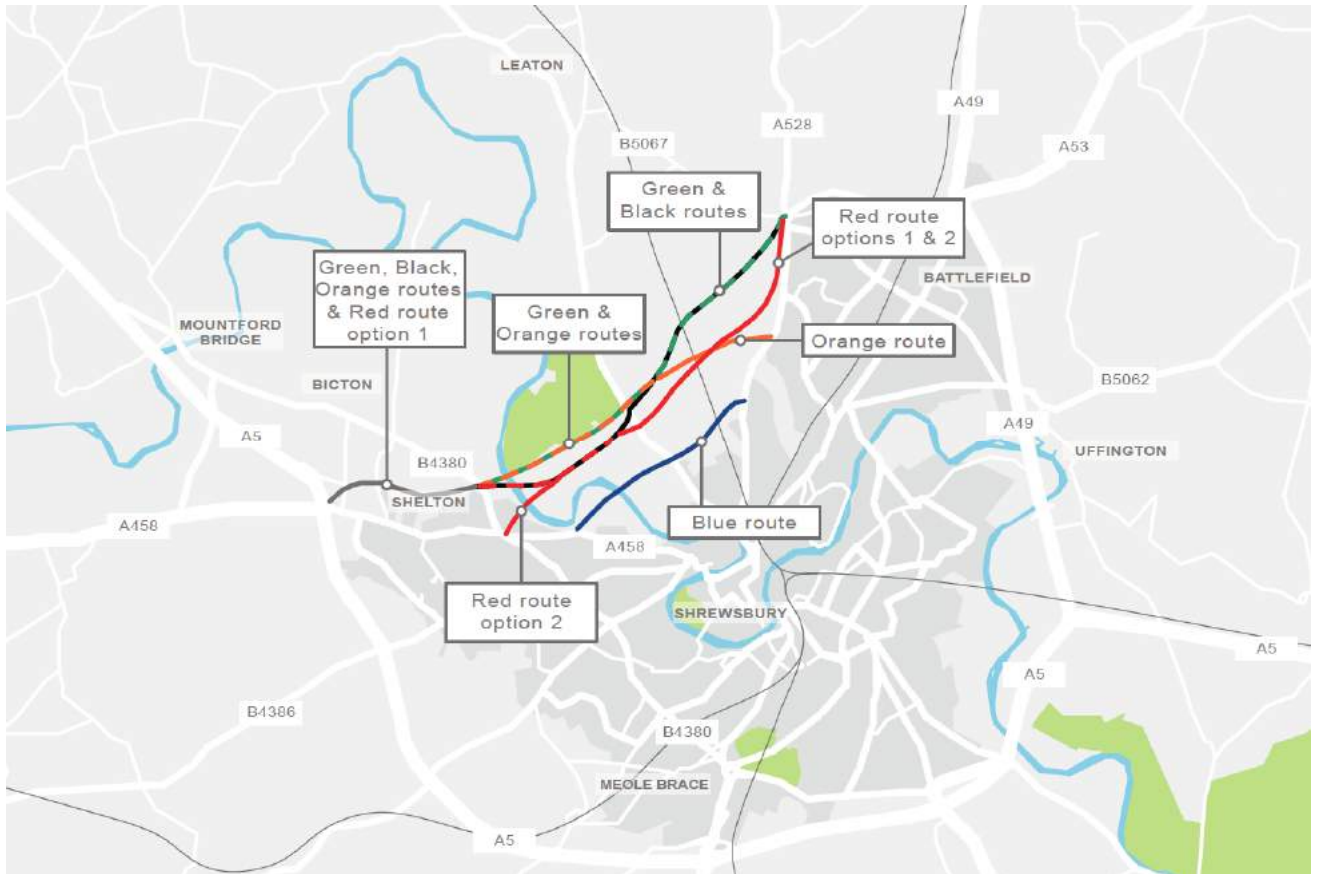


Figure 42 - NWRR route options for assessment in 2004

ALTERNATIVE OR COMPLEMENTARY TRANSPORT MEASURES

- 8.5.6. In addition, a successful bid for pump priming funds from the Government’s Transport Innovation Fund (TIF) allowed a much more detailed examination of:
- Road pricing (for access to the town centre and/or on NWRR)
 - A large scale package of measures to encourage non-car modes.

⁶² Shrewsbury NWRR Northern Corridors Stage 1 Landscape Assessment, Moore Environment (November 2004)

OPTION DEVELOPMENT AND ASSESSMENT

- 8.5.7. The more detailed assessment of options, leading to the identification of a single preferred option, is described in Chapter 9 and Chapter 10.

9. OPTION DEVELOPMENT AND ASSESSMENT

9.1. INTRODUCTION AND OVERVIEW

9.1.1. This chapter covers Step 7 of the Transport Appraisal Process, as defined in WebTAG:

“Develop and assess potential options to identify the better performing ones. Undertake public consultation on potential options”

9.1.2. It describes the more detailed development and assessment of road and non-road options in the period 2004 - 2007 following the initial sift (2000 – 2003) outlined in Chapter 8.

9.1.3. Specifically it summarises the results of:

- Cost estimates (2004)
- Stage 2 Environmental Assessment (2005)
- Stage 2 Traffic, Economic and Safety Assessment (2004)
- Public consultation (2005)
- The Transport Innovation Fund (TIF) study, including the detailed assessment of non-car options and road pricing (2007)

9.2. ROUTE OPTIONS ASSESSED

9.2.1. Six potential route options were identified, as described in Paragraphs 7.5.4 to 7.5.9 and Paragraphs 0 above, and preliminary designs were prepared for the Stage 2 Assessments.

9.2.2. The six routes are illustrated in Figure 43 below.

9.3. NON-ROAD OPTIONS ASSESSED

9.3.1. Further assessment was undertaken of possible alternatives to building a NWRR, building on the options assessed qualitatively in 2002. Alternatives were considered under the following headings:

- Walking
- Cycling
- Public transport (light rail transit or guided bus)
- Public transport (rail)
- Public transport (bus)
- Public transport (Park & Ride)
- Freight
- Traffic management
- Demand management

9.3.2. A workshop was held in June 2004, to clarify the non-road options for further assessment. The results of the subsequent assessment, including a quantitative assessment of selected options using the traffic model, are set out in the Non-road Study Report (2005) and summarised below.

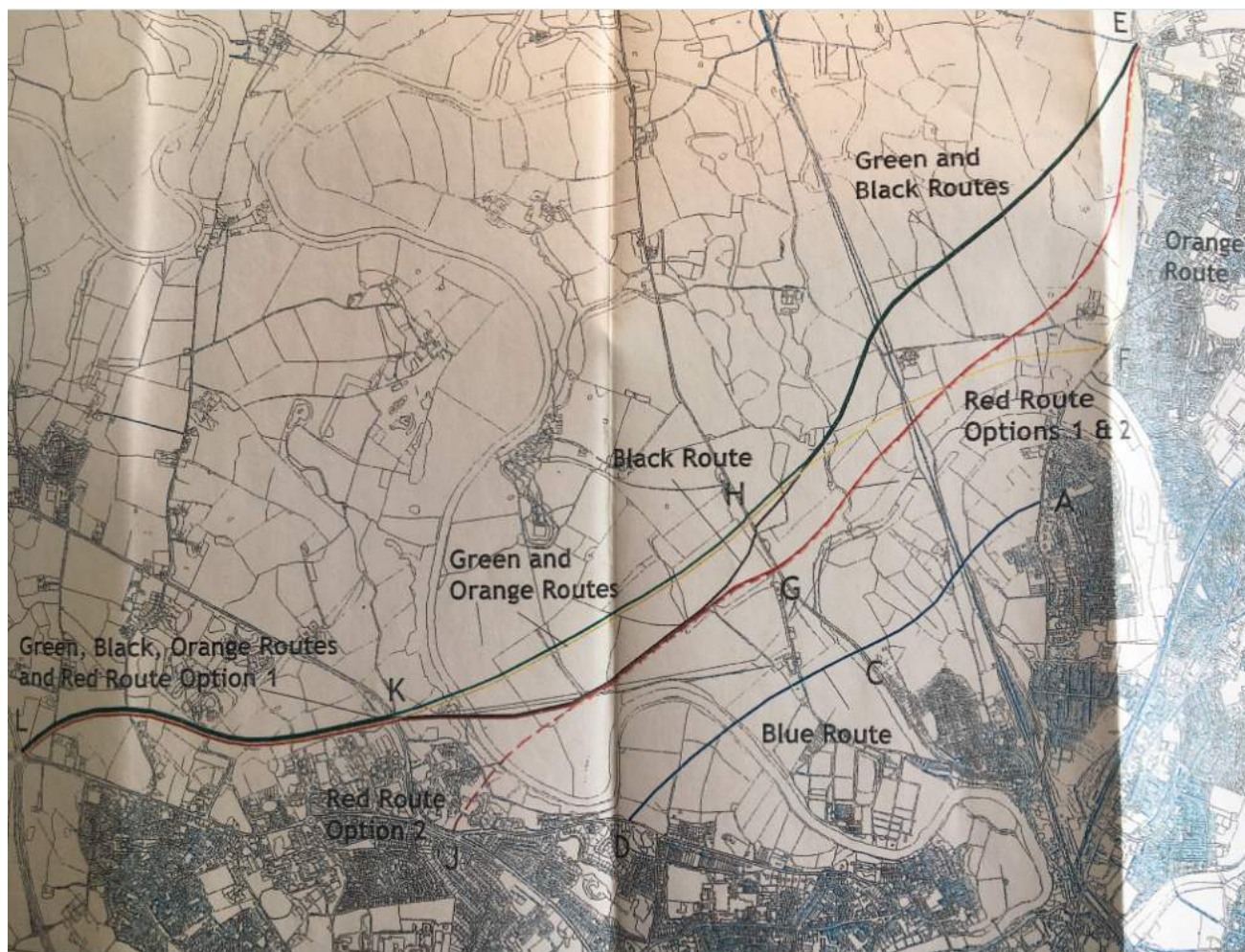


Figure 43 - NWRR route options assessed in 2004

WALKING

- 9.3.3. The review concluded that there was scope for further improvement to pedestrian facilities, and that this could be done relatively quickly if resources were available. Walking offers the opportunity to replace the car for short trips, including some trips into Shrewsbury town centre. Walking is also an essential link with other modes of transport and is an important part of an integrated transport strategy. However, improvements for pedestrians, though beneficial and desirable, would not have a significant impact on the number of cross-town trips between the north and west of Shrewsbury, and would therefore not meet the objectives of the scheme.
- 9.3.4. (Since the 2005 study, further improvements have been made to the pedestrian environment in the historic town centre, and other improvements are proposed as part of the Integrated Transport Strategy.)

CYCLING

- 9.3.5. The review concluded that new cycle routes could be provided in northern Shrewsbury, in the town centre (e.g. on the Smithfield Road corridor to the railway station), and in western Shrewsbury. New and improved cycle parking could be provided at key locations such as public transport interchanges. Improvements for cycling could encourage more local cycle trips within Shrewsbury. Improvements could be delivered quite quickly if resources were available. However, even with a greatly improved cycle network, there is much less scope for cycling to meet the needs of longer distance travellers and through trips. Overall the review

concluded that improved cycle facilities, though beneficial and desirable in themselves, would not meet the objectives of the scheme.

- 9.3.6. The review noted the scope for providing cycle facilities along the length of a NWRR.
- 9.3.7. (Since the 2005 study, further improvements have been made to cycle routes in the town centre, and other improvements are being delivered as part of the Integrated Transport Strategy.)

LIGHT RAIL TRANSIT (LRT) OR GUIDED BUS (GB)

- 9.3.8. The review considered that a new LRT or GB system could potentially be developed, subject to resources being available, for example on a corridor connecting northern and western areas with the town centre. LRT and GB systems were considered the most effective ways of persuading car users to change mode, and could help deliver wider regeneration benefits. However, it would be difficult to provide LRT or GB infrastructure in the town centre because of the combination of existing traffic and narrow, historic streets.
- 9.3.9. For the purposes of the review, it was estimated that a GB corridor linking the Oxon and Harlescott Park and Ride sites could cost between £18 million and £32 million. A LRT corridor could cost between £30 million and £80 million (capital cost only).
- 9.3.10. Even with this investment, it was forecast that town centre traffic flows would be reduced by less than 4%, a much smaller impact than a NWRR. The cost of LRT or GB would outweigh the benefits, and the option was therefore rejected.

HEAVY RAIL

- 9.3.11. The 2005 review noted that improvements to the existing railway station were proposed (some of these have since been delivered), and that provision of a Shrewsbury Parkway station at the A5/A49 junction east of Shrewsbury was also under consideration. Improved train services were also proposed (again, some of these, such as direct trains to London, have since been delivered).
- 9.3.12. However, heavy rail is mainly used for travel on specific long-distance routes and is less suited to inter-urban or cross-town movements. It does not provide an alternative for local through trips. Investment in rail improvements, though beneficial and desirable in other ways, would not meet the objectives of the scheme.

BUS

- 9.3.13. The review found that improvements to existing bus services could help reduce dependence on car travel for local trips. More frequent services could be delivered quickly, if sufficient resources were available. However, experience in other towns indicates that improved bus priority is usually needed in order to achieve significant transfer of trips from car to bus. In Shrewsbury, the physical difficulty in providing extensive bus priority on local roads meant that bus improvements alone would not have an equivalent impact to a NWRR.

PARK & RIDE

- 9.3.14. Shrewsbury has a successful Park & Ride service, operating from three sites. The review examined the possibility of adding a fourth Park & Ride site to the east of the town, in conjunction with the Parkway Station discussed above. Even with this investment, it was forecast that town centre traffic flows would be reduced by no more than 5%, a much smaller impact than a NWRR. Park & Ride services can reduce the number of car trips to and from the town centre, helping to reduce congestion, but they do not reduce local through traffic, and would not meet the objectives of the scheme.

FREIGHT

- 9.3.15. Height and weight restrictions limit the amount of through HGV traffic in most parts of Shrewsbury town centre, except on the north-west corridor (Welsh Bridge, Smithfield Road). Much of the HGV traffic is able to use the A5/A49 bypasses. The review considered that there may be scope to further reduce the impact of freight vehicles by developing a Lorry Route Network to direct HGVs to the most appropriate routes and further restricting HGVs in the historic core during peak periods. It noted the potential for providing an intermodal rail freight terminal at Harlescott in north Shrewsbury, to encourage more use of rail for locally generated freight traffic. However a separate study of rail freight for the County Council concluded that only about 5% of the road freight in and around Shropshire could be considered as potentially convertible to rail.
- 9.3.16. The review concluded that, whilst there may be some scope for improvement to freight without a NWRR, it was very unlikely that these would result in a significant reduction in the number of HGVs on the town's road network.

TRAFFIC MANAGEMENT

- 9.3.17. The review considered that traffic management measures could, potentially, improve conditions within the town centre. Speed limits, traffic calming and road space reallocation to pedestrians, cyclists and buses on the northern, central and western corridors could, potentially, provide a better environment for non-car users. However it also considered that it would be difficult to achieve without first reducing traffic on these routes. For this reason, traffic management measures alone would not achieve the objectives of the scheme.

DEMAND MANAGEMENT

- 9.3.18. Of all the non-road options considered, only road user charging was considered capable of resulting in a level of traffic reduction comparable with the provision of a NWRR. The assessment indicated that for road charging to work in terms of the economic viability of the town, and to maintain good levels of access, it would need to be introduced as part of an integrated package of measures to provide efficient and economic means of access, such as improved public transport services and other measures described above. The Shrewsbury Traffic Model was used to test the possible impact of a £2 toll on a town centre cordon, and found that this could lead to similar overall reductions in traffic to those that could be achieved with a NWRR.
- 9.3.19. Road user charging was therefore considered in much greater detail as part of the Transport Innovation Fund study, as described in Section 10.4 below.

