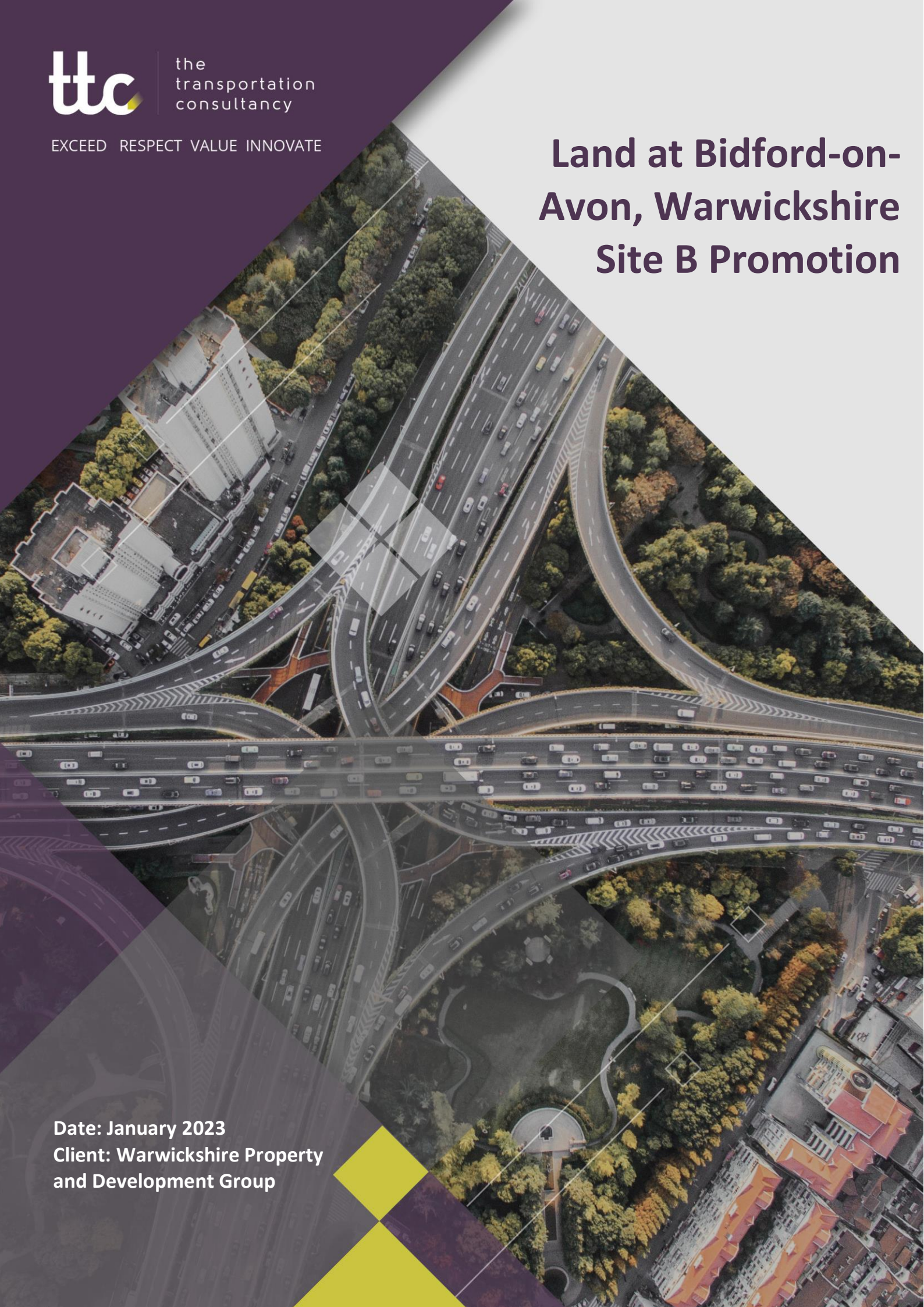
the transportation consultancy

EXCEED RESPECT VALUE INNOVATE

Land at Bidford-on-Avon, Warwickshire Site B Promotion



Date: January 2023
Client: Warwickshire Property and Development Group

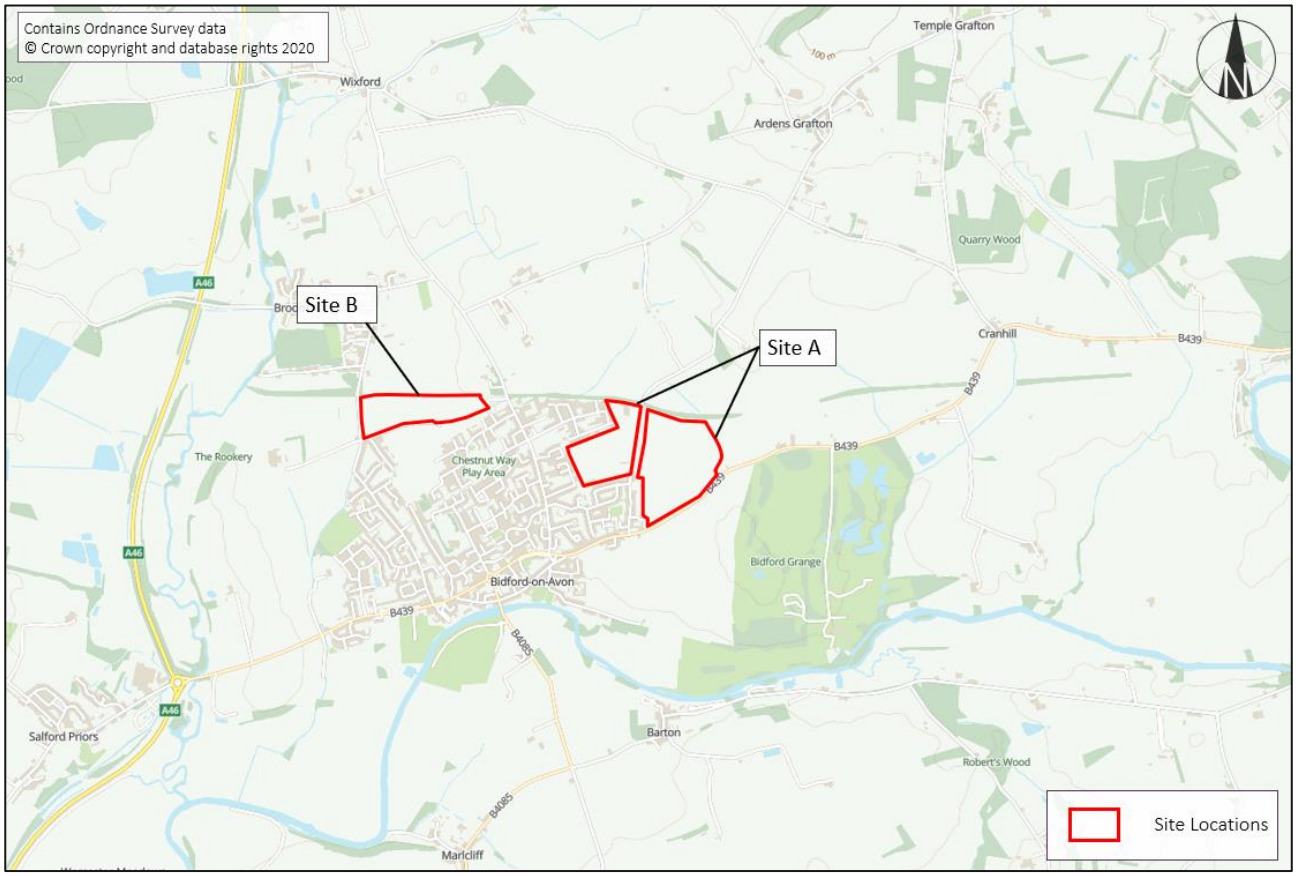
1. Introduction

1.1 Introduction

The Transportation Consultancy Ltd ('ttc') have been appointed by the client (Warwickshire Property and Development Group) to prepare a Transport and Highways Technical Note, in support of the promotion of the Bidford-on-Avon sites in the emerging South Warwickshire Local Plan.

'ttc' have been commissioned to review and promote two sites within Bidford-on-Avon. The location of both proposed allocation sites is illustrated in **Figure 1.1** below.

Figure 1.1 Site Locations



This document refers to 'Site B' from the figure above. 'Site A' has been reviewed within a separate document (**210755-01**), in conjunction with the commissioned work.

1.2 Scope of the Report

The remainder of the report is structured as follows:

- **Chapter 2:** Examines the local highway network in relation to the site and reviews local highway safety.

- Chapter 3: Examines the site's sustainability and determines access to public transport networks and local services and facilities.
- Chapter 4: Sets out the likely access arrangements to support the proposed allocation site for walking, cycling and vehicular access.
- Chapter 5: Sets out the anticipated traffic generation from the proposed allocation site and determines the preliminary high-level impact on the local highway network.
- Chapter 6: Provides a summary and conclusions to the report.

