

# M5 Junction 9 and A46 (Ashchurch) Transport Scheme

## **Scheme context and existing conditions**

Gloucestershire County Council

**For public engagement (7 October – 2 December 2024)**



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# 1. Introduction

## 1.1. Overview

This document provides additional background information to support the 7 October - 2 December 2024 public engagement for the M5 Junction 9 and A46 (Ashchurch) Transport Scheme. It forms part of the public engagement materials which can all be found on the Have Your Say website: <https://haveyoursaygloucestershire.uk.engagementhq.com/junction-9>.

- Section 1 introduces the scheme, its location and history
- Section 2 sets out the context for the scheme – considering economic, demographic, stakeholder, planning and policy contexts
- Section 3 describes the existing conditions on relevant parts of the transport network (focussing on M5 Junction 9 and the A46 between Tewkesbury and Teddington Hands roundabout)
- Section 4 summarises the key engineering constraints in the scheme area
- Section 5 presents the key environmental constraints in the scheme area.

Other documents in this series cover:

- Development of scheme objectives
- Option generation and sifting
- Summary of shortlisted options
- Analysis of shortlisted options
- Summary of walking, cycling and horse-riding opportunities.

## 1.2. Introduction

The M5 Junction 9 and A46 (Ashchurch) Transport Scheme (referred to throughout as ‘the scheme’) is a proposal to develop a new M5 junction 9a to the south of Tewkesbury and re-route a section of the A46 between the M5 and Teddington Hands roundabout. The scheme aims to help solve long standing traffic issues and provide vital infrastructure to meet existing and future needs, including improving journey times and reliability for journeys between the M5 Junction 9 and Teddington Hands roundabout.

Gloucestershire County Council (GCC) is the promoter for the scheme. However, the A46 and M5 Junction 9 are part of National Highways’ Strategic Road Network (SRN). Consequently, it has been agreed to progress the scheme through the National Highways Project Control Framework (PCF) to align the delivery of the project and the production of documentation with National Highways’ processes. The scheme is currently at PCF Stage 1 (Option Identification) in the National Highways project lifecycle.

The scheme will rely on securing funding from Government to be delivered. At this early stage, no commitment can therefore be given to funding being secured for the scheme delivery.

The case for improvements to the M5 Junction 9 and A46 through Ashchurch has become more compelling in recent years and would address the following issues:

- Congestion on this section of the A46 and at M5 Junction 9 means that both local and long-distance journeys are unreliable and take longer than they should
- At peak times, queuing from M5 Junction 9 can reach back to the M5 motorway with queuing vehicles on the hard shoulder creating a safety hazard
- Developments which already have planning permission are increasing traffic in this location
- Provision for walking and cycling at M5 Junction 9 and along the A46 is inadequate and does not meet current design standards. Along with the level of traffic on the A46 including Heavy Goods Vehicles (HGVs), this makes the road difficult to cross and discourages travel by bike or foot
- Further significant development in the Ashchurch area cannot be delivered without additional capacity on the road network.

Without intervention, the existing traffic problems at M5 Junction 9 and on the A46 through Ashchurch will continue to get worse. The Cotswold Designer Outlet is due to open in 2025 and over 1,400 new homes have been consented at Fiddington Fields to the east of the M5 and accessed via the A46.

Tewkesbury Borough Council is also advancing its Garden Communities programme. The programme's aim is to ensure that housing and employment opportunities are managed in the best possible way by enabling comprehensively planned, connected communities designed to encourage good growth, helping new and existing residents to enjoy the best possible quality of life.

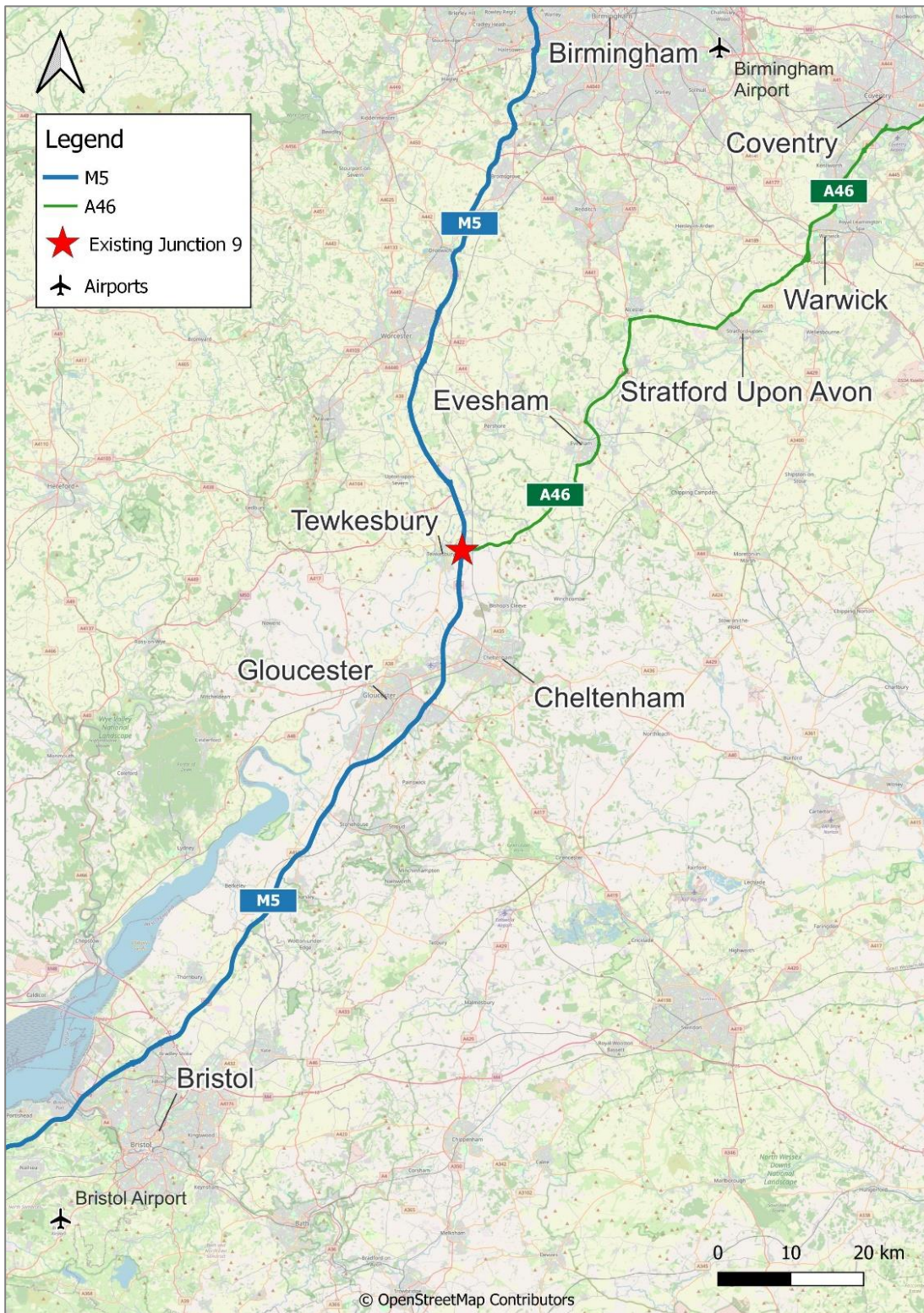
Diverting long-distance traffic - including heavy goods vehicles - from the A46 through Ashchurch onto a new road will be key to the successful development of the Tewkesbury Garden Communities. This will provide capacity for additional housing and employment opportunities, and crucially provide benefits to the existing communities, offering a more pleasant environment for residents and greater opportunities for walking, cycling and sustainable travel along the existing road.

### **1.3. Location of the scheme**

The scheme focuses on the 3 mile section of the A46 that runs from M5 Junction 9, through Ashchurch and Aston Cross junction and onto Teddington Hands roundabout. M5 Junction 9 is located 2 miles to the east of Tewkesbury town centre, approximately 7 miles to the northwest of Cheltenham, 10 miles to the southwest of Evesham, 30 miles to the south of Birmingham and 40 miles to the north of Bristol.

M5 Junction 9 is at a strategically important location, approximately midway between Birmingham and Bristol with the A46. It provides a key route for long distance journeys between parts of the Midlands, West and South West of England.

Figure 1-1 - Location of the scheme



## 1.4. Scheme history

This scheme has a long history dating back to the 1990s, when the then Department of Transport consulted on a new dual carriageway between the M5 and Evesham. Whilst these improvements did not happen, in more recent years the case for investment has become more compelling.

Highways England carried out a number of studies, starting with an A46 Scoping Study (2015). This identified the need to re-route the section of the A46 between the M5 near Tewkesbury and Teddington Hands roundabout, in order to help support predicted future levels of traffic growth.

During 2017, Gloucestershire County Council consulted local businesses and residents regarding congestion problems relating to M5 Junction 9 and the A46 through Ashchurch. Highways England and the council carried out a PCF Stage 0 study to identify potential improvements to the A46 and A438 at Ashchurch and Tewkesbury. The report was to inform the Road Investment Strategy 2 proposals to Highways England for funding for the A46 element of the scheme, although the scheme was not shortlisted for Road Investment Strategy 2.

In 2018, Midlands Connect Sub-National Transport Body commissioned an A46 Corridor Study Phase 1, followed by Phase 2 in 2020 which identified the whole of the A46 (from M5 Junction 9 to Grimsby) as a long-distance route with national economic significance. The studies by National Highways and Midlands Connect established that an offline highway solution is required to address the traffic problems at M5 Junction 9 and along the A46 through Ashchurch.

In 2019, UK Government awarded Garden Town status to the Tewkesbury Ashchurch location and Gloucestershire County Council identified the Department for Transport's Large Local Majors fund as an opportunity to develop a scheme of improvements at M5 Junction 9 and A46 (Ashchurch). Western Gateway Sub-National Transport Body submitted Gloucestershire County Council's Pre-Strategic Outline Business Case to the Department for Transport for Large Local Majors funding along with its Regional Evidence Base.

In March 2020, the government confirmed that the scheme could proceed to the Strategic Outline Case stage of scheme development under the Large Local Majors funding programme. Gloucestershire County Council submitted a Strategic Outline Case presenting a more in-depth case for intervention to the Department for Transport in September 2022.

Since 2022, Gloucestershire County Council has been working with National Highways to undertake further development and assessment of scheme options, resulting in the options presented in this public engagement. Table 1-1 presents a summary of these events.

**Table 1-1 - Scheme recent history**

<b>Year</b>	<b>Scheme history</b>
2015	Highways England - A46 Scoping Study
2017	GCC consultation events Highways England and GCC A46/A438 Ashchurch and Tewkesbury Scoping Study, Stage 0 Report
2018	Highways England PCF Stage 0 Study (Options Assessment Report) Midlands Connect A46 Phase 1 Study
2019	Western Gateway STB prioritised the scheme for LLM programme in its Regional Evidence Base submission to DfT
2020	Midlands Connect A46 Phase 2 Study DfT confirmed scheme could proceed to Strategic Outline Case (SOC) stage under LLM programme
2021	GCC engagement with National Highways to complete PCF Stage 0 and SOC commenced
2022	GCC submitted SOC to DfT in September 2022 GCC commenced PCF Stage 1 work on further option development and assessment
2023	Further work on option development and assessment
2024	Options presented for public engagement



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## 2. Scheme context

### 2.1. Overview

This section outlines the context of the scheme with respect to:

- National and local planning policies
- Proposals for the development of Tewkesbury Garden Communities.
- The A46 and Trans-Midlands Trade Corridor
- Stakeholder groups that may be affected by the proposals

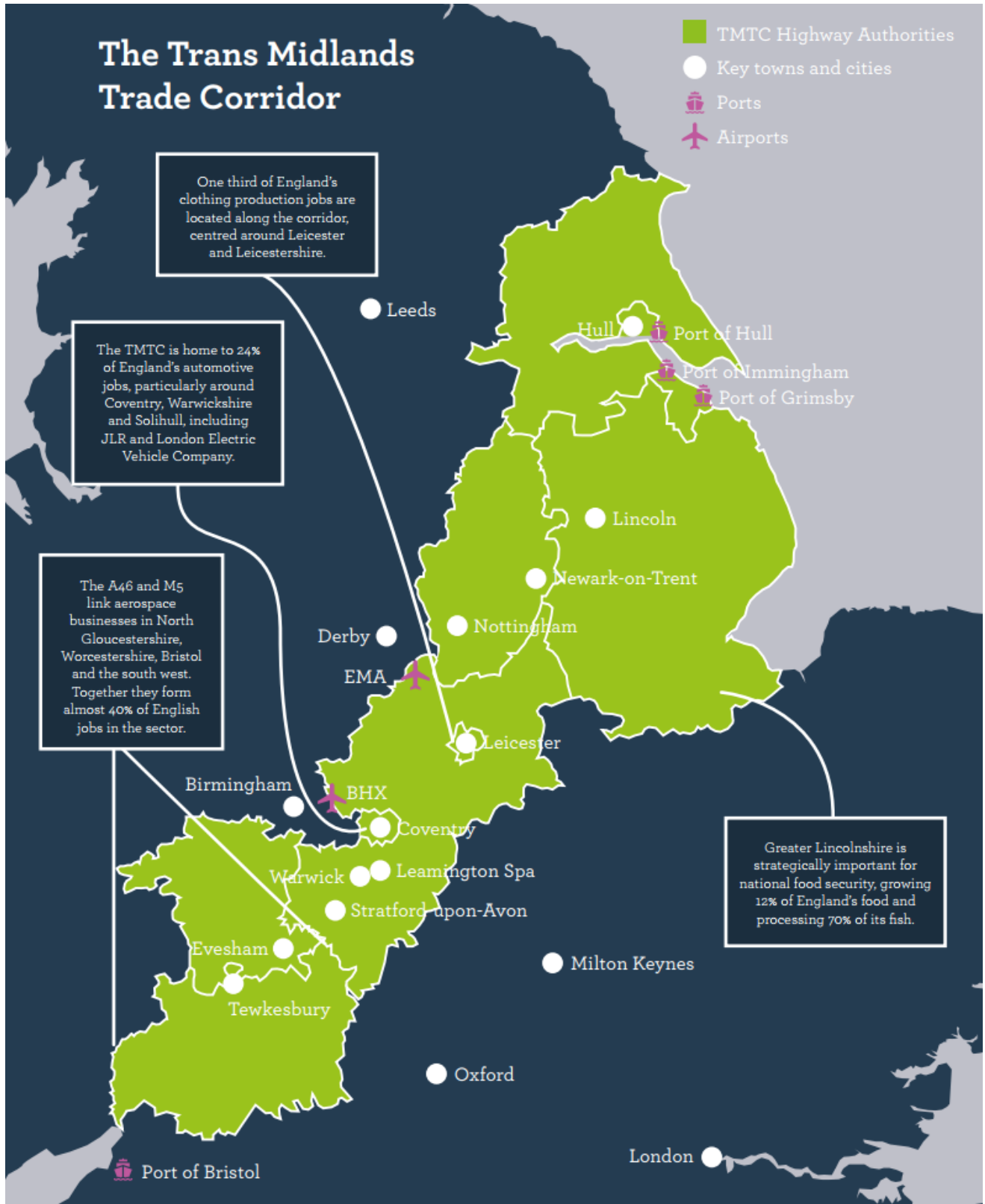
### 2.2. The A46 and Trans-Midlands Trade Corridor

The A46 is part of the SRN managed by National Highways and is one of the principal entry points to Gloucestershire from the north. It runs for over 250 kilometres from the M5 at Tewkesbury to Grimsby in Lincolnshire and performs many functions:

- One of the principal entry points into the West of England from the north and an alternative to the M5, M40 and M42, in the Midlands Connect area
- A connection between radial road corridors (such as the M1 and A1)
- Provides access to the Port of Bristol, the Humber Ports, and South Wales
- A bypass to major towns and cities such as Coventry, Leicester, Newark and Lincoln.

The scheme is at a pivotal location in the Trans-Midlands Trade Corridor shown in Figure 2-1. This corridor is an important economic spine and accounts for about 9% of England's GVA (Gross Value Added).

Figure 2-1 - Midlands Connect Trans-Midlands Trade Corridor



Source: Midlands Connect

The corridor is also strong in industries that are reliant on the SRN. Around half of all jobs and economic activity in the corridor are in sectors dependent on the SRN for both national and international supply chain and customer connectivity. This is reflected in the composition of jobs and sectors along the corridor, which includes:

- 25% of England's jobs in the automotive sector
- 20% of England's jobs in agriculture and the agri-tech sector, particularly prevalent in the southern extremes of the corridor around Evesham and Tewkesbury
- Aviation business clusters around north Gloucestershire, Worcestershire and Warwickshire that are linked by the A46 and the M5 to similar clusters around Bristol and South-West England. Together these clusters account for 40% of England's jobs in the aviation sector
- Highly specialised, emerging industries that benefit from close proximity to the SRN and in particular the A46: cyber-security in Gloucester and Cheltenham, battery technology in Warwickshire and computer gaming in Leamington Spa.

The Midlands Connect A46 Corridor Study Phase 1 and 2 Reports (2018 and 2020) have recognised that the A46 corridor provides an "excellent access to international gateways (e.g. Humber Ports & Bristol) for strong exporting industries (e.g. Automotive & Aerospace)".

Between 2015 and 2030, the economic output of the Trans-Midlands Trade Corridor is forecast to increase by 35% to £153 billion and the number of jobs is forecast to grow by 146,000 or 5%. Better accessibility to the Port of Bristol and Humber ports via the A46 will support and help grow the markets for these ports by attracting new business (some of which could be re-routed from other ports), especially in the Roll-on Roll-off market.