Table 32 - Comparison of forecast traffic reductions with NWRR and non-car options (2005 review)

Road	NWRR (Green route)	New Park & Ride and Parkway station	LRT scheme	£2 toll on town centre cordon
Welsh Bridge	-39%	0	-1%	-29%
English Bridge	+2%	-5%	-1%	-39%
Kingsland Bridge	-11%	-2%	-2%	-51%
Castle Foregate	-31%	-2%	-3%	-43%
Smithfield Road	-38%	-1%	-1%	-37%
Castle Street	-19%	-4%	-4%	-17%
Welshpool Road	-33%	0	-2%	-18%
The Mount	-45%	0	-2%	-19%
Ellesmere Road	-20%	0	-1%	-10%
Whitchurch Road	-18%	+1%	-1%	-5%

9.3.20. The results of the 2005 model tests of the most promising alternatives to a NWRR are set out in Table 32 which shows the forecast traffic changes with each option.

9.4. COST ESTIMATES

9.4.1. The cost of each NWRR route option was estimated at a 2004 price base, including the cost of land, scheme preparation and supervision costs, public utilities, compensation and a 20% contingency. Where appropriate, cost estimates include the section which was subsequently promoted separately as the Oxon Link Road.

Table 33 - Costs of NWRR options (2004 price base)

Route	Cost (2004 base)	Length	Cost per km
Blue	£17.9 million	2.2 km	£8.1 million
Red (Option 1)	£42.9 million	6.5 km	£6.6 million
Red (Option 2)	£39.5 million	4.7 km	£8.4 million
Green	£48.5 million	6.3 km	£7.7 million
Black	£49.6 million	6.4 km	£7.8 million
Orange	£42.8 million	6.6 km	£6.5 million

9.5. ENGINEERING ASSESSMENT

9.5.1. A detailed engineering assessment was undertaken for each of the six routes, and is described fully in the Route Study Report (2005)⁶³.

9.5.2. The carriageway widths were specified on the basis of forecast AADT flows from the Shrewsbury traffic model⁶⁴ and the recommendations in DfT Advice Note TA46/97. A single 2 lane (S2) standard with 1m hard strips and 2.5m verges was specified for the section of the NWRR between the A5 (Churncote) and the Holyhead Road (all options except Blue and Red Option 2). A wide single 2 lane (WS2) standard with 1m hard strips and 2.5m verges was chosen for the Blue, Red Option 2, and remaining sections of all the other options. A shared footway/cycleway was assumed to be provided within the verge and at junctions. A design speed of 100 km was adopted, in accordance with DfT Standard TD9/93. Horizontal and vertical curvature is in accordance with TD9/93 with departures from standards (one step below desirable minimum) would be required on all options except Red (Options 1 and 2) and Blue.

9.5.3. The routes differed in terms of the amount of overtaking opportunity available to traffic in each direction. Excluding the Churncote to Holyhead road section, on which no overtaking would be possible, the overtaking provision is as set out in Table 34.

⁶³ Shrewsbury NWRR Route Study Report, Mouchel Parkman for SCC (April 2005)

⁶⁴ 2002 SATURN model

Table 34 - NWRR options - overtaking provision

Route	Overtaking provision	
	W - N	N - W
Blue	47%	0%
Red (Option 1)	35%	9%
Red (Option 2)	29%	32%
Green	12%	66%
Black	9%	46%
Orange	44%	39%

9.5.4. The Route Study Report (2005) describes the alignment of each potential route option in detail, with reference to:

- Climate, topography and land-use
- Geology, geomorphology and ground conditions
- Hydrology, hydrogeology and drainage
- Utilities
- Construction issues
- Bridge design standards

9.5.5. The study confirmed that whilst engineering issues had been identified which would require further investigation, in general all of the options were considered feasible using normal construction techniques. There were no engineering issues that would preclude the adoption of any option. The preliminary designs used in the assessment did however include departures from design standards which would require consideration as part of later stages of design.

9.6. STAGE 2 ENVIRONMENTAL ASSESSMENT

9.6.1. A Stage 2 Environmental Assessment⁶⁵ for the six route options was published in 2005, and quoted in detail in the 2007 Preferred Route Report⁶⁶.

9.6.2. The above reports provide very full details of the environmental assessment. A brief summary of the main findings is given below.

METHODOLOGY

9.6.3. Each of the six routes indicated in Figure 43 was assessed using the methodology current at the time for a Stage 2 Assessment, as set out in the Design Manual for Roads and Bridges (DMRB) Volume 11. The results were used to inform a comparative appraisal in line with TAG, with TAG worksheets used to prepare Appraisal Summary Tables (ASTs) for each route.

⁶⁵ Shrewsbury NWRR, Stage 2 Environmental Assessment Report, Mouchel Parkman for SCC (May 2005)

⁶⁶ Shrewsbury NWRR, Preferred Route Report (Final), Mouchel Parkman for SCC (January 2007)

9.6.4. The Environmental Assessment covered:

- Noise
- Air quality
- Greenhouse gases
- Landscape character
- Heritage of historic resources: built and archaeological
- Biodiversity
- Water environment: hydrological, chemical and biological
- Physical fitness and accessibility for walkers, cyclists and equestrians
- Journey ambience for travellers
- Agriculture
- Integration with national and local policies

9.6.5. Baseline conditions were assessed. For each topic, the impact of each route was then compared with a “do minimum” scenario, defined as not implementing the NWRR scheme. Overall impacts were carried forward into the AST for each route. The Stage 2 Report also identified a number of issues which required more detailed investigation.

9.7. BASELINE CONDITIONS AND CONSTRAINTS

9.7.1. Existing environmental designations in the area are illustrated in the Environmental Constraints Plan, Figure 15. Levels of groundwater vulnerability are of particular importance due to the presence of a Grade 1 Source Protection Zone (SPZ) for the public water supply boreholes at Shelton (Refer to Figures 2.1 and 2.2 in the 2005 Preferred Route Report)

9.7.2. The area to the north-west of Shrewsbury, though largely undeveloped, includes a relatively large number of environmental constraints, though few would be directly affected by the options under consideration. Each option would affect the floodplain of the River Severn to some degree. All would pass mainly through agricultural land and through areas of topographical diversity. None of the options would directly affect listed buildings, scheduled ancient monuments, or areas designated as having nature conservation value at a national or international level. However all options except Blue would cross the area of local conservation interest at Shelton Rough, and the Old River Bed would be crossed by the Orange and Blue options. All of the options would cross two long-distance footpaths – the Severn Way and the Marches Way – as well as local public footpaths. All options except Blue would cross the SPZ.

BASELINE: NOISE (DM)

9.7.3. In the do-minimum situation, it was calculated that 1,054 dwellings would experience high noise levels (65 dB(A) and above) in the opening year then assumed (2011). The Estimated Population Annoyed (EPA) would be 1,199.

BASELINE: AIR QUALITY

9.7.4. At the time of the Stage 2 Environmental Assessment, three Air Quality Management Areas (AQMA) had been defined for Shrewsbury, two of which were within the NWRR study area:

- **AQMA No. 02:** Parts of Ditherington Road (A5191), Whitchurch Road (A5112), Sundorne Road (B5062) and Telford Way (A5112), and adjacent land.

- **AQMA No. 03:** Frankwell part of Bridge Street and Smithfield Road, and adjacent land.

9.7.5. The Stage 2 Assessment reported that further assessment in 2004 predicted the extension of the AQMA within Shrewsbury town centre due to levels of NO₂, and this came into force in March 2006.

BASELINE: LANDSCAPE

- 9.7.6. There are no statutory or non-statutory landscape definitions within the study area, but the Stage 2 EA considered that parts of the area are very attractive and, in overall terms, the landscape was considered to be highly sensitive.
- 9.7.7. The north-west sector of Shrewsbury benefits from a “green wedge” of open countryside reaching almost to the town centre. Particularly attractive landscapes are associated with the River Severn and its former channel, the Old River Bed, which have shaped the historic development of the town. These feature steeply sloping, sometimes wooded, escarpments with distant views of the Shropshire Hills. Elsewhere the landscape is gently rolling, with mixed agriculture bounded by hedgerows. Strong tree belts and woodlands, especially those associated with the Berwick Estate which have a parkland character, form important features.
- 9.7.8. Overall importance: **High**.

BASELINE: TOWNSCAPE

- 9.7.9. The town has been shaped by the present and former loops of the River Severn. The entire town centre (river loop) is a conservation area with more than 1,500 listed buildings. The built form is very varied, with the majority dating from the 15th – 18th centuries with an irregular framework of narrow streets.
- 9.7.10. To the west of the town centre, Frankwell and The Mount are also historic conservation areas of high amenity, although high traffic levels detract from this. To the south-west is an area straddling the River Severn with areas of open space, including the town’s main park, The Quarry. The area to the north of the town centre has lower townscape quality, with negative elements such as railway infrastructure and warehousing.
- 9.7.11. Outside the town centre, residential suburbs are the dominant element of the townscape, with varied styles from the mid to late 20th century and pockets of older development.
- 9.7.12. Along the Welshpool Road at Bicton Heath, residential areas combine with a variety of uses including a business park, the Shelton Waterworks, and shopping facilities.
- 9.7.13. Overall importance: **High**.

BASELINE: HERITAGE (ARCHAEOLOGY)

- 9.7.14. The most significant archaeological site is the Berwick Cropmark Complex. This is a band of cropmarks on the Berwick Estate comprising Neolithic and Bronze Age funerary monuments, Bronze Age / Iron Age / Romano-British farmstead enclosures and a mediaeval field. This site is of High significance within a national and regional context. Other sites including post-mediaeval farmhouses, a toll house, and sections of mediaeval heritage and ridge and furrow are regarded as of Low significance and local importance.

BASELINE: HERITAGE (BUILT HERITAGE)

- 9.7.15. Shrewsbury’s built heritage is particularly rich. The main features –Conservation Areas and more than 1,500 listed buildings in the town centre – have been described above under ‘townscape’. There are further conservation areas and listed buildings on the east side at Abbey Foregate and Castlefields / Spring Gardens. Shrewsbury Castle and the 11th century Church of the Holy Cross at Abbey Foregate are Scheduled Ancient Monuments. The Quarry Garden is Grade II listed.
- 9.7.16. Outside the town centre, features are more dispersed and only Gravel Farm and a cluster of buildings on the Berwick Estate are listed.

9.7.17. Overall significance of designated features: **High**.

BASELINE: BIODIVERSITY

- 9.7.18. There are two sites with statutory designations. Hencott Pools is an SSSI and part of a complex of meres and mosses across the north-west midlands which has an international designation as a Ramsar site. Its biodiversity and earth heritage value is considered to be Very High. The Old River Bed, part of a former river loop to the east of Ellesmere Road is an SSSI and is of **High** value.
- 9.7.19. Within the route corridors, there are several designated sites of local importance, as illustrated on the Constraints Map: Wildlife Sites or sites listed in the Local Plan for the Conservation of Regional and Local Sites of Ecological, Geological and Physiographical Importance. These are: Calcott Moss, Oxon Pool, Shelton Rough, the River Severn and the Old River Bed. These sites are of **Medium** value.
- 9.7.20. Surveys have indicated the presence of a broad range of ecologically significant habitats including species-rich wetlands, veteran trees including native black poplar, unimproved wet pasture, species-rich hedgerows and mature woodlands. Recorded protected species include badger, brown hare, Daubenton's bat, otter, Pipistrelle bat and water vole.

BASELINE: WATER ENVIRONMENT

- 9.7.21. The main surface water feature is the River Severn, a major river with a large upstream catchment including several tributary watercourses within the study area. The Stage 2 EA records that the water quality was rated by the Environment Agency⁶⁷ as '2' (Good). In terms of water quality the river and its tributaries are of Medium importance but its use as a public water supply via an intake to the Shelton Waterworks is of **High** importance.
- 9.7.22. The River Severn is a high risk area prone to flooding. The flood plan, illustrated on the Constraints Map, is considered to be of **High** importance.
- 9.7.23. The study area overlies a major aquifer of Permian Sandstone and is within Zones I, II and III of a Source Protection Zone (SPZ) defined by the Environment Agency. These centre on the boreholes used for public water supply by Severn Trent Water. The importance of groundwater is considered to be **Very High**.
- 9.7.24. There are several pools of still water including Oxon Pool, the Willow Pool on the Berwick Estate and Alkmund Park Pool. Hencott Pool, a SSSI and Ramsar site, is of **Very High** importance.

BASELINE: AGRICULTURE AND SOILS

- 9.7.25. Much of the land in the route corridors is defined as "best and most versatile" by PPS 7. It is predominantly Grade 3a or 2 with some Grade 3b. Land within the River Severn flood plain is of lower quality.
- 9.7.26. Thirteen farm units were identified within the study area, predominantly engaged in mixed arable and livestock farming.

BASELINE: ACCESSIBILITY AND PHYSICAL FITNESS

- 9.7.27. A network of public footpaths provides some access to open countryside. Two long distance footpaths cross the route corridors: the Severn Way and the Marches Way. Local footpaths provide links between roads and country lanes, and some circular walks are possible.

⁶⁷ Now Highways England

BASELINE: JOURNEY AMBIENCE

- 9.7.28. Facilities and information for travellers are considered to be generally good. Views for drivers within the town and on the approaches are also generally good. The main source of stress for travellers is congestion.

BASELINE: INTEGRATION

- 9.7.29. The policy context was set out in detail in the Stage 2 Environmental Assessment and is also summarised in Paragraph 2.2.18 above.

9.8. ENVIRONMENTAL IMPACTS

- 9.8.1. The environmental impacts of each potential route option were assessed for each of the above topic areas. The results are set out in full detail in the Stage 2 Environmental Assessment Report, and summarised below.

IMPACTS: NOISE

- 9.8.2. All routes would produce a net benefit in noise terms, but the longer routes - **Green, Black, Orange, and Red (Option 1)** - would be most effective (Table 35).

Table 35 – Comparison of noise impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Noise (No. of people annoyed)	-124	-124	-128	-111	-74	-35

IMPACTS: AIR QUALITY

- 9.8.3. All options would result in more properties experiencing lower concentrations of NO₂ and PM₁₀. The best performing route is **Red (Option 1)**, and the least benefit would be achieved by **Blue**. All options could decrease NO₂ concentrations in AQMA 02 and the enlarged Town Centre AQMA.
- 9.8.4. The air quality impacts are summarised in Table 36.

Table 36 - Comparison of air quality impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Local air quality	Better	Better	Better	Better	Better	Better
Regional air quality (tonnes NO _x /year)	-6	-6	-5	-6	-8	-5

IMPACTS: GREENHOUSE GASES

- 9.8.5. All routes would reduce CO₂ emissions by between 1.6% and 2.4%. The largest decrease would be achieved by **Red (Option 2)**, and the smallest by **Blue** and **Orange**.

9.8.6. The greenhouse gas impacts are summarised in Table 37.

Table 37 - Comparison of greenhouse gas impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Greenhouse gases (% of Do Min CO2 emissions)	98.0	98.0	98.4	98.1	97.6	98.3

IMPACTS: LANDSCAPE

9.8.7. The overall landscape impacts are derived from a combination of the effects upon the character of the landscape as a whole and the visual impact on views from properties.

9.8.8. The landscape impacts are summarised in Table 38.

Table 38 - Comparison of landscape impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Landscape/Visual	Moderate to large adverse	Moderate to large adverse	Large adverse	Slight to moderate adverse	Moderate adverse	Large adverse

9.8.9. A more detailed summary of the landscape and visual impacts for each route option is set out in Tables 2.7 – 2.11 of the 2005 Preferred Route Report.

9.8.10. All options would have an adverse impact on the landscape. The Stage 2 Environmental Assessment describes the high sensitivity of the landscape, the importance to Shrewsbury of the “green wedge” and the particular qualities of the Severn Valley and the Old River Bed. All routes would have a major impact at the crossing of the River Severn, though the height and length of the structure required for the longer routes would provide an opportunity for a “landmark” structure with a high standard of aesthetic design.

