M54 to M6 Link Road
TR010054
Volume 7
7.4 Transport Assessment Report

Regulation 5(2)(q)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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M54 to M6 Link Road
Development Consent Order 202[ ]

7.4 Transport Assessment Report

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1 Introduction

1.1 Overview

1.1.1 Highways England is developing a link road between the M54 and M6 to provide a link between Junction 1 of the M54, M6 Junction 11 and the A460 to Cannock. The M54 to M6 Link Road (herein referred to as 'the Scheme') aims to reduce congestion on local / regional routes, particularly the A449(T), A5(T) and A460 and deliver improved transport links to encourage the development of the surrounding area.

1.1.2 Within Highways England, the transport modelling, transport planning and transport appraisal activities are monitored and reviewed by the Transport Planning Group (TPG).

1.1.3 The Scheme's location is shown at various scales in Figure 1.1, Figure 1.2 and Figure 1.3.

Figure 1.1: Scheme's Location – Regional Context

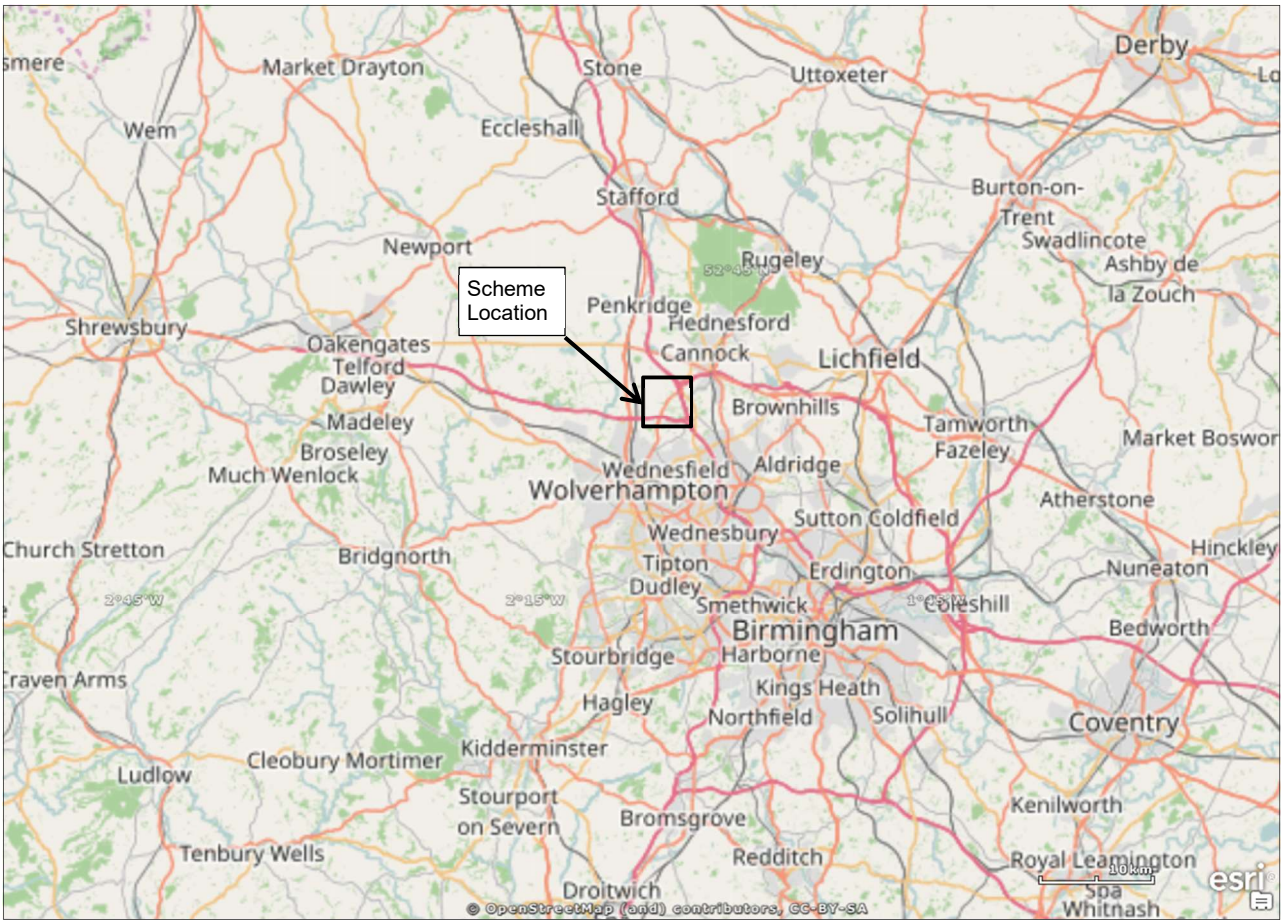


Figure 1.2: Scheme's Location – Area context

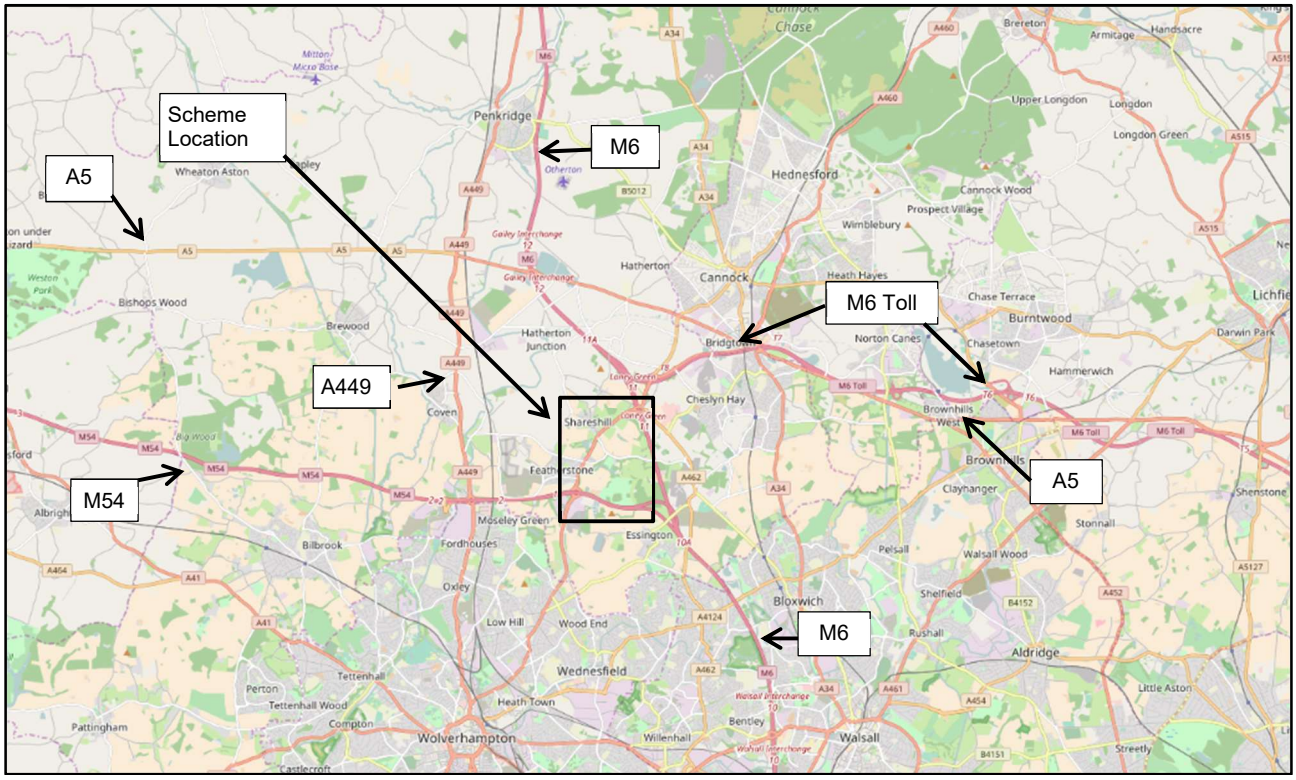
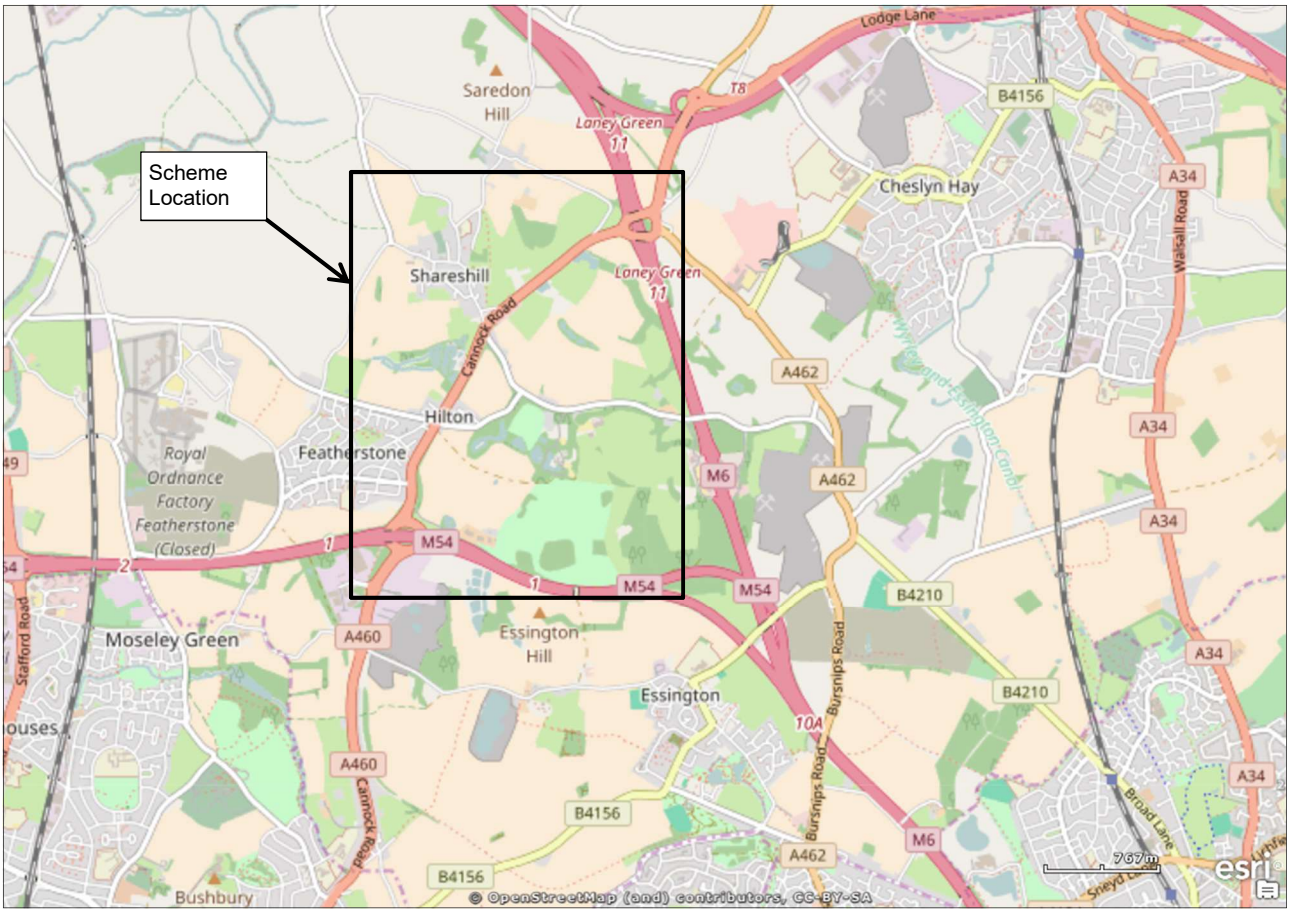


Figure 1.3: Scheme's Location – Local Communities



1.2 Scheme Objectives

1.2.1 The primary objectives of the Scheme are to:

- Relieve traffic congestion on the A460, A449 and A5, thereby providing more reliable journey times.
- Keep the right traffic on the right roads and improve safety by separating local community traffic from long distance and business traffic.
- Reduce volumes of through traffic in villages, improving local community access.
- Support local economic growth for Telford, Shrewsbury, Wolverhampton, Cannock and Tamworth by improving traffic flow and enhancing access to east-west and north-south routes.

1.3 Scheme Overview

1.3.1 The Scheme would provide a strategic link between the M54 Junction 1 and M6 Junction 11. From south to north the main components of the Scheme include:

- Replacement of the existing M54 Junction 1 with free-flow slip roads between the new link road and the M54. This would allow the free flow of traffic between the M54 and the new link road in both directions and maintain connectivity with the existing local road network, via three new roundabouts.
- Construction of a new dual carriageway between M54 Junction 1 and the M6 Junction 11. The alignment of the carriageway would be located to the east of the existing A460 and the villages of Featherstone, Hilton and Shareshill and west of Hilton Hall.
- Dark Lane would be stopped-up between the final property and the junction with Hilton Lane.
- The realignment of Hilton Lane on a bridge over the mainline of the Scheme. The bridge would be reconstructed on a similar alignment and would provide sufficient clearance for the new road.
- Provision of an accommodation bridge and access track across the mainline of the Scheme to retain access to severed land to the east of the Scheme. The route of the new link road would then continue north to the east of Brookfield Farm to link to the M6 Junction 11.
- Enlargement of the M6 Junction 11 signalised roundabout to accommodate a connection to the new link road and realign existing connections with the A460 and M6. Two replacement bridges would be required over the M6 to provide an increase in capacity from two lanes to four lanes of traffic on the roundabout. This work would raise the height of the junction by approximately 1.5 m.

1.3.2 General arrangement plans for the Scheme are contained within a separate submission document [APP-010/2.5], with text descriptions provided in Section 4 of this report.

1.4 Project Transport Stakeholders

1.4.1 The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) under sections 14(1)(h) and 22(1)(a) of the Planning Act 2008 (PA 2008) (as amended by Article 3 of The Highway and Railway (Nationally Significant Infrastructure Project) Order 2013). A Development Consent Order is therefore required to allow the construction and operation of the Scheme.

1.4.2 Highways England is the Applicant for the Scheme. The local highway authority is Staffordshire County Council (SCC).

1.4.3 Highways England is the highway authority for the strategic road network. Highways England is a government-owned company with responsibility for the operation and management of the motorways and trunk roads in England. Highways England is responsible to the Department for Transport (DfT). The trunk roads in the area are the M6 motorway, the M54 motorway, the A449(T) and the A5(T).

1.4.4 For the A460 and both junctions, SCC is the local highway authority. South Staffordshire Council (SSC), SCC and City of Wolverhampton Council are the 'host' planning authorities. As such, all three authorities have been consulted on the Scheme design.

1.4.5 The following organisations have also been consulted on the traffic elements of the Scheme as neighbouring authorities to the junction improvements: Walsall Council and Cannock Chase District Council. Wider consultation has been undertaken with other local authorities as part of the Scheme development, with further details provided in the Consultation Report [APP-024/5.1].

1.5 Scheme History

1.5.1 The Scheme has been developed over a period of time, as is shown in the timeline given in Table 1.1.

Table 1.1: Scheme Timeline

Year	Detail
1989-1994	An original preferred route for this link was announced in 1989, and it was still on the priority list in 1994.
2001	The Scheme was reaffirmed in 2001 as part of the West Midlands Area Multi Modal Study (WMAMMS).
2001-2003	Commissions to develop the new link were enacted and then suspended (due to a lack of detailed traffic modelling work and impact assessment). In July 2003 the Secretary of State for Transport announced his support in principle for a new link road between the M54 and M6/M6 Toll.
2006	On 24th May 2006 the Secretary of State for Transport announced funding for the M54-M6/M6 Toll link. Conceptual options for the new link were presented at public information exhibitions held in July 2006.
2010	The Spending Review Announcement in October 2010 listed the Scheme for potential construction in the future spending reviews periods.
2009 -2014	In 2009 several options to achieve the Scheme's objectives were presented and categorised into three main Options. In both the June 2013 Spending Round Announcement and the publication of the National Infrastructure Plan in December 2013, the Government confirmed its intention to fund the Scheme, subject to the finalisation of options and agreement being reached on developer contributions. In January 2014, the scheme was reviewed and progressed to produce a preferred route.
2014	Scheme announced in the Road Investment Strategy, subject to other contributions.
2014 to 2015	Public Consultation took place on three route options.
2015-2016	Feedback from consultation identified the need for us to carry out further assessment work on the options to find the best solution. Through this assessment, three modified options were developed.
2017	Consultation on three modified options took place in September and October 2017.
2017 to 2018	Analysis of consultation responses and assessment of the three modified options including environmental impact, buildability, value for money, safety, socio-economic impact and stakeholder engagement were taken into account. Selected Option B West as the best overall performing option.
2018	The direct link to the M6 Toll was removed, as the level of other contributions available was not enough to meet the cost of this link.
2018	A Preferred Route Announcement (PRA) was made by the Secretary of State for Transport in September 2018.
October 2018 to present	Further development of the preferred route, statutory and non-statutory consultation on proposals.

1.6 Policy & Strategy Context

1.6.1 As noted in Section 1.5, the Scheme has been in development for a number of years.

1.6.2 When the M6 Toll was first proposed, there were plans for it to be linked with the Birmingham 'Western Orbital Road' (via the Saredon Link). The original preferred route for this link was announced in 1989, and it remained on the priority list in 1994.

1.6.3 The development of the route was reaffirmed in 2001 as part of the West Midlands Area Multi Modal Study (WMAMMS).

1.6.4 Between 2001 and 2018, several studies examined the business case for the scheme, develop scheme options and progress the scheme through to a preferred route option.

1.6.5 A Preferred Route Announcement (PRA) was made by the Secretary of State for Transport in September 2018. The resulting road-based solution was then included within policy and strategy documents at both a national and local level. A full review of the Scheme compliance with policies and strategies is provided in the Case for the Scheme [APP-220/7.2].

1.6.6 **National level:** The National Policy Statement for National Networks (NPSNN) was published in December 2014. The NPSNN states that there is a critical need to improve the national networks to address road congestion and crowing on the railways to provide safe, expeditious and resilient networks that better support social and economic activity (paragraph 2.2). The NPSNN has been written to guide decision-making on Nationally Significant Infrastructure Projects (NSIP) being delivered on national networks. The NPSNN will be used by the Secretary of State as the primary basis for making decisions on this Development Consent Order (DCO) application.

1.6.7 Sitting alongside the NPSNN are the investment programmes for the road and rail networks and the business plans (delivery plans) prepared by the relevant delivery body. These provide detailed articulation of the Government's funding strategy and the investment priorities for the road and rail networks over forthcoming periods.

1.6.8 The Scheme is included within Highways England's first Road Investment Strategy: 2015/16 to 2020/21 document. The Investment Plan for the Midlands includes: '*a north-facing access between the M54 and the M6 and M6 Toll around junctions 10A and 11.'* The Scheme is listed "C25" and placed within the category '*Committed – subject to other contributions'*.

1.6.9 The NPSNN recognises that the construction and operation of a scheme can have a variety of impacts on the surrounding transport infrastructure. In this regard, it notes that the policies set out in local plans are relevant and the local highways authorities should be consulted on the assessment of transport impacts.

1.6.10 The National Planning Policy Framework (NPPF) is a relevant and important matter when considering the application. The NPPF paragraph 180, closely aligns with the aims set out in the NPSNN, stating that:

'180. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

1.6.11 **Regional Level:** Midlands Connect[1] (the transport arm of the Midlands Engine[2]) document 'Our Routes to Growth' (July 2018) states that:

'Further improvements to motorway infrastructure must be preceded by the confirmation and completion of the M54 to M6/M6 (Toll) Link Road.'

1.6.12 Transport for the West Midlands (part of the WMCA) has produced a document entitled 'Movement for Growth: The West Midlands Strategic Transport Plan' which sits alongside the WMCA Strategic Economic Plan to provide the overarching approach to the development of transport. The West Midlands Strategic Transport Plan 3 identifies the M54 – M6 / M6 Toll Link Road as one of the 'Key Transport Priorities for the National and Regional Tier'.

1.6.13 Alongside this document, the 'Movement for Growth: 2026 Delivery Plan for Transport' shows the following priority scheme:

TABLE 1 MOVEMENT FOR GROWTH KEY PRIORITIES AND COMMITTED SCHEMES AND PROJECTS

MfG Key Transport Priorities for the National and Regional Tier
New smart motorway sections - M6 Junctions 13 – 15, M40/M42 Interchange, development work on upgrading the remainder of the Birmingham Box to Smart Motorway standard (Birmingham Box Phase 4)
Better Use of M6Toll – Ongoing dialogue with central Government over potential ways to secure wider use of the M6 Toll
M54 – M6-M6Toll Link Road – Highways England committed scheme, subject to other contributions

1.6.14 In addition, the West Midlands Freight Strategy (2016) states that:

'the metropolitan area believes that in order to ensure reliable and efficient road freight access to national and international markets, major infrastructure enhancements are required for the following motorway sections and junctions and need to be considered in the development of future Highways England investment programmes:

- *M5 Junction 1, 2 and 3; M6 Junction 8, 9 and 10*
- *M54 / M6 / M6 Toll Link Road'*

1 Midlands Connect was established in October 2015 to determine what transport infrastructure was needed to boost the region's economy.

2 The Midlands Engine is a coalition of Councils, Combined Authorities, Local Enterprise Partnerships (LEP), Universities and businesses to enhance the economic status of the Midlands area.

1.6.15 **Local level:** Staffordshire County Council produced the South Staffordshire: District Integrated Transport Strategy (October 2017). This includes the following statements:

'5.9 The Government has published its Road Investment Strategy which identifies Highways England's national road programme for the period 2015 / 16 to 2020 / 21.

5.10 The County Council will continue to work directly with Highways England and through the Midlands Connect initiative to influence proposals for the next funding period beyond 2020 / 21. Proposals will also be developed through the A5(T) Transport Liaison Group that has been established between local partners and Highways England to ensure that the A5(T) plays its role in facilitating economic growth through maximising capacity and improving safety.

5.11 The key proposal in the Road Investment Strategy within South Staffordshire is the M54/M6/M6 Toll Link Road. The objective of the proposal is to provide a direct motorway link from the M54 to the M6 north and M6 Toll. The current direct link is the A460 which is currently carrying high volumes of both long distance and local traffic. A preferred route will be announced later this year and it is expected that construction will commence in 2021 with scheme opening in 2024.

5.12 The County Council recognises the importance of the scheme in terms of supporting economic growth and relieving congestion on the local highway network, in particular the A460 and A449 corridors. Future large-scale employment developments will significantly benefit from the completion of the scheme, including i54 Western Extension, West Midlands Interchange and ROF Featherstone.'

1.6.16 From the above, it can be seen that the Scheme is well supported by national and local planning and transport policy.

1.7 Purpose And Structure Of Report

1.7.1 This report forms the Transport Assessment (TA) supporting the DCO application.

1.7.2 The 'Guidance on Transport Assessment' (GTA, Department for Transport, DfT, 2007) states that 'a TA is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to deal with the anticipated transport impacts of the scheme and to improve accessibility and safety for all modes of travel.'

1.7.3 Although now withdrawn, the GTA continues to form the de facto standard for writing a TA (albeit that it is mainly focused on land-use developments such as housing or employment sites, rather than highway infrastructure schemes).

1.7.4 The main purpose of this report is to summarise the development of the Scheme in a single, stand-alone report for general consumption. It identifies how the Scheme will operate when opened. Construction phases are also considered.

1.7.5 The report is structured in the following way:

- Section 2: Baseline conditions (the existing conditions) are described.
- Section 3: Describes the development of the baseline traffic model.
- Section 4: Describes the calculation of the forecast future traffic conditions and the performance of the proposed junctions.
- Section 5: Consideration is given to Road Safety.
- Section 6: Consideration is given to the effects on walking and cycling.
- Section 7: Consideration is given to the effects on public transport.
- Section 8: Assessment of the scheme's construction phase is outlined.
- Section 9: Summary and conclusions.

2 Baseline Highway Infrastructure

2.1 Existing Roads

2.1.1 The existing roundabouts are grade-separated roundabout junctions. All entries at M54 Junction 1 operate under priority control with two-lane entries. The M6 Junction 11 is signalised on all approach arms (except the A462, which is priority controlled) with two-lane entries.

2.1.2 The layout of the junctions is shown in Figure 2.1 and Figure 2.2.

Figure 2.1: M54 Junction 1

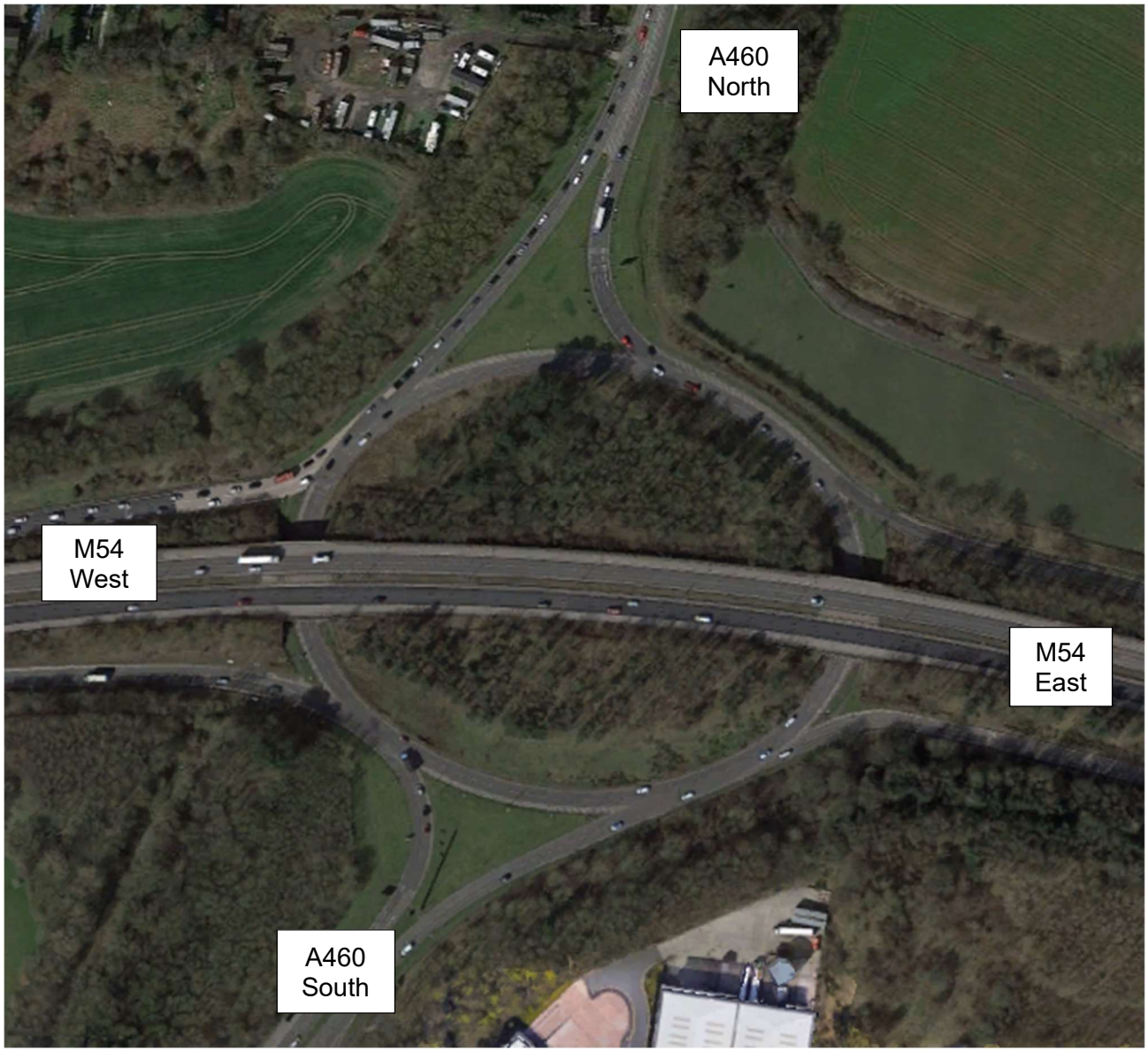
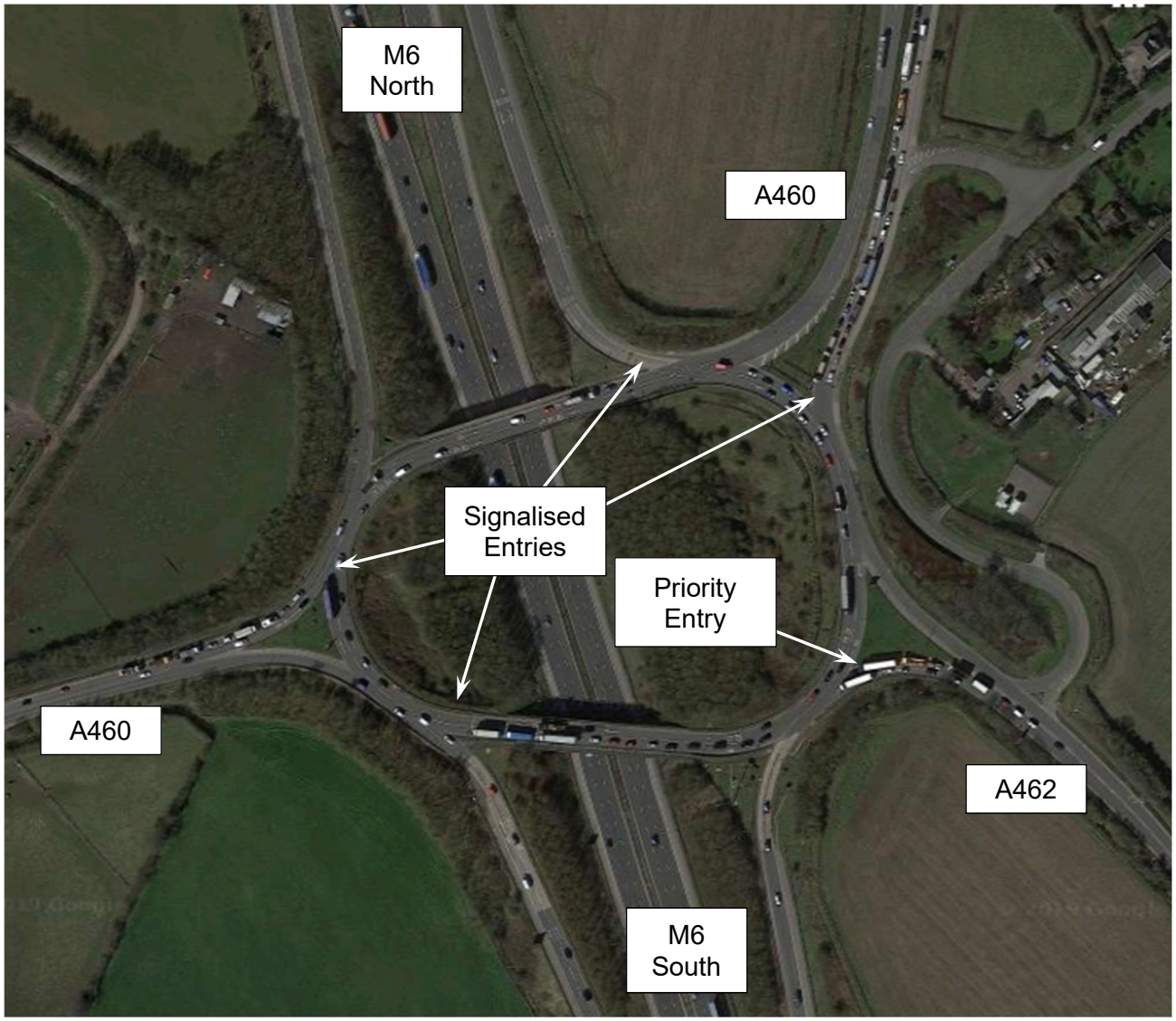


Figure 2.2: M6 Junction 11



2.2 Vehicle Movements Between West And North

2.2.1 The M54 Junction 1 and the M6 Junction 11 operate satisfactorily; however, the lack of north-facing slip roads to / from the M6 north from the M54 means that trips from the M54 West cannot access the M6 North (and vice versa) without using other roads.

2.2.2 Most of the vehicles travelling along the A460 through Featherstone, Hilton and Shareshill are to/from the East. Whilst, for physical reasons, the Scheme may be called the "M54-M6 Link", the purpose of the Scheme is to bridge a gap in the road network for strategic trip demands between the East and West. The signed route for these East-West strategic trips is via: M54 West – M54 Junction 2 – A449 – A449/A5 “Gailey” roundabout – A5 (through M6 Junction 12) – A5 East. See Figure 2.3.

2.2.3 It is noted that the 'non-trunk-road' route (between the eastbound M54 and the northbound M6) via the A460 through Featherstone, Hilton and Shareshill is approximately 1.6km longer than the signed route via the A449(T), A5(T), M6 Junction 12 (measuring both routes from M54 Junction 2 to M6 Junction 12). It is for this reason that few vehicles on the A460 passing Featherstone, Hilton and Shareshill neither originates from nor is destined to the M6 North.

