**Worcester City Council**

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Regulatory Services
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# Worcester City
# Source Apportionment Assessment 2022

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

April 2022

| | |
|---|---|
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# Table of Contents



**Appendices**



**List of Tables**

**List of Figures**

# 1.0 Introduction

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act 1995, the Air Quality Strategy for England, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance.

Policy Guidance (LAQM.PG16) requires a Local Authority to produce an Air Quality Action Plan (AQAP) following declaration of an Air Quality Management Area (AQMA). In order to develop an appropriate plan, it is necessary to identify the emission sources contributing to the exceedance of the Objective.

# 2.0 Air Quality Objectives

The air quality objectives set out in the Air Quality (England) Regulations 2000, as amended by the Air Quality (England) (Amendment) Regulations 2002, provide the statutory basis for the air quality objectives under LAQM in England. The relevant objectives for the propose of this assessment are set out in Table 1 below.

**Table 1 Nitrogen Dioxide National Air Quality Objectives**

| Pollutant | Objective | Averaging Period | Obligation |
|---|---|---|---|
| Nitrogen Dioxide | 200µg/m$^3$ | 1-hour mean | All local authorities |
| | not to be exceeded more than 18 times a year | | |
| | 40µg/m$^3$ | Annual mean | All local authorities |

# 3.0 Declaration

Three Air Quality Management Areas (AQMA) were declared by Worcester City Council in 2009 for exceedances of the annual average mean objective for nitrogen dioxide ($NO_2$):

- Dolday/Bridge Street AQMA declared 1st March 2009.
- Lowesmoor/Rainbow Hill AQMA declared 1st March 2009; and
- Newtown Road AQMA declared 1st March 2009.

The Newtown Road AQMA was revoked by the council on 30th July 2014.

A further AQMA was declared by the council for the St Johns area of Worcester for exceedance of the annual mean objective for NO2 on 26th September 2014.

In 2017, a detailed assessment was undertaken of an area within London Road and Sidbury by Air Quality Consultants (AQC) on behalf of Worcester City Council. The AQC report concluded that an area at the western end of London Road should be declared as an AQMA. A copy of AQC (July 2017) '*Detailed Assessment of Air Quality along London Road, Worcester*' (ref: J2829A/1/F1) is available to download from WRS website at http://www.worcsregservices.gov.uk/pollution/air-quality/local-air-quality-progress-reports.aspx

Additionally, long term trend measurements and automatic analyser results up to 2018 within Foregate Street, The Butts and The Tything, Worcester indicated that requirement for a new AQMA declaration of this combined study area would likely be confirmed by detailed assessment.

On the 11th June 2019 Worcester City Council formally declared the Worcester City AQMA (Political Boundary of Worcester City) which encompasses the whole district area as an AQMA, for likely breach of the nitrogen dioxide annual mean.

Additionally, Worcester City Council AQMAs Variation Order 2019 consolidates the existing 2009 and 2014 AQMAs, as detailed above, into the Worcester City AQMA (Political Boundary of Worcester City) as of 11th June 2019.

Details of declaration and plans of the AQMAs can be found on the following pages of WRS website: Air Quality Management Area Declarations | Worcestershire Regulatory Services (worcsregservices.gov.uk)

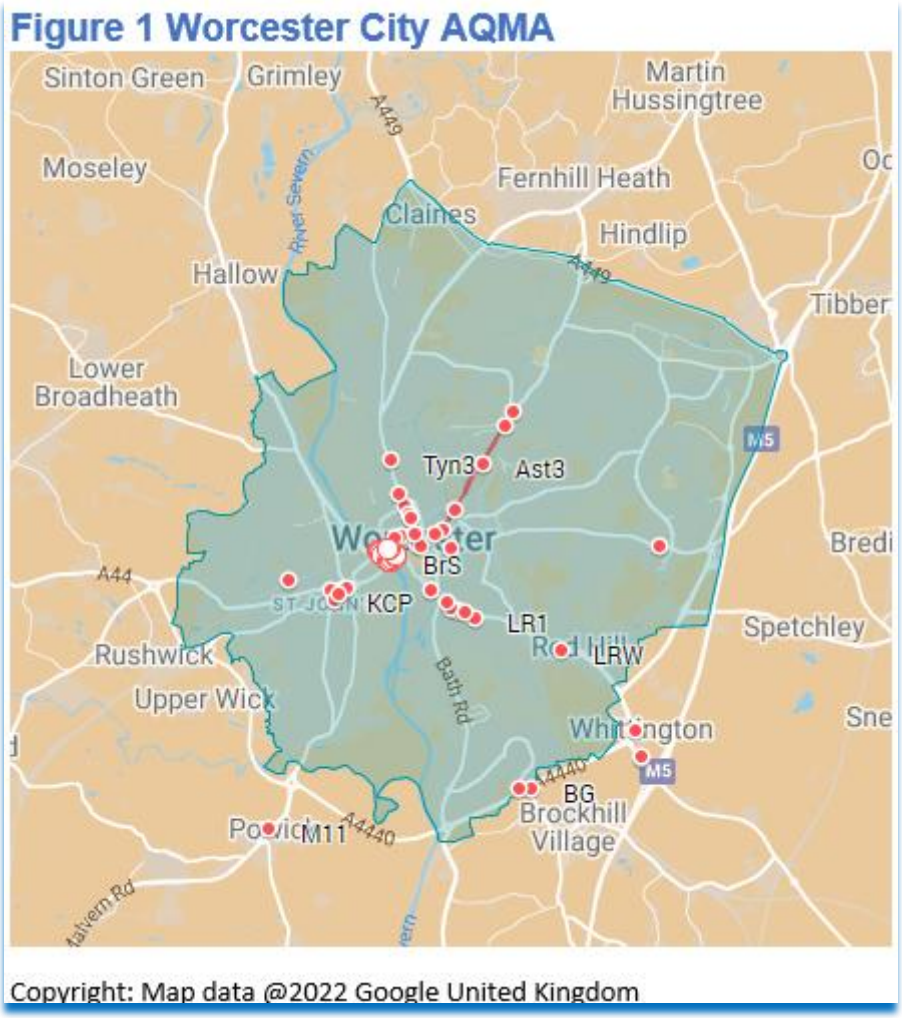
In 2013, WRS produced a countywide Air Quality Action Plan (AQAP) for Worcestershire which was adopted by Worcester City Council. WRS have produced two updates to the AQAP, the latest in September 2016. Following the identification of further areas of exceedance across Worcester City, and subsequent declaration of the Citywide AQMA, it is necessary to develop a new action plan relevant to these changes.

This report details the first steps in the process of developing a new Action Plan for improving nitrogen dioxide levels within the Worcester City AQMA. The report aims to identify and quantify the various emission sources which contribute to the exceedances occurring at different locations across the city.

Work previously commenced at the start of 2020 but was suspended due to the outbreak of the Covid-19 Pandemic which had severe impacts on traffic movements and behaviour. Traffic

movements were deemed to have returned to normal at the tail end of 2021 when progress was resumed, and the outstanding traffic surveys carried out.