9.8.11. East of the river, **Red (Option 1)** follows the grain of the landscape better than the other options, having less impact on the river cliff than the more northerly **Green** and **Orange** routes. It relates well to the landscape of the Berwick Estate, utilising existing tree belts to provide some screening. All options would adversely affect the very attractive landscape of the Old River Bed. By keeping to a low alignment, **Red (Option 1)** would be less dominant in the wider area, passing under the railway and utilising existing tree screening effectively. It would cross the Old River Bed escarpment at Crosshill at an angle, helping to minimise views into the 12m cutting, using the cutting positively to screen the road, and retaining the skyline for views from the south, and avoiding substantial visual impacts on properties. Emerging from the cutting the **Red route (either option)** would run parallel to Ellesmere Road, creating opportunities for an effective mitigation strip, strengthening the landscape on the edge of the built-up area.

9.8.12. The least negative impact on landscape (**slight to moderate adverse**) would be with **Red (Option 1)**.

9.8.13. The alternative **Red (Option 2)** is similar but, though a shorter route, it would have a higher overall visual impact due to **substantial** impact on housing at Darwin’s Wood estate.

IMPACTS: TOWNSCAPE

9.8.14. All options would have an indirect impact on townscape due to noticeable changes in traffic on existing roads in Shrewsbury. All of the longer routes - **Green, Black, Red (Option 1)** and **Orange** - would have a slight beneficial impact, with reductions of 20% or more in traffic on existing roads including Welshpool Road, Copthorne Road, The Mount, Frankwell, Welsh Bridge, Smithfield Road, Ellesmere Road and Castle

Foregate. Some routes, including Holyhead Road and the Abbey Foregate area would experience traffic increases, but overall the benefits are considered to exceed the disbenefits with the longer routes.

- 9.8.15. **Red (Option 2)** would have a substantial visual impact on townscape at Darwin's Wood and is assessed as **slight adverse** overall. The **Blue** Route would be most damaging to townscape, with new junctions on The Mount, Berwick Road and Ellesmere Road within, or on the fringe of, the urban area, and is assessed as **moderate adverse** overall.
- 9.8.16. The townscape impacts are summarised in Table 39.

Table 39 - Comparison of townscape impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Townscape	Slight beneficial	Slight beneficial	Slight beneficial	Slight beneficial	Slight adverse	Moderate adverse

IMPACTS: HERITAGE (ARCHAEOLOGY)

- 9.8.17. The least damaging option is the **Blue** route (**slight adverse**), because it avoids the most important archaeological feature – the Berwick Cropmark Complex, which is of high importance.
- 9.8.18. All of the long routes have a **large adverse** impact on the complex. In detail, the impacts differ between route options. The **orange** and **green** routes would directly affect a ring ditch and enclosure (Sites and Monuments Record SMR 00012), and a field system (SMR 02209), and pass close to ring ditches (SMR 00013). The red and **black** routes would directly cross two ring ditches and an enclosure (SMR 0010) and would pass close to the field system SMR 02209.
- 9.8.19. The Stage 2 Assessment concluded that additional field evaluation is required to determine the extent of the impacts.
- 9.8.20. The archaeological heritage impacts are summarised in Table 40.

Table 40 - Comparison of heritage (archaeology) impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Archaeological heritage	Large adverse	Large adverse	Large adverse	Large adverse	Large adverse	Slight adverse

IMPACTS: HERITAGE (BUILT ENVIRONMENT)

- 9.8.21. None of the route options would have a direct impact on built heritage features. All would have indirect impacts (**slight beneficial**) due to changes in traffic on existing roads, including:
- The Mount
 - Frankwell
 - New Street
 - Welsh Bridge
 - Smithfield Road
 - Chester Street / Coton Hill
 - Castle Foregate / St. Michael's Street / Spring Gardens / Ditherington
 - Montford Bridge / Leaton / Huffley Lane

- 9.8.22. The presence of a new road would also have impacts on the setting of heritage features. The **Green, Black, Orange and Red** options would all, to varying degrees impact on:
- Berwick Hall – views to the River Severn crossing
 - Gravel Hill Farm – views to the River Severn crossing
 - North Lodge / No 1, The Lodge off Berwick Road – views to the Berwick Road / NWRR junction.
 - No. 72 The Mount – views to the River Severn crossing
 - Nos. 56 – 70 The Mount – views to the River Severn crossing
 - The Mount House – views to the River Severn crossing
 - Laura’s Tower (Shrewsbury Castle) – views to the cutting east of the Shrewsbury-Chester railway
- 9.8.23. The impact of the **Red** options would be slight adverse, and that of the **Green, Black and Orange** options would be slight to moderate adverse.
- 9.8.24. The **Blue** route would have the greatest impact (moderate adverse) on the setting of heritage features, having a greater impact on Gravel Hill Farm and properties on The Mount.
- 9.8.25. Overall, taking account of both traffic changes and setting, the impact on Heritage (built environment) has been assessed as neutral for the **Red** options and slight adverse for all the others.
- 9.8.26. The built environment impacts are summarised in Table 41.

Table 41 - Comparison of heritage (built environment) impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Built heritage	Slight adverse	Slight adverse	Slight adverse	Neutral	Neutral	Slight adverse

IMPACTS: BIODIVERSITY

- 9.8.27. All the routes would cross an area of good ecological quality, including sites designated at local, national and international levels, as well as significant undesignated features including species-rich wetlands, ancient semi-natural woodland and parkland with veteran trees. All routes were therefore assessed in the Stage 2 Environmental Assessment as having **significantly adverse** impacts on biodiversity.
- 9.8.28. The biodiversity impacts are summarised in Table 42Table 39.

Table 42 - Comparison of biodiversity impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Biodiversity	Significant adverse	Significant adverse	Significant adverse	Significant adverse	Significant adverse	Significant adverse

- 9.8.29. Nevertheless, there are some differences between the routes:
- 9.8.30. All routes cross the River Severn, a designated Wildlife Site, though the size and span of the new bridge should minimise the impact. The **Blue** route avoids all the other Wildlife sites and is considered to be the least ecologically damaging overall. Being closest to the existing urban edge of Shrewsbury, and furthest from the designated sites, it would cause the least fragmentation of habitats. Being mainly on embankment, habitat severance could be ameliorated by provision of underpasses.
- 9.8.31. All of the long routes - **Green, Black, Orange, and Red (Option 1)** – pass close to the ecologically important wetlands of Oxon Pool and Calcott Moss with potential hydrological effects. **Red (Option 2)** avoids these.

- 9.8.32. All routes affect the river cliff at Shelton Rough, but **Green** and **Orange** have most direct impact on this designated Wildlife Site. **Green** and **Orange** also sever woodlands within the Berwick Estate. The **Black** and **Red** options have less impact.
- 9.8.33. **Green**, **Black** and **Orange** impact on the southern edge of Alkmund Park Wood, which is ancient semi-natural woodlands. The **Red** routes avoid this area.
- 9.8.34. The **Orange** route would be closest to the locally designated section of the Old River Bed and closest to the Old River Bed SSSI, having a roundabout junction on Ellesmere Road. The **Red** routes would avoid the designated area, but with a risk of hydrological impacts. **Green** and **Black** avoid these areas.
- 9.8.35. **Green** and **Black** would run within 53m of the Hencott Pool SSSI, part of an internationally important Ramsar wetland, and may require the completion of an Appropriate Assessment under the Habitats Directive. The **Red** Routes would be 386m from the SSSI, but could have some risk of hydrological impacts.
- 9.8.36. Overall, the **Blue** route is considered the least ecologically damaging. The **Red (Option 2)** and **Red (Option 1)** routes are considered the second and third least ecologically damaging. **Black** and **Green** are potentially more damaging because of potential impact on Hencott Pool, and **Orange** is considered most damaging because of its direct land take from the Old River Bed locally designated Wildlife Site
- 9.8.37. The Stage 2 Assessment concluded that additional data and assessment would be required in relation to Hencott Pool, with a view to avoiding potential impacts.

IMPACTS: WATER ENVIRONMENT

- 9.8.38. The impacts on the water environment are determined by consideration of impacts on:
 - Watercourses
 - Flood plain
 - Groundwater
 - Still water, lakes and ponds
- 9.8.39. A summary of these impacts for each route option is set out in Tables 2.13 – 2.18 of the 2005 Preferred Route Report.
- 9.8.40. The **Blue** route would have the least impact and has been assessed as **Moderate Adverse**. It would cross the river and require land-take from sections of the flood plain and two parts of the Old River Bed system. There is a risk of pollution to the River Severn, but the **Blue** route avoids any impact on the public water supply at the Shelton water intake and the associated Grade 1 Source Protection Zone (SPZ).
- 9.8.41. The impacts of **Red (Option 2)** are also considered moderate adverse. It would avoid the Grade I SPZ, but would traverse the Grade II SPZ with significant impacts. It would have moderate impacts on the flood plan and Old River Bed.
- 9.8.42. The longer routes, **Green**, **Black**, **Orange** and **Red (Option 1)** all have large adverse impacts, mainly due to their highly significant impacts on the Grade I SPZ and the water intake.
- 9.8.43. The water environment impacts are summarised in Table 43.

Table 43 - Comparison of water environment impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Water environment	Large adverse	Large adverse	Large adverse	Large adverse	Moderate adverse	Moderate adverse

IMPACTS: AGRICULTURE

- 9.8.44. Agricultural impacts are assessed in terms of:
- Agricultural land quality, including the best and most versatile land as defined in PPS7⁶⁸
 - Impacts on farm holdings, in terms of land-take and severance
- 9.8.45. The **Blue** route is the shortest and would take the least amount of agricultural land, mostly Grade 3b. All the other routes cross land designated best and most versatile agricultural land, predominantly Grade 3a/2 with some Grade 3b. The longer routes, **Green, Black, Orange** and **Red (Option 2)** would take more land, including a proportion of Grade 3a.
- 9.8.46. The main impact, whichever route is adopted, is on the Berwick Estate which is the largest landowner and farming enterprise in the area. The most damaging route overall would be **Orange**, as it has the largest land-take and affects the largest number of businesses affected.
- 9.8.47. Taking account of all the impacts, Table 44 summarises the impact of the options on agriculture.

Table 44 - Comparison of agriculture impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
No of businesses affected	9	9	11	11	8	4
Estimated land-take	15.78	15.63	17.35	15.95	11.50	7.73
Overall impact on agriculture	High	High / moderate	High	High	Moderate	Low

IMPACTS: ACCESSIBILITY AND PHYSICAL FITNESS

- 9.8.48. Severance for pedestrians, cyclists and equestrians was considered in terms of:
- Effects on footpaths, bridleways and lanes
 - Effects of new junctions on roads used by pedestrians accessing local facilities
- 9.8.49. The accessibility and physical fitness impacts are summarised in Table 45.

Table 45 - Comparison of accessibility and physical fitness impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Accessibility / Community severance	Moderate negative	Moderate negative	Slight negative	Moderate negative	Moderate negative	Moderate negative

- 9.8.50. All of the longer routes cross the Severn way and Marches Way long-distance routes. Although crossing points would be provided, amenity would be affected and other rights of way diverted to make use of the crossing points. **Red (Option 1)** has greatest impact of the longer routes, crossing Marches Way three times.

⁶⁸ Add Ref 8 PR Report

Orange has least impact overall (slight negative); it crosses Marches Way only once and reduces traffic on Ellesmere Road south of Hencott Lane, improving conditions for pedestrians.

- 9.8.51. All other routes are assessed as moderate negative although the shorter routes - **Blue** and **Red (Option 2)** - would have a slightly greater negative impact than the longer routes because the new junctions on existing roads would disrupt the movement of pedestrians and cyclists, whilst traffic would increase on Welshpool Road and, with the **Blue** route, The Mount and Ellesmere Road. All routes are similar in terms of physical fitness, though **Red (Option 2)** is the least favourable in this respect.

IMPACTS: JOURNEY AMBIENCE

- 9.8.52. All route options would improve journey ambience.
- 9.8.53. The journey ambience impacts are summarised in Table 46.

Table 46 - Comparison of journey ambience impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Journey ambience	Better	Better	Better	Better	Better	Better

IMPACTS: INTEGRATION

- 9.8.54. The differences between routes in terms of their fit with the planning policy context are considered to be slight. In general, policies relating to the road network would be advanced, whilst compliance with policies on the environment would be more mixed. The Stage 2 Assessment considers each route in detail, but concludes that they would all have a neutral impact.
- 9.8.55. The integration impacts are summarised in Table 47.

Table 47 - Comparison of integration impact

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Integration	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral

SUMMARY OF STAGE 2 ENVIRONMENTAL ASSESSMENT RESULTS

- 9.8.56. The results of the above assessments are summarised in Table 48 and discussed below.

Table 48 - Summary of Stage 2 Environmental Assessment (2005)

Topic	Green	Black	Orange	Red (Option 1)	Red (Option 2)	Blue
Noise (No. of people annoyed)	-124	-124	-128	-111	-74	-35
Local air quality	Better	Better	Better	Better	Better	Better
Regional air quality (tonnes NOx/year)	-6	-6	-5	-6	-8	-5
Greenhouse gases (% of Do Min CO2)	98.0	98.0	98.4	98.1	97.6	98.3

Landscape/Visual	Moderate to large adverse	Moderate to large adverse	Large adverse	Slight to moderate adverse	Moderate adverse	Large adverse
Townscape	Slight beneficial	Slight beneficial	Slight beneficial	Slight beneficial	Slight adverse	Moderate adverse
Archaeological heritage	Large adverse	Large adverse	Large adverse	Large adverse	Large adverse	Slight adverse
Built heritage	Slight adverse	Slight adverse	Slight adverse	Neutral	Neutral	Slight adverse
Biodiversity	Significant adverse	Significant adverse	Significant adverse	Significant adverse	Significant adverse	Significant adverse
Water environment	Large adverse	Large adverse	Large adverse	Large adverse	Moderate adverse	Moderate adverse
Agriculture	High	High / moderate	High	High	Moderate	Low
Accessibility / Community severance	Moderate negative	Moderate negative	Slight negative	Moderate negative	Moderate negative	Moderate negative
Physical fitness	Worse	Worse	Worse	Worse	Worse	Worse
Journey ambience	Better	Better	Better	Better	Better	Better
Integration	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral

9.8.57. The impact of each of the route options on a range of environmental indicators is set out in detail in the Appraisal Summary Tables in the April 2005 Route Study, and some of the key points are summarised below:

- **Noise** – The **orange, green** and **black** routes would have the greatest benefits in respect of noise, due to expected traffic reductions in the town. The **blue** route would be least successful.
- **Air Quality** – **Red route (option 1)** would bring the greatest air quality benefits, whilst the **blue** route would be the least successful in improving local air quality.
- **Climate Change** – Significant savings in CO2 emissions are predicted with all route options, because they would all lead to shorter journey distances and less congestion on existing roads. This takes into account an assumption that the scheme will result in the generation of some additional trips.
- **Landscape** – The most severe impacts on landscape character would result from the orange and blue routes, and these would also be visible from the largest number of houses. The route judged to fit best with the landscape is the red route (option 1).
- **Townscape** – All routes would benefit the appearance of the town by reducing traffic in areas such as Frankwell, Smithfield Road, Coton Hill and Castle Foregate. The **blue** and **red (option 2)** would have the greatest adverse effect with direct impacts at their western terminal points and increased traffic on The Mount and Welshpool Road.
- **Heritage** – all routes except the **blue** route would disturb an archaeological crop mark feature between the River Severn and Berwick Road. These include Ring ditches (ploughed down burial mounds) of the early Bronze Age and Enclosures (farmsteads) ranging from Bronze Age through to early Medieval periods. Each route would improve the setting of many historic buildings in the town by reducing traffic, but the new

road would be visible from heritage sites such as the Mount Conservation Area and Shrewsbury Castle, as it crosses open countryside. Overall the blue route is judged to have the least detrimental effect on heritage.