2.3 Vehicle Movements Between West And East

2.3.1 There is no signed route to the M6 Toll East from the M54 West.

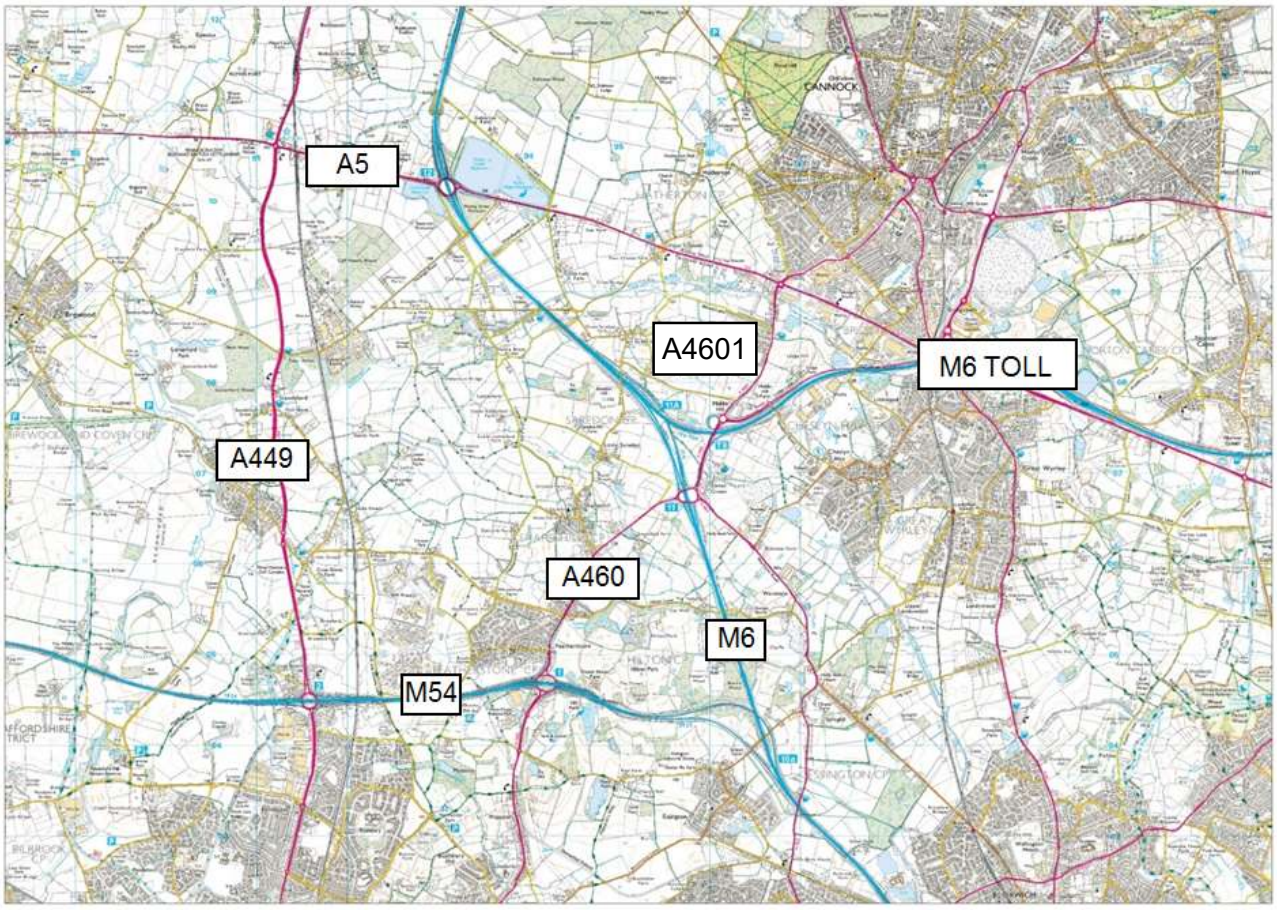
2.3.2 The signed route on the A5(T) East (and also on the M6 Toll East) to the primary destination of Telford is to use the A5(T) via M6 Junction 12 and then at Gailey to use the A449(T) and join the M54 at Junction 2.

2.3.3 An alternative non-trunk road route between A5(T) East and the M54 West exists through use of the A460. Car and heavy goods vehicle trips from the M54 West might route via M54 Junction 1 onto the A460, passing through the villages of Featherstone, Hilton and Shareshill, then via M6 Junction 11 and the A460 to the A5(T) East at Churchbridge.

2.3.4 The majority of the traffic flow on the A460 passing Featherstone, Hilton and Shareshill consists of vehicles that either originate from or are destined to:

- A4601 Wolverhampton Road to Cannock, or
- the M6 Toll Road East, or
- the A5(T) East.

Figure 2.3: Primary Routes Between M54 West And A5 / M6 Toll East

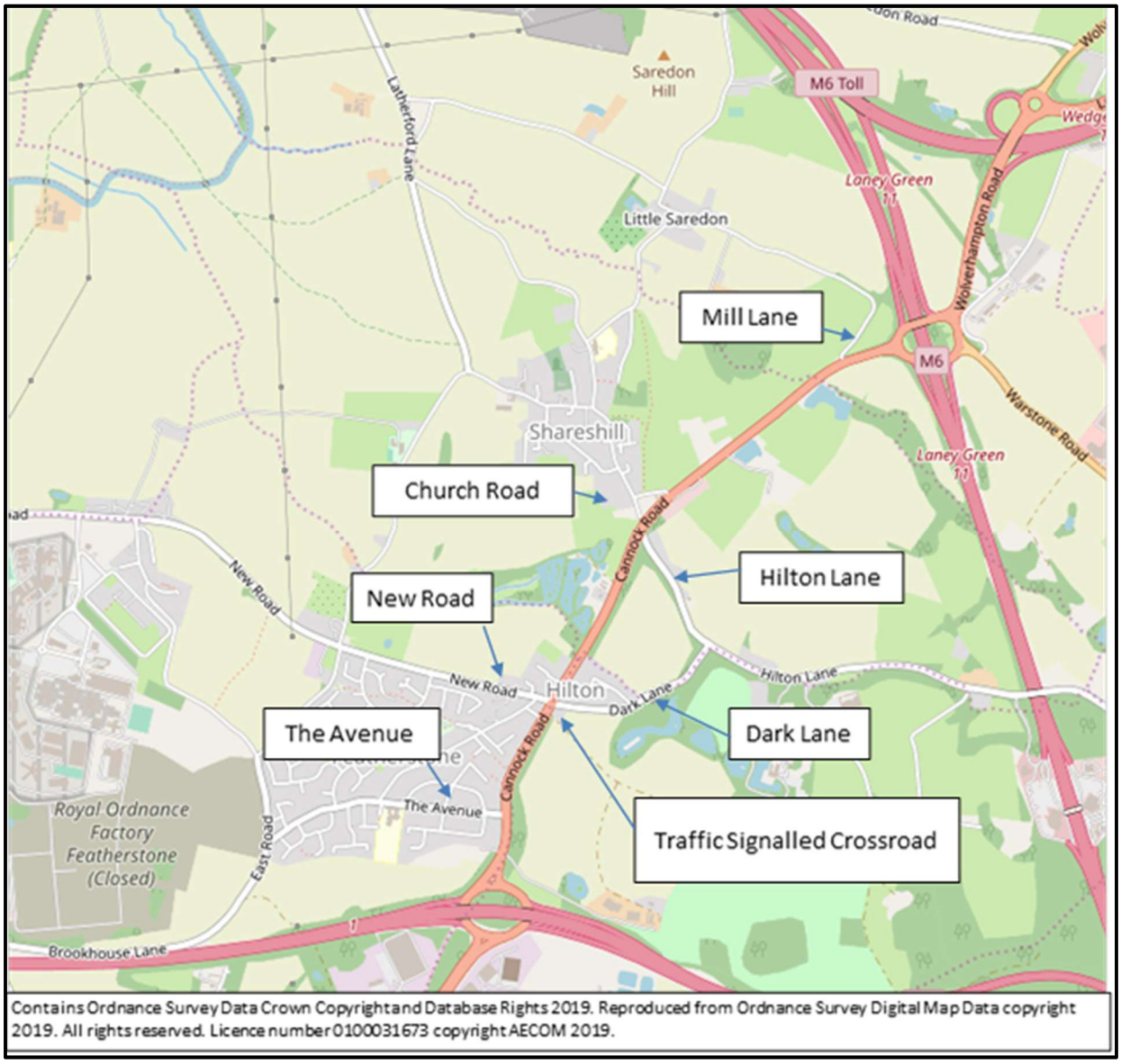


2.4 The A460

2.4.1 The A460 (west of the M6) is a single carriageway road approximately 10 metres wide with no physical separation between the flows of traffic in each direction. The A460 is not a trunk road, but is direction signed as a route between primary destinations.

2.4.2 The A460 predominantly features a 40mph speed limit, interspersed with 30mph and 50mph sections. The A460 has numerous minor roads and accesses joining it between the M54 and the M6, including six priority junctions and one signal-controlled junction. These provide access to Featherstone, Shareshill, Hilton Park and other isolated properties. These junctions are all at-grade and result in right turning traffic having to cross on-coming traffic to exit and enter the junctions. At Featherstone and Shareshill, there are ghost island right turn lanes. The junction with New Road and Dark Lane in Featherstone is a signalised crossroad.

Figure 2.4: A460 (M54 – M6 section)



2.4.3 The impact of the above on journey time can be illustrated with reference to typical traffic diagrams obtained from Google: see Figure 2.5 and Figure 2.6 (orange & red links highlight sections of typical delay by severity).

Figure 2.5: Typical Traffic – Wednesday, 08:30hrs, Google Traffic

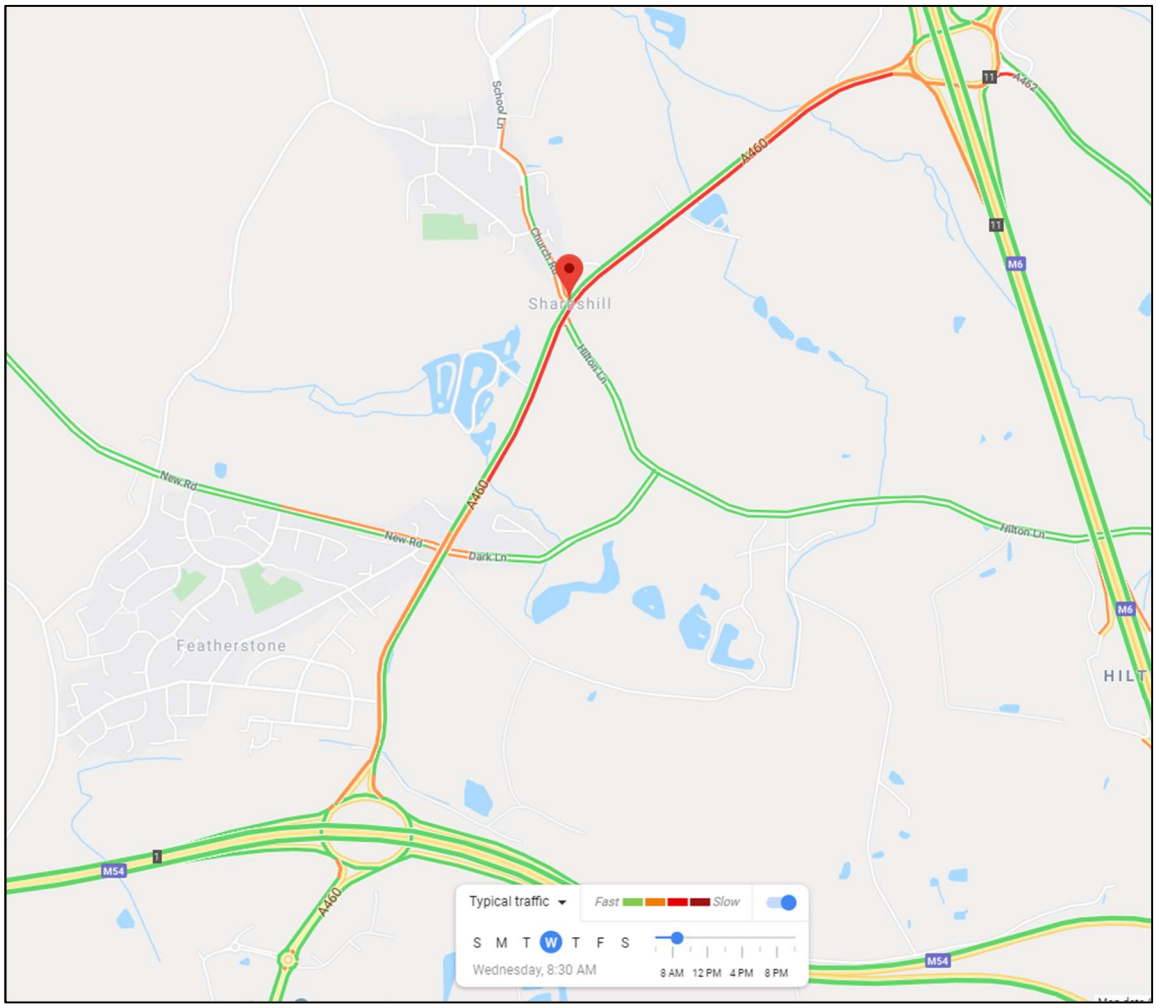
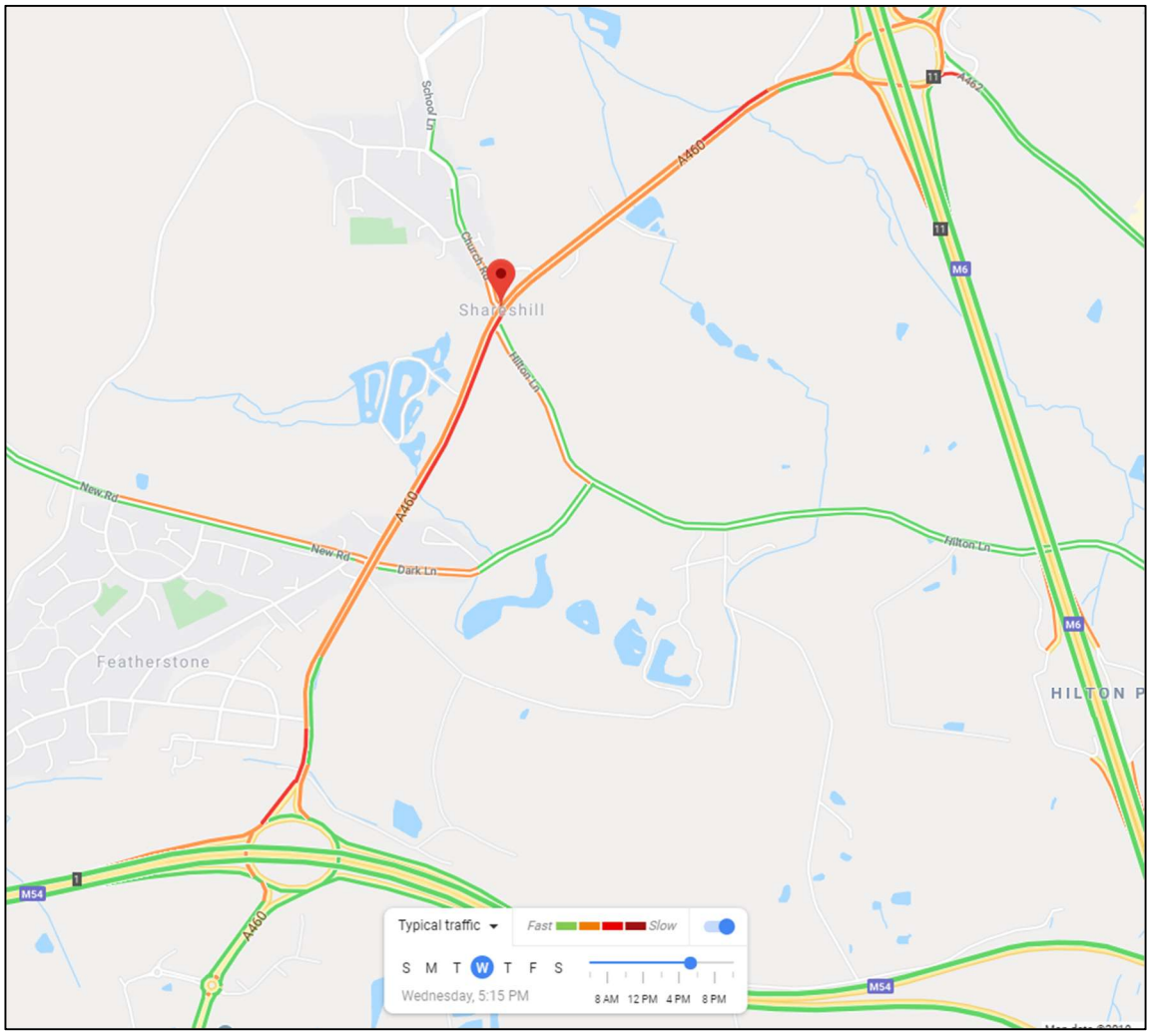


Figure 2.6: Typical Traffic – Wednesday, 17:15hrs, Google Traffic



2.4.4 There is a continuous footway on the western side of the A460; however, on the eastern side the footway is discontinuous. The A460 is predominately straight, although there are a few moderate bends and it is illuminated along its length. The southern half of the A460 is largely residential to the west and rural to the east. The northern half is generally rural on both sides. There are currently no cycle specific measures along this part of the A460.

2.4.5 The A460 continues from M6 Junction 11 to M6 Toll Junction T8 as a dual 2-lane all-purpose (D2AP) road.

3 Baseline Traffic Model

3.1 Overview

3.1.1 As noted in Section 1, the A460 is used for both strategic and local trips between the M6 Toll East/A5 East and the M54 West. This section of A-road road and its junctions with the motorway network sees congestion and delays. A capacity improvement of the junctions at the M6 Junction 11 and M54 Junction 1 and a new link road could therefore alleviate congestion in this location. It is also possible that the quicker journey times could induce new trips onto the highway network. For these reasons, traffic modelling has been undertaken to fully test the potential impacts and benefits of the proposed improvements.

3.1.2 The Scheme's traffic model was developed to assess the likely changes in traffic flow and highway network performance that could be attributable to the Scheme, and how the highway network would operate if the Scheme was not brought forward. In the first instance, however, it was important to demonstrate that the traffic model replicated exiting traffic conditions prior to it being used for forecasting future conditions.

3.2 Model Software

3.2.1 The Scheme's traffic model was developed to support the appraisal of the highway improvements and then validated in accordance with the DfT's TAG guidance. Industry-standard (SATURN[3]) software was used to develop the traffic model. SATURN is a traffic assignment and simulation package that allows for the modelling of delays on links and the vehicle interactions at junctions. An overview of how SATURN operates is provided at the end of this section.

3.2.2 The highway network contained within the SATURN model is based on the MRTM (Midland Regional Highway Model), which was commissioned by Highways England and has been continuously maintained and improved since 2016.

3.3 Model Area

3.3.1 The geographic coverage of the Scheme's traffic model was not, however, confined to the immediate geographical area around the A460 between the M6 and M54. The traffic model covers a broad enough area such that it can identify the traffic impacts of the Scheme on both the local and strategic road networks, i.e. it is likely that some re-routeing would occur as a result of improving the two A460 junctions since existing delays in the study area may be dissuading some people from using the A460 who then use competing routes instead. These competing routes could be as far afield as the A42, M42 and M1, or could be local roads such as A462, and therefore these competing routes have also been included in the traffic model to determine the potential for these trips to re-route back into the A460 corridor.

3.3.2 For this study, the MRTM model was extended to cover other parts of Great Britain. Given that the A460 is part of the SRN, it was important to represent the full length of strategic trips. In this regard, the Scheme's traffic model is able to represent potential transfers into the A460 corridor from competing strategic routes, for

[3] SATURN stands for "Simulation and Assignment of Traffic to Urban Road Networks". The software was developed by the Institute of Transport Studies, University of Leeds.

example, the route using the A5 for strategic trips between the Primary destinations of Telford and Tamworth.

3.3.3 The areas covered by the modelling are illustrated in Figure 3.1. In this figure, links coded in simulation (i.e. high level of detail) are shown in black. The extent of the simulation coding (i.e. the roads impacted by the scheme) is indicated by the extent of the black boundary. Buffer links (i.e. those outside of the main impact area, and therefore coded in less detail) are shown in red.

3.3.4 The simulation links in the local area that immediately surrounds the proposed Scheme are illustrated at a larger scale in Figure 3.2.

Figure 3.1: M54–M6 Link Road; Extent Of Buffer (Red) And Simulation (Black) Highway Network Coding

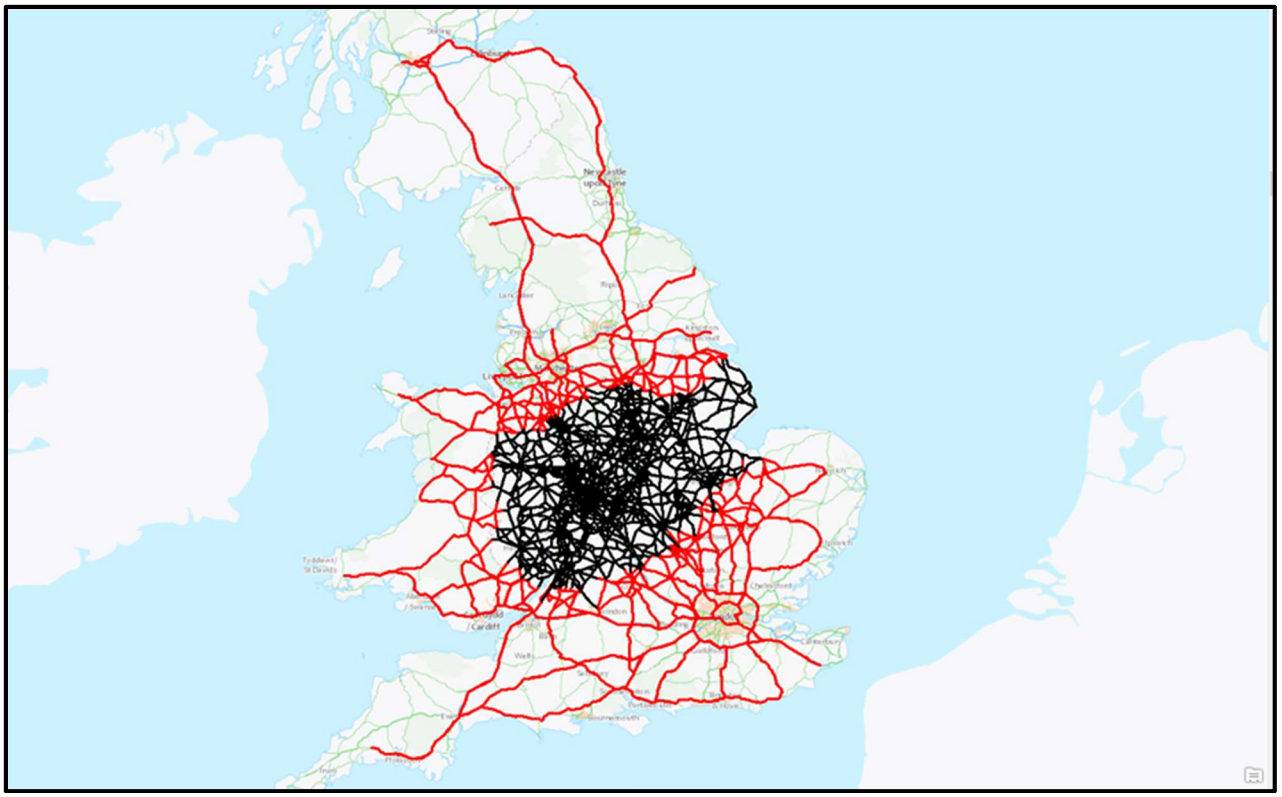
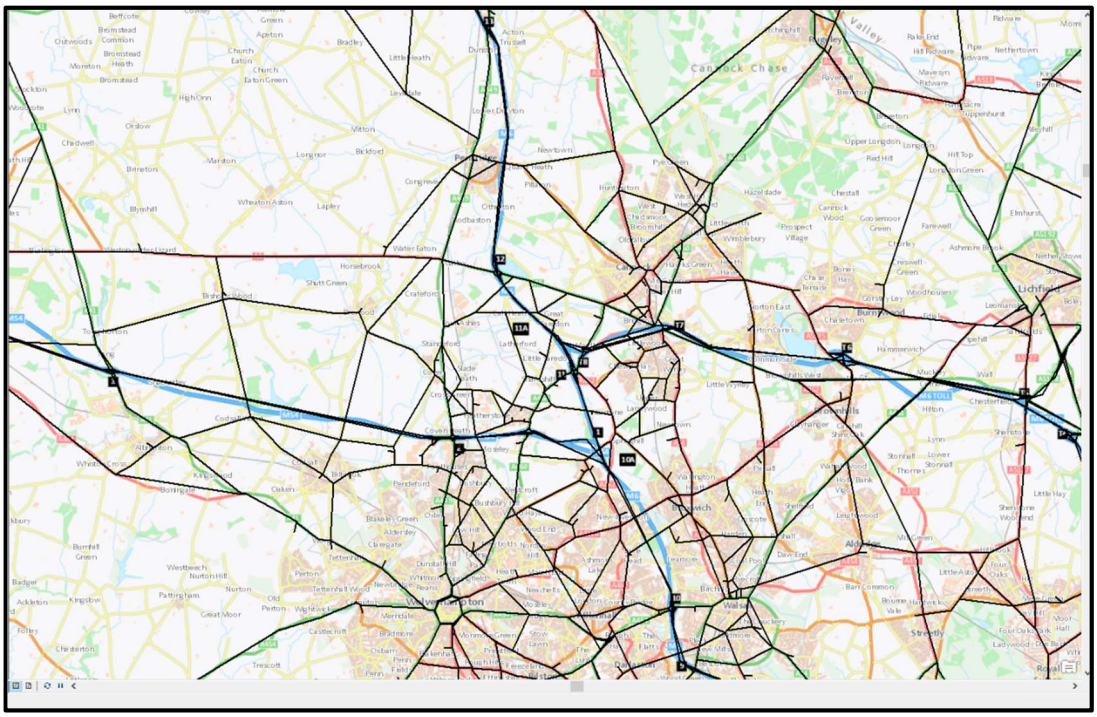


Figure 3.2: M54–M6 Link Road; Simulation In The Area Of The Scheme



3.4 Traffic Data

3.4.1 To develop an accurate base year traffic model that reflected existing conditions, detailed information on traffic flows and road network characteristics within the study area was required.

3.4.2 The traffic data collected for the development of the demand and supply models fall into the following types: Traffic Counts, Journey Time Surveys (JTS), and Origin - Destination (O-D) data.

Traffic Counts

3.4.3 Volumetric count data, both collected using Automated Traffic Counters (ATC) and Manual Classified Counts (MCC), were used within the development of the model.

3.4.4 ATC are set-up to record counts on specific roads and to provide information on traffic flows throughout the day, thus enabling a profile to be developed showing how traffic flow varies by time of day or by day of the week. Most ATC ran continuously for long periods.

3.4.5 MCC are typically carried out over the course of one day and can provide information on turning movements at the key junctions within the study area. MCC also provides details of the traffic composition on each approach arm to a junction or on a road.

3.4.6 Existing traffic data was obtained for the wider model area from the MRTM count database and Highways England's TRADS database. In the local scheme area, traffic flow data was obtained from Staffordshire County Council (SCC). Count data was also obtained from the previous traffic models. Table 3.1 to Table 3.3 summarise the locations and sources of the existing traffic count data obtained for the study.

Table 3.1: List Of Existing AT From Highways England's TRADS Database

SiteID	*Coordinates*	*Link Name*
Trads2 EB	375823308804	MIDAS site at M54/3324B-M54 eastbound between J4 and J3 nr to Coppice Green Lane
Trads2 WB	375812308792	MIDAS site at M54/3324A-M54 westbound between J4 and J3 nr to Coppice Green Lane
Trads8 EB	393211304550	MIDAS site at M54/3141B-M54 eastbound between J2 and J1
Trads8 WB	393672304615	MIDAS site at M54/3136A-M54 westbound between J2 and J1
Trads10 EB	394486304637	MIDAS site at M54/3128B-M54 eastbound within J1
Trads10 WB	394267304668	MIDAS site at M54/3130A-M54 westbound within J1
Trads11 EB	394679304581	MIDAS site at M54/3126M-M54 J1 eastbound access
Trads11 WB	394731304496	MIDAS site at M54/3125J-M54 J1 westbound exit
Trads13 WB	396478303939	MIDAS site at M54/3106A-M54 westbound between M6 and J1.
Trads14 NB	391185310324	TMU Site 7509/1-A449 northbound between M54 and A5
Trads14 SB	391164309215	TMU Site 7510/1-A449 southbound between A5 and M54
Trads28 NB	395825306466	TMU site 7647/2-M6 northbound within J11
Trads69 NB	392720310242	TMU Site 7512/1 on link A5 northbound between M6 and A449
Trads69 SB	392721310247	TMU Site 7512/2 on link A5 southbound between A449 and M6
Trads79 NB	396159307448	TMU Site 7671/2 on link M6 Toll northbound between T8 and M6
Trads79 SB	396251307485	TMU Site 7672/2 on link M6 Toll southbound between M6 and T8

Table 3.2: List Of Existing ATC From Staffordshire County Council

SiteID	*Coordinates*	*Link Name*
14D019 NB	392500308951	Vicarage Road, Calf Heath
14D019 SB	392500308951	Vicarage Road, Calf Heath
14L006 EB	394709305440	Dark Lane, Featherstone
14L006 WB	394709305440	Dark Lane, Featherstone
15L025 EB	384740310725	A5 Watling Street, Ivetsey Bank
15L025 WB	384740310725	A5 Watling Street, Ivetsey Bank
16C022 NB	390531303674	D4675 Innovation Drive, Pendeford (prior to M54 Access Rd)
16C022 SB	390531303674	D4675 Innovation Drive, Pendeford (prior to M54 Access Road)
16E016 NB	390995304329	D4675 Innovation Drive, Pendeford (post M54 Access Road)
16E016 SB	390995304329	D4675 Innovation Drive, Pendeford (post M54 Access Road)
16E017 NB	390910304373	D4675 Innovation Drive, Pendeford (post M54 Access Road)
16E017 SB	390910304373	D4675 Innovation Drive, Pendeford (post M54 Access Road)
CAM0089 EB	392467310302	A5 Watling Street, Galley
CAM0089 WB	392467310302	A5 Watling Street, Galley
CAM0110 NB	394853306205	A460 Cannock Road, Shareshill
CAM0110 SWB	394853306205	A460 Cannock Road, Shareshill
SIT0047 EB	390850310683	A5 Watling Street, Galley (West of A449)
SIT0047 WB	390850310683	A5 Watling Street, Galley (West of A449)

Table 3.3: List Of Existing ATCs From 2014 Study Work

SiteID	*Coordinates*	*Link Name*
ATC1 EB	397183308932	A5 Opposite CAT Factory
ATC1 WB	397183308932	A5 Opposite CAT Factory
ATC2 NB	394429305490	A460 between Dark Lane and Monument Drive
ATC2 SB	394429305490	A460 between Monument Drive and Dark Lane
ATC3 NB	394843306196	A460 between Old Cannock Road and Mill Lane
ATC3 SB	394843306196	A460 between Mill Lane and Old Cannock Road
ATC4 NB	397137304864	A462 between Old Landywood Lane and Hilton Lane
ATC4 SB	397137304864	A462 between Hilton Lane and Old Landywood Lane
ATC5 NB	396839304303	B4156 between M54 overbridge and Bursnips Road
ATC5 SB	396839304303	B4156 between Bursnips Road and M54 overbridge
ATC6 NB	396972303280	A462 between Red Lane and M6 overbridge
ATC6 SB	396972303280	A462 between M6 overbridge and Red Lane
ATC7 NB	396699308494	A4601 between Woodhaven and Wood Lane
ATC7 SB	396699308494	A4601 between Wood Lane and Woodhaven
ATC8 NB	401673320861	A51 between Bellamour Lane and Main Road
ATC8 SB	401673320861	A51 between Main Road and Bellamour Lane
ATC9 NB	392864316895	A449 between Old Vicarage Lane and School Lane
ATC9 SB	392864316895	A449 between School Lane and Old Vicarage Lane
ATC10 EB	395832305515	Hilton Lane between Dark Lane and M6
ATC10 WB	395832305515	Hilton Lane between M6 and Dark Lane
ATC11 NB	396217306421	A462 between B4156 and M6 J11
ATC11 SB	396217306421	A462 between M6 J11 and B4156
ATC12 NB	394830307346	Great Sarendon Road between New Lane & Windy Arbour Lane
ATC12 SB	394830307346	Great Sarendon Road between Windy Arbour Lane & New Lane
ATC13 NB	393888307394	Latherford Lane between Orchard Lane and New Lane
ATC13 SB	393888307394	Latherford Lane between New Lane and Orchard Lane
ATC14 NB	391525304785	A449 between M54 J2 and Brinsford Lane
ATC14 SB	391547304791	A449 between Brinsford Lane and M54 J2
ATC15 NB	394235304991	A460 between M54 J1 and The Avenue
ATC15 SB	394235304991	A460 between The Avenue and M54 J1

3.4.7 To supplement the above, a cordon of study specific ATC counters was used to gather data across the area and new MCC counts were also established at key junctions, where more detailed understanding of turning movements and vehicle types were desired.

3.4.8 Figure 3.3 shows the locations of the ATC surveys (undertaken in June 2017), and Table 3.4 lists the location of the ATCs.

3.4.9 Figure 3.4 shows the locations of the MCC surveys (undertaken in June 2017), and Table 3.5 lists the location of the MCCs.

3.4.10 Figure 3.5 shows the locations of the MCC surveys (undertaken in September 2018), and Table 3.6 lists the location of these MCC.

