

Appendix 2.4

Options Assessment Report, 2010

Stafford Western Access Improvements Stage 1: Options Assessment Report March 2010



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County Council**

Front cover illustration shows Chell Road, Stafford

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STAFFORD WESTERN ACCESS IMPROVEMENTS STAGE 1: OPTIONS ASSESSMENT REPORT

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1. Introduction

The Stafford Western Access Improvements is included in the West Midlands Regional Funding Allocation as a potential major scheme for preparation and commencement before 2014. The provisional Department for Transport allocation is £31 million and this Options Assessment Report forms an integral part of the Major Scheme Business Case being developed for submission in May 2010.

The West Midlands Regional Spatial Strategy identifies Stafford as a Settlement of Significant Development. The town has also been recognised as a Growth Point by Central Government and is identified as an Impact Investment Location in Regional Funding Advice. The Stafford Western Access Improvements are seen as a key element of the sustainable transport solution that will be required to deliver growth in Stafford. A solely sustainable transport option and options that combine both highway and sustainable transport solutions are therefore under consideration, together with further route variations that have been suggested via the public consultation process.

This Options Assessment Report:

- Summarises the need for an intervention including the need to accommodate strategic land use options for housing and employment development to achieve the Stafford growth agenda.
- Presents a comparative assessment of optional transport interventions formulated to relieve town centre transport problems and deliver development growth to 2026.
- Justifies the selection of the Preferred Option and identifies whether a credible lower cost alternative can be taken forward and developed as part of Stage Two of the Major Scheme Business Case.

2. Need for an Intervention

2.1 Existing Situation

Stafford Borough occupies a strategic position to the north of the West Midlands Region and Stafford is the County town of Staffordshire. The M6 runs north-south to the west of Stafford providing connections to Stoke-on-Trent, Birmingham, Manchester, the M54, the M42 and the M6 Toll. The A34 bisects the town running north-south linking to Walsall via Cannock, and Stoke-on-Trent via Stone. The A518 bisects the town running east-west linking to the A50(T) in the east and Telford to the west, and the southerly A449 connects Stafford to Wolverhampton. Major cities such as Birmingham, Manchester and Stoke-on-Trent are only a 45 minute drive away. East Midlands, Birmingham and Manchester Airports can all be accessed within approximately 1 hour.

The total number of people employed in Stafford is around 30,000 and the town maintains a strong representation in service industries, particularly among the local government and health sectors. Around 73% of the Borough's economically active population live and work within its boundary. Stafford Borough's population is around 125,900, with around 60,000 concentrated in Stafford, and it is projected that the Borough population will increase up to 131,000 by 2016.

The Stafford SATURN 2007 base year traffic model, developed by Atkins consultants, identifies a number of key links and junctions on the local highway network that experience highway capacity and delay issues. When congestion problems occur on the M6, traffic conditions in Stafford on strategic routes and in the town centre tend to be significantly worse. In general, congestion can lead to delays to public transport and affects journey time reliability.

There is an extensive network of bus services operating in the Stafford Urban Area with the predominant provider being Arriva Midlands. They focus on serving the town centre which benefits from good connections to a wide range of destinations. However, according to 2001 Census data and locally derived data, bus patronage is relatively low with only around 5% of work journeys made by Stafford residents by bus. Stafford railway station is located close to the town centre, although currently only approximately 1.6% of work journeys by Stafford residents are made by train.

Sustainable transport schemes that encourage walking, cycling and greater public transport use have been progressively delivered in the town since 2002 as part of the Stafford Urban Area Transport Management Strategy (SUATMS) which runs to 2011. Moreover, an extended package of sustainable transport measures for the period beyond 2011 has been formulated and tested to support the Stafford growth agenda. This focuses on providing bus priority, improving key town bus services to make public transport more attractive, pedestrian priority and cycling schemes. Whilst significant benefits accrued, there were economic disbenefits due to the impact on other highway users, particularly business users. Despite these operational disadvantages, the County Council remains committed to pursuing a sustainable integrated transport strategy for Stafford in the period to 2026, as resources permit through the Local Transport Plan and secured developer contributions.

2.2 Future Proposals

Following the recent Public Examination for the Phase 2 Revision of the West Midlands Regional Spatial Strategy, the Examination Panel Report recommended the following development provisions for Stafford Borough over the period 2006 to 2026:

- 11,000 new dwellings Borough wide
- An indicative figure of 8,000 for Stafford Town
- The potential for 1,000 additional dwellings at Stafford to meet the Ministry of Defence's requirements
- Employment land 5-year reservoir of 40 hectares (ha) with a total long term requirement (2006-26) of 120ha

Some of this requirement for Stafford Borough already has planning permission or has been completed. Other sites are identified in the Stafford Borough Local Plan (Saved), and potential sites exist within the Residential Development Boundary or on previously developed land. However, sites for approximately 6,000 new houses need to be found on greenfield extensions to the town and formally allocated through the planning process.

The employment land requirement in Stafford is expected to be found by re-developing or extending existing employment areas. This includes previously developed land in the Castlefields area which could provide some additional employment opportunities as part of an early mixed-use development scheme.

The Stafford SATURN traffic model has been used to assess the strategic impact of traffic likely to be generated by this level of new development for a forecast year of 2026, in line with the Local Development Framework time period. Three options for housing growth have been assessed against strategic key performance indicators related to sustainability and highway capacity. They are:

1. Focus growth in the north and west
2. Focus growth in the north and east
3. Focus growth in the south and east

These tests show that at peak times all land use options significantly impact on the highway network when there is only minimal transport intervention provided. However, when comparing the options in overall transport terms the most efficient way to increase households and jobs in Stafford is to focus the majority of greenfield development in the north and the west. Development opportunities in the west of Stafford are considered to be a sustainable option due to their close proximity to the town centre and public transport services, encouraging travel by a choice of modes. As part of this study, a series of tests were conducted to indicate which of a number of road schemes would be beneficial to support development growth. This work identified that the Stafford Western Access Improvements was likely to provide strong benefits to the highway network around Stafford.

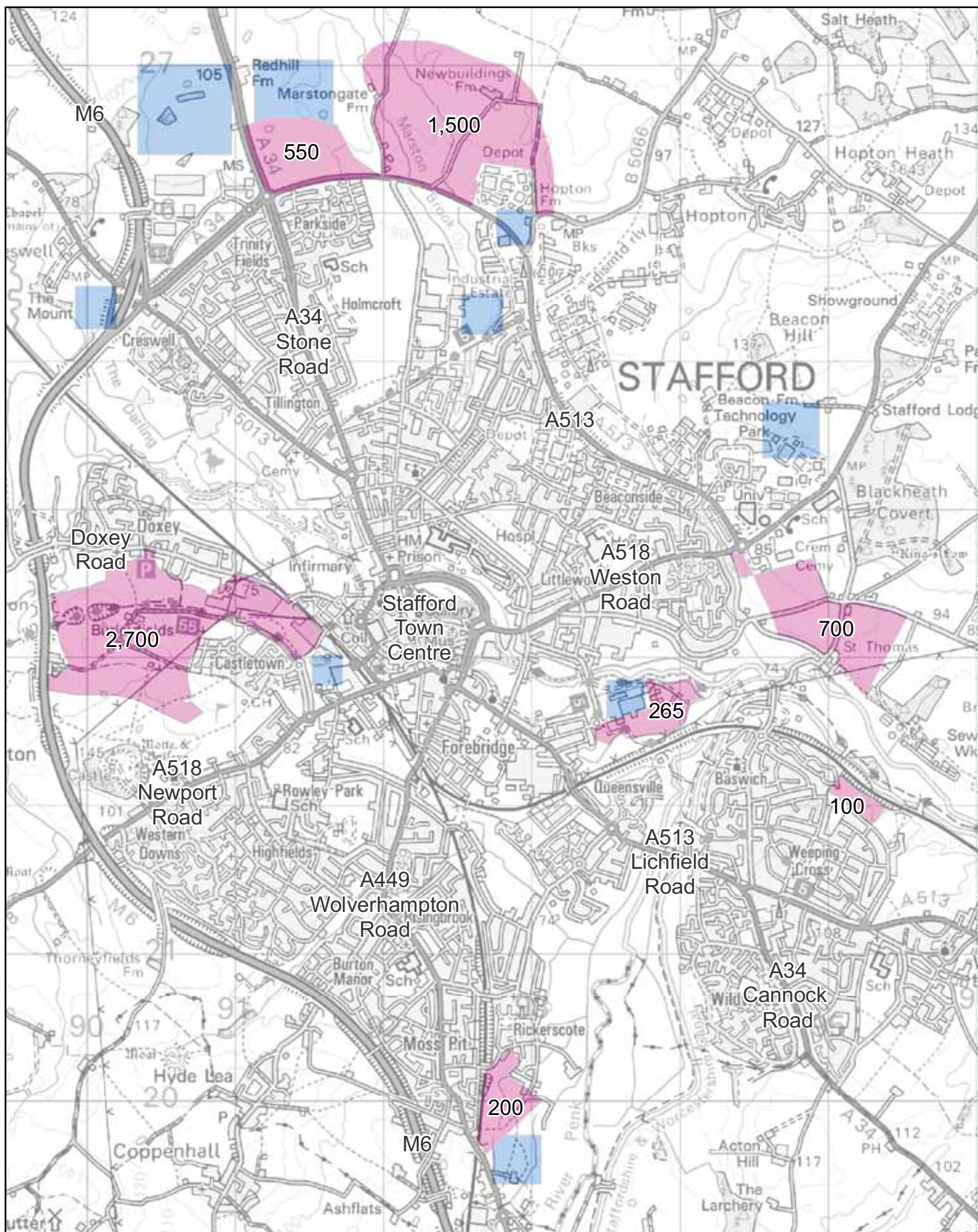
Based on the results of this work, the land use scenario for Stafford that has been assumed for the modelling work for forecast years of 2016 and 2031 (in line with the proposed scheme year of opening and 15 years after opening) has been agreed with

Stafford Borough Council and is shown on **Figure 2.1**. Further details regarding the SATURN modelling tool are provided in Chapter 6 of this report.

The 2031 do-minimum traffic situation assuming this development scenario is summarised in **Figures 2.2 and 2.3**. It shows that if only a minimal transport intervention (without the Stafford Western Access Improvements) occurs in the west, there is a high level of congestion in the AM and/or PM peak periods along routes within and to the town centre.

Figure 2.1
Stafford Growth Point Land Use Scenario

Potential Residential Sites
 Potential Employment Sites



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Figure 2.2
2031 Do Minimum AM Peak Congestion

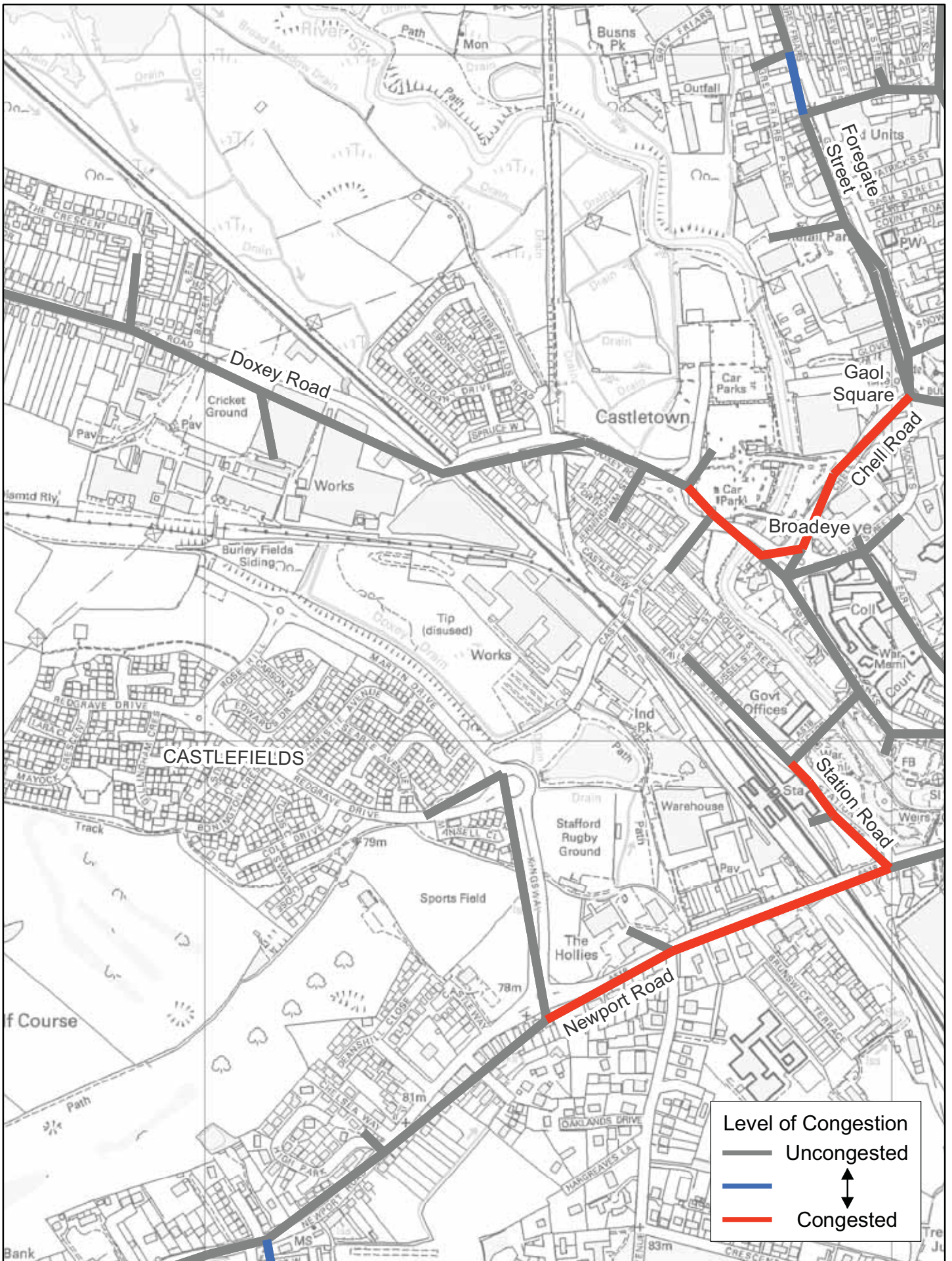
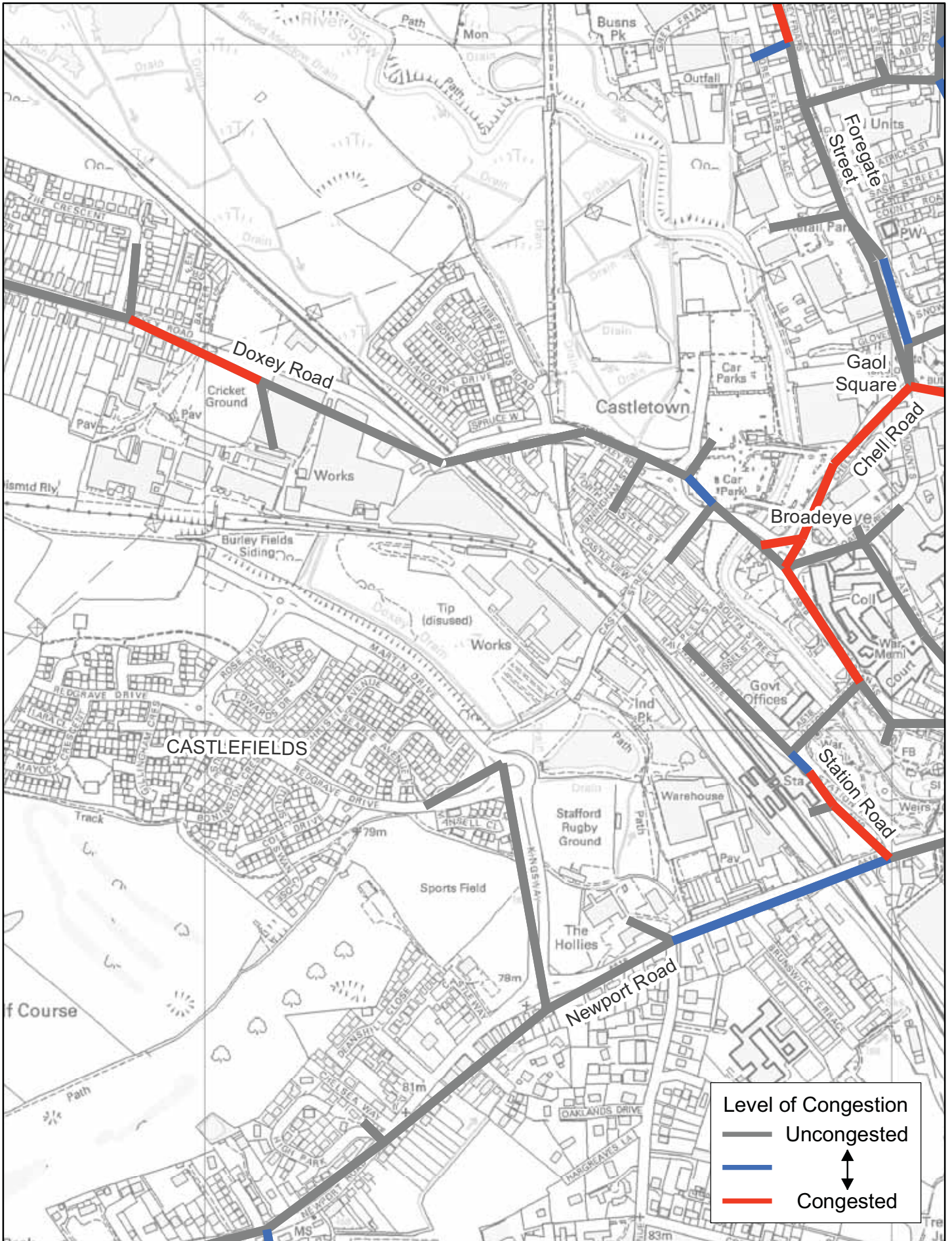


Figure 2.3
2031 Do Minimum PM Peak Congestion



3. Objectives of the Transport Intervention

The objectives of the transport intervention reflect the problems and opportunities identified in Chapter 2 and are in line with local, regional and national transport and land use objectives. Each transport option that might be appropriate for Stafford has been appraised against these objectives. The high level outcome (Objective 1) reflects Stafford's growth agenda to which improved transport infrastructure will contribute towards.

The intervention objectives are as follows:

1. To provide high quality transport infrastructure required to deliver development in Stafford as identified in the West Midlands Regional Spatial Strategy
2. To reduce congestion on routes into and around the town centre which act as a constraint on regeneration proposals
3. To facilitate improved access by sustainable modes between housing growth areas and the town centre
4. To facilitate improved access to public transport services
5. To improve safety and security for all road users

4. Strategic Fit

The objectives of the intervention have been assessed against national, regional and local strategies, comprising Department for Transport's - Delivering a Sustainable Transport System (2008) (which will guide the objectives of LTP3), West Midlands Regional Spatial Strategy (2007), Staffordshire Local Transport Plan (2006) and Stafford Borough Council's Sustainable Community Strategy (2008). The summary of this assessment is provided in **Tables 4.1 to 4.4** which clearly demonstrate that there is a strong and clear fit with national, regional and local strategies.

4.1 National Level

The intervention will help to meet national land use and transport objectives and will be in line with national planning policy statements. Table 4.1 shows how the intervention will be compliant with the Government's current transport guidance 'Delivering a Sustainable Transport System, 2008'.

Table 4.1: Strategic Fit with Delivering a Sustainable Transport System (DaSTS)

	STAFFORD WESTERN ACCESS IMPROVEMENT OBJECTIVES				
	To provide high quality transport infrastructure required to deliver development in Stafford as identified in the West Midlands Regional Spatial Strategy	To reduce congestion on routes into and around the town centre which act as a constraint on regeneration proposals	To facilitate improved access by sustainable modes between housing growth areas and the town centre	To facilitate improved access to public transport services	To improve safety and security for all road users
DaSTS OBJECTIVES					
Support national economic competitiveness and growth, by delivering reliable and efficient transport networks	✓	✓			
Reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change		✓	✓	✓	
Contribute to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health		✓	✓		✓
Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society	✓	✓	✓	✓	
Improve quality of life for transport users and non transport users, and to promote a healthy natural environment	✓	✓			

4.2 Regional Level

The Stafford Western Access Improvements is included in the West Midlands Regional Funding Allocation as a potential major scheme for preparation and commencement before 2014. This provides a clear indication that the scheme is expected to make an important contribution to regional and local objectives.

The West Midlands Regional Spatial Strategy (Phase Two Revision – Draft: Preferred Option December 2007) (WMRSS) identifies Stafford as a Settlement of Significant Development where strategic housing will be delivered outside the West Midlands and North Staffordshire conurbations and improvements to the transport network are identified as a sub-regional priority. Settlements of Significant Development:

- Act as sub-regional service centres
- Have the capacity to accommodate additional development without significant harm to local communities and in sustainable locations
- Are able to balance housing and employment opportunities and provide social infrastructure and services to meet the needs of expanded settlements
- Are able to deliver local regeneration priorities through new development
- Either already have or are capable of developing good accessibility by public transport and for increased provision for walking and cycling

The town has also been recognised as a Growth Point by Central Government and is identified as an Impact Investment Location in the Regional Funding Advice where investment in transport, housing and economic development is prioritised. Although Stafford is relatively prosperous, it is also identified as a Local Regeneration Area in the RSS based on the fact that it contains at least one of the most deprived 20% of wards nationally. Levels of deprivation are found in Highfields, Western Downs and Penside wards.

Policy UR3 in the WMRSS expects that the network of strategic towns and cities in the West Midlands, including Stafford, should be enhanced to play a leading role in urban renaissance programmes in order to provide services for local communities, a sense of identity and as drivers of economic growth. Stafford is also identified as a market town which also gives it a key role in providing services and other facilities to help in the regenerate of its rural hinterlands.

Table 4.2 shows how the intervention will be compliant with relevant WMRSS policies.

Table 4.2: Strategic Fit with West Midlands Regional Spatial Strategy (WMRSS)

	STAFFORD WESTERN ACCESS IMPROVEMENT OBJECTIVES				
	To provide high quality transport infrastructure required to deliver development in Stafford as identified in the West Midlands Regional Spatial Strategy	To reduce congestion on routes into and around the town centre which act as a constraint on regeneration proposals	To facilitate improved access by sustainable modes between housing growth areas and the town centre	To facilitate improved access to public transport services	To improve safety and security for all road users
RSS POLICIES					
SR1: Climate Change		✓	✓	✓	
SR2: Creating Sustainable Communities	✓		✓	✓	✓
UR2: Towns and Cities Outside Major Urban Areas				✓	
UR3: Enhancing the role of City, Town and District Centres	✓	✓	✓	✓	
RR3: Market Towns		✓		✓	
CF2: Housing Beyond the Major Urban Areas	✓	✓	✓	✓	
PA1: Prosperity for All	✓	✓	✓	✓	
PA11: The Network of Town and City Centres	✓	✓	✓	✓	
QE1: Conserving and Enhancing the Environment	✓		✓		
QE2: Restoring degraded areas and managing and creating high quality new environments	✓				
QE7: Protecting, Managing and Enhancing the Region's Biodiversity and Nature Conservation Resources	✓				
QE9: The Water Environment	✓				
W9: Construction and Demolition Waste	✓				
T1: Developing accessibility and mobility within the Region to support the Spatial Strategy	✓	✓	✓	✓	✓
T2: Reducing the Need to Travel	✓		✓	✓	
T3: Walking and Cycling	✓		✓		✓
T5: Public Transport				✓	
T9: The Management and Development of National and Regional Transport Networks	✓	✓		✓	
T12: Priorities for Investment	✓				

4.3 Local Level

The Stafford Western Access Improvements is identified as a potential major scheme for funding submission during the course of Staffordshire Local Transport Plan 2006 – 2011.

There has been a longstanding protected road alignment for the highway element of the Stafford Western Access Improvements, historically named as two separate schemes: the Castlefields Link Road and the Chell Road Diversion. This protected alignment is being considered as an intervention option as part of this Options Assessment Report (Yellow Route: C).

Policy T15C in the Staffordshire and Stoke-on-Trent Structure Plan 1996-2011 (adopted in 2001) identifies the Stafford Western Access Improvements as important for the implementation of the land use strategy within the Structure Plan. It also states that the scheme is likely to require substantial funding from the private sector and must be justified in the context of the Local Plan (now the Local Development Framework). All transport schemes identified in the Structure Plan were assessed in terms of cost, alignment, engineering and their contribution towards: aiding economic regeneration, reducing road traffic accidents, improving the environment, meeting development targets and reducing traffic flows. Policy T15C no longer has any statutory status as it has not been saved prior to the adoption of the Local Development Framework.

The protected road alignment for the Castlefields Link Road and Chell Road Diversion was considered for inclusion in the adopted Stafford Borough Council Local Plan 2001. A significant housing allocation at Castlefields was not included in the Local Plan therefore it was not considered appropriate to include the road proposals. There were also concerns about the protected alignment in terms of its deliverability and its impact on communities in Castletown.