2. Existing Highway Conditions

2.1 Introduction

This section of the report examines the surrounding local highway conditions, including a review of existing traffic flows and the highway safety record. The site in a local context is illustrated within **Figure 2.1**.

Figure 2.1 Local Context

The existing site comprises of grassland and fields, used for agricultural purposes. It is bound by agricultural fields to the north, residential housing to the east, a private access drive to the south, and Bidford Road to the west.

2.2 Local Highway Network

The local highway network is managed and maintained by the Local Highway Authority (LHA), Warwickshire County Council (WCC), which comprises of the following network.

Bidford Road

Bidford Road is a single two-way carriageway routing on a north to south alignment, located to the west of the allocation site and subject to a 40mph speed limit within the vicinity of the site. The highway provides access to Broom in the north and Bidford-on-Avon in the south.

The highway is a rural road, measuring c.6.5m wide with a footway (c.1.2m) provided on the eastern edge of the carriageway, which is contiguous to the site boundary. There is no street lighting within the vicinity of the site, however, further to the south, street lighting is provided along the western footway.

As this is the only adopted road contiguous with the site boundary, it is likely that this will serve the primary access point into the site. The proposed site access is an existing gate used for agricultural purposes and can be viewed in **Figure 2.2** below. More consideration is given to this in **Chapter 4.**

Figure 2.2 Existing Site Access

2.3 Highway Safety (Personal Injury Accident Data)

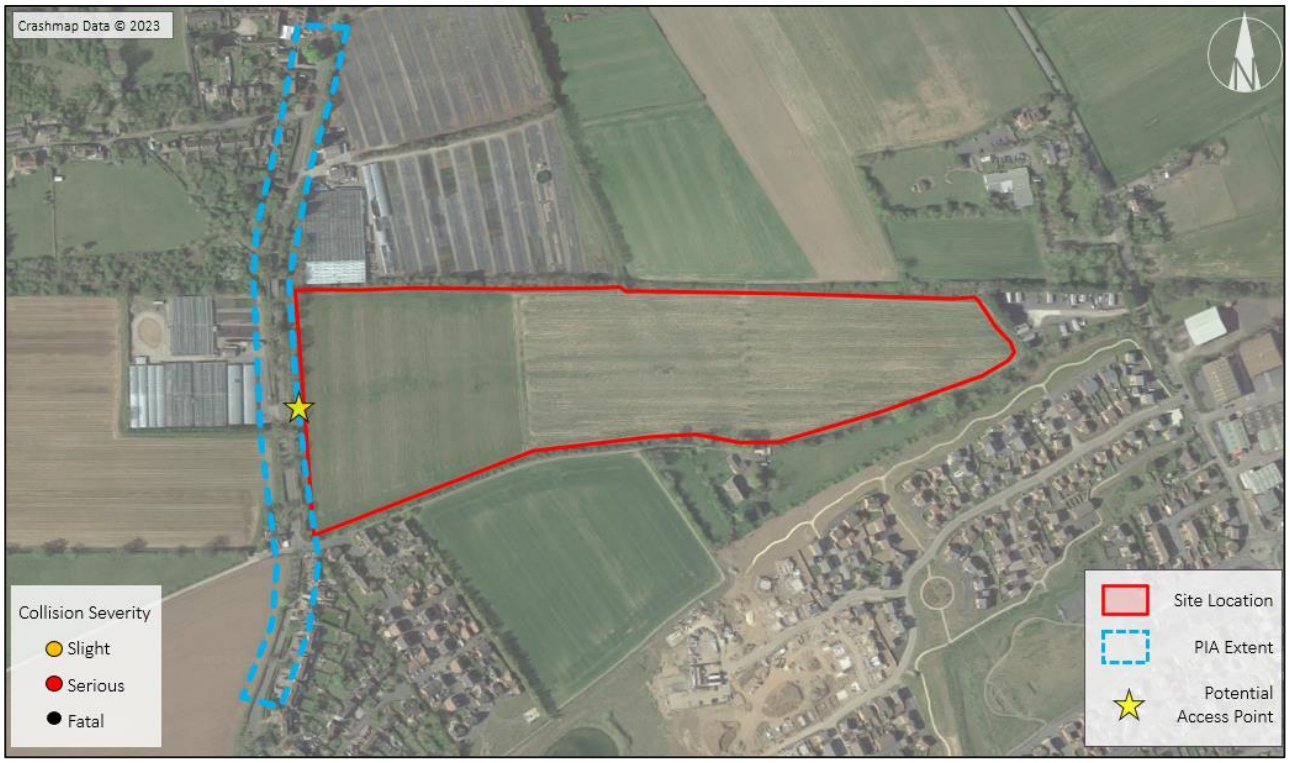
Personal Injury Accident (PIA) data has been extracted from Crashmap (www.crashmap.com) for the most recent 5-year period (2017-2021). The data is collected by the police and is approved by the National Statistics Authority and audited by the Department for Transport each year.

The purpose of assessing recorded PIAs is to determine whether there is a history of accidents in proximity to the site and to investigate whether there are any patterns or contributing factors to the accidents recorded. Clusters of accidents could indicate that improvements are required to enable development on the site to come forward.

Potential future access points have been the basis for the PIA search cordon. Accidents within the vicinity of future access points to the site have been measured along with their severity. The impact of casualties differs according to the severity of the injuries sustained. Three groups are usually differentiated as follows:

- **Fatal**: any death that occurs within 30 days from causes arising out of the accident.
- **Serious**: records casualties who require hospital treatment and have lasting injuries, but who do not die within the recording period for a fatality.
- **Slight**: where casualties have injuries that do not require hospital treatment, or, if they do, the effects of the injuries quickly subside.

Figure 2.3 PIA Summary



Only links of clusters which exhibit an accident rate or one per annum have been considered for further assessment, but based on the outcome of the assessment it has been identified that there have been no accidents within the search cordon. Therefore, it is considered that there are no pre-existing highway safety issues on the local highway network that the potential future development would be expected to exacerbate, and no further assessment is required.

2.4 Conclusions

A review of the existing highway network has been undertaken and revealed that the proposed allocation site is well connected to the local highway network, the site boundary is contiguous with the adopted public highway and a highway safety search has revealed that there are no outstanding highway safety issues.

3. Sustainability Assessment

3.1 Introduction

This section of the report examines the sustainability of the site by highlighting the surrounding walking and cycling infrastructure, public transport provision and surrounding services and facilities, which could be accessed by foot and bike.

3.2 Walking and Cycling Accessibility

Walking and cycling form sustainable modes of transport which not only provide benefits to residents but help to reduce the amount of congestion and pollution within the area.

It is generally considered that 2km for walking (25-minute journey) and 8km for cycling (30-minute journey) are acceptable distances to travel to work or nearby facilities and amenities. These distances are illustrative, will vary by individual according to their personal mobility and fitness, and will be influenced by their perception and prejudices on such factors such as local topography and attitude towards travel modes.

The Manual for Streets (MfS) reinforces this advice, stating that *"walkable neighbourhoods"* should have a range of facilities within 800m (a 10-minute walk). However, this is not regarded as the upper limit for walking journeys and MfS notes that walking offers the greatest potential to replace short car trips, particularly those under 2km.