Figure 3.3: Location Of ATC Counts Commissioned To Develop The Traffic Model

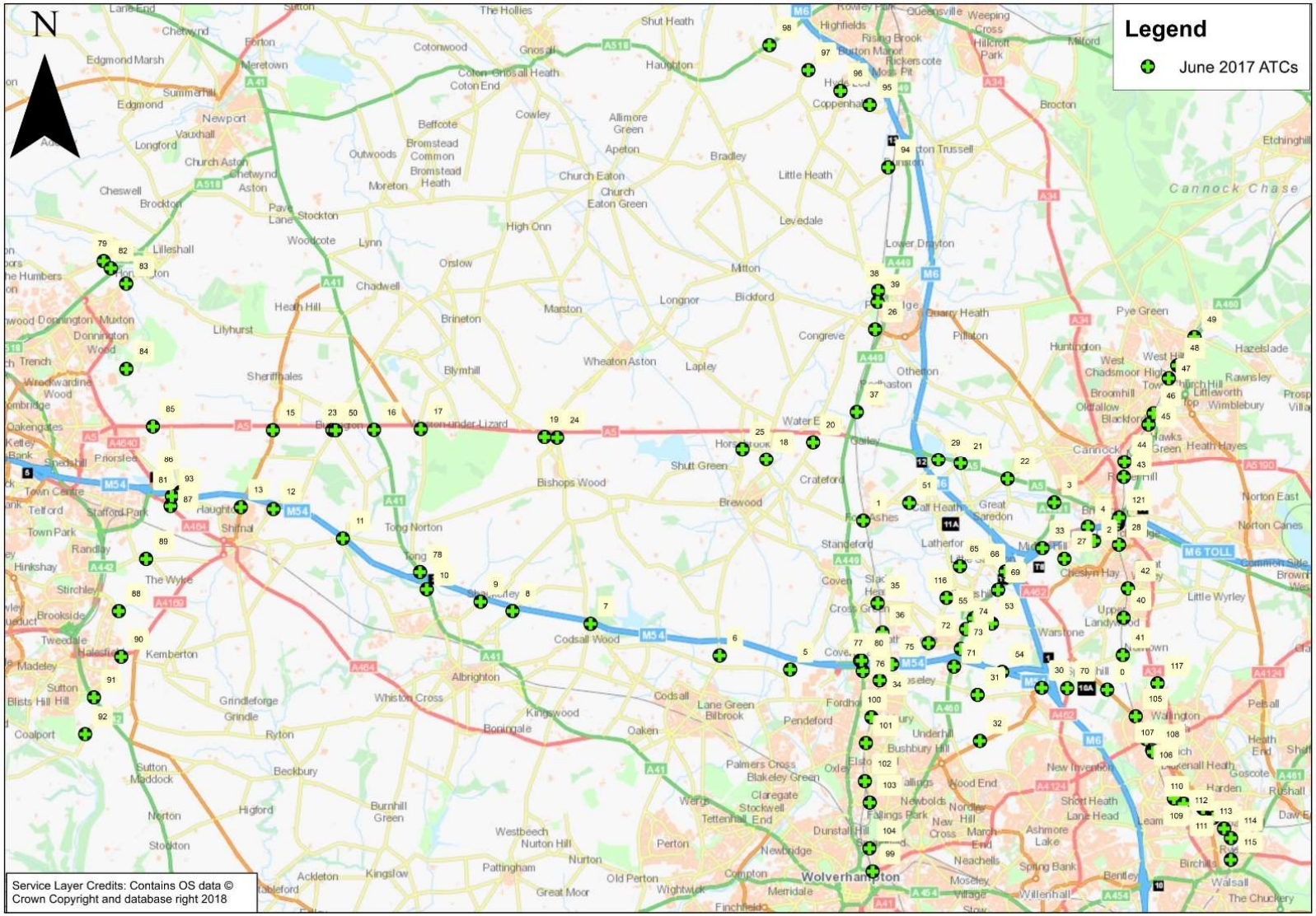


Table 3.4: List of ATC Surveys For June 2017 To Inform The Traffic Model

Site ID	*Coordinates*	*Link Name*
0	398137303833	Broad Lane, B4210, Springhill
1	391621308340	Station Drive, Four Ashes
2	397786307803	Coppice Lane, Churchbridge
3	396723308827	Wolverhampton Road, south of A5, North of Wood lane
4	397623308184	Mill Lane, Bridgtown North of M6 Toll,
5	389667304371	Lawn Lane, M54 Underbridge
6	387784304742	Port Lane, M54 underbridge, north of crossroads of Pendeford Hall Lane
7	384335305587	M54 Underbridge, Offoxey Road (North of Codsall Wood)
8	382250305927	M54 Underbridge, Donington Lane
9	381394306177	Shackerley Lane, M54 Underbridge
10	379957306511	South of M54, Newport Road A41
11	377717307867	Stanton Road, M54 Underbridge
12	375861308651	Coppice Green Lane, South of M54, near Shifnal
13	374992308700	B4379, Newport Road, South of M54
14	373638308879	South of M54. Haughton Lane
15	375845310776	South of A5, B4379
16	378548310785	South of A5, A41
17	379796310807	South of A5, Mill Lane
18	389029309985	South of A5, Ivy House Lane
19	383104310595	No Name. Located Between A5 and Spring Lane
20	390280310451	Clay Gates Road, South of A5
21	394221309881	North of The Woodlands, South of A5
22	395476309458	South of A5, Four Crosses Lane, North of Catsbridge Lane
23	377436310780	South of A5, NW of Crossroad of Lizard Lane
24	383442310580	Between A5 and Ivelsey Bank Road
25	388393310265	Horsebrook Crossroad, South of Cobblers Lane
26	391936313464	Bungham Lane, Penkridge
27	396994307324	Saredon Road, South East of M6 Toll
28	398453307699	Churchbridge, Station Road
29	393626309975	North of White Farm, South of A5, adj. Watling St. Plantation
30	396388303882	South-West of M54 B4156
31	394673303694	South-West of M54, Bognop Road, to the East of Windmill Cottage
32	394738302465	Blackhalve Lane, Essington, East of Power lines, west of Blackhalve Farm
33	396406307607	A460, Lodge Lane, East of M6 toll Jcn 8
34	392059304082	Greenfield Lane, Under Rail Bridge.
35	392004306140	New Road, Rail Crossing
36	392135305357	Brinsford Lane, Rail Crossing
37	391447311262	Stafford Road, North of A5
38	392018314490	Levedale Road adj. to railway
39	392005314197	Pinfold Lane, Penkridge
40	398575305750	Holly Lane, Landywood
41	398555304756	Long Lane, Newtown, Railway Crossing
42	398691306533	Landywood Lane, Landywood
43	398581309507	Rummer hill Road Rail crossing, Cannock
44	398599309919	A5190 Rail Crossing, Cannock
45	399241310928	Hawks Green Lane Rail Crossing, Cannock
46	399374311227	A4601 Rail Crossing, Cannock
47	399784312159	Stafford Lane Rail Crossing, Cannock
48	400012312503	Market Street Rail Crossing, Cannock
49	400468313261	Bradbury Lane, Rail Crossing, Cannock
50	377521310772	South of A5, NE of Crossroad of Lizard Lane
51	392850308815	Straight Mile, Calf Heath, Western end
53	395057305599	Hilton Lane, Featherstone
54	-	Count Not Undertaken

Site ID	Coordinates	Link Name
55	394573305734	A460, between Dark Lane and Hilton Lane
65	394202307125	Orchard Lane, Shareshill
66	395419306984	Mill Lane, Little Saredon
69	395222306495	A460 between Mill lane and Church Road, Shareshill
70	397069303870	Broad Lane, B4210, Springhill
71	394045304448	A460, South of Junction 1, M54, North of Mini Rounabout
72	393364305076	East Road, North of Brookhouse Lane, Featherstone
73	394227304921	North of M54, Junction 1. A460
74	394367305450	New Road, west of crossroads of A460, before Hilton Road
75	392392304509	Cat and Kittens Lane, Featherstone
76	391608304331	South of Junction 2, A449, North of Broadlands and any access roads.
77	391536304607	M54 - Junction 2 - Stafford Road Exit North Bound.
78	379778306969	North of M54, Junction 3. A41, Newport Road, just after north end of M54 Junction.
79	371323315287	Richards Road, Donnington, East of Hill Road, West of Kynnersley Drive
80	391574304609	M54 - Junction 2 - Stafford Road Entry South Bound.
81	373380309102	M54 underbridge, East of Junction 4, near J4M54 Motorcross.
82	371515315095	A518 New Trench Road, East of Clock Tower Roundabout, East of Footbridge
83	371926314686	Adj to Welcome to Telford/Muxton Sign. Wellington Road, Telford. West of Honnington
84	371932312411	Granville Road, Telford, East of Lyreco, West of Stable Bungalow
85	372640310874	A5, West of Telford Crem and Upper Woodhouse Farm, East of Grange Lane.
86	372921309514	Woodhouse Lane. Between Quakers playbarn and T Junction near Underbridge of M54, east of Junction 4
87	373112308734	A464, East of Service Station
88	371729305927	Hem Lane, near Halesfield
89	372458307322	Shaw Lane, to West of Shaw Farm, Shifnal, TF11
90	371795304711	A4169, East of Halesfield Development, Near Langley Cottage
91	371066303626	South of Sutton Hill Roadabout, A442, near Welcome to Telford Sign.
92	370831302646	Between south of A442 and High Street Coalford, Telford, Adj. to Sewage treatment work
93	373146308992	Haughton Road, East of Service station, West of T junction under M54
94	392284317787	School Lane, Dunston, Railway Bridge
95	391792319454	Chase View lane, south of Stafford
96	391013319829	Hyde Lea Bank, south of Bradley lane/Green Lane, North of Chase View Lane
97	390152320380	Bigwood Lane, Near Doxeywood Farm
98	389112321045	A518, between Bury Ring and south of Derrington Lane, Near Poly Farm
99	391871298986	Rail underbridge to North of Wolverhampton Station, A4124
100	391840303097	Bee Lane, under railway bridge (narrow road) Wolverhampton
101	391693302410	Three Tuns Lane, Wolverhampton Under Railway Bridge. Near Elston Hall Lane
102	391663301392	Bushbury Lane Railway Bridge, Wolverhampton
103	391794300820	Showell Road, Wolverhampton, Eastmost Railway underpass, just west of Guy Avenue
104	391785299598	A460, bridge over Canal, between Cross St North and Cambridge Street

Site ID	Coordinates	Link Name
105	398898303120	Broad Lane, B4310, Railway Bridge next to Bloxwich North station
106	399179302514	Sney Lane, Bloxwich, A412 Railway Bridge
107	399338302219	Croxdene Avenue, adj. to Bloxwich station. ATC railway bridge
108	399359302174	Central Drive, Bloxwich, Railway Bridge.
109	399920300932	Leamore Lane, Walsall, Railway Bridge
110	400182300790	A34 Railway Bridge, Walsall, Railway Bridge
111	400699300664	Bloxwich Road B4210, Walsall, Railway Bridge
112	400974300416	Forest Lane, Walsall, Railway Bridge
113	401260300126	Rutland Street, Walsall, Railway Bridge
114	401444299872	Coal Pool Lane, Walsall, Railway Bridge
115	401440299297	North street Railway Bridge, Walsall
116	393845306281	Featherstone Lane, near Oaklands Farm, Shareshill
117	399483304000	On A34, North of Turnberry Road junction.

Figure 3.4: Locations Of MCC Surveys Undertaken In June 2017

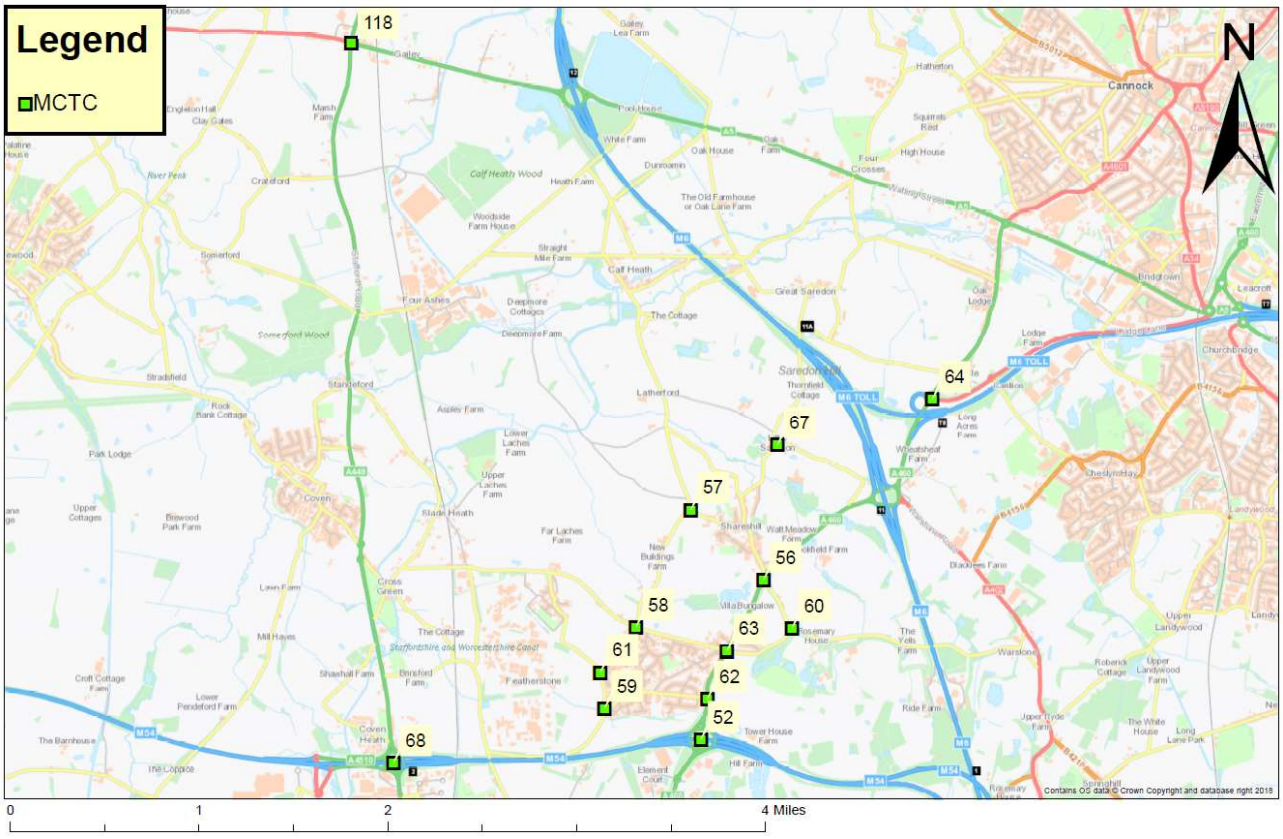


Table 3.5: Locations Of Manual Classified Counts Undertaken In June 2017

Site ID	*Coordinates*	*Link Name*
52	394185304688	M54 Junction 1
56	394717306044	Junction of A460 and Hilton Lane
57	394097306640	Church Road, Featherstone Lane
58	393632305643	Featherstone Lane, New Road Cross Road
59	393363304949	East Road, Brookhouse Lane junction, Featherstone
60	394961305634	Junction of Hilton Lane and Dark Lane, Featherstone
61	393327305256	East Road, Featherstone Road Junction
62	394239305031	Brookhouse Lane, A460 Junction
63	394405305437	A460 Dark Lane, Cannock Road and New Road Crossroad
64	396156307588	A460 Roundabout at M6 Toll West
67	394836307194	Little Saredon T junction
68	391566304487	M54 Junction 2
118	391205310613	A5, Stafford Road

Figure 3.5: Locations Of MCCs Undertaken In September 2018

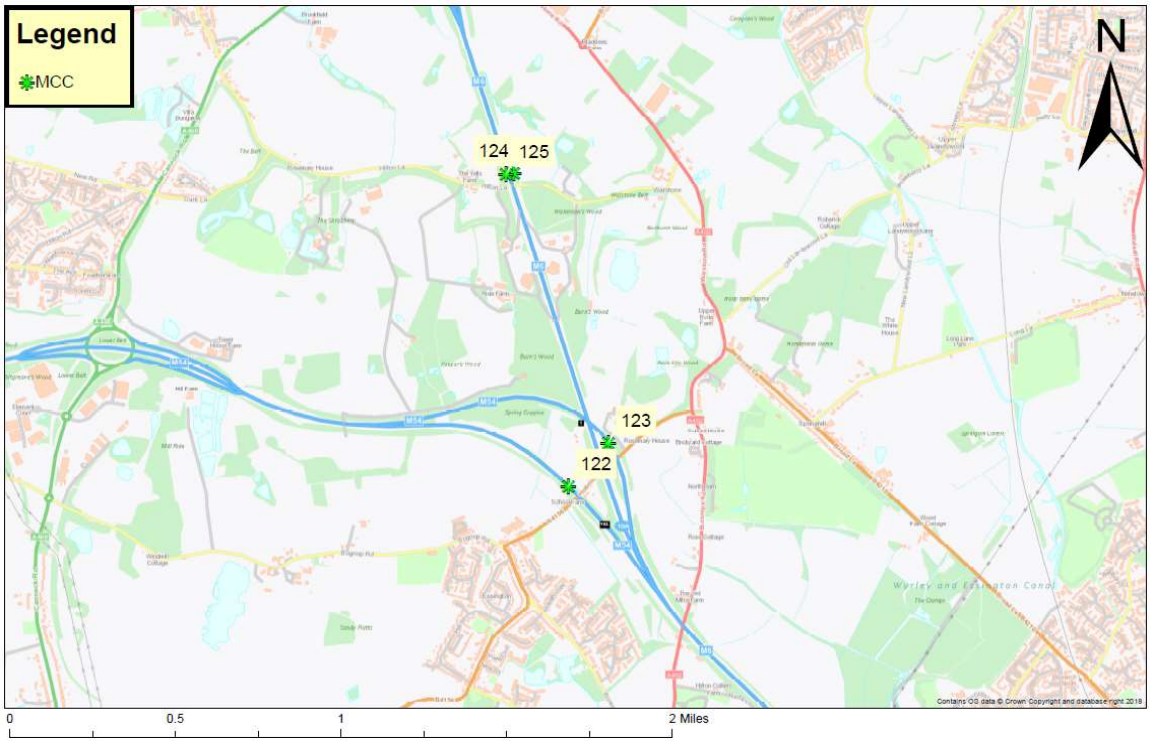


Table 3.6: Locations Of MCC Undertaken In September 2018

Site ID	*Coordinates*		*Link Name*
122	396423	304007	M54 NB Slip from M6
123	396616	304218	M54 SB Slip to M6
124	396157	305541	M6, NB, North of Hilton Park Services
125	399504	301751	M6, SB, North of Hilton Park Services

Journey Time Surveys

3.4.11 The routes used for the calibration and validation of journey time data are shown in Figure 3.6 and Figure 3.7.

Figure 3.6: Journey Time Survey Routes Assessed – North / West Of The Scheme

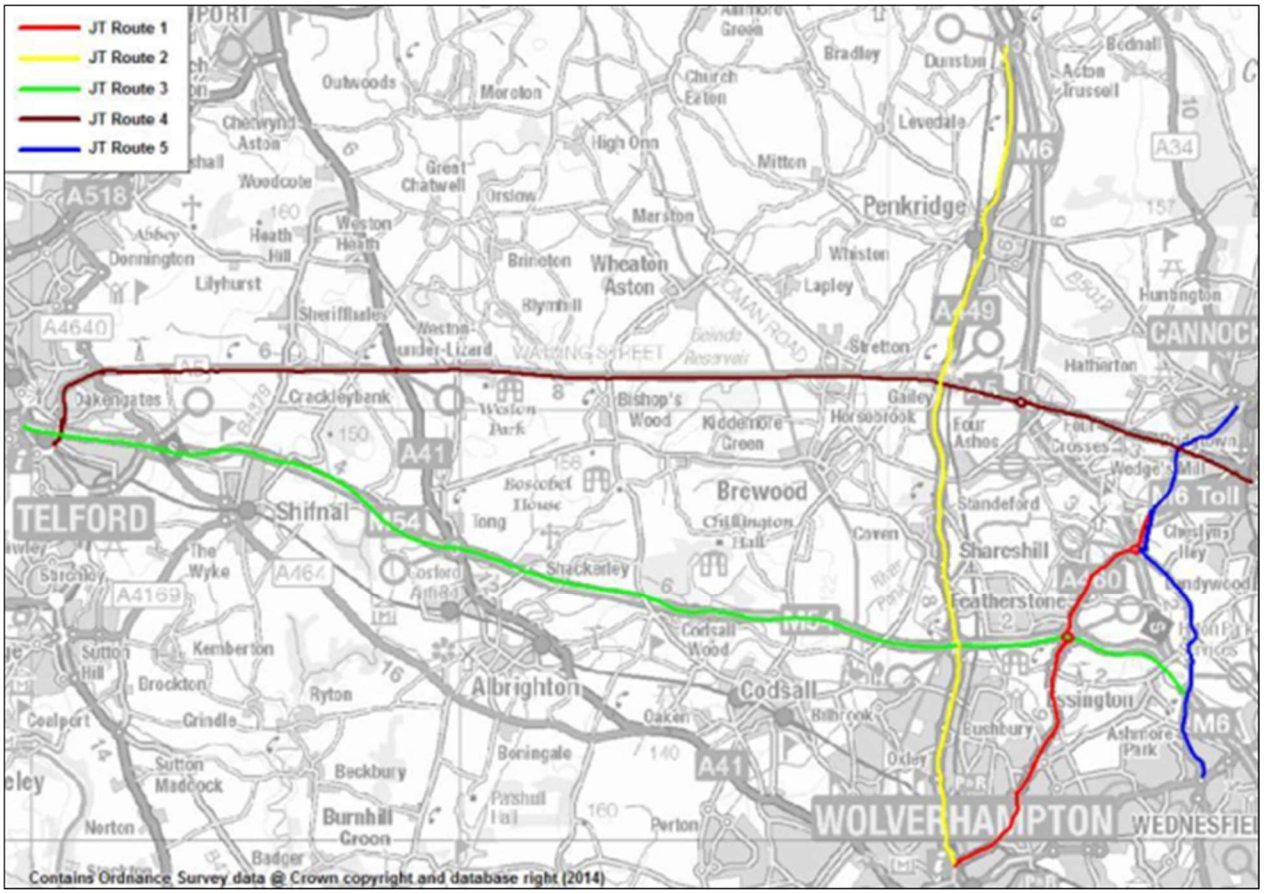
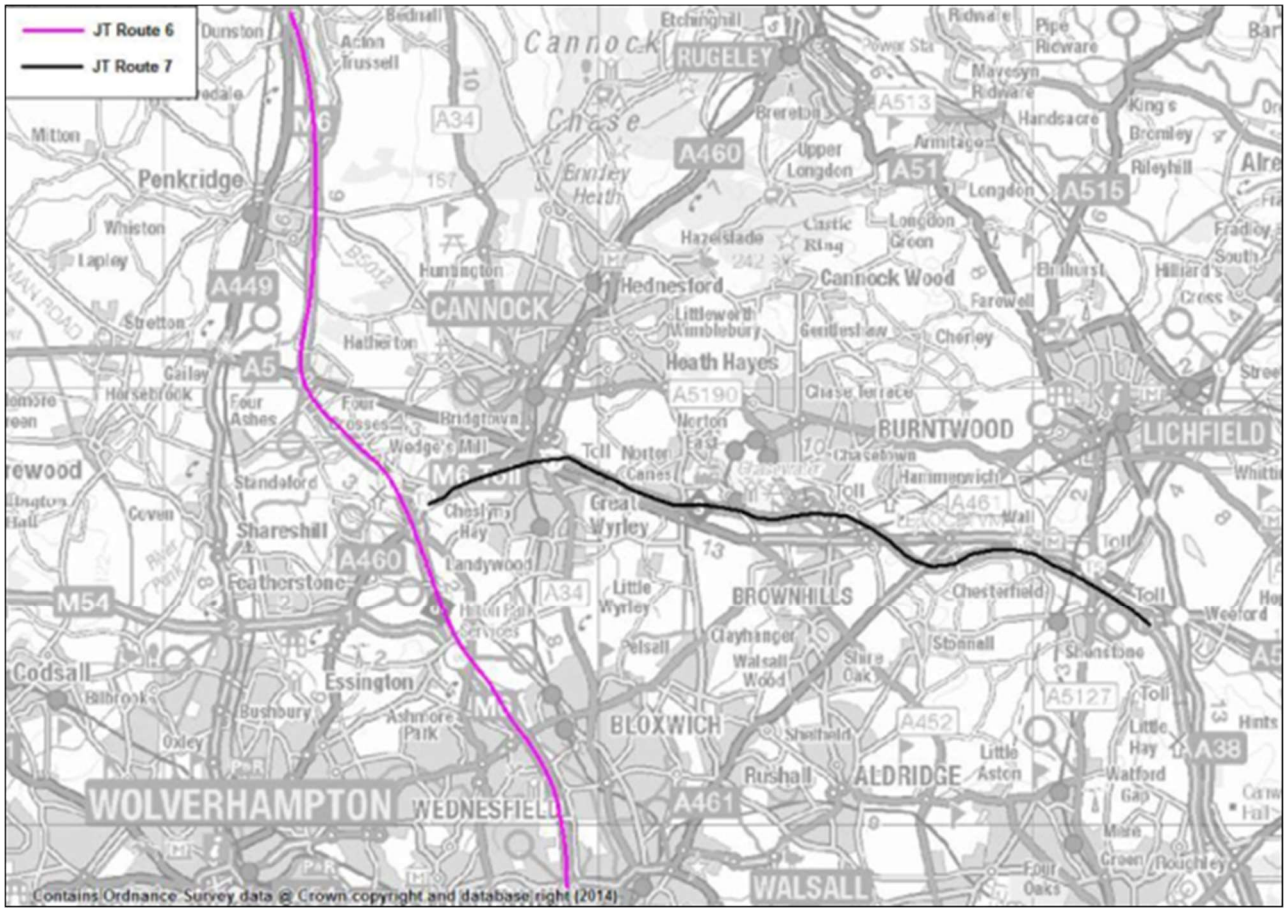


Figure 3.7: Journey Time Survey Routes Assessed – East Of The Scheme



3.4.12 Journey time data for these routes in the Wolverhampton area was taken from the Trafficmaster GPS database for the period from 27th March 2017 to 30th November 2017 inclusive.

3.4.13 Journey time data was calculated for routes within the study area using anonymised data supplied by Trafficmaster plc from around 100,000 probe vehicles across Britain that are equipped with global positioning system devices. These devices record speed and location information that is collated, digitally mapped, and matched to the road network.

Origin – Destination Matrices

3.4.14 As well as understanding the total volume of trips on the network (from the ATC and MCC survey sites) and the time taken to traverse key routes within the study area, it is also necessary to understand the origin and destination of trips (so that re-routeing impacts can be forecast).

3.4.15 The main sources of origin-destination trip data were from demand matrices extracted from the 2015 MRTM, combined with observed traffic data for the local area surveyed in 2017.

Traffic Data Summary

3.4.16 The data described above was used to load the traffic model with the correct volumes of trips, and describe how these trips are currently routeing across the network (i.e. in terms of origin/destination, overall trip length and journey time).

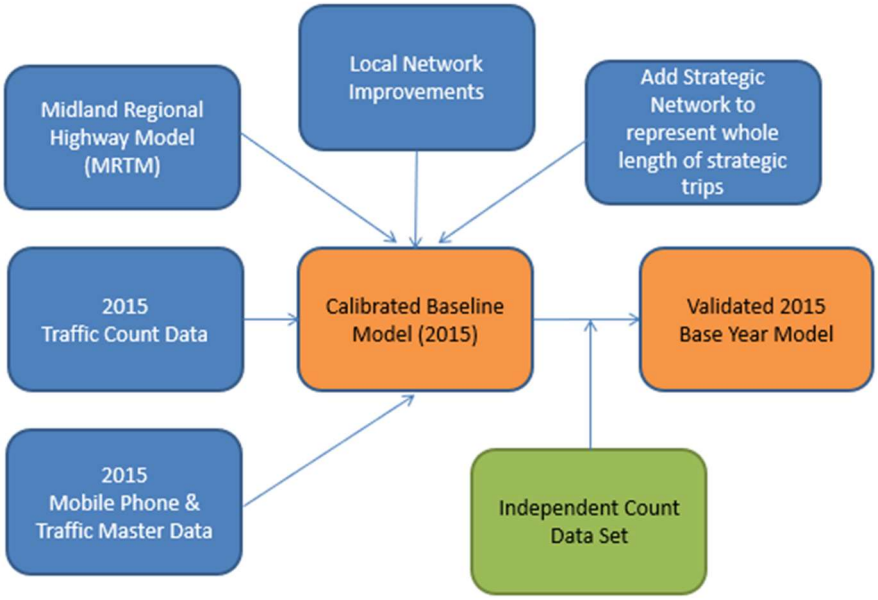
3.5 Highway Network Data

3.5.1 The study area contains signalised junctions that are considered 'key' junctions or congestion 'hot spots'. The signal timings for these junctions in each of the busy modelled time periods (i.e. AM peaks, Inter-Peak, and PM peaks) were carried forward from the PCF Stage 2 Model within the study area and from MRTM in the external area. These were then coded into the highway model's network as fixed time plans, with the timings being different for each modelled time period. As part of the calibration/validation process, some of the junctions were 'optimised' in SATURN where these would more realistically operate as demand-responsive dynamically adjusted signal-timings within the assignment model.

3.6 Summary

3.6.1 A summary of the method applied to create the baseline model is provided in Figure 3.8 and the general principals of traffic modelling, using SATURN software, are described in Figure 3.9.

Figure 3.8: Production Of Baseline Traffic Model



3.6.2 The validation of the traffic model against existing conditions was reported in a *Local Model Validation Report (LMVR)* [Ref: HE514465-ACM-GEN-M54_SW_PR_Z-RP-TR-1001; Nov 2019]. The LMVR provides further details of the building of the model, the model parameters used, the performance of the model against observed conditions, the potential applications for the model, and the model's strengths and weaknesses. The LMVR concluded that the model provided a robust foundation from which to assess the Scheme.

3.6.3 Figure 3.10 to Figure 3.15 show the traffic modelled baseline Annual Average Daily Traffic (AADT[4]), on key routes on and around the M54–M6 link road.

[4] AADT is the total volume of vehicle traffic of a highway or road for a year divided by 365 days. This gives a total quantum of traffic on an 'average' day.

Figure 3.9: SATURN Model Operation – General Principles

What is a SATURN model?

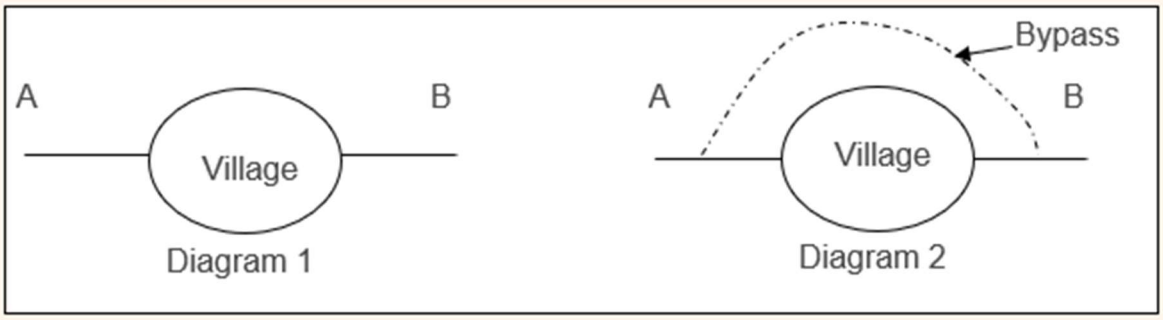
SATURN (*Simulation and Assignment of Traffic in Urban Road Networks*) is a computer software package used to forecast changes in traffic associated with development or road schemes. It has been used to support many large infrastructure schemes and is a DfT approved tool. A SATURN model has two components:

- A **Supply Network:** which is a representation of the highway network including its roads and junctions; and
- A **Demand Matrix:** which is a representation of the individual vehicles which would seek to route through the network.

The purpose of the SATURN model is to predict which specific route vehicles will choose to travel from their respective origins to their respective destinations given:

- Changes to the Supply Network (i.e. as new roads are opened, or junctions improved); and
- Changes to the Demand Matrix (i.e. as traffic levels increase (or decrease) in the future).

For example:



In Diagram 1, traffic from A to B would route through the village centre, as it is their only choice.

In Diagram 2, the choice of route has increased. Vehicles could either use the bypass or continue to route through the village centre. Importantly, as more traffic uses the bypass, congestion in the village centre would decrease, and this may make it a faster route for some traffic given the shorter distance.

SATURN solves the problem of 'how much traffic would use each route available'. It bases these choices on journey cost and distance.