Further information regarding the Midlands Connect A46 corridor studies is available at:

- [Midlands Connect - A46 corridor](#)
- [a46-corridor-study-stage-one-enhanced-strategic-case-final-november-2018.pdf \(midlandsconnect.uk\)](#)
- [mc-a46-corridor-study-phase-2-final-report-march-2021-with-appendix.pdf \(midlandsconnect.uk\)](#)

## 2.3. Demographic context

### 2.3.1. Overview

M5 Junction 9 is located between Ashchurch and Tewkesbury. The two areas are physically separated by the M5 and have distinct urban characteristics. Tewkesbury is a historic market town, with a population of approximately 94,900 people in the local authority area. In 2021, Tewkesbury borough had the eighth fastest growing population in England and Wales and was the only district across the Midlands and South-West England in the top 10 for population growth (<https://tewkesbury.gov.uk/boroughpopulation/>).

Data from the Office for National Statistics (ONS) indicates that Tewkesbury borough sustains 4,285 businesses<sup>1</sup> and approximately 50,900 jobs<sup>2</sup>. Most employment and light industrial uses in Tewkesbury are located within Tewkesbury Business Park and Ashchurch Business Centre to the west of M5 Junction 9. These two areas consist of 110 hectares of employment land that support approximately 10,100 jobs in high-skilled sectors such as manufacturing, logistics and high-tech. These commercial sites currently enjoy excellent proximity to M5 Junction 9, although there are limited opportunities for businesses to expand and the current supply of employment premises in the area is extremely limited.

Ashchurch also includes a Ministry of Defence (MoD) site, and the residential district of Northway, both of which have developed in a linear manner along the north side of the A46. Additional commercial and residential development is underway on the south side of the A46 including a Cotswold Designer Outlet and over 1,400 new homes at Fiddington Fields. A further cluster of commercial development is located to the south and west of Teddington Hands roundabout, including a major truck stop, petrol station and shop.

Immediately to the west of M5 Junction 9, Tewkesbury Academy is the main secondary school serving the area. Other schools close to M5 Junction 9 include the Alderman Knight School (located next to Tewkesbury Academy) and Ashchurch Primary School (located on the southern side of the A46 to the east of the rail bridge).

### 2.3.2. Socio-demographic data

Socio-demographic data has been compiled from the 2021 Census for the local area and compared with the England average in Table 2-1. The local area has been defined as the four closest Local Authority areas of Tewkesbury, Wychavon, Gloucester and Cheltenham.

**Table 2-1 - 2021 Census data for the local area and England**

Census statistic		Local Area (%)	England (%)
<b>Gender</b>	Female	51.0	51.0
	Male	49.0	49.0
<b>Age</b>	Children (Under 16)	17.2	18.6
	Young people (16-24)	9.2	10.6
	Working Age (16-64)	60.5	63.0
	Older people (65+)	22.2	18.4
<b>Disability</b>	Disabled under the Equality Act	16.7	17.3
	Disabled under the Equality Act (daily activities limited a lot)	6.4	7.3
	Disabled under the Equality Act (daily activities limited a little)	10.3	10.0

<sup>1</sup> [UK business: activity, size and location - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/business-and-productivity/business-activity/uk-business-activity-size-and-location)

<sup>2</sup> [Local authority district – Business Register and Employment Survey \(BRES\): Table 6 - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/business-and-productivity/business-activity/local-authority-district-business-register-and-employment-survey-bres)

Census statistic		Local Area (%)	England (%)
<b>Ethnicity</b>	White	91.8	81.0
	White Roma, Gypsy, or Irish Traveller	1.5	0.3
	Mixed / Multiple Ethnic Groups	2.4	2.9
	Asian / Asian British	3.5	9.6
	Black / African / Caribbean	1.5	4.2
	Other Ethnic Group	0.8	2.2
<b>Religion/belief</b>	Christian	50.5	46.3
	Buddhist	0.3	0.5
	Hindu	0.7	1.8
	Muslim	1.9	6.7
	Jewish	0.1	0.5
	Sikh	0.2	0.6
	Other	0.5	0.9
	None/ Not stated	45.8	42.7

The 2021 Census data for the local area indicates:

- Statistics for gender are in line with national statistics
- The proportion of the population aged 65+ is almost 4% higher in the local area compared to the England average (accounting for 22% of the population)
- Conversely, the proportion of the population aged between 16 and 64 is 2.5% lower than the England average, and aged under 16 is almost 1.5% lower
- The proportion of the population classed as disabled under the Equalities Act is broadly in line national statistics at around 17%, although the proportion reporting that their disabilities limited their daily activities a lot is almost 1% lower than the England average
- The proportion of the population identifying themselves as white is over 10% higher than the England average (accounting for almost 92% of the total), with most other ethnicities being correspondingly lower and none individually accounting for more than 5%
- However, the proportion identifying as 'White Roma, Gypsy, or Irish Traveller' is higher than the England average (but only accounting for 1.5% of the population)
- The proportion of the population identifying their religion / belief as Christian is just over 4% higher (accounting for just over 50% of the population), and for those indicating no religion / belief is 3% higher than the England average (accounting for almost 46%)

- Conversely, those identifying with other religions / beliefs are all lower than the England average, with none individually comprising more than 2% of the population.

## 2.4. Stakeholder context

Stakeholder groups that may be affected by the scheme include:

- Businesses including freight hauliers
- Private vehicle users
- Public transport users
- Non-motorised users (walkers, cyclists, wheelers and horse riders)
- Local communities

Further information regarding these groups is provided in Table 2-2 below.

**Table 2-2 - Stakeholder groups that may be affected by the scheme**

Group	Description of group
<b>Businesses including freight hauliers</b>	<p>Key business interests include:</p> <ul style="list-style-type: none"> <li>• Freight hauliers, tradespeople and business travellers using the A46 as a route between the Midlands and Gloucestershire / South West of England (passing through the Tewkesbury / Ashchurch area)</li> <li>• Freight hauliers, tradespeople and business travellers using M5 Junction 9 and/or the A46 to visit the Tewkesbury / Ashchurch area (in particular the industrial estates either side of M5 Junction 9)</li> <li>• Businesses located in the Tewkesbury / Ashchurch area that rely on customer / supplier access to premises including the new Cotswold Designer Outlet and the truck stop at Teddington Hands roundabout.</li> </ul>
<b>Private vehicle users</b>	<p>Key private vehicle customers include commuters and others travelling for leisure, shopping or other personal reasons:</p> <ul style="list-style-type: none"> <li>• Using the A46 as a route between the Midlands and Gloucestershire / South West of England (including holiday makers)</li> <li>• Using M5 Junction 9 and/or the A46 to visit the Tewkesbury / Ashchurch area (including employment and retail premises)</li> <li>• Residents of the Tewkesbury / Ashchurch area using the A46 for local journeys (including for travel between Tewkesbury and Ashchurch)</li> <li>• Residents of the Tewkesbury / Ashchurch area using M5 Junction 9 and/or A46 to access the M5 and A46 for longer distance journeys (including towards Cheltenham and Gloucester).</li> </ul>
<b>Public transport users</b>	<p>Public transport users include rail, bus and taxi passengers and some journeys may involve interchange between modes. Ashchurch for Tewkesbury rail station is accessed via the A46 and Northway Lane. It is served by frequent bus services via Northway to Tewkesbury, Cheltenham and Gloucester although most of these do not currently route via M5 Junction 9 or the A46 and there are gaps in bus stop provision on the A46.</p>

Group	Description of group
<b>Non-motorised users</b>	<p>Non-motorised users include walkers, cyclists, wheelers and horse riders travelling along and/or across the A46 and M5 Junction 9. Most of these journeys are likely to be local and would include commuting and children travelling to school as well as leisure trips with key destinations including:</p> <ul style="list-style-type: none"> <li>• Tewkesbury Academy</li> <li>• Ashchurch Primary School</li> <li>• Shannon Way employment area (with link to walking / cycling path via old rail line for onward travel to Tewkesbury town centre)</li> <li>• Alexandra Way / Northway Lane employment areas and MOD</li> <li>• Ashchurch for Tewkesbury rail station</li> <li>• Dobbies Garden Centre and Cotswold Designer Outlet.</li> </ul>
<b>Local communities</b>	<p>The A46 passes through residential areas at Ashchurch. Residential properties to the west of Aston Cross junction have direct driveway access on to the A46, with other key residential side roads being Tirl Brook Road, Fitzhamon Park, St Davids Road and Ashchurch Road (which also provides access to Ashchurch Primary School). These communities are therefore directly reliant on the A46 for access and affected by severance, noise and air quality impacts from the high traffic volumes including HGVs using the route.</p> <p>Other local communities that are likely to have an interest in the scheme include:</p> <ul style="list-style-type: none"> <li>• Residential areas at Northway and Newtown including schools located along the A438 immediately west of M5 Junction 9, the new developments at Fiddington Fields and wider town of Tewkesbury</li> <li>• Communities at Pamington and Aston on Carrant that are connected to the A46 by the B4079 at Aston Cross</li> <li>• Communities that may be affected by a new alignment of the A46 including the villages of Fiddington and Teddington, farms and other isolated properties</li> <li>• Communities located along the A46 north of Teddington Hands including Beckford, Ashton under Hill, Sedgebarrow and Hinton on the Green.</li> </ul>

## 2.5. Planning and policy contexts

### 2.5.1. Overview

The principal policy document for the scheme is the National Networks National Policy Statement (NN NPS), published by the previous UK Government in May 2024. The NN NPS provides planning guidance for nationally significant road, rail and strategic rail freight interchange projects. Section 104(3) of the Planning Act 2008 requires the Secretary of State to decide the application in accordance with the NN NPS, except to the extent that certain other considerations apply.

Certain national and local policy documents have the status of ‘material considerations’ in the determination of applications made for a Development Consent Order (DCO) for Nationally Significant Infrastructure Project (NSIP) (see Table 2-3). These are described in more detail in the following sub-sections.

**Table 2-3 - Planning policy context – national and local policy documents**

<b>National planning policy</b>	
NN NPS (May 2024)	<a href="https://www.gov.uk/government/policies/national-networks-national-policy-statement">National Networks National Policy Statement - GOV.UK (www.gov.uk)</a>
National Planning Policy Framework (December 2023)	<a href="https://www.gov.uk/government/policies/national-planning-policy-framework">National Planning Policy Framework - GOV.UK (www.gov.uk)</a>
<b>Local Transport Plan</b>	
Gloucestershire’s Local Transport Plan 2020-2041 (May 2021)	<a href="https://www.gloucestershire.gov.uk/transport-planning">Gloucestershire LTP 2020-2041   Gloucestershire County Council</a>
<b>Local planning policy</b>	
Gloucester, Cheltenham and Tewkesbury Joint Core Strategy 2011-2031 (Adopted December 2017)	<a href="https://www.strategiclocalplan.org/">» Adopted Joint Core Strategy (strategiclocalplan.org)</a>
Tewkesbury Borough Local Plan 2011 – 2031 (Adopted June 2022)	<a href="https://www.tewkesbury.gov.uk/development-planning">Adopted development plans - Tewkesbury Borough Council</a>

## 2.5.2. National policy

### 2.5.2.1. The National Networks National Policy Statement (May 2024)

The NN NPS sets out the need for and Government’s policies to deliver development of Nationally Significant Infrastructure Projects (NSIPs) on the national road and rail networks in England. The criteria for nationally significant road, rail and rail freight infrastructure projects are defined in the Planning Act 2008 (PA08) and it provides planning guidance for promoters of NSIPs on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State. It serves as the primary guideline for decision-making regarding the scheme, though other national and local policies may also be considered by the Secretary of State.

The NN NPS outlines the national importance of “creating a more accessible and inclusive transport network that provides a range of opportunities and choices for people to connect with jobs, services and friends and family”. The policy document also sets out the role the strategic road network plays in driving prosperity by “facilitating the movement of goods and people between England and other parts of the UK.”

#### General principles of development

Paragraph 4.2 states that “there is a presumption in favour of granting development consent for national networks Nationally Significant Infrastructure Projects (NSIPs) that fall within the



need for infrastructure established in this National Policy Statement (NPS) and which comply with the policies in this NPS.”

### **The need for development of the national networks**

Paragraph 2.1 states that “national networks provide critical long-distance links between places, offering fast and reliable journey times and in doing so enable connectivity between people and communities, which in turn supports and stimulates economic growth. As recognised through the government’s economic growth and levelling up agenda, improved connectivity, and accessibility, both locally and interregional, facilitates deeper labour markets giving individuals better access to jobs, and education, and businesses better access to skills.”

Paragraph 3.2 states that “population growth and economic growth are the most critical influences on travel demand. There has been a steady growth in the population of Great Britain over the last 20 years and the population is projected to increase further by 7.2% between 2025 and 2060.” The policy goes on to state that “without investment and infrastructure interventions, increasing demand will lead to decreasing network performance for users, for example, poorer journey time reliability, which comes with economic and social costs.”

Paragraph 3.4 states that “poor network performance, in the form of congestion or unexpected delays undermining reliability, has many costs. These costs include constraining economic activity by increasing costs to businesses and can constrain job opportunities if they limit access to labour markets. It causes frustration and stress for users.”

Paragraph 3.8 states that “transport infrastructure is a catalyst and key driver of growth, and it is important that the planning and development of infrastructure fully considers the role it can play in delivering sustainable growth, how it can support local and regional development plans and the growth aspirations of local authority areas. This will include exploring options to unlock sites for housing and employment growth made accessible by sustainable transport and the regenerative impact major infrastructure can play in driving renewal, increasing density, as well as creating new places and communities.”

### **Government’s policy for addressing need of the national road network**

Paragraph 3.46 states that “the government’s wider policy is to bring forward improvements and enhancements to the existing SRN where necessary to address the needs set out earlier. Enhancements to the existing national road network will include but are not limited to:

- New and improved junctions and slip roads
- Improvements to trunk roads, in particular, dualling of single carriageway strategic trunk roads and additional lanes on existing dual carriageways
- Measures to enhance capacity of the motorway network.”

### **Scheme compliance with the National Policy Statement**

Assessment of the scheme’s compliance with the policies set out in the National Networks National Policy Statement is included in the ‘Analysis of shortlisted options’ document which

can be found on the Have Your Say website:

<https://haveyoursaygloucestershire.uk.engagementhq.com/junction-9>.

### 2.5.2.2. National Planning Policy Framework (December 2023)

The NPPF sets out the Government's planning policies for development seeking consent under the Town and Country Planning Act (1990) in England and how these should be applied, with a presumption in favour of sustainable development. This section is based on the NPPF published by the previous Government in December 2023. The new Labour Government is consulting on proposed changes to the NPPF.<sup>3</sup>

The NPPF forms an important consideration for the determination of NSIPs seeking a DCO under the PA08. It sets out key principles of relevance to the scheme including delivering a sufficient supply of homes, building a strong, competitive economy, promoting healthy and safe communities and promoting sustainable transport.

The NPPF does not provide specific policies relating to NSIPs. Paragraph 1.9 of the NN NPS states that the NPS and NPPF are consistent, with paragraph 1.18 stating that the NPPF may be an important and relevant consideration "but only to the extent relevant to that project".

The NPPF is explicit about the role of NPS being the primary decision-making document for NSIPs under the Act. Paragraph 5 of the NPPF states "The Framework does not contain specific policies for nationally significant infrastructure projects. These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the NPPF). National policy statements form part of the overall framework of national planning policy and may be a material consideration in preparing plans and making decisions on planning applications."

The provision of the scheme is expected to align with the NPPF by fulfilling the economic objective and strategic policy for transport infrastructure. It will also contribute to the NPPF's goal of enhancing travel conditions and bolstering economic growth through improved infrastructure.

In terms of development planning in the wider area in proximity to M5 Junction 9, the NPPF provides an overarching policy framework in terms of how local planning authorities are to produce their local plans. The policies set out in the NPPF apply to the preparation of local and neighbourhood plans and to decisions on planning applications, and cover topics including housing supply and promoting sustainable transport.

The NPPF therefore provides the overall framework for how local policy documents such as the new Strategic and Local Plan and the Tewkesbury Borough Local Plan are formed in terms of their policy direction. This includes policy on housing supply and housing delivery targets.

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<sup>3</sup> Please see [Proposed reforms to the National Planning Policy Framework and other changes to the planning system - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/proposed-reforms-to-the-national-planning-policy-framework-and-other-changes-to-the-planning-system) for further information.

### 2.5.3. National Highways' Route Strategies

In 2023, National Highways published 'Connecting the country: our long-term strategic plan to 2050': <https://nationalhighways.co.uk/our-roads/future-roads/connecting-the-country/>. A series of 'Route Strategies Initial Overview Reports' were also published: <https://routestrategies.nationalhighways.co.uk/>.

The long-term vision set out in 'Connecting the country' is that: 'The Strategic Road Network is part of a seamlessly integrated transport system that meets our customers' needs by connecting the country safely and reliably, delivering economic prosperity, social value and a thriving environment.'

Two Route Strategies are relevant to the scheme:

- Birmingham to Exeter covers the whole of the M5 including Junction 9
- South Midlands includes the A46 from M5 Junction 9 to Coventry.

#### **Birmingham to Exeter (M5)**

In respect of M5 Junction 9, the Birmingham to Exeter report notes:

- In relation to safety, based on data for 2015-2018 there was a higher number of killed or seriously injured on both carriageways between M5 Junction 9 and 10, and southbound between Junction 8 and 9 compared to the route as a whole
- A key challenge highlighted across the route is long slip road queues extending onto the mainline under peak traffic demand
- Route performance is forecast to decline due to future increases in traffic flow demands, population and housing growth. Greatest morning peak delays are forecast at several locations including the M5 north and south of Junction 9

Initial route objectives identified include:

- Facilitate safe and effective connections to adjoining east-west routes (including the A46 Trans Midlands Trade Corridor) to promote strategic and regional connectivity and support economic activity
- Support delivery of regionally significant and sustainable economic development and housing, whilst maintaining the safe and effective operation of the network (with Ashchurch being one of the highlighted strategic development sites)
- Be a better neighbour by safeguarding the environment, reducing severance, and reducing any significant noise and air quality impacts for local communities, including at Tewkesbury.