**Figure 1 Worcester City AQMA**



# 4.0 Methodology and Input Data

This source apportionment assessment has been undertaken generally following the process outlined in Technical Guidance (LAQM.TG16). LAQM.TG16 (paragraph 7.100) advises that "source apportionment may be undertaken using a simple spreadsheet approach. For example, where road traffic emissions are the principal concern, the percentage contribution to NOX emissions may be calculated using the appropriate emissions factors". This approach has been adopted for the Worcester City source apportionment assessment utilising Defra's Emissions Factor Toolkit (EfT) v11.0.

Copies of the Emission Factor Toolkit input and outputs are shown in Appendix B.

## 4.1 Emission Factor Toolkit

Source apportionment was undertaken using the most recent version of DEFRA's Emission Factor Toolkit (EfT v11.0).

## 4.2 Traffic Data

**Traffic Count Data**

WRS commissioned 12-hour road traffic counts to be undertaken by Worcestershire County Council at the locations within the Worcester City AQMA where exceedances have been recorded. The first traffic surveys were carried out in March 2020 for Foregate Street, The Butts and the Tything. Other traffic surveys were scheduled to take place but were cancelled due to the Covid-19 Pandemic and subsequent lockdowns which heavily reduced traffic flows. The outstanding surveys were conducted in November 2021 for All Saints Road, Bridge Street, Lowesmoor, and the Cross once traffic volumes were considered to have returned to pre-pandemic levels.

The traffic count data were scaled to 24hours using DfT Table TRA037. A separate figure was calculated to scale taxi journeys from available data to reflect the level of evening and weekend operation. The traffic data and scaling calculations are provided in Appendix B.

**Speed Data**

Speed data for the various routes within Worcester City were derived from basic speed surveys carried out by WRS in January and February 2020. The surveys were carried out

using Android App “Speedometer GPS” which uses the inbuilt GPS of the smart phone to monitor and record journey statistics, including speed. These data are then displayed on a Google base map. The data is stored and can be reviewed later however there is no function to export the data from the app and as such it is not possible to reproduce it in full as part of this report. A summary of the information gathered is provided in Appendix B.

## 4.3 Diffusion Tube Data

Worcester City Council monitors annual mean nitrogen dioxide concentrations using passive diffusion tubes with 37 locations currently located across the District. Various diffusion tube monitoring locations are present within the areas of concern located inside the citywide AQMA area. Plans showing the locations of diffusion tube monitoring locations in relation to the study areas are included in Section 6. Where two or more diffusion tubes were located within the same study area the location recording the highest $NO_2$ concentration has generally been utilised to represent worst case conditions. The most representative monitoring location has been used in each case to inform the study. Two locations within Foregate Street (Fos and Fos2) have been included to provide comparison as the location with the highest concentrations is located at the edge of the study area at a busy signal-controlled crossroads.

It was decided to use data from 2018 as this was considered the most representative of concentrations. 2017 and 2019 data were subject to a low bias adjustment factor leading to lower than expected results. 2020 and 2021 results were even more heavily reduced due to the impacts of the Corona Virus Pandemic and subsequent lockdowns. 2018 was therefore considered to be more appropriate year to use being in line with previous long-term trends.
LAQM.TG16 advises that as diffusion tubes are not the reference method, and passive diffusion typically results in a low accuracy, it is necessary to bias adjust the results based upon local or national collocation studies with chemiluminescent analysers. The bias - adjustment factor of 0.89 issued by Defra was utilised to adjust the 2018 data.

**Table 2 Annual mean nitrogen dioxide concentrations measured at diffusion tube locations within the study areas (µg/m$^3$)**

| Site | Description | 2018[abc] |
|---|---|---|
| **Tyn** | 925 - Hammerchilds, The Tything, WR1 1JT | **47.21** |
| **Fos** | Foregate Street junction with Shaw Street, WR1 1EB | **48.51** |
| **Fos2** | Hewitt Recruitment, 35 Foregate Street, WR1 1EE | **35.81** |
| **But2** | Magdala Court, The Butts, WR1 3PB | **52.43** |
| **BRS2** | Bridge Street, WR1 3NJ | **47.7** |
| **Bkc** | Berkeley Court, Foregate Street, Worcester, WR1 3QF | **46.94** |
| **DDASH** | All Saints House, WR1 3NX | **43.8** |
| **Lwm1** | Lowesmoor, Rainbow Hill End, WR1 2SE | **41.2** |
| **Objective** | **40** | |

[a] *bias-adjusted using 2018 defra national factor 0.89*
[b] *annualised in accordance with DEFRA TG16*
[c] *calculated back to relevant exposure in accordance with DEFRA TG16*

# 5.0 Background and Local Contributions

Technical guidance (LAQM.TG16) advises that determining *"…the apportionment for $NO_2$ is not straightforward due to the non-linear relationship between emissions of $NO_2$ and nitrous oxides ($NO_X$). This is additionally complicated by the different proportions of $NO_2$ in the $NO_X$ emission for different sources, for example, petrol cars or diesel cars. The following advise therefore applies to $NO_2$ source apportionment:*

- *Background contributions: the national maps will give the total background $NO_2$ concentration. This should be apportioned to regional and local background using the ration of the background $NO_X$ concentrations attributable to these two sources, which are also available in the national maps; and*

- *Local contributions: the local contribution to $NO_2$ is the difference between the total (measured or modelled) $NO_2$ and the total background $NO_2$. This is then apportioned to the local sources, for example, buses, HGVs, taxis, cars, using the relative contributions of these sources to the local $NO_X$ concentration"*

Regional and total background concentrations of $NO_X$ and $NO_2$ for 2018, available from the DEFRA website, have been used to calculate the contribution of local $NO_2$ for the relevant monitoring locations for each area recording the highest measured level of $NO_2$ following the procedure laid out in LAQM.TG16 Box 7.5. The local contribution has then been apportioned to each vehicle class according to the results of the EfT. Calculations are presented in Appendix C. The results are summarised in Tables 3 and 4 below.