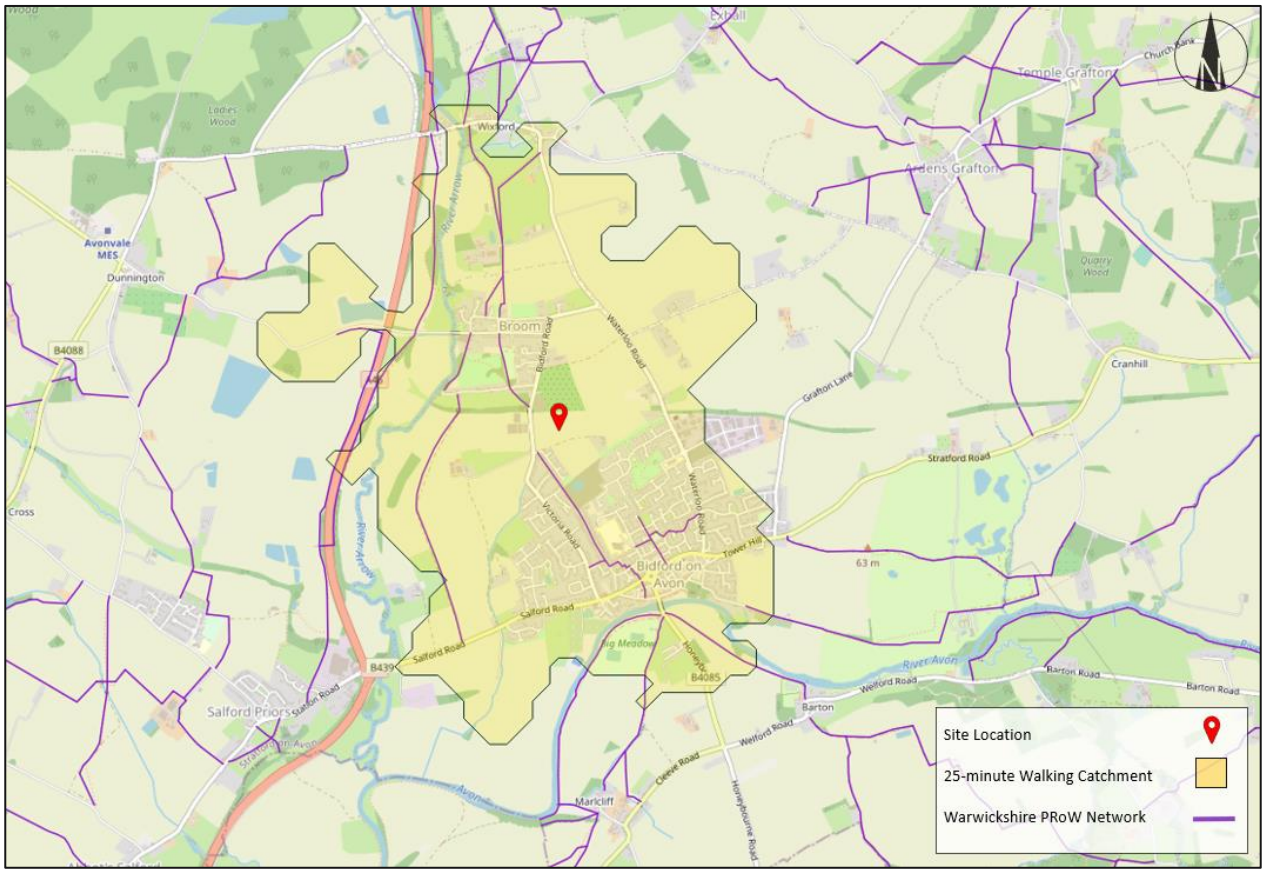
Cycling also provides the opportunity as a substitute for a short car journey, with the CIHT document, *Planning for Cycling*, stating:

> *'The majority of cycling trips are for short distances, with 80% being less than five miles* (8km) *and with 40% being less than two miles. However, many trips by all modes are also short distances (67% are less than five miles, and 38% are less than two miles); therefore, the bicycle is a potential mode for many of these trips (DfT, 2014a).'*

With regards to walking, Bidford Road provides a footway on the eastern edge of the carriageway within the vicinity of the site. As pedestrians travel towards either Broom or Bidford-on-Avon, the footway changes to the western edge of the carriageway. Due to the peripheral location of the proposed allocation, the existing footway is relatively narrow and lacks inclusivity for mobility impaired users. There is however sufficient scope for improvements as part of any future development proposals. However, the scale of the development, would necessitate the provision of substantial improvements to the footway network, inclusive of new and improved crossing opportunity to accommodate likely desire lines. Further consideration for this is given in **Chapter 4.**

The PRoW network within Warwickshire and the vicinity of the site has been visualised in **Figure 3.1** below. A 25-minute walk-time isochrone has been overlayed this network to illustrate the walkability of the proposed site.

Figure 3.1 PRoW Network and 25-minute Walking Catchment

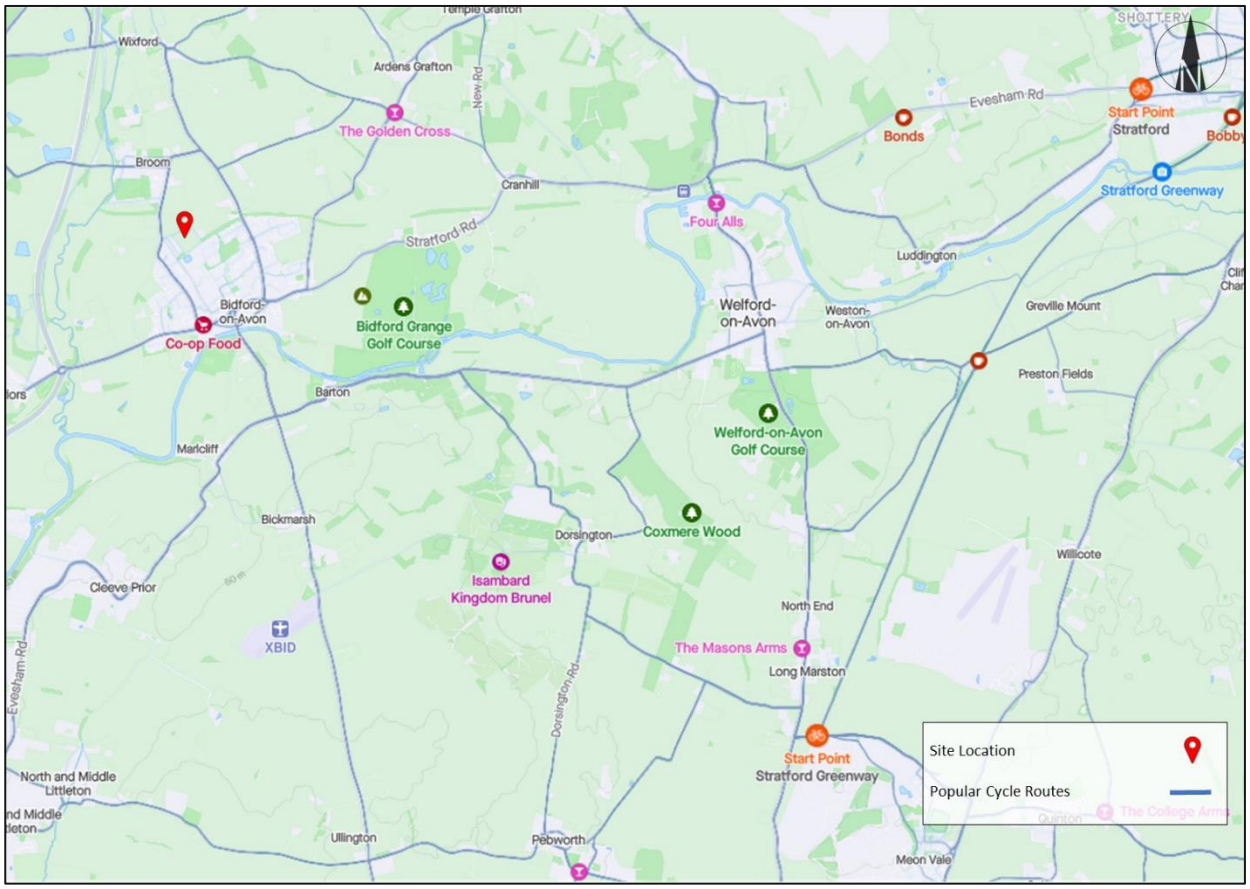


https://app.traveltime.com/

As can be seen, the extensive PRoW network, coupled with the existing footway network, ensures the entirety of the settlement is accessible within a 25-minute walk time, along with Broom and the outskirts of Wixford to the north.

With regards to cycling, Bidford-on-Avon does not currently benefit from any dedicated provision within the vicinity of the proposed allocation site, however, the local highway network is conducive to supporting cycling as evidenced in heatmap data captured on Strava. An extract of the data is presented within **Figure 3.2**, which demonstrates that the local road network is well utilised. Opportunities to improve cycle facilities could be considered as part of any future application.