- **Ecology** – The **blue** route and **red route (option 2)** would result in the least severance or loss of habitats. The orange route would be the least favourable ecologically, with the largest land take and severance of habitat. The **green** and **black** routes are close to Hencott Pool which is a Site of Special Scientific Interest (SSSI) and is designated as a wetland of international importance under the “Ramsar” Convention (The Convention on Wetlands of International Importance especially as Waterfowl Habitat – Ramsar, Iran 1971).
- **Water** – the four routes terminating at Churncote Island (**red option 1, green, black and orange**) would bridge the River Severn upstream of the extraction point for Shelton Waterworks, which would therefore need to be relocated to avoid a pollution risk. This was considered feasible, although there will be technical issues to resolve with the EA. In general these longer routes also have the largest impact on existing drainage. The four routes terminating at Churncote Island (**red option 1, green, black and orange**) would also directly pass through the “Source Protection Zone” (SPZ1) around the borehole used for ground water extraction, but this would not preclude construction of these routes. It should however be noted that the **red route (option 2)** would avoid the SPZ and be downstream of the present river water extraction point. All routes, including both the **red** routes, would affect the River Severn flood plain in some way. Overall the **blue** route was judged to have the least detrimental effect on water.
- **Agriculture** – The **blue** route would have the least detrimental effect on agriculture because it would have the smallest land take and would minimise the severance of farmland.
- **Accessibility** – All the routes would reduce the amenity of some long distance footpaths. The routes linking directly to the A5 bypass would also sever lanes connecting Bicton with the Welshpool Road.
- **Road Transport** – All options would reduce congestion in the urban area and lead to shorter journey times between the west and north Shrewsbury.

9.9. ENVIRONMENTAL ISSUES IDENTIFIED FOR FURTHER CONSIDERATION

9.9.1. The Stage 2 Environmental Assessment identified a number of issues where further investigation was recommended as part of the work to determine a preferred route. Specifically it concluded that:

- There is scope to increase the level of landscape mitigation
- Options could affect other archaeological features associated with the Berwick Cropmark Complex. Further field evaluation is required before the extent to the impact can be determined.
- Further hydrological and ecological data is required for any of the options at Hencott Pool, with a view to avoiding potential impacts
- The implications for the developing local plan spatial strategy should be considered further, especially with regard to infill development pressure on land to the west of Ellesmere Road

9.9.2. The outcomes of these further investigations are discussed in Chapter 10.

9.10. STAGE 2 TRAFFIC AND ECONOMIC ASSESSMENT (2005)

TRAFFIC ASSESSMENT

9.10.1. An assessment of the traffic impacts of the six NWRR route options was undertaken using the Shrewsbury Traffic Model. The development of the model is described in detail in the Shrewsbury SATURN Model, Model Validation Reports (April 2003 and March 2004), and summarised in the Preferred Route Report (January 2007). The model base year was 2003 and traffic forecasts were undertaken for 2011 (assumed opening year)

and 2026 (design year, assumed 15 years after opening). The modelled periods were AM peak (07.00 – 10.00), PM peak (16.00 – 19.00) and Inter Peak (10.00 – 16.00). The option tests are described in the Model Tests Report⁶⁹.

- 9.10.2. All of the route options tested were forecast to produce very large reductions in traffic on those town centre routes which presently carry traffic between the west and north of Shrewsbury, especially in the morning peak period.
- 9.10.3. The forecast reductions on the Welsh Bridge in the a.m. peak ranged from 40.8% (Blue Route) to 46.2% (Orange Route) in the “low growth” scenario, and from 33.0% to 39.5% in the 2011 “high growth” scenario.
- 9.10.4. Similarly, the forecast reductions on Smithfield Road in the a.m. peak ranged from 39.4% (Blue Route) to 43.7% (Orange Route) in the “low growth” scenario, and from 32.3% to 37.8% in the 2011 “high growth” scenario.
- 9.10.5. The forecast traffic reductions on Castle Street were smaller, but still significant, ranging from 17.1% (Blue Route) to 10% (Red Route, option 2) in the a.m. peak.
- 9.10.6. On other routes in the town centre, such as the High Street and the English Bridge, which are not part of the north-west corridor, a NWRR would have much less impact on traffic flows, with forecast changes of less than 5%.
- 9.10.7. In percentage terms, the traffic reductions were forecast to be less in 2026 than in 2011, though greater in absolute terms.
- 9.10.8. The main differences between the route options were on the roads outside the town centre. All route options except **Blue** were forecast to increase traffic on the Battlefield Link Road by about 15%. Significant increases were forecast on Shelton Road (about 65% with Red Option 2 and about 20% for routes starting at Churncote). Similarly, **Red Option 2** would increase traffic on Welshpool Road by about 5%, whereas the routes starting at Churncote would reduce traffic on Welshpool Road by about 20%.
- 9.10.9. The **Blue** Route was forecast to be less effective in diverting existing traffic onto the NWRR, carrying up to 20% less traffic than the other options. It would also produce increases in traffic of about 40% on Ellesmere Road and 80% on The Mount. In contrast to this, the **Red** and **Green** options would produce reductions of about 30% on Ellesmere Road and 60% on The Mount.
- 9.10.10. In simple terms, the **Blue** and **Red (Option 2)** routes which terminate closer to the town centre would produce greater increases on the radial routes leading towards them. This was considered to make these options less attractive. The “outer” routes were shown to be broadly similar in terms of their traffic impacts.
- 9.10.11. An assessment⁷⁰ of the potential for induced traffic indicated that the improvements brought about by a NWRR could lead to induced traffic in the region of 1% to 2%.

ECONOMIC ASSESSMENT OF OPTIONS (2007)

- 9.10.12. The results of an economic assessment of the six route options is set out in the Preferred Route Report (2007) and summarised in Table 49.

Table 49 - Economic assessment (low growth)

⁶⁹ NWRR Model Tests Report, Mouchel for SCC (May 2004)

⁷⁰ Paragraph 4.6, NWRR Model Tests Report, Mouchel for SCC (May 2004)

Route option	Present value of benefits (£,000) PVB	Present value of costs (£,000) PVC	Benefit-cost ratio. BCR
Green	256,007	53,062	4.82
Black	232,385	53,625	4.71
Orange	266,626	48,935	5.45
Red (Option 1)	242,711	47,270	5.13
Red (Option 2)	247,142	46,121	5.36
Blue	183,423	23,345	7.86

Table 50 - Economic assessment (high growth)

Route option	Present value of benefits (£,000) PVB	Present value of costs (£,000) PVC	Benefit-cost ratio. BCR
Green	461,518	60,801	7.49
Black	453,974	61,111	7.34
Orange	477,341	56,743	8.22
Red (Option 1)	442,797	54,542	7.95
Red (Option 2)	459,998	53,714	8.22
Blue	307,620	28,423	11.35

9.10.13. All options were shown to have produce benefits significantly in excess of their costs. The **Blue** Route produced the lowest benefits overall but - being the shortest route - it also produced the highest BCR. To a lesser extent, the same was true of the **Orange** and **Red Option 2** routes which produced a slightly higher BCR than the remaining routes. At this level of detail, however, there was little clear distinction between the **Green**, **Black** and **Red (Option 1)** routes in terms of their economic performance. This was unsurprising, as these routes connect to the existing network at the same points, and are similar in cost.

9.11. PUBLIC CONSULTATION (2005)

9.11.1. A further round of public consultation was undertaken in May 2005 to update people on the technical review, and to determine the level of support and/or opposition to the various options, including non-road options.

9.11.2. An exhibition was held in the Pride Hill Shopping Centre in Shrewsbury town centre, and staff were on hand to answer questions. Technical reports were available for inspection. The full exhibition was also made available on the Council's website, with additional downloadable information, and displayed at the County Library and the offices of the County and Borough Councils.

9.11.3. The exhibition included:

- A broad review of the 2003 consultation
- An update on the work undertaken since 2003
- A review of key issues and policies
- Examples of possible non-road solutions
- Alternative route options for the NWRR, including descriptions of the river crossing

9.11.4. A summary of the traffic and environmental effects of each route option

- 9.11.5. Over 50,000 leaflets and questionnaires were distributed with the local free newspaper, describing the scheme and giving details of the exhibition. The questionnaire was available online and at the exhibitions.
- 9.11.6. A total of 1,165 questionnaires were returned. A majority of respondents said they had attended the main exhibition or accessed the information in other ways, including the website. Full details of the consultation responses are given in the Consultation Report⁷¹.
- 9.11.7. The questionnaire was divided into three main sections, and the results from each are summarised below:

EXISTING TRAFFIC SITUATION AND FUTURE STRATEGY

- 9.11.8. A clear majority (77%) agreed that there are traffic problems in Shrewsbury which need to be addressed. A majority (58%) considered that the existing situation of minor improvements and ongoing maintenance was not an adequate solution.
- 9.11.9. People’s views on how the problems should be addressed were quite finely balanced, and are set out in more detail in Table 51. A majority of those who responded supported in principle the construction of a NWRR (not, at this stage of the questionnaire, with reference to a specific route).

Table 51 - Support for NWRR in principle (2005)

Question	Agree or strongly agree	Disagree or strongly disagree
A NWRR should be promoted to address the problems caused by traffic in the town centre	53%	41%
Methods other than building a new road should be promoted to solve traffic problems	48%	38%

- 9.11.10. It should be noted that the 2005 consultation appeared to show slightly lower levels of support for a NWRR than the 2003 consultation (53% in 2005 compared with 58% in 2003), together with an increase in the number of people disagreeing with the scheme (41% compared with 30% in 2003), whilst fewer people were undecided.

ALTERNATIVES TO BUILDING A NEW ROAD

- 9.11.11. People were asked: “What should be included in a future strategy if methods other than building a new road are to be pursued?” The results are set out in Table 52.

Table 52 - Support for alternatives to building a new road (2005)

Alternative methods	Yes	No
Walking – new routes and improvements to existing facilities	60%	20%
Cycling – new and improved cycle routes and secure parking	66%	15%
Buses – increase frequency and operating hours. Dedicate more space to bus lanes	52%	29%
Park & Ride – increased frequency and extended operating hours, increased capacity at existing sites. New sites.	61%	25%

⁷¹ Shrewsbury NWRR Public Consultation Report 2005 (Mouchel for SCC, October 2005)

Road charging – introduce peak time congestion charges for using town centre roads and invest the income in improved passenger transport services	32%	52%
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9.11.12. Walking, cycling and improvements to buses and Park & Ride were the most popular elements for inclusion in an alternative strategy. Road charging, as an alternative to building a new road, was supported by 32% of all respondents (38% of those who answered this question).

NORTH WEST RELIEF ROAD – PREFERRED OPTION

9.11.13. People were given an opportunity to select their first, second or third preferences, or to reject any of the six route options. The results are set out in Table 53.

Table 53 - Option preferences (2005)

Route option	1st	2nd	1st or 2nd	Rejected
Green route	26%	17%	43%	22%
No new road to be built	37%	0%	37%	20%
Red (Option 1)	22%	10%	32%	25%
Black	6%	14%	20%	25%
Red (Option 2)	5%	5%	10%	37%
Orange	2%	7%	10%	32%
Blue	3%	4%	7%	41%

9.11.14. The **Green** Route received the highest levels of support, with 43% of respondents making it their first or second choice, and only 22% rejecting it. The **Red Route (Option 1)** was the first or second choice of 32% of respondents, and was rejected by 25%.

9.11.15. The **Red (Option 2)**, **Orange** and **Blue** routes were the least popular routes, gaining no more than 10% first or second choices and being rejected by more than 30% of all respondents.

9.11.16. A significant percentage of respondents (37%) said that they would prefer no new road to be built, with 20% rejecting this option.

WRITTEN RESPONSES AND COMMENTS,

9.11.17. Submissions were received from 22 organisations and interest groups. These included:

- Support for the road from:
 - Shrewsbury and Atcham Borough Council (SABC) as an integrated approach with other measures except for blue or **Red route Option 2**
 - Shrewsbury Residents Association with general improvements to the town centre except for **blue** or **red** route **Option 2**
 - four commercial companies, two of whom cited problems at Battlefield, one of whom favoured **black**, **green** and **red route 1**.
- Opposition (strong in most cases) to the road from six interest groups, including:
 - Friends of the Earth (FoE)
 - Council for Protection of Rural England (CPRE)
 - Shrewsbury Civic Society
 - Shropshire Wildlife Trust

- Ramblers Association
- Shropshire Botanical Society

9.11.18. Most of those expressing opposition cited environmental impact as their main concern, with FoE also questioning the traffic and economic case.

9.11.19. Other comments included:

- English Nature expressed a preference for the blue route, given its avoidance of impact on the specific environmental features of the Berwick Crop Mark complex and the SSSI.
- The Environment Agency felt the assessment does not sufficiently address the possibilities of alternatives, which could avoid the potential to prejudice the public water supplies and treatment facilities at Shelton.
- The agent to Berwick Estate expressed no preference for any route, as all are considered to have equal impact.
- Detailed design issues were raised by Morris Leisure in relation to the Oxon Caravan Park, with general concern over noise and access issues.
- Montford Parish Council requested a route which connected to the Churncote roundabout.

9.11.20. Overall, the 22 responses confirmed that there was a continued interest in the NWRR proposals with both strong support and strong opposition for the road proposal from different quarters. There were also calls for more work to be done on the potential of non-road options, either in conjunction with or instead of the NWRR.

9.11.21. There were objections to the **Blue** route and **Red route (option 2)** from three respondents, whilst the **blue** route was favoured in terms of biodiversity and historic environments by two respondents. Apart from these there were no other clear preferences for route options.

9.11.22. Some respondents, including the Environment Agency, felt that a more detailed environmental assessment was needed, anticipating the requirement for a Stage 3 assessment if the scheme is taken forward with a preferred route.

9.11.23. Letters were also received from 24 members of the public expressing a wide range of views. The responses included general views opposing or supporting the NWRR and specific comments and suggestions. Fifteen correspondents strongly opposed a NWRR whilst six felt it was vital to solving congestion.

9.12. OPTION DEVELOPMENT AND ASSESSMENT – CONCLUSIONS

9.12.1. Shropshire County Council considered the results of the 2005 review of the NWRR in February 2006. The conclusions are summarised below.

THE NWRR IN PRINCIPLE

9.12.2. The consultation results revealed very strong feelings both for and against the idea of building a NWRR.

9.12.3. Most people agreed that there are traffic problems to be tackled. A majority, (53%) of respondents felt that a NWRR was the best way to solve them. There was also significant support for other measures, such as improvements to public transport, walking and cycling, but the technical study shows that these alone could not achieve the same level of traffic benefits as a road.

9.12.4. The technical study indicated that a congestion charge (in conjunction with better public transport) could, in theory, achieve equivalent levels of traffic reduction to a road scheme, but only about a third of people supported this as an alternative to building a new road, although this in itself may be considered a surprisingly high figure.

9.12.5. It was concluded that a NWRR should be taken forward, as part of a wider package of measures.

ROUTE CHOICE

- 9.12.6. Of the six route options considered, only two found any significant degree of support. The **green** route was the first or second choice of 43% of people. This is not quite a majority of those who responded, but neither is the 37% who, after considering the options, felt that no road should be built at all. The **red route (option 1)** was the first or second choice of 32% of people.
- 9.12.7. The **red route (option 1)**, and the **black** route are technically very similar to the **green** route, with similar costs and similar effects on traffic. Because the **black** and **red (option 1)** routes share part of the route of the **green** option, it seems likely that people found it difficult to discriminate between them. Although the **green** route attracted the most public support, presumably because it was demonstrably the “outer” route, the technical differences between the three outer routes were not considered sufficiently great to eliminate any of them from further consideration at this stage - at least not until the potential impacts of the **green** and **black** routes on the ecology of Hencott Pool, a “Ramsar” and SSSI site, had been further investigated.
- 9.12.8. The **red route (option 2)** was the first or second choice of only 10% of respondents. It has a junction closer to the town at its western end, and would attract more traffic to the Welshpool Road and affect more residential properties than other routes. For these reason it was not taken forward in the development of a preferred route.
- 9.12.9. The **orange** route was only the first choice of 2% of people, and was rejected by 32% (more than the **green**, **black** or **red (option 1)** routes). Although it has a very good benefit-cost ratio, it appears that people do not support this route which is slightly closer to the town centre and would have a junction connecting to Ellesmere Road north of Hubert Way. At one time there had been a proposal for Hubert Way to link to Spring Gardens by way of a new railway bridge but this (the “C3 link”) was ruled out in 1997 on cost and feasibility grounds⁷². There is therefore less remaining justification for a junction on Ellesmere Road. The **orange** route is also judged to be the least satisfactory in ecological terms. For these reasons it was concluded that the **orange** route should not considered in the development of a preferred route.
- 9.12.10. The **blue** route (closest to the town) would be the shortest and cheapest, and has the best benefit-cost ratio, but is clearly not supported by local people, probably because it was shown to attract more traffic to existing roads near its terminal junctions. It was therefore agreed that the blue route should not be considered in the development of a preferred route.
- 9.12.11. To summarise, the **blue orange** and **red (option 2)** were least well supported and technically least acceptable. It was therefore decided that a preferred route should be developed based on the remaining routes: **green**, **black** and **red (option 1)**. The development of the preferred route is described in Chapter 10.