## Table 3 Measured $NO_2$ concentrations & contribution of each main source type

| | Annual Mean Concentration (µg/m³) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site ID | Regional Background | Local Background | Cars | LGVs | Taxis | HGVs | Buses | MCs | Total |
| Tything (Tyn) | 9.12 | 4.5 | 16.29 | 6.18 | 2.35 | 4.16 | 4.6 | 0.03 | 47.21 |
| Foregate (Fos) | 9.12 | 4.5 | 12.1 | 4.65 | 4.68 | 2.93 | 10.48 | 0.03 | 48.51 |
| The Foregate (Fos2) | 9.12 | 4.5 | 7.7 | 2.95 | 2.98 | 1.86 | 6.67 | 0.02 | 35.81 |
| The Butts (But2) | 9.12 | 4.5 | 8.52 | 3.65 | 2.43 | 2.06 | 22.13 | 0.02 | 52.43 |
| Bridge Street (BRS2) | 8.43 | 4.69 | 17.25 | 6.96 | 1.48 | 4.02 | 4.82 | 0.05 | 47.70 |
| The Cross (Bkc) | 9.12 | 4.5 | 7.69 | 3.13 | 4.26 | 2.2 | 16.02 | 0.04 | 46.94 |
| All Saints Road (DDASH) | 8.43 | 4.69 | 13.74 | 4.72 | 1.18 | 3.96 | 7.02 | 0.05 | 43.80 |
| Lowesmoor (Lwm1) | 10.07 | 4.21 | 5.09 | 2.91 | 2.02 | 1.21 | 15.67 | 0.01 | 41.20 |
| | % Contribution to Total | | | | | | | | |
| Site ID | Regional Background | Local Background | Cars | LGVs | Taxis | HGVs | Buses | MCs | Total |
| The Tything (Tyn) | 19.32 | 9.53 | 34.51 | 13.09 | 4.98 | 8.82 | 9.75 | 0.07 | 100 |
| Foregate (Fos) | 18.82 | 9.29 | 24.95 | 9.58 | 9.64 | 6.03 | 21.6 | 0.06 | 100 |
| Foregate Street (Fos2) | 25.49 | 12.58 | 21.5 | 8.25 | 8.31 | 5.19 | 18.62 | 0.06 | 100 |
| The Butts (But2) | 17.39 | 8.58 | 16.25 | 6.96 | 4.63 | 3.92 | 42.21 | 0.04 | 100 |
| Bridge Street (BRS2) | 17.67 | 9.83 | 36.16 | 14.59 | 3.11 | 8.43 | 10.1 | 0.11 | 100 |
| The Cross (Bkc) | 19.4 | 9.58 | 16.39 | 6.66 | 9.07 | 4.69 | 34.12 | 0.09 | 100 |
| All Saints Road (DDASH) | 19.25 | 10.71 | 31.38 | 10.77 | 2.7 | 9.05 | 16.02 | 0.11 | 100 |
| Lowesmoor (Lwm1) | 24.44 | 10.22 | 12.35 | 7.06 | 4.91 | 2.94 | 38.04 | 0.03 | 100 |

Background split determined following technical guidance in Defra (Oct 2016) 'Background Concentration Maps User Guide':

(1) Regional background includes emissions from sources not in LA control e.g. Motorways outside of study area, Industrial sources, Domestic properties, Railways, Rural sources, Others

(2) Local background includes emissions from sources LA have some influence over e.g. Primary A roads, Minor Roads and Point sources in and outside of study area

Table 3 above demonstrates that the main contributors to emissions within the study areas are cars within the Tything, Foregate Street (Fos), Bridge Street, and All Saints Road. Buses are indicated to be the main contributor at the Butts, the Cross, and Lowesmoor. The

regional background is the highest source attributed at Foregate (Fos2), and second highest in six of the areas, and third at Foregate Street (Fos). Cars and regional background contributions are in the top three contributions for all 8 locations, with buses in 6 out of the 8 locations, and LGVs making up the remaining 2.

As the local authority is largely unable to influence regional background levels it is more useful to consider the source apportionment of the local traffic sources in isolation when developing actions for improving air quality. Table 4 below illustrates the local traffic contribution, excluding background concentrations, broken down into vehicle type.

### Table 4 - Concentrations & percentage contribution of emissions to local traffic sources

| Annual Mean Concentration (µg/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site ID | Cars | | | LGVs | | Taxis | HGVs | Buses | MCs | Total |
| | Petrol | Diesel | Other | Petrol | Diesel | | | | | |
| Tything (Tyn) | 2.15 | 14.07 | 0.07 | 0.03 | 6.15 | 2.35 | 4.16 | 4.6 | 0.03 | 33.59 |
| Foregate (Fos) | 1.58 | 10.51 | 0.02 | 0.01 | 4.64 | 4.68 | 2.92 | 10.49 | 0.03 | 34.88 |
| Fos2 | 1.01 | 6.68 | 0.02 | 0 | 2.95 | 2.98 | 1.86 | 6.67 | 0.02 | 22.19 |
| The Butts (But2) | 1.07 | 7.43 | 0.02 | 0.02 | 3.64 | 2.43 | 2.05 | 22.13 | 0.02 | 38.81 |
| Bridge Street (BRS2) | 2.16 | 15 | 0.08 | 0.01 | 6.95 | 1.48 | 4.02 | 4.82 | 0.05 | 34.57 |
| The Cross (Bkc) | 0.93 | 6.71 | 0.03 | 0.01 | 3.12 | 4.26 | 2.2 | 16.03 | 0.03 | 33.32 |
| All Saints Road (DDASH) | 1.73 | 11.97 | 0.02 | 0.01 | 4.72 | 1.19 | 3.97 | 7.03 | 0.04 | 30.68 |
| Lowesmoor (Lwm1) | 0.64 | 4.43 | 0.02 | 0.01 | 2.92 | 2.02 | 1.21 | 15.66 | 0.01 | 26.92 |
| % Contribution to Total | | | | | | | | | | |
| Site ID | Cars | | | LGVs | | Taxis | HGVs | Buses | Motorcycles | Total |
| | Petrol | Diesel | Other | Petrol | Diesel | | | | | |
| Tything (Tyn) | 6.4 | 41.9 | 0.2 | 0.10 | 18.3 | 7 | 12.4 | 13.7 | 0.10 | 100 |
| Foregate (Fos) | 4.53 | 30.12 | 0.07 | 0.02 | 13.3 | 13.41 | 8.37 | 30.08 | 0.09 | 99.99 |
| Fos2 | 4.53 | 30.12 | 0.07 | 0.02 | 13.3 | 13.41 | 8.37 | 30.08 | 0.09 | 99.99 |
| The Butts (But2) | 2.76 | 19.15 | 0.04 | 0.04 | 9.37 | 6.26 | 5.29 | 57.03 | 0.05 | 99.99 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Bridge Street (BRS2) | 6.26 | 43.38 | 0.24 | 0.03 | 20.09 | 4.29 | 11.63 | 13.93 | 0.15 | 100 |
| The Cross (Bkc) | 2.79 | 20.15 | 0.1 | 0.01 | 9.36 | 12.79 | 6.6 | 48.1 | 0.1 | 100 |
| All Saints Road (DDASH) | 5.64 | 39.03 | 0.07 | 0.02 | 15.38 | 3.87 | 12.94 | 22.9 | 0.15 | 100 |
| Lowesmoor (Lwm1) | 2.37 | 16.44 | 0.09 | 0.01 | 10.84 | 7.51 | 4.5 | 58.19 | 0.05 | 100 |

***Highest Contribution*, *Second*, *Third*, *Fourth***

Table 4 illustrates the contributors to emissions within the study areas with background concentrations removed shown as a percentage and as micrograms per cubic metre (µg/m$^3$) for the remaining roadside concentrations. To help identify and rank the concentrations the greatest values are shown in red, the second highest in yellow, the third in green and the fourth in blue. The highest contributors are diesel cars in 5 of the study areas and buses in the other 3. Again, six of the second highest contributors are shown to be diesel cars and buses with the remaining two being diesel LGVs. The third largest comprise buses, LGV diesels and taxis, with the fourth highest contributor comprising the remaining diesel LGVs, taxis and HGVs. For clarity, the rankings are shown in the table below.