Stafford Borough Council is currently preparing its Local Development Framework to replace the adopted Local Plan. Consultation on the Issues and Options for the Core Strategy has taken place and it is expected that a draft Core Strategy confirming LDF objectives and identifying strategic housing allocations and associated highway infrastructure will be published after the submission of this Major Scheme Business Case. The Borough Council's preferred land use option is currently scheduled for publication in September 2010. Therefore at a local level, the objectives of the proposed intervention have only been assessed against the existing Local Transport Plan and Sustainable Community Strategy (Tables 4.3 and 4.4).

Table 4.3: Strategic Fit with Staffordshire Local Transport Plan

	STAFFORD WESTERN ACCESS IMPROVEMENT OBJECTIVES				
	To provide high quality transport infrastructure required to deliver development in Stafford as identified in the West Midlands Regional Spatial Strategy	To reduce congestion on routes into and around the town centre which act as a constraint on regeneration proposals	To facilitate improved access by sustainable modes between housing growth areas and the town centre	To facilitate improved access to public transport services	To improve safety and security for all road users
LTP OBJECTIVES					
Better Accessibility	✓	✓	✓	✓	
Creating Safer Roads	✓				✓
Effective and Efficient Highway Maintenance	✓				
Reducing the Impact of Traffic	✓	✓	✓	✓	
Improving Air Quality		✓	✓	✓	

Table 4.4: Strategic Fit with Stafford Borough Sustainable Community Strategy

	STAFFORD WESTERN ACCESS IMPROVEMENT OBJECTIVES				
	To provide high quality transport infrastructure required to deliver development in Stafford as identified in the West Midlands Regional Spatial Strategy	To reduce congestion on routes into and around the town centre which act as a constraint on regeneration proposals	To facilitate improved access by sustainable modes between housing growth areas and the town centre	To facilitate improved access to public transport services	To improve safety and security for all road users
COMMUNITY STRATEGY OBJECTIVES					
Vibrant, prosperous, sustainable economy and environment	✓	✓	✓	✓	
All members of our communities are safe and feel safe					✓
Protected and enhanced environment	✓	✓	✓	✓	
All our members feel included in society, live longer, healthier and more contented lives		✓	✓	✓	✓

5. Option Development

5.1 Introduction

A number of options have been identified in order to meet the intervention objectives. The options that have emerged include a solely sustainable transport solution and solutions that combine increasing highway capacity with a package of complementary sustainable transport measures. All potential highway options have a common design philosophy being single carriageway roads with a 30mph speed limit, modern lighting and complete with new cycle ways and footpaths. Road alignments all aim to provide improved access between the west of Stafford and the town centre as this has been recognised as the most sustainable greenfield location for new housing development.

During December 2009 and January 2010 Staffordshire County Council carried out a consultation exercise to explain to local residents and stakeholders the options for improving transport infrastructure in Stafford to help accommodate likely forecast traffic growth. Four possible road alignments to the west of Stafford were suggested and consultees were invited to express their views about the proposed alternative solutions. The outcome of the consultation process has informed the intervention options and the decision regarding which option should be taken forward for further detailed analysis in Stage Two of the Major Scheme Business Case. The overall consultation results are summarised in Chapter 7 of this report and are discussed in more detail in a separate Consultation Report.

During the consultation process a number of alternative options for road construction around the urban area of Stafford were put forward as suggestions to help relieve traffic congestion in the town. The County Council's response to these suggestions is provided in the Consultation Report. With regard to the potential alignment of the Stafford Western Access Route, two new alignments (Consultation Routes G and H) were proposed and have been included for assessment within Chapters 5 and 6 of this Report.

It was also suggested that a combination of elements of the suggested routes could be implemented, including the 'Green' route phase 1 with the 'Yellow' route for phase 2. This 'hybrid' option has been developed and appraised in further detail due to its potential to be a credible lower cost alternative to the emerging Preferred Option. The option of constructing a Yellow (phase 1) / Green (phase 2) hybrid route has not been taken further because:

- The total cost of construction is considered prohibitive at £46 million (including contingencies)
- It does not relieve the impact on local communities in Castletown
- There are engineering concerns regarding the construction of a new askew road bridge required over the West Coast Main Line

Table 5.1 summarises how each intervention option has been identified.

Table 5.1: Identification of Options

INTERVENTION OPTION	HOW WAS THE OPTION IDENTIFIED?
A: Sustainable Transport Option	<ul style="list-style-type: none"> • Existing LTP Sustainable Transport Strategy (SUATMS) • Stafford Transport Study that will inform the Local Development Framework (Atkins 2007 – 2010) • 2009 Bid for Community Infrastructure Fund (CIF2) for a package of Sustainable Transport Measures for Stafford
Highway Options:	
B: Castlefields to Doxey Rd (Phase 1 red/blue/green)	<ul style="list-style-type: none"> • The most deliverable lower cost alternative that links the west of Stafford to the town centre • The option does not provide an alternative route to the north of the town centre • Complementary sustainable transport measures based on Option A above
C: Castlefields to Chell Rd (yellow)	<ul style="list-style-type: none"> • Historic protected alignment to relieve town centre roads and serve development in the west of the town • Complementary sustainable transport measures based on Option A above
D: Castlefields to Foregate St (red)	<ul style="list-style-type: none"> • The most direct route proposed between the west and the north of the town • Route option identified to minimise impact on existing residential areas and communities • Provides access to development sites and relieves congestion in the town centre • Complementary sustainable transport measures based on Option A above
E: Castlefields to Foregate St (blue)	<ul style="list-style-type: none"> • Route option identified to minimise environment impact • Provides access to development sites and relieves congestion in the town centre • Complementary sustainable transport measures based on Option A above
F: Castlefields to Foregate St (green)	<ul style="list-style-type: none"> • Route option identified to minimise impact on the environment, existing residential areas and communities • Provides access to development sites and relieves congestion in the town centre • Complementary sustainable transport measures based on Option A above
G: Castlefields to Gaol Square (green/realigned yellow consultation route)	<ul style="list-style-type: none"> • Suggested as an alternative alignment during the consultation process • Complementary sustainable transport measures can also be provided with this alignment
H: Castlefields to Foregate St (realigned green consultation route)	<ul style="list-style-type: none"> • Suggested as an alternative alignment of the Green option during the consultation process • Complementary sustainable transport measures can also be provided with this alignment
I: Hybrid route (green/yellow)	<ul style="list-style-type: none"> • Hybrid of Green Route (phase 1) and Yellow Route (phase 2) • Potential to be credible lower cost alternative • Complementary sustainable transport measures can also be provided with this alignment

5.2 Sustainable Transport Option (A)

In 2009, Staffordshire County Council submitted a bid for Community Infrastructure Fund (CIF2) to facilitate transport interventions necessary to help achieve housing growth. The bid required a full Major Scheme Business Case to be completed for a package of sustainable transport measures consisting of three complementary strategies to be jointly funded by the County Council, Borough Council, developer contributions and CIF2 funding. The total cost of implementation was estimated at £4.028m for the period 2009 to 2012. The measures were subject to public consultation either individually or through the development of the Stafford Urban Area Transport Management Strategy (SUATMS). The schemes include:

Bus Strategy

- Gaol Square Bus Interchange.
- Bus Priority Corridors (Linked to RTPI)
- Real Time Passenger Information (RTPI)
- Upgrade Town Centre Bus Stops

Walking and Cycling Strategy

- Town Centre Traffic Management and Pedestrian Improvements
- Beaconside Cycle Link
- Waterscape Walking and Cycling Links
- Rising Brook to town centre Cycle Link
- Castlefields Walking and Cycle Link

Promoting Smarter Travel Choices

- Supporting sustainable transport schemes
- Stafford Residential Travel Plan Framework

Capacity for the private car is not increased with this option. Instead, the overall effect of delivering this option will be the creation of improved opportunities to use sustainable transport and a better managed and safer transport network. However, schemes that are essential to make sustainable travel more attractive, such as bus priority and pedestrianisation, can ultimately disbenefit car drivers by lengthening journey times.

The economic analysis took into account the benefits from SATURN model outputs, a public transport spreadsheet model and benefits accruing to cycle and walk-based modes. Fixed land use appraisals were used for the assessments whereby all proposed development up to 2026 was included within the do-minimum scenario (assuming a situation without transport intervention) and do-something (with the investment). The key points of note from the economic assessment are as follows:

- Total present value of user benefits (PVB) is negative at £-6.03 million
- Highway (car, HGV) users contribute £-56.2 million of disbenefit
- Corresponding bus-based benefits amount to £50.2 million
- There are physical fitness benefits of £4.3 million
- Despite this, benefits to consumers using the bus outweigh the corresponding disbenefits generated by car-based consumers, but the relatively low proportion

of business users on the bus mean that disbenefits generated by car users in business travel are substantially higher. This marked disparity in business user benefits is what generates the overall negative PVB.

The combination of measures in the ‘Do-Something’ scenario, in particular the bus-only and one-way measures, resulted in disbenefits for highway users, in particular business users. The reduction in speed for business users resulted in an increase in travel costs (journey time) resulting in monetised disbenefits across the town centre network. The potential for rerouting to quicker alternative routes was limited by the wide coverage of the public transport schemes.

The transport strategy beyond 2012 will continue to focus on investing in transport infrastructure that continues to deliver better accessibility by sustainable modes, tackling congestion and improving road safety. It will be complemented by necessary access requirements at the location of new developments. However evidence suggests that higher traffic volumes may act as a barrier to delivering a successful Integrated Transport Strategy in the future.

A sustainable transport strategy cannot on its own satisfactorily deliver the Stafford Growth Agenda in transport terms. Additional highway capacity needs to be a key element of a sustainable transport solution. As well as helping to accommodate housing growth, a combination of new highway capacity and sustainable transport improvements will provide the opportunity to enhance bus services and facilities, walking, cycling and environmental enhancements within the town centre and improved access to the railway station.

The options under consideration were conceived to offer congestion relief to the ‘old town centre route’ comprising A34 Foregate-Gaol Square-Chell Rd-Broad Eye-Tenterbanks-Victoria Rd-Station Road-A518 Newport Rd (to Kingsway), in order to achieve the intervention objectives.

5.3 Castlefields to Doxey Road (Phase 1 Red/Blue/Green Route B)

This proposed option is shown on **Figure 5.1** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

B: Castlefields to Doxey Road (Phase 1 Red/Blue/Green Route)
Benefits
<ul style="list-style-type: none"> • Provides new access road to new development in Western Stafford, reducing the need to travel through Doxey • Does not take land from Site of Special Scientific Interest (SSSI) • Minimal landscape and biodiversity issues • Cheaper to construct than alternative options
Disbenefits
<ul style="list-style-type: none"> • Only provides a link between Martin Drive and Doxey Road • No congestion relief to ‘old town centre route’ (compared to Do Minimum) • Additional congestion at Newport Road / Westway junction • Route passes over infrequently used railway sidings owned by Network Rail • Area within highest risk Flood Zone 3

- Does not reduce pedestrian severance in the town

5.4 Castlefields/Doxey Road/Chell Road (Yellow Route C)

This proposed option is a historic protected alignment as shown on **Figure 5.2** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

C: Castlefields/Doxey Road/Chell Road (Yellow Route)
Benefits
<ul style="list-style-type: none"> • Does not take land from Site of Special Scientific Interest (SSSI) • Largely uses previously developed land • No concerns regarding impact on landscape • AM - significant relief to Station Road and Newport Road • PM - significant relief to Broadeye / Doxey Road and Tenterbanks • Slightly cheaper to construct than alternative options
Disbenefits
<ul style="list-style-type: none"> • New £9.5m askew road bridge required over the West Coast Main Line • Houses in Castletown would need to be demolished • Passes close to the Castlefield's balancing pond, a local wildlife habitat • AM – congestion remains on Chell Road and Broadeye / Doxey Road and additional congestion at Newport Road / Westway junction • PM - congestion remains on Gaol Square / Bull Hill, Chell Road and Station Road with additional congestion at Newport Road / Westway junction • Additional delays on the network caused by new traffic signals on Chell Rd • Area within highest risk Flood Zone 3

5.5 Castlefields/Doxey Road/Foregate Street (Red Route D)

This proposed option is shown on **Figure 5.3** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

D: Castlefields/Doxey Road/Foregate Street (Red Route)
Benefits
<ul style="list-style-type: none"> • The shortest route through to Foregate Street • Allows public transport, walking and cycling improvements in the town centre • AM - significant relief to Chell Road, Broadeye / Doxey Road, Newport Road • PM - significant relief to Gaol Sq / Bull Hill, Chell Road, Broadeye / Doxey Road, Tenterbanks • Can utilise an existing road bridge over the WCML
Disbenefits
<ul style="list-style-type: none"> • Direct impact on Doxey Marshes Nature Reserve SSSI which cannot be mitigated • Disruption to landscape pattern although appropriate mitigation is feasible • AM - congestion remains on Station Road and additional congestion on Doxey Road, Doxey and Newport Road / Westway • PM - congestion remains on Station Road and there is additional congestion on Doxey Road, Doxey

- Route passes over infrequently used railway sidings owned by Network Rail
- Area within highest risk Flood Zone 3
- Possible indirect impact on Foregate Conservation Area

5.6 Castlefields/Doxey Road/Foregate Street (Blue Route E)

This proposed option is shown on **Figure 5.4** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

E: Castlefields/Doxey Road/Foregate Street (Blue Route)
Benefits
<ul style="list-style-type: none"> • Only affects the very edge of the Doxey and Tillington Marsh SSSI. It enters the SSSI albeit into an area described by Natural England as 'Destroyed' • Allows public transport, walking and cycling improvements in the town centre • AM – significant relief on Chell Road, Broadeye / Doxey Road and Newport Road • PM – significant relief on Gaol Square / Bull Hill, Chell Road, Tenterbanks • Can utilise an existing road over the WCML • Limited impact on landscape
Disbenefits
<ul style="list-style-type: none"> • AM – congestion remains on Station Road, and there is additional congestion evident on Doxey Road, Doxey and Newport Road / Westway • PM – congestion remains on Broadeye / Doxey Road and Station Road • Close to houses on Doxey Road and potential conflicts near Sainsbury's • Route passes over infrequently used railway sidings owned by Network Rail • Area within highest risk Flood Zone 3 • Possible indirect impact on Foregate Conservation Area

5.7 Castlefields/Doxey Road/Foregate Street (Green Route F)

This proposed option is shown on **Figure 5.5** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

F: Castlefields/Doxey Road/Foregate Street (Green Route)
Benefits
<ul style="list-style-type: none"> • Only affects the very edge of the Doxey and Tillington Marsh SSSI. It enters the SSSI albeit into an area described by Natural England as 'Destroyed' • Allows public transport, walking and cycling improvements in the town centre • AM - significant relief to Chell Road, Broadeye / Doxey Road / Station Road and Newport Road • PM – significant relief at Gaol Square / Bull Hill, Chell Road, Broadeye / Doxey Road and Tenterbanks • Increased highway capacity and reduced conflicts close to Sainsbury's • Can utilise an existing road bridge over the WCML • Limited impact on existing residential areas • Landscape issues can be mitigated
Disbenefits
<ul style="list-style-type: none"> • AM – additional congestion evident on Doxey Road, Doxey and Newport

<p>Road / Westway</p> <ul style="list-style-type: none"> • PM – congestion remains at Station Road. Part of new route (Phase 2) is congested • Route passes over infrequently used railway sidings owned by Network Rail • Area within highest risk Flood Zone 3 • Possible indirect impact on Foregate Conservation Area

5.8 Consultation Route (Green/Realigned Yellow Route G)

This proposed option was identified as part of the consultation process. It incorporates the alignment of phase 1 of the Green Route between Newport Road and Doxey Road, and a revised alignment of the Yellow route that links directly into Gaol Square, rather than Chell Road. Gaol Square is currently a signalised four arm gyratory with high traffic flows. The introduction of a fifth arm can only be included on a large gyratory system which is designed with large storage between stop lines on the circulatory movements of the roundabout. This is not the case at Gaol Square therefore this option can only be modelled by accommodating the new western access road by linking it into the gyratory at the existing junction of Chell Road and Gaol Square.

The route is shown on **Figure 5.6** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

<p>G: Castlefields to Gaol Square Consultation Route (Green/Realigned Yellow Route)</p>
<p>Benefits</p> <ul style="list-style-type: none"> • Does not take land from Site of Special Scientific Interest (SSSI) • AM – significant relief to Broadeye / Doxey Road, Station Road, Newport Road • PM – some relief to Gaol Square / Bull Hill, but significant relief to Broadeye / Doxey Road and Tenterbanks • No concerns regarding impact on landscape • Can utilise an existing road over the WCML • Limited impact on existing residential areas
<p>Disbenefits</p> <ul style="list-style-type: none"> • AM - congestion remains on Chell Road. Increased congestion evident on Doxey Road, Doxey and Newport Road / Westway. New route (Phase 2) partly congested • PM – congestion remains on Chell Road and Station Road and increased congestion evident at A34 Foregate / Gaolgate and Newport Road / Westway. New route (Phase 2) partly congested • Route passes over infrequently used railway sidings owned by Network Rail • Area within highest risk Flood Zone 3

5.9 Consultation Route (Realigned Green Route H)

This alternative emerged from the consultation response made by Bellway Homes and St Modwen Properties plc. Essentially it involves a more westerly alignment

that avoids the need to construct a new bridge over the Doxey rail sidings at Castletown. This proposed option is shown on **Figure 5.7** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

H: Castlefields/Doxey Rd/Foregate Street Consultation Route (Realigned Green Route)
Benefits
<ul style="list-style-type: none"> • Only affects the very edge of the Doxey and Tillington Marsh SSSI. It enters the SSSI albeit into an area described by Natural England as 'Destroyed' • Allows public transport, walking and cycling improvements in the town centre • AM - significant congestion relief on Chell Road, Broadeye / Doxey Road and Newport Road • PM – significant congestion relief on Gaol Square / Bull Hill, Chell Road, Broadeye / Doxey Road. Some relief to Tenterbanks • Increased highway capacity and reduced conflicts close to Sainsbury's • Can utilise an existing road bridge over the WCML • Limited impact on existing residential areas • Landscape issues can be mitigated • Avoids the need to bridge infrequently used railway sidings owned by Network Rail
Disbenefits
<ul style="list-style-type: none"> • AM – congestion remains on Station Road and additional congestion on Doxey Road, Doxey and Newport Road / Westway • PM - congestion remains in Station Road and additional congestion on Newport Road / Westway • Area within highest risk Flood Zone 3 • Possible indirect impact on Foregate Conservation Area • Additional distance makes it less attractive to through traffic

5.10 Hybrid Route (Green/Yellow Route I)

This option was identified after considering the costs of providing individual sections of the route, in the context of responses received through the consultation exercise. This proposed option is shown on **Figure 5.8** and the traffic implications are illustrated in **Appendix A**. The benefits and disbenefits are summarised below:

I: Castlefields/Doxey Road/Chell Road Hybrid route (Green/Yellow Route)
Benefits
<ul style="list-style-type: none"> • Cheaper than all 4 'Colour' Route Options and both Consultation Routes (G and H) • AM – significant congestion relief on Station Road and Newport Road • PM – significant congestion relief on Broadeye / Doxey Road and Tenterbanks • Minimal impact on SSSI -only affects the very edge of the Doxey and Tillington Marsh SSSI. It enters the SSSI into an area described by Natural England as 'Destroyed'. • Increased highway capacity and reduced conflicts close to Sainsbury's

<ul style="list-style-type: none"> • Can utilise an existing road bridge over the WCML • Limited impact on existing communities • Landscape issues can be mitigated
Disbenefits
<ul style="list-style-type: none"> • AM – Chell Road and Broadeye / Doxey Road still congested. Additional congestion on Newport Road / Westway and Doxey Road approaching capacity • PM – congestion remains on Gaol Square / Bull Hill, Chell Road and Station Road • Additional delays on the network caused by new traffic signals on Chell Rd • Area within highest risk Flood Zone 3

5.11 Summary of Traffic Impact of the Intervention Options

To give an impression of peak hour network efficiency under each option, 2031 forecast year two-way link flows, expressed as a percentage of design capacity were plotted for the study network. Links were then classified as; grey ‘uncongested’, blue ‘approaching capacity’ and red ‘congested’. A five value scoring matrix was then applied to identify the optimum transport intervention from an operational perspective. **Tables 5.2 and 5.3** summarise the results achieved.

With a score of 10 points, Option F (Green) delivers the best operational conditions (lowest degree of congestion) in the AM peak, followed by Option C (Yellow) and Option H (Consultation Green/realigned Yellow) which both score 12 points. Option B (Phase 1 Red/Blue/Green) delivers the worst operating conditions (highest degree of congestion) with a score of 20 points.

For the PM peak, Option F (Green) with a score of 12 points, brings about the best operational conditions (lowest degree of congestion), closely followed by Option D (Red), with a score of 13 points. Again Option B clearly emerges as the worst option with a score of 27 points because it offers the least relief to drivers.

Table 5.2: AM Peak Hour Congestion Analysis

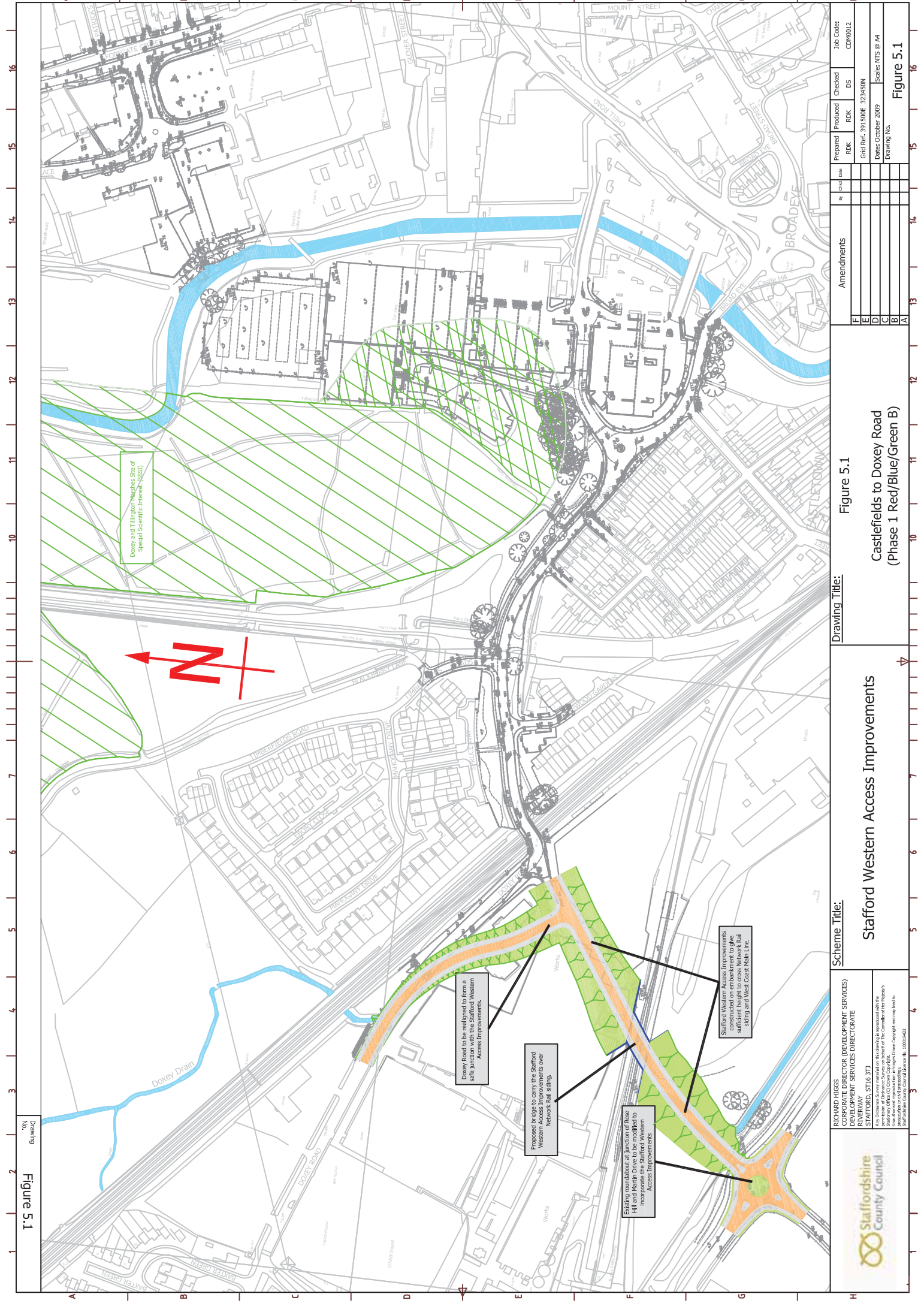
Option	Section of Affected Highway												
	A34 Greyfriars	A34 Foregate / Gaolgate	Gaol Square / Bull Hill	Chell Rd	Broadeye / Doxey Rd	Tenterbanks	Station Rd	Newport Rd	SWAI Phase 1	SWAI Phase 2	Doxey Road Doxey	Newport Rd / Westway	Total
Do Min	1	0	0	4	4	0	4	4	na	Na	0	1	18
B: Red/Blue/Green Phase 1	1	0	0	4	4	0	4	4	0	0	0	3	20
C: Yellow	1	0	0	4	3	0	0	1	0	0	0	3	12
D: Red	2	0	0	0	0	0	3	1	0	0	4	3	13
E: Blue	1	0	0	0	0	0	3	1	0	1	4	3	13
F: Green	1	0	0	0	0	0	1	1	0	0	4	3	10
G: Consultation Route	1	0	0	3	0	0	1	1	0	3	4	3	16
H: Consultation Route	1	0	0	0	0	0	3	1	0	0	4	3	12
I: Hybrid Route	1	0	0	4	3	0	1	1	0	0	2	3	16