Figure 3.10: Baseline Model AADT Flows – M54 West (2015)

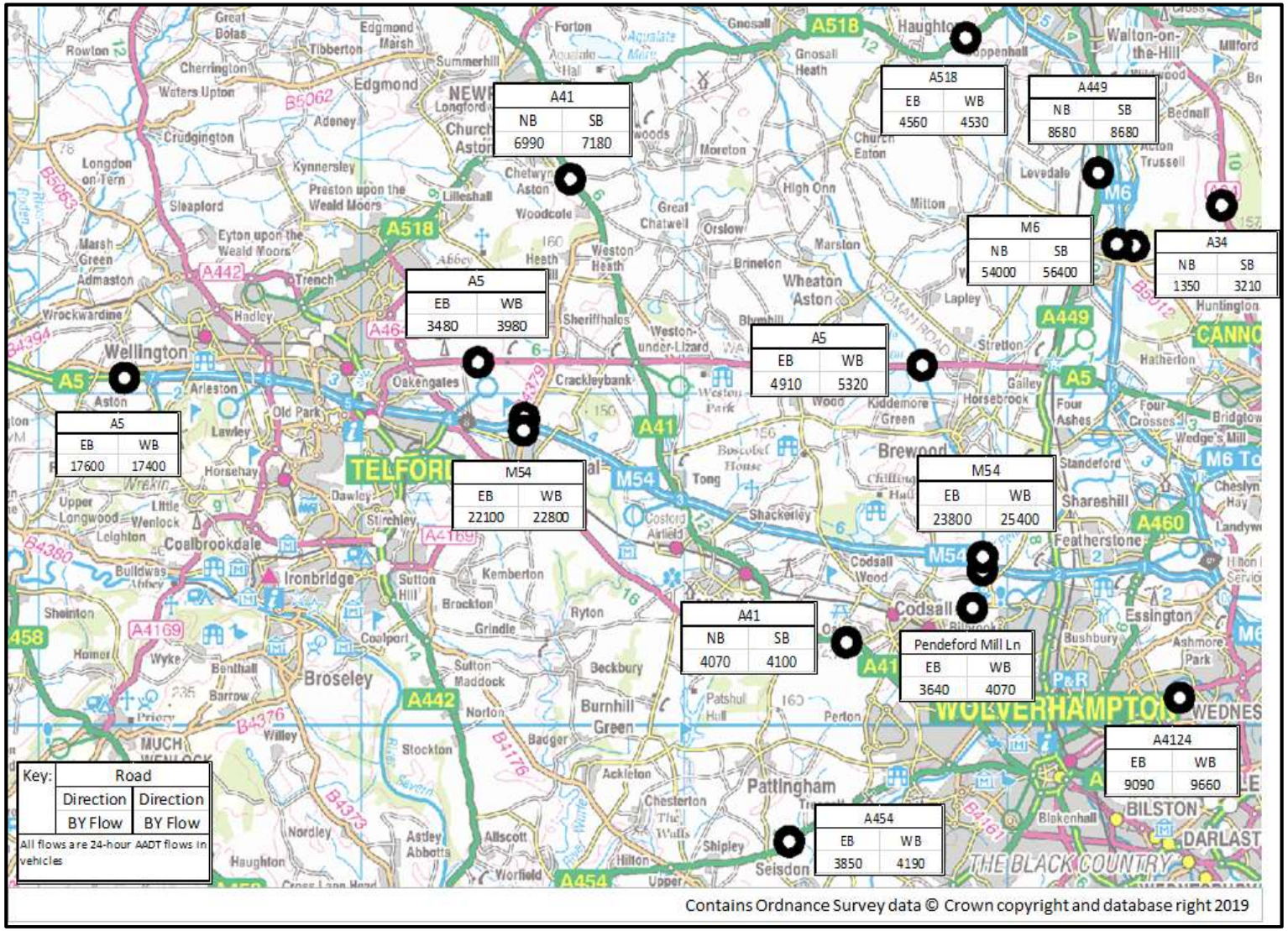


Figure 3.11: Baseline Model AADT Flows – M6 Toll / A5 East (2015)

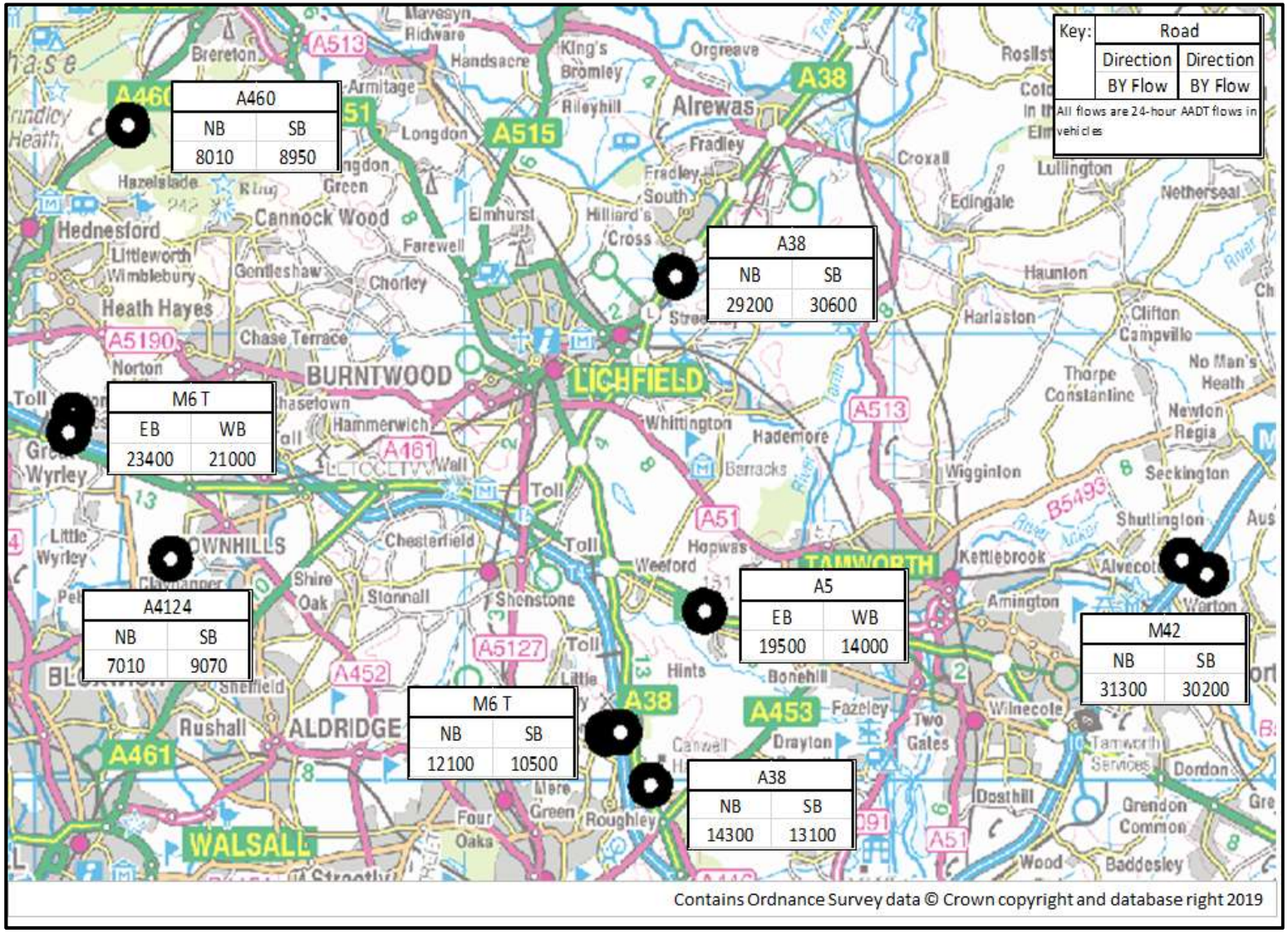


Figure 3.12: Baseline Model AADT Flows – M42 / M6 South East (2015)

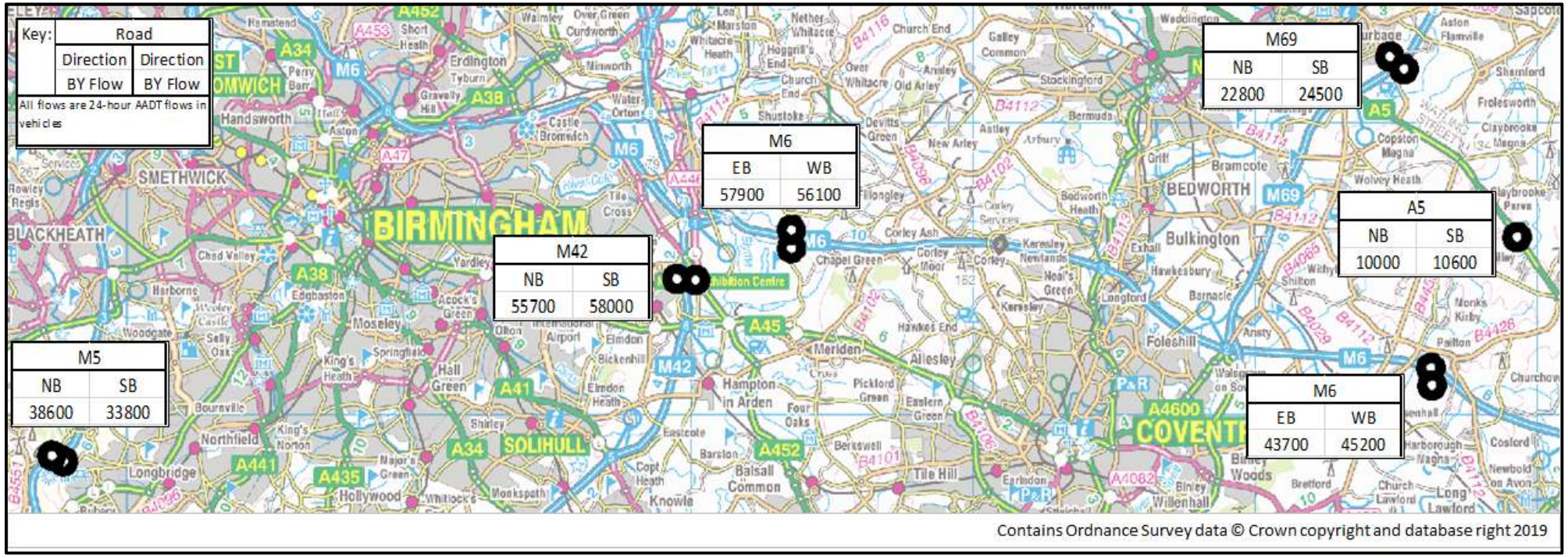


Figure 3.13: Baseline Model AADT Flows – A5 / M6 Junction 12 (2015)

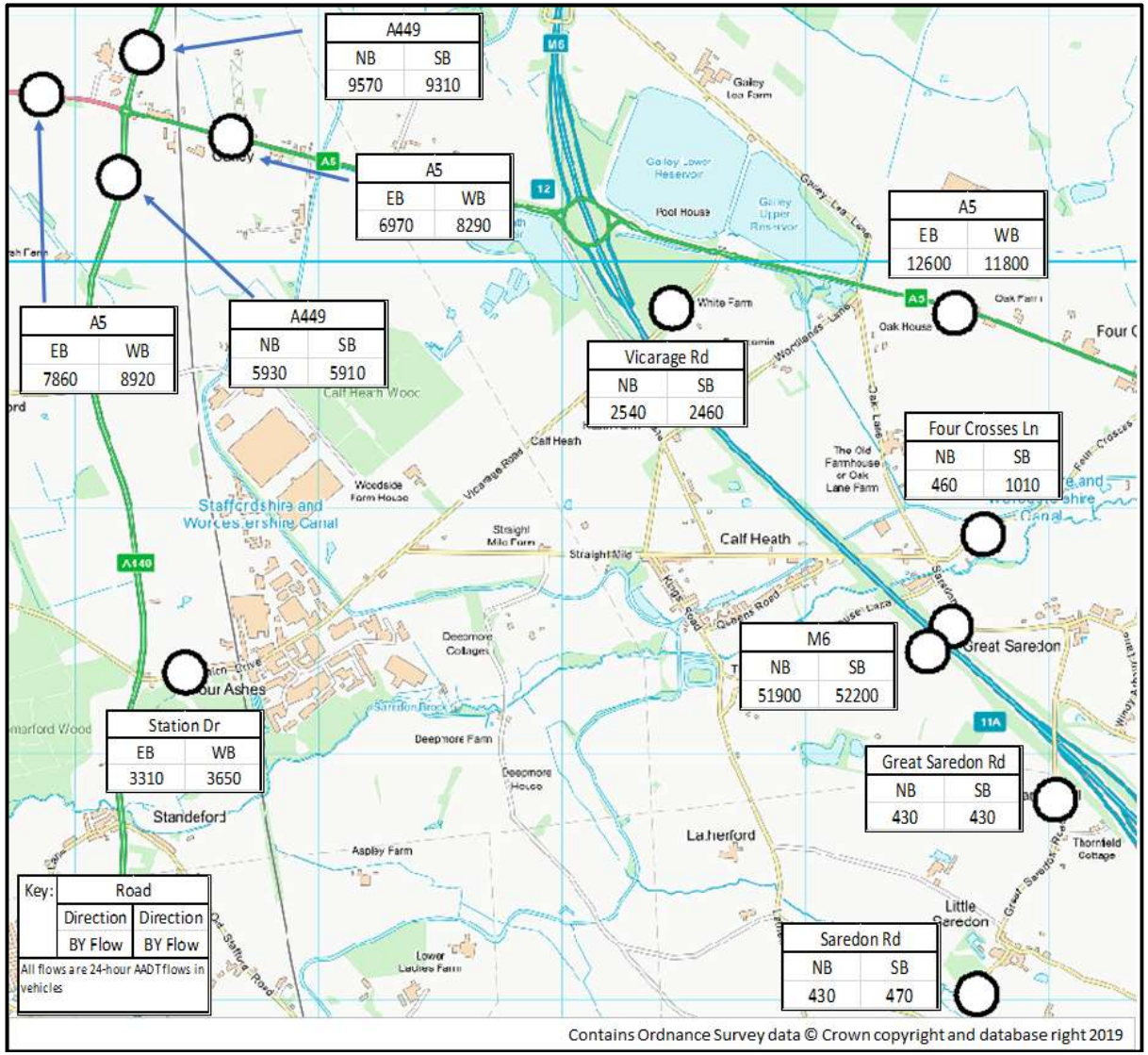


Figure 3.14: Baseline Model AADT Flows – M6 (Toll) / A462 / A5 (2015)

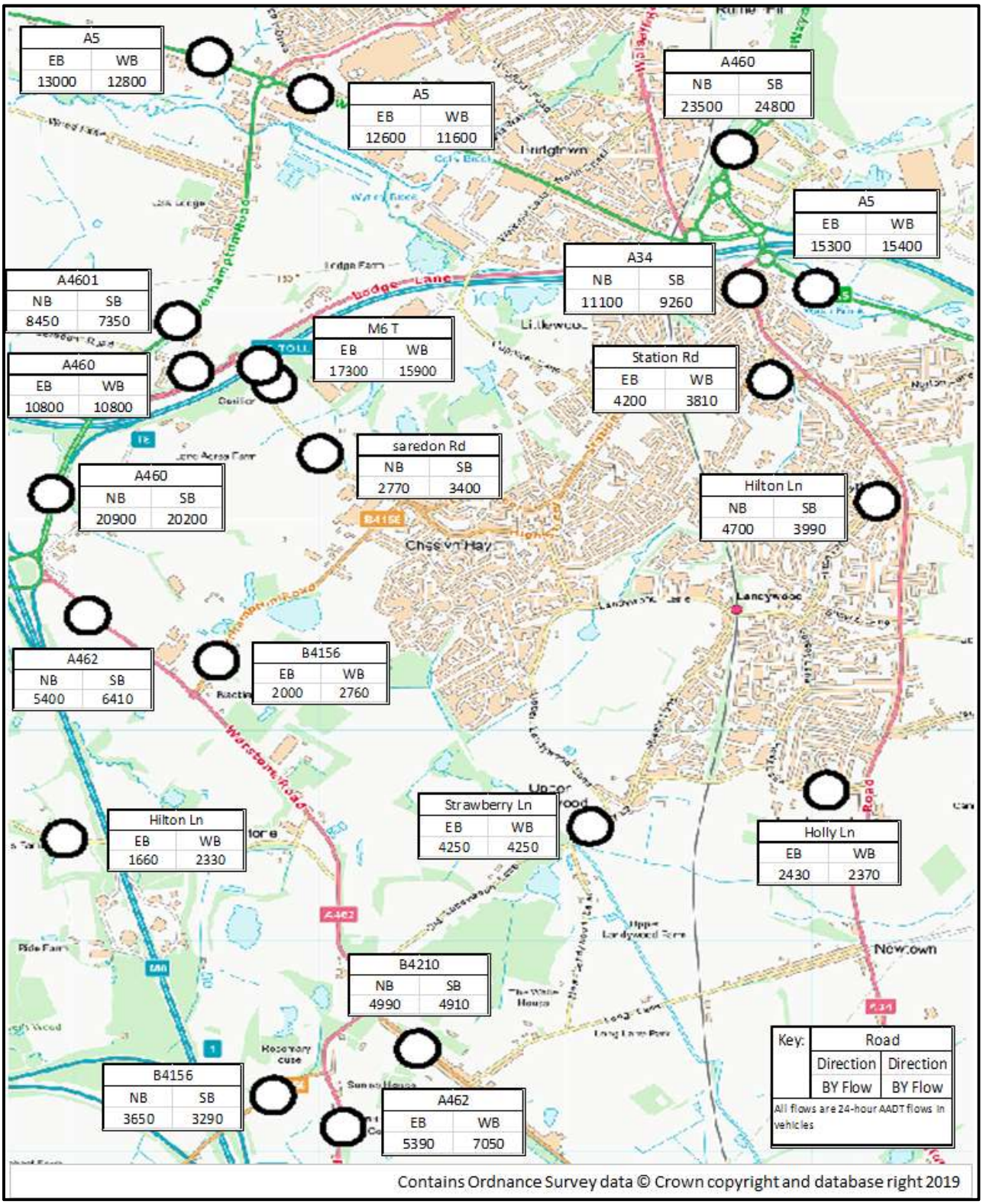
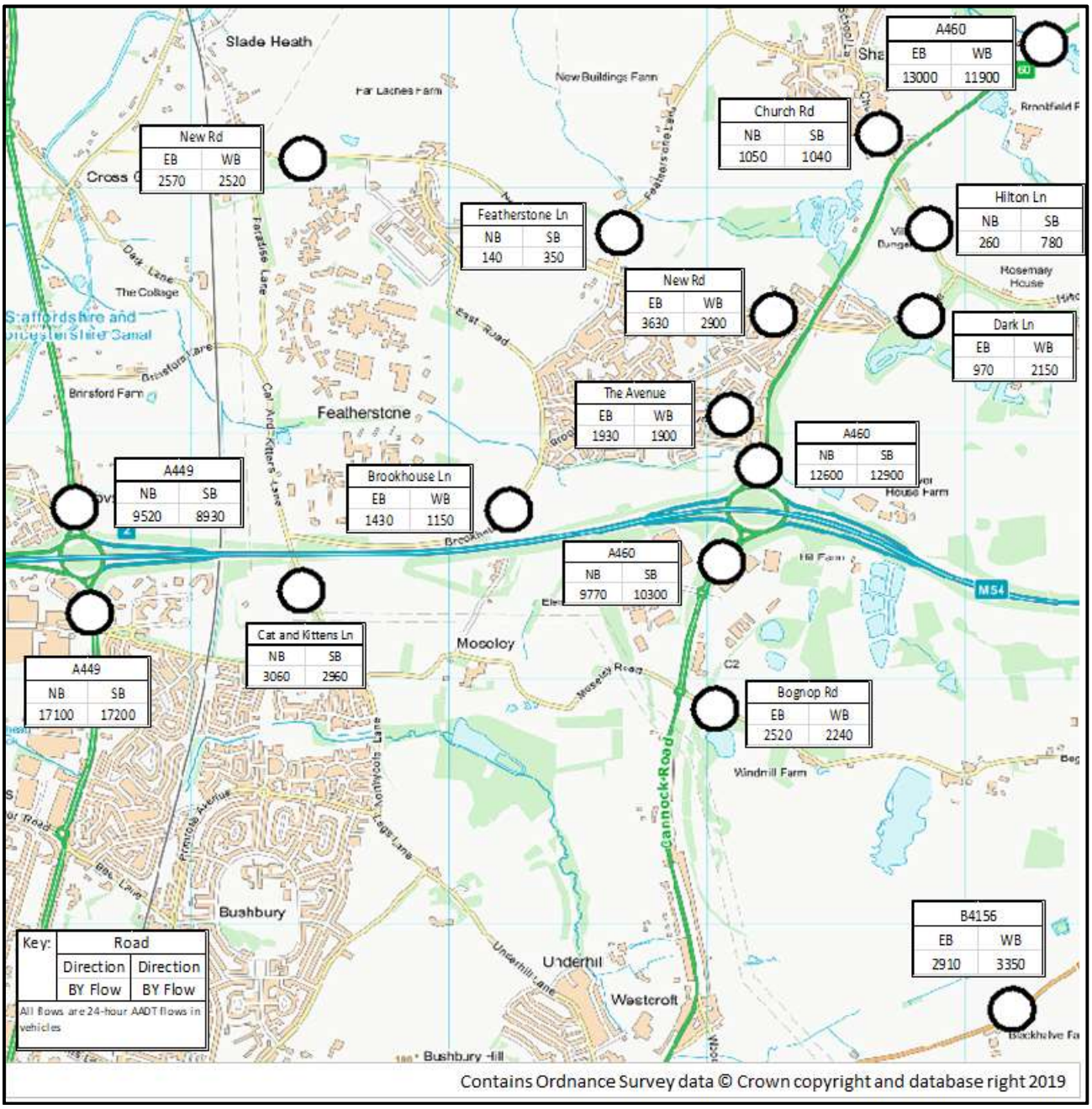


Figure 3.15: Baseline Model AADT Flows – M54 / A460 (2015)



4 Future Year Traffic Forecasts

4.1 Overview

4.1.1 The purpose of this section is to identify the performance of the highway network in the future, both 'with' and 'without' the Scheme. It includes a description of the proposed improvements to the M6 Junction 11 and M54 Junction 1, and the proposed link road.

4.2 Future Year Scenarios

4.2.1 Two future year forecasts have been prepared:

- 'Do-Minimum' – i.e. no improvements to the M6 Junction 11 and M54 Junction 1 (and no new link provided). Traffic growth would occur into the future as described later in this section. Transport interventions that were considered more than likely to be implemented were included.
- 'Do-Something' – i.e. the junction improvements are introduced at M6 Junction 11 and M54 Junction 1 and the new link road built. Traffic growth occurs into the future as for the 'Do-Minimum' case, as is described in this section.

4.2.2 The future year forecasts were prepared for an Opening Year (2024), an intermediate year (2031) and a Design Year (2039).

4.3 Modelling The 'Do-Minimum' Case

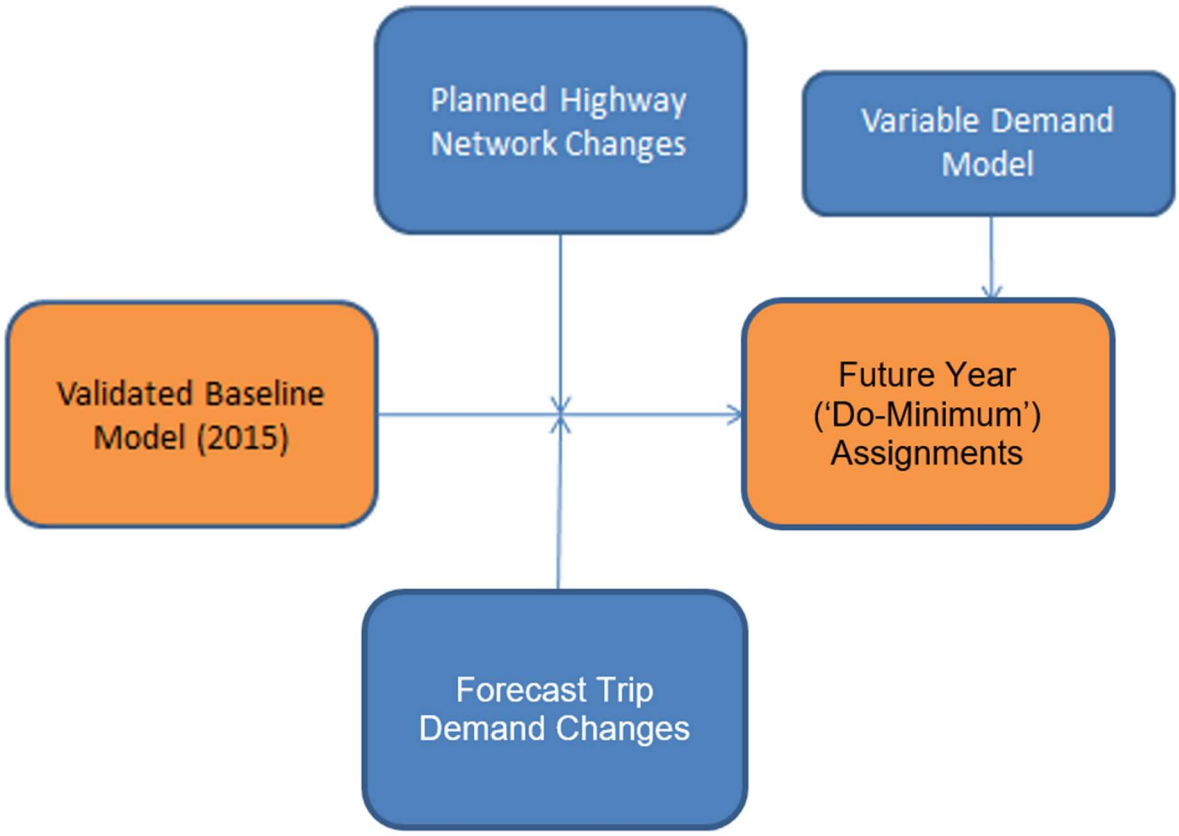
4.3.1 **Method:** The number of trips on the highway network is likely to grow whether or not the Scheme is introduced, and there are also likely to be changes (e.g. junction improvements) to the highway network outside of the scope of the Scheme.

4.3.2 To forecast the future traffic demand, information has been obtained from the Department for Transport, Highways England, and the four local planning districts (Cannock Chase, South Staffordshire, Walsall and Wolverhampton) regarding:

- Planned changes to the highway network; and
- Forecast changes in trip demand.

4.3.3 The information provided has then been used to modify the Scheme's Base Year Traffic Model, as illustrated in Figure 4.1, to produce the 'Do-Minimum' future year highway assignments.

Figure 4.1: Production Of The 'Do-Minimum' (2039) Forecast Assignments



4.3.4 **Planned changes to the highway network:** The following road improvement schemes were included in the 'Do Minimum' model networks for the relevant forecast years. The number in brackets shows the first forecast year network where the DM changes have been implemented.

- A45 / A6 Chowns Mill Roundabout improvement (2024);
- M6 Junction 10 Improvement (2024);
- M1 Junction 19 Improvement (2024);
- A47 Wansford to Sutton dualling (2024);
- A5 Towcester Relief Road (2024);
- A45-A46 Tollbar End (2024);
- A50 Uttoxeter Project (2024);
- A500 Etruria Widening (2024);
- M1 Junctions 23a-25 Smart Motorway (2024);
- Kegworth Bypass (2024);
- M1 Junction 28-31 Smart Motorway (2024);
- M1 Junctions 13-15 Smart Motorway (2024);
- A453 Widening (2024);
- A47 Guyham Junction (2024);
- M40 / M42 Interchange Smart Motorway (2024);

- A5 Dodwells to Longshoot Widening (2024);
- A38 Derby Junctions (2024);
- A46 Coventry Junction Upgrades (2024);
- M42 Junction 6 (2024);
- M1 Junction 13-19 Smart Motorway (2024).
- Daventry Development Link (2024);
- A500 Wellingborough (Isham Bypass) (2024);
- M40 J12 Improvement (2024);
- Nuneaton Northern Relief Road (2024);
- Stafford Western Access Routes (2024);
- Hereford Southern Link Road (2024);
- Chester Road Corridor Improvements (2024);
- Birchley Island Improvements (2024);
- DIRFT Improvements (2024);
- Grantham Southern/King 31/Spitalgate (2024);
- A4440 Worcester Southern Link Road (2024);
- A40 Embridge Court Roundabout (2024);
- Etruria Valley Connectivity (2024);
- M1 J22 Improvement (2024);
- Darlaston SDA (2024);
- Coventry A45 Junction (2024);
- Lincoln Southern Bypass (2031);
- Lincoln Eastern Bypass (2031);
- A52 Wyvern Transport Improvements (2031);
- HS2 Road Infrastructure (2031).

4.3.5 **Forecast changes in trip demand:** The future demand for travel within the model study area will be affected by several key factors. These include:

- Changes in employment levels;
- Changes in population and the number of households; and
- Changes in the level of car ownership.

4.3.6 The impacts of these factors are incorporated in the NTEM (National Trip End Model).

4.3.7 Information contained within the NTEM database was extracted in the form of forecast year trip-end growth projections for travel (including by car, LGV and HGV), thus allowing local area traffic models to be developed on a consistent basis with regard to future year national growth.

4.3.8 Specific developments were modelled in the four local planning authority areas of Cannock Chase, South Staffordshire, Walsall and Wolverhampton. Within this local area, the increase in the number of trip-ends generated by both the planned

residential and planned employment development was based upon the explicit modelling of the individual development site proposals. Each proposed site was allocated to an appropriate model zone.

4.3.9 To allow the number of development-specific trip-ends to be calculated, the following information was required for each of the identified development sites:

- A list of proposed developments, together with information of their geographic locations, land-use classifications, model zones and scales.
- Planning status (level of probability) of development proposals, i.e. whether the proposal was Near Certain, More than Likely, Reasonably Foreseeable or Hypothetical (TAG Unit M4, Appendix A, Table A2, May 2018).
- Construction phasing proposals of each development site including start and end years of the construction program and the proposed numbers of units to be completed each year.

4.3.10 The identified sites, the likelihood of each site being implemented (assessed using the methods described in TAG Unit M4) and the expected year of implementation, was used to develop an Uncertainty Log. The Uncertainty Log identified those sites to be modelled specifically in the traffic forecasting process.

4.3.11 Amongst these development sites, notable generators of trips included within the Core growth scenario traffic forecasts were: the West Midlands Rail Interchange, the mixed-use developments at Four Ashes, further development at the “i54” site, and the development of the Retail Park on Eastern Way at Cannock.

4.3.12 Figure 4.2 illustrates the distribution of the development sites by type (residential or employment) and Figure 4.3 illustrates the level of certainty in the absence of the Scheme.