### Table 5 – Breakdown of top contributions to emissions in each area

| Site ID | First Largest Contributor (% / µg/m$^3$) | Second | Third | Fourth |
|---|---|---|---|---|
| The Tything (Tyn) | **Diesel Cars (41.9% / 14.07µg/m$^3$)** | **Diesel LGVs (18.3% / 6.15µg/m$^3$)** | **Buses (13.7% / 4.6µg/m$^3$)** | **HGVs (12.4% / 4.16µg/m$^3$)** |
| Foregate Street (Fos) | **Diesel Cars (30.12% / 10.51µg/m$^3$)** | **Buses (30.08 / 10.49µg/m$^3$)** | **Taxis (13.41% / 4.68µg/m$^3$)** | **Diesel LGVs (13.3% / 4.64µg/m$^3$)** |
| Foregate Street (Fos2) | **Diesel Cars (30.12% / 6.68µg/m$^3$)** | **Buses (30.08% / 6.67µg/m$^3$)** | **Taxi (13.41% / 2.98µg/m$^3$)** | **Diesel LGVs (13.3% / 2.95µg/m$^3$)** |
| The Butts (But2) | **Buses (57.03% / 22.13µg/m$^3$)** | **Diesel Cars (19.15% / 7.43µg/m$^3$)** | **Diesel LGVs (9.37% / 3.64µg/m$^3$)** | **Taxis (6.26% / 2.43µg/m$^3$)** |
| Bridge Street (BRS2) | **Diesel Cars (43.38% / 15µg/m$^3$)** | **Diesel LGVs (20.09% / 6.95µg/m$^3$)** | **Buses (13.93% / 4.82µg/m$^3$)** | **HGVs (11.63% / 4.02µg/m$^3$)** |
| The Cross (Bkc) | **Buses (48.1% / 16.03µg/m$^3$)** | **Diesel Cars (20.15% / 6.71µg/m$^3$)** | **Taxis (12.79% / 4.26µg/m$^3$)** | **Diesel LGVs (9.36% / 3.12µg/m$^3$)** |
| All Saints Road (DDASH) | **Diesel Cars (39.03% / 11.97µg/m$^3$)** | **Buses (22.09% / 7.03µg/m$^3$)** | **Diesel LGVs (15.38% / 4.72µg/m$^3$)** | **HGVs (12.94% / 3.97µg/m$^3$)** |
| Lowesmoor (Lwm1) | **Buses (58.19% / 15.66µg/m$^3$)** | **Diesel Cars (16.44% / 4.43µg/m$^3$)** | **Diesel LGVs (10.84% / 2.92µg/m$^3$)** | **Taxis (7.51% / 2.02µg/m$^3$)** |

# 6.0 Required Improvements

The degree of improvement required to achieve the annual mean objective for nitrogen dioxide ($NO_2$) is the difference between the highest measured or predicted concentration and the objective level (40µg/m$^3$). For example, the highest nitrogen dioxide concentration at a representative location in the Tything study area in 2018 is 47.21µg/m$^3$ at Tyn, requiring a reduction of 7.21µg/m$^3$ for the objective to be met.

However Technical Guidance (LAQM.TG16) advises that in terms of the reduction in emissions required it is more useful to consider nitrogen oxides (NOx). Therefore, the road NOx reduction required for compliance with the national air quality objectives in the Tything at Tyn has been calculated in accordance with LAQM.TG16 Box 7.6 utilising Defra's NOx to $NO_2$ Conversion Spreadsheet v5.1. Calculations are included in Appendix C.

It is generally accepted that the revocation of an AQMA is not appropriate unless measured concentrations are consistently below the objective to avoid 'bouncing' between revocation and re-declaration of borderline AQMAs. Therefore, the reduction in $NO_X$ required to achieve targets at 5% and 10% below the objective have also been calculated. Achieving these levels would provide greater confidence to the local authority that emissions of $NO_2$ are unlikely to exceed the objective again. A summary of the required reductions in $NO_X$ and $NO_2$ to achieve concentrations of 36µg/m$^3$, 38µg/m$^3$ and 40µg/m$^3$ at the relevant monitoring locations are presented in Table 6 below.

**Table 6 Required reduction in annual mean concentration at monitoring locations**

| Required reduction in $NO_X$/$NO_2$ concentrations at monitoring locations | | | | |
|---|---|---|---|---|
| | **Required reduction to: -** | **Required $NO_X$ reduction (µg/m$^3$)** | **Required $NO_X$ reduction (% of local sources)** | **Equivalent $NO_2$ reduction (µg/m$^3$)** |
| **The Tything (Tyn)** | **Objective 40µg/m$^3$** | 19.40 | 26.54 | 8.91 |
| | **5% below obj. 38µg/m$^3$** | 23.93 | 32.74 | 10.99 |
| | **10% below obj. 36µg/m$^3$** | 28.38 | 38.82 | 13.04 |
| **Foregate Street (Fos)** | **Objective 40µg/m$^3$** | 22.61 | 29.63 | 10.34 |
| | **5% below obj. 38µg/m$^3$** | 27.14 | 35.57 | 12.41 |
| | **10% below obj. 36µg/m$^3$** | 31.59 | 41.4 | 14.44 |
| **Foregate Street (Fos2)** | **Objective 40µg/m$^3$** | n/a | n/a | n/a |
| | **5% below obj. 38µg/m$^3$** | n/a | n/a | n/a |
| | **10% below obj. 36µg/m$^3$** | 1.81 | 3.89 | 0.86 |
| **The Butts (But2)** | **Objective 40µg/m$^3$** | 32.5 | 37.7 | 14.63 |
| | **5% below obj. 38µg/m$^3$** | 37.03 | 42.96 | 16.67 |
| | **10% below obj. 36µg/m$^3$** | 41.48 | 48.12 | 18.68 |
| **Bridge Street (BRS2)** | **Objective 40µg/m$^3$** | 20.72 | 27.79 | 9.61 |
| | **5% below obj. 38µg/m$^3$** | 25.27 | 33.89 | 11.72 |
| | **10% below obj. 36µg/m$^3$** | 29.73 | 39.87 | 13.79 |

| | | | | |
|---|---|---|---|---|
| **The Cross (Bkc)** | **Objective 40µg/m$^3$** | 17.63 | 24.66 | 8.22 |
| | **5% below obj. 38µg/m$^3$** | 22.18 | 31.03 | 10.34 |
| | **10% below obj. 36µg/m$^3$** | 26.64 | 37.27 | 12.42 |
| **All Saints Road (DDASH)** | **Objective 40µg/m$^3$** | 11.19 | 17.2 | 5.28 |
| | **5% below obj. 38µg/m$^3$** | 15.74 | 24.2 | 7.42 |
| | **10% below obj. 36µg/m$^3$** | 20.20 | 31.06 | 9.53 |
| **Lowesmoor (Lwm1)** | **Objective 40µg/m$^3$** | 2.9 | 5.11 | 1.38 |
| | **5% below obj. 38µg/m$^3$** | 7.45 | 13.13 | 3.53 |
| | **10% below obj. 36µg/m$^3$** | 11.91 | 20.99 | 5.65 |