Finally, the Birmingham to Exeter report outlines 'proposed locational areas for further consideration' to be explored in future roads periods. The sections of the M5 either side of Junction 9 are highlighted with key issues identified as follows:

- A relatively high number of road users have been killed or seriously injured in collisions on the M5 between Gloucester and Worcester

- Whilst not as great as on southern sections of the route, seasonal delays also occur. Morning peak delay is forecast to increase in both directions on this section in the future
- Long slip road queues currently form at junctions within this section, where the M5 provides access to connecting east-west route
- Severance issues have also been identified at Junction 9
- Significant development growth is planned at Tewkesbury south of Junction 9 and around Junctions 10 and 11, leading to forecasts of increased morning peak delay in the future.

### South Midlands (including A46)

In respect of the A46 at Ashchurch, the South Midlands report notes:

- In relation to safety, the A46 between Tewkesbury and north of Evesham only has an International Road Assessment Programme star rating<sup>4</sup> of 1 or 2. Other key challenges highlighted include walking, cycling and horse-riding casualties along sections of the A46, and limited active travel mode use due to safety concerns
- Sections of the A46 experience seasonal delays, often during holiday periods, including on the approach to M5 Junction 9. They also experience significant incidents-related delay, impacting on the reliability of this section of the route
- The A46 on approach to M5 Junction 9 is forecast to experience increased delays and unreliability by 2031 due to traffic growth from developments and wider economic growth, with planned housing development highlighted as a key challenge.

Initial route objectives identified include:

- Provide safe journeys on the A46 for local communities and all road users, including pedestrians, cyclists and horse riders. In addition to reducing collisions, reduced severance and improved walking and cycling facilities are sought, principally for smaller settlements along the route
- Delivery of sustainable housing developments along the A46
- Improve integration with sustainable transport modes to reduce the number of short journeys by car and encourage active travel along the A46
- Support facilities to enable the efficient movement of goods, and help improve driver welfare, within the Midlands region and to strategic destinations across the UK
- Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on communities along the route.

Finally, regarding 'proposed locational areas for further consideration' the South Midlands report states the following in respect of the A46 at Ashchurch:

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<sup>4</sup> International Road Assessment Programme Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road. The higher the star rating, the safer the road. Ratings are produced for each 100-metre section of road, based on detailed inspections of roadside features as well as traffic flow, speed, pedestrian and cyclist use, and crash data.

- There is substantial housing development planned at the A46 junction with the M5. This section is the start of the A46 and M69 strategic south-west to north-east corridor, linking the M5 with the M1
- This section of the A46 has a low safety rating
- There is evidence of morning and afternoon peak delays on the southbound approach to M5 Junction 9.
- This section is one of Midlands Connect's priority areas for investment.

#### 2.5.4. Gloucestershire Local Transport Plan (2020 – 2041)

The Local Transport Plan (LTP) sets out the transport issues and priorities for the county. It identifies M5 Junction 9 as a junction where key highway routes join on the A46/A438 corridor providing access to the M5, with the A46 being an important link providing access between the M5 and M69 near Coventry.

The LTP states that M5 Junction 9 and the A46 corridor suffers from congestion in peak hours and is recognised as an issue by National Highways and Gloucestershire County Council. In its current form, the M5 Junction 9 / A46 will restrict future growth, particularly the Tewkesbury Garden Town proposals. The LTP then goes on to state that M5 Junction 9 and A46 corridor has been recognised as one of Gloucestershire's primary highway infrastructure priorities.

#### 2.5.5. Local planning policy

Tewkesbury borough's current development plan includes:

- The Joint Core Strategy for Cheltenham Borough Council, Gloucester City Council and Tewkesbury Borough Council (JCS, adopted in December 2017)
- Tewkesbury Borough Local Plan 2011 – 2031, adopted in June 2022.

A new Strategic and Local Plan (SLP) is being prepared for the combined Cheltenham, Gloucester and Tewkesbury Local Planning Authority areas, but is currently at a relatively early stage of development, with a Regulation 18 Issues and Options Consultation undertaken in January – March 2024.

#### **Cheltenham, Gloucester and Tewkesbury Joint Core Strategy 2011-2031 (Adopted 2017)**

The Joint Core Strategy (JCS) is a partnership between Cheltenham Borough Council, Gloucester City Council and Tewkesbury Borough Council which sets out an overarching planning framework for the three areas. This document outlines the long-term vision and objectives for development in Gloucester, Cheltenham and Tewkesbury, including housing and employment growth and the supporting infrastructure that will be needed.

Policy A5 – Ashchurch from the JCS outlines the development allocation for the Ashchurch area. This comprises a 14-hectare employment site that has since gained planning permission for a retail outlet and garden centre near the existing M5 Junction 9 (Strategic allocation A9). The garden centre opened in November 2022 while the retail outlet centre (Cotswold Designer Outlet) is now under construction.

## **Tewkesbury Borough Local Plan (Adopted June 2022)**

The Tewkesbury Borough Plan 2011-2031 was adopted on 8 June 2022 at a Special Meeting of Full Council at TBC. Policy TRAC6 in the Adopted Local Plan details that TBC supports highway infrastructure improvements along the A46 corridor to M5 Junction 9, including 'online' and 'offline' measures, along the A46 where they improve accessibility for all modes of transport and promote journey time reliability. (However, no scheme alignment is currently allocated within the Tewkesbury borough development plan).

## **Cheltenham, Gloucester and Tewkesbury Strategic and Local Plan (under development)**

The adopted JCS committed to reviewing housing supply and retail/town centre issues. This review has subsequently been replaced by proposed development of a Cheltenham, Gloucester, and Tewkesbury Strategic and Local Plan, with a Regulation 18 Issues and Options Consultation taking place between 16 January and 12 March 2024.

The SLP will feature both broad and detailed policies for Cheltenham, Gloucester, and Tewkesbury. The Issues and Options Consultation document presented six sustainable development scenarios, including urban concentration, rural dispersal, and sustainable transport options. However, none of these scenarios would, on their own, deliver sustainable development; the final strategy will be a combination of different elements.

One of the development scenarios relates to new strategic settlement (Scenario 4). This option would mean seeking to deliver development through one or more comprehensive, master-planned new settlements, of a minimum of around 4,000 new homes with supporting infrastructure. Currently, three such potential locations have been identified – one being Tewkesbury Garden Communities (Tewkesbury Garden Town).

The next stage in the development of the SLP is expected to be a further Regulation 18 consultation during 2025 which will identify preferred spatial options. Further information regarding the SLP is available at: <https://strategiclocalplan.org/>.

## **2.6. Tewkesbury Garden Communities**

Tewkesbury Borough Council is promoting the Tewkesbury Garden Communities to meet future housing and employment land needs for the borough. The TGC programme is in its early stages and the ambition is to deliver the development over the next 30 years. The Ministry of Homes, Communities and Local Government awarded Garden Town status to the TGC in March 2019.

TBC re-confirmed its support to TGC development in September 2023 and subsequently have produced and consulted on a 'Garden Communities Charter' which sets out principles for development. The charter was formally endorsed by TBC in February 2024 and is available at: <https://tewkesbury.gov.uk/wp-content/uploads/2024/03/Tewkesbury-Garden-Communities-Charter.pdf>. With respect to transport and connectivity, the charter indicates that there should be:

- A focus on walking, cycling and improved access to public transport, including making the A46 a more attractive route for walking and cycling and improved links to Tewkesbury for Ashchurch rail station

- The delivery of a ‘strategic traffic solution to reduce existing congestion and support housing and economic growth’.

The potential scope of TGC development is illustrated in the Draft Concept Plan published by TBC in 2021 (Figure 2-2). This includes existing planning consents, plus Garden Communities at North Ashchurch and South Ashchurch and development to the west of the M5 at Mitton<sup>5</sup>. It also includes references to a ‘future transport corridor’ to the south of Concept Plan area but was produced prior to the development of options for this scheme.

**Figure 2-2 - Tewkesbury Garden Town Concept Plan, October 2021**



Since the 2021 Concept Plan was produced, further housing development has been consented in Fiddington development area (Fiddington Fields). The focus of future Garden Communities development is therefore expected to be mostly on sites located to the east of the Birmingham to Bristol rail line (with North Ashchurch development extending west of the rail line to the north of the existing community of Northway).

Large scale development will require investment in infrastructure including provision for active modes (walking, wheeling and cycling), public transport (rail and bus) and roads. The scope of transport infrastructure investment required will be determined through the SLP and

<sup>5</sup> The Mitton development area lies in the Wychavon Borough Council area and is subject to allocation in the South Worcestershire Development Plan Review, submitted for examination in September 2023. (<https://www.localplanservices.co.uk/swdpreview>)

statutory planning processes for individual developments. However, it is anticipated that this scheme would be required to unlock the scale of Garden Community development indicated in Figure 2-2.



## 3. Existing transport conditions

### 3.1. Overview

This section summarises the existing conditions in respect of M5 Junction 9 and the A438 / A46 corridor between Tewkesbury and Teddington Hands roundabout, east of Ashchurch. It includes:

- Descriptions of the current transport infrastructure including provision for sustainable modes
- Descriptions of current traffic conditions and how these are forecast to change
- Analysis of data regarding road safety (vehicle collisions)
- Descriptions of engineering and environmental conditions that could act as a constraint to the scheme.

### 3.2. Current provision along the A46 corridor

Highway provision and design standards vary along the A46. While most of the route is either a rural dual or single carriageway with National Speed Limit, the 3km section at Ashchurch (between M5 Junction 9 and the Aston Cross junction) is the only urban single-carriageway section of the A46 south of Coventry (Table 3-1).

**Table 3-1 - A46 current provision and design standards (Coventry to Tewkesbury)**

A46 Section	Length	Current provision / design standard	Speed limits
Coventry Bypass (Stivichall Interchange) to M40 Junction 15 (includes Warwick Bypass)	16km	Rural dual carriageway with grade-separated junctions	National Speed Limit
M40 Junction 15 to A439 Marraway roundabout	3km	Rural dual carriageway with limited at-grade junctions	National Speed Limit
A439 Marraway roundabout to A435 Oversley Mill roundabout	17km	Rural single carriageway with at-grade junctions	National Speed Limit
A435 Oversley Mill roundabout to A44 Twyford roundabout	12km	Rural dual carriageway with limited at-grade junctions	National Speed Limit
A44 Twyford roundabout to A4184 Cheltenham Road roundabout (Evesham Bypass)	6km	Rural single carriageway with limited at-grade junctions	Mostly National Speed Limit with some 40/50 mph sections

A46 Section	Length	Current provision / design standard	Speed limits
A4184 Cheltenham Road roundabout to B4079 Aston Cross junction	13km	Rural single carriageway with at-grade junctions	Mostly National Speed Limit with some 40/50 mph sections
B4079 Aston Cross junction to M5 Junction 9 (Ashchurch)	3km	Mostly urban single carriageway with at-grade junctions	30/40mph

### 3.3. M5 and A46 in North Gloucestershire

Throughout Gloucestershire, the M5 is a three-lane motorway. M5 Junction 9 is located approximately 3 miles south of Junction 8 (which provides connection to the M50) and 4 miles north of Junction 10.

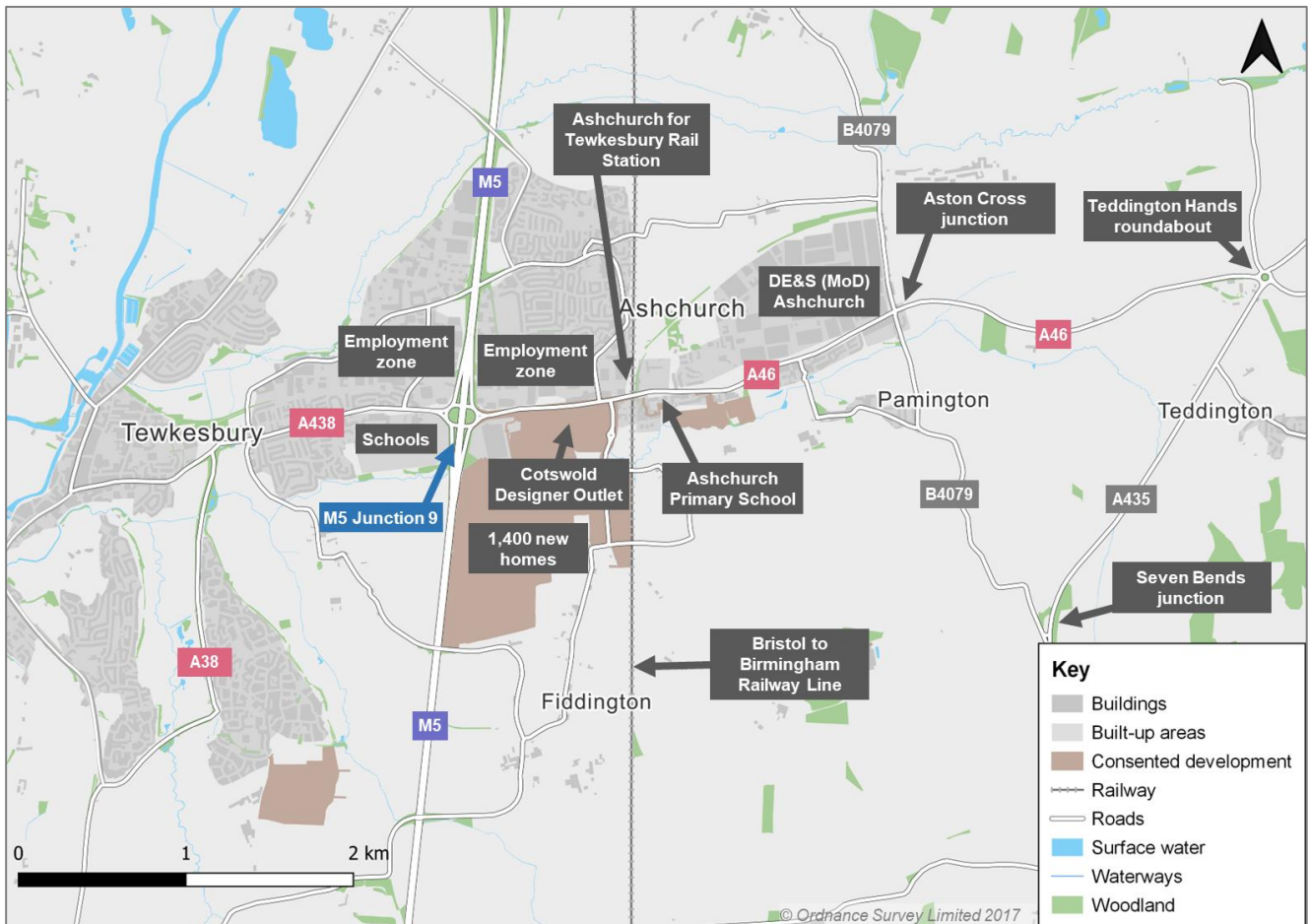
M5 Junction 9 is formed by a signal-controlled four-arm roundabout junction with slip roads to/from the M5. The A438 and A46 form the western and eastern arms respectively. The roundabout itself is generally limited to two circulatory lanes, although some widening was completed in 2023 on the western side by Robert Hitchins Limited as part of the mitigations agreed for the retail and housing developments on the eastern side of the M5.

Figure 3-1 shows how M5 Junction 9 occupies a central location in the combined Tewkesbury and Ashchurch urban area, with the M5 separating the two towns and the A46 forming the main east-west route through Ashchurch.

The existing urban area extends as far east at the B4079 Aston Cross junction. Between the M5 and B4079, the A46 provides access to both residential areas and commercial facilities including:

- Northway Trading Estate, Ashchurch for Tewkesbury Rail Station and Northway residential area
- Cotswold Designer Outlet and over 1,400 new homes under construction
- Ashchurch Primary School
- Defence Equipment and Supplies (DE&S) Ashchurch (MOD's primary vehicle storage and distribution site for armoured and soft skinned vehicles)
- Residential areas extending along most of the southern side of the A46 between the rail line and Aston Cross junction.

Access to these facilities and residential areas from the A46 is provided via a sequence of signalised junctions between the M5 and rail line (four in total) and priority junctions between the rail line and signalised Aston Cross junction. In addition, residential properties west of Aston Cross have direct access from the A46.

**Figure 3-1 - The M5 and A46 at Ashchurch**


The A46 is mostly a single carriageway road, except for the first section between the M5 and Alexandra Way / Diamond Road. Various speed limits apply between M5 Junction 9 and Teddington Hands roundabout:

- 40mph between M5 Junction 9 and west of Northway Lane
- 30mph between Northway Lane and east of Fitzhamon Park
- 40mph between east of Fitzhamon Park and east of Aston Cross junction
- National Speed Limit (60 mph) between east of Aston Cross junction and Teddington Hands roundabout.

Land immediately west of M5 Junction 9 (accessed from the A438 Ashchurch Road) is occupied by schools (including Tewkesbury Academy) and the Shannon Way employment area. At peak times, conflicts between long-distance traffic, local traffic and use of crossings by walking and cycling users (including children travelling to the schools) results in congestion along the A438 and A46, also affects M5 Junction 9.

To the east of Ashchurch, Teddington Hands roundabout connects the A46 to the A435 (towards Bishop Cleeve) and B4077 (towards the rural villages of Alderton and Toddington). There is a large truck stop, farm shop, petrol station and pub (Teddington Hands Inn)

adjacent to the roundabout with access to the site from the A435. The Teddington Hands truck stop was expanded in 2023 and provides 24-hour secure parking for up to 150 HGVs.