Figure 3.2 Cycle Heat Map

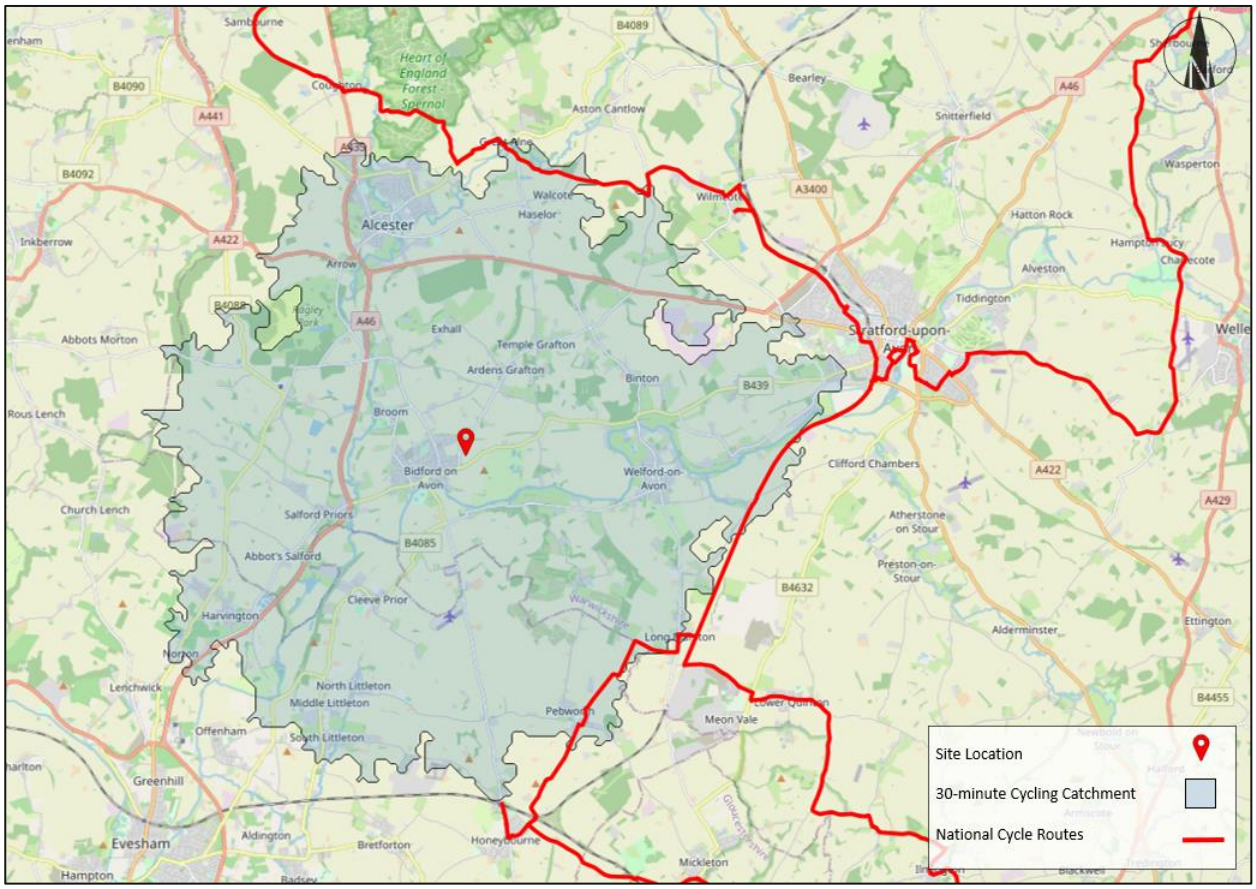


https://www.strava.com/heatmap#7.00/-120.90000/38.36000/hot/all

In terms wider connectivity, Bidford-on-Avon is within proximity to National Cycle Routes 5 and 41, which are accessible within a 30-minute cycle to the east and south of the promotion site. Route 5 is also known as the Stratford Greenway, which runs through the English countryside from Reading to North Wales. More locally to this proposed development, it routes along traffic-free sections, which include the Stratford Greenway between Long Marston and Stratford-upon-Avon and the Rea Valley Route in Birmingham

Route 41 connects users to Bristol, Gloucester, Stratford-upon-Avon and Rugby. More locally, this route is known as the Lias Line, which routes along the Grand Union Canal through Long Itchington, to the south of the development site. This route and network are managed by Sustrans, and has been illustrated in Figure 3.3 below, alongside the 30-minute cycling catchment.

Figure 3.3 National Cycle Network and 30-minute Cycling Catchment



https://app.traveltime.com/

Figure 3.3 shows that National Cycle Route 5 provides access into Stratford-upon-Avon, Wilmcote, Great Alne and Coughton to the north. Meanwhile, to the south, Long Itchington and Honeybourne are all accessible via Route 5.

A wide variety of locations are accessible within a 30-minute cycle, such as Alcester to the north, Welford-on-Avon to the east, Littleton to the south and Harvington to the southwest.

3.3 Local Facilities and Amenities

The site is well situated to benefit from access to a number of local services and facilities which can be undertaken by sustainable modes of transport. The proposed development site's accessibility has been judged against the institute of Highways and Transportation (IHT) '*Guidelines for providing for Journeys on Foot'* (2000) in relation to acceptable walking distances to services and facilities.

Tables 3.1 summarises the desirable, acceptable, and preferred maximum walking distance to local community facilities and services.

Table 3.1 Recommended Accessibility Thresholds

Threshold Classification	Town Centre	Community / School	Elsewhere
Desirable	200m	500m	400m

Threshold Classification	Town Centre	Community / School	Elsewhere
Acceptable	400m	1,000m	800m
Preferred Maximum	800m	2,000m	1,200m

Source: *CIHT (2000), Guidelines for Providing Journeys on Foot, IHT, London*

Given the site's relative proximity to Bidford-on-Avon *and* Broom centre, a number of services and facilities could be accessed by future residents of the proposed development site and are situated within walking distance. Table 3.2 highlights the accessible services and amenities with their walking distance and journey time. Measurements have been taken from future potential pedestrian permeability points in to the site, along any PRoW networks.

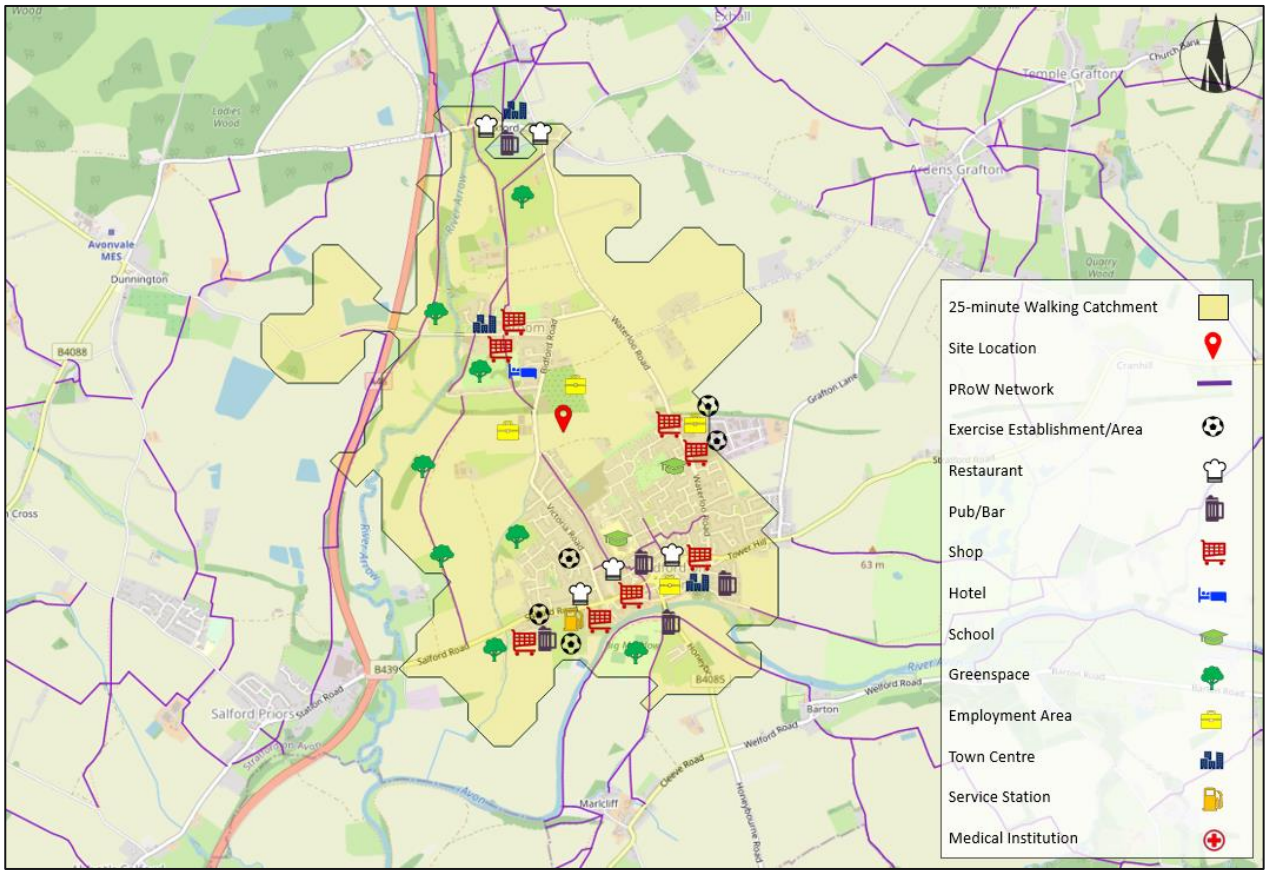
Table 3.2 Walkable Services and Amenities from Proposed Site

Service / Amenity	Distance	Walking Time	Threshold Classification
Bidford-on-Avon Primary School	1080m	15-minutes	Acceptable
The Village Café	1600m	21-minutes	Preferred Maximum
The Frog	1400m	18-minutes	Preferred Maximum
Bidford-on-Avon Tennis Club	1100m	14-minutes	Preferred Maximum
Tudor Barn	320m	4-minutes	Desirable
The Broom Hall	330m	4-minutes	Desirable
Broom Village Hall	800m	10-minutes	Desirable
The Tavern Broom	830m	10-minutes	Desirable
Esso Garage	1100m	14-minutes	Preferred Maximum

It can be seen from Table 3.2 that the proposed site is well located to benefit from a number of services and facilities which are within a desirable and preferred maximum walking distance. This will reduce the dependence on car journeys to access key services and facilities and promote a sustainable development.