Scoring matrix
 4 = Congested
 3 = Part of link is congested
 2 = Approaching capacity
 1 = Part of link approaching capacity
 0 = Link within capacity

Table 5.3: PM Peak Hour Congestion Analysis

Option	Section of Affected Highway											Total	
	A34 Greyfriars	A34 Foregate / Gaolgate	Gaol Square / Bull Hill	Chell Rd	Broadeye / Doxey Rd	Tenterbanks	Station Rd	Newport Rd	SWAI Phase 1	SWAI Phase 2	Doxey Road Doxey		Newport Rd / Westway
Do Min	3	1	4	4	3	4	3	1	na	na	0	1	24
B: Red/Blue /Green Phase 1	3	1	4	4	4	4	3	1	0	0	0	3	27
C: Yellow	3	1	4	4	0	0	3	0	0	0	0	3	18
D: Red	3	1	0	0	0	0	3	2	0	0	3	1	13
E: Blue	3	1	0	0	4	0	3	2	0	1	0	1	15
F: Green	3	0	0	0	1	0	3	1	0	3	0	1	12
G: Consultation Route	3	3	2	3	0	0	3	1	0	3	0	3	21
H: Consultation Route	3	0	0	0	1	2	3	2	0	1	0	3	15
I: Hybrid Route	3	1	4	4	0	0	3	1	0	0	0	1	17

Scoring matrix
 4 = Congested
 3 = Part of link is congested
 2 = Approaching capacity
 1 = Part of link approaching capacity
 0 = Link within capacity



Drawing No. **Figure 5.1**

Amendments

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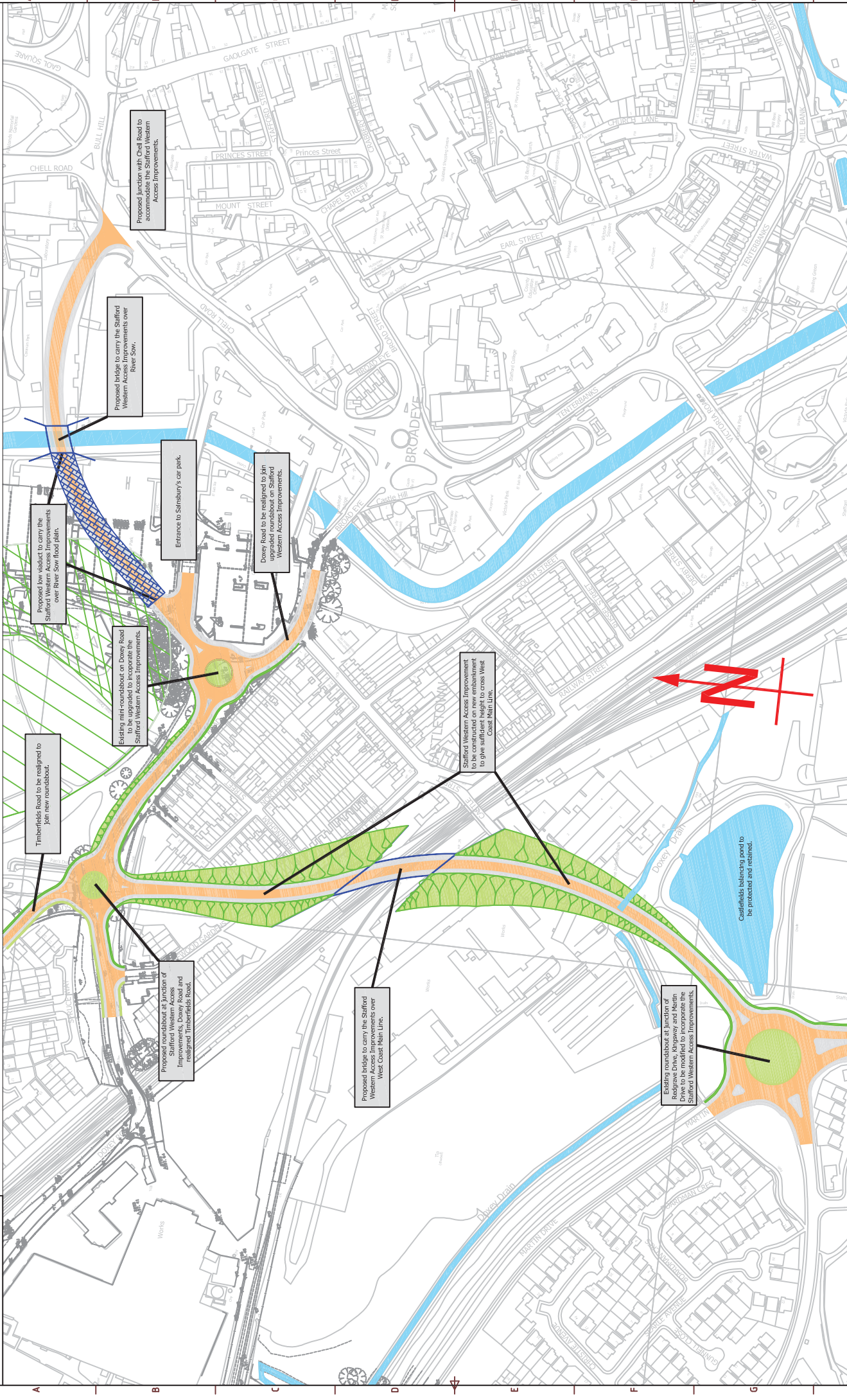
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Castlefields to Doxey Road (Phase 1 Red/Blue/Green B)

Scheme Title:
Stafford Western Access Improvements

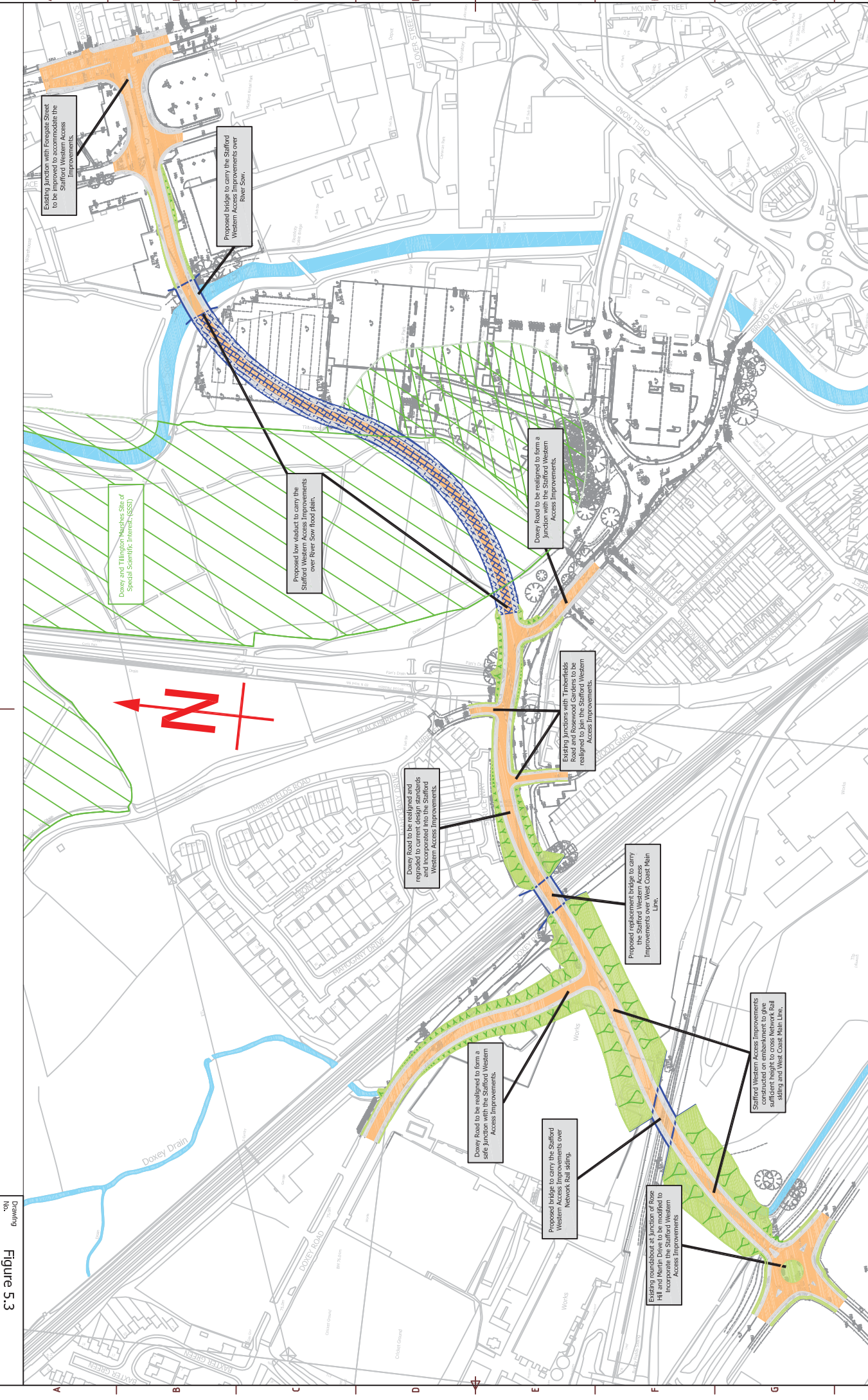
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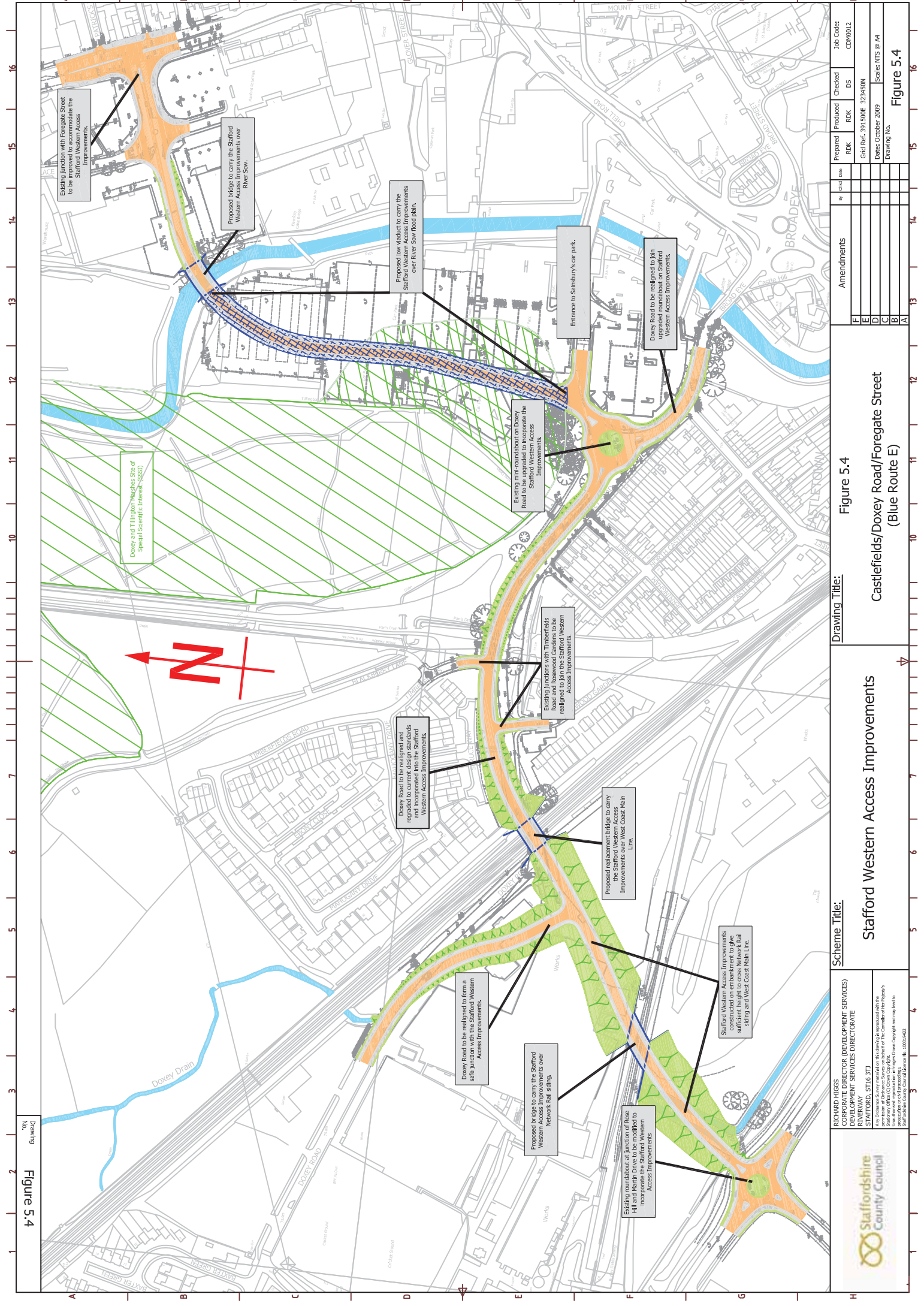


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Drawing No. **Figure 5.3**

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Drawing No. Figure 5.4

Drawing Title: Figure 5.4
Scheme Title: Stafford Western Access Improvements
 (Blue Route E)

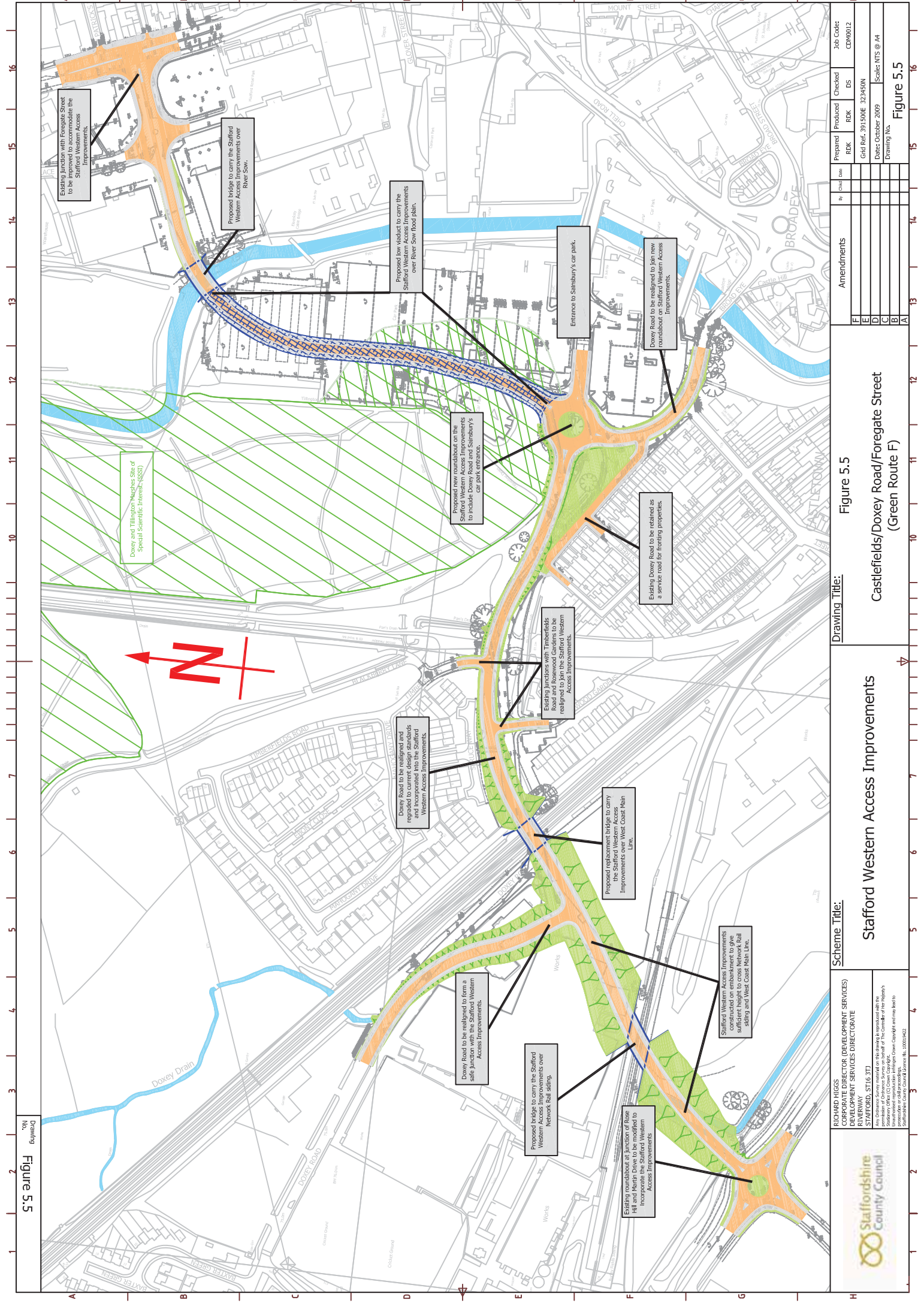
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Figure 5.5
Castlefields/Dosey Road/Foregate Street
(Green Route F)

Drawing Title:

Scheme Title:

Stafford Western Access Improvements

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A B C D E F G H

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Existing junction with Foregate Street to be improved to accommodate the Stafford Western Access Improvements.

Proposed bridge to carry the Stafford Western Access Improvements over River Sow.

Proposed low viaduct to carry the Stafford Western Access Improvements over River Sow (near foot path).

Entrance to Sainsbury's car park.

Dosey Road to be realigned to join new roundabout on Stafford Western Access Improvements.

Dosey and Tillington Marches Site of Special Scientific Interest (SSSI)

Proposed new roundabout on the Stafford Western Access Improvements to include Dosey Road and Sainsbury's car park entrance.

Existing Dosey Road to be retained as a service road for fronting properties.



Dosey Road to be realigned and upgraded to current design standards and incorporated into the Stafford Western Access Improvements.

Existing junction with Timberfields Road and Rosewood Gardens to be realigned to join the Stafford Western Access Improvements.

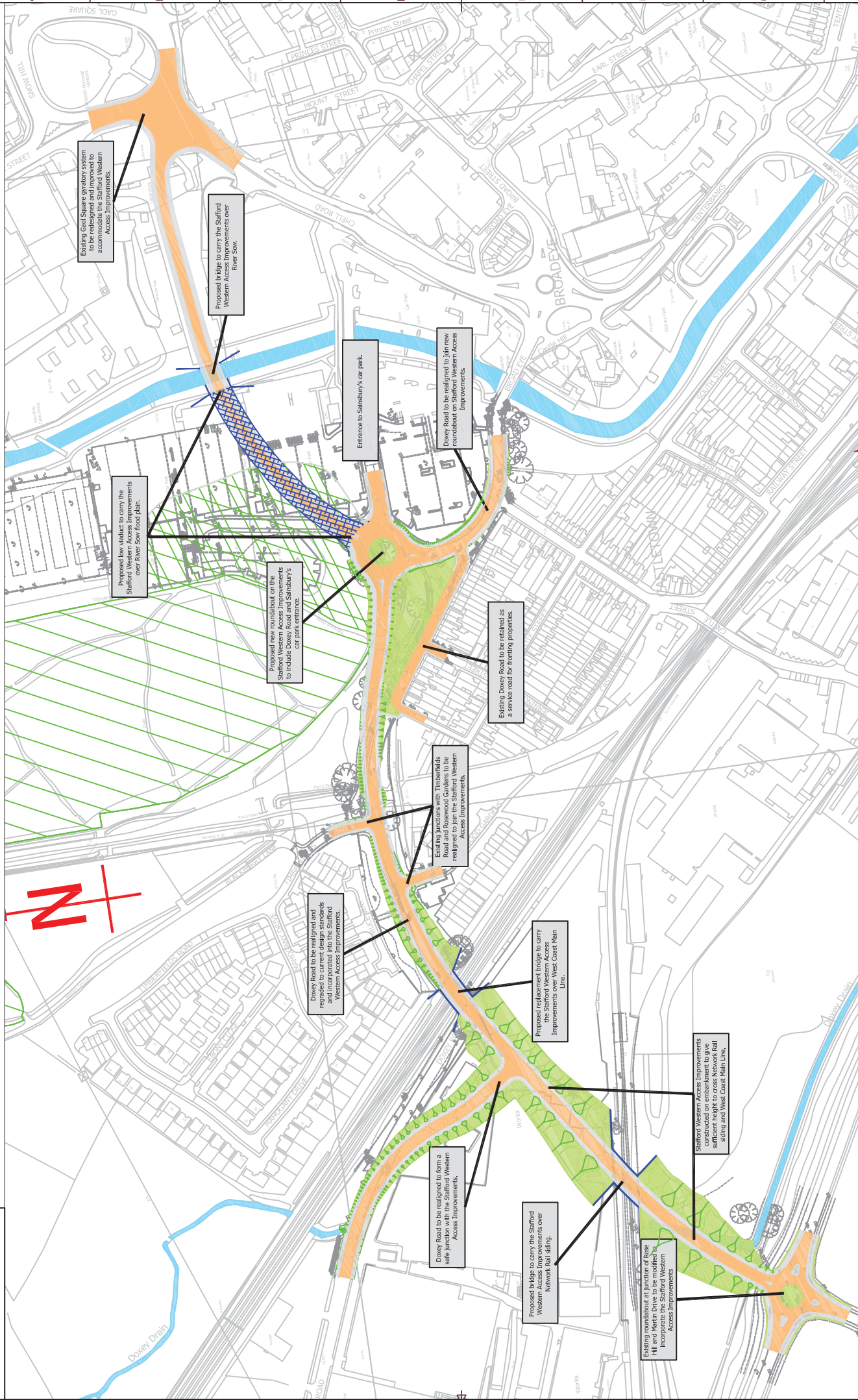
Proposed replacement bridge to carry the Stafford Western Access Improvements over the West Coast Main Line.

Dosey Road to be realigned to form a safe junction with Stafford Western Access Improvements.

Proposed bridge to carry the Stafford Western Access Improvements over Network Rail siding.

Existing roundabout at Junction of Rose Hill and Peplin Drive to be realigned to form a safe junction with Stafford Western Access Improvements.

Stafford Western Access Improvements constructed on embankment to give sufficient height to cross Network Rail siding and West Coast Main Line.