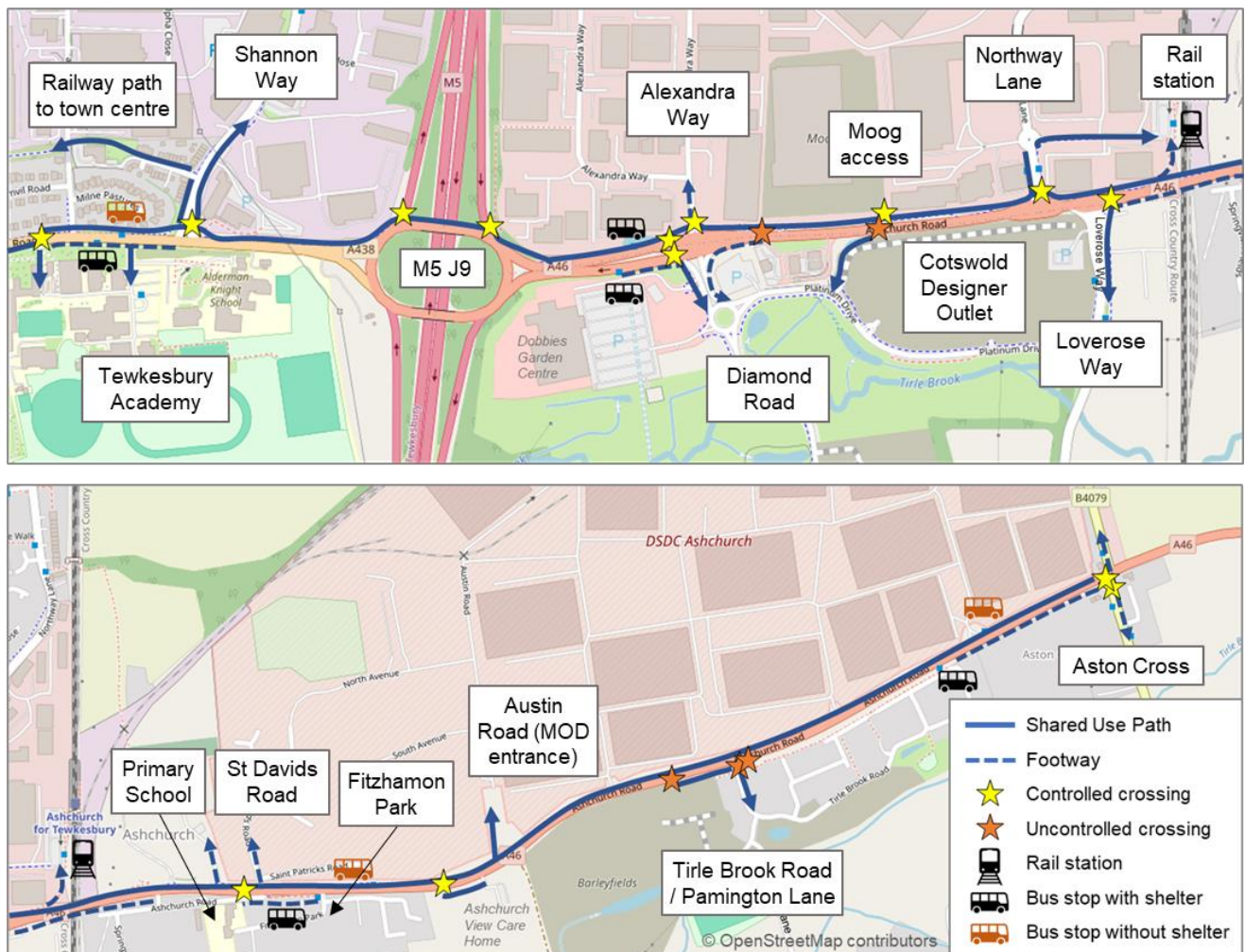
To the south of the Teddington Hands roundabout and business accesses, the A435 is a single carriageway which continues south towards Bishops Cleeve. Approximately 500m south of the roundabout, access to Teddington village is provided by a simple priority junction. The junction with the B4079 at Seven Bends is a further 2km to the south.

### 3.4. Provision for sustainable modes

#### 3.4.1. Existing provision for pedestrians and cyclists

Figure 3-2 highlights the main sustainable transport features between Tewkesbury Academy and Aston Cross.

Figure 3-2 - Provision for sustainable modes along the A438 / A46 corridor



Current provision includes a Shared Use Path for walking and cycling running along the northern side of the A438 / A46 from the crossing outside Tewkesbury Academy (west of Shannon Way) to approximately 80m west of the A46/B4079 Aston Cross junction. It provides the main walking and cycling route to Tewkesbury Academy and the railway path

towards Tewkesbury from residential areas to the east of the M5. It also provides access via Northway Lane to Ashchurch for Tewkesbury rail station.

There are four pairs of bus stops (although only the Tewkesbury Academy stops are currently served by frequent scheduled services). There is currently no provision for walking and cycling between Aston Cross and Teddington Hands roundabout, nor any bus stops on the A46 to the east of Aston Cross.

While formally designated for shared use, the SUP along the A438 / A46 does not meet current design guidance due to:

- Inadequate width to accommodate both pedestrians and cyclists or to allow cyclists to pass each other along its full length
- No horizontal separation or buffer from traffic along most of its length
- It stops short of the Aston Cross junction – cyclists must cycle on-road to access the B4079 (although Pamington Lane provides an alternative route to the south)
- Side road crossings do not meet current design standards.

In addition, there is no continuous footway or SUP on the southern side of the A438 / A46 and some crossings over the A46 remain uncontrolled (notably by the new housing at Tirlle Brook Road and between the Moog entrance and new SUP to the Cotswold Designer Outlet.

### **3.4.2. Existing and planned bus services**

Figure 3-3 shows the main scheduled bus routes serving Tewkesbury and Ashchurch as of June 2024. Stagecoach runs four bus services between Cheltenham and Tewkesbury. From Cheltenham, each service follows the A4019 (Tewkesbury Road) over M5 Junction 10, before joining the A38 on the way to Tewkesbury town centre. Other services connect Tewkesbury with Gloucester and Bishops Cleeve.

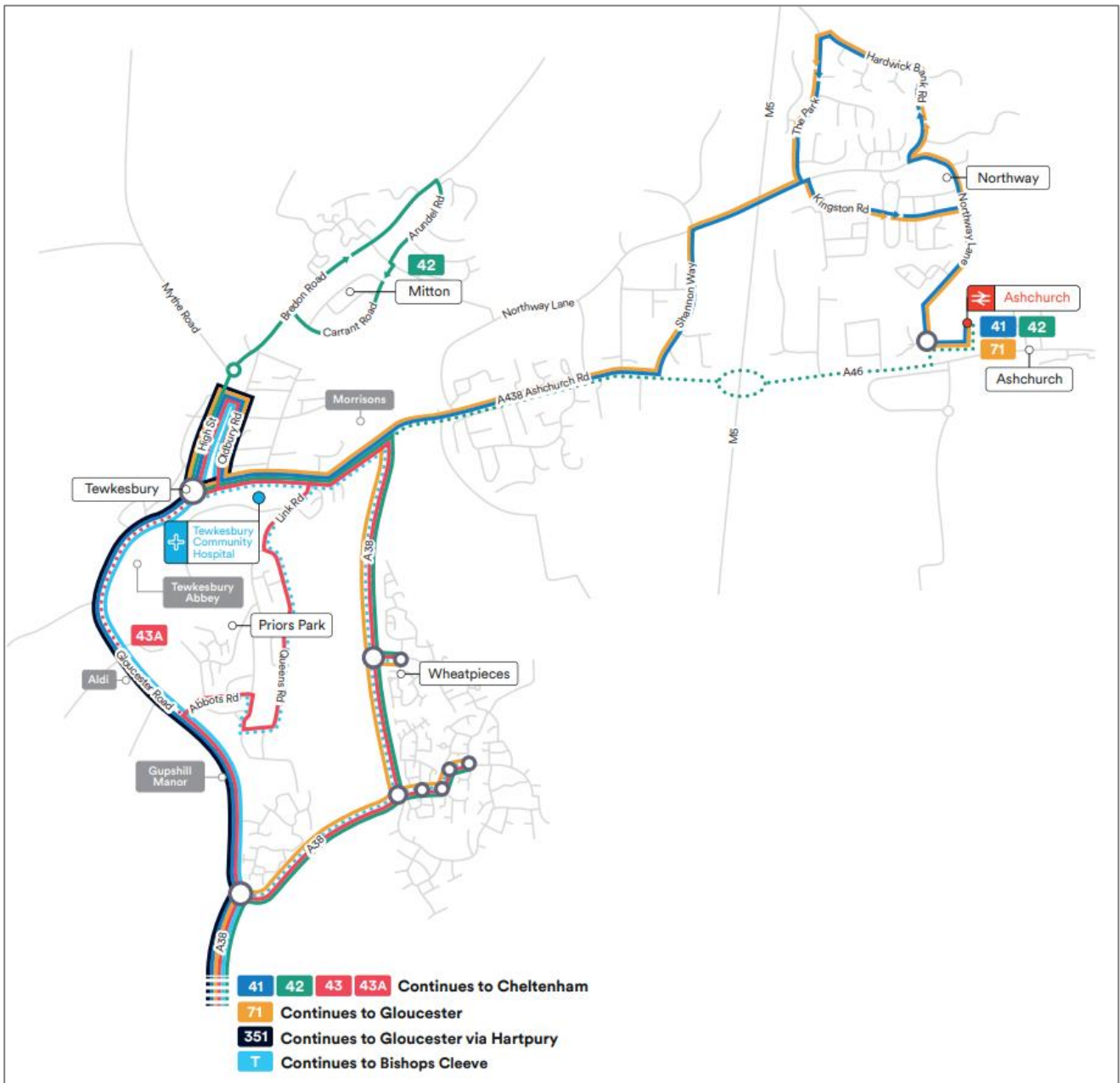
The Northway area is served mainly by route 41 (to Cheltenham) and route 71 (to Gloucester) with these services combining to provide up to four buses per hour in each direction between Tewkesbury and Ashchurch for Tewkesbury Rail Station via Shannon Way and Northway Lane. On Sundays, only the 41 operates providing an hourly service.

The 42 route provides an alternative service around Tewkesbury and Mitton (connecting to Cheltenham) on a similar frequency to the 41. Some journeys on the 42 route do not serve Mitton but extend along the A438/A46 to Ashchurch for Tewkesbury Rail Station – but they are limited to just two services in each direction between 07:00 and 08:00 and three services in each direction between 17:30 and 20:00.

Although there are bus stops located along the A46 to the east of Ashchurch for Tewkesbury Rail Station, currently they are only served by a daily school bus service from Tewkesbury to Winchcombe School. Astons Coaches run route 540 between Evesham and Tewkesbury, which runs hourly on weekdays and Saturday, between approximately 7.30am and 6pm. The service avoids the A46 south of Beckford and routes to north of Ashchurch via Bredon to serve villages in this area, before re-joining the A46 towards Evesham.

Given the size of the developments underway at Fiddington (located to the south of the A46 between the M5 and rail line), conditions have been attached requiring various transport mitigations to be provided by the developer through a Section 106 agreement. This includes requirements for a bus service to be financially supported by the developer, which is expected to operate a 30-minute core frequency between the housing development, Cotswold Designer Outlet and Tewkesbury town centre.

**Figure 3-3 - Tewkesbury and Ashchurch bus services operated by Stagecoach (June 2024)**



Sourced from: [0123 Tewkesbury Map \(tison-maps-stagecoachbus.s3.amazonaws.com\)](https://tison-maps-stagecoachbus.s3.amazonaws.com/0123_Tewkesbury_Map)

### 3.4.3. Rail services

Ashchurch for Tewkesbury rail station is located immediately north of the A46, accessed via Northway Lane and Ashchurch Parkway. There is a separate footpath for pedestrian access which connects the rail station to the A46 opposite Loverose Way.

Rail services are provided mostly by GWR – operating hourly in both directions between Bristol Temple Meads and Worcester Foregate Street / Shrub Hill and calling at various stations including Cheltenham Spa, Gloucester and Bristol Parkway. In addition, a limited number of CrossCountry services call at Ashchurch for Tewkesbury on the Nottingham to Cardiff Central route (operating via Birmingham New Street and Derby).

The rail station also acts as the terminus for Stagecoach bus services, with up to four bus services per hour between the station and Tewkesbury town centre.

## 3.5. Traffic levels, journey times and delays

### 3.5.1. Overview

Having considered the road network and surrounding development, this section considers the levels of traffic which uses the A46 corridor between M5 Junction 9 and the Teddington Hands roundabout, and the level of congestion typically experienced by motorists at different times of the day. This is based on analysis of a range of observed traffic data sources to provide an accurate picture of existing conditions. Most of the data presented pre-dates the COVID-19 epidemic as travel patterns and traffic volumes were clearly impacted by this between 2020 and 2022. Where more recent data is available, additional observations are provided.

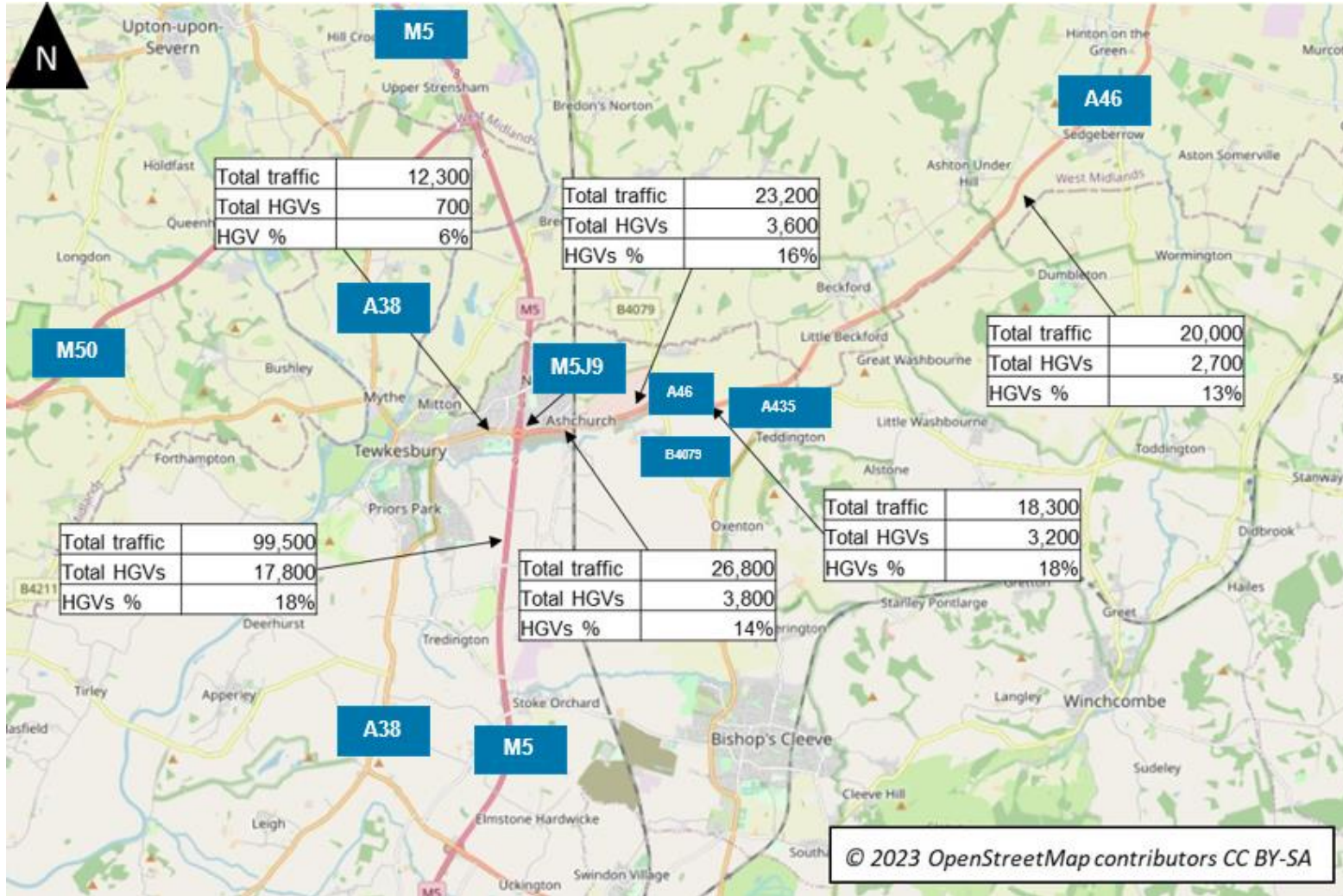
### 3.5.2. Traffic volume

Traffic count data (collected for July 2017 prior to the school summer holidays) has been analysed to understand the typical level of traffic in the local area. The observed 24-hour Average Weekday Traffic (AWT) for several locations along the A46, the A438 and the M5 is plotted in Figure 3-4. Where suitable data is available, the number and proportion of HGVs at each location is also presented.

Figure 3-4 shows that the volume of traffic on the A46 is highest between Alexandra Way and Northway Lane where there are a large number of employment sites adjacent to M5 Junction 9. Slightly lower levels of traffic are observed further east along the corridor.

The levels of HGVs along the A46 are consistently greater than 13% of all vehicles. Both the proportion and volume of HGVs are well in excess of the levels seen on the A438 to the west and generally comparable to the proportions seen for the M5 mainline. This reflects the role the A46 corridor plays in supporting the strategic movement of freight between the South West and the Midlands.

Figure 3-4 - 24-hour Average Weekday Traffic flows (July 2017)





The DfT produces annual statistics on road traffic vehicle kilometres by vehicle type and road for Great Britain (Dataset TRA0204<sup>6</sup>). This dataset shows that for 2017 (consistent with the selected count data), for rural trunk A roads, the average proportion of HGVs in terms of vehicle kilometres is 8.7% of total vehicles. This again highlights the high proportion of HGV traffic using the existing A46 route (in excess of 13%).

Available long-term monitoring data from the National Highways WebTRIS database<sup>7</sup> for the A46 east of Beckford has been analysed from 2017 to 2023. As of October 2023, the average daily volume of traffic had reached the traffic levels seen in 2017, although notably traffic levels during weekday peak periods were still approximately 4-5% below pre-pandemic levels, consistent with national trends.