Figure 3.3 displays a 2km, 25-minute walking isochrone illustrating the location of the services and facilities highlighted in Table 3.2.

Figure 3.4 2km, 25-Minute Walking Isochrone including Services and Facilities



In addition to those services and facilities deemed to be with an acceptable walking distance, it is worth noting that there are additional facilities which are situated just outside of these thresholds. These include a gym, bakery, public house, restaurants, additional convenience stores, and schools, which are closer to Ardens Grafton and Broom in the north. All of these are accessible within a 30-minute cycle, in turn offering future residents a genuine modal choice.

3.4 Public Transport

Bus Services

The closest bus stop to the proposed development is situated on the B439 outside the Co-op, c.1100m south from the site location. Google Maps shows a bus stop on Bidford Road to the north of the site (c.400m), but it is unmarked and seemingly disused. The Co-op bus stop is in the form of a shelter, seating, timetable, bus flag, bus border kerb and bus layby.

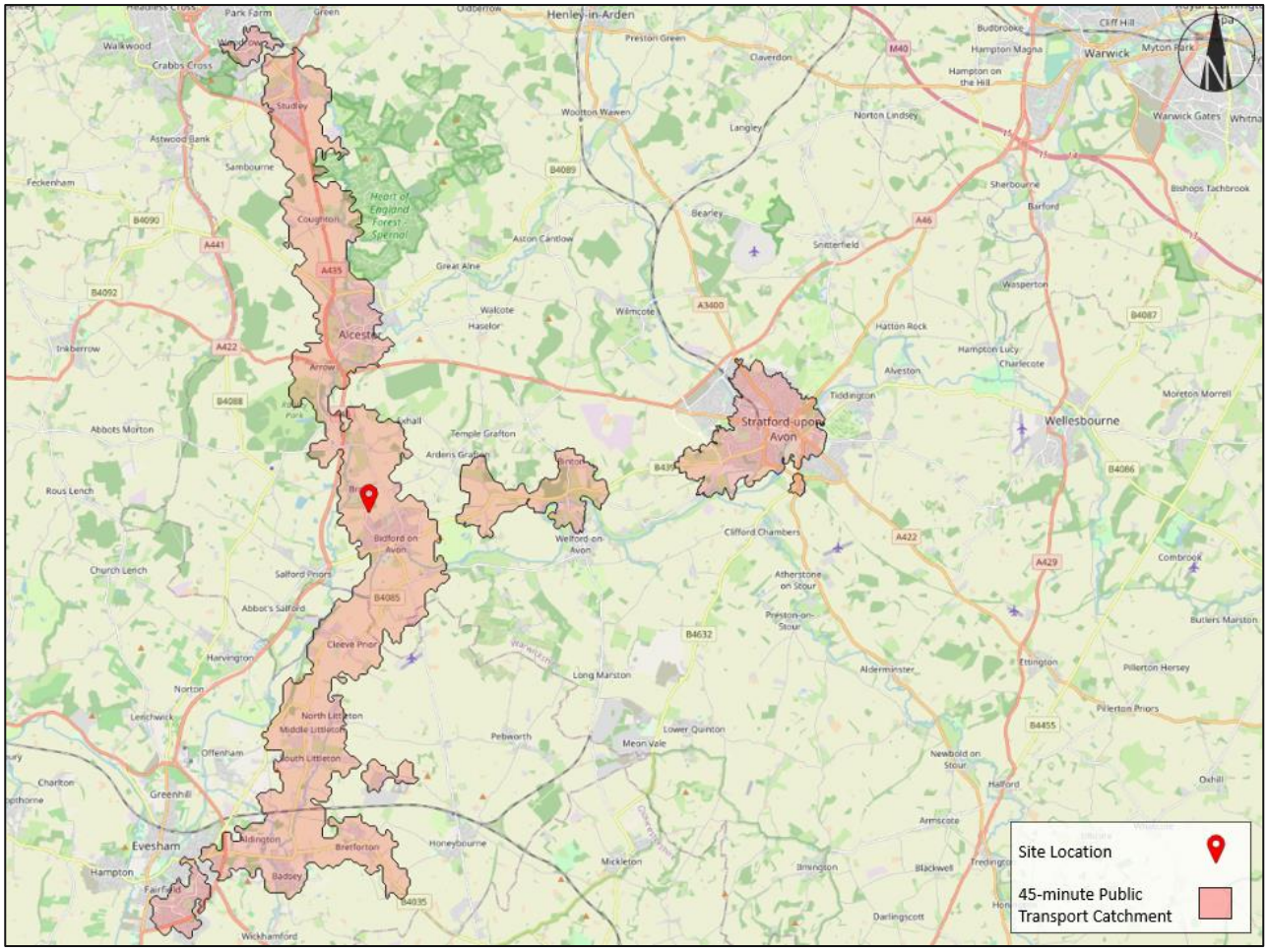
The stops offer combined access to 4 services which provide access to destinations across southwestern Warwickshire, including key settlements such as Alcester. A summary of the service and frequencies is presented in **Table 3.3** and as 45-minute travel isochrone is illustrated within **Figure 3.5**.

Table 3.3 Local Bus Services

Bus Stop	Distance	Facilities	Bus Services	Route	Peak Frequency
B439 Co-op (Stop ID: warajmwa)	1100m	Bus flag, Timetable, Border Kerb, Seating, Shelter	212	Caravan Site - Stratford Tesco Bus Shelter	Tuesday and Fridays – AM Peak Only
			247	Alcester Academy – Bidford, Co-op	Every 40 minutes
			247S	Redditch – Evesham	AM and PM Peak Only (School Service)
			28	Stratford – Evesham	Every 50 minutes
Broom High Street (Stop ID: warajtpa)	800m	Unmarked	212	Caravan Site - Stratford Tesco Bus Shelter	Tuesday and Fridays – AM Peak Only

Source: www.stagecoachbus.com , https://www.diamondbuses.com/worcester-warwickshire/ , https://www.flexi-bus.co.uk/

Figure 3.5 Public Transport Isochrone 45-minute radius



Given the size of the proposed site, there is potential for bus stops to be placed directly outside of the development on Bidford Road to improve access to bus services. These future improvements are considered in greater detail within **Chapter 4**.

Train Services

Stratford-upon-Avon Railway station is located approximately 10.4km (crow-fly distance) to the east of the proposed allocation site. The station is managed by the West Midlands Railway. The station provides services to Birmingham, Kidderminster, Worcester and Leamington Spa.

West Midlands Railway provide twice-hourly weekday and Saturday services from Stratford-upon-Avon to Birmingham Snow Hill, which continue to Kidderminster, with some services during the early and late hours of the day terminating at Worcester Foregate Street or Stourbridge Junction. There are two routes between Birmingham and Stratford; one service per hour runs via Shirley, and the other via Solihull. In the evening hours, the frequency of services is reduced to once-hourly with trains only running via Shirley. The last service of the day terminates at Birmingham Snow Hill.

On Sunday, there is an hourly service to Worcester Foregate Street via Shirley and Birmingham Snow Hill. Some services terminate at Worcester Shrub Hill, and no services run via Solihull.

Chiltern Railways provide a single service approximately every two hours to Leamington Spa via Hatton along the Leamington-Stratford line. On weekdays, some services terminate at Hatton or Warwick where connections are available to Leamington Spa. The last service of the day terminates at Banbury.

On Sunday, the frequency of services remains the same; however, they are only available from late morning to late evening.

Stratford-upon-Avon Railway Station can be accessed via a 19-minute / 47-minute / 25-minute respective car, cycle and bus (Service No.28 includes pedestrian journey to the nearest bus stops) journey from the proposed allocation site.

3.5 Conclusion

As a result of the information provided in this chapter, it can be concluded that:

- There are existing pedestrian and cycle infrastructure which afford access to numerous local services and facilities, including those likely to be utilised by future residents on a regular basis. Extensions to the existing infrastructure would be required and is considered within Chapter 4.
- The site is situated within proximity of existing bus services, which serve the immediate and wider area. Potential also exists to introduce new bus stops and increased services along Bidford Road to further enhance the site's sustainability.
- Rail links are afforded, which includes regional destinations such as Birmingham, Kidderminster, Worcester and Leamington Spa.

4. Development Proposals

4.1 Overview

This chapter of the report describes the development proposals, including indicative details of internal road layout, access, parking and servicing arrangements.

4.2 Development Description

The development proposals will provide the following quantum of development:

- Between 180 – 240 dwellings (6 ha of residential development area across 9.96 ha).
- Upgraded access point and junction to provide access into the site, taken from Bidford Road.
- New pedestrian links within the curtilage of the site, with tactile paving dropped kerb crossing points at desire lines.
- Improved 2m footway along the eastern edge of Bidford Road carriageway.

A plan illustrating the concept layout has been extracted in **Figure 4.1** below, with a full copy available within **Appendix A**.