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Scheme Title:
Stafford Western Access Improvements

Drawing Title:
Figure 5.6
Consultation Route
(Green/realigned Yellow G)

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Drawing No. **Figure 5.6**



Figure 5.7
Stafford Western Access Improvements
Consultation Route (Realigned Green H)

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Drawing Status				
Client Issue				
Date of 1st Issue	21/07/10	Drawing Number	Revision	
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Checked by	PW	20534/314/003		

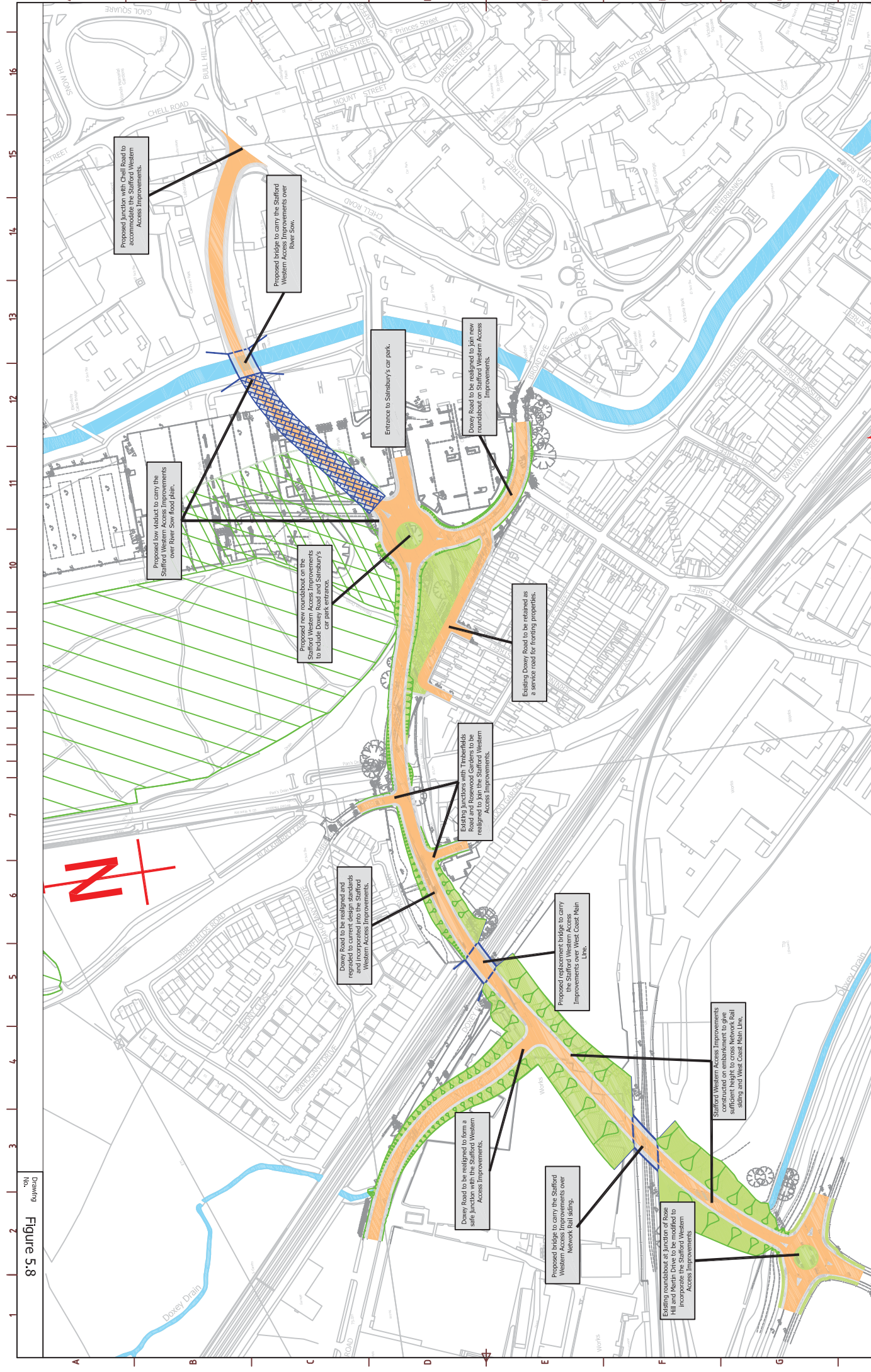
Client
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Bellway Homes

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 www.partbreit.co.uk
 # PartBreit Associates LLP
 1111050/01

STAFFORD WESTERN ACCESS IMPROVEMENTS - CONSULTATION ROUTE (REALIGNED GREEN H)
 DRAWING NUMBER: 20534/314/003
 DATE: 21/07/10
 SCALE: 1:500
 DRAWN BY: DS
 CHECKED BY: PW
 PROJECT: STAFFORD WESTERN ACCESS IMPROVEMENTS - CONSULTATION ROUTE (REALIGNED GREEN H)

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Drawing No. **Figure 5.8**

Stafford Western Access Improvements		Figure 5.8
Hybrid Route (Green/Yellow I)		Hybrid Route (Green/Yellow I)
Drawing Title:		Drawing No.
Scheme Title:		Job Code:
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C	RDK	329450N
B	RDK	329450N
A	RDK	329450N

5.12 Assessment of options against Intervention Objectives

An analysis has been undertaken to evaluate the extent to which each option meets the intervention objectives compared to the predicted cost of the scheme. The analysis will guide the decision regarding the identification of the Preferred Option and the Credible Lower Cost Alternative. **Table 5.4** summarises how well each option meets the intervention objectives. The options have been scored as follows:

- 0 – Does not meet objective at all
- 1 – Contributes slightly to the objective
- 2 – Partially achieves the objective
- 3 – Largely fulfils the objective
- 4 – Completely achieves the objective

It can be concluded that **Options D (Red), E (Blue), F (Green) and H (Consultation Route)** are all similar in cost and are potential preferred solutions as they all achieve 85% of the intervention objectives. Option G (Consultation Route) could also potentially be the preferred solution, however it only achieves 70% of objectives. Options A (Sustainable Transport Only), Option B (Phase 1 Red/Blue/Green), C (Yellow) and Option I (Hybrid Green/Yellow) could potentially be ruled out as the Preferred Option or the Credible Lower Cost Alternative because they do not adequately achieve the intervention objectives and do not have a Benefit to Cost Ratio of over 2. Option B achieves just 35% of objectives and Options A, C and I achieve 50%.

The lower cost alternative needs to adequately achieve the intervention objectives and have a sufficiently high appraisal score to be considered as a credible option. Option G cannot be considered as the lower cost alternative as it is equal in cost to the potential preferred solutions and neither can the cheaper options I, C and B due to their low BCRs.

Table 5.4: Evaluation of Options Regarding Achievement of Objectives

SCHEME OBJECTIVE	OPTION A: Sustainable Transport	OPTION B: Phase 1 Green/Red /Blue	OPTION C: Yellow Route	OPTION D: Red Route	OPTION E: Blue Route	OPTION F: Green Route	OPTION G: Consultation Route	OPTION H: Consultation Route	OPTION I: Hybrid Route
Provide the necessary transport infrastructure required to deliver development in Stafford as identified in the West Midlands Regional Spatial Strategy	2	2	3	4	4	4	3	4	3
Reduce congestion on routes into and around the town centre which act as a constraint on regeneration proposals (See Note 1)	1	1	2	3	3	3	3	3	2
Facilitate improved access by sustainable modes between housing growth areas and the town centre	2	2	2	4	4	4	3	4	2
Facilitate improved access to public transport services	2	1	1	3	3	3	2	3	1
Improve safety and security for all road users	3	1	2	3	3	3	3	3	2
Total Score (Out of 20)	10	7	10	17	17	17	14	17	10
Scheme Cost Estimate (including contingencies)	£4.03m <small>(based on estimated resources up to 2012)</small>	£20.2m	£38.7m	£42.1m	£42.9m	£42.4m	£42.3m	£41m	£35.4m
Benefit to Cost Ratio (See Note 2)	1.77	0.83	0.46	2.09	2.07	2.46	2.09	2.44	0.38

Note 1: Assessment based on consideration of congestion analysis and BCR as a measure of operational efficiency

Note 2: Advice suggests that schemes with a BCR of < 2.0 are unlikely to achieve DfT support

5.13 Complementary Measures

Staffordshire County Council remains committed to pursuing a sustainable integrated transport strategy for Stafford in the period to 2026 that includes the delivery of sustainable transport schemes supported by demand management techniques that promote smarter travel choices. Providing additional highway capacity to the west of the town centre will open up further opportunities to provide complementary sustainable transport measures within and to the town centre. The likely measures are shown on **Figure 5.9**. They will be funded through Local Transport Plan resources, public transport operators, the developers of Castlefields and Burleyfields, and additional developer contributions secured towards the emerging transport strategy for the Stafford urban area (via Section 106 agreements or the Community Infrastructure Levy).

Enhanced bus services

High frequency bus services will be provided along the proposed western access route to serve emerging development proposals in western Stafford. The scheme will also provide the opportunity to increase the frequency of bus services for existing residents at Doxey and will provide bus access to the Greyfriars retail park on the A34, as well as the town centre, particularly along Chell Road, Tenterbanks, Victoria Road and Station Road.

Enhanced bus interchange

There are currently a number of small bus interchange locations serving Stafford town centre. Six key bus services call at an existing interchange adjacent to Gaol Square and Queensway which is currently proposed to be improved as part of the Local Transport Plan capital programme. Traffic relief at Gaol Square, Queensway and Chell Road, which is expected to be provided by the Stafford Western Access Improvements, will make it easier for buses to enter and exit this interchange.

The most important bus interchange serving the town centre is located on Chell Road. Traffic relief afforded to Chell Road will create the opportunity to increase road space for buses, allowing bus facilities to be extended and safer access to bus stops to be provided for pedestrians.

Three of the proposed road alignments are expected to improve access to Greyfriars Retail Park to the north of the town centre on the A34 which will also provide the opportunity to enhance bus services and interchange to this location.

Improved access to rail services

Stafford railway station is located close to the town centre and provides passenger services to destinations such as Birmingham, Stoke-on-Trent, Manchester, London and Liverpool. The main problem identified at the railway station is the lack of affordable parking which results in rail passengers parking on local residential streets, including Kingsway at Castlefields which is on the proposed line of the Stafford Western Access Route. The access route will therefore provide the opportunity to:

- Deliver significant levels of housing that will have convenient access by walking, cycling and bus to the railway station
- Reduce congestion on Station Road improving vehicular access to Network Rail's new multi-storey car park, which is currently under construction
- Introduce complementary residents parking schemes and Traffic Regulation Orders to reduce on-street parking at Castlefields and Castletown caused by parking problems at the station and traffic congestion in the town

Urban Traffic Control and bus priority

Staffordshire County Council will continue to extend the Urban Traffic Control network to make better use of existing highway capacity by linking the timing of traffic signals to improve the operation of junctions. The Stafford Transport Strategy will also focus on improving bus reliability and journey times on the key radial routes into the town centre. The additional capacity provided by the Stafford Western Access route is likely to make it easier to give buses priority at traffic signals on these routes.

Walking and cycling links to the town centre

High quality, safe and convenient pedestrian and cycle routes will be constructed along the proposed access route. Every opportunity will be taken through high quality design to maximise the journey ambience for pedestrians and cyclists along the whole route. The developers of proposed housing sites in the west will also be required to enhance existing walking and cycling routes to both the railway station and the town centre, including the Millennium Way which runs along the disused railway line. All will be delivered through the formulation of a comprehensive Masterplan being progressed in partnership with the Castlefields and Burleyfields Developer Consortium.

The Castlefields walking and cycling link will be provided as part of the transport strategy to directly connect over 2,000 existing and proposed homes to the town's amenities and public transport services.

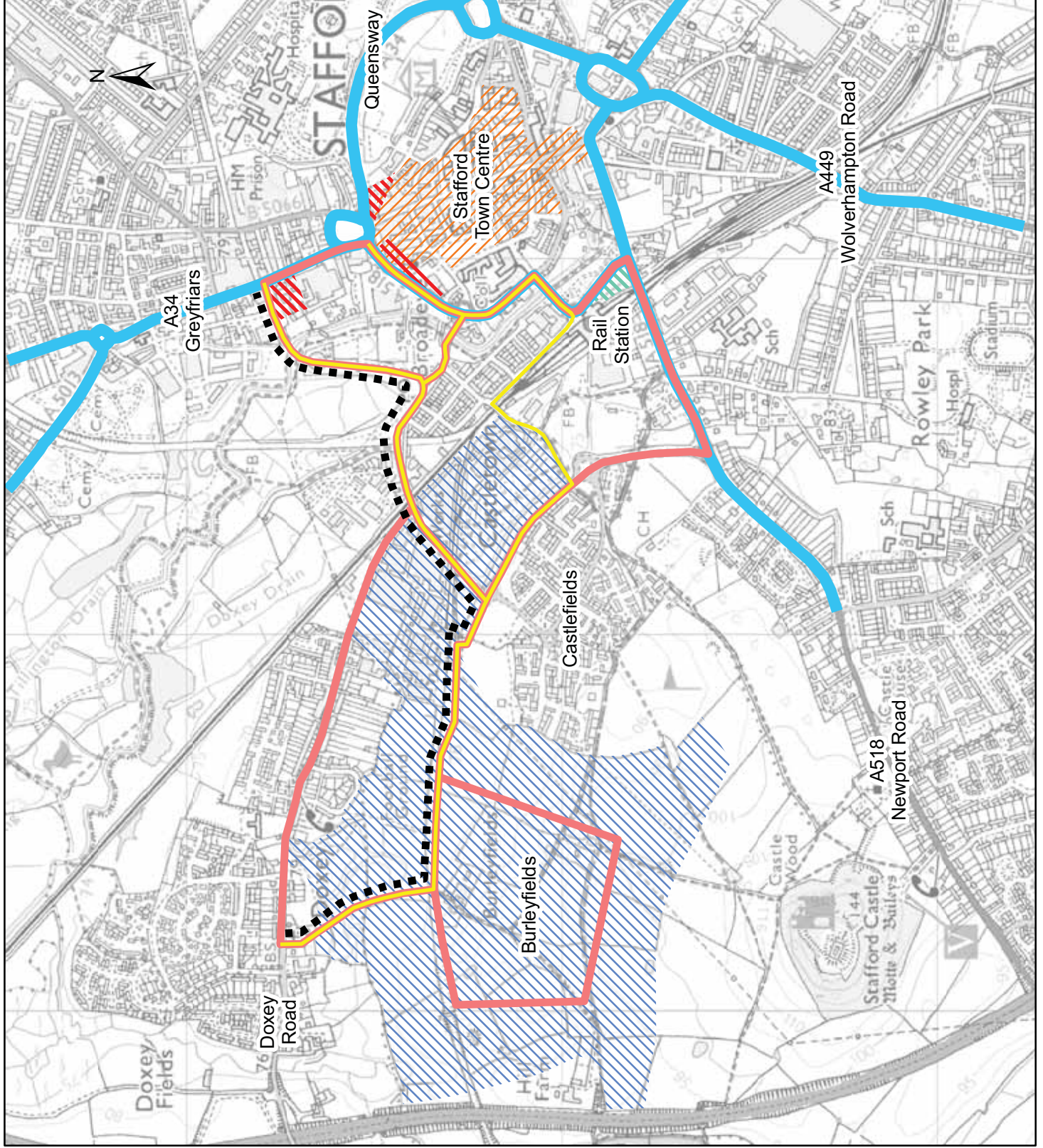
Town centre pedestrian priority

One of the objectives of SUATMS (the existing transport strategy for Stafford) is to reduce the impact of traffic in the town centre by expanding the pedestrianised area and reducing the speed of the remaining traffic to a maximum of 20mph. The scheme will afford traffic relief to Chell Road which will allow similar strategic pedestrian enhancements to be undertaken.

Traffic management and safety measures

Appropriate traffic management and safety measures will be implemented if considered necessary following post scheme monitoring of the actual impact of changes in traffic flows and speeds, for example at Castlefields, Doxey Road, West Way and Station Road. This issue was identified during the consultation process.

Figure 5.9
Complementary Measures



- New Highway
- Enhanced Bus Service
- Urban Traffic Control / Bus Priority
- Enhanced Walking and Cycling
- ▨ Enhanced Bus Interchange
- ▨ Pedestrian Priority
- ▨ Enhanced Rail Station Car Park
- ▨ Residential Development

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6. Option Appraisal (ASTs)

6.1 Introduction

Each option has been appraised against the Government's five transport objectives:

- Environment
- Safety
- Economy
- Accessibility
- Integration

The results of the appraisal are summarised in Appraisal Summary Tables (ASTs) for each option provided at the end of this Chapter.

6.2 Description of Modelling Tool

The AM and PM peak hour modelling for the economic assessment for the Options Assessment Report has been carried out using the Stafford SATURN 2007 base year fixed demand highway model developed by Atkins Transport Planning to assess the relative impact of future land use scenarios for the Stafford growth point. The Stafford Transport Model Survey Completion Report (2007), Model Calibration and Validation Report (2008) and Model Forecasting Report (2008) have been produced by Atkins and are available as background reports.

The model structure is AM peak hour (08:00 – 09:00) and PM peak hour (17:00 – 18:00) with three user classes including cars, LGVs and HGVs. Calibration and validation of the model demonstrates that it accurately reflects existing traffic movements through the study area. It is recognised that although it does not fully comply with Department for Transport WebTAG guidance it provides a calibrated and validated platform for comparing the benefits and disbenefits of each option to guide the decision regarding which interventions should be taken forward as the Preferred Option.

The base year SATURN model has been updated to include a land use scenario agreed with Stafford Borough Council, as shown in Chapter 2 **Figure 2.3**, and each of the route options have been assigned for 2016, 2024 and 2031 forecast years to provide the model input for a TUBA economic assessment. Future year demand scenarios have been developed based on specific residential and employment development phasing in line with the Regional Spatial Strategy, supported by underlying growth rates extracted from TEMPRO 5.4. The same future year development scenario has been adopted for both the 'Do-Minimum' and 'Do-Something' scenarios.

The modelling for the sustainable transport option was completed as part of the County Council's bid for Community Infrastructure Funds in 2009. The economic assessment took into account the benefits from the following sources:

- Highway (dis)benefits modelled by TUBA (based on SATURN model outputs)

- Public transport user benefits modelled in spreadsheets
- Benefits accruing to users of non-motorised forms of transport (cycle and walk-based modes).

The SATURN model referred to above, has been refined for Stage 2 of the Major Scheme Business Case to ensure that it is WebTAG compliant. Journey purposes have been disaggregated, time and distance parameters applied and variable demand modelling undertaken using DIADEM (Dynamic Integrated Assignment and Demand Modelling). The Local Model Validation Report for the Stage 2 work was produced by Term Consultants Atkins in February 2010 and shows that the new model is calibrated and validated to DMRB Standards. It has been supplied to the Department for Transport and is available as a background report.

6.3 Environment

The mitigation of the environmental impact of the Preferred Route which emerges from this exercise will form an integral part of the scheme, potentially including:

- Reinstatement of all or part of the 'Destroyed' section of the SSSI or the possible designation of additional land as SSSI which may help offset the affects of the proposed low viaduct and bridge
- The side slopes of the Stafford Western Access Route will be sensitively landscaped throughout. The planting will be carried out using appropriate native species, which will also be chosen to ensure they are low maintenance
- To keep road noise to a minimum, the road will be surfaced with materials which will reduce traffic noise while being hard wearing and skid resistant
- Appropriate landscape mitigation measures will be incorporated as part of its design to achieve best fit within the landscape. Adequate land acquisition will be required to ensure an acceptable level of mitigation to minimise landscape and visual impacts and make an appropriate contribution to landscape maintenance
- Doxey Drain will be enhanced to help offset the affects of the increased length of culvert
- No designated historic assets are directly impacted by the proposed routes

The environmental work underpinning the sub-objective for the Preferred Option will comprise a 'scoping opinion' to guide consultants commissioned to undertake a full Environmental Impact Assessment, pursuant to a grant of planning permission for the scheme.

6.4 Safety

An analysis of existing accident data has been undertaken for the five year period between June 2004 and May 2009. The analysis covers the western sector of the town centre (Chell Road, Tenterbanks, Victoria Road and Station Road), A34 north up to the Stone Road/Eccleshall Road junction (including parallel route Gaol Road and Browning Street), Doxey Road, Newport Road between Bridge Street and West Way, Castletown and Castlefields.

The annual average accident rate calculated for the study area is 39 which is equivalent to the expected annual accident rate estimated using COBA. The only locations where observed rates are slightly higher than expected are on Newport Road, Tenterbanks and Chell Road.

Although one objective of the proposed transport intervention is to improve safety and security for all road users, reducing accidents is not considered to be the main priority for the scheme. However, it is expected that accident benefits are likely to be identified where there are reductions in traffic flows on the network. Road injury accident data will continually be monitored and analysed in the study area and if locations are identified where consistent patterns of circumstances occur that might be reduced by remedial engineering works, a local safety scheme will be implemented using available LTP funds.

A summary of the accident statistics within the local study area is provided in **Table 6.1:**

Table 6.1: Personal Injury Accidents

Personal Injury Accidents	Total	Severity		
		Slight	Serious	Fatal
All	196	186	10	0
Pedestrians	35	30	5	0
Cyclists	25	24	1	0

6.5 Economic Assessment

An initial economic assessment has been carried out to gain an advanced understanding as to how the different alignment options will affect the benefits and to factor in the differing costs of the options. These are expressed in Q2 2008 prices. In order to develop these for use in the economic assessment of the schemes the following adjustments have been applied:

- Construction Inflation adjustment to year of spend (based on figures provided in PAR Guidance)
- Risk adjustment of 20% (based on initial assumptions)
- Optimism Bias adjustment of 44% (in line with WebTAG 3.5.9 for Local Authority Schemes at Programme Entry Stage)
- Scheme costs adjusted to 2002 prices (based on RPI adjustment)
- Cost discounted from year of spend to 2002 (based at 3.5%pa)
- Conversion to Market Prices (Based on WebTAG guidance at 20.9%)

Table 6.2 illustrates the costs of the options as used for the cost-benefit analysis.

Table 6.2: Cost of Highway Options

Cost (£,000s)	B: Phase 1 Blue/ Red/ Green	C: Yellow Route	D: Red Route	E: Blue Route	F: Green Route	G: Consult- ation Route	H: Consult- ation Route	I: Hybrid Route
Total Investment (Q2 2008)	£16,842	£32,234	£35,091	£35,762	£35,351	£35,214	£34,167	£29,473
Construction inflation adjustment	£18,138	£34,784	£38,017	£38,746	£38,300	£37,945	£36,883	£31,913
Risk adjusted (20%)	£21,765	£40,180	£44,030	£44,877	£44,359	£43,782	£42,617	£36,944
Optimism bias adjusted (44%)	£31,342	£57,859	£63,403	£64,622	£63,877	£63,047	£61,369	£53,200
2002 prices	£25,806	£47,639	£52,204	£53,207	£52,594	£51,910	£50,529	£43,803
Discounted to 2002 and market prices	£20,546	£37,538	£41,142	£41,934	£41,449	£40,888	£39,817	£34,515

TUBA assessments have been run against the Do Minimum Scenario (which includes programmed changes to the local network) to calculate the benefits produced by providing the new highway scheme and Transport Economic Efficiency (TEE) tables have been completed. The Present Value of Benefits (PVB) and Benefit to Cost Ratio (BCR) are provided in **Table 6.3** for direct comparison. The BCRs calculated for this Options Assessment Report may be considered to be conservative estimates since they do not take into account potential benefits/disbenefits to be accrued from sub-objectives on noise, local air quality and accident savings.

For comparison, the assessment for the sustainable transport option did take into account all of these factors and delivered a PVB of £9.65m and PVC of £5.45 with a Benefit to Cost Ratio of **1.77**. The considerable benefits accruing from these sub-objectives therefore outweighed the disbenefits experienced by business users.

Table 6.3: Breakdown of Benefits and Benefit to Cost Ratios by Option

	B: Phase 1 Blue/ Red/ Green	C: Yellow Route	D: Red Route	E: Blue Route	F: Green Route	G: Consult- ation Route	H: Consult- ation Route	I: Hybrid Route
PVC (in £1,000s)	£20,907	£37,825	£41,901	£42,832	£42,388	£41,497	£40,900	£34,692
PVB (in £1,000s)	£17,456	£17,313	£87,441	£88,696	£104,195	£86,911	£99,941	£13,108
BCR	0.83	0.46	2.09	2.07	2.46	2.09	2.44	0.38

The results demonstrate that when assessed on the same basis the most cost effective scheme is Option F (Green) as it provides the highest BCR of 2.46. Other economically attractive options revealed by the analysis include Option E (Blue), Option D (Red), Option G (Consultation Route) and Option H (Consultation Route) which are similar in costs, benefits and BCR. Crucially, these options provide BCRs in excess of 2 and hence may also be considered as high value for money.