### 3.5.3. Source of traffic

Having considered the total volume and level of HGVs using the A46, it is also important to consider the source of traffic which is using the corridor. In September 2022, an Automatic Number Plate Recognition (ANPR) survey was conducted, analysing the origin and destination patterns of traffic using the A46 to the east of the Aston Cross junction. The proportions of where traffic then travels to, west of this location are presented in Table 3-2.

**Table 3-2 - A46 ANPR analysis showing proportion of traffic travelling to M5 or local destinations**

Destination	Proportion of traffic travelling from the A46 east of Aston Cross junction
To M5 southbound on-slip	49%
To M5 northbound on-slip	16%
To M5 (either on-slip)	<b>65%</b>
To A438 (towards Tewkesbury)	18%
To Ashchurch (before M5 J9)	17%

The analysis demonstrates that 65% of all traffic travelling westbound on the A46 east of Aston Cross is then joining the M5 motorway via M5 Junction 9 rather than travelling to more local destinations in either Tewkesbury or Ashchurch. Most of this traffic is headed southbound on the M5 towards the southwest. More local movements to either Tewkesbury or Ashchurch account for 35% of traffic using the corridor. A similar pattern was observed in the reverse direction, with 47% of traffic travelling to the A46 east of Aston Cross originating from the M5 south of Junction 9.

This analysis provides further evidence of how the A46 route is serving a strategic function in connecting the South West and the Midlands, whilst also providing local access to Tewkesbury and Ashchurch.

<sup>6</sup> [Road traffic estimates \(TRA\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

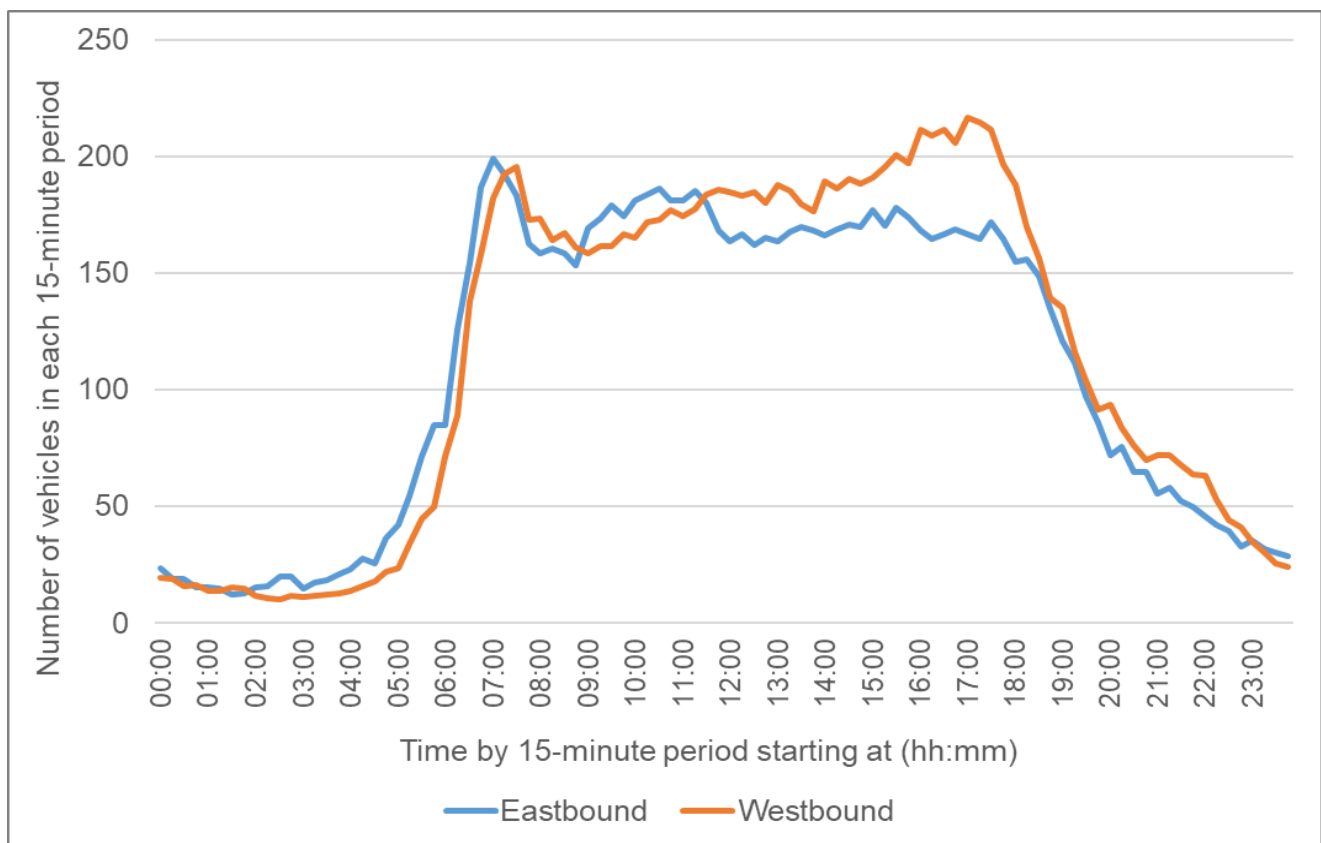
<sup>7</sup> [National Highways - WebTRIS - Map View \(highwaysengland.co.uk\)](https://highwaysengland.co.uk)

### 3.5.4. Variation in A46 traffic flows during the day

To understand the variation in traffic over the course of a typical weekday, analysis of National Highways’ WebTRIS traffic data from May 2023 is presented in Figure 3-5 for the A46 west of Aston Cross. Understanding the changes in flow across the day is important for understanding the congestion impacts as presented in the following sub-sections.

The profile shows a morning peak in both directions between 07:00 and 07:30 with traffic levels then staying consistently high throughout the day. There is an additional evening peak in the westbound direction between 15:30 and 18:00 in the evening. The relatively short initial peak in the morning and lack of a clear evening peak in the eastbound direction may be due to the signalised junctions either side of this section reaching their capacity, which then restricts traffic along this part of the A46.

**Figure 3-5 - Variation of traffic during the day on A46 west of Aston Cross (Mon-Fri)**



Data from 2017 for the same count site on the A46 west of Aston Cross was also inspected. This indicates very little change in the total volume and pattern of traffic westbound on this part of the A46, but that peak eastbound flows in 2017 were much higher (reaching an average of almost 250 vehicles per 15-minute period in both morning and evening peaks). The reduction in peak eastbound flow in 2023 compared to 2017 is much greater than the 4-5% reduction in traffic flows reported above in Section 3.5.2 for the A46 east of Beckford. This may therefore be due to localised changes to the A46 at Ashchurch including new signalised junctions between the M5 and rail bridge restricting eastbound traffic flow at peak times.

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Overall, the data indicates that the A46 at Ashchurch is at capacity during morning and evening peak periods, and is close to capacity for much of the day between these.

### 3.5.5. Corridor journey times

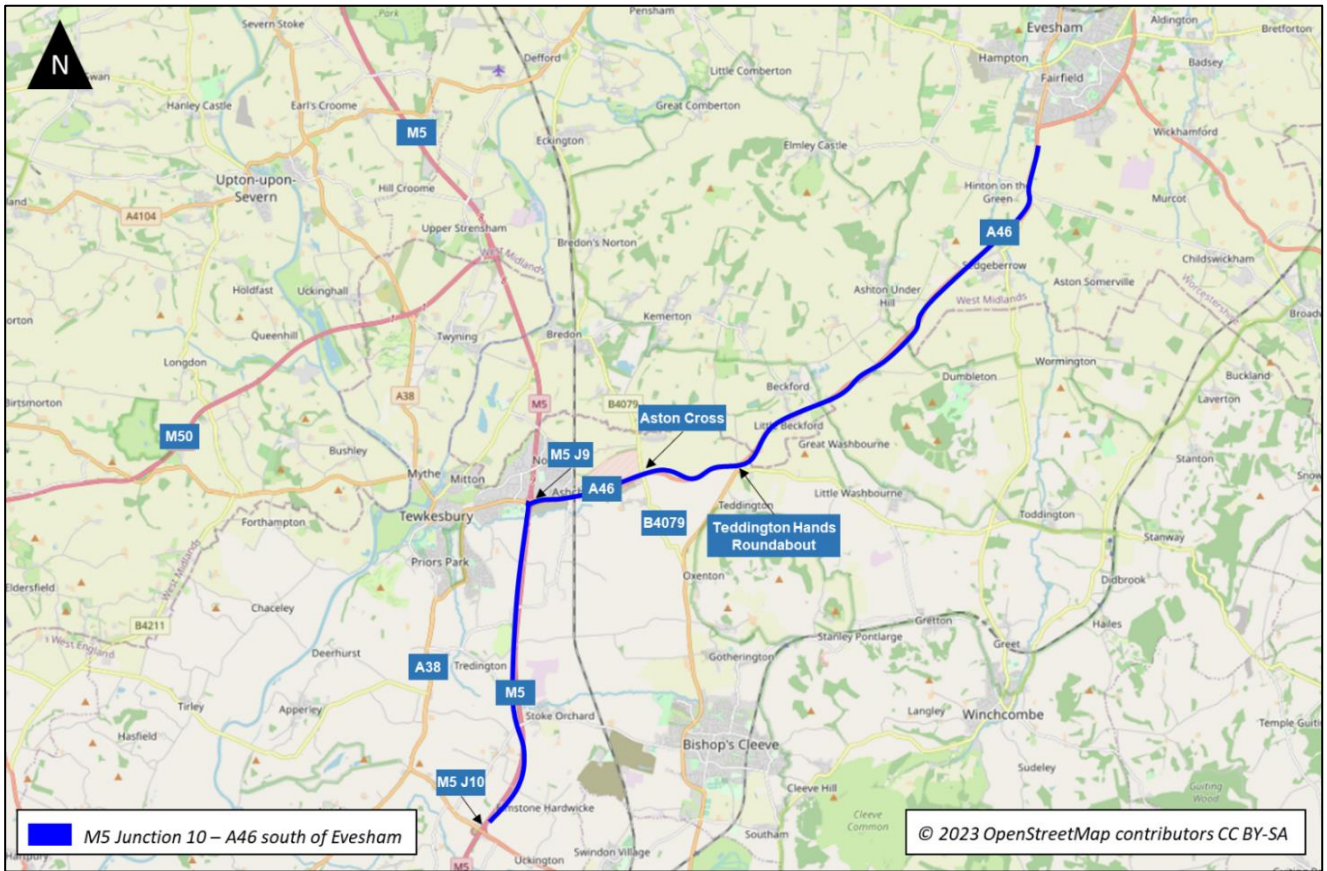
This section considers journey times for the corridor under typical conditions as well as when conditions are busier or more congested than normal (not including when there are major incidents on the route). To do this, GPS journey time data collected for September/October 2019 has been analysed for the strategic route between M5 Junction 10 and the A46 south of Evesham.

The extents of the route are shown in Figure 3-6, with Figure 3-7 and Figure 3-8 then presenting the journey time statistics for the eastbound and westbound direction respectively.

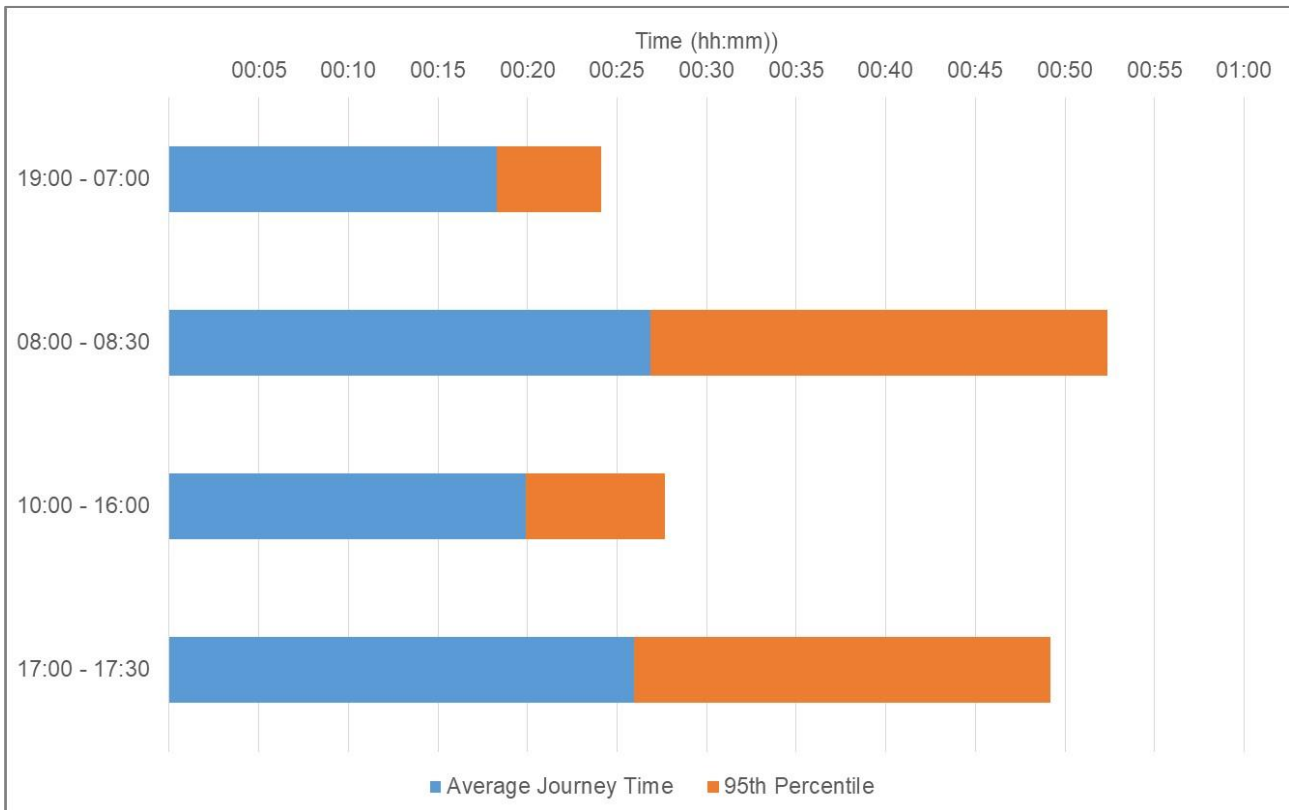
Analysis was undertaken across four different time periods: Off-peak (19:00–07:00), AM peak (08:00–08:30), Interpeak (10:00–16:00) and PM peak (17:00–17:30). Each graph presents the average journey time for each time period (shown in blue) and then the 95th percentile journey time (shown in orange).

The average journey time illustrates the typical day-to-day congestion and how this varies for the peak periods when traffic is busiest versus when traffic levels are lower. The 95th percentile is used to understand potential reliability issues at different times of the day and how much longer journeys can be (excluding the 5% slowest journeys which are often attributed to incidents or events such as roadworks on the network).

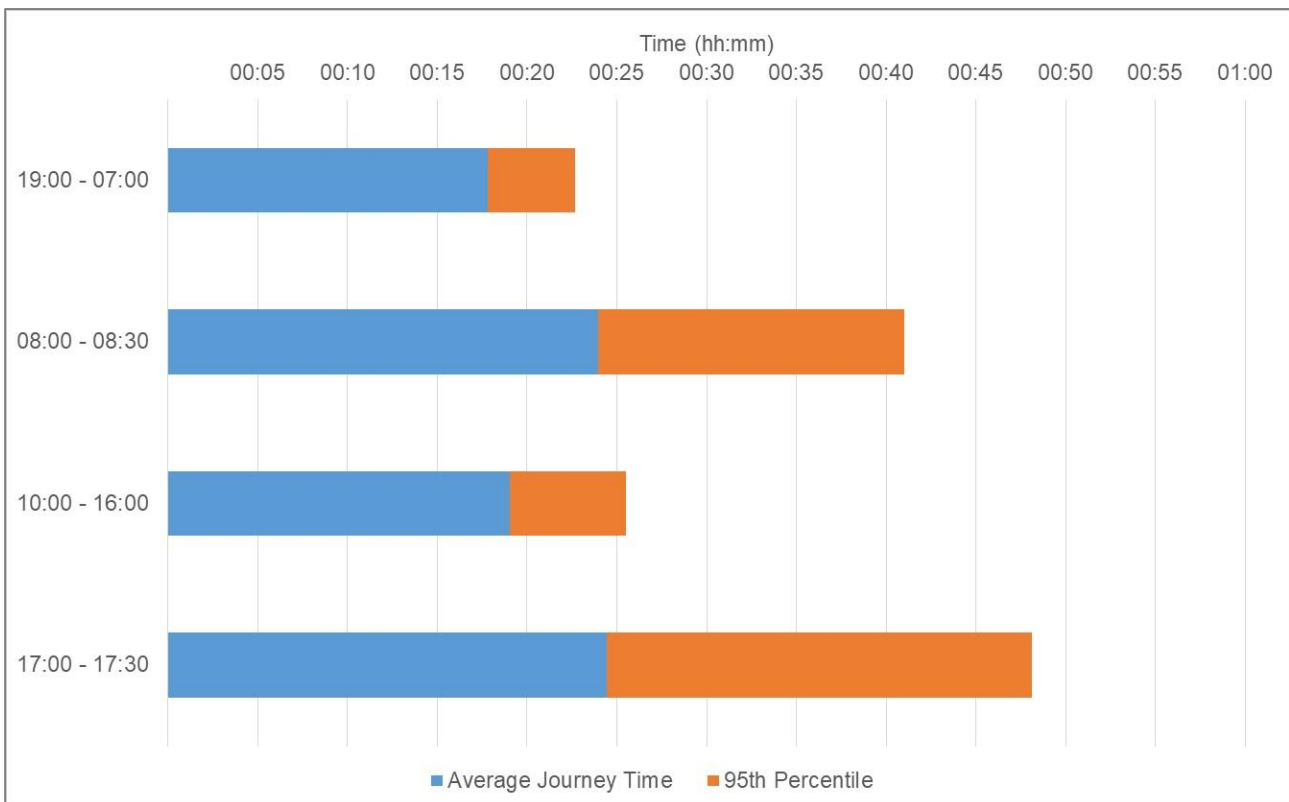
Figure 3-6 - Journey time route between the M5 at Junction 10 and the A46 south of Evesham