COMPLEMENTARY MEASURES

- 9.12.12. The preferred route option was developed in parallel with the County Council's participation in the government funded Transport Innovation Fund (TIF) initiative. This provided a unique opportunity to investigate in more detail the feasibility of road-user charging, either as an alternative to a NWRR or as part of a package including a NWRR. The findings of the study are summarised in Chapter 10.

⁷² See paragraphs 7.4.18 to 7.4.22

10. THE PREFERRED OPTION

10.1. INTRODUCTION

10.1.1. Chapter 9 described the development and assessment of six potential route options for a NWRR (illustrated in Figure 44 below) together with a range of non-road alternatives.

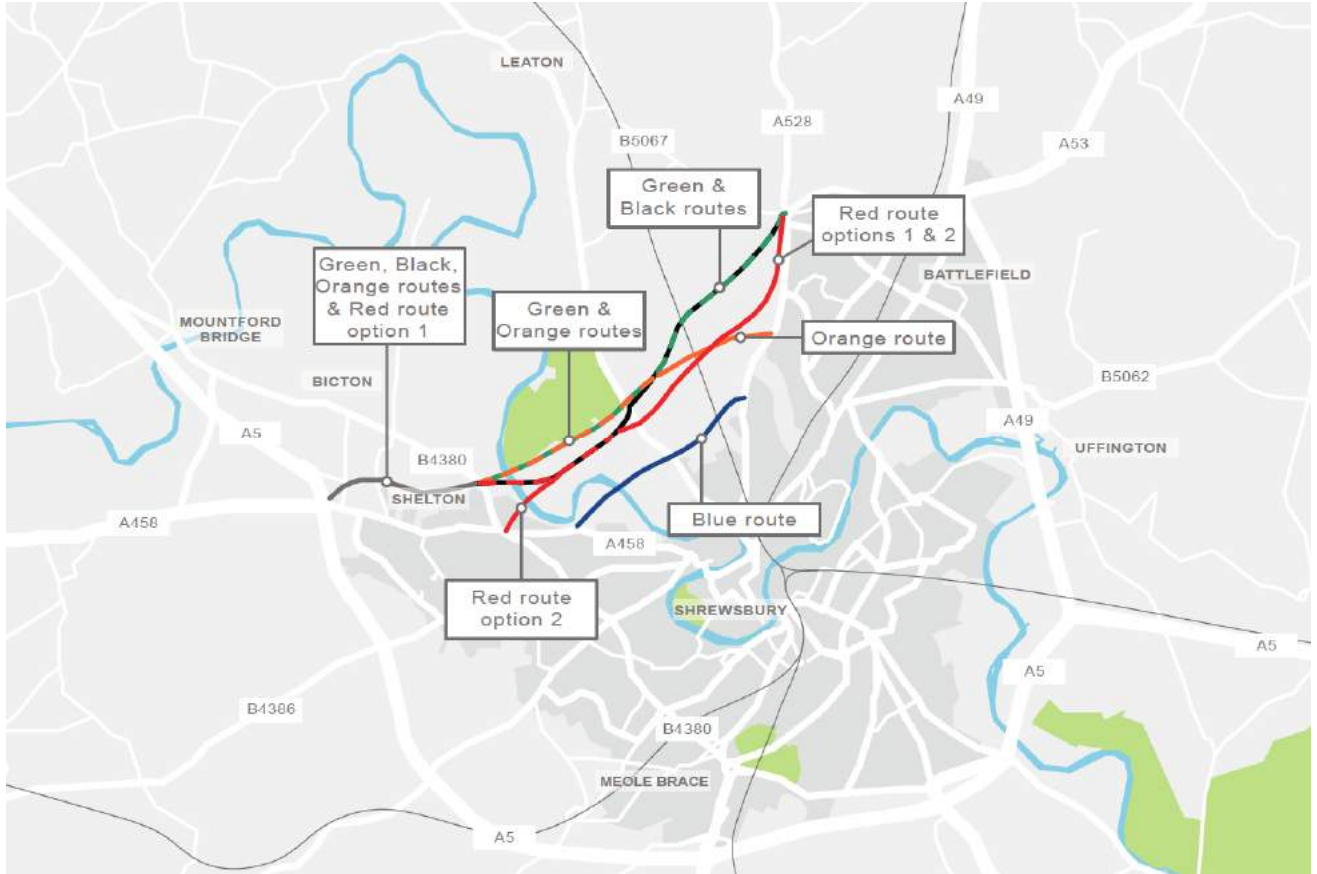


Figure 44 – Route options

10.1.2. The assessment concluded that:

- a preferred route should be developed based on the **green, black and red (option 1)** routes
- further investigation should be undertaken of environmental issues identified in the Stage 2 assessment
- road user charging was the only alternative which could have a similar impact on traffic as a NWRR

10.1.3. This chapter describes the development of a single preferred route in the light of further consideration of the environmental impacts of the three remaining options. It also summarises the outcome of the Transport Innovation Fund study which examined the feasibility of road pricing in the town centre and on a NWRR.

10.2. FURTHER ENVIRONMENTAL ASSESSMENT TO IDENTIFY A SINGLE PREFERRED ROUTE

10.2.1. The three routes which were the subject of more detailed investigation were:

1. The Green Route

2. The Black Route

3. The Red Route (Option 1)

(As illustrated in Figure 44 above)

- 10.2.2. This chapter summarises the main differences between these options, which led to the recommendation of a preferred route. It does not go into great detail, but this may be found in the full technical report: Shrewsbury North West Relief Road, Preferred Route Report (January 2007).

TRAFFIC IMPACTS

- 10.2.3. There would be no significant difference, in traffic terms, between the three different routes, as each follows the same general alignment and has similar connections to the existing road network.

AIR QUALITY

- 10.2.4. Consultations with English Nature and the Shropshire Wildlife Trust identified concerns about the impact of nitrogen deposition from vehicle exhausts upon the Hencott Pool Ramsar site, which is of international importance for nature conservation, and the Old River Bed.
- 10.2.5. Increased deposition of nitrogen-containing compounds can lead to changes in the competition between plant species in a delicate ecosystem, changing the composition of the system. The pollutant of most concern is NO_x. Road transport is the major source of UK NO_x emissions, although these are now decreasing due to improved vehicle design.
- 10.2.6. The air quality impacts of the alternative routes have been assessed in accordance with the Interim Advice Note 61/05: Guidance for undertaking Environmental Assessment of Air Quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSIs.
- 10.2.7. The NWRR would lead to changes in NO_x concentrations at Hencott Pool as set out in Table 54.

Table 54 - Impact of NWRR options on NO_x concentration at Hencott Pool

		Annual mean NO _x µg/m ³	Change due to NWRR µg/m ³	EU objective for protection of vegetation µg/m ³
Existing	2003	15.7	-	30.0
Do minimum	2011	11.7	-	30.0
Green	2011	16.5	4.73	30.0
Red (Option 1)	2011	11.7	-	30.0
Black	2011	15.4	3.67	30.0

- 10.2.8. The **Green** and **Black** Routes would increase NO_x concentrations at Hencott Pool by about 4 µg/m³. The **Red Route (Option 1)** would have no effect. However the overall concentration of NO_x would still be less than the EU objective for the protection of vegetation (30 µg/m³).
- 10.2.9. All of the routes would lead to a net reduction of NO_x concentrations at the Old River Bed, because they would all reduce traffic on existing roads nearby.
- 10.2.10. It has also been calculated that total deposition of nitrogen would increase by 0.9% at Hencott Pool and would reduce by up to 0.9% at the Old River Bed.
- 10.2.11. **Conclusion – air quality:** It is concluded that the increase in NO_x emissions from road traffic due to the NWRR would not have a significant impact on designated nearby sensitive ecosystems, whichever route is chosen.

LANDSCAPE

- 10.2.12. Consultation with the CPRE and Friends of the Earth (FoE) have raised concerns about the impact of the NWRR on the landscape, particularly that of the Old River Bed. Consultation with the Countryside Agency stressed the importance of access to the countryside for recreation. There were general concerns about the effect of the NWRR on landscape character, loss of local green space, impacts on the rights of way network and on the risk of infill development.
- 10.2.13. A meeting was held with CPRE and FoE on 3 February 2006, at which CPRE presented their own Landscape Character Survey which has been taken into consideration in the Preferred Route Report. Account has also been taken of the County Council's draft Historic Landscape Characterisation.
- 10.2.14. The Landscape Assessment in the Stage 2 Environmental Report has been developed to take account of the issues raised, in order to compare the impact of each route option. The methodology follows the detailed guidance set out by the Department of Transport. This includes a structured appraisal of the sensitivity of landscape features and the size of likely impacts, for each section of the route.
- 10.2.15. The results, for each of the three routes under consideration are shown in Table 55.

Table 55 - Landscape impact assessment

	Green	Red (Option 1)	Black
Churncote to Holyhead Road	Slight adverse impact	Slight adverse impact	Slight adverse impact
Holyhead Road to Berwick Road	Moderate adverse impact	Moderate adverse impact	Moderate adverse impact
Berwick Road to Battlefield	Large adverse impact	Large adverse impact	Large adverse impact
Whole route (based on worst section)	Large adverse impact	Large adverse impact	Large adverse impact

- 10.2.16. This confirms what has previously been acknowledged: that the construction of a major road through open landscape would have a significant impact. However, the DfT methodology, which requires the overall assessment to be based on that for the worst section, is not very sensitive to differences between the routes.
- 10.2.17. A more detailed examination of the three routes does reveal significant differences between them (Table 56).

Table 56 - Landscape impacts by route section

Route section	Landscape impact
Churncote to Holyhead Road	All routes follow the same alignment
Holyhead Road to Berwick Road	The more southerly alignments of the Red Route (Option 1) and Black Route are preferable as they would take less mature vegetation and provide a better fit with the pattern of landscape
Berwick Road to Battlefield	The Green and Black routes would affect a shorter length of the Old River Bed and views would be better protected by cuttings and intervening high ground. With regard to rights of way, these routes would be less disruptive to views of the Old River Bed from Marches Way, and more easily screened by planting, earth shaping or landform.
Whole route	The Black Route would be least damaging to the landscape

- 10.2.18. More detail on landscape impacts is given in the Preferred Route Report.

- 10.2.19. **Conclusion – landscape:** It is concluded that whilst any of the routes would have a large adverse impact on landscape, the Black Route would be least damaging and most susceptible to mitigation.

HERITAGE

- 10.2.20. Aerial photographs taken in the last quarter of the 20th century revealed a number of archaeological features evidenced by cropmarks. The Stage 2 survey (2004) recommended a programme of further field evaluation, including a geophysical survey, to determine the extent and survival of these features.
- 10.2.21. The geophysical survey was undertaken in May and June 2006, and confirmed the survival of below-ground features previously identified by aerial photography, together with a number of other features.
- 10.2.22. The Berwick cropmark complex comprises ring ditches, enclosures and other linear forms and is one of several such groups in the Upper Severn Valley. It is regarded as being of national importance because of its date range (Neolithic to Mediaeval) and its complexity.
- 10.2.23. The Preferred Route Report also considers the impact of the routes on the built heritage.
- 10.2.24. **Conclusion – Heritage:** Each of the three road options under consideration would seriously affect components of the Berwick cropmark complex. The **Red Route (Option 1)** may have slightly less impact on this, and on the built heritage, but the Preferred Route Report concludes that any differences are slight and it would not be appropriate to discriminate between the different routes on this basis.
- 10.2.25. It is therefore recommended that further site investigation be undertaken in the form of trial trenches, to determine the degree and quality of survival of the features and deposits within the major components affected by the preferred road option. The appropriate treatment could be either preservation in situ (requiring route realignment to avoid the remains) or by record (through full scale excavation, prior to construction). A watching brief should also be maintained to record any other archaeological features revealed during construction.

BIODIVERSITY

- 10.2.26. Detailed consultation with English Nature (now Natural England) had been taking place since 2004.
- 10.2.27. Concerns about the possible impact of the road were raised by the Shropshire Wildlife Trust in June 2005.
- 10.2.28. As part of the Stage 2 Environmental Assessment a detailed desk-top study was undertaken, together with a preliminary site survey.
- 10.2.29. The main concerns about the possible impact of the NWRR upon biodiversity relate to the two Sites of Special Scientific Interest (SSSI) in the area:
- **Hencott Pool (SSSI and Ramsar site).**
Hencott Pool is part of the Meres and Mosses of the north west Midlands and is of international importance. Despite its name, it contains little if any standing water but is a peat filled basin supporting a very rich flora of fen plants, including several uncommon species. These are completely intolerant of salt, require very damp to shallow water conditions and intermediate to richly fertile soils. The ecology is therefore very sensitive to the quality and quantity of water entering the wetland.
 - **Old River Bed (SSSI).**
The Old River Bed is an old meander of the River Severn and is important for its fen and swamp vegetation. The ecology is therefore sensitive to the quality and quantity of water feeding the site.
- 10.2.30. In addition, the routes would run close to the County Wildlife Site which includes the remaining area of the old river meander to the west of the SSSI. The routes would also all cross the River Severn and its floodplain.
- 10.2.31. The Preferred Route Report (2007) sets out the results of the studies and surveys in detail, focusing particularly on the differences between the three routes still under consideration. It takes account of additional

guidance published since the Stage 2 Assessment was done, and draws on further detailed consultation with English Nature / Natural England.

- 10.2.32. The initial assessment concluded that each of the three routes would have a “moderate adverse” ecological impact. In other words, they were broadly similar in their effects, because they follow similar lines within a narrow corridor.
- 10.2.33. There are however more subtle differences between the routes which the Preferred Route Report demonstrates through more detailed analysis. The **Red Route (Option 1)** would be significantly further away from Hencott Pool (although it would intrude upon the flood plain of the Old River Bed). Because of the international significance of Hencott Pool, this emerges as the most important consideration.
- 10.2.34. Of the remaining two routes, the **Black** Route would be slightly more acceptable than the **Green** Route, as it would have less impact upon the Shelton Rough Shropshire Wildlife Site and the undesignated Willow Pool.
- 10.2.35. The **Red (Option 1)** and **Black** routes have the least impact, in terms of ecology, and the **Green** route the greatest, although the differences are judged to be small.
- 10.2.36. In 2006, further consultations with Natural England identified an alternative approach which could offer a positive ecological benefit for the scheme: The **Green** and **Black** routes pass closest to Hencott Pool. If the land between Hencott Pool and the road were acquired for the development of an ecological buffer strip, and if the Pool itself were acquired for permanent conservation management as part of the road scheme, there could be an overall positive impact on the ecology of the pool. By moving the **Green** and **Black** routes just 50m further from Hencott Pool, they could also be located behind an area of enhanced landform designed to ensure that surface water does not drain towards the pool, minimising the potential for chemical pollution of the site. This positive impact could be further enhanced by the inclusion of works to improve the habitat to a plan to be formulated and agreed with Natural England. This could include scrub clearance and control of water levels.
- 10.2.37. Such an approach would be similar to that taken by Shropshire County Council in relation to the A53 Hodnet Bypass, where wetland conservation and management was a key aspect of the scheme.
- 10.2.38. With such mitigation at Hencott Pool, the **Green** or **Black** Routes would become the preferred options, in terms of ecology, with no physical intrusion into the flood plain of the Old River Bed. The **Black** Route, having less impact on Shelton Rough and Willow Pool, offers the best solution overall.
- 10.2.39. **Conclusion – Biodiversity:** With mitigation as described above at Hencott Pool, the **Black** Route would have the least impact upon biodiversity. Discussions should continue with Natural England, especially regarding mitigation at Hencott Pool, and a detailed ecological survey should be undertaken as part of the full Environmental Assessment for the preferred route.