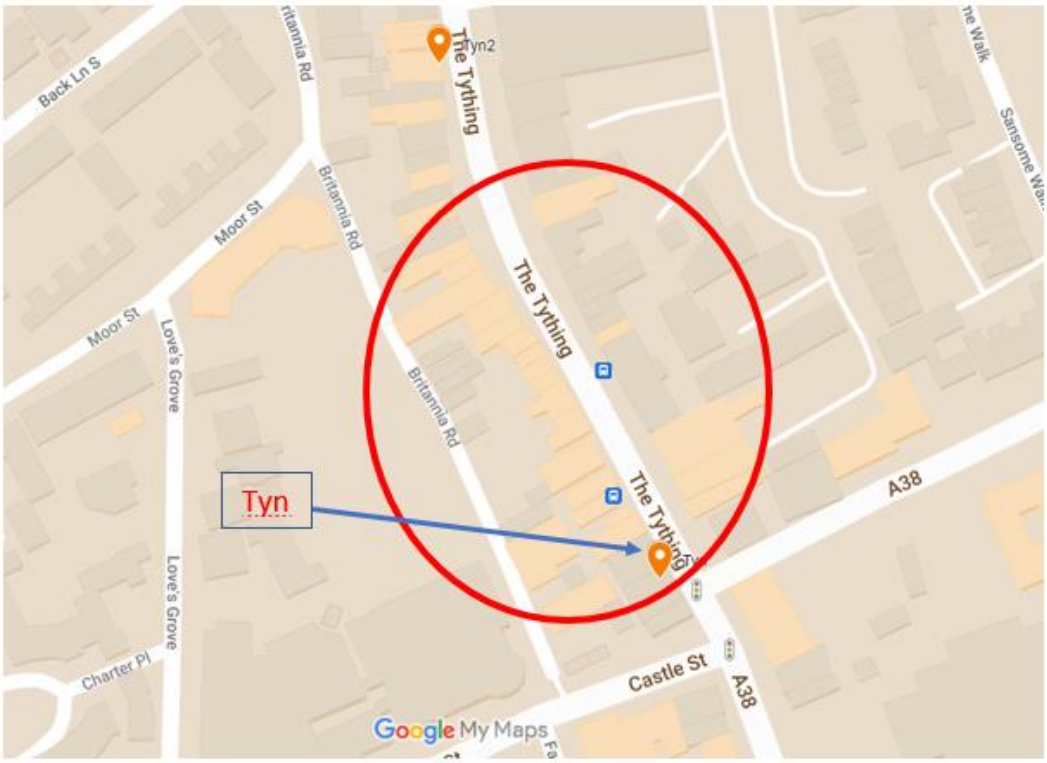
Table 6 indicates that the largest reduction of 37.7% in emissions, or 14.63µg/m$^3$, is required within the Butts study area (But2) to reduce level of $NO_2$ to the objective. The smallest reduction of 5.11%, or 1.38µg/m$^3$, is required at Lowesmoor (Lwm1). All other areas fall within that range bracket with the exception of Fos2 that already measures within the objective and therefore no reduction is required (although a 0.86 µg/m$^3$ decrease is required to be 10% below).

This report does not focus on how required reductions might be achieved. However, in order to inform the focus of potential measures for consideration as part of Action Plan development the information below demonstrates the reduction in emissions that could be expected to be achieved in each of the study areas, assuming stepped nominal emission reductions for each main vehicle category.

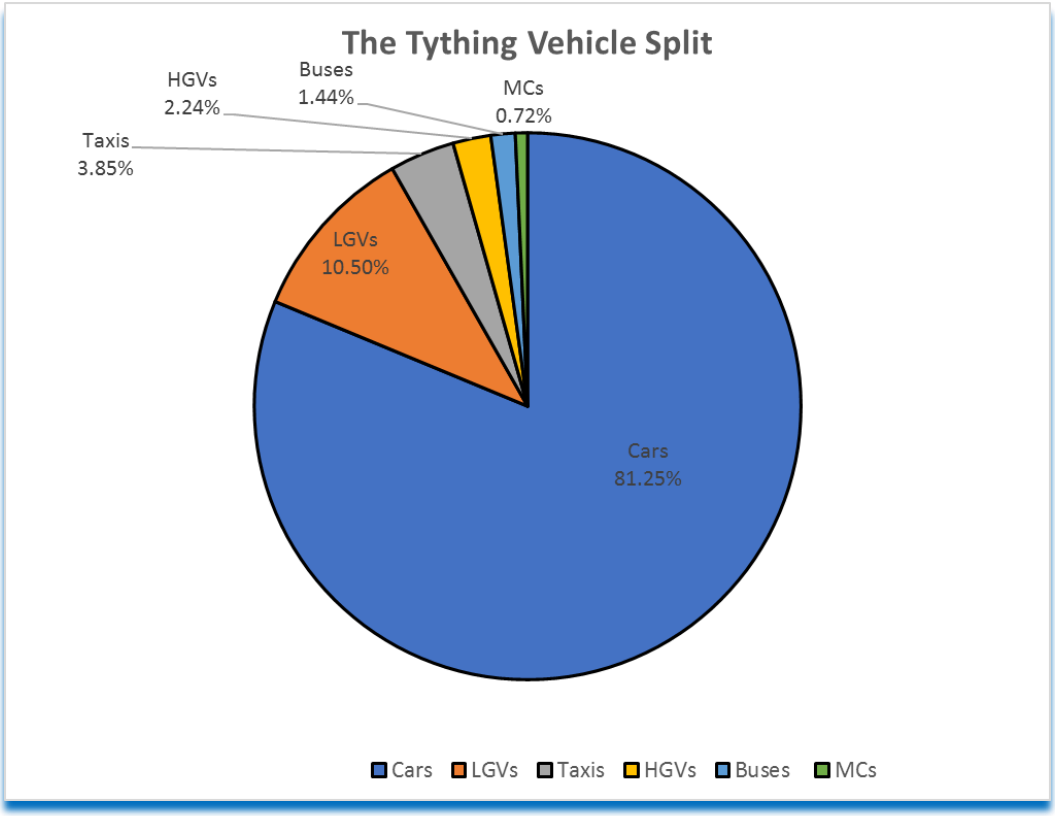
## 6.1 The Tything (Tyn)

The traffic data survey was undertaken along the Tything, north of St Mary's Street, taking account of north and south bound traffic on the 3rd March 2020. The plan below shows the study area and location of monitoring point Tyn.

Figure 2.1 The Tything (Tyn) Study Area



The traffic survey identified the following proportion of vehicles.




The emissions output based on traffic composition were then calculated and can be seen on the chart below..