The BCRs for Option B (Phase 1 Red/Blue/Green), Option C (Yellow) and Option I (Hybrid green/yellow) have been shown to be less than 1 and hence may be considered as offering low values for money. The key reasons for this are:

- The Option C (Yellow) and Option I (Hybrid green/yellow) cause additional delays to existing and new road users and re-routing largely due to the additional new signalised junction on Chell Road
- Large delays at Gaol Square gyratory create disbenefits for Option C (Yellow) and Option I (hybrid green/yellow), particularly in the PM peak
- Option I (Hybrid green/yellow) produces lower benefits than Option C (Yellow) due to the fact that the western section of the access road is much longer.
- Option B (Phase 1 Blue/Red/Green) is considered to be low value for money with limited benefits due to it only providing a link between Martin Drive to Doxey Road, leaving congested conditions in the town
- Highway capacity near to Sainsbury's is increased with Option F (Green) compared to Option E (Blue) leading to higher benefits
- Option D (Red) is further away from the town centre than Option E (Blue) therefore is a less attractive option for navigating between the town centre and the north of Stafford

Appraisal Summary Table – OPTION A: SUSTAINABLE TRANSPORT

OPTION A: SUSTAINABLE TRANSPORT		Description:	Problems		Present Value of Costs to Public Accounts £5.45m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT		ASSESSMENT
ENVIRONMENT	Noise	Other than some rerouting around the schemes, the aggregate change in traffic flows is negligible.	Dispersed impact throughout the study area. Benefits have been measured in terms of changes in vehicle kms		Overall impact – Neutral PVB = £0.35m
	Local Air Quality	Aggregate change in traffic flows is modelled to be negligible throughout the study area.	Estimated monetised local air quality benefits based on the removal of vehicle kms from the highway network.		Overall impact – Neutral PVB = £0.55m
	Greenhouse Gases	There will be a reduction in greenhouse emissions due to modal shift and more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.		Overall impact - Neutral PVB = £0.17m
	Landscape	Assessed together with Heritage of Historic Resources	See Heritage of Historic Resources		Neutral
	Townscape	Assessed together with Heritage of Historic Resources	See Heritage of Historic Resources		Neutral
	Heritage of Historic Resources	All highway works will be in accordance with SCC's guidance note on Conservation within the Highway: Structure of Historic Importance and 'Streets for All Manual: West Midlands, DfT and English Heritage 2005'. No expected impact on conservation areas, monuments, archaeological remains, listed structures	Not applicable		Neutral
	Biodiversity	All relevant ecological surveys will be undertaken to ascertain the requirement for mitigation measures	Not applicable		Neutral
	Water Environment	The package has been scoped and no assessment is needed	Not applicable		Neutral
	Physical Fitness	The cycling and walking schemes will result in physical fitness benefits. Journey time contour maps were produced using Accession.	Schemes provide activity benefits of over 30 minutes walk time. Monetised benefits have been provided for cycling.		PVB = £4,322,067(cyclists) > 30 minutes per day overall increase of 10,917 pedestrians
	Journey Ambience	Bus stop and interchange improvements and RTPI will benefit Traveller Care. Castlefields walking and cycling link will benefit Travellers' Views. Cycling and walking schemes, bus stop and interchange improvements and RTPI will benefit Traveller Stress	> 10,000 journeys per day will be affected		Large Beneficial PVB Cyclists = £131,187 PVB Pedestrians =£144,208
SAFETY	Accidents	Accident data was analysed for the whole study area, and benefits have been identified as a result of the improvements. Accident benefits have also been identified as a result of mode shift	Monetised benefits have been calculated for pedestrian facilities and benefits resulting from mode shift.		PVB = £2.27m(peds / cyclists) PVB = £10m (change veh kms)
	Security	Cycling and pedestrian schemes will benefit security of vulnerable road users, in terms of improved facilities, lighting and landscaping. The bus stop improvements and RTPI will benefit security of public transport users. The monetised benefits were calculated using Accession contour maps.	Existing residents and all new homes equating to around 11,900 new users of walking and cycling facilities will be affected. 45,801 existing and 5,925 new users of bus improvements will all be affected.		Road Users – Moderate Beneficial Public Transport Users – Large Beneficial

ECONOMY	Public Accounts	The scheme funding will be funded by Staffordshire County Council, Stafford Borough Council, LTP and developer contributions.	Central Government PVC = £0m Local Government PVC = £5.45m	PVC = £5.45m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Users PVB -£30.85m Transport Providers PVB £4.805m	PVB = -£26.05m
	Transport Economic Efficiency: Consumers		Users PVB £20.02m	PVB = £20.02m
	Reliability	The package is expected to improve journey time reliability.	Not applicable	Slight Beneficial
	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Economic Regeneration Strategy by creating new opportunities for economic growth and regeneration.	Not applicable	Not applicable
	Option values	The cycling schemes within this bid will have a significant impact on this sub objective	> 2,000 residents will have more travel options available to them	Strong Beneficial
	Severance	Bus stop and town centre improvements will reduce severance. Calculations are based on Accession.	> 1,000 journeys will benefit	Large Beneficial
	Access to the Transport System	The schemes within this bid do not have a significant impact on the sub objective	Not applicable	Neutral
	Transport Interchange	Bus interchange improvements, improved bus stop waiting facilities and Real Time Passenger Information will improve transport interchange between different modes of transport.	Benefits for 45,801 existing residents and 5,925 potential new users. RTPI will serve approximately 4,000 potential new users.	Bus users – Large Beneficial Rail users – Slight Beneficial
	Land-Use Policy	The package of measures will benefit a range of local, regional and national land use and transport policies. No policies will be hindered	Not applicable	Beneficial
Other Government Policies	The bid will help policies of the DTf, DCLG, Health, DCSF, DBERR and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial	
ACCESSIBILITY				
INTEGRATION				

Appraisal Summary Table – OPTION B: CASTLEFIELDS TO DOXEY ROAD (PHASE 1 RED/BLUE/GREEN)						
OPTION B		Description:			Problems	Present Value of Costs to Public Accounts £20.9m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT		
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 702	Net population annoyed is +34		
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 0.1 PM10: 0.1		
	Greenhouse Gases	There will be a small reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.07m		
	Landscape	An assessment has been carried out on features including Pattern, Tranquility, Cultural and Landcover. Appropriate levels of mitigation can be achieved	Not applicable	Neutral		
	Townscape	Demolition of former Unicorn Works offices which is a potential development site.	Not applicable	Slight adverse (negative)		
	Heritage of Historic Resources	Overall impact on two 19 th century dismantled railway lines is minimal. There will be a localised impact upon any palaeoenvironmental remains present. There is a low potential for archaeological remains.	Not applicable	Slight negative adverse effect		
	Biodiversity	Extent of impact on SSSI would depend on drainage alterations. Needs to be assessed by Natural England.	Not applicable	Moderate negative. Mitigation should reduce this to minor negative		
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within highest risk Flood Zone 3. Potential to impact on Doxey Drain during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Slight adverse impact Mitigation measures will be agreed with the Environment Agency		
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral		
	Journey Ambience	Frustration will be reduced as the condition of the network is better with phase 1 in place. Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement.	AADT for this route is over 10,000	Large beneficial		
SAFETY	Accidents	Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed		

	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
ECONOMY	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £20.9m Local Government PVC = £0m	PVC = £20.9m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £7.99m Transport Providers PVB £0m	PVB = £7.99m
	Transport Economic Efficiency: Consumers		Users PVB £9.4m	PVB = £9.4m
	Reliability	Little relief to the existing route stress	Route stress Before: 104 After: 103	Slight beneficial
	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial Strategy and associated economic regeneration.	Not applicable	Not applicable
ACCESSIBILITY	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	This option does not reduce levels of severance at any location and has a slight negative impact on the Doxey Road.	No pedestrian journeys benefit	Slight negative
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
INTEGRATION	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION C: CASTLEFIELDS TO CHELL ROAD (YELLOW)				
OPTION C		Description:	Problems	Present Value of Costs to Public Accounts £37.8m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 694	Net population annoyed is +26
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 0.4 PM10: 0.1
	Greenhouse Gases	There will be a small reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.05m
	Landscape	The route passes through an area of built character therefore there are no concerns regarding landscape	Not applicable	Neutral
	Townscape	The option is intrusive in townscape terms. It will impinge on the edges of the most valuable areas of historic townscape and remove enriching remnant features. Associated carriageway structures will be visually obtrusive. Few apparent opportunities for amelioration.	Not applicable	Large adverse (negative)
	Heritage of Historic Resources	Overall impact on two 19 th century dismantled railway lines is minimal. There is a low potential for archaeological remains. There will be an impact upon the site of the Castle Engine Works.	Not applicable	Slight negative adverse effect
	Biodiversity	Restoration of car parks could achieve compensation for impacts. Impact on wet woodland may not be able to be mitigated. There may be protected species including otters, badgers, bats, water vole and birds. Japanese knotweed is present which needs to be treated.	Not applicable	Moderate negative. Mitigation should reduce this to minor negative
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on Doxey Drain and Castlefields balancing pond during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Moderate adverse impact. Mitigation measures will be agreed with the Environment Agency
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral
	Journey Ambience	Frustration will be reduced as the condition of the network and ability to make good progress along a route are better with the yellow route in place. Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement.	AADT for this route is over 10,000	Large beneficial

SAFETY	Accidents	Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Pedestrians using the route from Castle Street to Martin Drive will benefit from a route which is visible to vehicles increasing informal surveillance. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £37.8m Local Government PVC = £0m	PVC = £37.8m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £8.3m Transport Providers PVB £0m	PVB = £8.3m
	Transport Economic Efficiency: Consumers		Users PVB £8.9m	PVB = £8.9m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 81	Slight beneficial
	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	Chell Road pedestrian count data indicates within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location. Rosewood Gardens comprises 19 properties which will experience a moderate negative change in severance. More locations experience an improvement in severance than a negative impact.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	ACCESSIBILITY	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable
INTEGRATION	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION D: CASTLEFIELDS TO FOREGATE STREET (RED)				
OPTION D		Description:	Problems	Present Value of Costs to Public Accounts £41.9m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 699	Net population annoyed is +31
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 5.2 PM10: 1.3
	Greenhouse Gases	There will be a small reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.12m
	Landscape	Viability of nature reserve and its management are at risk and elevated causeway will disrupt landscape pattern and visual impact. Appropriate mitigation is feasible, including extensive planting alongside route, but would need to be balanced with SSSI management.	Not applicable	Moderate adverse
	Townscape	This option probably has least impact on the townscape aspects, but clearly this will need to be balanced against other environmental considerations – not least, the impact on the open marshland. Where it deviates from existing highway routes, it creates additional space between the proposed routeway and the edge of the built form, providing the opportunity for amelioration. Demolition of former Unicorn Works office which is a potential development site.	Not applicable	Slight adverse (negative)
	Heritage of Historic Resources	Minimal impact on two 19 th century dismantled railway lines. There is a low potential for archaeological remains. Possible indirect impact on Foregate Conservation Area from rise in vibration, noise, light and vehicle pollution. Greatest potential impact will be on the readability of the water meadow systems.	Not applicable	Slight negative adverse effect
	Biodiversity	Adequate mitigation not possible. This option is contrary to Structure Plan policy NC7 and National Planning Guidance (PPS9)	Not applicable	Major negative
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on River Sow, and Doxey and Tillington Drains during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Moderate adverse impact Mitigation measures will be agreed with the Environment Agency
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral
	Journey Ambience	Travellers' views will improve as a section of the new route will provide views across Doxey and Tillington Marshes SSSI. Frustration will be reduced as the road layout and geometry, condition of the network and ability to make good progress along a route are all better with the red route in place. Fear of potential accidents will also reduce as the	AADT for this route is over 10,000	Large beneficial

SAFETY	Accidents	new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement. Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. However, the northern part of this route is more isolated as it is further out of town providing slightly reduced levels of security for pedestrians and cyclists. Complimentary measures for bus users will be promoted through the LTP which will increase security levels. For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution. Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Not quantified	Slight negative
ECONOMY	Public Accounts		Central Government PVC = £41.9m Local Government PVC = £0m	PVC = £41.9m
	Transport Economic Efficiency: Business Users & Transport Providers		Business Users PVB £46.2m Transport Providers PVB £0m	PVB = £46.2m
	Transport Economic Efficiency: Consumers		Users PVB £41.2m	PVB = £41.2m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 86	Slight beneficial
ACCESSIBILITY	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	More locations experience an improvement in severance than a negative impact. Chell Road pedestrian count data indicates that within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
INTEGRATION	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered. This option is contrary to Structure Plan policy NC7 and National Planning Guidance (PPS9)	Not applicable	Negative
	Other Government Policies	The bid will help policies of the DfT, DCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION E: CASTLEFIELDS TO FOREGATE STREET (BLUE)

OPTION E		Description:	Problems	Present Value of Costs to Public Accounts £42.8m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 678	Net population annoyed is +11
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 3.6 PM10: 0.9
	Greenhouse Gases	There will be a reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.14m
	Landscape	An assessment has been carried out on features including Pattern, Tranquility, Cultural and Landcover. There is a minor impact on Landcover. Impact will be limited subject to retention of extensive areas of scrub and mature trees as a buffer. Appropriate levels of mitigation can be achieved.	Not applicable	Neutral
	Townscape	This option runs along existing highway and open car park. The new traffic island and enhanced carriageway runs tight up to the edge of Castletown, providing little to no opportunity for amelioration. Demolition of former Unicorn Works office which is a potential development site.	Not applicable	Moderate adverse / large negative
	Heritage of Historic Resources	Neutral impact on two 19 th century dismantled railway lines. There will be a localised impact upon any palaeoenvironmental remains present. There is a low potential for archaeological remains. Possible indirect impact on Foregate Conservation Area from rise in vibration, noise, light and vehicle pollution. No direct impact on water meadows.	Not applicable	Slight negative adverse effect
	Biodiversity	Restoration of car parks could achieve compensation for impacts. Impact on wet woodland may not be able to be mitigated. There may be protected species including otters, badgers, bats, water vole and birds. Japanese knotweed is present which needs to be treated.	Not applicable	Potential major negative. Mitigation should be able to reduce this to minor negative
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on River Sow, and Doxey and Tillington Drains during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Moderate adverse impact Mitigation measures will be agreed with the Environment Agency
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral
	Journey Ambience	Frustration will be reduced as the road layout and geometry, condition of the network and ability to make good progress along a route are all better with the blue route in place. Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement.	AADT for this route is over 10,000	Large beneficial

SAFETY	Accidents	Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
ECONOMY	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £42.8m Local Government PVC = £0m	PVC = £42.8m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £46.6m Transport Providers PVB £0m	PVB = £46.6m
	Transport Economic Efficiency: Consumers		Users PVB £41.9m	PVB = £41.9m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 88	Slight beneficial
ACCESSIBILITY	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	More locations experience an improvement in severance than a negative impact. Chell Road pedestrian count data indicates that within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
INTEGRATION	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION F: CASTLEFIELDS TO FOREGATE STREET (GREEN)				
OPTION F		Description:	Problems	Present Value of Costs to Public Accounts £42.4m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 693	Net population annoyed is +25
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 1.1 PM10: 0.3
	Greenhouse Gases	There will be a reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.16m
	Landscape	Loss of vegetation will result in moderate detrimental impact, including loss of mature trees. Minor impact on Landcover. Appropriate mitigation is feasible, including extensive planting alongside route, but would need to be balanced with SSSI management.	Not applicable	Slight / Moderate adverse
	Townscape	This option runs along existing highway and open car park. Where it deviates from this, it creates additional space between the proposed routeway and the edge of Castletown, providing the opportunity for amelioration. Demolition of former Unicorn Works offices which is a potential development site.	Not applicable	Slight adverse (negative)
	Heritage of Historic Resources	Neutral impact on two 19 th century dismantled railway lines. There will be a localised impact upon any palaeoenvironmental remains present. There is a low potential for archaeological remains. Possible indirect impact on Foregate Conservation Area from rise in vibration, noise, light and vehicle pollution. Minimal impact on water meadow system.	Not applicable	Slight negative adverse effect
	Biodiversity	Restoration of car parks could achieve compensation for impacts. Impact on wet woodland may not be able to be mitigated. There may be protected species including otters, badgers, bats, water vole and birds. Japanese knotweed is present which needs to be treated.	Not applicable	Potential major negative. Mitigation should be able to reduce this to minor negative
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on River Sow, and Doxey and Tillington Drains during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Moderate adverse impact Mitigation measures will be agreed with the Environment Agency
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral
	Journey Ambience	Frustration will be reduced as the road layout and geometry, condition of the network and ability to make good progress along a route are all better with the Green route in place. Fear of potential accidents will also reduce as the new highway will be built to	AADT for this route is over 10,000	Large beneficial

SAFETY	Accidents	superior design standards and avoid areas where there is a high pedestrian movement. Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
ECONOMY	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £42.4m Local Government PVC = £0m	PVC = £42.4m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £55.0m Transport Providers PVB £0m	PVB = £55.0m
	Transport Economic Efficiency: Consumers		Users PVB £49.1m	PVB = £49.1m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 87	Slight beneficial
ACCESSIBILITY	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	More locations experience an improvement in severance than a negative impact. Chell Road pedestrian count data shows that within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
INTEGRATION	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION G: CONSULTATION ROUTE (GREEN/REALIGNED YELLOW)				
OPTION G		Description:	Problems	Present Value of Costs to Public Accounts £41.5m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 685	Net population annoyed is +17
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 0.4 PM10: 0.1
	Greenhouse Gases	There will be a reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.09m
	Landscape	An assessment has been carried out on features including Pattern, Tranquility, Cultural and Landcover. Appropriate levels of mitigation can be achieved	Not applicable	Slight / moderate negative
	Townscape	It will impinge on the edges of historic townscape. Associated carriageway structures will be visually obtrusive. Few apparent opportunities for amelioration. Demolition of former Unicorn Works offices which is a potential development site, and Areva Laboratory (Gad Square).	Not applicable	Large adverse (negative)
	Heritage of Historic Resources	Overall impact on two 19 th century dismantled railway lines is minimal. There will be a localised impact upon any palaeoenvironmental remains present. There is a low potential for archaeological remains. There will be an impact upon the site of the Castle Engine Works.	Not applicable	Slight negative adverse effect
	Biodiversity	Restoration of car parks could achieve compensation for impacts. Impact on wet woodland may not be able to be mitigated. There may be protected species including otters, badgers, bats, water vole and birds. Japanese knotweed is present which needs to be treated.	Not applicable	Major negative Mitigation should reduce this to minor negative
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on Doxey Drain and Castfields balancing pond during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Moderate adverse impact Mitigation measures will be agreed with the Environment Agency
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral
	Journey Ambience	Frustration will be reduced as the condition of the network and ability to make good progress along a route are better with this route in place. Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement.	AADT for this route is over 10,000	Large beneficial

SAFETY	Accidents	Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
ECONOMY	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £41.5m Local Government PVC = £0m	PVC = £41.5m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £45.2m Transport Providers PVB £0m	PVB = £45.2m
	Transport Economic Efficiency: Consumers		Users PVB £41.6m	PVB = £41.6m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 91	Slight beneficial
ACCESSIBILITY	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	More locations experience an improvement in severance than a negative impact. Chell Road pedestrian count data indicates that within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
INTEGRATION	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION H: CONSULTATION ROUTE (REALIGNED GREEN)				
OPTION H		Description:	Problems	Present Value of Costs to Public Accounts £40.9m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 699	Net population annoyed is +31
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Small changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.	Highest increase at a Receptor compared to Do-Min (ug/m3) NO2: 1.1 PM10: 0.3
	Greenhouse Gases	There will be a reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.	Overall impact - Neutral PVB = £0.18m
	Landscape	Loss of vegetation will result in moderate detrimental impact, including loss of mature trees. Minor impact on Landcover. Appropriate mitigation is feasible, including extensive planting alongside route, but would need to be balanced with SSSI management.	Not applicable	Slight / Moderate adverse
	Townscape	This option runs along existing highway and open car park. Where it deviates from this, it creates additional space between the proposed routeway and the edge of Castletown, providing the opportunity for amelioration. Demolition of former Unicorn Works offices which is a potential development site.	Not applicable	Slight adverse (negative)
	Heritage of Historic Resources	Neutral impact on two 19 th century dismantled railway lines. There will be a localised impact upon any palaeoenvironmental remains present. There is a low potential for archaeological remains. Possible indirect impact on Foregate Conservation Area from rise in vibration, noise, light and vehicle pollution. Minimal impact on water meadow system.	Not applicable	Slight negative adverse effect
	Biodiversity	Extent of impact on SSSI needs to be assessed by Natural England. Restoration of car parks could achieve compensation for impacts. Impact on wet woodland may not be able to be mitigated. There may be protected species including otters, badgers, bats, water vole and birds. Japanese knotweed is present which needs to be treated.	Not applicable	Potential major negative Mitigation should reduce this to minor negative
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on River Sow, and Doxey and Tillington Drains during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable	Moderate adverse impact Mitigation measures will be agreed with the Environment Agency Neutral
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable	Neutral
	Journey Ambience	Frustration will be reduced as the road layout and geometry, condition of the network and ability to make good progress along a route are all better with this route in place.	AADT for this route is over 10,000	Large beneficial

SAFETY	Accidents	Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement. Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
ECONOMY	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £40.9m Local Government PVC = £0m	PVC = £40.9m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £52.9m Transport Providers PVB £0m	PVB = £52.9m
	Transport Economic Efficiency: Consumers		Users PVB £46.9m	PVB = £46.9m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 88	Slight beneficial
ACCESSIBILITY	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	More locations experience an improvement in severance than a negative impact. Chell Road pedestrian count data indicates that within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
INTEGRATION	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

Appraisal Summary Table – OPTION I: HYBRID ROUTE (GREEN/YELLOW)

Description:		Problems	Present Value of Costs to Public Accounts £34.7m
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT
ENVIRONMENT	Noise	The change in traffic flow has been assessed for a defined local study area including the proposed alignment and the most likely affected network that was identified during the consultation process. Very limited noise impact has been identified.	Population annoyed = 673
	Local Air Quality	DMRB11 scoping level assessment completed. No designated Air Quality Management Area. Modelled NOx at 4 receptors is expected to achieve national air quality objectives. Change in number of PM10 exceedances of the daily mean criterion is negligible. Five NO2 local monitoring sites – some kerbside sites may approach objective for annual mean NO2.	Smallest changes in air quality compared with do-minimum. No properties are expected to be subject to a breach in national air quality objectives.
	Greenhouse Gases	There will be a reduction in greenhouse emissions due to more efficient car journey times.	Benefits have been estimated using TUBA through the highway modelling.
	Landscape	An assessment has been carried out on features including Pattern, Tranquility, Cultural and Landcover. Appropriate levels of mitigation can be achieved	Not applicable
	Townscape	It will impinge on the edges of historic townscape. Associated carriageway structures will be visually obtrusive. Few apparent opportunities for amelioration. Demolition of former Unicorn Works offices which is a potential development site.	Not applicable
	Heritage of Historic Resources	Overall impact on two 19 th century dismantled railway lines is minimal. There will be a localised impact upon any palaeoenvironmental remains present. There is a low potential for archaeological remains. There will be an impact upon the site of the Castle Engine Works.	Not applicable
	Biodiversity	Restoration of car parks could achieve compensation for impacts. Impact on wet woodland may not be able to be mitigated. There may be protected species including otters, badgers, bats, water vole and birds. Japanese knotweed is present which needs to be treated.	Not applicable
	Water Environment	Not in a Groundwater Source Protection Zone. Areas of the route are within Flood Zone 3. Potential to impact on Doxey Drain and Castlefields balancing pond during construction and operational periods. Further consideration needed on risk to groundwater flow, the SSSI and Controlled Waters.	Not applicable
	Physical Fitness	A new facility along the route will be provided for pedestrians and cyclists in the west of Stafford, however, the additional number of pedestrians and cyclists expected as a result of this facility has been calculated to be insignificant in terms of improving physical fitness.	Not applicable
	Journey Ambience	Frustration will be reduced as the condition of the network and ability to make good progress along a route are better with this route in place. Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement.	AADT for this route is over 10,000

SAFETY	Accidents	Personal injury accident data has been analysed which concludes that there is currently no significant safety issue in the locally defined study area. It is expected that accident benefits will be identified on road links where traffic flows are expected to reduce.	Observed 5 year accident data for the local study area is 196 accidents (10 serious) involving 35 pedestrians and 25 cyclists. Observed annual accident rate is equivalent to the expected rate provided by COBA.	A monetised assessment has not been completed
	Security	Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas. Complimentary measures for bus users will be promoted through the LTP which will increase security levels.	Not quantified	Neutral
ECONOMY	Public Accounts	For the Options Report, it has been assumed that all monies come from central government. In practice, the scheme funding will be split between a local contribution (sourced from developers) and the indicative DfT contribution.	Central Government PVC = £34.7m Local Government PVC = £0m	PVC = £34.7m
	Transport Economic Efficiency: Business Users & Transport Providers	Journey time and vehicle operating cost savings through reduced congestion for both private vehicle users, freight and public transport users.	Business Users PVB £6.4m Transport Providers PVB £0m	PVB = £6.4m
	Transport Economic Efficiency: Consumers		Users PVB £6.7m	PVB = £6.7m
	Reliability	Moderate changes in stress for a low flow route	Route stress Before: 104 After: 92	Slight beneficial
ACCESSIBILITY	Wider Economic Impacts	Designation of Growth Point status will help to deliver the Regional Spatial strategy and associated economic regeneration.	Not applicable	Not applicable
	Option values	This highway option does not have a significant impact on this sub objective, however complementary measures associated with delivering the scheme such as new walking, cycling and bus infrastructure will improve travel options.	Not applicable	Not assessed
	Severance	More locations experience an improvement in severance than a negative impact. Chell Road pedestrian count data indicates that within a 12 hour period 5069 people crossed in one direction and 4833 people crossed in the other direction, although it should be noted that many people will make a return journey in this location.	The total number of people affected across all levels of severance is greater than 1000	Large beneficial
	Access to the Transport System	The scheme does not include the provision of new public transport services therefore does not have a significant impact on this sub objective.	Not applicable	Not assessed
	Transport Interchange	This highway option does not include transport interchange facilities, however it will facilitate complementary measures that will improve access to bus and rail interchange.	Not applicable	Not assessed
INTEGRATION	Land-Use Policy	The scheme will benefit a range of local, regional and national land use and transport policies. No policies will be hindered.	Not applicable	Beneficial
	Other Government Policies	The bid will help policies of the DfT, DCLG, and wider policies on Health, Education and Economy, and other local and regional policies. It is not expected to hinder policies.	Not applicable	Beneficial

7. Acceptability of Options

A public consultation exercise took place between 3rd December 2009 and 22nd January 2010 on four route options for the Stafford Western Access Improvements. It included the following:

- Letters and questionnaires to statutory consultees, key stakeholders and elected Members
- Letters and questionnaires to residents directly affected by the proposals
- Two day public exhibition in the town centre
- Staffordshire County Council web page incorporating detailed information about the proposal and an on-line questionnaire
- Full page advertisement in the local press

There was widespread interest in the consultation exercise and over 900 questionnaires were returned. The public consultation response is summarised as follows:

- 52% of respondents disagreed that a new route between the Newport Road and Foregate Street was needed, which resulted in 51% not expressing a view on their preferred route
- The response to 'which is your preferred route?', was as follows:
 - 48% Do nothing
 - 34% Green Route
 - 6% Yellow Route
 - 6% Red Route
 - 3% Blue Route
 - 3% no response
- Out of the respondents who selected a preferred route:
 - 70% chose the Green Route
 - 12% chose the Yellow Route
 - 11.5% chose the Red Route
 - 6.5% chose the Blue Route

Responses have also been received from Network Rail, Chamber of Commerce, local developers and landowners, Environment Agency, English Heritage, Stafford Borough Council, Castlefields Residents Association, Staffordshire Wildlife Trust and Staffordshire Police. The environmental responses have informed the conclusions reached for each option regarding the Environment sub-objective in the Appraisal Summary Tables provided in Chapter 6.