**Figure 3-7 - Eastbound journey time analysis (M5 Junction 10 to Evesham)**



**Figure 3-8 - Westbound journey time analysis (Evesham to M5 Junction 10)**



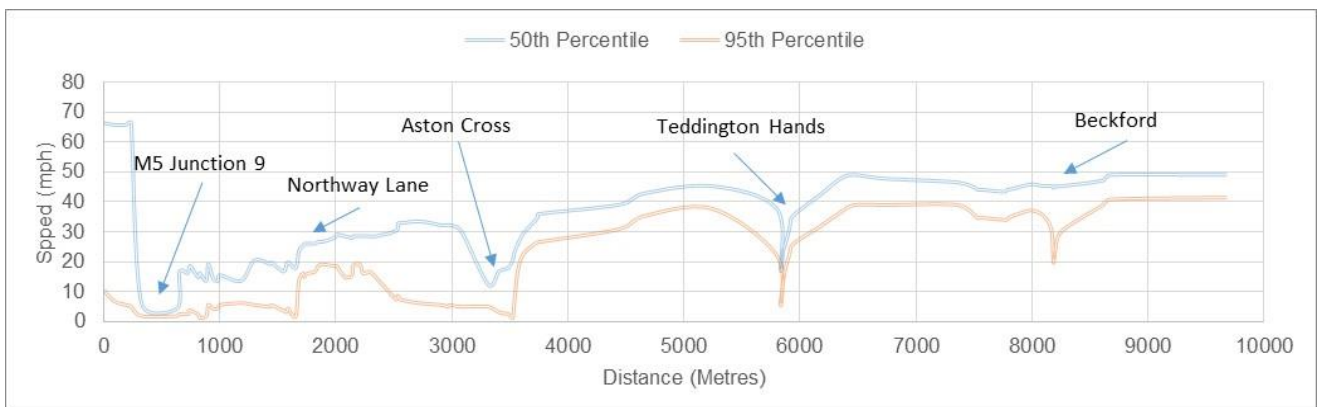
Both graphs demonstrate that the average journey time during the peak periods is longer than during quieter periods of the day (in both directions). In the eastbound direction, average journey times are more than seven minutes longer in the peak periods compared to the off-peak average journey time whilst in the westbound direction, average delays are more than six minutes higher compared to the off-peak.

Comparing the 95th percentile values versus the average, the graphs also demonstrate that there is a lot of variability in the range of observed journey times during the peak periods. For example, in the eastbound direction during the AM peak, the 95th percentile is more than 25 minutes greater than the average journey time. In comparison, the 95th percentile for the off-peak is less than five minutes greater than the average journey time. This highlights the substantial reliability issues on the corridor when the network is busiest.

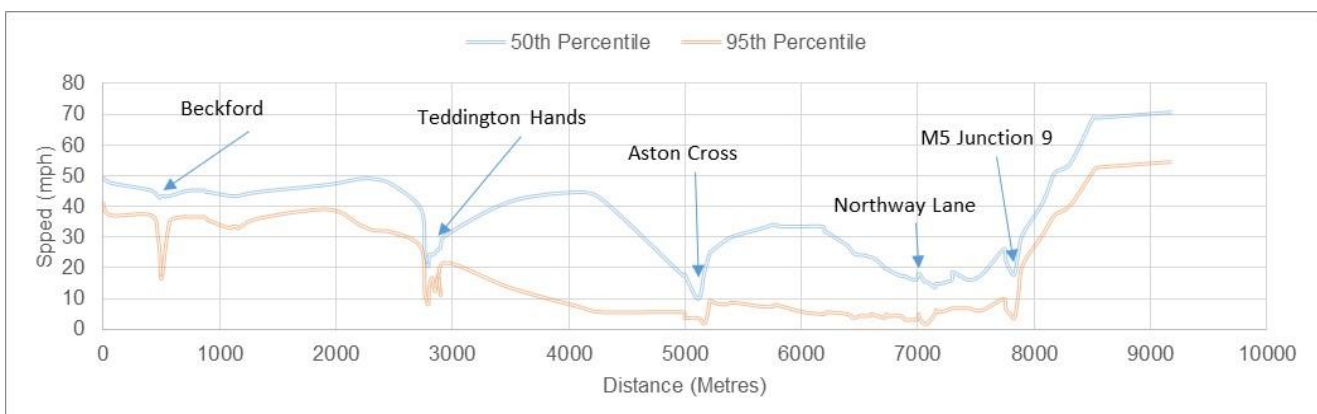
### 3.5.6. Congestion hotspots

As well as analysing the overall level of delay seen on the corridor, it is also important to consider which sections of the route experience the most delay. Figure 3-9 and Figure 3-10 present speed profiles showing the change in average and 95th percentile speeds between the M5 just to the south Junction 9 and the A46 at Beckford for the eastbound direction during the AM peak and westbound direction during the PM peak respectively (based on the same GPS journey time data for September/October 2019).

**Figure 3-9 - M5/A46 eastbound speed profile (08:00-08:30)**



**Figure 3-10 - A46/M5 westbound speed profile (17:00-17:30)**

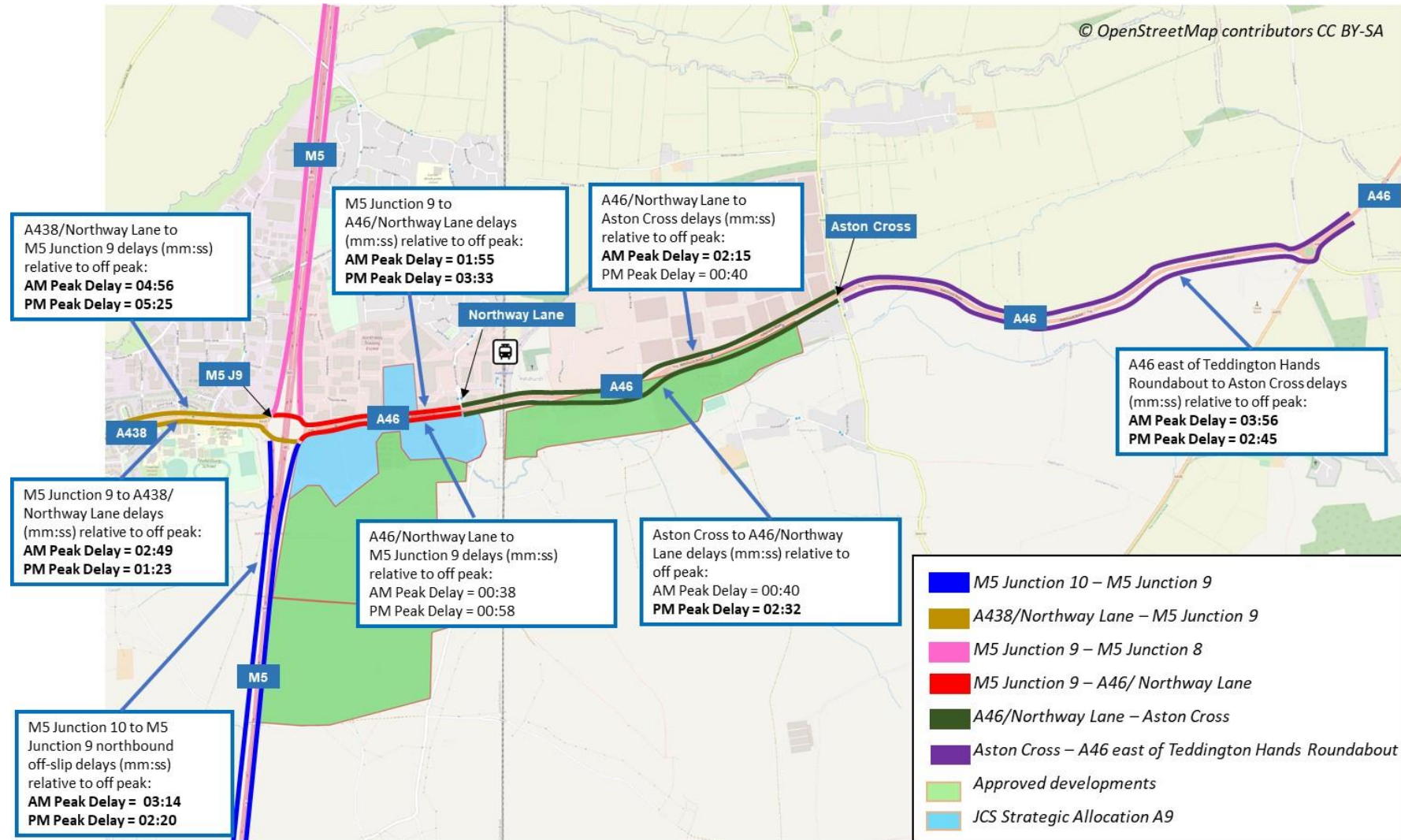


In the eastbound direction, Figure 3-9 shows several points where the average (50th percentile) speed declines to 20mph or slower between M5 Junction 9 and Northway Lane owing to the large number of signalised junctions on this stretch. Speeds decline again on the approach to the Aston Cross junction, after which they increase as the route becomes less impeded through the Teddington Hands roundabout and beyond. The 95th percentile line indicates there are occasions where the speed drops to less than 10mph all the way between the M5 northbound off-slip and Northway Lane and again on the approach to Aston Cross.

In the westbound direction, Figure 3-10 shows a clear drop in average speed on the approach to the Aston Cross junction. Beyond Aston Cross, speeds fall again on the approach to Northway Lane and M5 Junction 9. The 95th percentile line shows there is potential for the speed to remain consistently below 20mph for a 5 kilometre stretch all the way between the Teddington Hands roundabout and M5 Junction 9 on particularly congested occasions.

Figure 3-11 presents a breakdown of the average delays by different sections of the highway network, in the study area based on the GPS journey time data. The delays are calculated by comparing the average journey time during each peak period versus the equivalent journey time observed during the off-peak (when the network is uncongested). Sections where the differences are greater than one minute are highlighted in bold. The map shows how there are several different congested sections on the A46 (with some differences by direction) as well as on the M5 Junction 9 northbound off-slip and around the A438 Shannon Way junction.

Figure 3-11 - Peak period average delays versus off-peak (September/October 2019)





## 3.6. Road safety

### 3.6.1. Slip road queuing at M5 Junction 9

Slip road queuing at M5 Junction 9 presents a safety risk which is a concern of National Highways. The proximity of Shannon Way to M5 Junction 9 can result in traffic queuing back onto the slip road leaving the M5, causing safety concerns for fast-moving traffic exiting the M5 motorway and heading westbound to Tewkesbury town centre. The Birmingham to Exeter Route Strategy Initial Overview Report published by National Highways in 2023 identifies a key challenge is long slip road queues extending onto the mainline under peak traffic demand including at M5 Junction 9.<sup>8</sup>

The recent improvements at M5 Junction 9 included widening of the M5 northbound off-slip, part of the circulatory and A438 towards Tewkesbury. These measures were designed to increase capacity in this part of the junction and reduce queuing on the northbound off-slip. However, this does not prevent queuing from the A438 / Shannon Way junction extending back to M5 Junction 9 at peak times. With future traffic growth, the possibility of queuing extending back to the M5 remains a safety risk.

### 3.6.2. Analysis of vehicle collisions data

DfT 'STATS19' data on vehicle collisions has been collected for a five-year study period. The STATS19 database is a collection of all road traffic accidents that resulted in a personal injury and were reported to the police within 30 days of the accident. Data was collected for all years from 2015-19 inclusive. While more recent data is also available, figures from 2020 and 2021 were significantly affected by lockdowns and reduced travel during the COVID-19 pandemic. The period chosen is therefore not affected by the impacts of COVID-19 on travel demand.

Table 3-3 shows the number of reported injury collisions during the five-year study period at key junctions and road links in the area. The analysis concentrates on the M5 and A46 and other key roads for through-traffic including A435, A438 and B4079 but does not include all local roads in the area.

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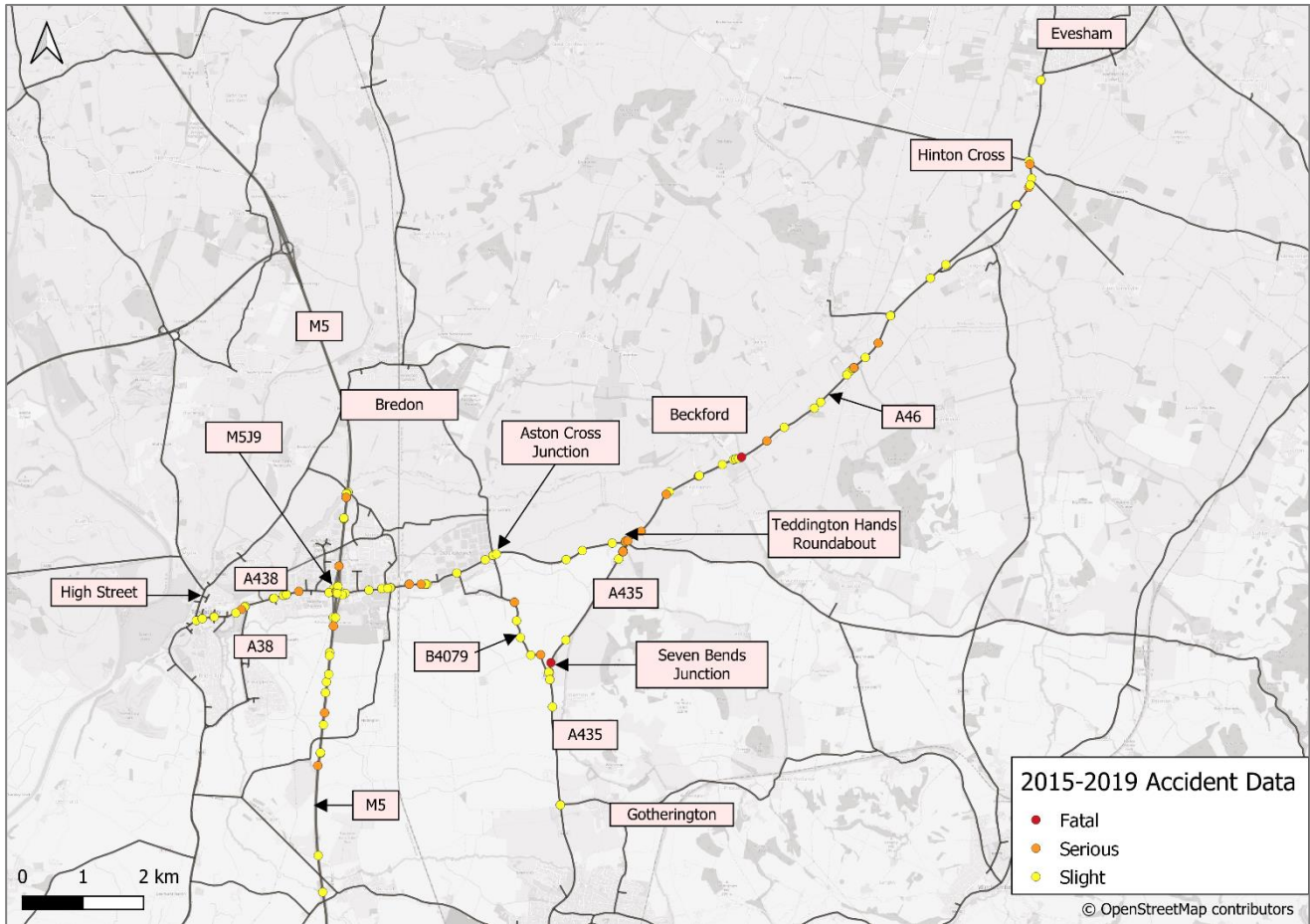
<sup>8</sup> [Route Strategies \(nationalhighways.co.uk\)](https://www.nationalhighways.co.uk)

**Table 3-3 - Reported collisions by location, 2015 – 2019**

<b>Junctions</b>	<b>Fatal</b>	<b>Serious</b>	<b>Slight</b>
M5 Junction 9	0	3	10
A46/B4079 Aston Cross junction	0	0	3
A46/A435/B4077 Teddington Hands roundabout	0	2	2
A435/B4079 Seven Bends junction	0	0	5
A438/A38	0	0	1
<b>Total (junctions)</b>	<b>0</b>	<b>5</b>	<b>21</b>
<b>Roads</b>	<b>Fatal</b>	<b>Serious</b>	<b>Slight</b>
M5 south of M5 Junction 9 (to Stoke Orchard)	0	4	9
M5 north of Junction 9 (to Worcestershire County boundary)	0	1	6
M5 north of Junction 9 (Worcestershire section near Bredon)	0	1	1
A46 – M5 Junction 9 to Aston Cross	0	3	9
A46 – Aston Cross to Teddington Hands roundabout	0	0	4
A46 – Teddington Hands roundabout to Evesham	1	11	28
B4079 – Seven Bends to Aston Cross	0	2	4
A435 – Teddington Hands to Seven Bends	2	2	3
A435 – Gotherington to Seven Bends	0	4	6
A438 – M5 Junction 9 to A38	0	1	4
A438 – A38 to High Street	0	2	8
<b>Total (roads)</b>	<b>3</b>	<b>31</b>	<b>82</b>
<b>Total (junctions and roads)</b>	<b>3</b>	<b>36</b>	<b>103</b>

Figure 3-12 identifies the locations of these collisions. Across the whole study area, there was a total of 142 collisions between 2015 and 2019, of which three were fatal, 36 were classed as serious and 103 as slight.