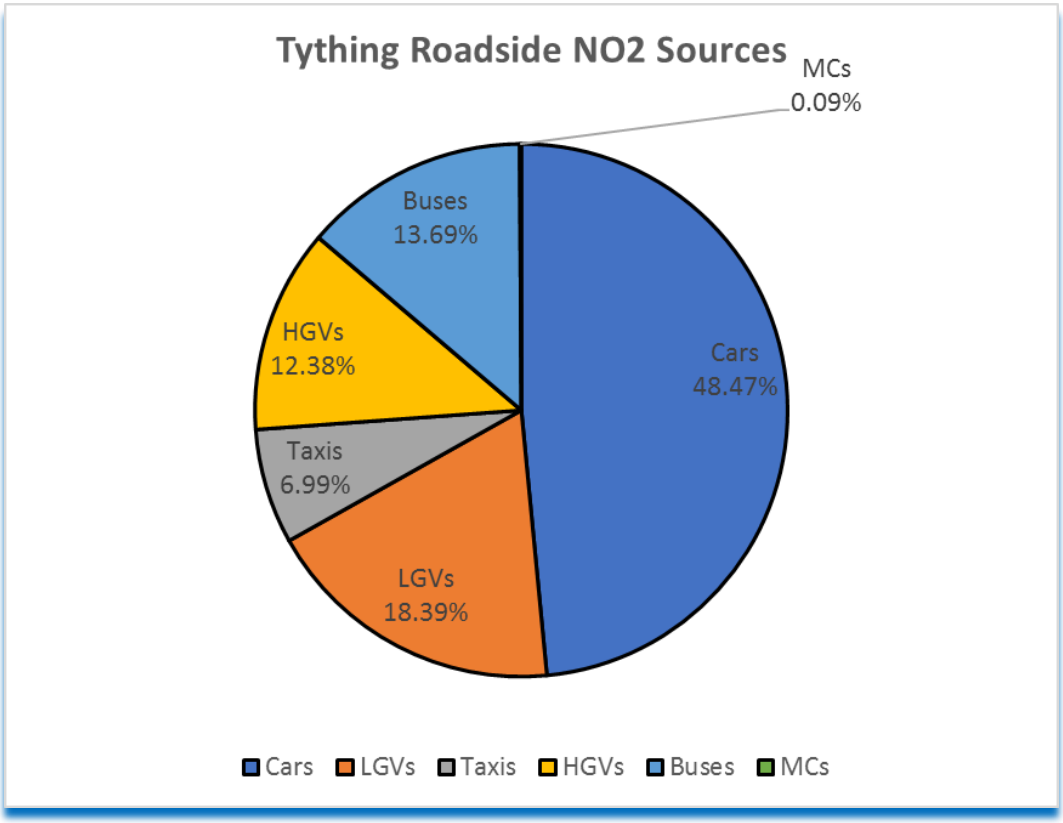


**Table 6.1 Required reduction in annual mean concentration at Tyn**

| Tything Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 16.29 | 1.629 | 3.258 | 4.887 | 6.516 | 8.145 | 9.774 | 11.403 | 13.032 | 14.661 | 16.29 |
| Taxis | 2.35 | 0.235 | 0.47 | 0.705 | 0.94 | 1.175 | 1.41 | 1.645 | 1.88 | 2.115 | 2.35 |
| LGVs | 6.18 | 0.618 | 1.236 | 1.854 | 2.472 | 3.09 | 3.708 | 4.326 | 4.944 | 5.562 | 6.18 |
| HGVs | 4.16 | 0.416 | 0.832 | 1.248 | 1.664 | 2.08 | 2.496 | 2.912 | 3.328 | 3.744 | 4.16 |
| Buses | 4.6 | 0.46 | 0.92 | 1.38 | 1.84 | 2.3 | 2.76 | 3.22 | 3.68 | 4.14 | 4.6 |
| MC | 0.03 | 0.003 | 0.006 | 0.009 | 0.012 | 0.015 | 0.018 | 0.021 | 0.024 | 0.027 | 0.03 |
| Total Vehicles | 33.61 | 3.388 | 6.776 | 10.164 | 13.552 | 16.94 | 20.328 | 23.716 | 27.104 | 30.492 | 33.61 |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

As indicated in table 6 previously a reduction of 8.91µg/m$^3$ or more would be required to meet the national objective, 10.99µg/m$^3$ for 5% below the objective, and 13.04µg/m$^3$ for 10% below.

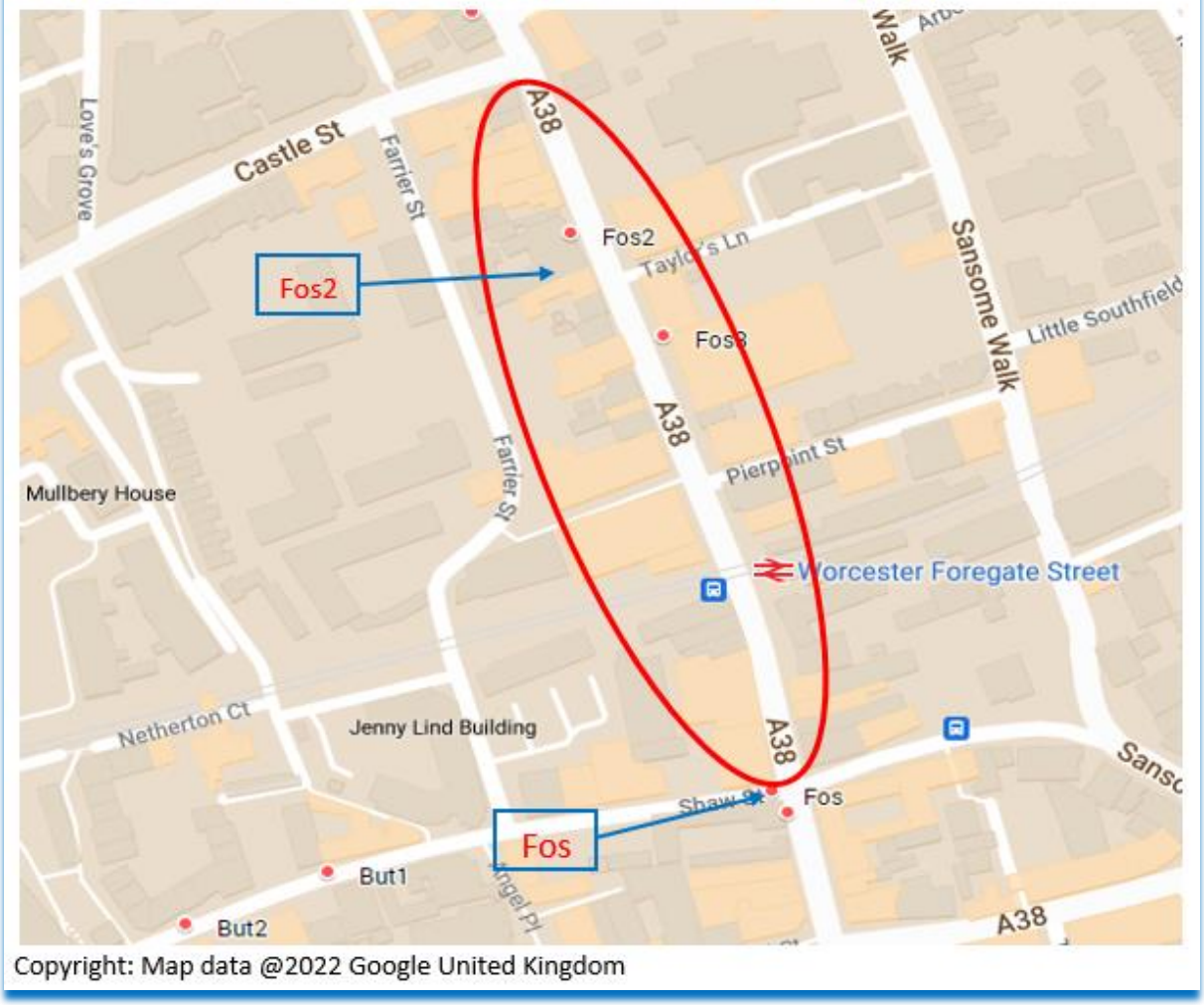
Table 6.1 demonstrates that to achieve the $NO_2$ results highlighted above reductions targeting individual types of vehicle in isolation within the Tything would not lead to the annual mean objective being achieved. Cars would be an exception to this but would require a very large reduction of 60% or more to fall below the objective.