A joint response from Bellway Homes and St Modwen Properties plc was received in the form of a suggested alternative alignment for phase 1 of the green route which avoids the need to close infrequently used railway sidings owned by Network Rail. This suggested alignment has been assessed as part of the Options Assessment Report (Consultation Route H).

An alternative alignment for the Yellow Route was suggested that links directly into Gaol Square rather than Chell Road and is delivered in conjunction with phase 1 of the Green Route. A slightly revised (more practical) version of this suggestion has been assessed as part of the Options Assessment Report (Consultation Route G). Combinations of elements of the suggested routes were also supported and one of these combinations, Green phase1 with Yellow phase 2 has also been developed and appraised in this report.

The consultation questionnaire also encouraged informal commentary from respondents about the Council's proposals. A summary of these responses is given below:

- Around 25% supported the need for a sustainable transport solution
- Around 15% suggested other road solutions serving other parts of the town in preference to a new road in the west
- Around 20% were more concerned about other transport issues in the town
- Around 5% were concerned that the route options would create congestion on Foregate Street
- Around 5% expressed environmental concerns regarding the route options

The sustainable transport option was subject to a separate consultation with key stakeholders in May 2009 as part of the Community Infrastructure Fund CIF bid process.

The MP, Prospective Parliamentary Candidates, the Chamber of Trade and Commerce and Local Councillors have also been consulted. Formal political approval for the Preferred Option will be sought in April 2010 prior to the submission of the final Major Scheme Business Case. A further consultation exercise providing details on the Preferred Option will take place in 2010 and formal consultations will take place to inform the planning application and environmental assessment following confirmation of Programme Entry and prior to Full Approval of the scheme.

8. Financial Case

Table 8.1 provides the current scheme costs for each option based on Q2 2008 prices. At this stage individual maintenance costs and profiles have not been calculated for the options. It is considered however that these will be broadly consistent between the options and hence would not influence the overall results.

Table 8.1: Scheme Costs (Q2 2008 prices)

Cost Element (£'000s)	B: Phase 1 only	C: Yellow Route	D: Red Route	E: Blue Route	F: Green Route	G: Consultation Route	H: Consultation Route	I: Hybrid Route
Construction	£14,281	£25,891	£29,800	£30,390	£30,029	£27,828	£27,667	£24,856
Land	£750	£3,000	£1,500	£1,500	£1,500	£4,000	£3,000	£1,500
Preparation	£1,358	£2,367	£2,843	£2,904	£2,867	£2,539	£2,625	£2,338
Supervision	£453	£789	£948	£968	£956	£846	£875	£779
Contingencies (20%)	£3,368	£6,409	£7,018	£7,152	£7,070	£7,043	£6,833	£5,894
TOTAL (including contingencies)	£20,210	£38,456	£42,109	£42,914	£42,422	£42,256	£41,000	£35,367

Option E (Blue) has the highest overall cost although the costs are all broadly comparable at around £42 to £43 million for Options E, F, D and G suggested during the consultation process and Option H is £41 million. Not surprisingly the cost of completing just the first phase of the Green Route (B) is considerably cheaper.

All of the options are similar in length, although Option C (Yellow) is slightly shorter. The Blue, Green and Red options and the two Consultation Routes all require a new bridge over the West Coast Main Line, a new bridge over the River Sow, a route over or around Network Rail railway sidings, new junctions and a low viaduct over Doxey Marshes. Although Option G (Consultation Green/Realigned Yellow) does not require such an expensive viaduct, there are additional costs incurred in relation to utilities work, junction alterations and land acquisition. Option C (Yellow) is predicted to cost around £4 million less at £38 million which is mainly due to the need for a less expensive viaduct.

Option I (Hybrid Green/Yellow) is a combination that utilises the Green route for phase 1 and the historic Yellow Route for phase 2. This option is around £7.5 million cheaper as it avoids the need for the more expensive viaduct and a skewed bridge over the WCML (as required for the Yellow Route). Reduced costs are also incurred in relation to junction alterations and land acquisition.

The majority of the scheme will be funded by Central Government's Regional Funding Allocation for major transport schemes. The provisional DfT allocation is

£31 million for the period 2012/16. The County Council views the prospect of securing at least a 10% local contribution from developers towards the scheme as realistically achievable based on recent negotiations with landowners and developers together with past experience and successes regarding securing developer contributions throughout the County.

Staffordshire County Council can demonstrate a good track record for securing developer contributions for packages of sustainable transport measures for urban areas and major highway schemes. £2.3 million was secured for the Rugeley Bypass and a total of around £6 million has been secured since 2002 towards the delivery of urban transport strategies for Stafford, Burton upon Trent and Lichfield.

In the unlikely event that sufficient developer contributions cannot be delivered then the County Council will consider using Capital Reserves or undertaking Prudential Borrowing to make up the 10% local contribution required.

9. Commercial and Delivery Overview

Staffordshire County Council has a strong track record in the procurement and delivery of sustainable transport measures and major schemes, most recently demonstrated with Rugeley Eastern Bypass.

Staffordshire County Council has a dedicated Corporate Procurement Team that will manage the procurement process. The option would be to invite tenders on a 'design and build' basis or to design the scheme in-house and advertise it as a 'construction only' contract. The value of the Stafford Western Access Improvements dictates that the procurement process will be governed by EU procurement law and the Public Contract Regulations 2006. The tender will conform to full contract and award advertisement in the Official Journal of the European Union (OJEU) thereby attracting competition from Europe in addition to the UK. Transparent tender evaluation will be governed by bespoke selection and award criteria based on both a strict price and quality ratio. All evaluation methodology will be aligned to procurement policy and will be compliant with industry best-practice and EU legislation.

Staffordshire County Council's Staffordshire Highways team has been recognised nationally as an excellent four star service, one of the top ten in the UK and it has been highlighted by the Government as an exemplar of best practise and a Centre of Excellence in managing the highway network. Staffordshire Highways brings together a core of professionals from Staffordshire County Council and Enterprise, (the selected contractor) to deliver its maintenance and construction programmes. This successful partnership will manage the delivery of the complementary measures on the existing highway network.

The risks for the Stafford Western Access Improvements will be owned and managed in line with the County Council's Corporate Risk Management Policy. A range of measures will be adopted to mitigate risk, for example, working closely with relevant partners and, if necessary, redirecting resources to this scheme. Risks that may have the greatest impact on delivery will be closely monitored and managed. Risk will also be managed by maintaining a comprehensive record of scheme costs, and benchmarking programmes against previous performance to maintain control of costs, hence maximising value for money. The County Council follows the principles set out in 'PRINCE' and use the 'CS PROJECT Professional' and 'Systems Applications and Projects' (SAP) management tools.

A Quantified Risk Assessment took place on 8th March 2010 in the form of a workshop facilitated by Faithful+Gould to inform Stage Two of the Major Scheme Business Case. The key output was a Risk Register which will identifies comprehensive risk mitigation strategies necessary to prevent quantified risks affecting the delivery of the scheme.

10. Outcome of Option Appraisal

The result of the overall appraisal has identified that **Option F (Green)** should be taken forward as the **Preferred Option**. It has the highest Benefit to Cost Ratio (BCR) at 2.46 and achieves 85% of the intervention objectives. The appraisal also concludes that this option delivers the best operational conditions (lowest degree of congestion) in both the AM and PM peak hours and it is expected that any environmental implications will be able to be satisfactorily mitigated.

Major Scheme Business Cases often identify a sustainable transport package as their credible lower cost alternative. In this bid, Option A (Sustainable Transport Only), with an outturn cost of £4.028M (PVC £5.45M), constitutes the lowest cost alternative but cannot be considered 'credible' since it only achieves 50% of the intervention objectives and impacts negatively on highway users, in particular business users, and ultimately the local economy. It cannot, on its own satisfactorily deliver the Stafford Growth Agenda in transport terms.

Option H (Consultation Route Realigned Green) appears as the 'next best' alternative to the Option F (Green) as it yields a similar BCR of 2.44, by being slightly cheaper to construct but delivering marginally less benefits. Whilst lying outside the strict definition of a 'credible lower cost alternative', this option remains a fallback to ensure a scheme can be delivered in western Stafford, should negotiations stall with Network Rail over the delivery of a new bridge to take the road over Doxey Sidings. Unfortunately it is also so similar to Option F (Green) as to not merit a separate independent assessment in Stage 2 of this Major Scheme Business Case.

Options D (Red), E (Blue), Option G (Consultation Route Green/Realigned Yellow) and H (Consultation Route Realigned Green) are all similar in cost and all potentially achieve 70 - 85% of the intervention objectives, however they do not score as well as Option F (Green) in the detailed Option Appraisal. The County Council recommends that Options A (Sustainable Transport Only), Option B (Phase 1 Red/Blue/Green), Option C (Yellow) and Option I (Hybrid Green/Yellow) are ruled out as the Preferred Option or the credible lower cost alternative because they do not adequately achieve the intervention objectives, do not have a BCR of over 2 and do not score as highly as Option F (Green) in the Option Appraisal.

Although the consultation results favoured the Do-Nothing option, the County Council does not consider this to be a realistic course of action. Stafford needs an integrated and sustainable transport strategy to deliver its Regional Spatial Strategy allocation and Growth Point ambitions. Evidence shows that without the provision of additional highway capacity, the forecast travel demand associated with new housing and employment leads to congestion which constrains the development of an effective and economically justifiable transport strategy. Western Stafford is the favoured location for providing additional capacity because of the likely distribution of new development emerging from the local planning authority's processes, and the practicalities of delivering an economically viable scheme which minimises adverse impacts.

This Options Assessment Report has provided a detailed WebTAG appraisal of all Options A to I. The appraisal has identified that there is no significant difference between the highway options for the following sub-objectives to help to justify the Preferred Option:

- Noise
- Local air quality
- Greenhouse gases
- Accident savings
- Water environment
- Journey ambience
- Security
- Reliability

Option D (Red) would help to achieve most intervention objectives. It has a BCR of 2.09 and benefits would be achieved in terms of Journey Ambience, Reliability and Severance. However it cannot be taken forward as the Preferred Option due to the outcome of the Environmental sub-objective analysis that identifies a 'Moderate Adverse' impact on Landscape, a 'Major Negative' impact on Biodiversity and a 'Moderate Adverse' impact on the Water Environment. The Red Route is contrary to Structure Plan policy NC7 and National Planning Guidance (PPS9) as it is considered that the Biodiversity impact cannot be adequately mitigated.

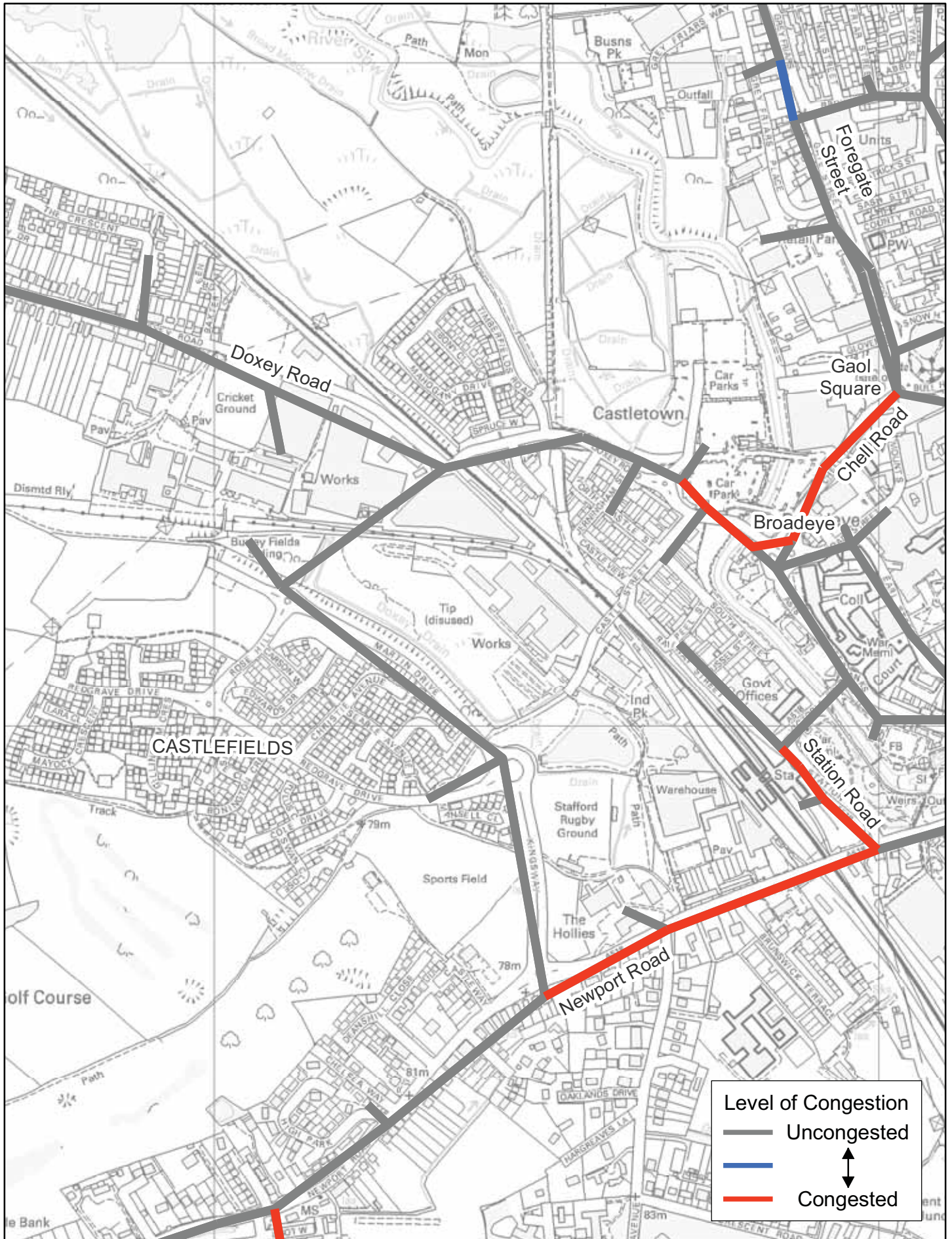
It is not recommended that Option E (Blue) should be taken forward as the Preferred Option, although it achieves most intervention objectives. It has a BCR of 2.07 and would provide similar benefits compared to the Green Route. However it is the highest cost option and the Green alignment is preferable to the Blue because the alignment of the Option E (Blue) runs closer to houses and communities on Doxey Road.

Option G (Consultation Route Green/Realigned Yellow) is expected to be the same cost as the Preferred Option and has a BCR of 2.09. It scores lower than the Preferred Option in terms of the BCR, meeting intervention objectives and providing better highway operational conditions in the peak hours.

Appendix A

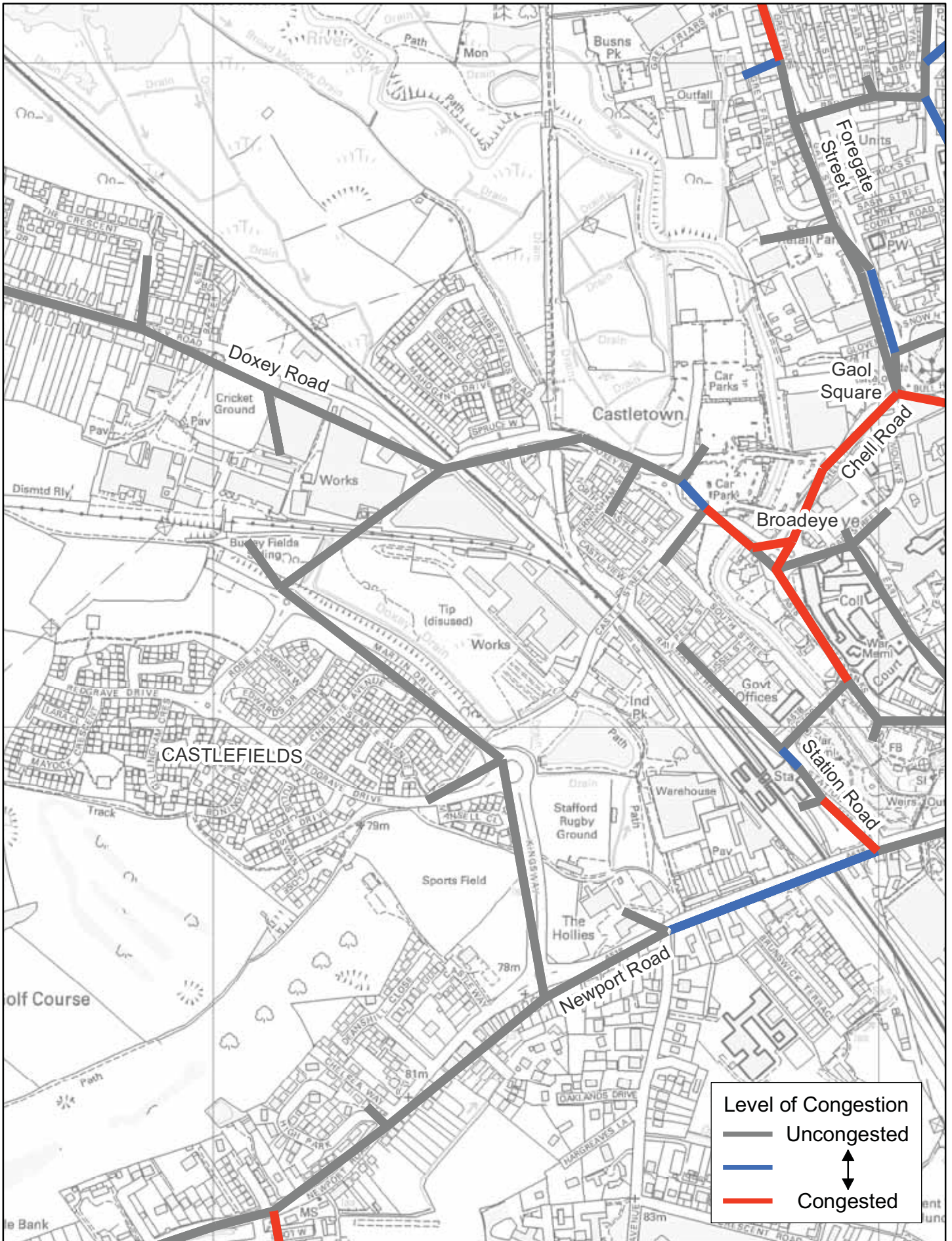
Peak period traffic implications for each option

Stafford Western Access Improvements
Castlefields to Doxey Road (Phase 1 Red / Blue / Green B)
2031 AM Peak Hour

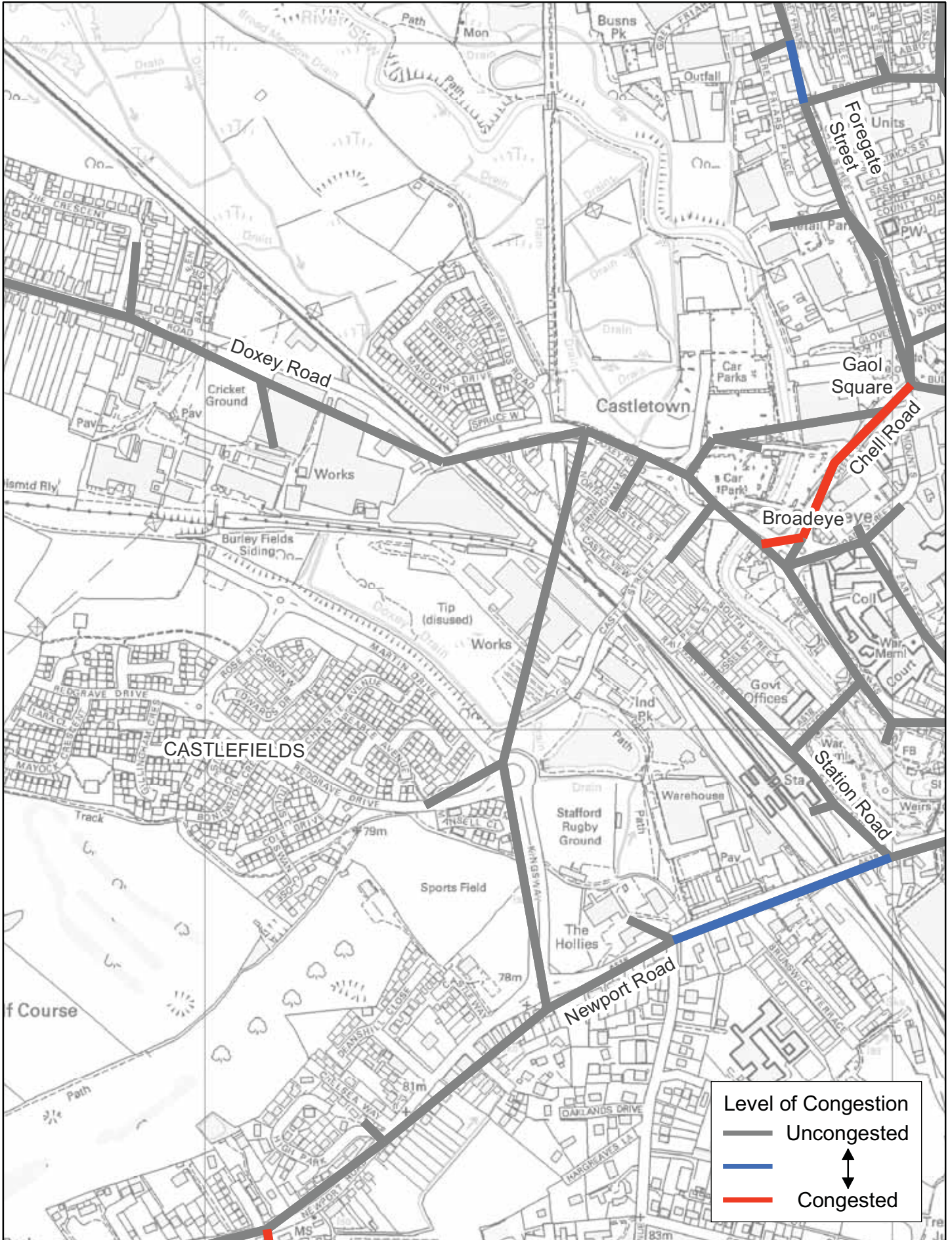


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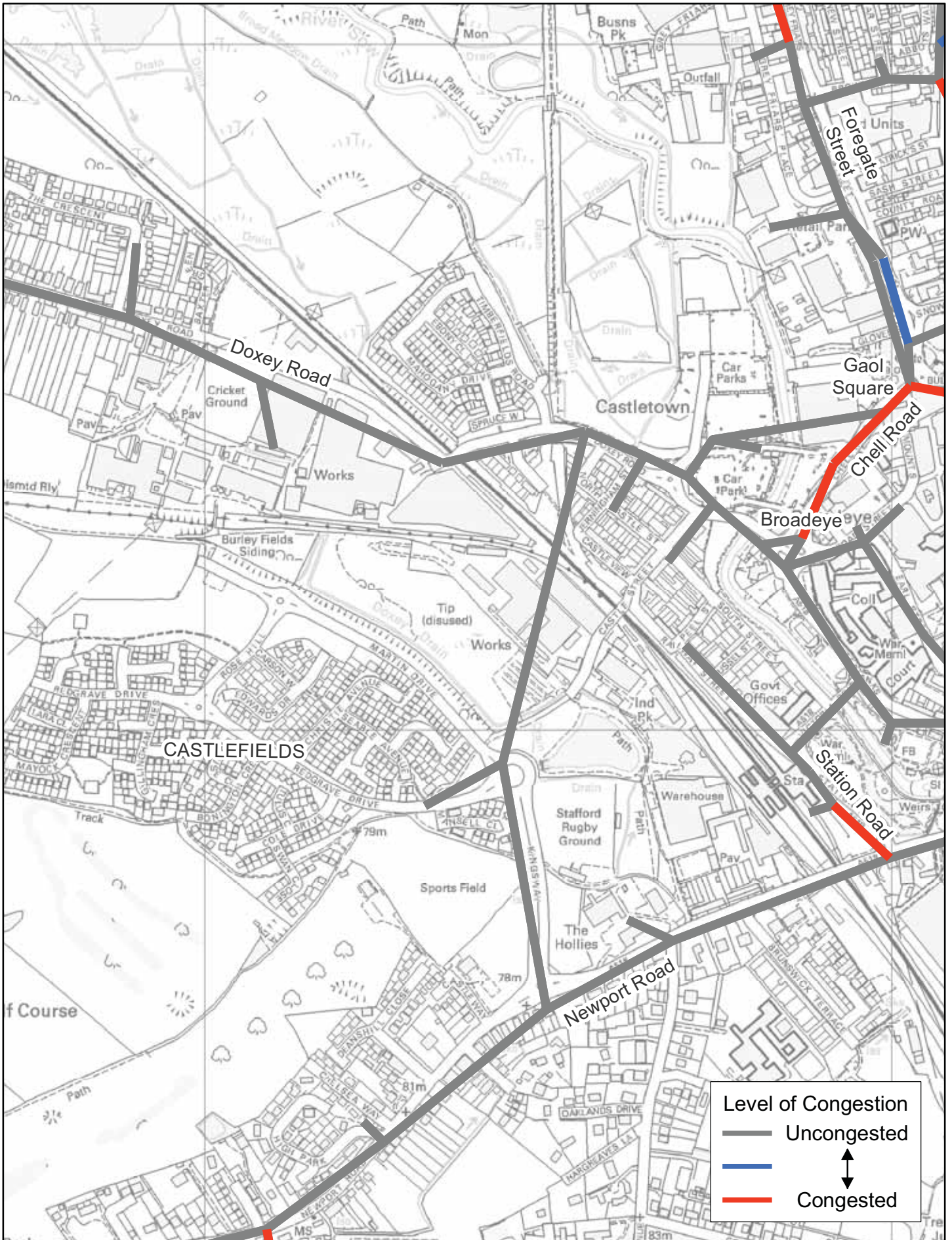
Stafford Western Access Improvements
Castlefields to Doxey Road (Phase 1 Red / Blue / Green B)
2031 PM Peak Hour