Figure 4.1 Concept Layout

4.3 Internal Road Layout

Based on the quantum of development and with reference to WCC Design Guide 'Part 3 – Street Design (Residential S38), the following access requirements have been identified:

Road Type 4a

- Direct link road taken directly from Bidford Road
- 5.5m minimum width carriageway
- 20mph speed limit
- Minimum 2m footways on either side of the carriageway
- Visibility splays for these roads have been based on the posted speed limits along Bidford Road (40mph), which requires 4.5m x 90m based on the requirements set out in CD 109 of the Design Manual for Roads and Bridges (DMRB).

Road Type 4b

- Local access roads taken from Road Type 4a to serve sub-divisions of up to 50 dwelling houses.
- 5m minimum width carriageway
- 20mph speed limit
- Minimum 2m footways on either side of the carriageway
- Visibility splays for these roads have been based on the required speed limits for Type 4a road (20mph), which requires 2.4m x 25m based on the requirements set out in '*Table 7.1 Derived SSDs for streets (figures rounded)'* of MfS Design Guidance.

Given over 200 dwellings are proposed, the WCC design guide states that more than one access point will be required to serve the development. The site frontage is c.215m and it is therefore likely that two points of access could be accommodated to satisfy this requirement, or alternatively and with reference to the concept layout, there may be opportunity to provide a further access into the reserved site to the south.

With regard to specific vehicle junction type, this has been based off trip rates and likely traffic generation potential of the development (Chapter 5). Chapter 6 details the junctions required for each proposed access point.

Pedestrian and Cycle Access

As previously noted, Bidford Road affords a pedestrian footway along the eastern edge of the carriageway, which could be widened to a minimum of 2m along the eastern edge of Bidford Road.

Footways would also be provided along both sides of every new carriageway within the development site. This would measure 2.0m wide and would require crossing points to be improved and provided at new desire lines, which would include dropped kerbs, tactile paving and potentially public refuge islands within the vicinity of new junctions. New footway connections to the site will tie into the existing adopted highway along Bidford Road.

Public Transport Access

There are 2 bus stop locations within an acceptable and preferred maximum walking distance threshold of the proposed site access points: Broom High Street and the B439 Co-op. As such, accessibility to public transport is achievable, but it is acknowledged that additional bus stops or service diversions would be required to satisfactorily service the proposed allocation site.

There are also potential pedestrian permeability opportunities to be taken from the south of the site, which borders the reserved site highlighted on the concept layout. This would improve public transport access for a number of potential residents residing near to the site boundary.

Figure 4.2 outlines potential walking routes to existing services and potential locations for future bus stops. All walking routes, service diversion/extension/frequency improvements and bus stops locations would be discussed with WCC and service providers as part any formal planning application.

Figure 4.2 Potential Future Bus Stop Arrangement

4.4 Parking Provision

Parking standards for new development are outlined in the Stratford District Council 'Development Requirements SPD Part O – Parking and Travel' for vehicle and cycle parking. The standards allow for the following **maximum** parking levels for residential developments:

- 1-bedroom unit – 1 space
- 2-bedoom unit – 2 spaces
- 3-bedroom unit – 2 spaces
- 4-bedroom unit – 3 spaces

- 5-bedroom unit – 3 spaces

In addition to the above, 0.2 unallocated spaces per unit are also required for visitors. The prescribed standards would be adhered as part of any future application.

4.5 Servicing Arrangements

Servicing will be afforded within the curtilage of the site boundary, via kerbside collection for each dwelling.

5. Travel Demand & Impact

5.1 Introduction

To gauge the level of traffic movements that could be generated from the proposed residential dwellings, a trip rate assessment has been undertaken using the industry standard TRICS (Trip Rate Information Computer System) database. TRICS is a nationally recognised database of traffic surveys covering a multitude of different development types. From the concept layout it has been assumed that 240 dwellings will be built, and the trip rates have been growthed from this number of dwellings as a robust, 'worst-case' assumption.

5.2 Traffic Generation

Trip rate data has been extracted from the latest version of the TRICS database for 03 'Residential' – A 'Houses Privately Owned' to determine the likely traffic generation for the proposed development site.

The following survey selection parameters were utilised:

- Greater London, Scotland, Wales, Northern Ireland, Republic of Ireland removed;
- Population within a mile (actual – 6,858), range used 1,000 – 10,000;
- Population within 5 miles (actual – 26,994), range used 5,000 – 50,000;
- Surveys conducted for sites between 40 – 1500 Dwellings (Average – 204)
- Surveys conducted in 'Edge of Town Centre', 'Suburban Area' and 'Edge of Town' locations.

Full and detailed TRICS outputs are provided in **Appendix B** with a summary of the trip rates and likely traffic generation that could be generated by the existing site outlined in **Table 5.1** below.

Table 5.1 Trip Rates and Trip Generation

	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way
	Trip rate (1 dwelling)			Proposed Trip Generation (240 dwellings)		
AM Peak (08:00 – 09:00)	0.133	0.326	0.459	32	78	110
PM Peak (17:00 – 18:00)	0.322	0.171	0.493	77	41	118
Daily	2.069	2.124	4.193	497	510	1006

Table 5.1 shows that in the AM and PM peak hour, 110 and 118 two-way trips are made respectively, as a result of the proposed development. Over the course of a day, 1,006 two-way trips could be generated. This trip generation has been used to inform junction requirements for the development, in the section below.

5.3 Junction Requirements

The daily trip generation has been used alongside the Design Manual for Roads and Bridges (DMRB) document titled 'CD 123 Geometric design of at-grade priority and signal-controlled junctions', to inform the worst-case junction requirements at the access point(s).

Figure 5.1 Concept Layout with Proposed Access Points

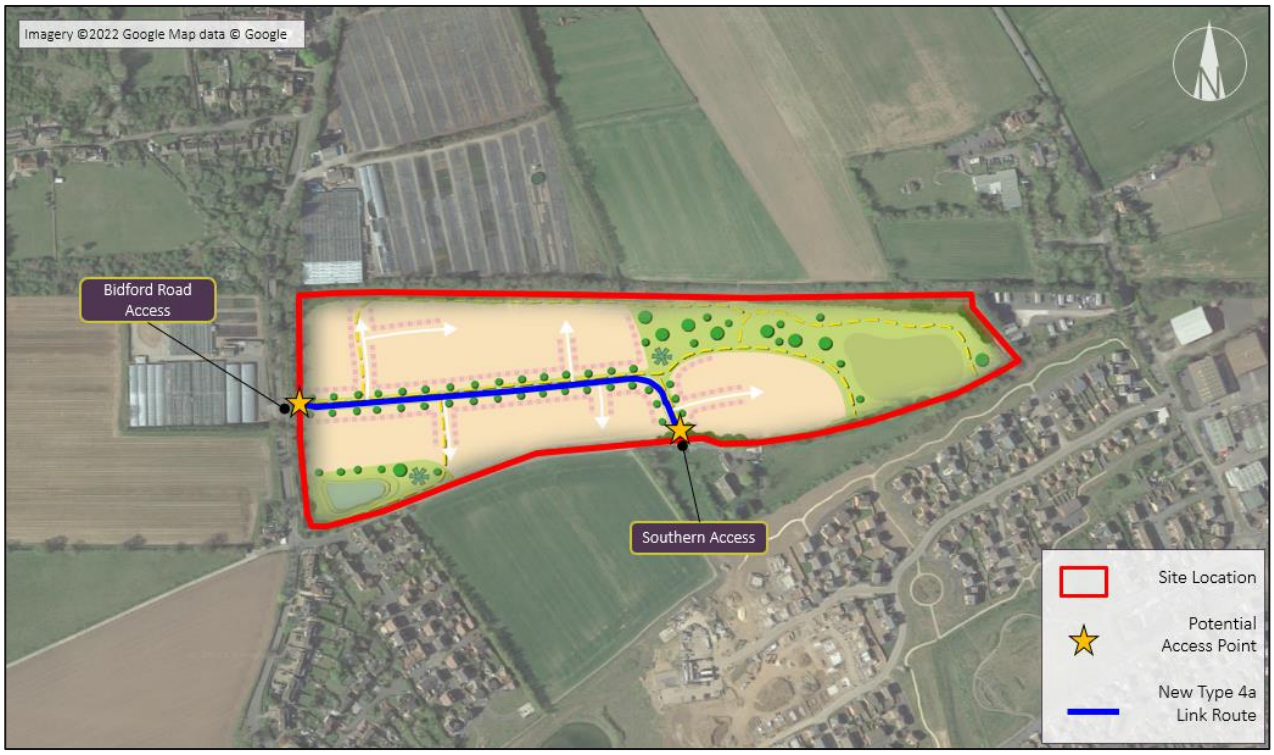


Table 5.2 Access Distribution

Two-Way Daily Trips	Access Distribution *			
	Bidford Road Access		Southern Access	
	%	Trip Generation	%	Trip Generation
1006	75%	755	25%	251

*Distribution based on the number of dwellings and their relative proximity to each potential access point

The daily trip generation for each parcel of land has been used in conjunction with guidance contained within the Design Manual for Roads and Bridges (DMRB) document titled 'CD 123 Geometric design of at-grade priority and signal-controlled junctions', to inform the likely junction forms required to serve the development.