Figure 4.2: Location Of Development Sites By Type (residential, employment)

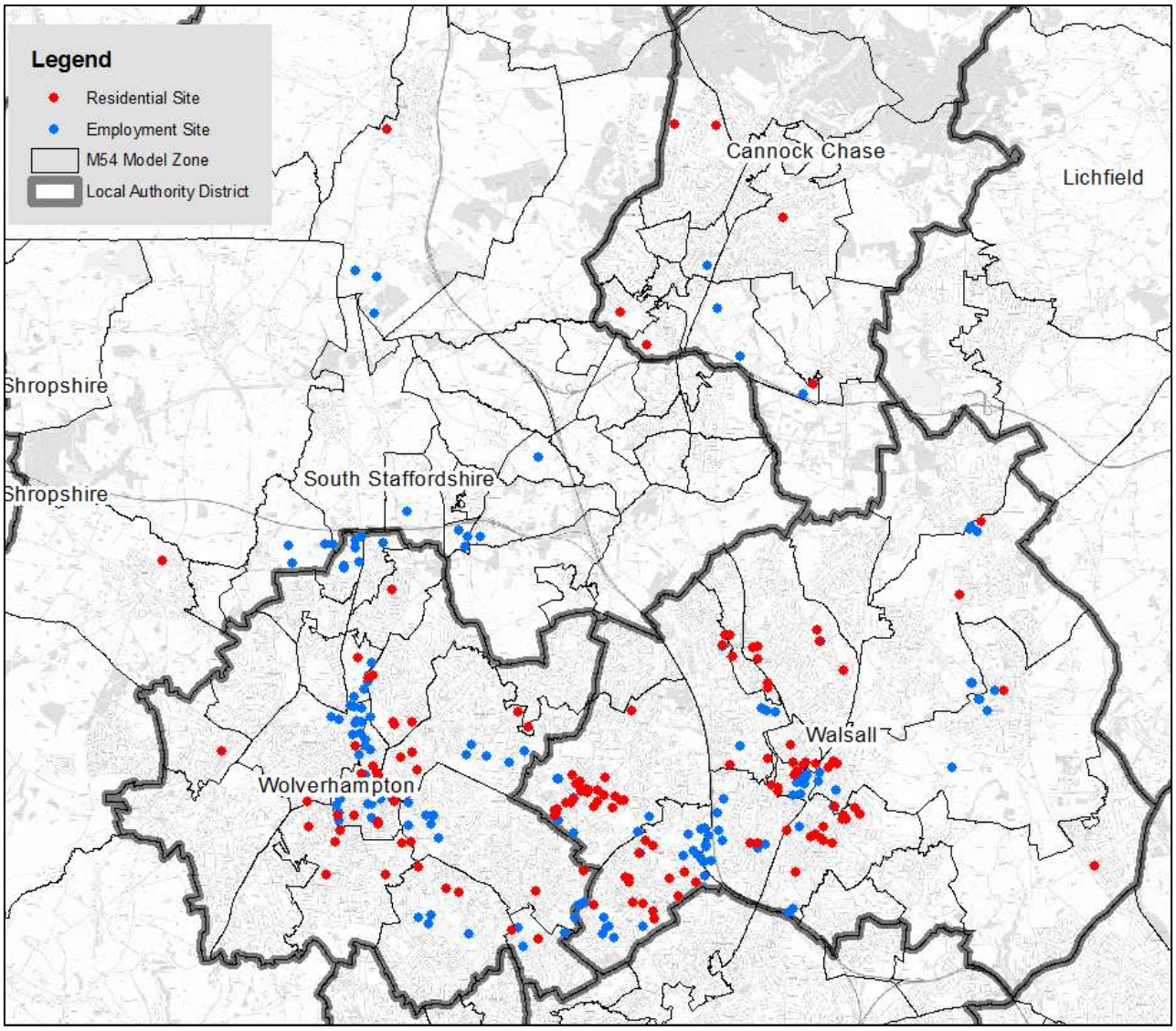
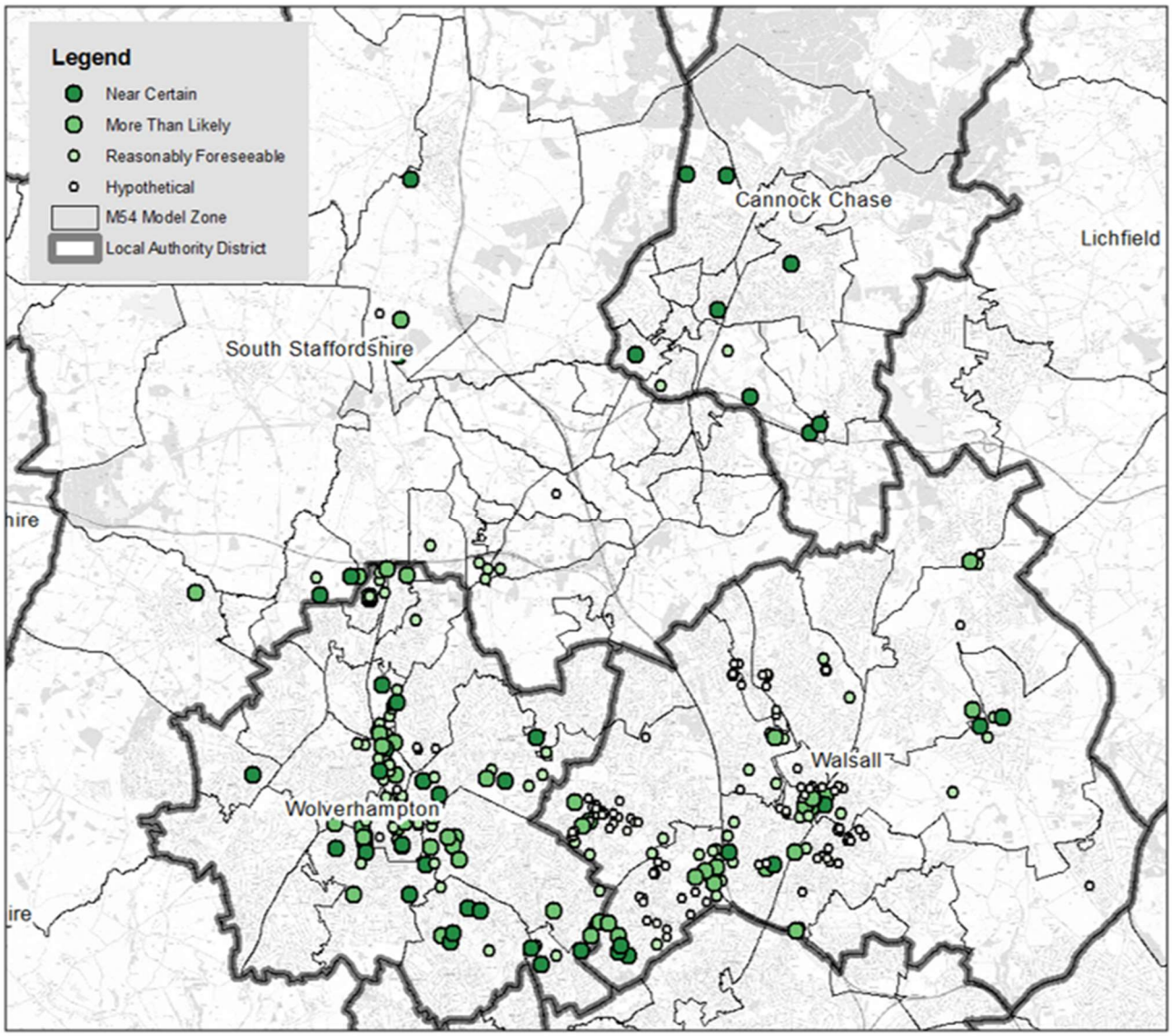


Figure 4.3: Local Plan: Distribution Of Development Sites By Level Of Certainty



4.3.13 It is noted that:

- where the opening year of a development was not specified, it was assumed that sites would be complete by 2031.
- the development sites with the higher certainty levels of Near Certain (NC) and More Than Likely (MTL) were included in the Core scenario traffic forecasts (following the guidance in the DfT's TAG Unit M4: Forecasting & Uncertainty);
- for residential developments, only sites with over 150 dwellings were considered;
- each development proposal was allocated to an existing model zone or (for one site) assigned to a new model development zone.

4.3.14 A summary of the overall quantum of development included in the Core Scenario model is summarised in Table 4.1.

Table 4.1: Summary Of NC/MTL Development Sites (Core Scenario)

District	Employment Sites		Residential Sites (Over 150 Dwellings)	
	Number of sites	Square metres	Number of sites	Number of dwellings
Cannock Chase	3	142,800	4	1,805
South Staffordshire	8	1,016,400	3	504
Walsall	24	94,856	3	683
Wolverhampton	29	299,041	11	3,856
Total	64	1,553,097	21	6,848

Note: There was also a hotel site identified with 133 beds (MTL) in Wolverhampton.

4.3.15 From the above description is clear that not all of the trips from development growth were included within these specifically modelled development sites. But the 'Core' scenario traffic growth forecasts were controlled at a district level to the expected population and GDP growth from the DfT's national trip end model. Thus, the magnitude of trip growth generated by the smaller sites was included within the overall growth factors applied to the modelled zones in each district.

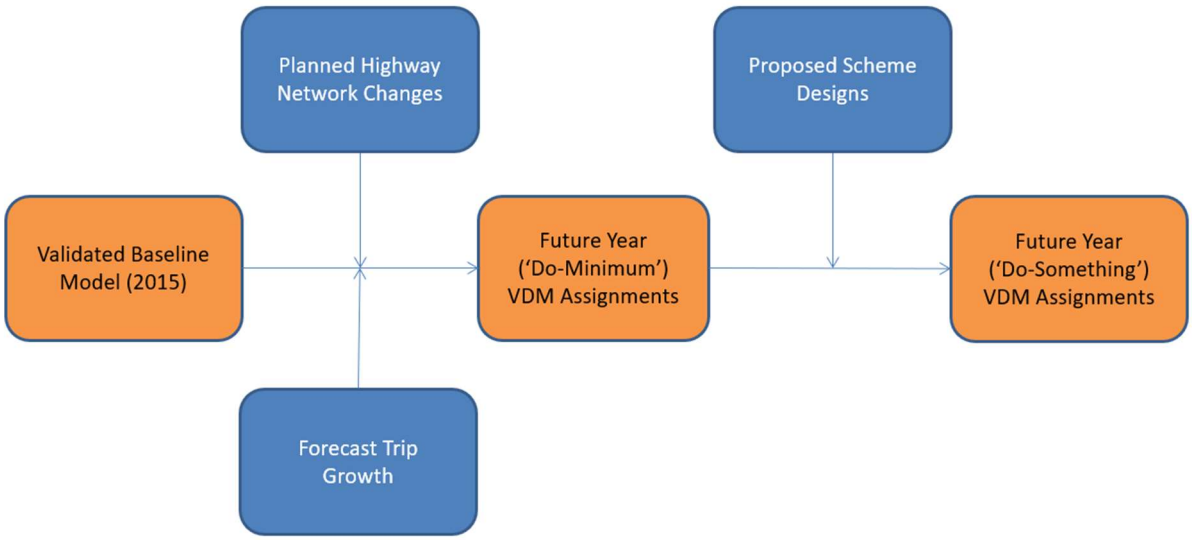
4.4 Modelling The 'Do-Something' Case

4.4.1 To produce the 'Do–Something' (2039) forecast, the 'Do–Minimum' traffic forecasting model was further developed to include the proposed link road and M6 Junction 11 & M54 Junction 1 junction improvements (Figure 4.4).

4.4.2 The 'Do-Something' model has been prepared to answer the following types of question:

- Are the two junction improvements economically justified?
- What is the optimum layout option at M54 Junction 1?
- What is the optimum layout option at M6 Junction 11?
- What is the optimum layout option of the link road?

Figure 4.4: Development Of The 'Do-Something' (2039) Traffic Model



4.4.3 The key features of the Scheme, which were coded into the 'Do-Something' traffic forecasting models, are:

4.4.4 **At M54 Junction 1** (Figure 4.5)

- Existing roundabout removed and converted to three smaller roundabouts, one to the south and two to the north of the M54.
- Links between the new roundabouts to run at 40mph speed limits.
- Upgrades to eastbound diverges and westbound merges.
- Access to the existing A460 (north) via the western of the three new roundabouts.
- Free-flow links from the M54 to the scheme link and vice versa.

4.4.5 Link Road

- Provision of Dual 2-lane All-Purpose (D2AP) Design Standard with a 70mph speed limit.
- A direct free flow lane to the M54 and entry and exit slip roads at M54 Junction 1.

4.4.6 **At M6 Junction 11** (Figure 4.6)

- An enlargement of the junction to provide extra capacity and accommodate a connection to the new link road.
- The connection to the A460 south will be realigned to accommodate the scheme link and the A460 north connection will be widened both northbound and southbound.

Figure 4.5: Improvements At M54 Junction 1

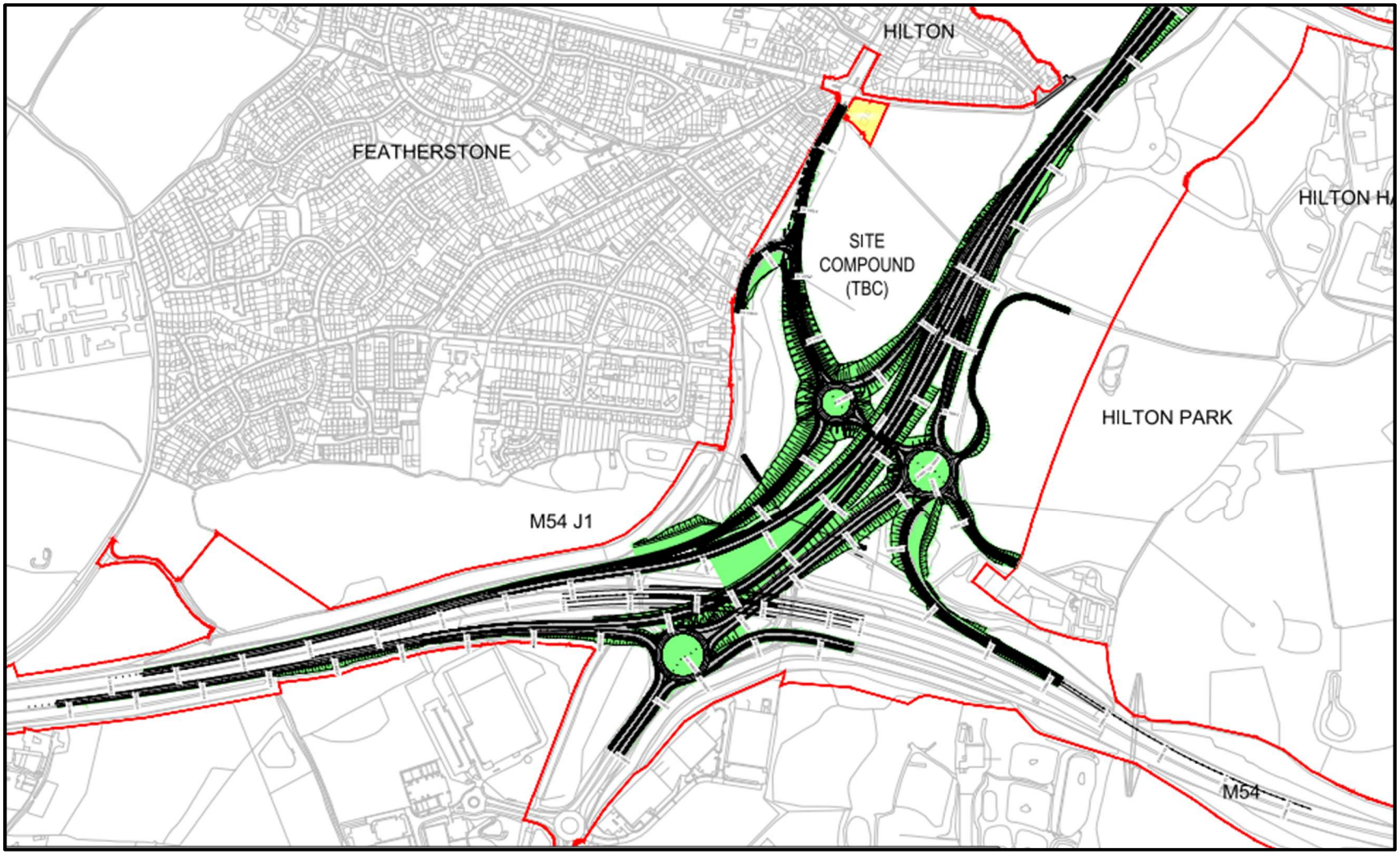
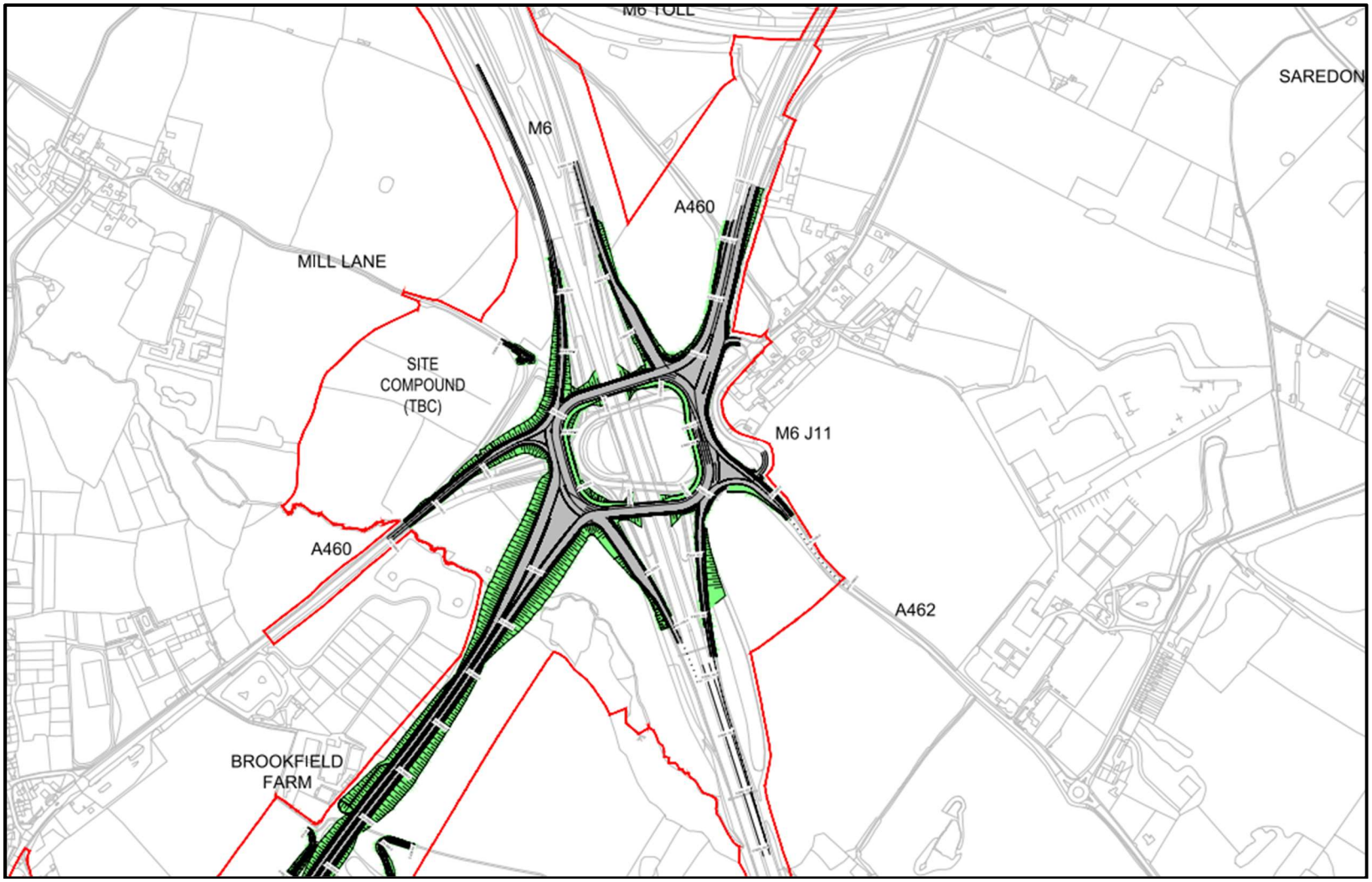


Figure 4.6: Improvements At M6 Junction 11



4.5 Forecast Changes In Traffic Flows

4.5.1 The total number of trips within the reference case trip matrices, for the base year, for the 'Do–Minimum' 2039 future year and for the 'Do-Something' 2039 future year, are shown in Table 4.2. The values shown are in vehicle units per hour.

Table 4.2: Matrix Totals (All vehicles)

Modelled Hour	Base Year (2015)	Reference Case Future Year (2039)	Growth (2039/2015)
AM1	1,983,067	2,310,273	16.50%
AM2	1,847,927	2,148,030	16.24%
AM3	1,547,542	1,799,946	16.31%
IP	1,577,004	1,872,535	18.74%
PM1	1,988,837	2,343,844	17.85%
PM2	2,068,771	2,428,323	17.38%
PM3	1,542,405	1,809,858	17.34%
EV	814,992	959,083	17.68%
ON	285,269	335,134	17.48%

Modelled weekday hours:
AM1 07:00 – 08:00;
AM2 08:00 – 09:00;
AM3 09:00 – 1000;
IP (Inter-Peak) average hour 10:00 – 16:00;
ON (Overnight) average hour 22:00 – 07:00.
PM1 16:00 – 17:00;
PM2 17:00 – 18:00;
PM3 18:00 – 19:00;
EV (Evening) average hour 19:00 – 22:00.

4.5.2 The values in the table show the total number of trips assigned to the traffic model (not how they are routeing on specific roads, which is provided later). This table is shown to illustrate the level of growth forecast across the model area (and prior to the application of the variable demand forecasting process).

4.5.3 A variable demand forecasting process was applied to account for any induced (or dissuaded) trips as a result of the Scheme. For instances where travel times (and therefore costs) are improved, individuals may be encouraged to perform additional (induced) trips. Conversely, in instances where travel times worsen, this would likely supress trips (compared to the Base Year).

4.5.4 The assignment process also includes a route choice mechanism for every trip, which is an iterative process that accounts for the delays caused by all the other users who will also be making journeys through the highway network.

4.5.5 Once the Variable Demand Model processes were applied, the resulting future year (post-VDM) traffic assignment forecasts were obtained.

4.5.6 Figure 4.7 to Figure 4.12 show the forecast Annual Average Daily Traffic (AADT[5]), on key routes on and around the M54 – M6 link road. Traffic flows are presented for both the 'Do-Minimum' and 'Do-Something' case forecasts, considering all

[5] AADT is the total volume of vehicle traffic of a highway or road for a year divided by 365 days. This gives a total quantum of traffic on an 'average' day.

vehicles. The changes in flow, between the 'Do-Minimum' and 'Do-Something' (DS-DM so negative values are a reduction as a consequence of the Scheme), are presented in the bottom boxes.

4.6 Flow Relief On The A460

Daily Flow Relief

4.6.1 The 2039 forecast daily (annual average daily traffic) flows on the existing A460 are shown on Figure 4.12 as being 15,700 vehicles/day eastbound and 13,700 vehicles/day westbound, which is a total flow without-scheme (DM) of 29,400 vehicles per day. With-Scheme (DS), this A460 flow would reduce to 2,000 eastbound and 1,350 westbound, which is a total two-way flow of 3,350 vehicles/day. This residual flow on the A460 in the With-Scheme (DS) case would be due to movements from/to local origins/destinations; for example, trips from and to Featherstone, Hilton and Shareshill.

4.6.2 The Scheme would therefore reduce the flows on the A460 by approximately 26,000 vehicles per day two-way, or reduce flows to 11% (1 in 9) of what the traffic flows would be in a without-scheme case.

Heavy Goods Vehicles Movements

4.6.3 The flow of heavy goods vehicles on the A460 was observed using various manual classified traffic counts over the period from April 2014 to June 2017. The traffic model was based upon 2015 flow levels and was segmented to represent heavy vehicles as separate user classes. Over the 12-hour (07:00-19:00) weekday time-period the traffic model overestimated the number of HGV on the A460, but the comparison was considered to be an acceptable level of agreement. The 12-hour weekday HGV flows are tabulated below (Table 4.3).

Table 4.3: 2015 Base Year HGV Flows (12-hour) On The A460

	2015 Base Year Traffic Model HGV Flow (12-hours)	Observed HGV Flow (12-hours)	Difference
A460 N of Church Rd EB	1,503	1,405	98
A460 N of Church Rd WB	1,594	1,371	223

4.6.4 The observed flows in the above table included flows associated with the 'M6 Diesel' fuel filling-station business on the A460 to the north of Church Rd. This business was not specifically represented as a loading-point zone within the traffic model because the users of such sites tend to be making pass-by trips on their journey between other origins and destinations.

4.6.5 In the With-Scheme (DS) case, the HGV flows on the A460, as extracted from the traffic forecasting model, are presented in Table 4.4.

Table 4.4: HGV Flow Relief On A460 With-Scheme

	2015 Base Year Traffic Model HGV Flow (12-hours)	2024 With Scheme Traffic Forecast Flows (12-hours)	HGV Flow Relief (12-hours) on A460
A460 N of Church Rd EB	1,503	97	1,406
A460 N of Church Rd WB	1,594	84	1,510
A460 N of Church Rd 2-way	3,097	181	2,916

4.6.6 The observed two-way HGV flow on the A460 to the south of the 'M6 Diesel' fuel filling station business that was observed to turn into / out of this site is 375 HGV two-way per day. As noted above, the traffic model forecasts represent these HGV vehicles in the base year trip matrices, but because the M6 Diesel business is not specifically represented as a loading-point zone, some of these observed HGV movements might not be assigned onto the A460 in the With-Scheme (DS) case.

4.6.7 SCC has expressed concern that post-opening, the flows on the relieved A460 would remain high. In response, Highways England has proposed a 'Monitor and Manage' approach. Should HGV flows exceed an agreed threshold, further work would be undertaken between Highways England and SCC to manage the situation, including the possible implementation of a traffic regulation order (TRO).

Peak Hour Flow Relief

4.6.8 The first transport objective of the Scheme is to relieve traffic congestion on the A460, A449 and A5. Setting an objective in terms of traffic congestion implies that the objective should be measured in terms of the AM and the PM peak hour flows.

4.6.9 The highest flows on the strategic network tend to be in the AM1 peak hour (07:00 to 08:00) and the PM2 peak hour (17:00 to 18:00). Table 4.5 presents the flows extracted from the 2024 forecast year traffic model assignments.

Table 4.5: Peak Hour Flows On Bypassed Roads

		2024, 'Do-Minimimum'		2024, 'Do-Something'		Reduction (DM-DS)	
Road Description	Direction	AM1	PM2	AM1	PM2	AM1	PM2
A460 (at M6 J11)	Eastbound	1,136	1,079	206	126	930	954
	Westbound	891	900	95	71	797	828
A460 (Hilton Lane to New Rd)	Eastbound	1,171	1,158	309	348	862	810
	Westbound	843	919	154	169	689	750
A460 (at M54 J1)	Eastbound	1,079	1,087	335	408	744	679
	Westbound	1,041	1,072	346	280	696	792
A449 (at A5 Gailey)	Northbound	507	871	312	600	195	271
	Southbound	831	475	436	313	395	162
A5 (West of A449 Gailey)	Eastbound	890	851	692	593	198	258
	Westbound	833	902	534	765	299	136

4.6.10 The Scheme would remove between 60% (at M54 J1) and 90% (at M6 J11) of the peak hour flow on the A460.

4.6.11 The Scheme would remove between 15% and 47% of the peak hour flows on the A449/A5 route.

4.6.12 The Scheme would fulfil its transport objective to reduce congestion on the A460, the A449 and the A5.

Figure 4.7: Forecast AADT Flows – M54 West (2039)

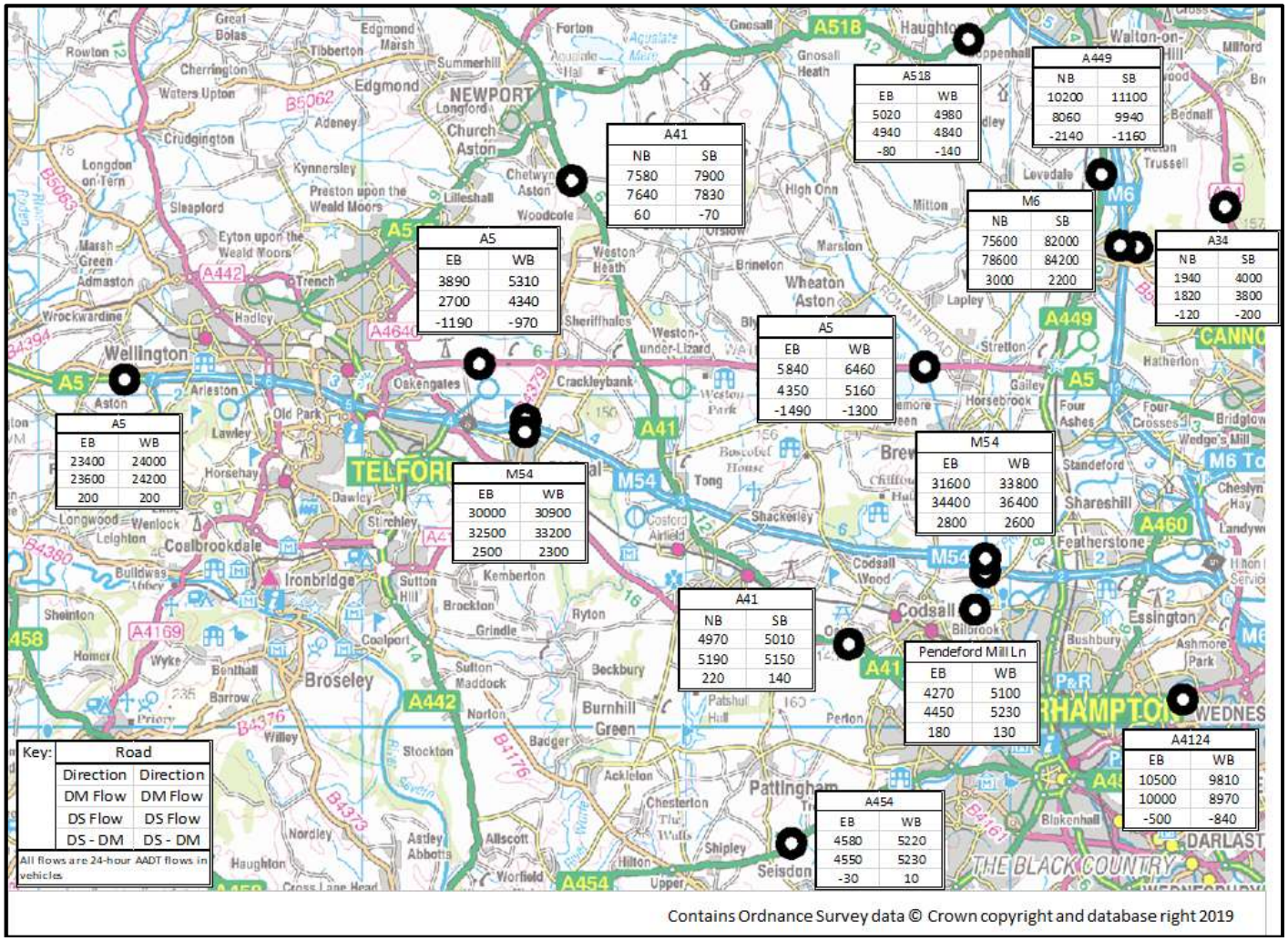


Figure 4.8: Forecast AADT Flows – M6 Toll / A5 East (2039)

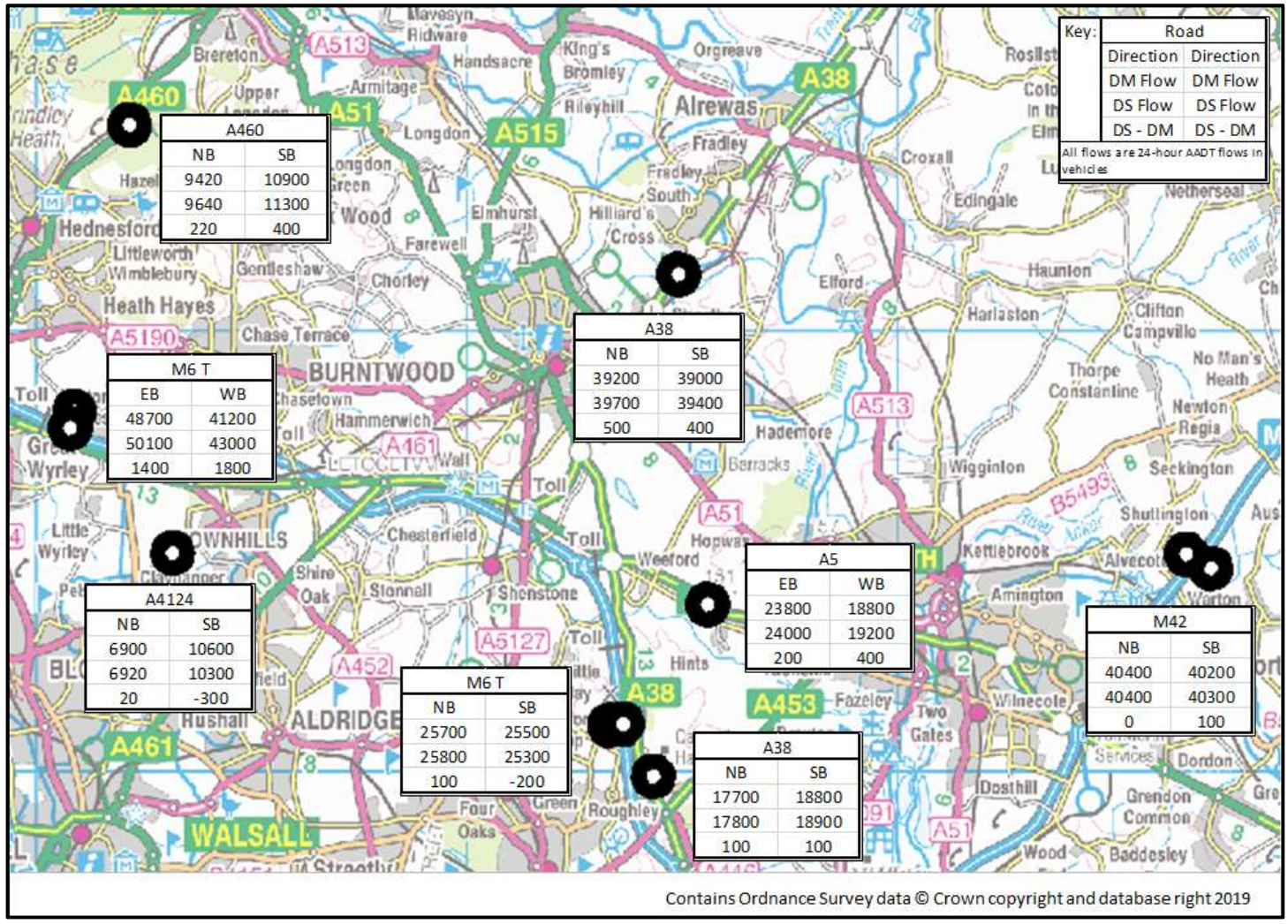


Figure 4.9: Forecast AADT Flows – M42 / M6 South East (2039)