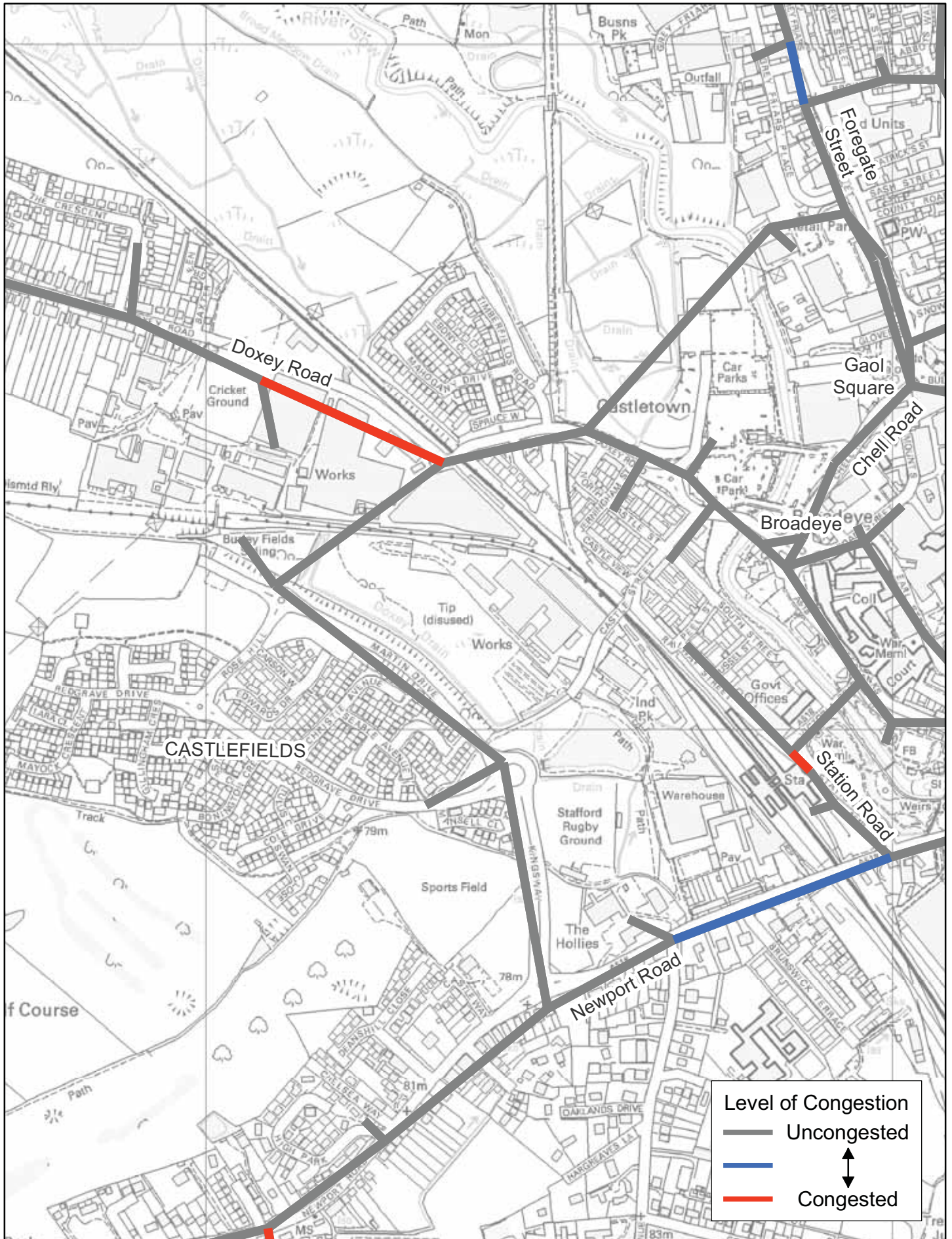
Stafford Western Access Improvements
 Castlefields / Doxey Road / Chell Road (Yellow Route C)
 2031 AM Peak Hour



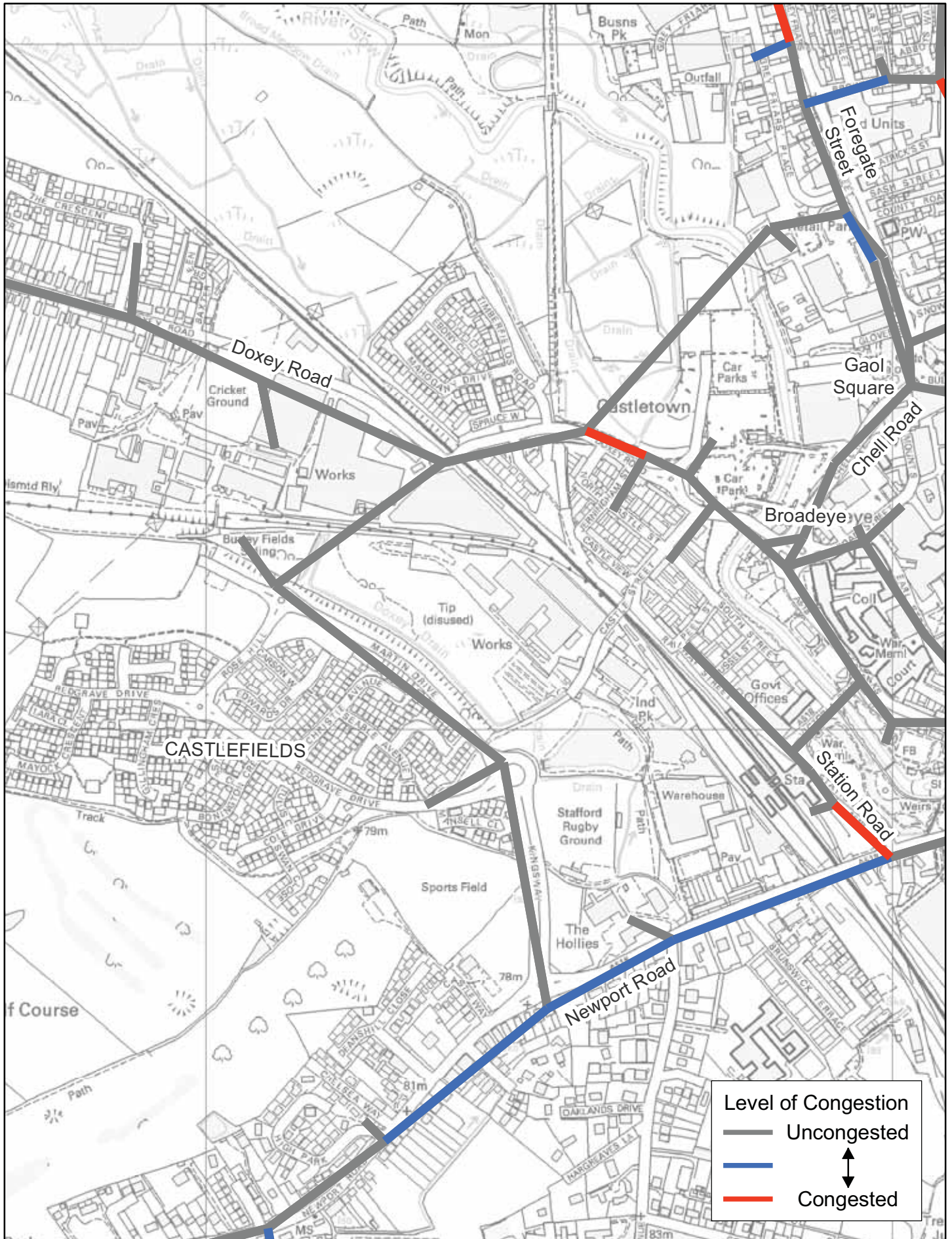
Stafford Western Access Improvements Castlefields / Doxey Road / Chell Road (Yellow Route C) 2031 PM Peak Hour



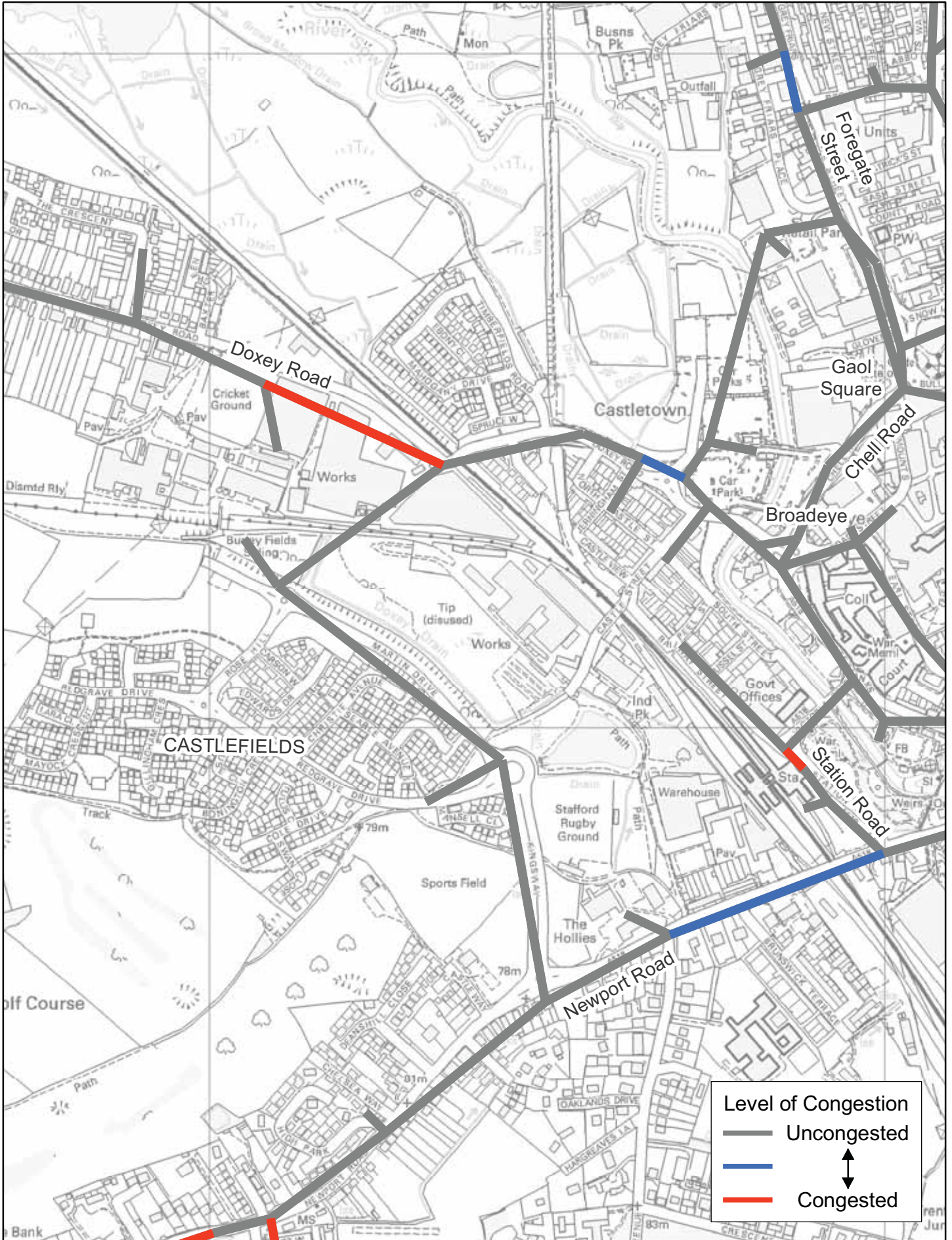
Stafford Western Access Improvements
Castlefields / Doxey Road / Foregate Street (Red Route D)
2031 AM Peak Hour



Stafford Western Access Improvements
 Castlefields / Doxey Road / Foregate Street (Red Route D)
 2031 PM Peak Hour

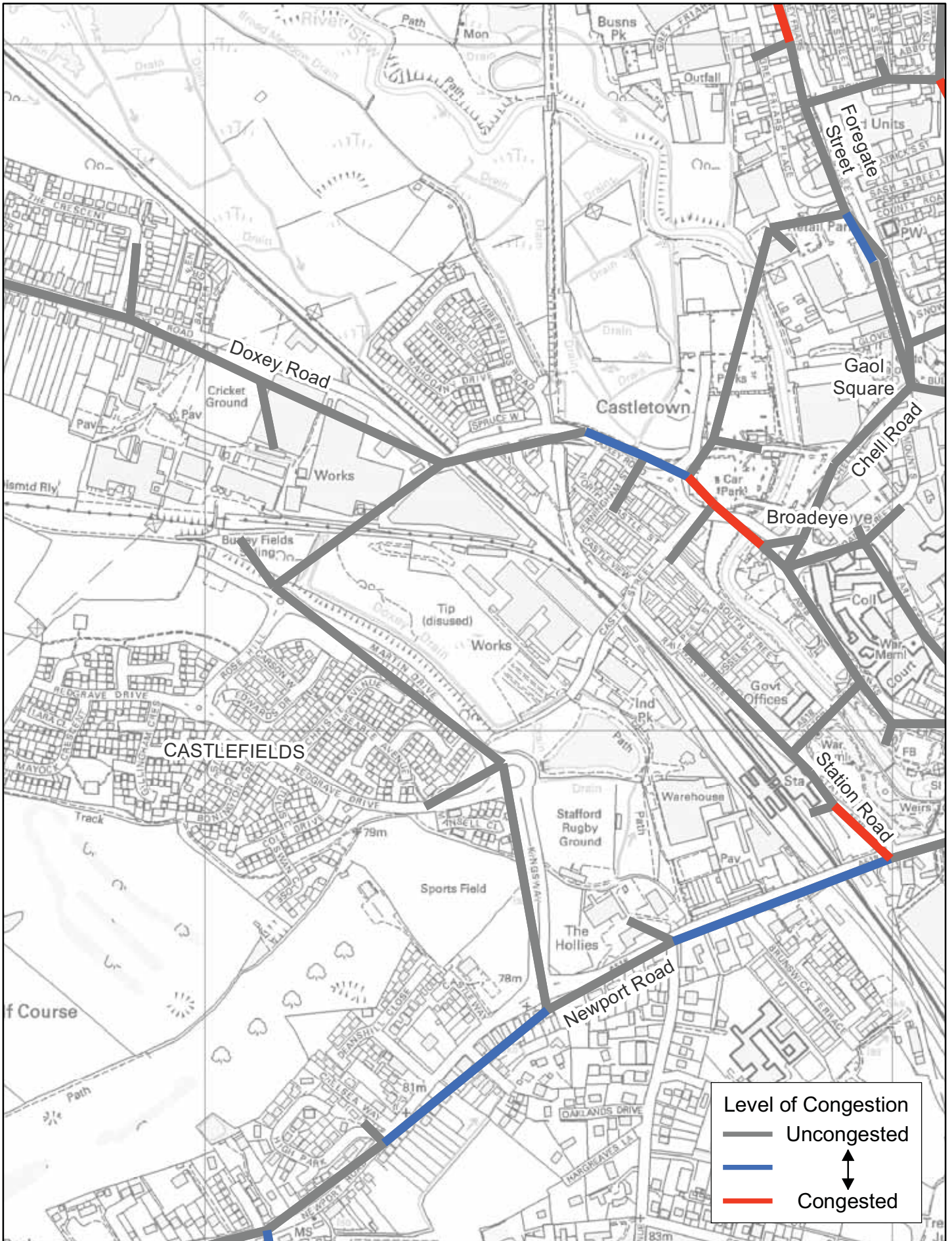


Stafford Western Access Improvements
Castlefields / Doxey Road / Foregate Street (Blue Route E)
2031 AM Peak Hour



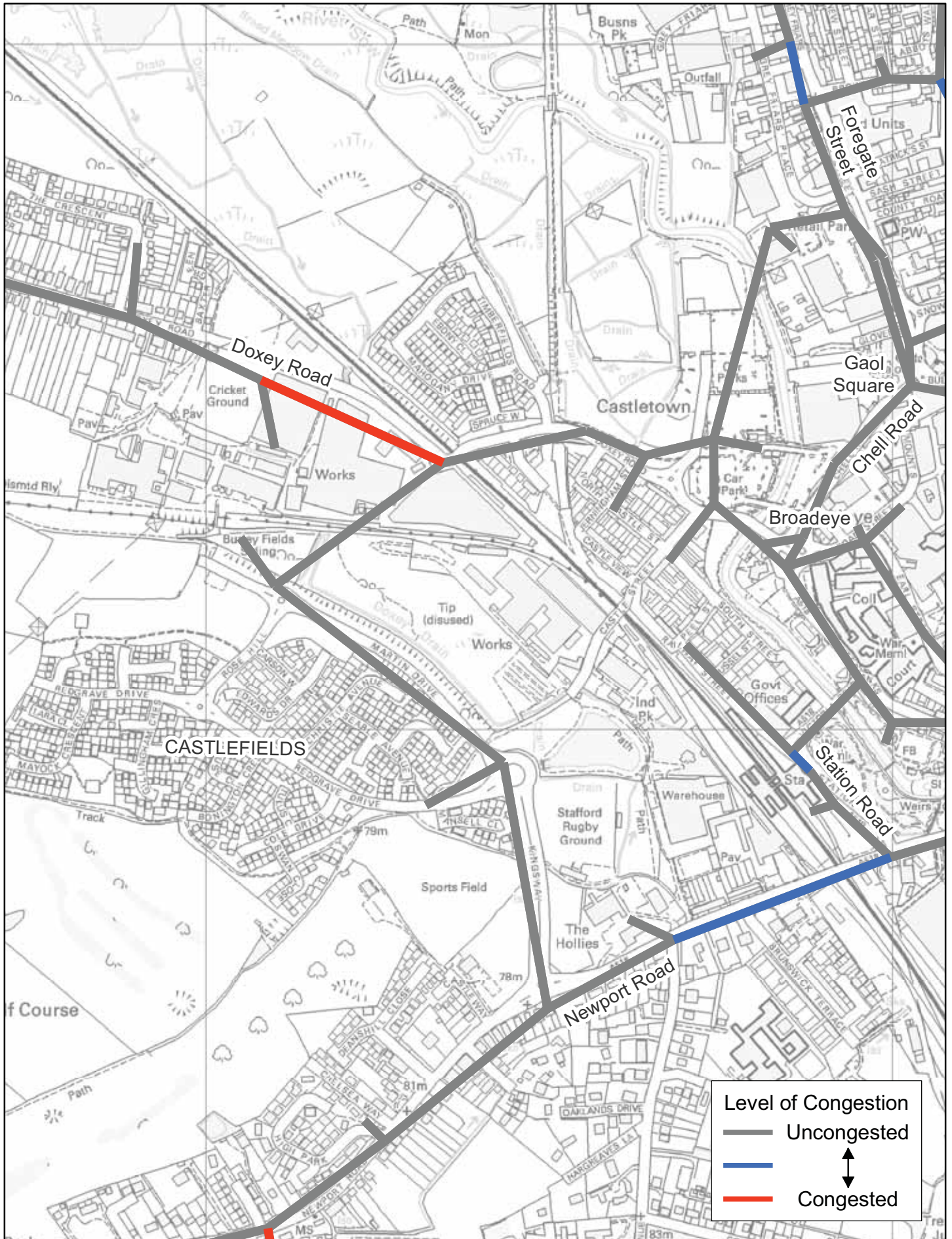
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Stafford Western Access Improvements
 Castlefields / Doxey Road / Foregate Street (Blue Route E)
 2031 PM Peak Hour