Based on the information presented above, the following would be considered as a minimum, for each access point:

Bidford Road Access

Approximately 75% of vehicle trips will be made through this point of access, which equates to 755 trips. Therefore, the following junction will be required:

- A ghost island right-turn lane junction along Bidford Road.

Southern Access

Approximately 25% of vehicle trips will be made through this point of access, which equates to 251 trips. Therefore, the following junction will be required:

- A simple priority T-Junction.

Please note that 'ttc' have conducted an assessment for the 'worst-case' scenario of 240 dwellings. For example, if under 200 dwellings are proposed at this site, two points of access will not be required, and the southern access can be disregarded for future proposals.

5.4 Traffic Impact

In order to determine if the local highway network experiences congestion, traffic congestion maps from Google Traffic Data have been obtained for AM and PM peak hour periods. The levels of congestion on the network are coloured coded as follows:

- Green represents no congestion
- Amber shows slight congestion
- Red shows slow moving traffic
- Heavy Red shows a large build up of slow moving traffic

Figures 5.2 and 5.3 displays the traffic data from the AM & PM peak hour from Google Traffic Data.

Figure 5.2 AM Peak Hour Local Highway Conditions

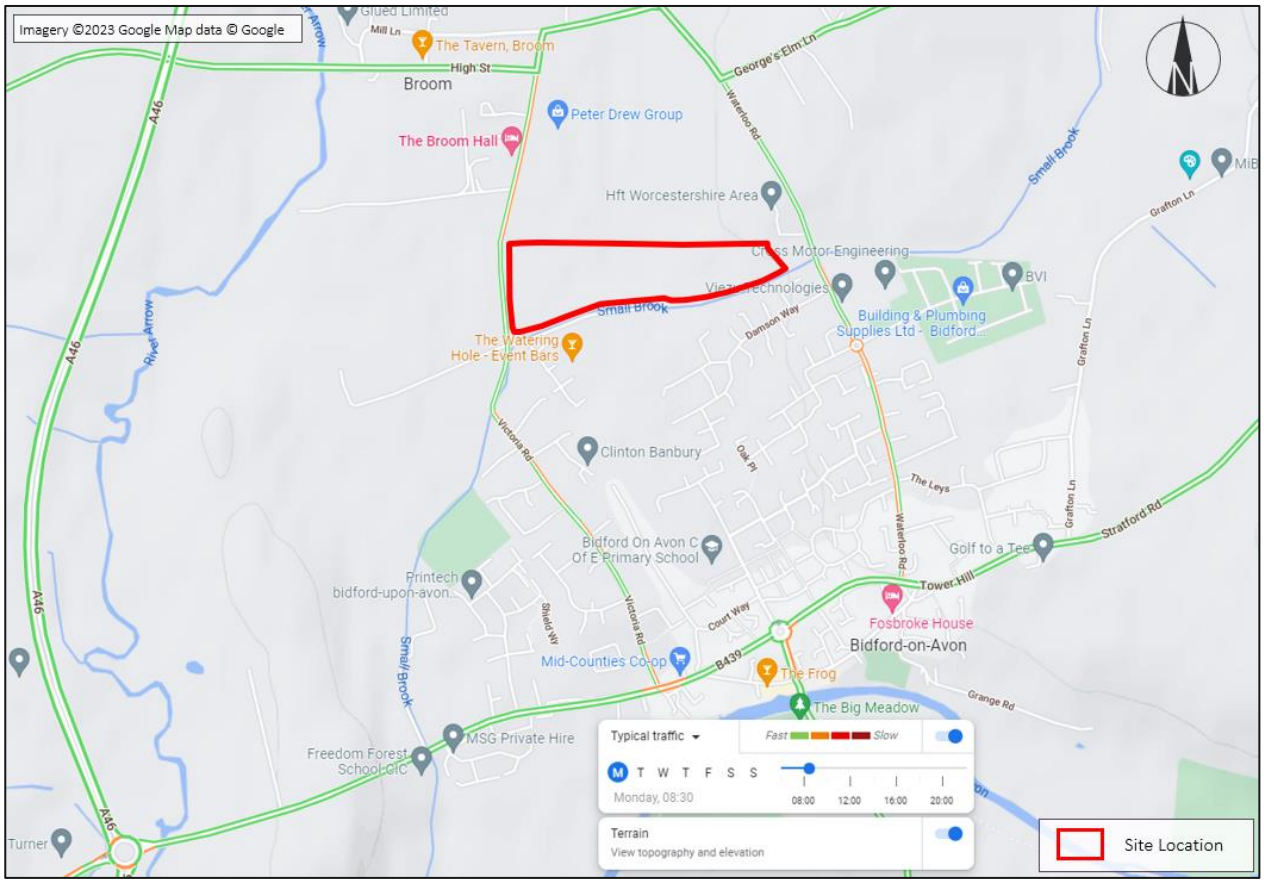
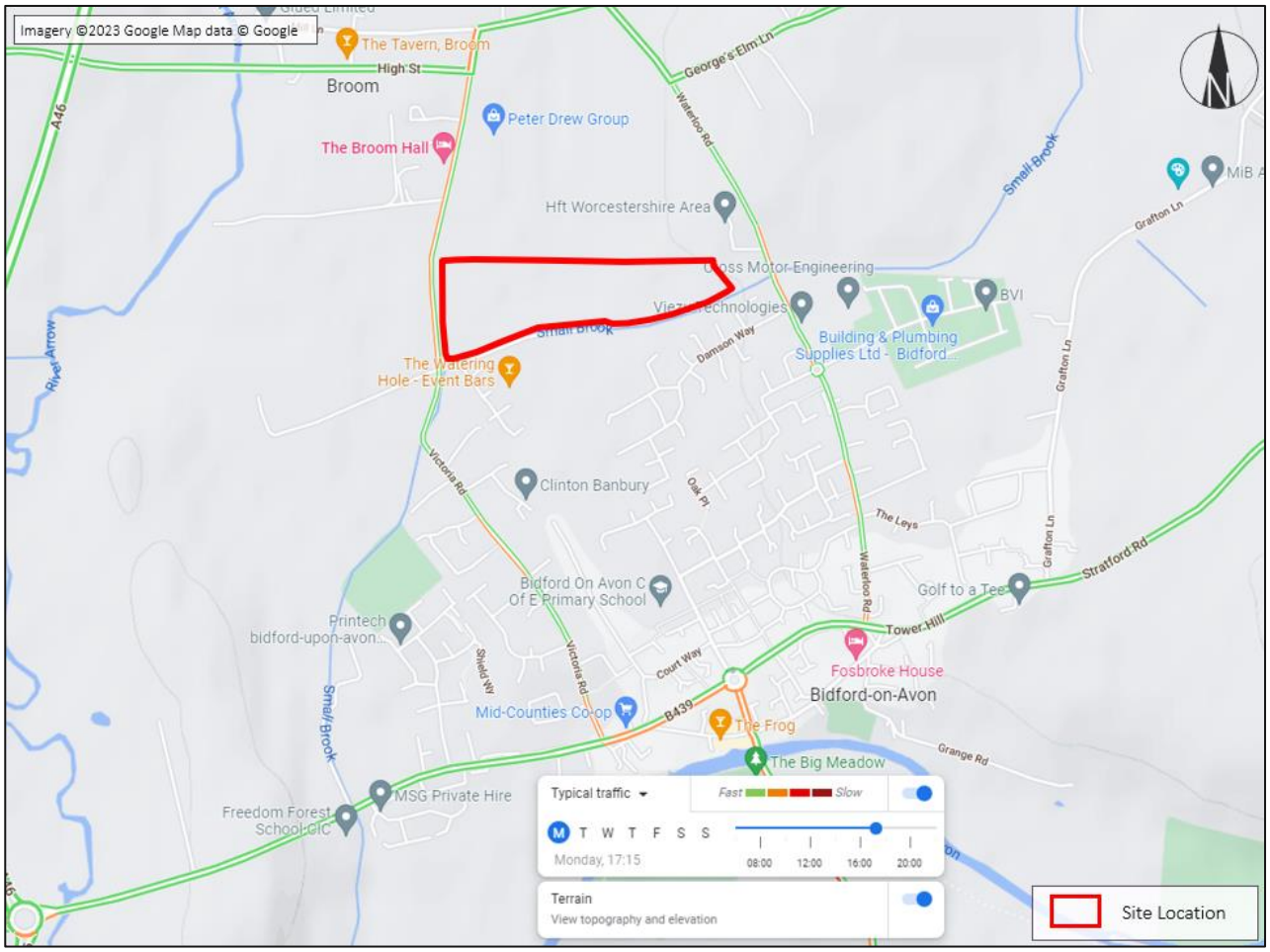


Figure 5.3 PM Peak Hour Local Highway Conditions



Figures 5.1 and 5.2 demonstrate that, with the exception of some light congestion experienced along Tower Hill / Salford Road roundabout to the southwest of the site, the vast majority of the local highway operates with no discernible issues during the AM and PM peak hours.