**Figure 3-12 - Location and severity of collisions, 2015 – 2019**



The incidents at M5 Junction 9, along with the A435 (which experienced two fatal collisions), and along the A46 between Teddington Hands and Evesham (which experienced one fatal collision) are detailed below.

**M5 Junction 9 (0 fatal, 3 serious and 10 slight)**

The M5 Junction 9 area was defined as the roundabout, slip roads to and from the M5, the motorway between the northern and southern slip roads and 150m either side of the slip merges/diverges.

The types of collision were classified as below:

- 6 nose-to-tail collisions
- 3 collisions involved vehicles changing lanes
- 3 collisions involved vehicles losing control
- 1 collision involved a bicycle failing to stop at a signal-controlled crossing and colliding with a car.

The collisions were widely distributed about the interchange apart from a cluster of three collisions on the A46 westbound approach to the roundabout, all of which were nose-to-tail collisions.

### **A435 - Teddington Hands to B4079 (2 fatal, 2 serious and 3 slight)**

This section of the A435 has a high severity of collisions, 57% involved a road user killed or seriously injured. A cluster of four collisions including one fatal and two serious occurred south of the Teddington Hands roundabout near the access for the petrol filling station and truck stop. The types of collision were classified as below:

- 3 collisions involved vehicles losing control
- 3 involved vehicles turning right
- 1 nose-to-tail collision.

### **A46 – Teddington Hands roundabout to Evesham (1 fatal, 11 serious and 28 slight)**

Between 2015 and 2019, there were a total of 40 collisions between Teddington Hands roundabout and Evesham, involving 86 vehicles. The types of collision were classified as below:

- 14 collisions involved vehicles going ahead
- 11 collisions involved vehicles turning right
- 5 collisions involved vehicles slowing or stopping
- Other collisions involved where vehicles were waiting to go ahead, moving off, turning left, overtaking the moving vehicle - offside, going ahead left-hand bend and right-hand bend.

There was one fatal collision reported in June 2019 at Beckford, which involved a lorry driver who had got out to check his vehicle being hit by a passing car. No other pedestrian casualties were reported in the data for the A46 between Teddington Hands and Evesham.

In 2023, the speed limit over a 1.5km section of the A46 at Hinton Cross was reduced from 60mph to 40mph following a safety campaign from Parish Councils and MPs.<sup>9</sup>

### **3.6.3. Collisions involving cyclists and pedestrians**

Between 2015 and 2019, only one vehicle collision was reported at M5 Junction 9 which resulted in injury to a cyclist, with no such collisions reported along the A46 between M5 and Teddington Hands roundabout. No vehicle collisions with pedestrians were reported either at M5 Junction 9 or along the A46 west of Teddington Hands roundabout.

The collisions data for 2020 to 2022 has therefore also been analysed for reports of collisions involving cyclists and pedestrians. At M5 Junction 9, two collisions were reported on the western (A438) arm of the junction: one resulting in a serious injury to a pedestrian and one resulting in a slight injury to a cyclist. Along the A46, two collisions were reported to

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<sup>9</sup> [A46 safety campaigners visit speed reduction scheme to hear of early success - National Highways](#)

the east of the Alexandra Way junction close to the BP garage resulting in slight injuries: one involving a cyclist and one involving a pedestrian. A collision with a cyclist (resulting in slight injuries) was also reported to the east of the Loverose Way junction (west of the rail bridge). No further collisions involving cyclists or pedestrians were reported on the A46 between the rail bridge and Teddington Hands roundabout.

The 2020-2022 data therefore indicates that there is a more recent pattern emerging of vehicle collisions with cyclists and pedestrians at M5 Junction 9 and along the A46 between the M5 and rail bridge.

### 3.6.4. Benchmarking of collisions

The collision rates for the M5, A438, A435 and A46 have been compared to the similar road types in Reported Road Casualties Great Britain (RRCGB) 2019 (see Table 3-4). The collision rates for most of these road sections (including the A46) were lower than the comparable national rate. However, the collision rate for the A435 is higher than the comparable national rate for this type of road.

The M5 Junction 9 interchange is lower compared to similar motorway junctions in terms of collision numbers, collision severity and collision distribution. The collisions on the M5 north and south of Junction 9 are typical of those recorded on a motorway.

**Table 3-4 - Collision rates per billion vehicle kilometres comparisons by route**

Section	Length (km)	Collisions	AADT (2019)	Collision Rate	National Comparison
<b>M5 south of Junction 9</b>	3.9	13	110,253	17	44
<b>M5 north of Junction 9</b>	3.4	9	82,648	18	44
<b>A46 (M5 to Teddington Hands)</b>	4.8	23	20,013	130	244
<b>A46 (Teddington Hands to Evesham)</b>	11.1	40	18,079	109	244
<b>A435 Teddington Hands to Seven Bends</b>	2.6	12	13,947	184	135
<b>A435 Seven Bends to Gotherington</b>	2.5	10	13,947	155	135
<b>A438 (M5 to High Street)</b>	2.3	16	16,207	149	457

## 4. Engineering constraints

### 4.1. Topography and geography

The scheme area comprises low-lying predominantly agricultural land used for both arable and pastoral purposes, which has been identified as historic River Severn flood plain. As a result, alluvial deposits are present across the site area, associated with both Tirlle brook (which flows south of the A46) and Carrant brook (which is situated just north of Northway residential community).

The area is relatively flat and steepens eastwards from 15-20m above sea level along the M5 to 30m above sea level at Teddington Hands roundabout.

Several large farms with associated outbuildings are scattered throughout the site area and there is a small local road network. A service station including petrol forecourt and truck stop are located adjacent to Teddington Hands roundabout on the A46. Most of the existing residential and commercial development lies to the north of the A46.

### 4.2. High-pressure gas pipelines and overhead power lines

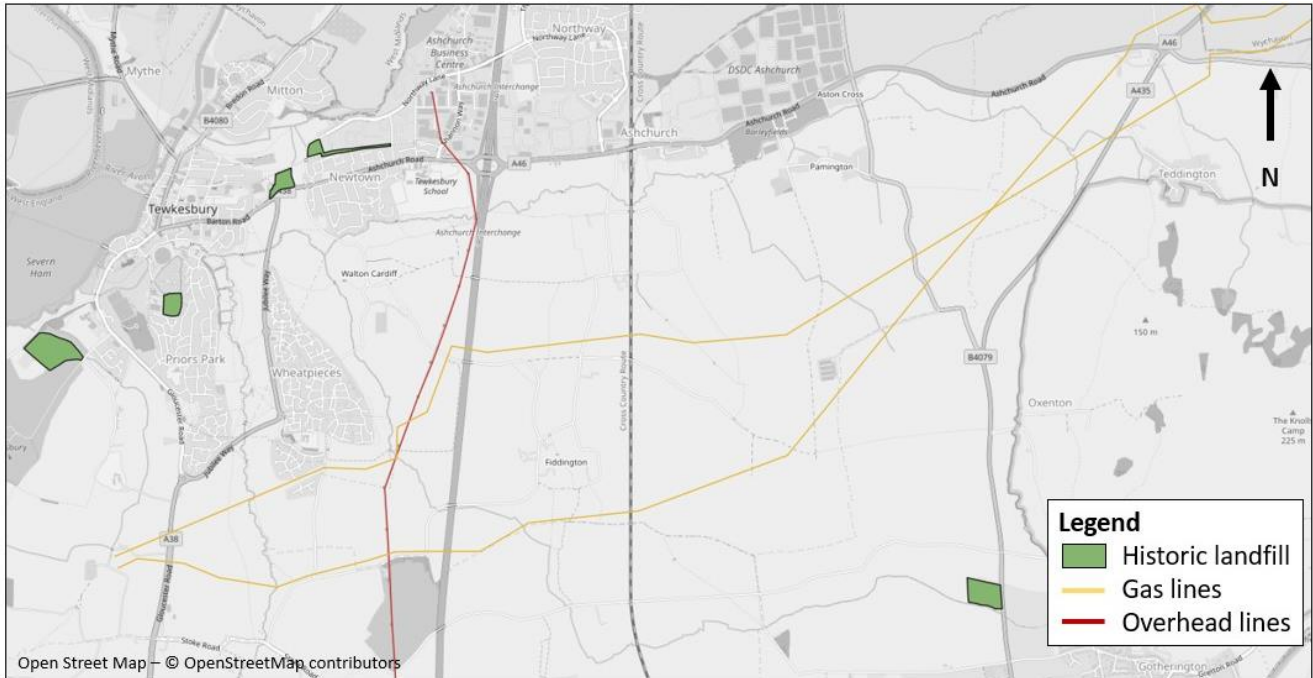
The site area contains two high-pressure gas pipelines, managed by Cadent Gas that are of national importance in the distribution of gas to South Wales and South-West England. These major gas pipelines operate at higher pressures than the standard, at between 16 bar (g) and 100 bar (g).

Figure 4-1 shows the location of high-pressure gas pipelines that surround Teddington Hands Roundabout and run parallel to the A46. Overhead powerlines are also located on the western side of the M5, running very close to the carriageway and M5 Junction 9.

### 4.3. Historic landfill sites

Four small historic landfill sites are located on the outskirts of Tewkesbury market town, with one site located to the east near Bishops Cleeve. These are also indicated in Figure 4-1 below.

**Figure 4-1 - Gas distribution network, overhead powerlines and historic landfill sites**



#### 4.4. Rail infrastructure

The main Bristol to Birmingham railway line runs parallel to the M5 about 1km east of the motorway and has been constructed on a shallow embankment to mitigate flood risk prevalent in the area. A significant underbridge or overbridge solution will be necessary to cross the existing railway line.

In Ashchurch, there is a disused Tewkesbury railway line and a freight spur off the Bristol to Birmingham mainline that serves the MoD Ashchurch site with intermittent train use.

#### 4.5. Existing and proposed development along the A46

The existing A46 runs through Ashchurch which contains large areas of commercial and residential areas to the north, and a smaller quantity of commercial and residential areas to the south which limits the opportunities for widening the existing A46. Future development of land to the north and south of the existing A46 is also to be expected which will further reduce that land available for a new/improved highway alignment.

## 5. Environmental constraints

### 5.1. Overview

This section presents a summary of environmental constraints identified in the study areas for the scheme. The study areas differ for each topic as explained in the following sections, in accordance with the Department for Transport's Design Manual for Roads and Bridges. Environmental constraints maps are available to download on the Have Your Say website: <https://haveyoursaygloucestershire.uk.engagemthq.com/junction-9>.

Assessment of the environmental impact of the scheme options is presented in the 'Analysis of shortlisted options' document which can be found on the Have Your Say website: <https://haveyoursaygloucestershire.uk.engagemthq.com/junction-9>.

### 5.2. Air quality

The local air quality study area is defined as the area within 200m of the Affected Road Network. The Affected Road Network includes sections of the following roads locally:

- M5 Junction 4a to M5 Junction 14
- A46 between Ashchurch and Stratford-upon-Avon
- A4019 west of Junction 10
- A435 between Cheltenham and Teddington
- Stoke Road between A4019 between Piff's Elm and Bishops Cleeve
- B4077 between Teddington and Stow-on-the-Wold
- B4632 between Southam and Winchcombe.

The scheme is not located within an Air Quality Management Area (AQMA) and there are no AQMAs within 1000m. The closest AQMA is located in Cheltenham town centre, which is located approximately 6 miles south of the A46.

The pollutants of concern are nitrogen dioxide (NO<sub>2</sub>) and Particulate Matter 10 (PM<sub>10</sub>) as these pollutants are most likely to be present in ambient air at concentrations close to or above the air quality criteria at sensitive receptors near to roads. At background locations in the air quality study area, pollutants are not likely to exceed the Air Quality Strategy objectives for England<sup>10</sup> currently or in the scheme opening year. Background concentrations of Particulate Matter 2.5 (PM<sub>2.5</sub>) are also expected to be below the air quality target of 10 µg/m<sup>3</sup> by the scheme opening year.

There are two statutory designated ecological sites within the air quality study area: Walton Cardiff Ponds Local Wildlife Site (LWS) and Hucclecote Meadows Site of Special Scientific Interest (SSSI).

There is one road in the Department for Environment, Food and Rural Affairs' Pollution Climate Mapping model that coincides with the affected road network – the A438 in

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<sup>10</sup> [The air quality strategy for England - GOV.UK \(www.gov.uk\)](https://www.gov.uk)



Tewkesbury. Annual mean NO<sub>2</sub> concentrations are estimated to be well below the limit value of 40 µg/m<sup>3</sup> in both the base year (2019) and scheme opening year.

### 5.3. Noise and vibration

The study area for construction noise comprises a 400m area from the scheme alignment for all options, which allows for a 100m construction corridor. The study area for construction vibration comprises a 100m area from the closest construction activity with the potential to generate vibration.

For operational noise, the study area includes receptors within 600m of all options. As the scheme has potential to bypass both the M5 and the A46, receptors within 600m of these roads have been included.

Noise-sensitive receptors within Noise Important Areas that are within 1000m of the scheme have been included in the study area for operational noise.

Residential properties considered sensitive to noise and vibration within proximity to the scheme have been identified in the following areas: Tewkesbury, Ashchurch, Northway, Aston Cross, Pamington, Walton Cardiff, Tredington, Stoke Orchard, Fiddington, Homedowns, Natton, Claydon, Oxenton, Teddington, and Teddington Hands.

Additionally, sensitive non-residential receptors have been identified, including:

- Community assets, schools and colleges
- Statutory designated sites such as the Cotswolds National Landscape (formerly known as Area of Outstanding Natural Beauty)
- The Deserted Medieval Village Scheduled Monument at Walton Cardiff
- Non-statutory designations (such as LWS).

Noise Important Areas have been identified by noise mapping undertaken by Defra, where 1% of the population are affected by the highest noise levels from major roads. Eight of these have been identified in the area that could be affected by the scheme. These are located close to the M5, A46, and A438.

Noise mapping results (undertaken by Defra in 2017) show that the local noise climate surrounding the scheme is dominated by road traffic noise from the M5, A46 and A435 and rail noise from the Birmingham to Bristol rail line. There may also be more localised sources of industrial/commercial sound in the vicinity. Existing noise levels are likely to be much lower in rural areas located away from some, or all, of these noise sources, particularly the M5.

### 5.4. Biodiversity

The study areas take account of:

- The alignment of each scheme option
- The assumed 100m Works Area for each option (including the road alignment and possible off-site ancillary works or areas)

- The individual ‘study areas’ relating to each Ecological Feature.

The extent to which individual ‘study areas’ extend beyond the 100m Works Areas was determined by the likely scale of potential significant effects for each type of Biodiversity or Ecological Feature. These are based on good practice guidance and professional judgement.

There are six statutory designated sites of European importance within 2km of all options:

- Wye Valley and Forest of Dean Bat Sites Special Area of Conservation (SAC)
- Dixton Wood SAC
- Bredon Hill SAC
- Severn Estuary SAC
- Severn Estuary Special Protection Area (SPA)
- Severn Estuary Ramsar Site.

There are also a number of local nature conservation areas, designated as Local Wildlife Site (LWS) within 2km of all scheme options:

- Carrant Brook LWS
- Long Meadow LWS
- Teddington Grove LWS
- Tewkesbury Railway Line (Disused) LWS
- Walton Cardiff Ponds LWS.

There is one ancient, replanted woodland identified within the 1000m study area at Teddington Grove. There is also one veteran tree that has been identified within the study area, based on the data within the Woodland Trust’s Ancient Trees Inventory.<sup>11</sup> This is located approximately 350m south of Teddington Hands roundabout.

The area to the south and east of Tewkesbury is strongly influenced by the River Severn and the River Avon, and comprises mostly arable fields, with occasional pasture fields, intersecting hedgerows, and small pockets of woodland (including plantation woodland). Some traditional orchards and deciduous woodland priority habitats are present in the area.

The Tirl Brook (a tributary of the River Swilgate, discharging to the River Avon) and its tributaries run to the north of the scheme area (flowing east to west to the south of the A46 between Teddington Hands and the M5). Further south the Dean Brook (also a tributary of the River Swilgate) runs to the south of the scheme area passing to the north of the village of Stoke Orchard.

Records were returned from local environmental records centres of the following species in the scheme area:

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<sup>11</sup> [Tree Search - Ancient Tree Inventory \(woodlandtrust.org.uk\)](http://www.woodlandtrust.org.uk)

- Amphibians (great crested newt, smooth newt and common toad)
- Otter
- Bats (comprising 11 species, including greater horseshoe bat, lesser horseshoe bat and barbastelle)
- Reptiles (grass snake)
- Birds (including the following species: peregrine falcon, green sandpiper, barn owl, fieldfare, redwing, greylag goose, red kite, goshawk, merlin, and hobby)
- Invertebrates (including the following species: white letter hairstreak butterfly, marsh fritillary butterfly, and moth species)
- Badger.

## 5.5. Water environment

In general, the study area comprises the land within 1000m of the proposed land take for each route option.

Flood risk from watercourses and potentially groundwater is a major issue within the Tewkesbury area, which sits at the meeting point of the Rivers Severn and Avon. There are large floodplains associated with the Rivers Severn, Avon, and for the several significant tributaries including the River Swilgate, Dean Brook, Tirlle Brook and Carrant Brook.

The Rivers Severn and Avon are found to the north west of the study area, north west of Tewkesbury. The River Swilgate and Dean Brook are located towards the south of the study area, near Stoke Orchard. The Tirlle Brook is located to the north of the study area, running parallel to the south of the A46. The River Swilgate also runs vaguely parallel to the A46, north of Ashchurch through Aston on Carrant.

While most flood risk is associated with these rivers to the west of the M5, Flood Zones 2 and 3 associated with the Tirlle Brook run parallel to the A46 between the M5 and B4079. They also span a large area between the A46 and the A435 southwest of Teddington Hands roundabout. Flood Zone 2 is land assessed as having between a 1 in 100 and 1 in 1000 annual probability of flooding (1% - 0.1%). Flood Zone 3 is land assessed as having a 1 in 100 or greater annual probability of flooding (>1%).