FLOOD RISK AND DRAINAGE

- 10.2.40. Without mitigation, the NWRR could have a substantial adverse impact on the local and regional water environment. However, through the use of controlled drainage systems, by routing the road away from or above areas prone to flood and through modifications to its vertical alignment these impacts can be minimised or avoided.
- 10.2.41. The Preferred Route Report examines in detail the impact of each of the route options upon:
- The loss of flood plain storage
 - Obstruction of flow routes across flood plain
 - Pollution entering watercourses or wetland
 - Impact on sensitive sites
 - Impact on the public water supply

- 10.2.42. For the purposes of selecting a preferred route, the impact on public water supply is a determining issue. The **Green** Route would cross the river upstream of the Severn Trent water intake and the risk of accidental spillage into the river at this point, however small, is considered unacceptable. As the water intake cannot be moved, this effectively rules out the **Green** Route.
- 10.2.43. Both the other routes would cross the river downstream of the water intake, and can be realigned to increase this distance by about 40m. They would still need to include measures to prevent contamination from run-off or errant vehicles. Other mitigating measures would include compensatory storage for loss of flood plain due to embankments. Embankments for the bridge would also need to be kept to the margins of the flood plain.
- 10.2.44. Through consideration of the other possible impacts, the **Black** Route is considered to be slightly better than the **Red (Option 1)** because of its lower impact upon the floodplain around the Old River Bed and, as previously mentioned, the potential for mitigation and enhancement at Hencott Pool.
- 10.2.45. **Conclusion – Flood risk and drainage:** With mitigation, the **Black** Route would have the least impact on flood risk and drainage. The **Green** Route is unlikely to be acceptable due to its crossing of the river above the abstraction point.

GROUNDWATER

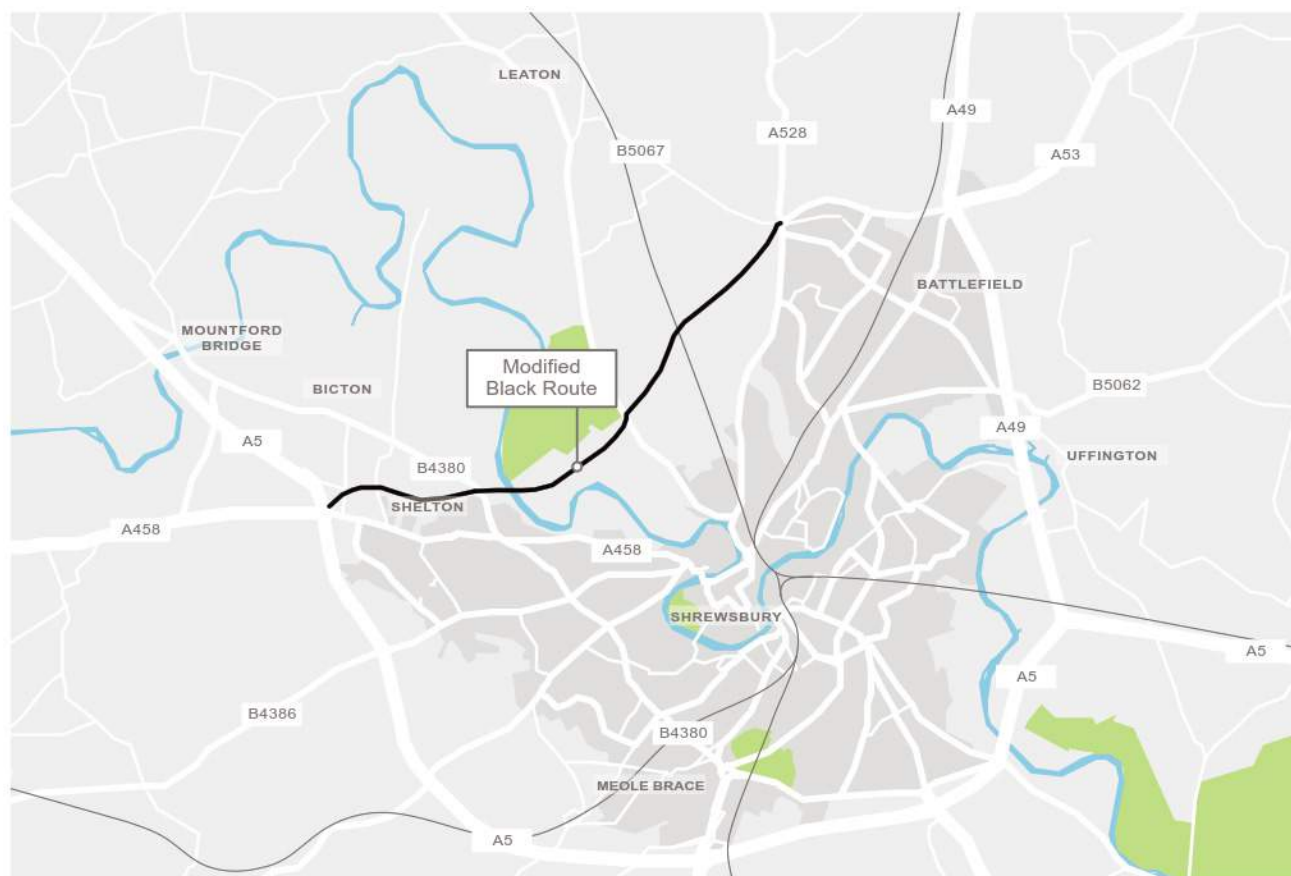
- 10.2.46. Several concerns have been raised about groundwater issues:
- The Environment Agency are concerned about the siting of a main road through the Source Protection Zone for their borehole at Shelton.
 - Severn-Trent Water also have concerns about the borehole and other effects upon the aquifer
 - English Nature and the Shropshire Wildlife Trust have concerns about the water balance and quality in Hencott Pool and the Old River Bed.
- 10.2.47. The Preferred Route Report notes that all of the routes lie within a sensitive groundwater setting. They are underlain at depth by the major aquifer from which drinking water is abstracted from boreholes. Cuttings could encounter a separate shallow groundwater table. Without mitigation, new road construction and operation could affect deep and shallow groundwater quality and impact on wetlands and surface water features.
- 10.2.48. The most sensitive issue with regard to groundwater is the proximity of all the routes to the Severn Trent borehole at Shelton. The full length of all of the routes lies within the Source Protection Zone, and the greatest part of this is classified as SPZ II, within which the Environment Agency only permit surface runoff from roads in exceptional circumstances. A short length of each route lies within SPZ I, within which the Environment Agency do not permit any surface runoff from roads.
- 10.2.49. The Preferred Route Report goes on to note that there are aspects of the local geology which suggest that the groundwater impacts may be less than would initially appear.
- 10.2.50. It also anticipates that all of the potential groundwater impacts could be mitigated and reduced to a neutral level by engineering measures, including:
- Installation of a sealed drainage system, with crash barriers and linings to prevent road run-off from accidents polluting groundwater in the most sensitive areas;
 - Use of cut-off walls for cuttings, with an associated groundwater drainage system designed to maintain groundwater levels;
 - Recharge of attenuated water to groundwater via soakaways situated outside the most sensitive areas
- 10.2.51. For the purposes of selecting a preferred route, the key point is that there is no significant overall difference between the three options under consideration with regard to groundwater.

- 10.2.52. **Conclusion – Groundwater:** It is not possible to discriminate between the three routes under consideration, on the basis of their impact upon groundwater.
- 10.2.53. Work done to date indicates that groundwater impacts can be mitigated by engineering measures. This includes impacts upon the Source Protection Zone for the Shelton Borehole.
- 10.2.54. A more detailed ground investigation and numerical model should be developed for the preferred route, to enable cost-effective mitigation measures to be designed.

10.3. OVERALL PREFERRED ROUTE

- 10.3.1. The results of the further investigations into the three possible routes are summarised below:
- **Traffic:** No significant difference
 - **Air quality:** No significant difference
 - **Landscape:** Black route preferred
 - **Heritage:** No significant difference
 - **Biodiversity:** Black route preferred
 - **Flood risk and drainage** Black route preferred. Green route unacceptable
 - **Groundwater:** No significant difference
 - **Overall:** **Black route preferred**
- 10.3.2. The **Black** route is preferred overall, because it is better able to deal with the key local issues. A more detailed summary is included in the Preferred Route Report and this also points clearly the **Black** Route as the preferred option, in terms of its overall impact.
- 10.3.3. The **Black** route is the most expensive of the options considered. This may be regarded as the cost of selecting a route which has least impact on a very sensitive local environment. A similar value judgment was made when shorter (and cheaper) route alternatives were rejected in favour of an outer corridor of routes, on the basis that the inner routes could not command public support.
- 10.3.4. Work undertaken since publication of the Preferred Route Report indicated that some minor modifications should, however, be made to the **Black** Route, to minimise environmental impact on the Severn Trent water intake and water treatment works, and on Hencott Pool. The Modified **Black** Route (illustrated in Figure 45) is therefore the preferred option.

Figure 45 – Modified Black Route



10.4. ROAD PRICING OPTIONS – CONCLUSIONS OF THE TRANSPORT INNOVATION FUND STUDY

OVERVIEW OF THE TIF STUDY

- 10.4.1. Shropshire was one of ten local authorities which took part in the Government’s “Transport Innovation Fund” (TIF) initiative, designed to encourage development of smarter and more innovative transport strategies which would tackle congestion, improve public transport, and introduce road pricing.
- 10.4.2. The County Council developed and tested a package of innovative measures for Shrewsbury which included:
 - A North West Relief Road (based on the 2007 preferred route)
 - A “first class public transport system” with new buses, improved services and new passenger facilities
 - Flexible road pricing (tolling on town centre approaches and, as an option, on the NWRR)
 - Environmental and other improvements, especially in the historic town centre
- 10.4.3. The overall concept is illustrated in Figure 46.

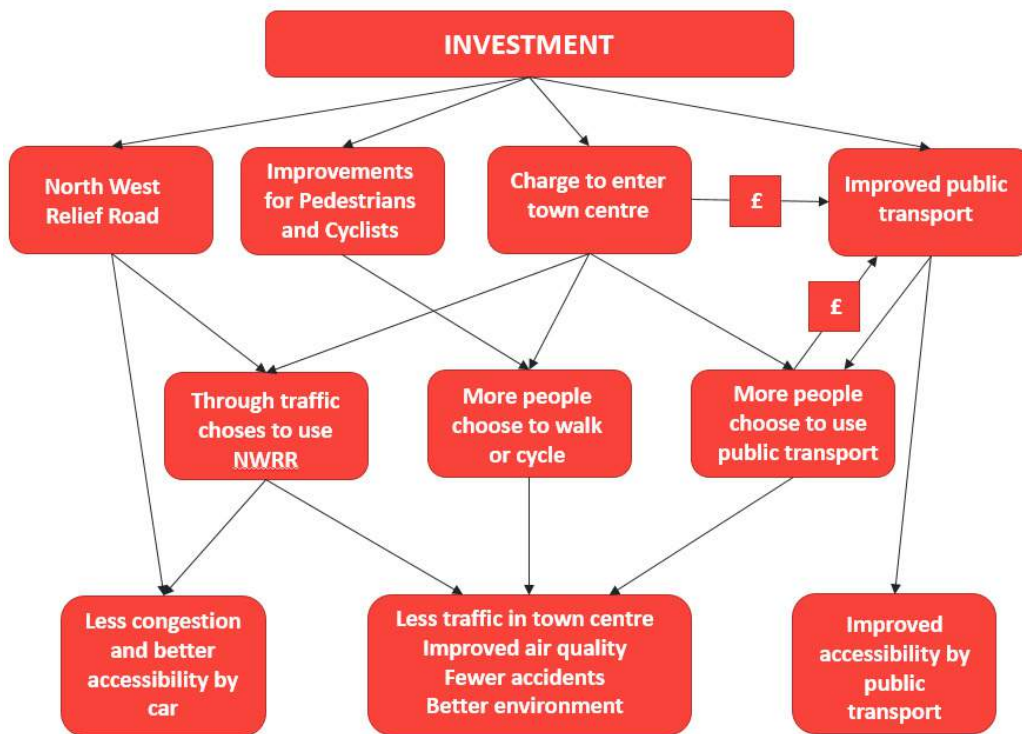


Figure 46 - Overview of potential TIF project for Shrewsbury

- 10.4.4. As part of the TIF study, a new multi-modal transport model was developed for Shrewsbury
- 10.4.5. The results of the investigations are set out in detail in the study report⁷³ and the conclusions in a report to the County Council in December 2007⁷⁴.

ESTIMATED COSTS

- 10.4.6. The study identified a potential package of improvements (including a NWRR) costing approximately £109 million at 2006 prices (Table 57).

Table 57 - Costs of potential TIF package

Cost estimates	Capital Cost	Revenue Cost per year
Shrewsbury NWRR (Q3 2006 prices)	£61.3m	-
Road pricing scheme and related improvements (e.g. variable car park signing)	£28.1m	£3.3m gross
Package of public transport and other transport/environmental improvements	£19.8m	£1.9m
TOTAL	£109.2m	£5.2m

⁷³ TIF Study Final Report, (Mouchel for SCC, November 2007)

⁷⁴ SCC Cabinet Report: “Shrewsbury Transport Innovation Fund and North West Relief Road” (14 December 2007)

10.4.7. In simple terms, the capital costs would have been the subject of a bid to the DfT's Transport Innovation Fund, whereas the ongoing revenue costs would need to be covered by the income from a road pricing scheme.

ROAD PRICING OPTIONS

- 10.4.8. Consultations had shown that people were unsure about road pricing, with only 18% in favour and 39% against it as a possible means of dealing with congestion. However, 37% answered "maybe", indicating a degree of open mindedness on the issue. If road pricing were to be introduced, people said they would expect the income to be reinvested in better transport.
- 10.4.9. From the initial traffic and economic model it was concluded that a road pricing scheme in Shrewsbury would need to be "low cost", with charges of around £1.00 or £1.50. Modelling showed that increasing charges beyond this level would produce very little extra revenue, as it would drive people away.

SCENARIO TESTS

- 10.4.10. A representative range of scenarios was tested with the traffic model:
- Do minimum
 - NWRR only
 - Town centre road pricing and transport package only
 - Town centre road pricing and transport package + NWRR
 - Town centre road pricing and transport package + NWRR + toll on NWRR
- 10.4.11. The results of the scenario tests are set out and discussed below.

COSTS

- 10.4.12. The study identified a potential package of improvements (including a NWRR) costing approximately £109 million at 2006 prices.
- 10.4.13. The capital cost associated with each scenario is summarised in Table 58.

Table 58 - Capital costs of NWRR and road pricing scenarios (£ million, 2006 prices)

Scenario	Cost of NWRR	Cost of improvements to public transport etc.	Cost of road pricing and associated measures	Total cost
NWRR only	61.3	0	0	61.3
Town centre road pricing + transport package only	0	19.8	28.1	47.9
Town centre road pricing + transport package + NWRR	61.3	19.8	28.1	109.2
Town centre road pricing + transport package + NWRR + toll on NWRR	61.3	19.8	28.1	109.2

TRAFFIC IMPACTS

- 10.4.14. The study indicated that town centre road pricing in combination with a "free" NWRR would produce the biggest traffic reductions on key routes in the town centre (Table 59).