The A46 and Stratford Road are key arterial roads, which will serve future residents on route to employment areas and neighbouring settlements, such as Alcester, Stratford-upon-Avon and Evesham. In keeping with the immediate local highway network, there are also no discernible issues during the AM and PM peak hours.

6. Summary & Conclusions

6.1 Summary

This Transport and Highways report has been prepared in order to support the promotion of a parcel of land at Bidford-on-Avon in Warwickshire.

In summary:

- The site boundary is contiguous with the adopted public highway.
- A review of the local highway network revealed that there were no outstanding highway safety issues.
- The site is reasonably situated to benefit from access to Stratford-upon-Avon Railway Station, which provides frequent and reliable links to local and regional destinations.
- Bus stops are situated with close proximity and provide access to a frequent bus service to Alcester, Stratford-upon-Avon and Evesham. Access to bus services could be improved by increasing the frequency of bus services within the vicinity Bidford-on-Avon and adding new bus stops within the vicinity of the proposed site access along Bidford Road.
- A number of local services and facilities are located within a desirable walking distance of the site, which could be utilised by future residents on a daily basis.
- A 'safe and suitable' internal road layout has been identified and proposed in line with the appropriate standards.
- The routeing for an improved footway has been identified along the eastern edge of Bidford Road, Potential for a cycle route may also be achievable and would be considered at the next assessment stage.
- The anticipated traffic generation has been established using the industry standard TRICS database to create a robust estimate of the vehicle generation from both the residential and industrial zones within the site.
- This traffic generation has informed likely future junction requirements to support the delivery of the site but would be subject to further consultation with the LHA and LPA.
- A review of the wider highway network has been undertaken to determine whether there are any existing congestion issues, it has been identified that there are some minor congestion issues within the immediate vicinity. Looking at the wider network holistically, the local highway network operates at a very good level during the AM and PM peak hours.

6.2 Conclusions

On the basis of the information presented in this report it is considered that the proposed development can be comfortably accommodated within the local area. As such there should be no reason why the allocation cannot be recommended in terms of highways and transportation.

Appendix A
Concept Layout

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

- Site Boundary
- Residential Development Area
- Primary Development Frontages
- Existing Vegetation
- Proposed Planting
- Public Open Space
- Childrens Play Area
- Pedestrian & Cycle Link
- Primary Access Route
- Secondary Access Route
- Landscape / Ecology Habitat Area
- SuDS Basin

Indicative Schedule of Development

Description	Amount
Total Site Area	9.96 ha
Residential Development Area	6 ha
Public Open Space Provision	3.96 ha
Density	30-40 dph
Number of Dwellings	180-240

MAKING COMPLEX EASY

20 Western Avenue, Milton Park,
Abingdon, Oxfordshire, OX14 4SH
T: +44(0) 1235 821 888

Client: Warwickshire Property & Development Group

Project: Land at Broom Farm, Bidford-on-Avon

Title: Concept Masterplan

Status	Drawn By	PM/Checked by
DRAFT	JS	JS
Job Ref	**Scale @ A3**	**Date Created**
JSL4493	1:5,000	06/22
Drawing Number		**Rev**
101		A

Appendix B
TRICS

Calculation Reference: AUDIT-154301-230123-0106

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	1 days
	HC	HAMPSHIRE	1 days
	HF	HERTFORDSHIRE	1 days
03	**SOUTH WEST**		
	DC	DORSET	1 days
04	**EAST ANGLIA**		
	NF	NORFOLK	9 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NE	NORTH EAST LINCOLNSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 50 to 514 (units:)
Range Selected by User: 40 to 1500 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 07/10/22

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	5 days
Wednesday	3 days
Thursday	3 days
Friday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	10 days
Directional ATC Count	4 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	1
Edge of Town	12

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	10
Out of Town	2
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	25 days - Selected
Servicing vehicles Excluded	78 days - Selected

Secondary Filtering selection:

Use Class:

C3	14 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	6 days
5,001 to 10,000	7 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	9 days
25,001 to 50,000	5 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

1.1 to 1.5	13 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	12 days
No	2 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	14 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 **DC-03-A-09** **MIXED HOUSES** **DORSET**
A350
SHAFTESBURY

Edge of Town
No Sub Category
Total No of Dwellings: 50
Survey date: FRIDAY *19/11/21* *Survey Type: MANUAL*

2 **ES-03-A-04** **MIXED HOUSES & FLATS** **EAST SUSSEX**
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total No of Dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

3 **HC-03-A-23** **HOUSES & FLATS** **HAMPSHIRE**
CANADA WAY
LIPHOOK

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 62
Survey date: TUESDAY *19/11/19* *Survey Type: MANUAL*

4 **HF-03-A-03** **MIXED HOUSES** **HERTFORDSHIRE**
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

5 **NE-03-A-03** **PRIVATE HOUSES** **NORTH EAST LINCOLNSHIRE**
STATION ROAD
SCUNTHORPE

Edge of Town Centre
Residential Zone
Total No of Dwellings: 180
Survey date: TUESDAY *20/05/14* *Survey Type: MANUAL*

6 **NF-03-A-16** **MIXED HOUSES & FLATS** **NORFOLK**
NORWICH COMMON
WYMONDHAM

Edge of Town
Residential Zone
Total No of Dwellings: 138
Survey date: TUESDAY *20/10/15* *Survey Type: DIRECTIONAL ATC COUNT*

7 **NF-03-A-23** **MIXED HOUSES & FLATS** **NORFOLK**
SILFIELD ROAD
WYMONDHAM

Edge of Town
Out of Town
Total No of Dwellings: 514
Survey date: WEDNESDAY *22/09/21* *Survey Type: MANUAL*

8 **NF-03-A-31** **MIXED HOUSES** **NORFOLK**
BRANDON ROAD
SWAFFHAM

Edge of Town
Residential Zone
Total No of Dwellings: 321
Survey date: THURSDAY *22/09/22* *Survey Type: DIRECTIONAL ATC COUNT*

9 **NF-03-A-32** **MIXED HOUSES & FLATS** **NORFOLK**
HUNSTANTON ROAD
HUNSTANTON

Edge of Town
Residential Zone
Total No of Dwellings: 164
Survey date: WEDNESDAY *21/09/22* *Survey Type: DIRECTIONAL ATC COUNT*

LIST OF SITES relevant to selection parameters (Cont.)

10 **NF-03-A-33** **MIXED HOUSES** **NORFOLK**
LONDON ROAD
ATTLEBOROUGH

Edge of Town
Residential Zone
Total No of Dwellings: 143
Survey date: THURSDAY *29/09/22* *Survey Type: MANUAL*

11 **NF-03-A-34** **MIXED HOUSES** **NORFOLK**
NORWICH ROAD
SWAFFHAM

Edge of Town
Out of Town
Total No of Dwellings: 80
Survey date: TUESDAY *27/09/22* *Survey Type: MANUAL*

12 **NF-03-A-36** **MIXED HOUSES** **NORFOLK**
LONDON ROAD
WYMONDHAM

Edge of Town
No Sub Category
Total No of Dwellings: 75
Survey date: THURSDAY *29/09/22* *Survey Type: MANUAL*

13 **NF-03-A-39** **MIXED HOUSES** **NORFOLK**
HEATH DRIVE
HOLT

Edge of Town
Residential Zone
Total No of Dwellings: 212
Survey date: TUESDAY *27/09/22* *Survey Type: MANUAL*

14 **NF-03-A-47** **MIXED HOUSES & FLATS** **NORFOLK**
BURGH ROAD
AYLSHAM

Edge of Town
Residential Zone
Total No of Dwellings: 300
Survey date: WEDNESDAY *21/09/22* *Survey Type: DIRECTIONAL ATC COUNT*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	181	0.068	14	181	0.278	14	181	0.346
08:00 - 09:00	14	181	0.133	**14**	**181**	**0.326**	14	181	0.459
09:00 - 10:00	14	181	0.129	14	181	0.147	14	181	0.276
10:00 - 11:00	14	181	0.115	14	181	0.142	14	181	0.257
11:00 - 12:00	14	181	0.130	14	181	0.139	14	181	0.269
12:00 - 13:00	14	181	0.126	14	181	0.132	14	181	0.258
13:00 - 14:00	14	181	0.146	14	181	0.132	14	181	0.278
14:00 - 15:00	14	181	0.147	14	181	0.167	14	181	0.314
15:00 - 16:00	14	181	0.240	14	181	0.162	14	181	0.402
16:00 - 17:00	14	181	0.263	14	181	0.167	14	181	0.430
17:00 - 18:00	**14**	**181**	**0.322**	14	181	0.171	**14**	**181**	**0.493**
18:00 - 19:00	14	181	0.250	14	181	0.161	14	181	0.411
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.069			2.124			4.193

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	50 - 514 (units:)
Survey date date range:	01/01/14 - 07/10/22
Number of weekdays (Monday-Friday):	14
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	26
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.