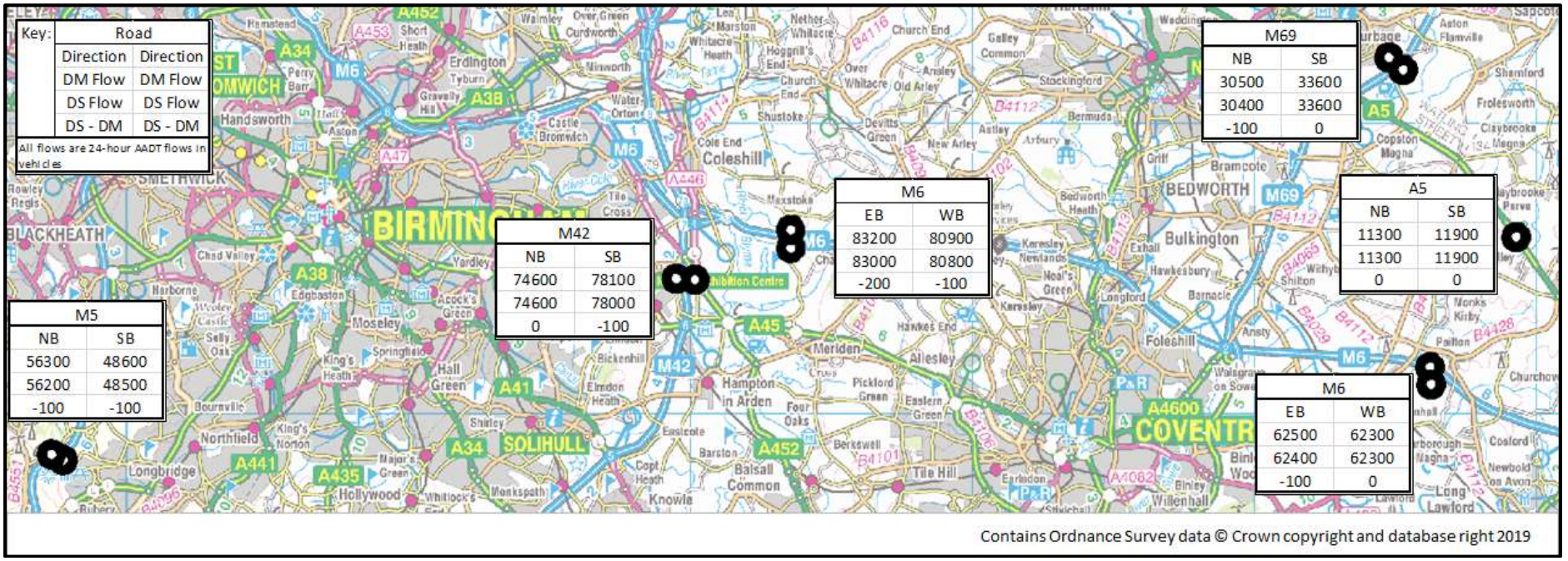


Figure 4.10: Forecast AADT Flows – A5 / M6 Junction 12 (2039)

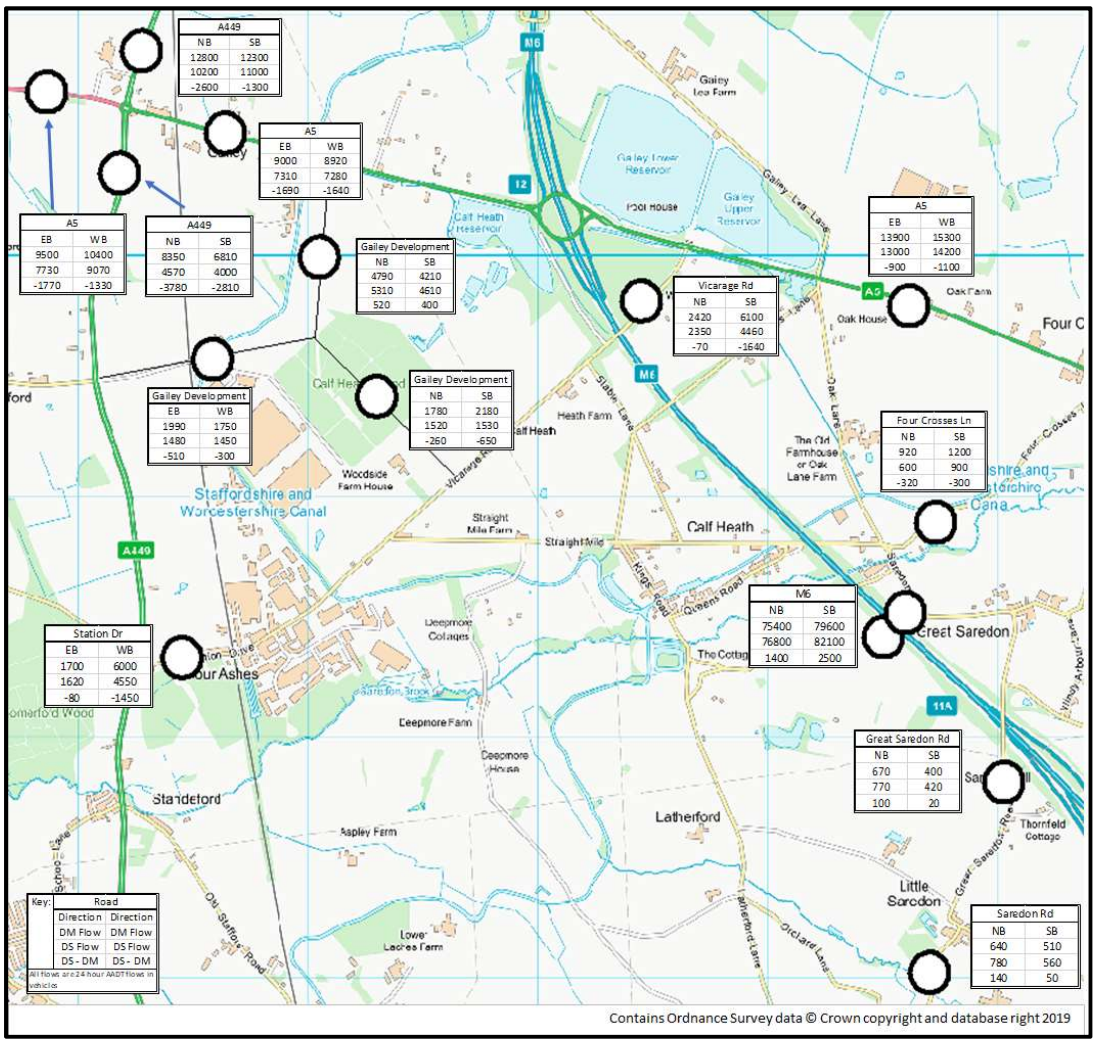


Figure 4.11: Forecast AADT Flows – M6 (Toll) / A462 / A5 (2039)

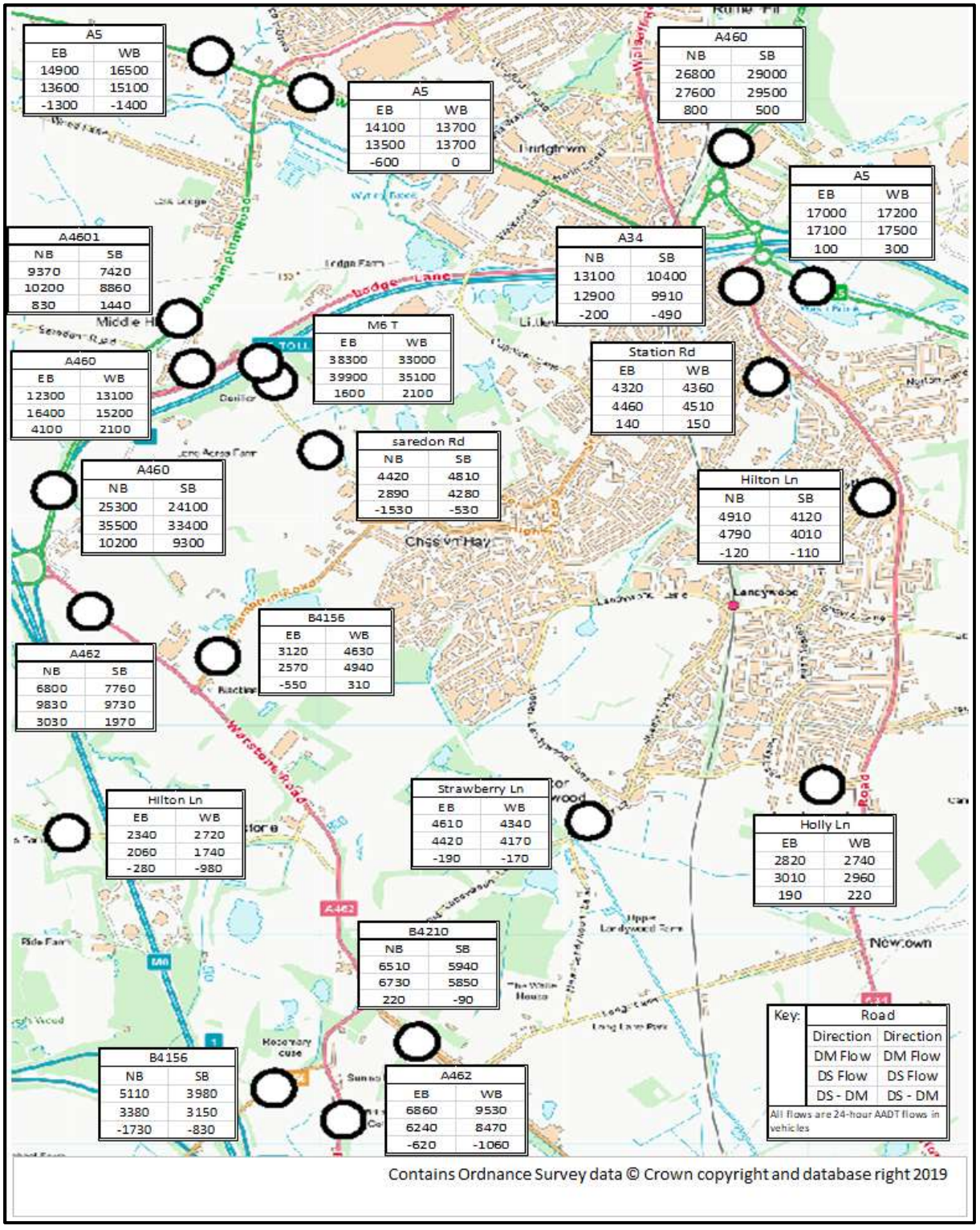
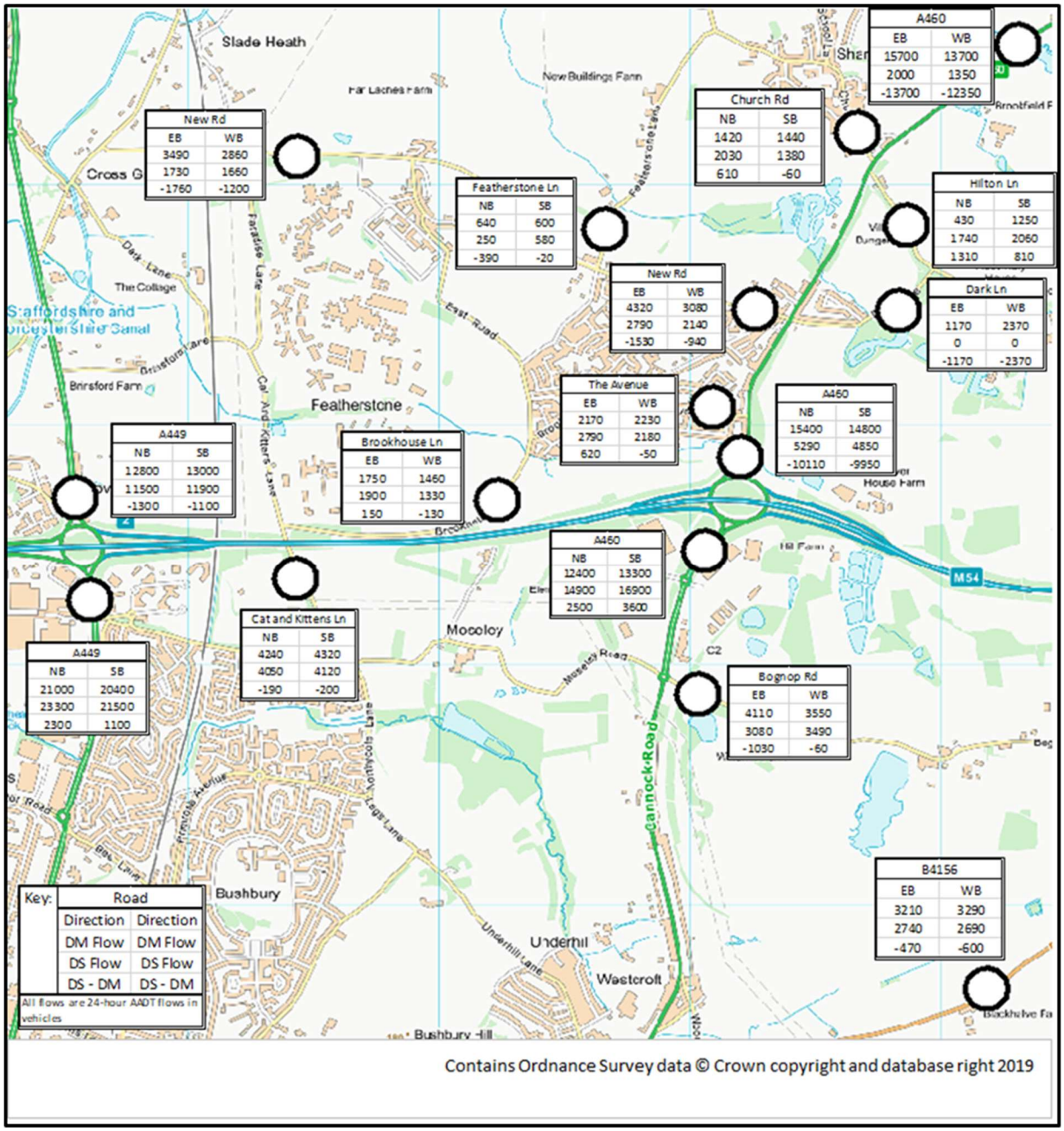


Figure 4.12: Forecast AADT Flows – M54 / A460 (2039)



4.7 Performance Of The Highway Network Without The Scheme

4.7.1 Traffic forecasting and economic assessments were produced in December 2019. The outcome of these assessments demonstrated the need for the Scheme through:

- analysis of journey times and traffic flows in the M6 M54 corridor, which identified that there are delays that the Scheme would address;
- the number of personal injury collisions on the main routes connecting between the M6 and M54, the A449 and A460 through Featherstone, which would be reduced with the Scheme;
- journey time analysis, which demonstrates congestion on the A449 and A460, with lower speeds than during free-flow conditions. Observations of M6 Junction 11 identify queuing at this location in the baseline year
- a high level of heavy goods vehicle traffic on the A460 which would be more appropriately routed onto the Scheme.

4.7.2 Several routes in the study area were assessed to determine the level of journey time delays in the study area. The following was observed:

- journey times on the M6 between Junction 10 and Junction 13 were 31% higher southbound in the AM peak and 29% higher northbound in the PM peak than free-flow conditions;
- there were no delays on average on the M6 Toll Junction T4 to T8 length and M6 Junction 10a to M54 Junction 2 during the peak periods;
- journey times on the A449 / A5 between M54 Junction 2 and M6 Junction 12 were 13% higher southbound in the AM peak and 11% higher northbound in the PM peak compared to off-peak journey times. Compared to free-flow conditions, journey times on this route were 58% higher southbound in the AM peak and were 51% higher northbound in the PM peak;
- journey times on the A460 increased in peak periods, compared to the off peak, by around 51% in the AM peak southbound and 41% in the PM peak northbound. The average travel speeds also reflect this, reducing from 51kph to around 35kph in the AM and PM peak hour directions.

4.7.3 Moving observer journey time surveys were undertaken along the A449, A5, A460 and M54 in September 2013 during the AM and PM peak periods. These surveys identified congestion at the following locations:

- M6 Junction 11 on the A460 eastbound and southbound approaches.
- A460 southbound and northbound approaches to the traffic signals at New Road/Dark Lane.
- A449 and A5 approaches to Gailey roundabout.

4.7.4 The overall level of delay was determined using data from the HATRIS database. This showed that there was an increase in delay on the A449

during the peak hours, as junctions were at capacity. These delays would be expected to increase in future years as traffic flows are forecast to increase.

4.7.5 **Summary:** Previous transport analyses has shown that the existing junctions would not provide sufficient capacity to accommodate future levels of forecast demand.

4.8 Performance Of The Highway Network With-Scheme

4.8.1 **M54 Junction 1:** The proposed layout at M54 Junction 1 includes: removing the existing roundabout and creating three smaller roundabouts (one to the south and two to the north of the M54), an upgrade to the eastbound diverge, an upgrade westbound merge, a connection to the existing A460 (north) via the western of the three new roundabouts. The Scheme would include free-flow links from the M54 to the new link and vice versa.

4.8.2 As such, ARCADY software, which is a tool recommended by the DfT to be used to calculate the capacity of roundabout junctions, was used to confirm the operational analysis of the new roundabouts within this designed layout.

4.8.3 ARCADY analysis used a synthesised, peak one-hour profile and provided outputs in the form of Ratios of Flow to Capacity (RFC) and queue length (Q) measured in passenger car units (PCU). The synthesised hourly traffic-flow profile included a 12.5% mid-peak ‘surge’ to robustly test the performance of the roundabouts.

4.8.4 A worst-arm RFC value of 0.85 during any time segment was used as the target for new roundabout designs because this approach minimises the chance that queuing will occur at a new roundabout on opening, whilst not over-sizing the roundabouts. For existing roundabouts, RFC values above 0.85 are likely to produce queues that increase slowly. Above an RFC value of 1.0, a roundabout is more than likely to be at capacity (with resulting larger increases in queue length).

4.8.5 Table 4.6 summarises the results of the junction operational analyses, using ARCADY software, for three proposed roundabouts.

Table 4.6: Performance Of The M54 Junction 1 Roundabouts, 2039 Design Year

Roundabout	Approach	Entry Capacity (PCU/Min)	Entry Flow (PCU/Min)	Ratio of Flow to Capacity (RFC)	Queue (PCU)	Queue (lane-metres)
Featherstone Interchange West (AM)	A460 North	13.53	7.47	0.55	1	0.0
	New Link Road	0.00	0.00	0.00	0	0.0
	Dumbbell	41.95	17.07	0.41	0	0.0
	M54 West	26.32	10.63	0.40	0	0.0
Featherstone Interchange West (PM)	A460 North	15.18	8.89	0.59	1	0.0
	New Link Road	0.00	0.00	0.00	0	0.0
	Dumbbell	41.95	17.14	0.41	0	0.0
	M54 West	26.25	9.03	0.34	0	0.0
Roundabout	**From**	**Entry Capacity (PCU/Min)**	**Entry Flow (PCU/Min)**	**Ratio of Flow to Capacity (RFC)**	**Queue (PCU)**	**Queue (lane-metres)**
Featherstone Interchange East (AM)	A460 North	29.18	17.96	0.62	1	0.0
	New Link Road	0.00	0.00	0.00	0	0.0
	Dumbbell	40.28	18.15	0.45	0	0.0
	M54 West	39.45	15.33	0.39	0	0.0
Featherstone Interchange East (PM)	A460 North	33.01	18.26	0.55	1	0.0
	New Link Road	0.00	0.00	0.00	0	0.0
	Dumbbell	40.48	18.16	0.45	0	0.0
	M54 West	39.70	10.87	0.27	0	0.0
Roundabout	**From**	**Entry Capacity (PCU/Min)**	**Entry Flow (PCU/Min)**	**Ratio of Flow to Capacity (RFC)**	**Queue (PCU)**	**Queue (lane-metres)**
M54 J1 South Roundabout (AM)	A460 North	41.92	29.45	0.70	2	10.0
	New Link Road	20.86	5.82	0.28	0	0.0
	Dumbbell	38.11	25.63	0.67	1	8.3
	M54 West	0.00	0.00	0.00	0	0.0
M54 J1 South Roundabout (PM)	A460 North	41.92	25.82	0.62	1	0.0
	New Link Road	23.80	7.96	0.33	0	0.0
	Dumbbell	39.91	23.65	0.59	1	0.0
	M54 West	0.00	0.00	0.00	0	0.0

Notes: RFC = Ratio of Flow to Capacity. RFC is a measure of the demand at the junction in relation to its ability to accommodate the demand flow, reported on a worst-arm basis.
Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis in Passenger Car Units;
i.e. 1 car = 1 PCU; 1 HGV = 2 PCU.

4.8.6 The results in Table 4.6 show that the proposed roundabouts would operate below the 0.85 target RFC in the forecast design year in the AM and PM peak hours.

4.8.7 **M6 Junction 11:** The preferred option junction layout was an enlargement of M6 Junction 11 to accommodate greater traffic volumes and the new link road connection.

4.8.8 The preferred option would be fully signal controlled, where all approaches would operate with signals. Preliminary junction modelling using LinSig software was carried out on the junction options.

4.8.9 LinSig software models the capacity and delay for individual approach arms and for the junction as a whole. For the individual arms, the outputs are Degree of Saturation (DoS) and Mean Maximum Queue Length (MMQ). Within LinSig, a total-junction statistic known as the Practical Reserve Capacity (PRC) is also reported, which shows the percentage of "spare" capacity for the junction as a whole.

4.8.10 LinSig works on the basis that a junction is at capacity when an individual junction arm DoS value exceeds 90%. Below this threshold, queues begin to increase slowly as the DoS increases. Above this threshold, queues begin to increase rapidly. As the DoS on any arm increases, the PRC remaining at the junction decreases. LinSig uses a 'flat' traffic demand profile throughout the modelled period as standard, i.e. a constant arrival rate of vehicles will occur on each approach arm over the modelled periods, typically a peak traffic hour such as 08:00 to 09:00 or 17:00 to 18:00.

4.8.11 The assessment was undertaken using the 2039 'Core Growth' 'Demand' forecast turning-movement flows from the Traffic Forecasting Report.

4.8.12 A summary of the preliminary LinSig assessment in shown in Table 4.7.

Table 4.7: Summary Of Junction 11 LinSig Assessment Results (2039)

Time Period	DoS	Max MMQ	Delay (pcu Hr)	PRC (%)
AM2 (08:00 – 09:00)	89.6%	15.3	102.2	0.5%
PM1 (16:00 – 17:00)	86.1%	14.2	67.79	4.5%
PM2 (17:00 – 18:00)	89.7%	11.2	67.98	0.4%

4.8.13 The LINSIG results show that; based on the 2039 Core Forecast turning-movement flows, the preferred junction layout option would operate below the target 90% threshold. Where junctions are above this threshold, queue lengths may begin to increase.

4.9 Impact On Journey Times

4.9.1 The impact of the Scheme on journey times along seven routes (which routes are indicated in Figure 3.6 and Figure 3.7) were extracted from the traffic forecasting models.

4.9.2 The routes for which journey time has been analysed are as follows:

- Route 1 – from A460 (Stafford Street) to M6 Toll Junction T8;
- Route 2 – from A460 (Stafford Street) to M6 Junction 13;
- Route 3 – from M54 Junction 5 to the M54 / M6 Merge;
- Route 4 – from Hollinswood Roundabout to Churchbridge Roundabout;
- Route 5 – from the A462 and A4124 Roundabout to the A4601/A34 Junction;
- Route 6 – from M6 Junction 10 to M6 Junction 12; and
- Route 7 – from M6 Toll Junction T8 to M6 Toll Junction by Weeford.

4.9.3 A typical weekday was represented as nine specifically modelled hours:

Table 4.8: Weekday Hours Represented in The Traffic Model

No.	Abbreviation	Description
1	AM1	AM peak period 1 (07:00-08:00)
2	AM2	AM peak period 2 (08:00-09:00)
3	AM3	AM peak period 3 (09:00-10:00)
4	IP	Inter-peak period (10:00-16:00) average hour
5	PM1	PM peak period 1 (16:00-17:00)
6	PM2	PM peak period 2 (17:00-18:00)
7	PM3	PM peak period 3 (18:00-19:00)
8	EV	Evening period (19:00-22:00) average hour
9	ON	Overnight period (22:00-07:00) average hour

4.9.4 Forecast assignments were produced for each of these time periods to model how the demands on the road network change throughout a typical 24-hour week day. These nine time periods were consistent with the validated 2015 Base Year highway model.

4.9.5 A typical day was modelled for three future years, these are:

- 2024 – first full year the Scheme would be open to traffic
- 2031 – interim year representing a suitable local planning year and required for economic assessment of transport user benefits;
- 2039 – the Scheme's Design Year.

4.9.6 The Design Year was defined as 15 years after the Scheme would be open to traffic. On that basis, the Scheme's design year of 2039 was modelled as a forecasting year.

4.9.7 In each traffic forecast year, the highway network was represented for the 'without-scheme or 'Do-Minimum' case (DM) and also for the with-Scheme or 'Do-Something case (DS).

4.9.8 The total journey time along each route was extracted from each of the traffic modelled periods. The times were extracted for each modelled hour, from the 2015 Base Year Traffic Model, and from each of the traffic forecast years: 2024, 3031 and 2039 for the 'Do-Minimum' and 'Do-Something' forecasts.

4.9.9 The journey times extracted are tabulated in the following nine tables, one for each modelled hour (Table 4.9 to Table 4.17). The times are provided in minutes and seconds. For the future years, the journey time changes due to the Scheme are calculated (Diff); a negative sign indicates a time saving with the Scheme.

Table 4.9: Journey Times - AM1 (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	18:49	19:37	17:08	-02:29	20:28	17:41	-02:47	20:56	18:43	-02:13
1 SB	19:05	20:08	20:17	00:08	20:58	20:42	-00:16	22:04	21:24	-00:40
2 NB	22:47	23:13	23:07	-00:06	23:38	23:25	-00:13	24:09	23:51	-00:18
2 SB	29:36	30:25	29:45	-00:39	30:48	30:18	-00:30	31:35	31:03	-00:32
3 EB	15:50	15:53	16:12	00:19	16:03	16:24	00:20	16:14	16:43	00:28
3 WB	16:25	16:28	16:45	00:17	16:33	16:51	00:18	16:42	17:05	00:23
4 EB	27:46	29:24	27:49	-01:36	30:37	28:22	-02:15	31:39	29:52	-01:47
4 WB	28:11	29:22	27:58	-01:24	29:18	28:10	-01:09	29:41	28:42	-00:58
5 NB	19:59	21:58	20:57	-01:01	22:43	21:32	-01:11	23:50	22:26	-01:23
5 SB	19:32	20:26	19:48	-00:38	21:03	20:37	-00:25	22:14	21:19	-00:55
6 NB	12:45	12:34	12:35	00:01	12:41	12:44	00:03	12:48	12:53	00:05
6 SB	13:03	12:42	12:45	00:03	12:50	12:55	00:05	12:59	13:03	00:04
7 EB	09:39	09:58	10:00	00:02	10:13	10:17	00:03	10:50	10:57	00:07
7 WB	09:27	09:32	09:34	00:01	09:36	09:38	00:02	09:45	09:47	00:02

Table 4.10: Journey Times - AM2 (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	17:44	18:18	16:21	-01:57	18:51	16:38	-02:13	19:35	17:13	-02:22
1 SB	18:53	19:38	20:26	00:48	20:11	20:54	00:44	21:09	21:39	00:29
2 NB	23:08	23:29	23:16	-00:13	24:09	23:42	-00:27	24:55	24:08	-00:47
2 SB	29:15	30:00	29:56	-00:04	30:30	30:19	-00:11	31:15	31:00	-00:14
3 EB	15:58	16:07	16:23	00:16	16:14	16:34	00:20	16:28	16:52	00:25
3 WB	16:24	16:33	16:45	00:12	16:40	16:55	00:15	16:53	17:16	00:23
4 EB	26:40	28:11	26:53	-01:18	29:01	27:23	-01:39	30:04	28:04	-02:01
4 WB	28:20	29:05	28:14	-00:52	29:27	28:28	-00:59	29:51	28:43	-01:09
5 NB	17:49	18:44	18:22	-00:22	19:22	19:01	-00:20	20:10	19:54	-00:16
5 SB	16:28	17:11	16:39	-00:32	18:00	17:12	-00:48	18:52	18:00	-00:52
6 NB	12:19	12:12	12:13	00:01	12:19	12:20	00:01	12:28	12:30	00:02
6 SB	12:48	12:32	12:32	00:01	12:41	12:43	00:01	12:49	12:52	00:03
7 EB	09:34	09:50	09:52	00:02	10:06	10:10	00:03	10:35	10:36	00:01
7 WB	09:27	09:32	09:32	00:01	09:38	09:40	00:02	09:46	09:48	00:03

Table 4.11: Journey Times – AM3 (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	18:10	18:42	16:26	-02:16	19:17	16:36	-02:41	19:47	16:54	-02:53
1 SB	19:34	20:11	20:16	00:05	20:40	20:39	-00:01	21:15	21:08	-00:07
2 NB	23:03	23:18	23:18	00:00	24:10	23:49	-00:21	25:01	24:22	-00:39
2 SB	28:16	28:53	28:44	-00:09	29:15	29:07	-00:09	29:54	29:35	-00:19
3 EB	15:36	15:39	15:51	00:12	15:44	15:58	00:14	15:52	16:09	00:17
3 WB	16:10	16:16	16:29	00:13	16:24	16:38	00:15	16:34	16:51	00:17
4 EB	25:32	26:28	25:29	-00:59	27:21	25:50	-01:32	28:23	26:34	-01:49
4 WB	27:38	28:16	27:15	-01:01	28:30	27:24	-01:06	28:57	27:48	-01:09
5 NB	17:41	17:34	17:28	-00:06	19:34	18:47	-00:47	20:10	19:19	-00:51
5 SB	15:59	16:49	16:01	-00:48	17:35	16:34	-01:01	18:27	17:09	-01:18
6 NB	12:33	12:22	12:23	00:00	12:29	12:29	-00:00	12:40	12:42	00:02
6 SB	12:55	12:38	12:40	00:02	12:48	12:51	00:03	12:54	12:58	00:04
7 EB	09:30	09:41	09:42	00:02	09:52	09:55	00:02	10:13	10:18	00:05
7 WB	09:27	09:30	09:31	00:01	09:36	09:38	00:02	09:42	09:45	00:02

Table 4.12: Journey Times - IP (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	17:43	18:15	16:29	-01:45	18:39	16:43	-01:56	19:13	17:12	-02:02
1 SB	18:02	18:47	18:39	-00:08	19:14	18:54	-00:20	20:02	19:25	-00:37
2 NB	21:57	22:24	22:26	00:02	22:56	22:54	-00:02	23:32	23:26	-00:05
2 SB	24:36	25:24	25:13	-00:11	26:07	25:47	-00:21	26:48	26:25	-00:23
3 EB	15:31	15:36	15:48	00:12	15:40	15:54	00:14	15:49	16:07	00:17
3 WB	16:09	16:16	16:27	00:12	16:21	16:34	00:13	16:30	16:45	00:14
4 EB	24:55	25:47	24:53	-00:54	26:10	25:03	-01:07	27:00	25:32	-01:28
4 WB	26:27	27:13	26:22	-00:51	27:23	26:31	-00:52	27:54	26:51	-01:02
5 NB	17:30	18:02	17:51	-00:11	18:32	18:16	-00:15	19:20	18:54	-00:26
5 SB	15:03	15:50	15:18	-00:31	16:21	15:40	-00:41	17:19	16:08	-01:12
6 NB	12:38	12:30	12:31	00:01	12:39	12:41	00:02	12:46	12:50	00:04
6 SB	12:56	12:39	12:42	00:03	12:49	12:53	00:04	12:59	13:05	00:06
7 EB	09:25	09:33	09:34	00:01	09:41	09:44	00:03	10:00	10:03	00:03
7 WB	09:26	09:31	09:32	00:01	09:36	09:38	00:02	09:43	09:45	00:02

Table 4.13: Journey Times - PM1 (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	20:03	21:43	19:11	-02:32	23:04	20:07	-02:56	24:20	21:34	-02:46
1 SB	19:51	20:41	20:59	00:18	21:24	21:16	-00:08	22:31	21:56	-00:35
2 NB	25:34	26:25	26:39	00:14	27:40	27:24	-00:16	29:16	28:47	-00:30
2 SB	29:03	30:05	29:48	-00:16	30:43	30:27	-00:15	31:56	31:58	00:01
3 EB	15:40	15:49	16:11	00:22	15:57	16:23	00:26	16:06	16:45	00:38
3 WB	16:34	16:46	16:59	00:13	16:57	17:13	00:16	17:07	17:27	00:20
4 EB	27:21	29:08	27:17	-01:51	30:18	27:53	-02:25	31:29	29:14	-02:16
4 WB	27:30	28:25	27:29	-00:56	28:33	27:38	-00:55	29:25	28:26	-00:59
5 NB	20:26	21:44	20:44	-01:00	22:43	21:34	-01:08	23:24	22:30	-00:54
5 SB	16:18	17:01	16:41	-00:20	17:37	17:12	-00:25	18:31	17:57	-00:33
6 NB	14:00	13:31	13:40	00:09	13:45	15:42	01:57	14:18	16:51	02:32
6 SB	13:37	13:41	13:52	00:10	13:59	14:09	00:10	14:12	14:11	-00:01
7 EB	09:32	09:44	09:45	00:01	10:01	10:03	00:02	10:26	10:28	00:02
7 WB	09:42	10:00	10:02	00:02	10:15	10:18	00:03	10:27	10:38	00:11

Table 4.14: Journey Times – PM2 (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	19:23	20:38	18:37	-02:02	21:27	19:14	-02:12	22:41	20:24	-02:17
1 SB	19:45	20:27	20:49	00:22	21:06	21:35	00:28	22:12	22:05	-00:07
2 NB	26:51	28:03	27:11	-00:53	28:28	27:49	-00:40	29:59	29:12	-00:48
2 SB	28:43	29:31	29:17	-00:14	29:59	29:41	-00:19	30:42	30:28	-00:14
3 EB	15:35	15:44	16:00	00:16	15:51	16:09	00:18	15:59	16:21	00:22
3 WB	16:33	16:43	16:59	00:16	16:53	17:12	00:19	17:03	17:29	00:26
4 EB	28:07	29:58	28:12	-01:46	30:59	29:02	-01:56	32:00	30:12	-01:48
4 WB	27:47	28:51	27:50	-01:01	29:00	28:12	-00:48	29:53	29:16	-00:36
5 NB	20:42	21:36	20:42	-00:54	22:23	21:22	-01:01	23:20	22:18	-01:02
5 SB	16:13	16:53	16:41	-00:13	17:24	17:11	-00:13	18:12	17:53	-00:19
6 NB	14:17	13:41	14:00	00:19	13:58	16:12	02:14	16:27	16:53	00:26
6 SB	13:10	13:15	13:24	00:09	13:33	13:43	00:10	13:54	14:02	00:08
7 EB	09:27	09:37	09:38	00:01	09:47	09:49	00:02	10:03	10:06	00:03
7 WB	09:40	09:56	09:58	00:02	10:08	10:14	00:05	10:22	10:30	00:08