Actions to improve emissions are likely needed to target more than one type of vehicle to achieve the desired reduction. Table 6.1 demonstrates that a reduction of 30% or more is required across all vehicle types to meet the objective.

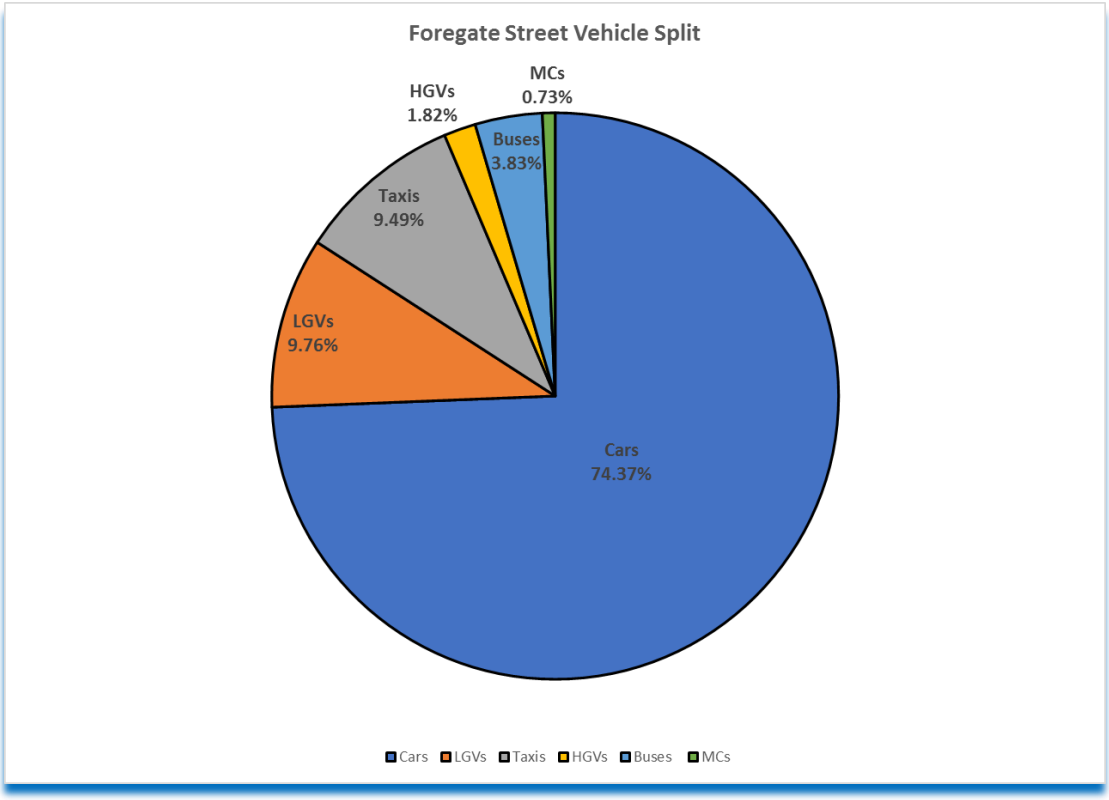
## 6.2 Foregate Street (Fos)

The traffic data survey was undertaken along Foregate Street, between Shaw Street and Castle Street, observing north and south bound traffic on the 10th March 2020. The plan below shows the study area and location of monitoring points Fos and Fos 2. Location Fos3 was not utilised as recorded concentrations are much lower.

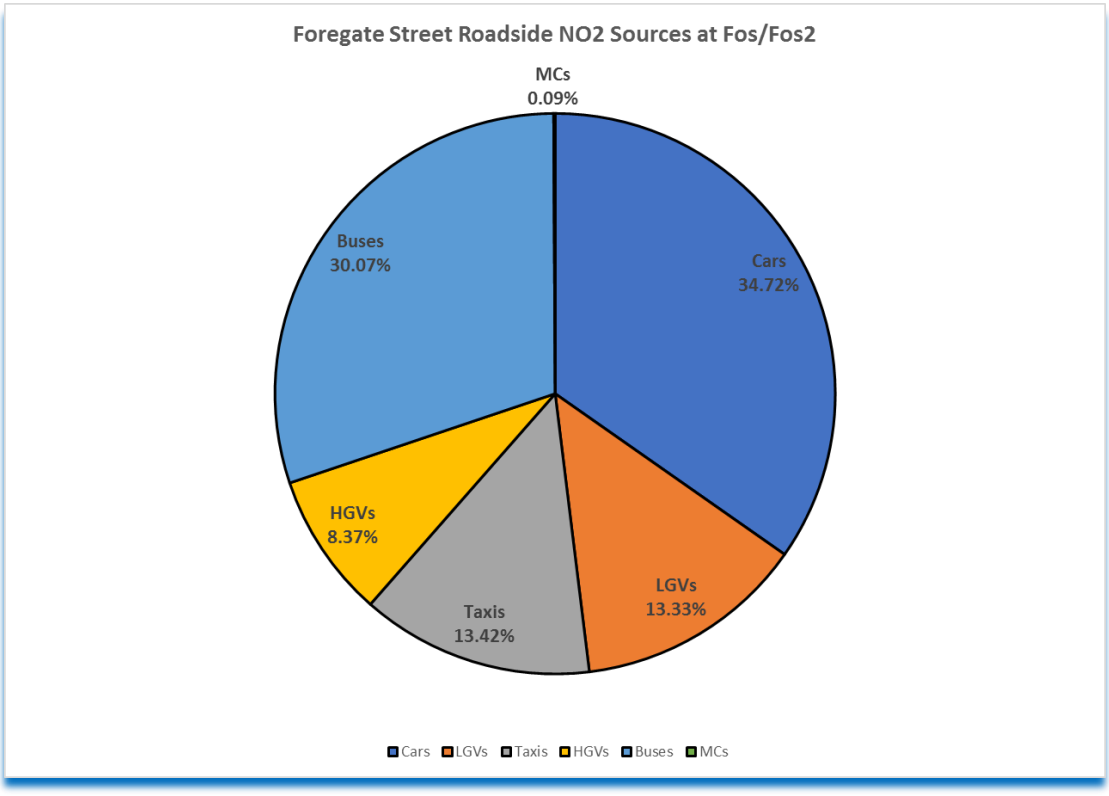
**Figure 2.2 The Foregate Street (Fos & Fos2) Study Area**



The traffic survey showed the following proportion of vehicles within Foregate Street.




The emissions output based on traffic composition show the following roadside contributions.