Table 59 - Traffic reductions with NWRR and road pricing scenarios

Scenario	Reduction in traffic on Smithfield Road
NWRR only	31%
Town centre road pricing + transport package only	41%
Town centre road pricing + transport package + NWRR	65%
Town centre road pricing + transport package + NWRR + toll on NWRR	57%

ECONOMIC IMPACTS (TRANSPORT)

- 10.4.15. The study indicated that all of the scenarios could have a positive BCR. However the 'NWRR only' scenario would produce a much higher economic benefit than any of the scenarios involving road pricing. Road pricing without a NWRR performed worst in simple economic terms (Table 60).

Table 60 - Economic impacts (BCR) of NWRR and road pricing scenarios

Scenario	Benefit- cost ratio (BCR)
NWRR only	8.7
Town centre road pricing + transport package only	1.8
Town centre road pricing + transport package + NWRR	4.0
Town centre road pricing + transport package + NWRR + toll on NWRR	3.8

MODE CHOICE IMPACTS

- 10.4.16. Any of the road pricing options would be effective in achieving a mode shift towards more sustainable means of accessing the town centre (Table 61).

Table 61 - Mode choice impacts of NWRR and road pricing scenarios

Scenario	Percentage of total trips to town centre made by car
Do minimum	38%
NWRR only	41%
Town centre road pricing + transport package only	27%
Town centre road pricing + transport package + NWRR	27%
Town centre road pricing + transport package + NWRR + toll on NWRR	27%

REVENUE IMPACTS (CASH FLOW)

- 10.4.17. In the first five years of the scheme, all of the scenarios would cost more to operate than the level of income that could be generated. The lowest deficit would be with charges on the NWRR as well as the town centre (Table 62).

Table 62 - Revenue impacts of NWRR and road pricing scenarios (£ million)

Scenario	Projected income	Projected costs	Annual deficit
NWRR only	0	0	0
Town centre road pricing + transport package only	3.9	5.2	1.3
Town centre road pricing + transport package + NWRR	2.6	5.2	2.6
Town centre road pricing + transport package + NWRR + toll on NWRR	5.0	5.3	0.3

ROAD PRICING – CONCLUSIONS

- 10.4.18. The TIF study showed that a road pricing scheme could reduce traffic and congestion in the town centre, improve accessibility and encourage more people to use more sustainable forms of transport, but
- Any of the road pricing options would perform significantly less well than a NWRR, as measured by its BCR
 - a scheme with town centre charging only could not be relied on to work in cash flow terms, either with or without a NWRR,
 - a TIF package with town centre road pricing, a tolled NWRR and improved public transport would be marginal in cash-flow terms and there is a risk that projected surpluses might not be achieved.
 - there is no evidence that a road pricing scheme, especially if it had to include a tolled NWRR would command public support.
- 10.4.19. For these reasons, Shropshire County Council concluded in January 2007 that
- road pricing was not a viable alternative to a NWRR
 - road pricing in combination with a NWRR would not be financially viable
 - the preferred NWRR scheme should be progressed, alongside a broader package of measures (excluding pricing) to reduce congestion and encourage sustainable transport.
- 10.4.20. The last of the above decisions led to the development of a new Shrewsbury Integrated Transport Plan (ITP) which was the subject of a successful bid for Growth Deal funding in 2016, and is now being implemented.

OVERALL CONCLUSIONS

- 10.4.21. By 2007, the Shrewsbury North West Road scheme had been subject to increasingly detailed engineering and environmental assessments over a very long period of time. A wide range of potential alternative or complementary measures had been identified and assessed to determine whether there was a viable alternative to a NWRR. Throughout this process, local people and stakeholders had been consulted on both road and non-road options. Traffic modelling and economic assessment had been undertaken in increasing detail.
- 10.4.22. As described above, this work demonstrated that:
- A north-west relief road is needed to address traffic problems in the north-west sector of Shrewsbury
 - Alternative solutions would not have the same impact as a NWRR, or would not be deliverable
 - The scheme has been developed as part of an wider transport strategy, other elements of which have been, or are being, delivered
 - A north-west relief road would be supported by a majority of local people

- The preferred route (Modified Black Route) is feasible and would be most acceptable in terms of:
 - Its overall impact on the environment
 - its overall ability to reduce traffic on key congested routes in the town centre
 - its overall acceptability to local people
- The overall economic benefits of a NWRR would significantly exceed the cost of construction

NEXT STAGE

10.4.23. Some 10 years have passed since the preferred route was confirmed. The next stage is to update the appraisal and prepare an Outline Business Case (OBC) for the NWRR comprising:

- Strategic Case
- Economic Case
- Financial Case
- Commercial Case
- Management Case

REVIEW OF OPTIONS APPRAISAL

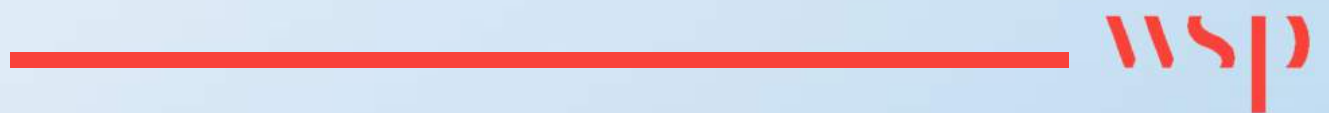
10.4.24. It is acknowledged that the appraisal of options described above was undertaken some years ago, and that the key assessments leading to the selection of the preferred route were undertaken prior to the publication of the Preferred Route Report in 2007. Only minor modifications have been made to the preferred route between 2007 and 2017.

10.4.25. The Council believes that this work is robust, and that it is neither necessary nor appropriate to repeat the assessment of discarded options. The reasons for this confidence are set out in the Appendix, which concludes that:

- New surveys and traffic modelling for the OBC will quantify the problems which the NWRR needs to address in current terms in 2017 terms
- The basic rationale for selection of a preferred route described in the OAR and supporting documents has been reviewed and found to be robust and logical. Built development since 2007 tends to constrain options further and reinforces the route choices described in the OAR. It is therefore not necessary or appropriate to re-run the appraisal of alternative options for the 2017 OBC, as it is very unlikely this would lead to different conclusions.
- New modelling and appraisal for the 2017 OBC will determine the strength of the case for the preferred route, and test that the proposed road standard offers value for money.
- Updated design work for the 2017 OBC will confirm the cost and deliverability of the proposed scheme.
- An updated assessment for the 2017 OBC will review key environmental issues
- A new public and stakeholder consultation for the 2017 OBC clearly demonstrates the acceptability of the preferred route. Early indications are that support for the scheme, and the preferred route, has increased.

Appendix A

REVIEW OF OPTIONS APPRAISAL



BACKGROUND

A draft OAR was submitted to DfT for comment in advance of the submission of the OBC and associated documents. It was based on work undertaken over several decades to identify a preferred route for the NWRR. A preferred route was adopted in 2007, and formed the basis of:

- More detailed design work, intended to support a proposed MSBC in 2010 which was not submitted due to lack of national or regional funding at that time
- The planning and development of the approved Oxon Link Road (OLR) scheme in 2015. The OLR will form the first stage of the preferred route, linked to delivery of Shrewsbury's western urban extension.
- A successful application for NWRR scheme development costs from the Large Local Majors fund (2016).
- The Outline Business Case for the NWRR, currently being prepared for submission in December 2017
- Local development planning decisions

COMMENTS ON DRAFT OAR

The Department for Transport has commented on the draft OAR, noting that the OAR is based on work undertaken before 2007, and has indicated that:

- A refresh of the options appraisal and/or a refresh of the input data and/or an explanation of why you believe the 2007 options appraisal remains reliable would be of benefit.

This note explains why Shropshire Council believes that the 2007 options appraisal remains reliable as a basis for confirming the preferred route for a NWRR.

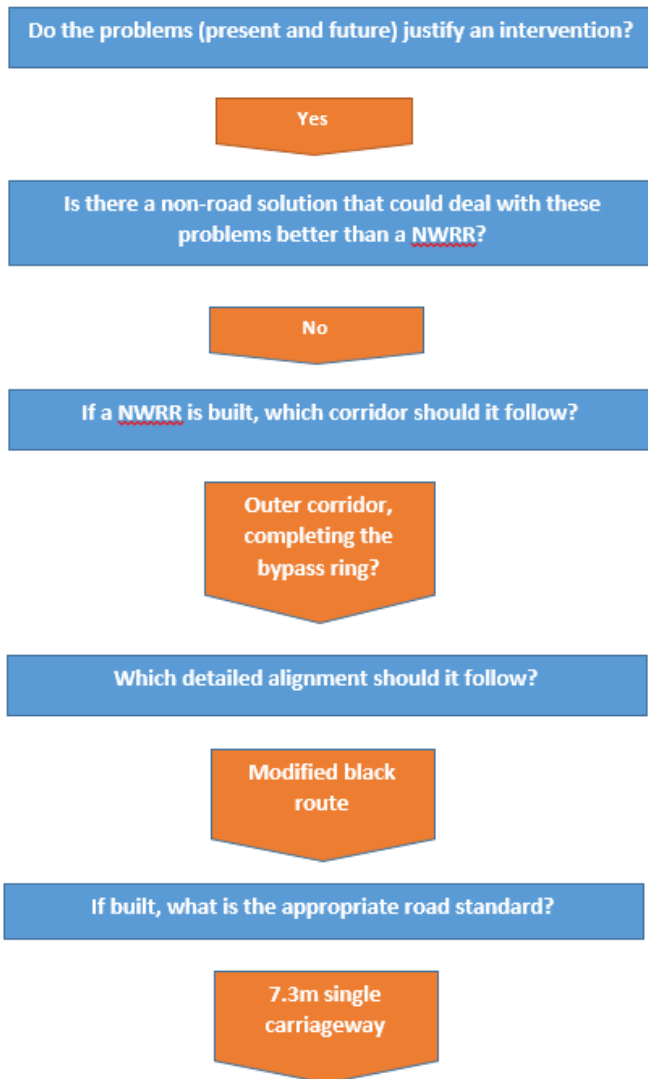
REVIEW OF THE OPTIONS APPRAISAL

The concept of a Shrewsbury NWRR has developed over a very long period, from the mid-1980s until 2007, continuing to the present day. Whilst much has changed in that time, the common thread has been the lack of transport infrastructure in the north-west sector of the town. The Council and its predecessors have sought to address the problems that this "missing link" causes (congestion, poor accessibility, inefficient and unreliable journeys, and traffic on unsuitable roads).

In trying to find the best solution to this problem, the council has had to address the following questions:

- Do the problems (present and future) justify an intervention?
- Is there a non-road solution which could deal with these problems better than a NWRR?
- If a NWRR is built, should it be in:
 - An inner corridor, close to the built-up area?
 - A middle corridor, completing the partial ring road?
 - An outer corridor, completing the bypass ring?
- Which detailed alignment should it follow?
- If built, what is the appropriate road standard?

The de-facto answers, arrived at over an extended period of appraisal and leading to the present preferred route, are illustrated below:



The remainder of this note considers:

- the original evidence on which each of the above answers was based
- whether fresh evidence will be offered in the Outline Business Case, and if not
- why the Council believes answers based on previous work are still reliable.

Where appropriate, the Council's decision has been based on consideration of:

- Strategic fit
- Feasibility
- Value for money
- Environmental impact
- Effectiveness in addressing problems
- Public acceptability

DO THE PROBLEMS (PRESENT AND FUTURE) JUSTIFY AN INTERVENTION?

This question is addressed fully in the Outline Business Case, and does not depend on historic data or appraisal. Evidence on traffic demand, journey times, delays etc. will be presented based on current (2016) observations and completely new modelling. Based on this new modelling, the Economic Case will demonstrate the extent to which the intervention is justified in terms of savings in time, vehicle operating costs, greenhouse gas emissions and accidents, and improvements in reliability.

Because the new model is based on up-to-date traffic surveys, planning data, costs and values of time etc. it will provide a more robust justification of the intervention than the earlier work.

IS THERE A NON-ROAD SOLUTION WHICH COULD DEAL WITH THESE PROBLEMS BETTER THAN A NWRR?

This issue has been addressed exhaustively in the historic appraisal, as described in the OAR.

Firstly, in 2002, a qualitative assessment was undertaken of potential non-car options. The conclusions are set out below, together with a comment on whether a different conclusion would be reached today (2017).

Measure	Assessment	Conclusion	2017 review
Development of a light rail transit or guided bus system	Would be subject to significant constraints including practical, political, environmental and financial concerns.	The traffic reduction effects of a NWRR scheme are unlikely to be matched even on the basis of a significantly higher level of investment.	There is no new reason to suggest that a light rail or guided bus system, would be appropriate for Shrewsbury, or that it would be as effective as a NWRR
Improvements to the existing bus network	Could benefit local, cross-town and long distance travel	It is likely that a package approach combining bus infrastructure and service upgrading could increase patronage and bring about a modest level of modal transfer from the private car.	Improvements have been made since 2002 to bus infrastructure, vehicles and Park and Ride, though resources are limited at the present time. As noted in 2002, bus investment can bring modest benefits. No reason to change the 2002 conclusion
Improvements in the existing passenger rail system	Could potentially benefit long distance journeys into Shrewsbury and (to a lesser extent) through travel, but would be of limited relevance for local trips..	Rail improvements could potentially lead to some increase in patronage, however the potential for modal transfer is likely to be more limited than for bus investment and there are concerns regarding the deliverability of rail infrastructure improvements under present circumstances	No reason to change the 2002 conclusion that rail investment would have very limited impact on the problems NWRR is designed to address.
Investment in cycling infrastructure	Likely to benefit local and cross-town journeys. A significant level of enhancement could be provided for an equivalent investment to the NWRR.	Would be of limited benefit for long distance and through trips.	Improvements have been made to cycling infrastructure since 2002, and continue to be made as part of the Integrated Transport Plan. However,

			there is no reason to change the 2002 conclusion that this is of limited benefit for longer distance trips.
Investment in pedestrian infrastructure	As a result of the relatively short range of walking trips, this is likely to be of principal benefit to local journeys only.	The development of pedestrian facilities could however play a significant role in enhancing accessibility by other non-car modes.	Improvements have been made to pedestrian infrastructure since 2002, and continue to be made as part of the Integrated Transport Plan. However, there is no reason to change the 2002 conclusion that this is of limited benefit for longer distance trips.
HGV improvements, including rail freight	A relatively low proportion of heavy vehicle movements between western and northern areas are likely to use town centre routes at present as a result of height restrictions. Hence the effect of any investment in alternatives may not be noticeable in terms of reduced flows through the central area.	While the development of the proposed rail freight terminal at Harlescott could bring about local benefits, the proportion of road freight that could potentially be converted to rail is low overall.	Efforts to secure a rail-freight depot at Harlescott were unsuccessful. There is no reason to change the 2002 conclusion that the proportion of road freight that could potentially be converted to rail is low overall.
Demand management measures including car park pricing strategy, traffic management and travel plans for schools and businesses	Can potentially restrain traffic in combination with other complementary measures.	Potential effects of such measures to be assessed in greater detail.	The possibility of comprehensive demand management measures was examined in detail as part of the Transport Innovation Fund study. However this proved not to be deliverable in practice
A package of measures to encourage non-car use including investment in bus, rail, cycling and walking facilities	Could be provided for an equivalent sum to the NWRR proposals. These might potentially be complemented by demand management techniques such as revised car parking charges and traffic management measures.	Whilst a modest level of modal transfer could be achieved, a NWRR is likely to facilitate a significantly higher level of traffic reduction in the town centre and on northern and western radial routes than is likely to be achieved by non-road measures even in combination.	The possibility of comprehensive investment in non-car measures was examined in detail as part of the Transport Innovation Fund study. However this bore out the 2002 conclusion that a NWRR would be more effective in reducing traffic on existing NW routes.

As noted above, and in the OAR, a comprehensive package of non-car and complementary measures was subsequently explored in detail as part of the Transport Innovation Fund (TIF) study. The TIF package included a range of options for road user charging, including charges for access to the town centre and for use of a NWRR.