Table 4.15: Journey Times – PM3 (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	16:54	17:21	16:26	-00:55	17:36	16:39	-00:57	18:04	17:02	-01:01
1 SB	17:08	17:41	18:14	00:33	18:00	18:28	00:28	18:31	18:53	00:22
2 NB	22:48	23:11	22:59	-00:12	23:24	23:10	-00:15	23:53	23:36	-00:17
2 SB	24:46	25:21	25:21	-00:00	25:47	25:34	-00:13	26:41	26:14	-00:27
3 EB	15:16	15:21	15:29	00:08	15:25	15:34	00:09	15:31	15:41	00:11
3 WB	16:00	16:09	16:16	00:08	16:16	16:25	00:09	16:25	16:35	00:11
4 EB	24:47	25:29	24:44	-00:45	25:36	24:51	-00:45	26:02	25:13	-00:49
4 WB	26:10	26:45	26:20	-00:25	26:53	26:25	-00:28	27:17	26:49	-00:28
5 NB	17:00	17:10	17:33	00:23	17:44	17:27	-00:17	18:04	17:48	-00:16
5 SB	14:29	14:52	14:56	00:04	15:10	15:16	00:07	15:39	15:43	00:04
6 NB	12:53	12:47	12:47	00:00	13:03	13:04	00:01	13:19	13:22	00:03
6 SB	12:40	12:39	12:45	00:06	12:56	13:05	00:09	13:17	13:27	00:10
7 EB	09:22	09:25	09:25	00:00	09:31	09:31	00:00	09:40	09:41	00:01
7 WB	09:29	09:37	09:37	00:00	09:45	09:46	00:01	09:56	09:57	00:01

Table 4.16: Journey Times – EV (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	15:22	15:34	15:22	-00:12	15:43	15:25	-00:17	15:55	15:31	-00:24
1 SB	15:33	15:47	15:51	00:04	15:54	15:54	00:01	16:08	16:02	-00:05
2 NB	19:58	20:07	20:06	-00:02	20:22	20:21	-00:01	20:35	20:29	-00:05
2 SB	20:31	20:38	20:52	00:14	20:35	20:51	00:16	20:46	21:00	00:14
3 EB	15:10	15:12	15:16	00:04	15:14	15:18	00:04	15:17	15:22	00:05
3 WB	15:47	15:51	15:56	00:04	15:56	16:01	00:05	16:02	16:08	00:06
4 EB	23:13	23:30	23:24	-00:06	23:31	23:21	-00:10	23:43	23:28	-00:15
4 WB	24:43	25:02	24:54	-00:08	24:58	24:48	-00:10	25:09	24:57	-00:12
5 NB	14:03	14:13	14:22	00:09	14:21	14:28	00:08	14:32	14:37	00:05
5 SB	12:54	13:06	13:10	00:04	13:16	13:18	00:02	13:31	13:31	00:00
6 NB	11:55	11:55	11:56	00:00	12:01	12:01	00:00	12:08	12:09	00:00
6 SB	11:58	11:56	11:56	00:00	11:59	11:59	00:00	12:05	12:05	00:00
7 EB	09:20	09:20	09:20	00:00	09:21	09:21	00:00	09:23	09:24	00:00
7 WB	09:22	09:23	09:23	00:00	09:23	09:23	00:00	09:25	09:26	00:00

Table 4.17: Journey Times – ON (minutes : seconds)

JT Route	2015	2024			2031			2039		
	Base Year	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)
1 NB	14:35	14:40	14:51	00:11	14:44	14:52	00:08	14:48	14:52	00:04
1 SB	14:34	14:39	15:08	00:29	14:40	15:09	00:29	14:44	15:09	00:25
2 NB	19:16	19:19	19:21	00:02	19:27	19:30	00:02	19:30	19:32	00:02
2 SB	19:56	19:57	20:11	00:14	19:52	20:06	00:14	19:54	20:09	00:15
3 EB	15:07	15:08	15:11	00:03	15:08	15:11	00:03	15:09	15:12	00:03
3 WB	15:39	15:40	15:42	00:02	15:40	15:42	00:02	15:41	15:43	00:02
4 EB	22:46	22:55	22:54	-00:01	22:55	22:52	-00:02	22:56	22:54	-00:02
4 WB	24:12	24:24	24:23	-00:01	24:21	24:20	-00:01	24:22	24:21	-00:01
5 NB	12:56	13:00	13:17	00:17	13:02	13:18	00:16	13:05	13:19	00:14
5 SB	11:57	12:00	12:09	00:08	12:03	12:11	00:08	12:07	12:15	00:08
6 NB	11:38	11:34	11:35	00:00	11:35	11:35	00:00	11:37	11:37	00:00
6 SB	11:46	11:44	11:44	-00:00	11:46	11:46	-00:00	11:48	11:48	-00:00
7 EB	09:20	09:20	09:20	00:00	09:20	09:20	00:00	09:20	09:20	00:00
7 WB	09:22	09:22	09:22	-00:00	09:22	09:22	-00:00	09:22	09:22	-00:00

4.9.10 The most significant journey time changes would occur in all three of the AM Peak hours, in the PM1 and PM2 peak hours, and in the inter-peak (IP) average hour.

4.9.11 The routes that would experience the largest reductions in journey times for the 'Do-Something' case were: Route 1 (NB), Route 4 (EB and WB) and Route 5 (NB).

4.9.12 Routes 1 and 5 were orientated north-south and traversed close to the M54-M6 Link Road and so the reductions in journey times on these routes are logical.

4.9.13 Route 4 was orientated east-west but the implementation of the Scheme link would encourage traffic to re-route south to the M54, hence the reduction in journey time of the relieved route.

4.9.14 Routes 2, 3, 6 and 7 would have negligible changes to journey times throughout all time periods and forecast years.

4.10 East-West Journey Time Savings

4.10.1 It should be noted that the above journey time routes followed fixed assignment (route choice) paths. Therefore, Journey Time Route 1 followed the existing A460 road through Featherstone, Hilton and Shareshill in both the DM and the DS cases.

4.10.2 This explains why the time savings on Journey Time Route 1 (particularly southbound) are not particularly large. Indeed, there are potential advantages in keeping the journey times along Route 1 high in the 'With-Scheme' (DS) case because this would encourage the maximum volume of traffic to transfer onto the new Scheme link and provide the maximum traffic flow relief to the communities of Featherstone, Hilton and Shareshill.

4.10.3 The following tables show the journey time savings between a fixed origin/destination pair. With this method of analysis, road-users would have a free-choice of route within the traffic model and therefore trips would route along the existing A460 in the 'Without-Scheme' DM case and along the new Scheme link in the DS case.

4.10.4 The selected origin/destination pair used for the analysis was:

- To the West: the i54 development site at M54 Junction 2.
- To the East: the community at Catshill in Brownhills, located on the A452 to the south of the A5(T) and M6 Toll Road, and at the west end of the A4124.

4.10.5 The typical east-west time savings, which were extracted from the traffic forecasting assignments, are presented in Table 4.18.

Table 4.18: East-West Time Savings Due To The Scheme

Modelled Hour	Direction	Trip Purpose	2015	2024 DM	2024 DS	2024 diff (DM-DS)	2031 DM	2031 DS	2031 diff (DM-DS)	2039 DM	2039 DS	2039 diff (DM-DS)
AM1	Eastbound	Car Employers Business	24:13	24:49	19:47	05:02	25:58	20:27	05:31	27:05	21:35	05:30
AM1	Eastbound	Car Other (Med Income)	28:15	29:34	24:52	04:42	30:47	25:30	05:17	31:35	26:25	05:11
AM1	Westbound	Car Employers Business	26:09	27:13	23:00	04:12	28:04	23:38	04:26	29:15	24:29	04:46
AM1	Westbound	Car Other (Med Income)	26:14	27:13	23:00	04:12	28:04	23:38	04:26	29:15	24:29	04:46
AM2	Eastbound	Car Employers Business	23:25	23:20	18:54	04:25	24:03	19:24	04:40	24:49	20:03	04:46
AM2	Eastbound	Car Other (Med Income)	26:16	27:18	23:05	04:13	28:03	23:40	04:23	28:48	24:17	04:31
AM2	Westbound	Car Employers Business	26:06	26:28	22:34	03:55	27:02	23:03	03:59	28:06	23:48	04:19
AM2	Westbound	Car Other (Med Income)	26:07	26:28	22:34	03:55	27:02	23:03	03:59	28:06	23:48	04:19
AM3	Eastbound	Car Employers Business	26:11	23:28	18:40	04:47	24:15	18:58	05:17	24:58	19:29	05:29
AM3	Eastbound	Car Other (Med Income)	26:16	27:07	22:39	04:28	27:38	22:54	04:44	28:08	23:13	04:55
AM3	Westbound	Car Employers Business	27:31	28:10	23:36	04:34	28:42	23:59	04:43	29:23	24:32	04:52
AM3	Westbound	Car Other (Med Income)	27:31	28:10	23:36	04:34	28:42	23:59	04:43	29:23	24:32	04:52
IP	Eastbound	Car Employers Business	23:08	22:53	18:48	04:04	23:21	19:07	04:15	24:05	19:38	04:26
IP	Eastbound	Car Other (Med Income)	25:58	26:45	23:07	03:38	27:03	23:32	03:32	27:24	23:41	03:43
IP	Westbound	Car Employers Business	26:52	27:55	24:06	03:50	28:30	24:26	04:04	29:35	22:10	07:25
IP	Westbound	Car Other (Med Income)	26:52	27:56	24:06	03:50	28:30	24:27	04:03	29:58	25:21	04:37
PM1	Eastbound	Car Employers Business	29:12	30:12	23:45	06:27	31:56	24:48	07:08	33:07	25:48	07:19
PM1	Eastbound	Car Other (Med Income)	34:28	35:11	29:11	06:00	36:18	29:47	06:31	37:01	30:30	06:31
PM1	Westbound	Car Employers Business	28:48	30:07	26:11	03:56	31:09	26:56	04:13	32:31	27:51	04:40
PM1	Westbound	Car Other (Med Income)	29:01	30:07	26:11	03:56	31:09	26:56	04:13	32:31	27:51	04:40
PM2	Eastbound	Car Employers Business	27:39	28:27	23:40	04:47	29:45	24:44	05:01	30:58	25:37	05:21
PM2	Eastbound	Car Other (Med Income)	31:18	32:34	28:20	04:14	33:47	29:20	04:27	34:45	29:52	04:54
PM2	Westbound	Car Employers Business	28:30	29:54	25:26	04:27	30:54	26:11	04:43	32:36	27:15	05:21
PM2	Westbound	Car Other (Med Income)	28:37	29:54	25:26	04:27	30:54	26:11	04:43	32:36	27:15	05:21
PM3	Eastbound	Car Employers Business	24:05	24:29	21:29	02:59	24:49	18:36	06:14	22:30	18:52	03:38
PM3	Eastbound	Car Other (Med Income)	24:05	24:29	21:29	02:59	24:50	21:43	03:07	25:06	21:52	03:15
PM3	Westbound	Car Employers Business	24:22	24:52	21:49	03:03	25:08	21:55	03:12	25:39	22:14	03:25
PM3	Westbound	Car Other (Med Income)	24:22	24:52	21:49	03:03	25:08	21:55	03:12	25:39	22:14	03:25
EV	Eastbound	Car Employers Business	21:57	22:14	19:54	02:21	22:27	20:00	02:27	22:40	17:49	04:51
EV	Eastbound	Car Other (Med Income)	21:57	22:14	19:54	02:21	22:27	20:00	02:27	22:40	20:07	02:33
EV	Westbound	Car Employers Business	21:44	22:04	19:40	02:24	22:08	19:41	02:27	22:24	19:51	02:33
EV	Westbound	Car Other (Med Income)	21:44	22:04	19:40	02:24	22:08	19:41	02:27	22:24	19:51	02:33
ON	Eastbound	Car Employers Business	20:34	20:41	18:47	01:54	20:44	18:48	01:56	20:49	18:48	02:01
ON	Eastbound	Car Other (Med Income)	20:34	20:41	18:47	01:54	20:44	18:48	01:56	20:49	18:48	02:01
ON	Westbound	Car Employers Business	20:12	20:20	18:26	01:55	20:24	18:27	01:57	20:27	18:27	02:00
ON	Westbound	Car Other (Med Income)	20:12	20:20	18:26	01:55	20:24	18:27	01:57	20:27	18:27	02:00

4.10.6 The travel times of two alternative trip purpose were investigated and have been reported in Table 4.18. These trip purposes were “Car Employers Business” and “Car Other (Medium Income)”. The journey times were different for the two trip purposes because the road-users on these different trip purposes would tend to make different route choices. For example, travellers on “Employers Business” are more likely to pay the M6 Toll charges than travellers on “Other” (e.g. shopping, visiting friends) types of journeys.

4.10.7 It was noted that both types of traveller would use the existing A460 through Hilton and Shareshill in the DM ‘without-scheme’ case and both would transfer to use the new Scheme’s link road in the DS ‘With-Scheme’ case.

4.10.8 The overall east-west time savings would vary by time-of-day and by direction-of-travel, but would cover a range of values from 7 minutes, 19 seconds in the PM1 peak (eastbound) to a 1 minute, 55 seconds time saving at night (ON).

4.11 Summary

4.11.1 Forecast traffic model assignments, both with and without the scheme's junction improvements, have been used to identify the performance of the network. The proposed scheme-junctions would operate satisfactorily, and journey times would improve as a result of the Scheme.

4.11.2 The east-west travel time savings as a result of opening the Scheme would be up to approximately 7 minutes in the peak time and approximately 2 minutes during the quieter night-time periods.

5 Road Safety

5.1 Data Sources

5.1.1 The Guidance on Transport Assessment states that a TA should "establish the current personal injury accident records for the most recent three-year period, or five years if this is considered to be more appropriate."

5.1.2 The data obtained relates to those collisions that resulted in a personal injury and which were reported to the police. This data (known as STATS19 statistics) is generally recognised to be the most complete record of road collisions occurring on the local highway network. For the avoidance of doubt, and as is normal practice, they do not include statistics from collisions resulting in "damage-only" to vehicles, or which were not reported to the police.

5.1.3 Each collision resulting in a personal injury is classed as either 'Slight', 'Serious' or 'Fatal' by the police depending on the most serious injury resulting from the collision (i.e. a collision resulting in two 'Slight' injuries and one 'Serious' injury would be classified as a 'Serious' collision). Definitions, given in Road Accidents Great Britain (published by the DfT), are as follows:

- Slight: An injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.
- Serious: An injury for which a person is detained in hospital as an "in-patient", or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident. An injured casualty is recorded as seriously or slightly injured by the police on the basis of information available within a short time of the accident. This generally will not reflect the results of a medical examination but may be influenced according to whether the casualty is hospitalised or not. Hospitalisation procedures will vary regionally.
- Fatal: Human casualties who sustained injuries that caused death less than 30 days after the accident. Confirmed suicides are excluded.

5.1.4 Observed road collisions, in the form of STATS19 data, was procured from Telford & Wrekin, Staffordshire, Shropshire, Wolverhampton and Walsall Local Authorities and Highways England for the period January 2016 to December 2018.

5.2 Accident Model

5.2.1 The STATS19 data combined with AADT daily flows for the Baseline model, 'Do-Minimum' and 'Do-Something' forecasts were used to calculate how collisions might change with the introduction of the Scheme.

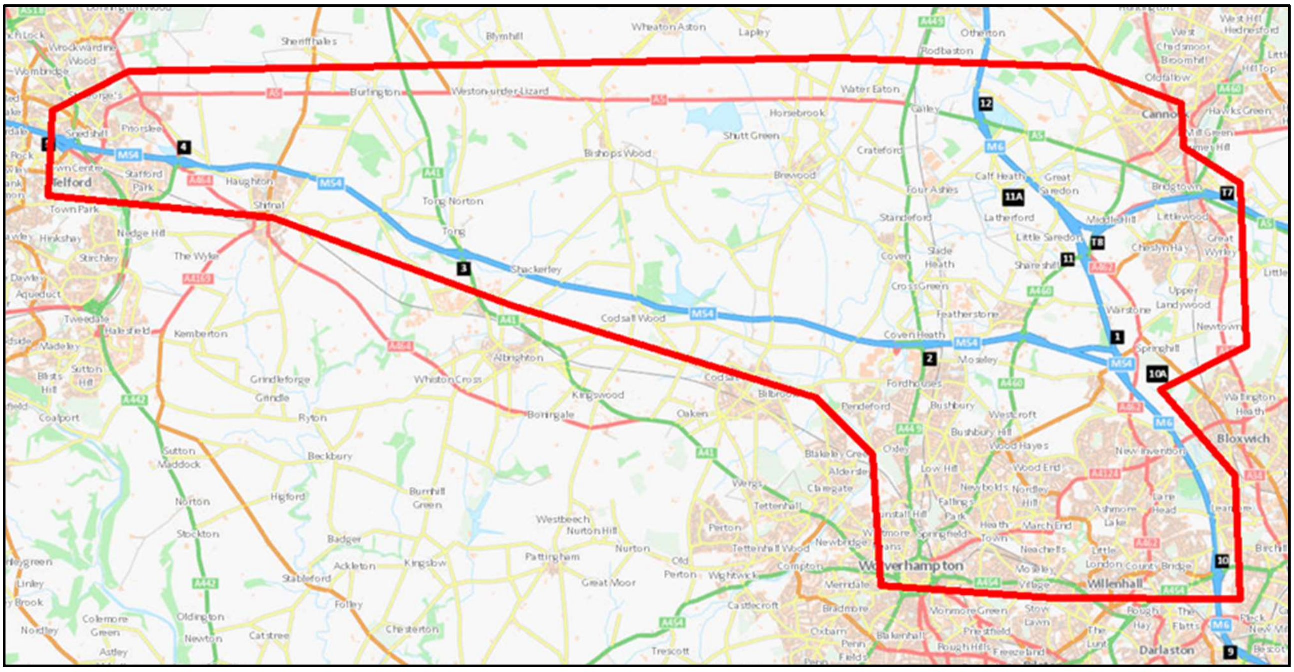
5.2.2 A road designed to modern highway standards with few side roads would be expected to experience fewer collisions than a historic road with at-grade priority junctions serving adjacent development. The highway standard therefore defines

the accident rates to be applied in the Accident Model to the links and to the junctions.

5.2.3 The daily flow forecasts were required because collision numbers are a function of the level of traffic using the highway network, not just the standard of roads and junctions through which this traffic seeks to route.

5.2.4 The accident model covered the area appraised for the road safety assessment (Figure 5.1) and was defined by the consideration of all the links and junctions where traffic flows could materially change between the DM and DS cases.

Figure 5.1: COBALT Accident Appraisal Network



5.2.5 The accident model was constructed using Highways England's software COBALT. The COBALT model uses a link and junction structure that is similar to the Traffic Model.

5.2.6 For existing roads, where local STATS19 accident data was not available (which is distinct from roads with no recorded accidents), and for the new links that would appear in future years only, default national accident rates were applied based upon the classification of the road and the junctions' type.

5.3 Accident Savings

5.3.1 Personal injury collision (PIC) numbers were calculated for every link in the COBALT model network for every year in the 60-year appraisal period (2024 to 2083). The PIC numbers were also calculated for specific COBALT nodes that represented key junctions in the COBALT accident model.

5.3.2 The computed PIC numbers were then summed to give the total PIC across the whole highway network within Accident Model's extents in the 'Do-Minimum' (without-scheme) and 'Do-Something' (With-Scheme) cases.

5.3.3 Severity split factors were then applied to the PIC numbers to calculate the total casualty numbers for each severity type.

5.3.4 Table 5.1 summarises the total number of personal injury collisions (PIC) that would be saved by the Scheme, and the breakdown of casualties by severity.

Table 5.1: Number Of PIC And Casualties Saved – Core Scenario

Numbers of PIC	'Do-Minimum' (without-scheme)	'Do-Something' (With-Scheme)	Saving
PIC	8,691	8,361	330
Numbers of Casualties			
Fatal Casualty	128	118	10
Serious Casualty	1,122	1,039	83
Slight Casualty	11,265	10,893	372

5.3.5 There would be benefits for all types of casualty and, overall, there are expected to be 330 fewer personal injury collisions in the Core forecast when comparing the 'Do-Something' with the 'Do-Minimum' case.

5.3.6 Of the 465 casualties saved by the Scheme, there would be 93 (20%) killed and serious injury (KSI) casualties saved.

5.3.7 The Scheme would accommodate the traffic flows on a better standard of road and would reduce collisions on the existing highway network.

6 Sustainable Transport: Walking And Cycling

6.1 Overview

6.1.1 The purpose of this section is to describe how existing walking and cycling routes have been incorporated into the Scheme and where changes to walking and cycling routes would be made.

6.2 Pedestrian And Cycle Routes

6.2.1 This section looks at the Scheme impacts on walking and cycling and is taken from the Distributional Impact Assessment. The Scheme represents a physical barrier to movement because pedestrians will be diverted to use a grade separated crossing of the motorway.

6.2.2 The impacts are examined at seven locations which are shown in the following figures, where Red indicates the current footpath or bridleway route that will be severed by the scheme, and Green indicates a diversionary route after works are complete.

6.2.3 **Location 1: Featherstone – Hilton Cross:** There is an existing footway that routes north-south and links between Featherstone and the Hilton Cross employment site. The footway crosses two slip roads and passes under the M54 motorway through the west bridge of the M54 Junction 1 roundabout.

Figure 6.1: Location 1: M54, Junction 1: Footpaths

6.2.4 The Scheme will have a negative impact on pedestrian movement between Featherstone and Hilton Cross. There would be a minimum 220 metre diversion for pedestrians which would involve walking around three un-signalised roundabouts and crossing two slip roads.

6.2.5 In terms of the journey length increase, this would only warrant a 'Minor impact' classification under LA 112 'Population and human health' guidance manual (table 3.12).

6.2.6 The same document states any "rights of way for walkers, cyclists and horse-riders (WCH) crossing roads at grade with >16,000 vehicles per day" should be considered to have 'very high' impact on WCH. In the 2039 design year, the slip roads indicated in Figure 6.1 would each carry a one-way AADT flow of approximately 25,000 vehicles per day (very high impact) in the no-scheme case and approximately 5,000 vehicles per day (medium impact) in the with-scheme case.

6.2.7 **Location 2: Dark Lane:** There is a short length of Dark Lane that links between the residential area of Hilton at Park Road and Hilton Lane. This length of route is used by walkers, cyclists and horse-riders.

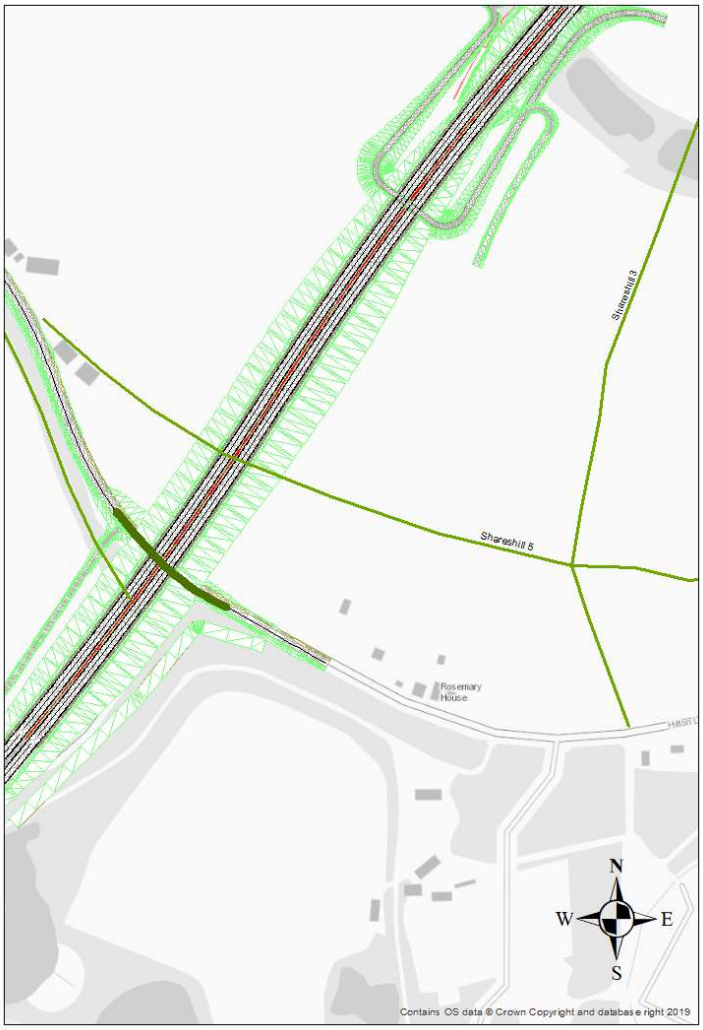
Figure 6.2 Location 2: Dark Lane Path Diversion.

6.2.8 A length of Dark Lane would be closed with the Scheme passing over the top of this section. The current pedestrian, cycle and equestrian route would be lost as a result of this, to compensate for this closure a new length of bridleway will be provided to link Hilton Lane up to the new end of Dark Lane. The new route will be 60m longer than the existing route for walkers and cyclists heading to Hilton Lane east.

6.2.9 As a new bridleway will be constructed and the new route adds more than 50m to the journey length there will be a minor impact (based on Table 3.12 in LA 112) resulting from the closure of Dark Lane.

6.2.10 **Location 3: Hilton Lane:** Hilton Lane connects to Shareshill at its northwest boundary and provides a route under the M6 motorway to the east. The road is a public highway providing access for vehicles walkers, cyclists and horse-riders. There is no segregated footway provided; pedestrians mainly use the grass verges or the edge of the road to travel along this road.

Figure 6.3 Location 3: Hilton Lane



6.2.11 The Scheme will cross Hilton Lane at the location shown below in Figure 6.3. The highways, footpaths and bridleways in the area are also shown below in Figure 6.3.

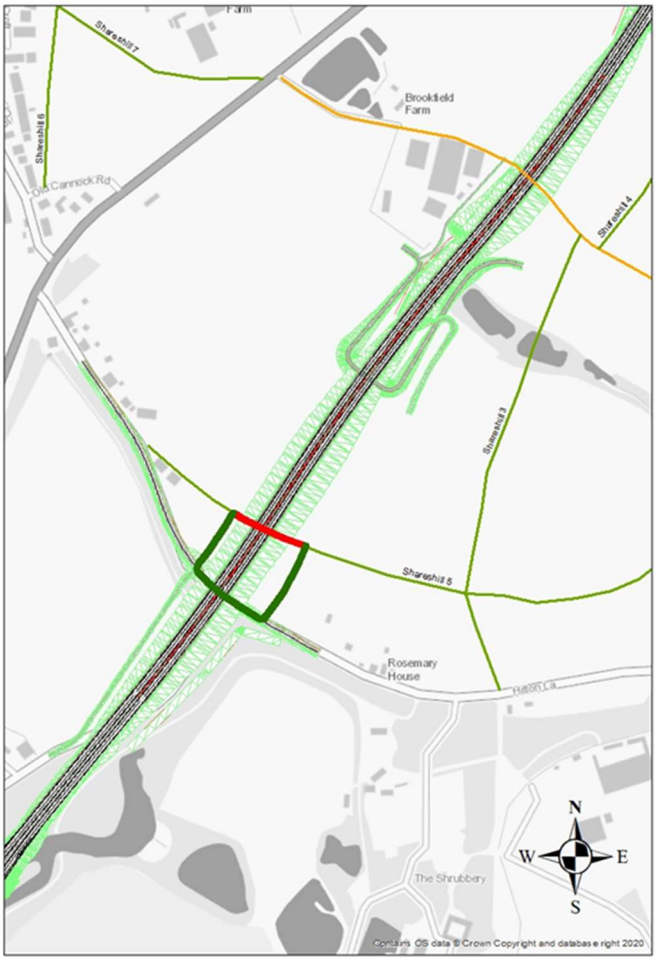
6.2.12 The Scheme will include an overbridge to carry the existing Hilton Lane highway on a similar alignment over the M54 to M6 link road mainline. A footway would be provided alongside the carriageway over the bridge to mitigate any impact to pedestrians and vulnerable users. However, it is noted that the remaining road on to the east of the new bridge would remain in its existing condition with no formal footway.

6.2.13 It is predicted that the Scheme would have a negligible impact on Hilton Lane.

6.2.14 **Location 4: Hilton Park:** There are a number of footpaths in the area of Hilton Park, Brookfield Farm and Hilton Lane. Location 4 is defined by the southernmost footpath that would be severed by the scheme (Shareshill No. 5). This footpath is orientated east-west and connects to Hilton Lane at its western end.

Figure 6.4 Location 4: Hilton Park (Shareshill No. 5) footpath

6.2.15 The point at which the footpath (Shareshill No. 5) is bisected by the Scheme is shown in Figure 6.4 with a proposed new path detailed. The new footpath will be realigned along a length of the realigned Hilton Lane, over the new Hilton Lane overbridge on a new section of footway, then diverted north parallel to the Scheme to tie into the current alignment of the footpath. This diversion is predicted to add 160m to the journey length resulting in a minor impact (based on table 3.12 in LA 112). However, it would provide greater connectivity to other walking, facilities and also would provide a link between Hilton Lane and the new bridleway to the west of the line of the former Dark Lane.



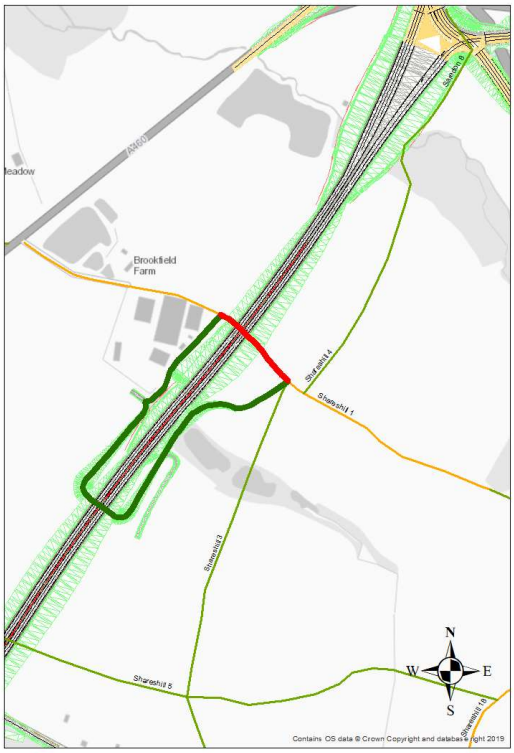
6.2.16 **Location 5: Brookfield Farm:** The footpath and bridleway (Shareshill No. 1) leading away from Brookfield Farm appears to be regularly used and in better condition than most of the PRoW in the area. It is especially used by the horse-riding school at Brookfield Farm. This bridleway is set to be severed by the Scheme.

Figure 6.5 Location 5: Brookfield Farm Bridleway Diversion

6.2.17 Figure 6.5 shows the location where the bridleway will be closed and the site of the diversion over the scheme.

6.2.18 A bridge will be built over the scheme that is suitable for horses so that horse-riders can continue using the existing bridleway. This diversion will add an extra 610m onto the journey.

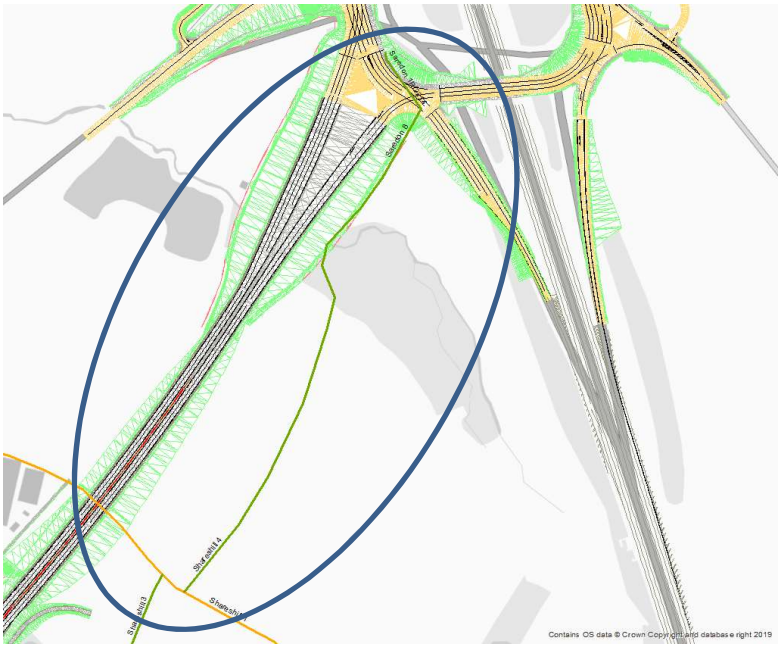
6.2.19 Because the journey length of this diversion would increase by more than 500m, the guidance from LA 112 (table 3.12) advises that this would be a major severance. However, alternative locations for the crossing were considered and rejected. These alternative options are outlined in the Environmental Statement Chapter 3 - Assessment of Alternatives [APP-042/6.1], at Table 3.8.