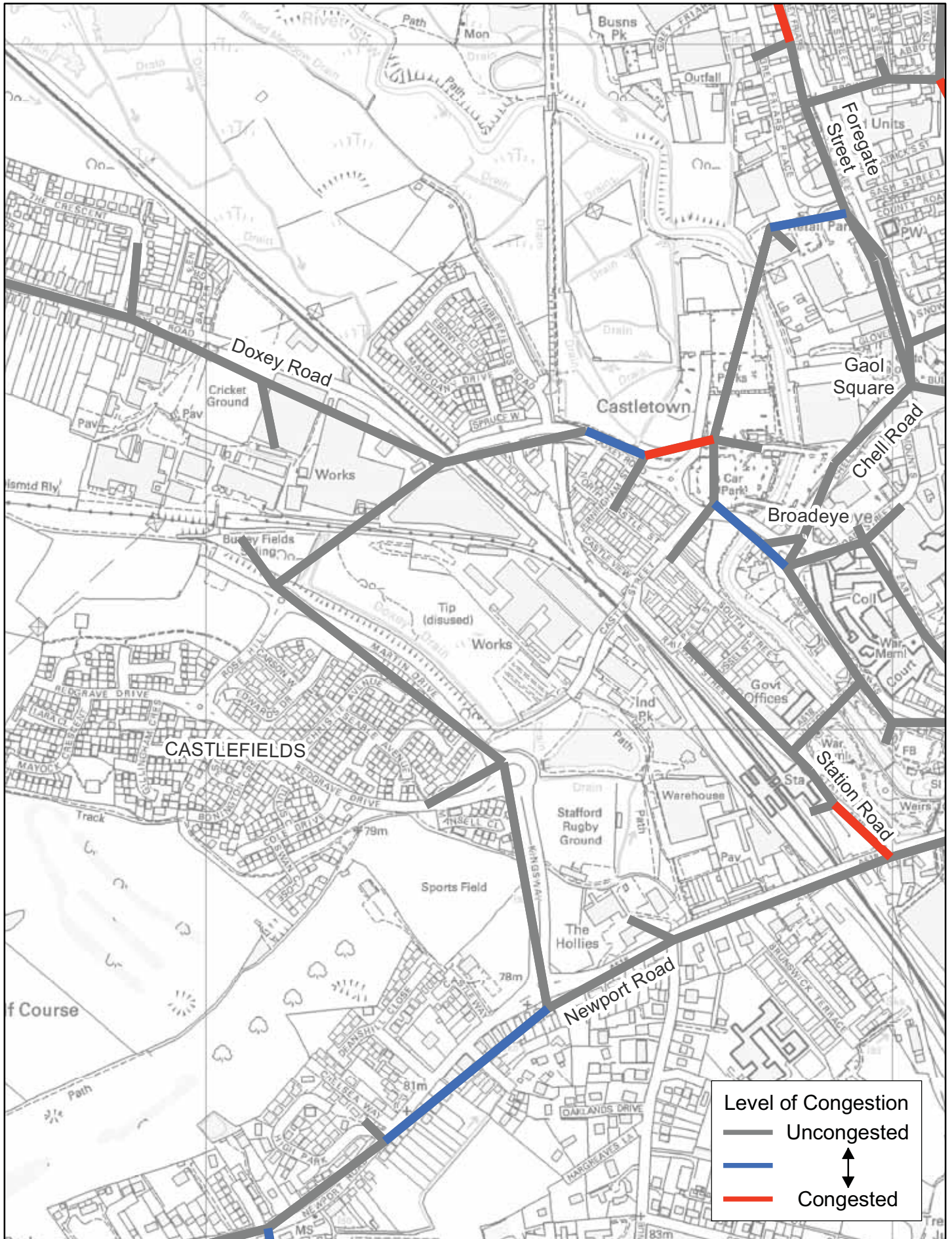


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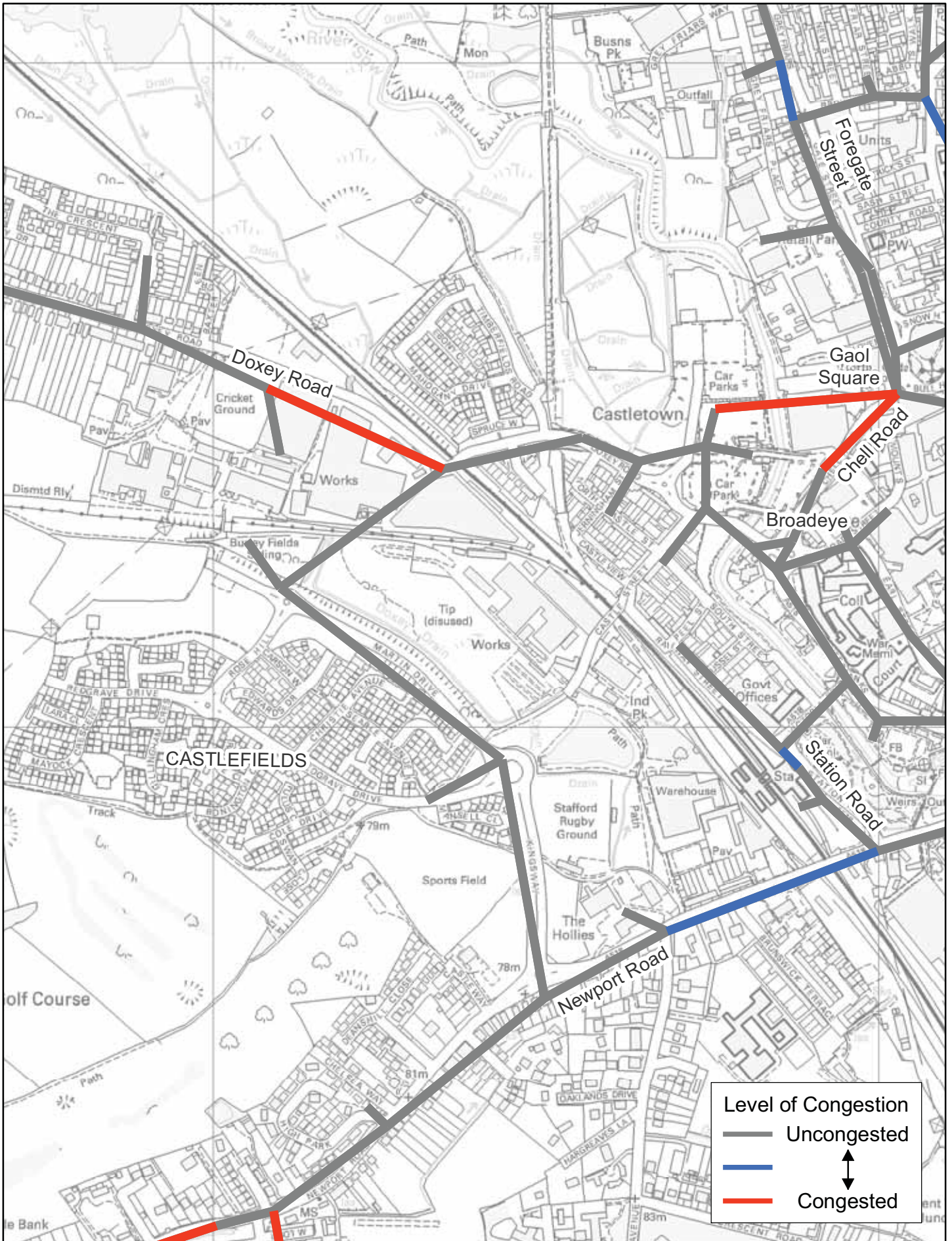
Stafford Western Access Improvements
 Castlefields / Doxey Road / Foregate Street (Green Route F)
 2031 AM Peak Hour



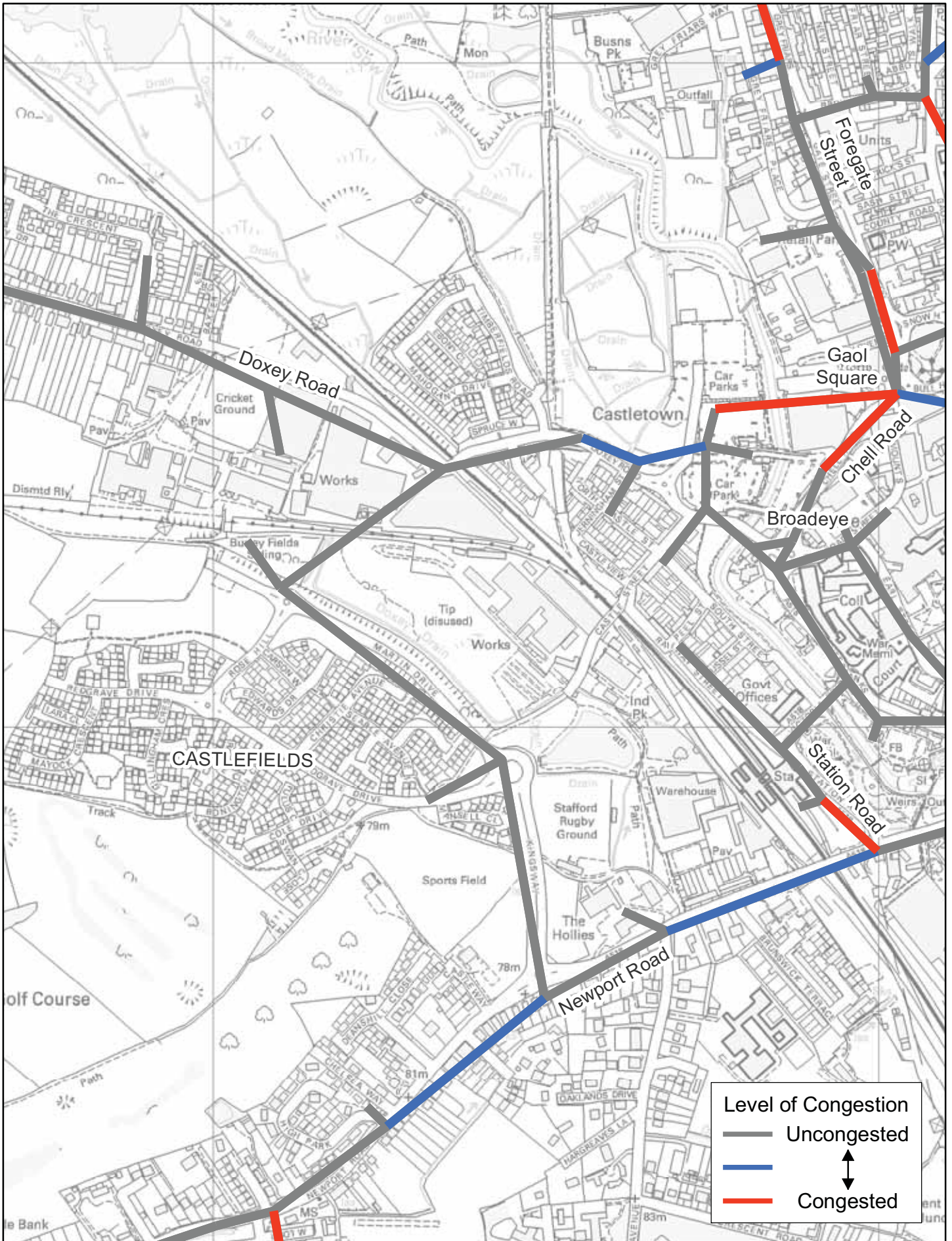
Stafford Western Access Improvements
Castlefields / Doxey Road / Foregate Street (Green Route F)
2031 PM Peak Hour



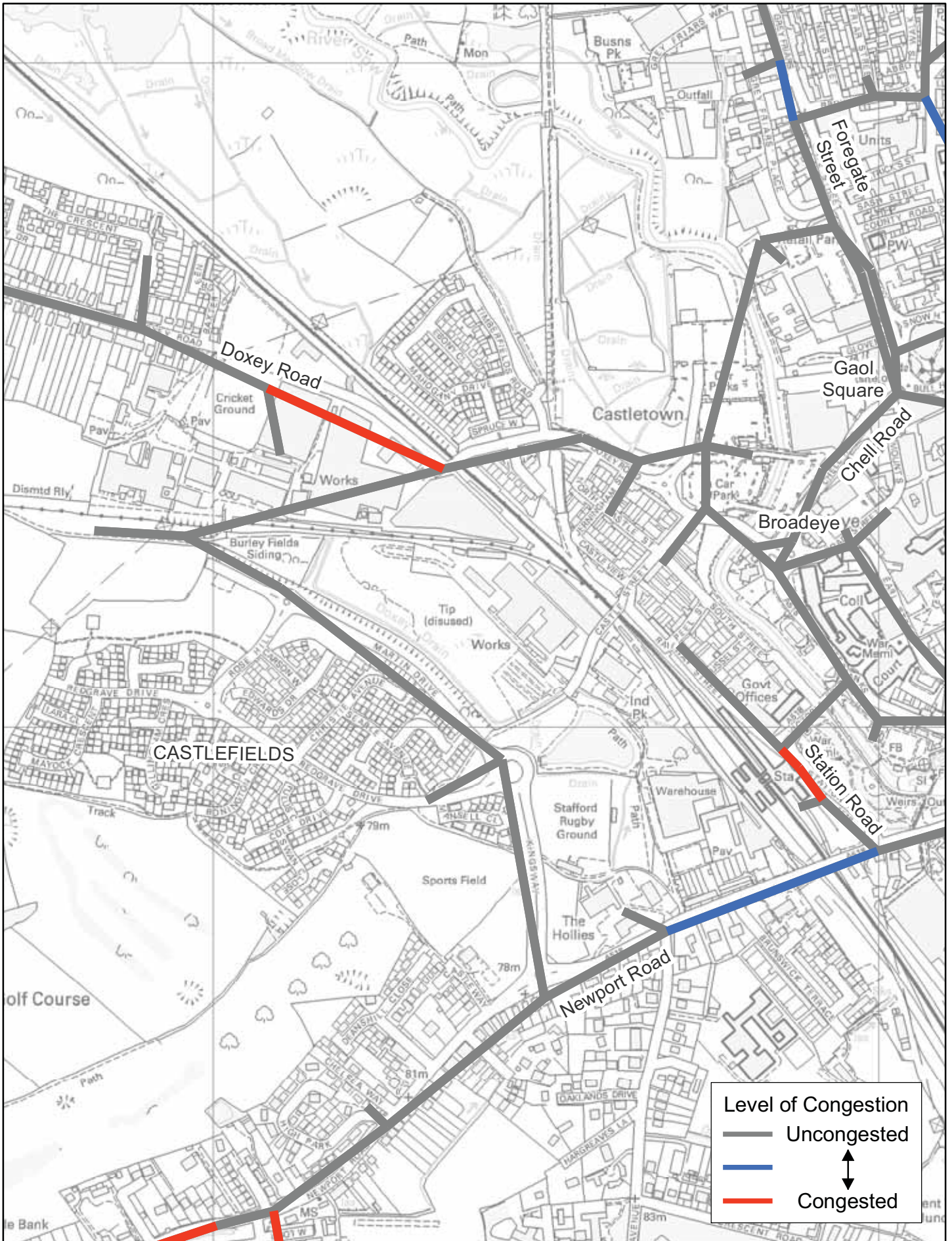
Stafford Western Access Improvements
 Consultation Route (Green / Realigned Yellow G)
 2031 AM Peak Hour



Stafford Western Access Improvements
 Consultation Route (Green / Realigned Yellow G)
 2031 PM Peak Hour

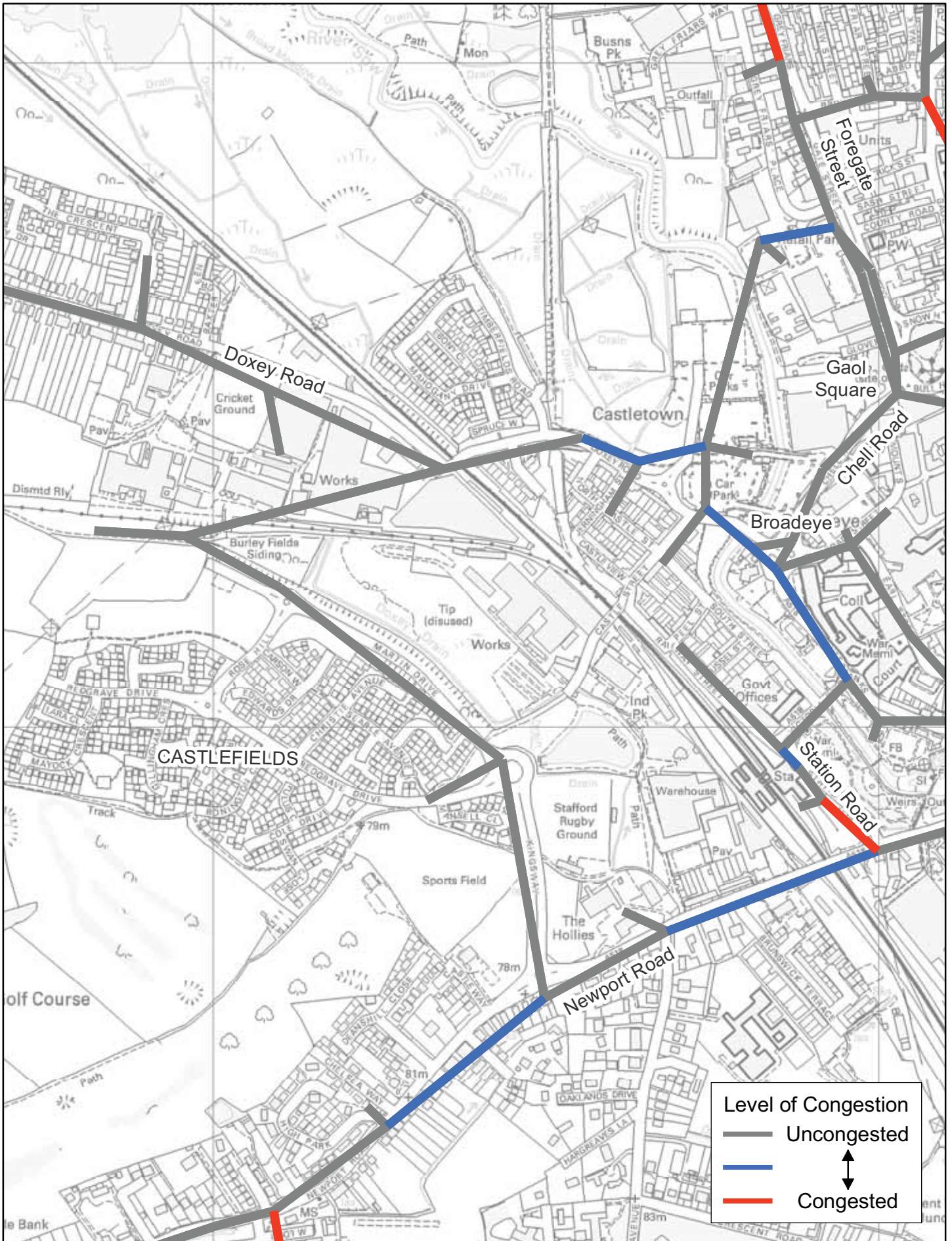


Stafford Western Access Improvements
 Consultation Route (Realigned Green H)
 2031 AM Peak Hour

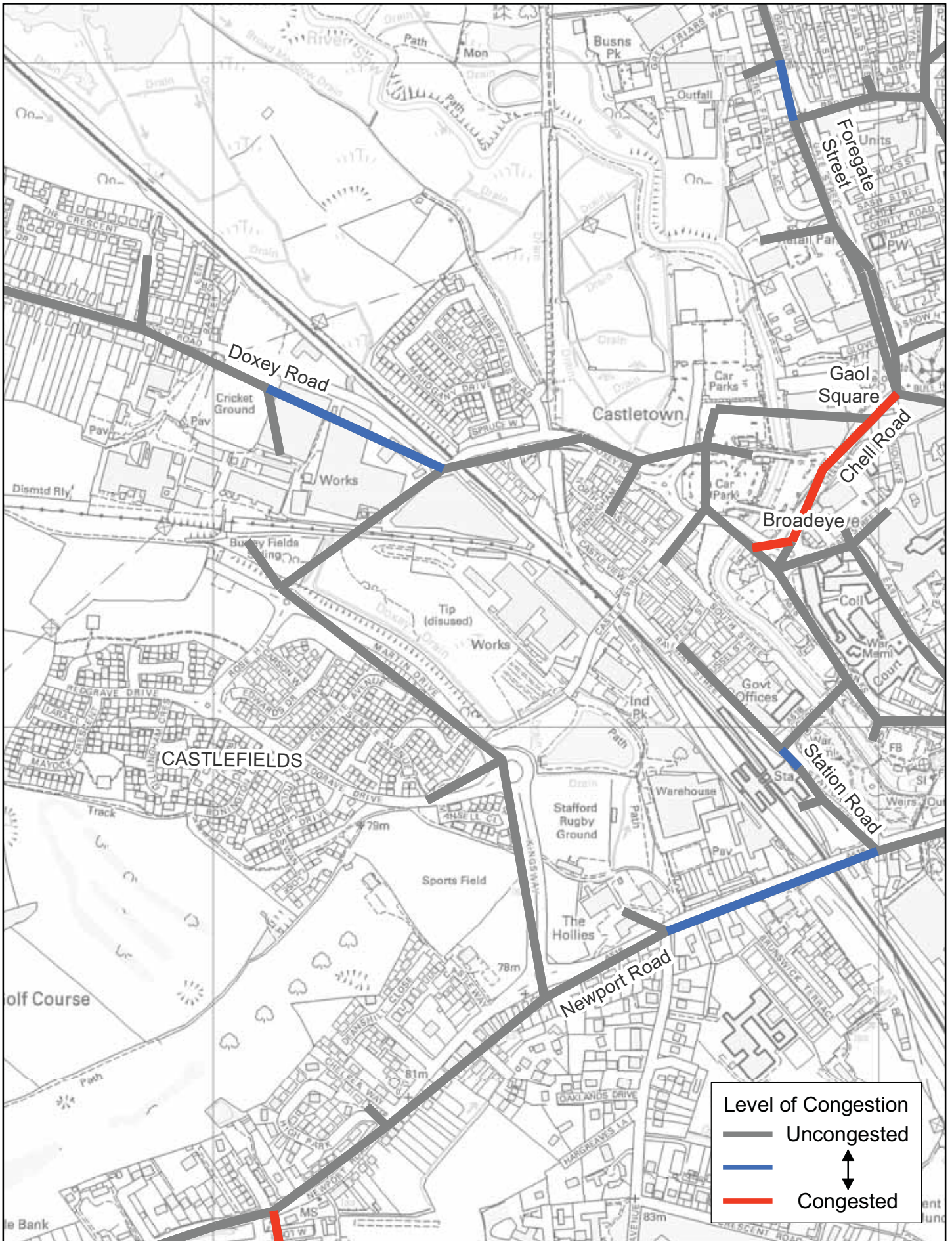


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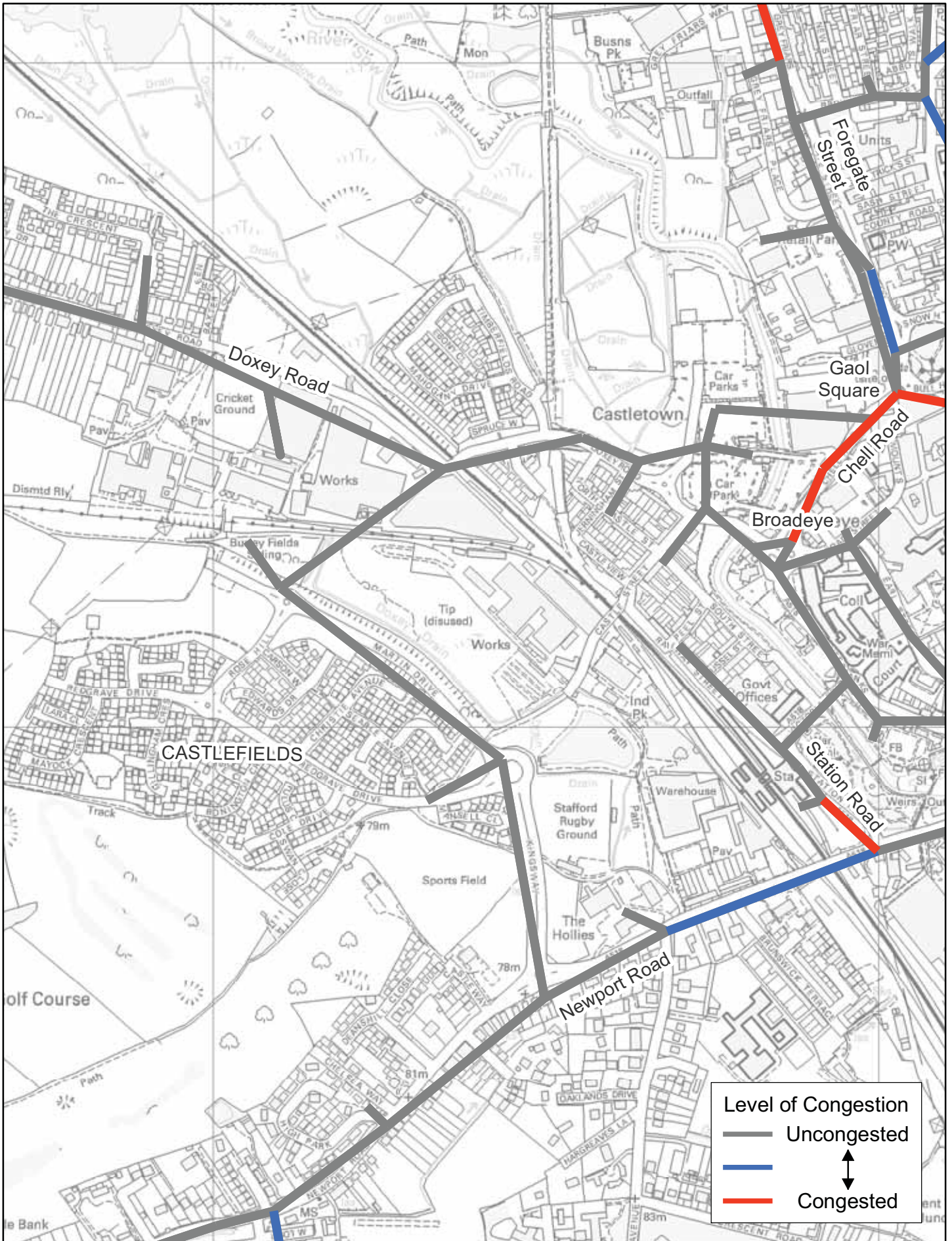
Stafford Western Access Improvements
 Consultation Route (Realigned Green H)
 2031 PM Peak Hour



Stafford Western Access Improvements
Hybrid Route (Green / Yellow I)
2031 AM Peak Hour



Stafford Western Access Improvements
 Hybrid Route (Green / Yellow I)
 2031 PM Peak Hour



Appendix B – List of Background Documents

Study Reports produced by Atkins (Term Consultants):

- Stafford Transport Model Survey Completion Report (2007)
- Model Calibration and Validation Report (2008)
- Model Forecasting Report (2008)
- Draft Initial Options Assessment Report (2008)
- Local Model Validation Report for Stafford Western Access Improvements (2010)

Webtag Sub-Objectives - background reports and worksheets produced by Staffordshire County Council and Atkins

Stafford Western Access Improvements Consultation Report 2010, Staffordshire County Council

West Midlands Regional Spatial Strategy Phase Two Revision – Draft Preferred Option, December 2007

Delivering a Sustainable Transport System (DaSTS), Department for Transport, November 2008

Staffordshire Local Transport Plan 2006 – 2011, Staffordshire County Council

Community Infrastructure Fund Round 2 Full Business Case for a Package of Sustainable Transport Measures for Stafford, Staffordshire, May 2009

the knot unites



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