The TIF study tested the potential impact of a £47 million package of measures designed to reduce car use in the town centre – both with and without a NWRR. It included detailed modelling, including modelling of mode choice, and produced very clear results which are summarised in the OAR. Specifically it showed that:

- A comprehensive large scale package of improvements and road pricing could produce significant traffic reductions – in some cases more that could be achieved with a NWRR, although it would work even better in conjunction with a NWRR.
- Any scheme including road pricing would produce significantly lower economic benefits than could be achieved by a NWRR on its own.

Scenario	Benefit- cost ratio (BCR)
NWRR only	8.7
Town centre road pricing + transport package only	1.8
Town centre road pricing + transport package + NWRR	4.0
Town centre road pricing + transport package + NWRR + toll on NWRR	3.8

Comparing a NWRR with an alternative non-NWRR strategy, the difference in economic performance is very pronounced (a BCR of 8.7 compared with just 1.8). It is extremely unlikely than a new study, even if this were feasible, would lead to a very different overall conclusion.

The Council’s conclusion in 2007 that any of the road pricing options would perform significantly less well than a NWRR, as measured by its BCR, is therefore considered robust.

It was also concluded that:

- a scheme with town centre charging only could not be relied on to work in cash flow terms, either with or without a NWRR,
- a TIF package with town centre road pricing, a tolled NWRR and improved public transport would be marginal in cash-flow terms and there is a risk that projected surpluses might not be achieved.
- there is no evidence that a road pricing scheme, especially if it had to include a tolled NWRR would command public support.

In the 10 years since 2007, the likelihood of a delivering a road-user charging scheme anywhere in the UK has become even more remote. None of the other towns and cities in the TIF study were able to deliver a charging project, the government is not encouraging such schemes, and the prospect of securing the capital funds for a full TIF-style package of improvements and charging on top of the cost of a NWRR is negligible.

The Council’s decision, in 2007 that a NWRR scheme should be progressed, alongside a broader package of measures (excluding pricing) to reduce congestion and encourage sustainable transport led directly to the development of the Shrewsbury Integrated Transport Package. The impacts of this are included in the “Do Minimum” scenario against which the current NWRR proposal is being tested for the OBC submission.

The construction of a NWRR would not preclude the introduction of road user charging in the future, should there be a change of government policy or technological advance.

Based on the information available in 2017, the conclusion that there is no non-road solution currently available to the Council which could deal with the problems better than a NWRR is considered to be robust.

ROUTE CORRIDOR

If a NWRR is built, should it be in:

- An inner corridor, close to the built-up area?
- A middle corridor, completing the partial ring road?
- An outer corridor, completing the bypass ring?

Given the passage of time since 2007 and the changes that have taken place over the past 10 years, it is important to review whether the choice of route corridor (an outer corridor completing the bypass ring) is still supported by the evidence available in 2017.

Shrewsbury's unique geography, and the complete lack of any purpose built road link in the NW sector, means that a decision has to be taken – if a NWRR is to be built – on how it should relate to the road hierarchy in the remaining sectors of the town.

- Should it be a short link, close to the town centre, to provide a simple alternative to the Smithfield Road route?
- Should it aim to complete the middle ring of distributor roads formed by the B4380 and A5112 in the S and E sectors respectively?
- Or should it aim to complete the ring of outer bypasses formed by the A5 and A49 trunk roads, which were not in place when the NWRR was first considered?

The OAR describes the initial sift of route options. A very large number of options was identified in the period up to 2003, including routes suggested by members of the public in a 2003 consultation, as well as routes previously put forward in TPP submissions and Local Plans. Together these covered all the possible routes and all three of the corridors identified above. It is neither feasible nor necessary to repeat this initial sift, because it was used to identify six representative route options for further, more detailed study in the period to 2007.

It is however appropriate to consider whether the selection of a preferred route in 2007 is still robust. Given the changes that have since taken place, would the same route be chosen in 2017?

The six routes are identified below, and assigned to one of three corridors as discussed above. In addition, two route options which were considered but rejected at an earlier stage are listed for completeness, and the avoidance of doubt – these are shown in italics in the table below.

Route	Corridor	Comment
Red (Option 1)	Outer	Includes Oxon Link Road
Black	Outer	Includes Oxon Link Road
Orange	Outer	Includes Oxon Link Road
Green	Outer	Includes Oxon Link Road
Green + C3	Outer	Includes link between Ellesmere Road and Spring Gardens
Red (Option 2)	Central	Connects to distributor ring road at Shelton
Red + C3	Central	Connects to distributor ring road at Shelton Includes link between Ellesmere Road and Spring Gardens
Blue	Inner	Short route from The Mount to Ellesmere Road

The OLR describes how a preferred route was identified in a three stage process:

- Firstly, the shortlist was narrowed down to three routes – Green Black and Red.
- Secondly, the Black Route was identified as the best of the three
- Thirdly, the Black Route was modified to further reduce its environmental impact

The robustness of the first of these stages may be simply tested by considering three criteria from a current (2017) perspective:

- Strategic fit
- Deliverability
- Public acceptability

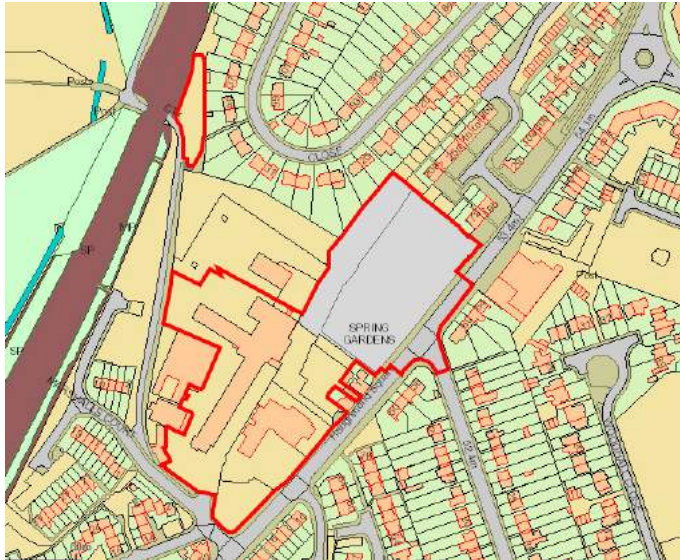
In terms of strategic fit, the Blue Route is now considered to be unacceptable. It does not connect directly to either the distributor ring or the outer bypass. It does not relate to the proposed Oxon Link Road and SUE (West), or to the recently developed Battlefield Enterprise Park and Link Road.

In terms of deliverability, developments and planning decisions taken since 2007 mean that three of the routes are no longer capable of being delivered:

- Recent housing development now occupies land at Darwin's Wood which had once been part of the protected route for the Red (Option 2) and Red + C3 routes, but which was subsequently abandoned in favour of the preferred route identified in 2007. In every practical sense, this means that these options could not now be delivered.



- Planning consent has since been granted for development on land which would have been needed for the construction of the “C3 link”, adjacent to the historic Flaxmill Maltings, on Spring Gardens. The Maltings themselves are in the process of being redeveloped under the leadership of Historic England, due for completion in 2021. This means that the Green + C3 route is no longer capable of being delivered.

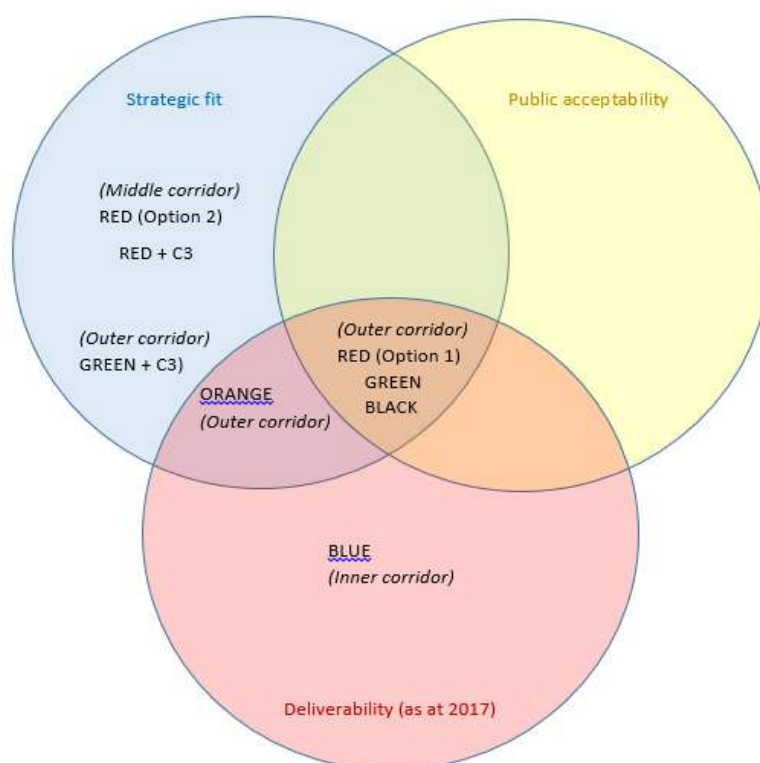


Finally, in terms of public acceptability, the findings of the 2005 public consultation, reported in the OAR, are still considered robust. The following three route options were the least popular, and most unpopular in 2007, by a considerable margin:

Route option	1st choice	2nd choice	1st or 2nd	Rejected
Red (Option 2)	5%	5%	10%	37%
Orange	2%	7%	10%	32%
Blue	3%	4%	7%	41%

For the Red (option 2), Orange and Blue Routes, at least three times as many people rejected them as supported them, and none enjoyed the support of more than 10% of the people responding. There is no reason to suppose that this degree of opposition could be overcome if the routes were subject to further consultation in 2017, and the Council would not be able or willing to ignore such strongly held views when there are more popular options available. The Red + C3 and Green + C3 options were not included in the 2005 consultation as they had already been abandoned by that time. However, as both of these routes would pass through areas which have now been developed for housing, it seems safe to assume that – even if these were feasible, which they are not – they would not be acceptable to a significant proportion of the public.

The above reasoning is represented in the diagram below:



This review reinforces the 2007 conclusion that the NWRR should be built in the outer corridor, and that the design should be developed from the Green, Black and Red (Option 1) routes.

It is acknowledged in the OAR that some of the routes rejected at this stage had a higher BCR than those which were taken forward for further development. Nevertheless, the decision is still robust, since it makes no sense to proceed with a scheme which is not deliverable, or does not achieve strategic fit, or which is clearly unacceptable to the local public. There is no point in re-running the economic appraisal for the rejected options.

WHICH DETAILED ALIGNMENT SHOULD IT FOLLOW?

The OAR describes the process by which the Red (option 1), Black and Green routes were subject to further, more detailed, engineering investigation and environmental assessment in order to identify a single preferred route. The physical differences between the remaining three routes at this stage was very small, whilst the investigations were undertaken at a greater level of detail than would normally be the case for an Outline Business Case, because the Council was planning to submit a Major Scheme Business Case for the preferred route.

The reasons for selecting a variant of the Black Route as the preferred route in 2007 are still valid:

- The Green route was rejected because it would have crossed the River Severn upstream of the point where drinking water is abstracted by Severn-Trent water, and the risk of pollution by spillage was considered unacceptable. The other routes cross downstream of the water intake. This situation is unchanged in 2017, with the additional factor that the relocation of the water intake:
 - Would significantly delay delivery of the NWRR.
 - Would significantly add to the cost.
 - Is unnecessary and inappropriate, as a downstream crossing is achievable.
- The 2007 appraisal also concluded that the Black Route would be more acceptable than Red (option 1) because it would be less damaging to the environment in terms of landscape, biodiversity, noise, and impacts on rights of way. The reasons are summarised below:



Landscape: The Red Route (option 1) takes a lower line in the landscape than the Black Route, and follows the general grain of the land. However this has the effect that the Red Route (option 1) dominates the landscape of the Old River Bed (an SSSI and Shropshire Wildlife Site), which is regarded as an area of High Sensitivity. The area designated for the Conservation of Regional and Local sites of Ecological, Geological and Physiographical Importance is not directly entered, but the landscape character area which defines the whole extent of the Old River Bed is followed by the Red Route (option 1) for 1.2 km whereas the Black Route occupies it for only 0.35 km.

Also, though the Red Route (option 1) is generally lower in the landscape than the Black Route, the local topography varies greatly in this area and the Red Route (option 1) would require substantial earthworks which would be out of scale with their surroundings – for example a deep cutting followed by an 8m embankment east of Berwick Road, which could not be graded out because of flood plain constraints.

Biodiversity: Although the Black Route would run closer to the Hencott Pool SSSI and Ramsar site than the Red Route (option 1), this provides an opportunity for the Council to acquire the pool with a view to ensuring its appropriate management (with regard to its ecological objectives) in perpetuity as a mitigation measure. Such a desirable outcome would not be possible with the Red Route (option 1).

Also, as noted above, the Red Route (option 1) is partly located within the floodplain of the Old River Bed SSSI and Shropshire Wildlife Site. Compensation for loss of floodplain is possible, but it would increase land-take and may impact on the sensitive ecosystem in the area. In contrast, the Black Route would require no intrusion into the flood plain of the Old River Bed.

The Red Route (option 1) is also considered likely to require more mitigation to the severance of badger territory than the Black Route.

Noise: Both the Red (option 1) and Black routes would reduce the numbers of properties within higher noise bands of 65dB(A) or higher, but the Black Route would provide greater noise benefits, as it runs further away from the built-up area.

Impact on public rights of way: The Red Route (Option 1) would have significant implications for the Marches Way long distance recreational path, crossing the alignment at three locations and requiring two bridges as crossing points. Views from this path over the Old River Bed and towards Shrewsbury are of high value and would be affected significantly by the presence of the road occupying the low foreground.

The OAR states that the Black route was preferred overall, because it is better able to deal with the key local issues. For the same reasons, the Black Route is considered much more defensible at a possible Public Inquiry, when environmental impacts would be a major issue – a key factor in the deliverability of the scheme. A more detailed summary is included in the Preferred Route Report and this also points clearly the Black Route as the preferred option in terms of its overall impact. The OAR describes minor modifications made to the Black Route to further reduce its environmental impact.

The OAR acknowledges that the preferred route is the most expensive of the options considered, and there is no reason to suppose that a review of the costs and benefits at this stage would find differently, or that this would lead to a different conclusion. This is regarded as the cost of selecting a route which has the least impact on a very sensitive local environment.

The OAR sets out the basis on which the “Modified Black Route” was identified as the preferred option within the “outer” corridor, having set out clearly the advantages and disadvantages of each option. There is no reason to suppose that re-visiting this assessment would produce significantly different findings, or lead to a different conclusion. New traffic modelling and economic assessment will be undertaken for the OBC to confirm that the proposed scheme offers good value for money.

IF BUILT, WHAT IS THE APPROPRIATE ROAD STANDARD?

Since identification of a preferred route in 2007, further consideration has been given to the appropriate carriageway standard, in order to reduce scheme costs and environmental impact. A reduction from 10m single carriageway to a 7.3m single carriageway is envisaged. This will be tested using the new traffic model, superseding earlier (pre 2007) tests of alternative standards.

New traffic modelling and economic assessment will be undertaken for the OBC to check that the proposed 7.3m carriageway standard for the proposed scheme offers best value for money.
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CONCLUSIONS

- New surveys and traffic modelling for the OBC will quantify the problems which the NWRR needs to address in current terms in 2017 terms
- The basic rationale for selection of a preferred route described in the OAR and supporting documents has been reviewed and found to be robust and logical. Built development since 2007 tends to constrain options further and reinforces the route choices described in the OAR. It is therefore not necessary or appropriate to re-run the appraisal of alternative options for the 2017 OBC, as it is very unlikely this would lead to different conclusions.
- New modelling and appraisal for the 2017 OBC will determine the strength of the case for the preferred route, and test that the proposed road standard offers value for money.
- Updated design work for the 2017 OBC will confirm the cost and deliverability of the proposed scheme.
- An updated assessment for the 2017 OBC will review key environmental issues
- A new public and stakeholder consultation for the 2017 OBC clearly demonstrates the acceptability of the preferred route. Early indications are that support for the scheme, and the preferred route, has increased.



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