6.2.20 **Location 6: Fishing Lake:** On a north-south alignment east of the fishing lake is the footpath (Shareshill 4 and Saredon 8) described here. At its northern end this footpath connects to M6 J11, which will be altered as part of the Scheme.

6.2.21 The Scheme would connect to the footpath (Saredon 8) at the location shown in Figure 6.6

Figure 6.6 Location 6: Path heading towards M6 J11

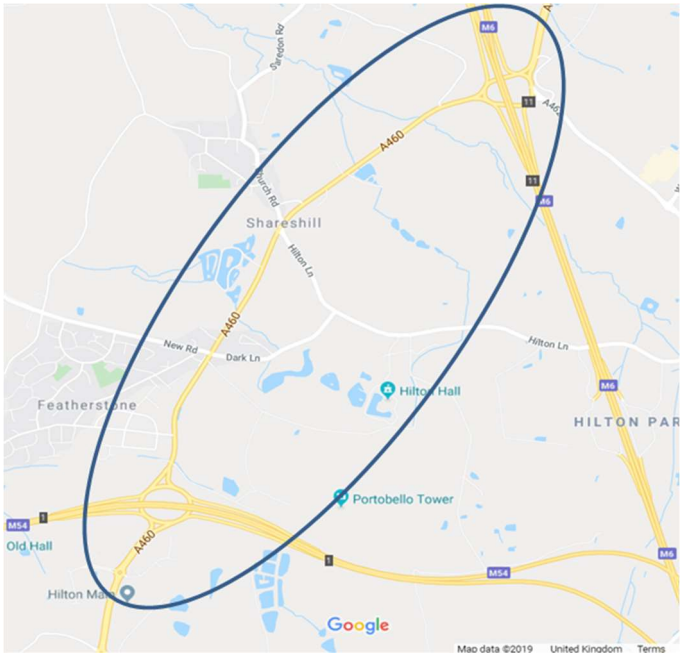


6.2.22 The Scheme would have a minimal impact on the footpath described here as the Scheme would not bisect its main pathway. At the improved M6 J11 configuration a ramp would provide access for walkers. A footway and traffic signals around the junction would enable people to safely navigate around the junction as desired.

6.2.23 It is considered that the Scheme would have a negligible impact on the path known as Saredon 8.

6.2.24 **Location 7: A460 Corridor:** As a result of the Scheme, daily flow is predicted to reduce on the A460 (specifically on the length shown in Figure 6.7).

Figure 6.7 Location 7: A460 Corridor



6.2.25 The two-way 24-hour Annual Average Daily Traffic (AADT) of this road is predicted to be 26,700 vehicles in 2024 if the scheme is not built. As such the traffic flows on the existing A460 are a barrier to the free-movement of pedestrians. The existing conditions on the A460 are considered to have a 'very high' impact on severance.

6.2.26 The Scheme would bypass this link and provides a new route between M54 J1 and M6 J11, thereby, reducing the two-way 24-hour AADT flow to 5,700 vehicles in 2024.

6.2.27 Following DMRB volume 11, section 3, part 6 guidance in LA 112 "Population and human health", the reduction in vehicle flow would change the severance classification of the A460 from 'Very High' to 'Medium'.

6.2.28 Following the completion of the Scheme, a legacy package of improved pedestrian and cycling improvements may also be implemented, which would further improve the benefits to vulnerable walkers, cyclists and horse riders in this area.

6.2.29 TAG Unit A4.1, Chapter 5 advises "Community severance is defined here as the separation of residents from facilities and services they use within their community caused by substantial changes in transport infrastructure or by changes in traffic flows."

6.2.30 The following is an analysis of Trip Attractors and Generators within the scheme area and listed in Table 6.1.

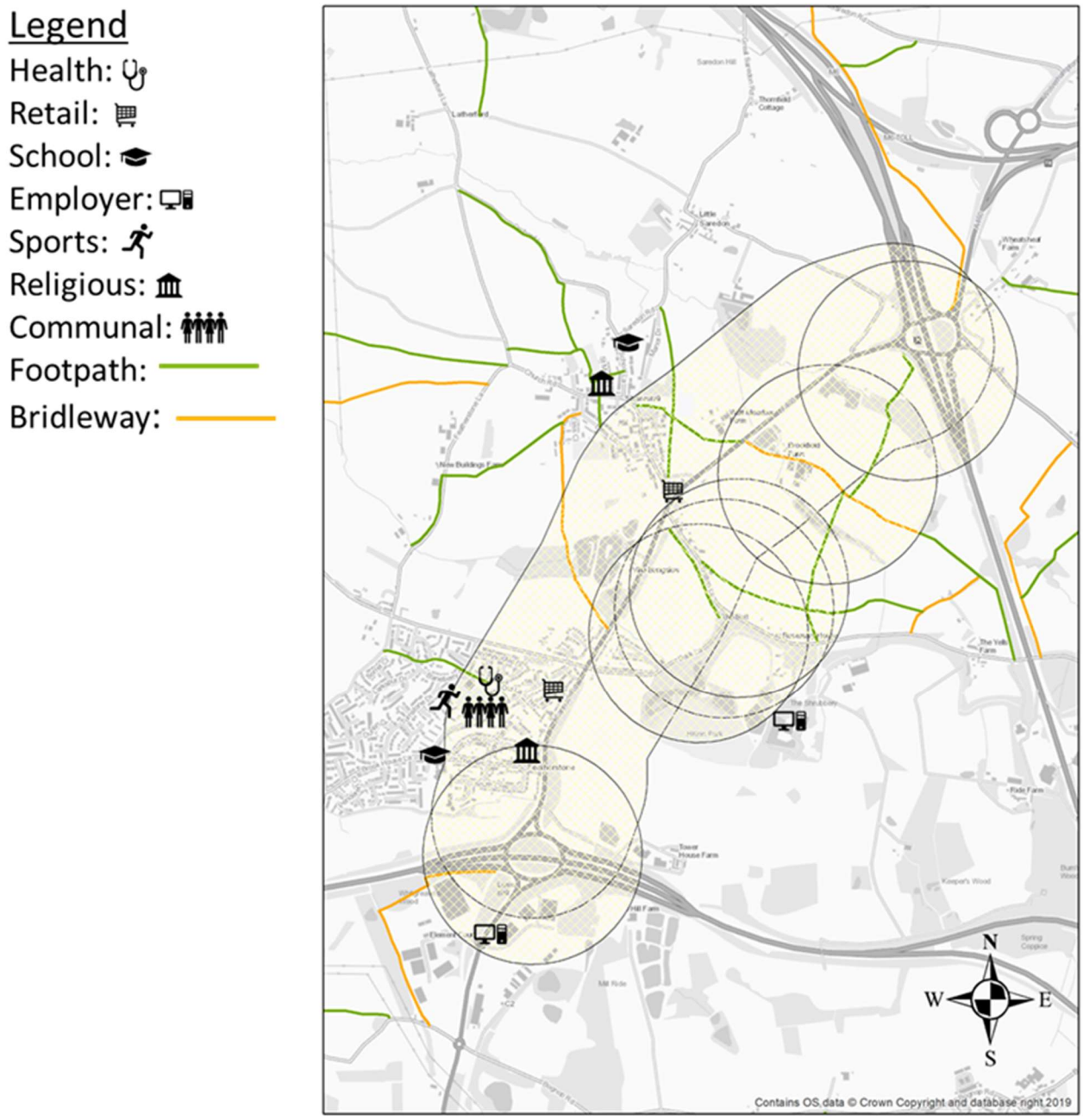
6.2.31 Shown below in Figure 6.8; Whitgreave Primary School and Havergal Church of England School are both outside of the 400m cordon around the A460. Although outside the scope of the impact area, some journeys to the school may benefit from the reduction of flow on the A460. As such, the Scheme would have no negative impact on journeys to school for vulnerable users accessing local schools.

6.2.32 The local retail & community facilities within the impact area affected by severance are "The Post Offices and local shops in Featherstone and Shareshill" which are set to benefit from "substantial" flow reductions along the A460, as described by DMRB Guidance.

6.2.33 In terms of employment sites, as impact location 3 & 6 (which cover Hilton Hall and Hilton Services respectively) both have a neutral impact, access to these employment sites across all social groups should remain unchanged.

6.2.34 In conclusion, no community assets would suffer from negative severance as a result of the Scheme and no further assessment of these sites would be undertaken.

Figure 6.8: Position of Community Assets within Severance Impact Area



6.2.35 Table 6.1 summarises severance impacts by location.

Table 6.1: Summary Of Severance Impacts By Location Caused By The Scheme

Location	Impact of Severance	Qualitative Comment	Estimated maximum change in distance between locations (meters)
1. M54 Junction 1	Minor adverse	Footway crosses two slip roads in the no-scheme case and two slip roads with lower flows in the with-scheme case. There would be an increase in journey length of 220m.	220
2: Dark Lane	Minor adverse	Closed to cars but a new path for WCH created. Minimal increase in distance to travel for WCHs	60
3. Hilton Lane	No change	Bridge constructed on same alignment of current road to cross the scheme	-
4. Hilton Park Footpath	Minor adverse	New footpath to join Hilton Lane to Shareshill No.5 so walkers can maintain access to footpath network in this area	160
5. Brookfield Farm	Major adverse	Large diversion created to allow WCH to maintain access to bridleways. New bridge suitable for horses.	610
6. Fishing Lake	No change	Minimal change to path. New ramp created for WCH to access new junction.	-
7. A460 Corridor	Moderate benefit	Reduction in vehicle flow with the two-way AADT flow reduced from 26,700 (very high impact) to 5,700 (medium impact).	-

6.3 Summary

6.3.1 The proposed changes to pedestrian and cycle route would create some increases and minor decreases in the walking, cycling and horse-riding distances; but were not considered to be material impacts apart from at Location 5 (Brookfield Farm).

6.3.2 Overall the Scheme would provide safer road-crossings for walkers, cyclists and horse riders and would provide a more pleasant environment on the A460.

7 Sustainable Transport: Public Transport

7.1 Overview

7.1.1 The appraisal of public transport accessibility focuses on access to employment, services and social networks considers the accessibility needs of different groups of people. A wide range of factors were considered, including journey times to reach key destinations, service frequencies and the provision of accessible boarding at bus stops.

7.1.2 The impact of the Scheme on public transport services that cross through the Scheme area and its general impact on access to public transport are reviewed in this section.

7.1.3 While this section focuses on the public transport aspect of accessibility, broader accessibility issues have also been considered throughout the Scheme.

7.2 Impact Of The Scheme

7.2.1 There are no rail facilities in the immediate vicinity of the Scheme. The nearest rail station is Landywood near Cheslyn Hay approximately 3km to the east of the Scheme however there are no direct transport links to this station.

7.2.2 The A460 provides a link to Cannock station, approximately 5km north of the Scheme, that can be accessed via a number of bus services. The A460 also provides a link to Wolverhampton station approximately 8km south of the Scheme that can be accessed via a number of bus services.

7.2.3 There are several bus routes that use the local road network in the vicinity of the Scheme. Refer to Table 7.1 and Figure 7.1.

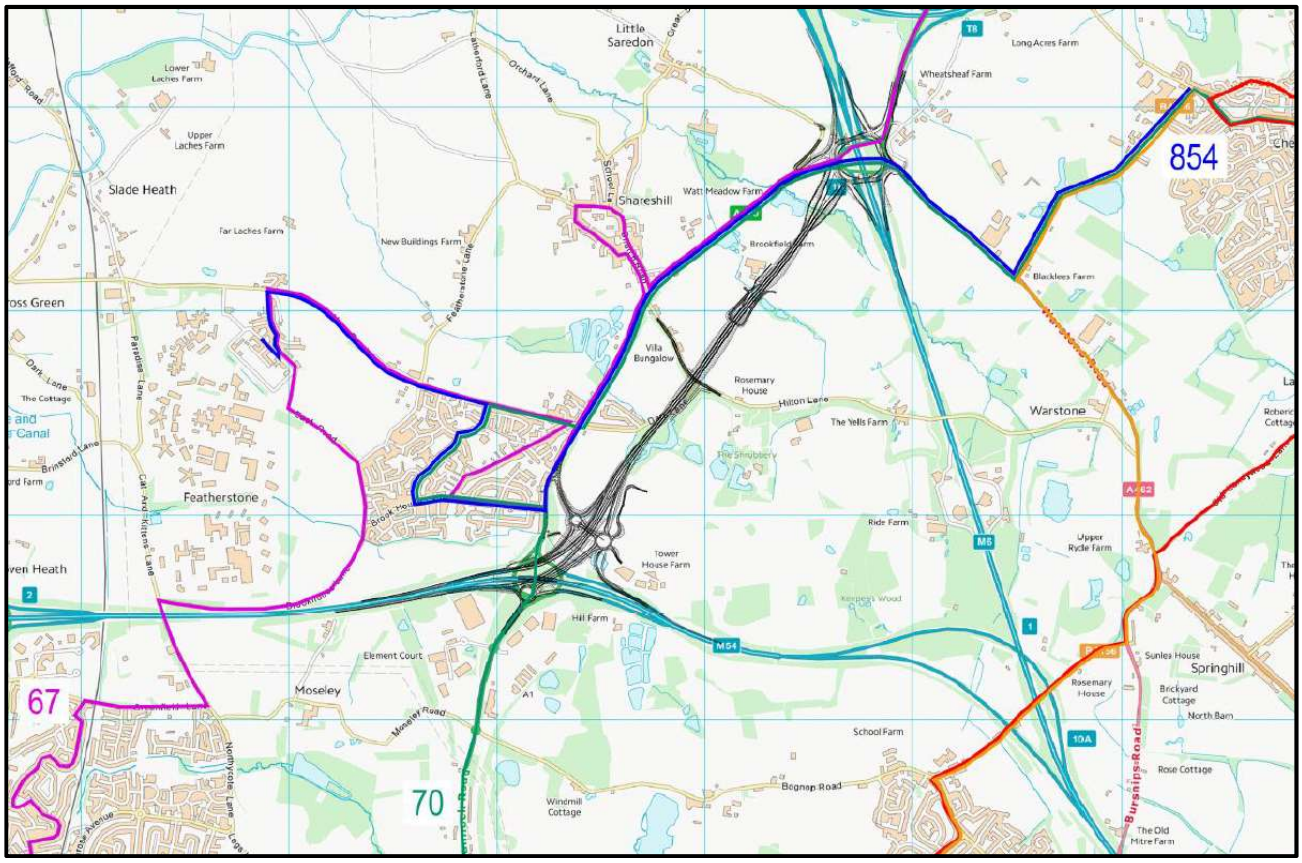
7.2.4 There is a potential for diversions to some bus routes as a result of the Scheme. The routes in the immediate vicinity of the Scheme with the potential for disruption or diversions are identified below:

- Arriva operates the Route 70 service between Cannock and Wolverhampton via Cheslyn Hay and Featherstone. The service runs every half hour between Monday and Saturday.
- Select Bus Company operates the Route 67 service between Cannock and Wolverhampton via Shareshill and Featherstone every two hours Monday-Friday. An alternative route is used for a single service every weekday morning and evening to access Cheslyn Hay High School.
- National Express West Midlands Bus Company also operates the Route 854 service between Cheslyn Hay High School and Brinsford via Featherstone. This service runs a single service every school weekday morning and evening.

Table 7.1: Bus Services Passing Through M54 J1 and/or M6 J11

Location	Name of Service(s)
M54 Junction 1	70
M6 Junction 11	67, 70, 854

Figure 7.1: Public Transport Services



7.2.5 It is expected that the changes made to M6 J11 would have a minimal impact on the routings and timings of bus journeys passing through the Scheme; all the existing bus stops in this area would remain accessible as shown in Figure 7.2.

7.2.6 The only potential impact of the Scheme on existing bus routes would be to the Route 70 service. The M54 Junction 1 would be redesigned with a completely new layout requiring Bus Route 70 to take a modified path to reach the existing bus stops (Figure 7.3). The redesigned layout results in two bus stops potentially becoming inaccessible to Bus Route 70 (shown in blue in Figure 7.3), however this is unlikely to have a major impact on passengers. A new bus stop can potentially be placed opposite The Avenue, this coupled with the existing bus stops in the vicinity of The Avenue would mitigate any impacts on the ability of people to access Bus Route 70.

Figure 7.2: Scheme And Bus Stop Locations Overlaid On The Existing Road Network Surrounding M6 Junction 11.

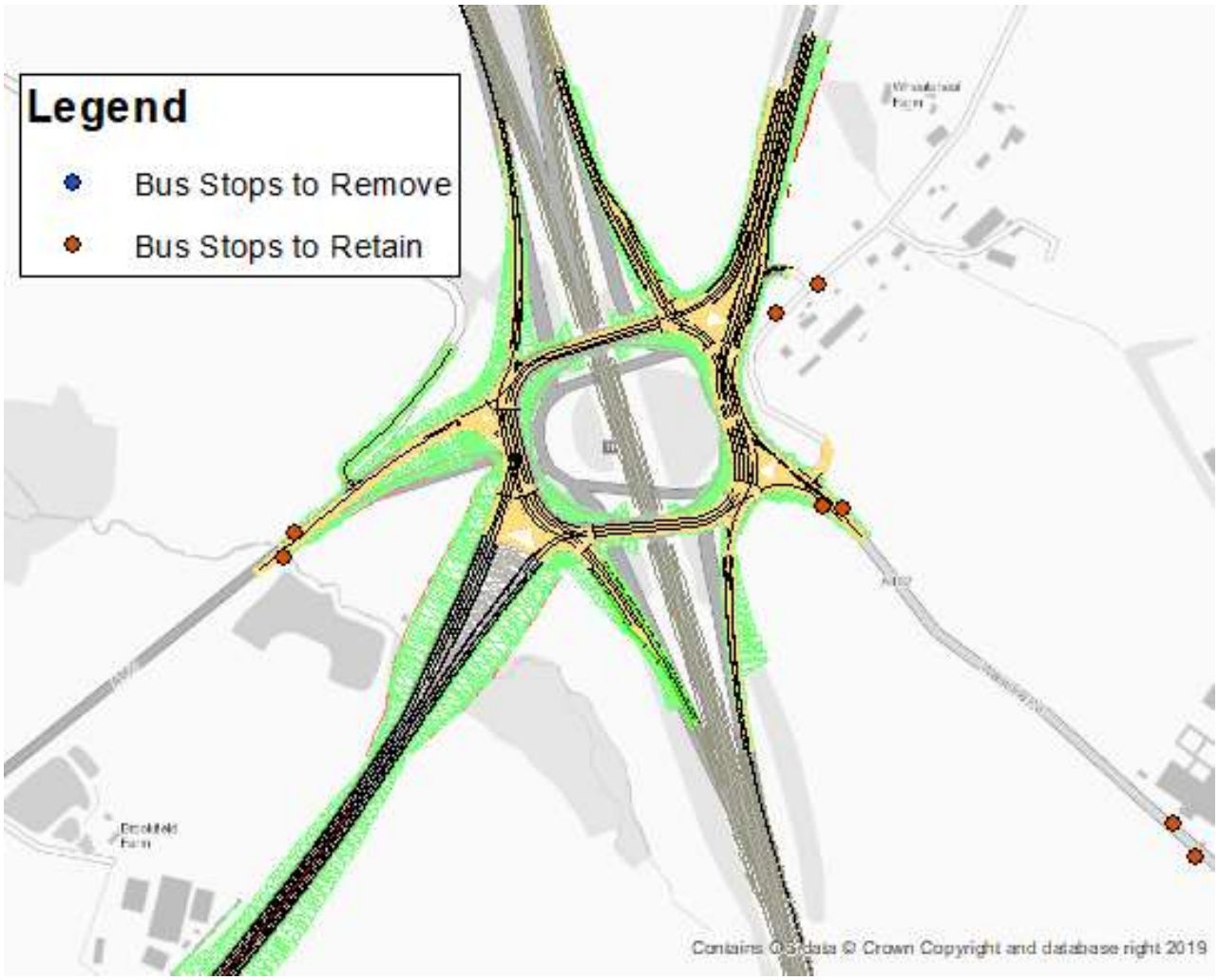
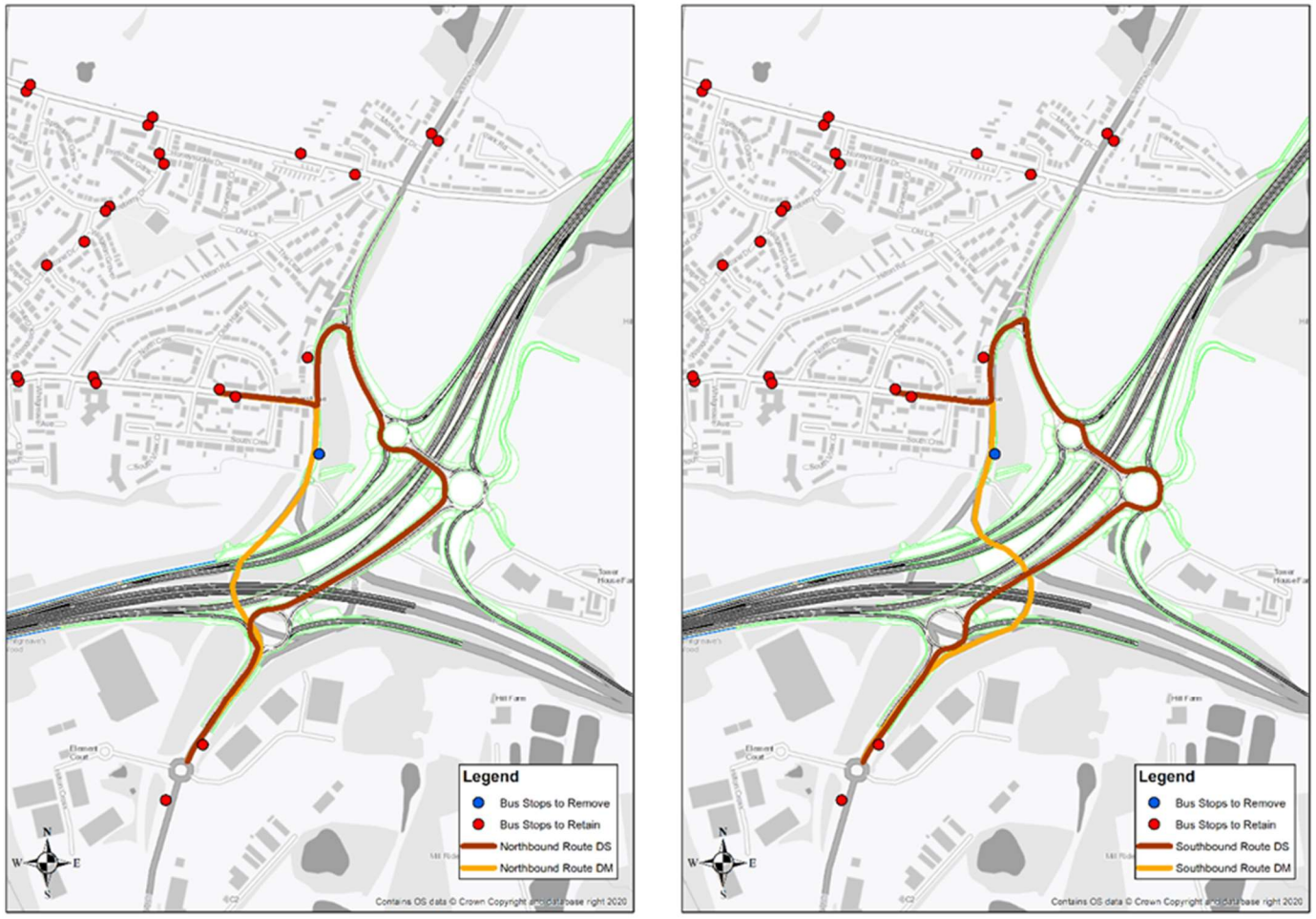


Figure 7.3: Bus Route 70 Northbound (left) And Southbound (right) Through M54 J1 In The DM and DS



7.2.7 The new route through the Scheme would add approximately 550m to the journey distance of Bus Route 70, potentially resulting in an increased journey time. However, this would likely be countered by a shorter journey time along the relieved A460 (With-Scheme) when traveling between M54 J1 and M6 J11. The number of vehicles using the A460 between M54 J1 and M6 J11 would reduce as a result of the Scheme; which would lead to improved journey time reliability for this bus service.

7.2.8 Furthermore, due to the reduced number of vehicles on the relieved A460, there would be more opportunities for the Buses to re-join the relieved A460 – after pulling into a bus stop – leading to a reduction in journey delays. The reduced flow levels on the A460 would also reduce the severance and delays to passengers who would need to cross the road to reach the bus stop either to board or alight the service.

7.2.9 There are other bus routes operating in proximity to the Scheme, such as the 54, 54A, 1, 2 and X511. None of these routes or the timings of these bus services would be impacted by the Scheme and so have not been assessed as part of this accessibility analysis.

7.3 Summary

7.3.1 During the construction phases, bus services would inevitably face an increase in journey times.

7.3.2 After the Scheme has been completed, all services would be able to follow the same routes (subject to minor distance changes due to the new road layout) whilst benefiting from the capacity-upgraded junctions and the reduced flows on the A460.

8 Construction Period

8.1 Overview

8.1.1 Road users tend to understand why roadworks must take place, but they are viewed as disruptive and inconvenient. To improve the customer experience, Highways England has developed a vision of how it will manage major road works in the future.

8.1.2 Consideration has been given to the principles described in the vision as part of the development of the Scheme's 'Outline Traffic Management Plan' [APP-223/7.5 revised]. The vision describes where Highways England is looking to change our approach to road works.

a. Varying the speed limits so they are appropriate for the work taking place
b. Shortening the length of road works
c. Appropriate use of full road closures and associated diversions
d. Delivering road works quicker
e. Explaining clearly what activities are, or are not, taking place

8.1.3 The purpose of this section is to summarise the construction strategy associated with the Scheme.

8.2 Construction Duration

8.2.1 The construction duration of the Scheme was planned on the basis of a 2.5-year construction period (30 months) in consultation with Highways England's appointed Contractor. This planned 2.5-year construction programme was used as the basis for the traffic modelling and the environmental assessments of the construction period.

8.2.2 Table 8.1 sets out the assumed traffic management constraints used by Highways England's Contractor to develop the construction durations for the Scheme. These are indicative. Reference should be made to the Outline Traffic Management Plan [APP/7.5 revised].

Table 8.1: Traffic Management Restrictions Assumed

The following traffic management restrictions have been considered:	
M54 J1	**Phase 1** • Traffic running on existing alignment. • M54 main carriageway two lane running eastbound and westbound. • Localised traffic management for eastbound diverge slip road construction.
	Phase 2 • As Phase 1, with access to Tower House Farm transferred to new access
	Phase 3 • M54 main carriageway closed eastbound and westbound for 3-week period. • M6 J10 northbound off slip closed for traffic onto the M54 westbound for 3-week period • Temporary alignment of the M54 Junction 1 circulatory carriageway retained on the western side of the M54 roundabout for A460 northbound and southbound traffic. • Exiting traffic from eastbound M54 off slip only allowed to travel northbound. • A460 northbound traffic approaching south of the M54 J1 able to turn left onto the M54 on-slip westbound or continue northbound on the 460. • A460 southbound traffic approaching the north of the M54 J1 able to turn left on the M54 on-slip eastbound or continue southbound on the A460. • M54 main carriageway traffic to be diverted via signed route from M54 Junction 2 via the A449 Stafford Rd to A449/A5 Gailey Island and then the A5 to M6 Junction 12.
	Phase 4 • M54 main carriageway two-lane running eastbound and westbound. • Access for A460 local traffic to M54 maintained to the westbound merge slip. • Access for southbound A460 local traffic to M54 eastbound merge via Featherstone Bridge. • Permanent A460 northbound and southbound traffic running via A460 south roundabout and Featherstone Bridge. • M54 eastbound diverge slip realignment to Featherstone Bridge and link road.
	Phase 5 • All traffic transferred onto the new alignment
	•
M6 Junction 11	**Phase 1** • Traffic running on existing alignment at existing interchange with no speed limit reduction. • Localised traffic management on A460 and existing roundabout including temporary traffic signals and lane or road closures. • Localised traffic management on slip roads where necessary. • Closure of Mill Lane with diversion route in place. • Hard shoulder closures on M6 mainline across the works area.
	Phase 2 • Traffic using newly constructed slip roads and temporary road construction. • Temporary traffic signals in place on Gyratory. • Existing Roundabout still being used during bridge construction. Weekend / overnight closures for existing bridge removal. • Narrow lanes on the M6 Mainline. • Southbound diverge slip to have temporary Give Way. • Lane closure on southbound slip. • Temporary Give Way to the Northbound diverge slip road and A460.
	Phase 3 & 4 • New interchange minus link road now fully operational. • Bridge demolition can potentially take place on closure during this phase if required • Localised traffic management in place to allow for the remainder of works to be carried out – exact POA to be confirmed • Hard shoulder closures on M6 Mainline. • Traffic running on M6 Mainline no speed limit reduction. • Temporary traffic signals in place on Gyratory.
Link Road	• Constructed offline in Phases 1-4 (detailed above) • Open for use during Phase 5 / Phase 6

8.2.3 The Contractor was appointed by Highways England in Winter 2019/2020. One of the Contractor's first tasks was to review the construction methods, consult with key stakeholders on the availability of road space and potential diversion routes and then to review the assumed construction phase durations.

8.2.4 The Outline Environmental Management Plan (OEMP) [APP-218/6.11] sets out the project-wide core working hours. These are 08:00 to 18:00 Monday to Friday and 08:00 to 13:00 on Saturdays, with no working on Sundays and Bank Holidays.

8.2.5 Some Work activities with limited durations, subject to prior agreement with SSC environmental health officers, are likely to be permitted outside of these hours. There is an onus to demonstrate that the activity would be not environmentally worse than the activities that have been assessed within the Environmental Statement [APP-055/6.1].

8.3 Outline Traffic Management Plan

8.3.1 An Outline Traffic Management Plan (OTMP) has been prepared for the Scheme [APP-223/7.5]. A Traffic Management Plan will be developed during the subsequent detailed design stages with input from the Contractor and the relevant local highway authority. Requirement 10 on the draft DCO [APP-018/3.1] requires development of a TMP. This Requirement will need to be discharged prior to commencement of development.

8.3.2 The TMP will describe the Temporary Traffic Management (TTM) arrangements needed to facilitate the construction of the Scheme. The Traffic Management Plan will be prepared with the aims to have:

- No increase in accidents.
- Protection of vulnerable road users.
- Protection for the workforce from adjacent live traffic during construction of the works.

8.4 Nature Of Works

8.4.1 The construction works involve implementing the upgrades at each junction simultaneously.

8.4.2 A high-level draft programme, defining the main construction phases envisaged at each junction and with the assumed durations assigned, has been prepared.

8.4.3 In order to facilitate the construction works, the traffic management arrangements will need to be phased. The sequence of the construction phases proposed for this Scheme could be changed in order to accommodate the potential constraints of the construction works. Each phase would be able to run concurrently with construction phases at the other junctions.

8.4.4 Descriptions of the construction phases that would be ongoing is provided in the OTMP [APP-223/7.5] at sections 2 and 3.

8.4.5 Each junction's construction programme is divided into phases that run concurrently with the construction of the other sections.

8.5 Restrictions: Speed Limits

8.5.1 Road works should be designed to minimise the risks to road users and the workforce. A mandatory reduced speed limit (even when enforced) can only be considered a reliable method of providing the required protection to road workers when implemented with physical measures. In all other cases the TTM should be designed to be safe at the permanent speed limit e.g. provision of safety zones in accordance with the Traffic Signs Manual, Chapter 8, Part 3. For all other situations reduced speed limits are set on whether they are needed for road users' safety.

8.5.2 Where, due to site constraints, it is not possible to design the entire section of road works to be safe at the permanent speed limit designers shall provide evidence to show what alternative construction options were considered to maintain the permanent speed limit and why a lower speed limit is ultimately required.

8.5.3 For the purpose of traffic modelling and assessing the travel times through construction during the early construction phases it was assumed that a 50mph temporary speed limit would likely be implemented on the M6 and M54 mainline. This would be needed to ensure the safety of road users whilst the preparatory construction work takes place on the land immediately adjacent to the M54 and M6.

8.6 Summary

8.6.1 The construction of the upgraded Junctions on the M54 and M6 and the new link road would lead to short-term disruption; however, this would be minimised via the introduction of carefully designed traffic management and the development and implementation of the Traffic Management Plan.

9 Summary And Conclusions

9.1.1 The Scheme would develop a new link from the M54 to the M6 to improve access between the West (e.g. M54 corridor, Telford and Shrewsbury) and the East (e.g. Cannock and A5 East). The Scheme would include capacity upgrades to the M54 Junction 1 and to M6 Junction 11.

9.1.2 The existing A460 route, between the M6 at Junction 11 and M54 at Junction 1, is the source of delays. Improvements have exhausted the potential to improve this link within its current layout.

9.1.3 The Scheme would relieve traffic on the A460, A449(T) and A5(T), thereby providing more reliable journey times. The Scheme would reduce peak period congestion along the A460 at the M54 and M6 motorway junctions at either end. The Scheme would reduce the volume of through traffic in villages. The Scheme would improve road safety.

9.1.4 The Scheme's development has a long history, with three rounds of consultation seeking the views of members of the public since 2014. This has resulted in a Scheme that considers local traffic movements and also improves upon the existing provision for pedestrians and cyclists. Bus services crossing the Scheme area would also benefit from the improved junctions and the separation of local and strategic traffic.