The Carrant Brook, Tirlle Brook and River Swilgate fall within the Severn River Basin District, as set out in the Severn River Basin Management Plan. Any development must ensure it does not cause deterioration to their existing conditions or prevent the watercourses reaching their objective status under the Water Framework Directive.

There are also numerous ordinary watercourses in the study area. Several watercourses (Main Rivers and ordinary watercourses) are crossed by the existing M5 carriageway. There are no lakes within the 1000m study area, however there are several ponds.

Groundwater plays an important role in both flood risk and water supply. No groundwater protection zones were identified in the scheme area. Alluvium, Cheltenham Sand and Gravels and Wasperton Sand and Gravel Member superficial deposits within the soil

composition are present; these are classified by the Environment Agency as secondary A aquifers which present a risk of flooding from groundwater.

## 5.6. Landscape and visual receptors

The study area is defined as the footprint of the scheme option plus a 1000m buffer zone surrounding that boundary for both landscape character and visual amenity.

The landscape study area is located within Severn and Avon Vales National Character Area. The lower valleys of the rivers Severn and Avon dominate this low lying open agricultural vale landscape with intersecting hedgerows, small woodlands and some traditional orchards, made up of distinct and contrasting vales, including Evesham, Berkeley, Gloucester, Leadon and Avon, with Cotswold hill outliers like Bredon Hill punctuating the otherwise largely flat vale landscape. Small streams flow across the landscape from the Cotswold hills in the east, towards the River Avon and River Severn in the west. Tirlle Brook is the most notable of these watercourses in the study area.

Most of the scheme area lies within the Vale of Gloucester Landscape Character Area (Settled Unwooded Vale). The scheme area also extends into the following Landscape Character Areas:

- Teddington and Greet Vale (Unwooded Vale), to the east of Teddington Hands roundabout
- Oxenton and Dixton Hills (Escarpment Outlier) and Vale of Gloucester Fringe (Settled Unwooded Vale), where the scheme borders the Cotswolds National Landscape
- Carrant Brook Village Claylands (Village Claylands), where the study area extends into the southern boundary of Worcestershire to the south of Carrant Brook.

The Cotswolds National Landscape extends to the east of the A435 between the villages of Oxenton and Teddington and is a key statutory landscape designation bordering the study area. There are no other statutory designated landscapes within the study area that have the potential to be directly or indirectly affected by the scheme options.

Tewkesbury Special Landscape Area is a non-statutory landscape designation that falls within the study area.

With regards to visual receptors, the study area contains many footpaths and bridleways, including Public Rights of Way and the Long-Distance Footpath of the Gloucestershire Way. There are clusters of properties dotted within the area, usually forming parts of hamlets and other small settlements such as Walton Cardiff, Homedowns, Natton, Fiddington and Claydon. Slightly larger clusters of properties are located in the villages of Tredington, Stoke Orchard, Pamington, Oxenton and Teddington, with Bishop's Cleeve having developed significantly more over the last 50 years. Other properties tend to be isolated farmsteads or cottages dispersed along the various rural roads.

Much larger areas of residential development and commercial buildings can be found to the west and north of the study area, most notable being Wheatpieces to the west, Newtown to the northwest, along with pockets of residential land along the south side of the A46 at Ashchurch.

A large solar farm has been consented at Claydon (occupying land to the east of the Birmingham to Bristol rail line, north of Bozard Lane and south of Claydon Farm) which is expected to become a significant feature in the landscape.

## 5.7. Geology and soils

The study area to consider effects on soil and agricultural land is the permanent engineering footprint of the proposed options. The land contamination study area extends to land immediately beyond this, to a distance of 500m (off-site).

Superficial deposits of the Cheltenham Sand and Gravel Member are present in small areas around Gotherington, Fiddington and to the south of Pamington. An area of Alluvium is also present in the east between Pamington and Teddington associated with Tirl Brook. Deposits of the Wasperton Sand and Gravel Member (river terrace deposits) are also present in the west and southern parts of the study area, and located along and to the north of the A46 and around Pamington. These superficial deposits are classified by the Environment Agency as secondary A aquifers.

The study area is underlain by the Charmouth Mudstone Formation bedrock geology, which is classified as a secondary (undifferentiated) aquifer. There are no groundwater Source Protection Zones (SPZ) located within the study area. The majority of the study area is located within an area of 'medium' groundwater vulnerability associated with the superficial and bedrock aquifers. An area of 'high' groundwater vulnerability is present within the southwest of the study area.

With regards to agricultural soils, the Evesham 2 association of clayey soils over the Charmouth Mudstone Formation predominates. The Fladbury association of alluvial clay is mapped on floodplains.

With regards to Agricultural Land Classification (ALC), the study area is almost entirely Grade 3b (good to moderate quality) with Grade 4 (poor quality) land present on wet alluvium in Flood Zone 3. There is likely to be very little Best and Most Versatile (BMV) land within the study area. (BMV land is defined as land which falls in ALC Grades 1 to 3a. This classification is used to identify high-quality farmland that is most suitable for long-term agricultural use due to its versatility and productivity.)

There are no geological SSSIs or Local Geological Sites (LGS) within the study area.

There are no records of current or historical landfills located within the study area. Two fuel retail sites are located within the study area: one at Teddington Hands roundabout, and another at M5 Junction 9. Other potential sources of contamination include adjacent agricultural activities, the sewage works adjacent to the west of the A435, and a biofertiliser lagoon north of the A435 / B4079 junction.

## 5.8. Cultural heritage

The study area is as follows for each option:

- The option alignment plus a 500m buffer for non-designated heritage assets, to identify impacts and characterise the historic environment
- The option alignment plus a 1000m buffer for designated heritage assets to also

incorporate possible indirect impacts such as those on setting and landscape.

There is a total of 32 designated heritage assets that have been identified within the study area. This includes one Scheduled Monument (medieval churchyard cross in churchyard of Church of St John the Baptist, Tredington, Stoke Orchard) and 31 Listed Buildings. Of these Listed Buildings:

- Three are Grade I listed:
  - Church of St Nicholas, Teddington
  - Church of St John the Baptist, Oxenton
  - Church of St John the Baptist, Tredington, Stoke Orchard)
- Two are Grade II\* listed:
  - Dovecote Circa 75 Metres South East of Manor Farm, Fiddington
  - Manor Farm, Fiddington)
- The remaining are Grade II.

The majority of designated heritage assets that are within the study area are Grade II Listed Buildings, mostly residential or agricultural buildings of post-medieval date contributing to the local character of the area, with settings contributing to their significance only at a close proximity to the buildings.

There are two exceptions to this: the assets around Fiddington and the Tibblestone. The Tibblestone is a Grade II listed standing stone of indeterminate date located adjacent to the A435 and Texaco filling station south of Teddington Hands roundabout. Very little is known about the Tibblestone besides it may possibly date to the early prehistoric periods and represent an ancient boundary. Consequently, there is great benefit in preserving its location.

In addition to the designated heritage assets, there is a rich and complex landscape of non-designated heritage. The non-designated assets that are included in the study area comprise 10 archaeological sites, one place name record and nine blocks of ridge and furrow.

The archaeological sites include:

- Several prehistoric or Romano-British remains
- Medieval settlement features at Fiddington Hamlet
- Cropmarks at Teddington
- Medieval paddocks
- Ring features at Chez Nous
- A Second World War storage depot.

They also include The Birmingham and Gloucester Railway, with branches to Evesham and Tewkesbury, later taken over by the Midland Railway, and Route of the 1789 Cleeve and Evesham Turnpike. The Second World War 'A Series' army QF bombing decoy, Oxenton potentially also falls into this group.

## 5.9. Materials and waste

Two study areas have been defined for the assessment:

- First Study Area – the project boundary including temporary construction areas (such as construction compounds) where construction materials will be consumed, and waste generated
- Second Study Area - covering the feasible sources and availability of materials required to construct the main elements of the scheme and suitable recovery and waste management infrastructure that could accept arisings and/or waste generated by the scheme. This is the South West region of England for the materials and Gloucestershire for waste.

Material assets and the waste capacity of waste management facilities form the basis of the existing baseline conditions. Schemes in the South West should have a minimum of 22% recycled content in material assets and components. Material asset sales for the South West and UK are shown in Table 5-1. These are for the material assets most likely to be required for highway schemes.

**Table 5-1 - Availability of material assets**

<b>Material Assets</b>	<b>Annual Sales in South West England (Million Tonnes)</b>	<b>Annual Sales in UK (Million Tonnes)</b>
<b>Aggregate (recycled &amp; secondary)</b>	4.5	74
<b>Crushed Rock</b>	25.4	116.2
<b>Sand and Gravel</b>	3.1	52.1
<b>Asphalt</b>	2.1	21.8
<b>Concrete</b>	2.5	35.1
<b>Steel</b>	Not Available	9.2

Further to the above on a local scale, supply of recycled and secondary aggregate in Gloucestershire is more than 200,000 tonnes per annum.

The likely future state of material asset use is expected to be very similar to the current state, potentially reducing as fewer primary materials are used as aspects of the circular economy are embraced and more recycled materials are used, as encouraged by the Minerals Local Plan.

With regards to Mineral Safeguarding Areas (MSA) and peat resources, the Gloucestershire Policies Map shows a sand and gravel MSA immediately beneath and adjacent to the scheme area. There are no Blanket Bogs, Lowland Fens or Lowland Raised Bog areas that are or could give rise to peat reserves.

The likely future state (in the absence of the scheme) of MSAs and peat resources are expected to remain the same due to the protection provided to them largely preventing development on or within them.

With regards to waste, construction, demolition and excavation (CD&E) waste generated by the scheme will predominantly be non-hazardous and inert, with small quantities of hazardous waste (e.g., paints, solvents and contaminated soil). The amount of landfill capacity and waste infrastructure in the study area will fluctuate year on year, based on the number, type and size of construction projects underway. This in turn is heavily influenced by factors such as the economic situation, investment levels and legislative and policy variations.

The baselines for landfill capacity and waste infrastructure capacity in Gloucestershire are calculated by the Environment Agency data and are presented in Table 5-2 and Table 2-7 respectively.

**Table 5-2 - Landfill capacity baseline in Gloucestershire**

Waste Stream	Gloucestershire (m <sup>3</sup> )
Inert and non-hazardous	2,389,202
Hazardous	957,279

**Table 5-3 - Waste infrastructure capacity baseline in Gloucestershire**

Waste Stream	Gloucestershire (Tonnes)
Inert and non-hazardous CDE	998,127
Hazardous CDE	7,031

The future remaining landfill and waste management infrastructure in Gloucestershire is likely to reduce over time, as these sites become more filled with waste.

## 5.10. Population and human health

The Population assessment has explored a study area of 500m from the edge of the proposed works area of each option and consolidated them into one, using the outermost boundary in all instances.

For Human Health, the study area encompasses the communities and wards that are directly or indirectly affected by the scheme: Isbourne; Cleeve Hill; Severn Vale North; Tewkesbury East; and South Bredon Hill (Wychavon).

There are clusters of residential properties dotted within the study area, usually forming parts of hamlets and other small settlements such as Claydon, Walton Cardiff, Homedowns, Natton, and Fiddington. Slightly larger clusters of properties are located in the villages of Tredington, Stoke Orchard, Pamington, Oxenton and Teddington. Other properties tend to be isolated farmsteads or cottages dispersed along the various rural roads.

Much larger areas of residential development can be found to the west and north of the study area, most notable being Wheatpieces to the west, Newtown to the northwest (part of Tewkesbury), along with pockets of residential land along the south side of the A46 at Ashchurch. Ashchurch lies to the east of Tewkesbury and the two areas are separated by



the M5. Tewkesbury has a population of approximately 94,900 people in the local authority area.

Community assets present in the area include various schools:

- Tewkesbury Academy and Alderman Knight School, located adjacent to M5 Junction 9 (accessed from the A438)
- Ashchurch Primary School, located to the south of the A46 off Ashchurch Road
- Tredington Primary School, located to the west of the M5 on Stoke Road.

Other assets include village halls at Ashchurch and Teddington, St. Nicholas Church in Teddington; Sherdon's Golf Centre, and Jenny's Field memorial park.

There are many businesses in the scheme area – most notably along the A46 corridor to between the M5 and Birmingham to Bristol rail line, including new retail developments on the south side of the A46, and also to the west of the M5 in the Shannon Way area. A further cluster exists around Teddington Hands roundabout, including a major truck stop, fuel retail, shop and inn. Away from the A46, businesses include guesthouses/B&Bs, vehicle repair services or sales, manufacturers, builders / joiners, catering services, equestrian facilities and kennels.

In addition to the major retail and housing developments adjacent to the M5 north of Fiddington, recent developments in the area include Claydon Solar Farm (under construction), expansion of facilities at Teddington Truck Stop, expansion of poultry farm units (Starveall Farm) and biofertilizer lagoon at Seven Bends.

Most of the scheme area is agricultural land which is under rotations of combinable arable crops and grass for livestock. Farms are of moderate size, mostly larger than 80 hectares with farming units based around settlements at Fiddington and Pamington, distributed along Bozard Lane and other locations such as Claydon. There are a number of equestrian facilities including at Fiddington and Claydon with land allocated to these activities rather than for arable or livestock farming. The construction of Claydon Solar Farm will affect a large area of farmland to the east of the rail line between Bozard Lane and Claydon Farm.

The study area contains many footpaths and bridleways, including Public Rights of Way and the Gloucestershire Way regional trail. Several Public Rights of Way are intersected by the scheme.

The current conditions for vehicle travellers are characterised by congestion at the various junctions along the A46. Driver stress, as a result, is exacerbated by the overall inability to move freely at peak times

## **5.11. Climate effects and vulnerability**

### **5.11.1. Climate effects**

The UK has made commitments to tackle the root cause of climate change by reducing Greenhouse Gas emissions, as well as to increase the resilience of development and infrastructure to the changing climate. The Climate Change Act 2008 (amended in 2019)

sets a target to reduce net Greenhouse Gas emissions by at least 100% from 1990 levels by the year 2050. To meet this target, a set of carbon budgets, which currently run to 2037, have been set. These limit the amount of greenhouse gas the UK can legally emit in a five-year period.

Baseline conditions are defined by the:

- Total background emissions from all sources, i.e., all UK emissions, at all scales; and
- Predicted total emissions assuming the scheme is not constructed for both the Opening Year (2031) and the Design Year (2041), and over the 60-year appraisal period.

The UK's emissions for 2022 were 417.1 million tonnes of CO<sub>2</sub>e. This is 2.2% lower than 2021, following warmer weather in 2022 and a large drop in emissions from the residential sector. Transport emissions rose 4% from 2021 to 2022 due to all COVID-19 restrictions being eased but were 8% lower than in 2019. Transport remained the largest emitting sector, responsible for 27% of emissions.

The UK is currently in the fourth carbon budgetary period (2023-2027), the budget for which is 1,950 MtCO<sub>2</sub>e. The UK cannot legally emit more GHG than this within the budgetary period. The fifth carbon budget is 1,725 MtCO<sub>2</sub>e (2028-32), and the sixth carbon budget is 965 MtCO<sub>2</sub>e (2033-37). Whilst budgets are not set beyond this, there is a legal requirement for the UK to reach 'net zero' emissions (0 MtCO<sub>2</sub>e) by 2050.

The possible construction period (2032-34) and Opening Year (2034) of the scheme would fall across the fifth and sixth carbon budgets.

### **5.11.2. Climate vulnerability**

The scheme is situated within the River Severn catchment. It is important to understand the current climate and modelled projections of how it might change in the future. Baseline climate conditions have been considered for the period 1981 to 2010, using regional historical weather data provided by the Metrological Office.

The data shows that the climate in the study area is one of relatively mild winters and warm summers. Monthly average and mean maximum temperatures are high for the UK. Across the timeseries, 1981-2010, peak summer (July) average maximum temperatures of 22 °C in the River Severn catchment are equal to the maximum across the UK. Long-term average days with ground frost are close to UK average and the number of days with air frost each winter has been reducing since 1930.

Observations across the UK show a high level of variability in precipitation from year to year, with a slight overall increase in UK winter precipitation in recent decades. The long-term average monthly rainfall in the River Severn catchment is below average for the UK. However, impacts from extreme weather have been recorded, including:

- In December 2020, drivers on the A435 were stranded when flash flooding inundated the road (<https://www.bbc.co.uk/news/uk-england-gloucestershire-55429889>).

- In July 2007, two month's rain (78 mm) fell in one day causing rapid and intense flash flooding that killed 3 people. Traffic on the M5 between Junctions 10 and 12 came to a standstill with about 10,000 motorists stuck overnight. Severn Trent Water's Mythe Water Treatment works was breached by floodwater leaving 350,000 people without water for 18 days. Castle Mead electricity sub-station was overwhelmed, cutting power to 48,000 people in Gloucester. 825 households – 1,950 people – had to leave their homes (<https://thefloods.gloucestershirelive.co.uk/>).

As a whole, the UK is likely to experience hotter and drier summers and warmer and wetter winters, and it is possible that climate change will also increase the frequency and severity of extreme weather events, such as heavy rainfall, storms and heatwaves. Climate projections from the Meteorological Office United Kingdom Climate Projections 2018 were used to understand possible future changes to the climate in the vicinity of the scheme.

The models indicate that the River Severn catchment is in line with these UK trends. The catchment is likely to experience an increase in average winter temperatures from 4.1°C (observed average 1981-2010) to 7.0°C (projected average 2071-2089). The projected increase in winter temperatures is therefore expected to reduce mean snowfall, number of snow days and heavy snow events. The catchment is also projected to experience an increase of 5.1°C in summer mean daily maximum temperatures, a decrease in summer rainfall of between 0.1mm (7%) to 1.4mm (66%) and an increase in winter mean precipitation by 0.5mm.