### Table 6.2 Required reduction in annual mean concentration at Fos

| Foregate (Fos) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 12.11 | 1.211 | 2.422 | 3.633 | 4.844 | 6.055 | 7.266 | 8.477 | 9.688 | 10.899 | 12.11 |
| Taxis | 4.68 | 0.468 | 0.936 | 1.404 | 1.872 | 2.34 | 2.808 | 3.276 | 3.744 | 4.212 | 4.68 |
| LGVs | 4.65 | 0.465 | 0.93 | 1.395 | 1.86 | 2.325 | 2.79 | 3.255 | 3.72 | 4.185 | 4.65 |
| HGVs | 2.92 | 0.292 | 0.584 | 0.876 | 1.168 | 1.46 | 1.752 | 2.044 | 2.336 | 2.628 | 2.92 |
| Buses | 10.49 | 1.049 | 2.098 | 3.147 | 4.196 | 5.245 | 6.294 | 7.343 | 8.392 | 9.441 | 10.49 |
| MC | 0.03 | 0.003 | 0.006 | 0.009 | 0.012 | 0.015 | 0.018 | 0.021 | 0.024 | 0.027 | 0.03 |
| Total Vehicles | 34.88 | 3.488 | 6.976 | 10.464 | 13.952 | 17.44 | 20.928 | 24.416 | 27.904 | 31.392 | 34.88 |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

As indicated in table 6 previously a reduction of 10.34µg/m$^3$ or more would be required to meet the national objective, 12.41µg/m$^3$ for 5% below the objective, and 14.44µg/m$^3$ for 10% below, based on concentrations recorded at monitoring location Fos.

Table 6.2 indicates that to achieve the $NO_2$ results highlighted above reductions targeting individual types of vehicle in isolation generally would not lead to the annual mean objective being achieved. The data indicates that a 90% or more reduction in the number of cars or 100% reduction in buses would be required to achieve the objective.

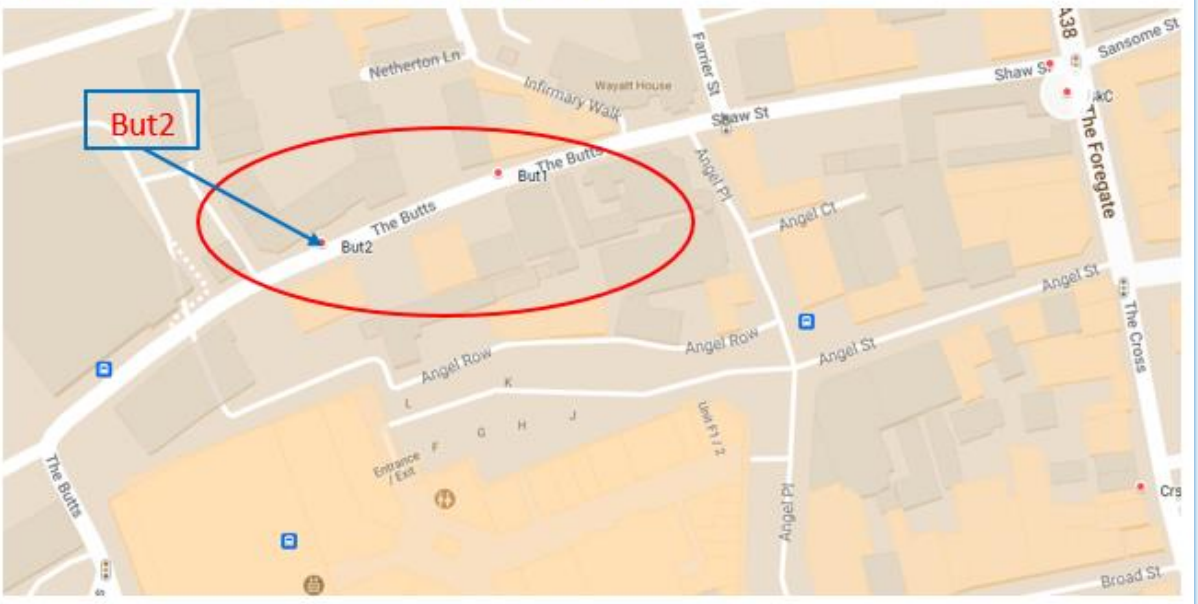
Actions to improve emissions are likely needed to target more than one vehicle type to achieve the desired reduction. Table 6.2 demonstrates that a reduction of 30% or more is required across all vehicle types to meet the objective, a 40% reduction would achieve concentrations 5% below the objective, and a 50% or more reduction would be necessary to achieve 10% below the objective.

The required reduction data has not been provided for location Fos2 as concentrations have been recorded below the objective.

## 6.3 The Butts (But2)

The traffic data survey was undertaken along the Butts with the traffic flowing east bound on the 12th March 2020. The plan below shows the study area and location of monitoring point But2. But2 was used instead of But1 due to the slightly higher concentrations being recorded at this location.

**Figure 2.3 The Butts (But2) Study Area**

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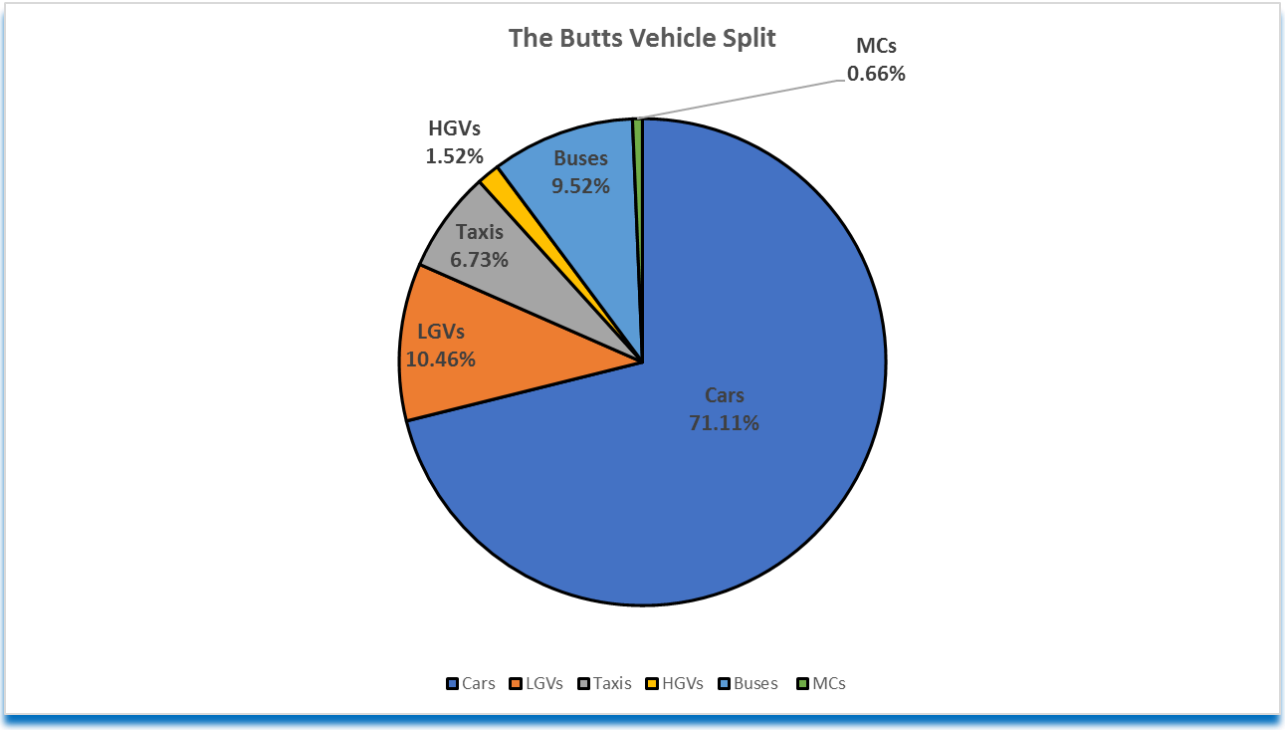
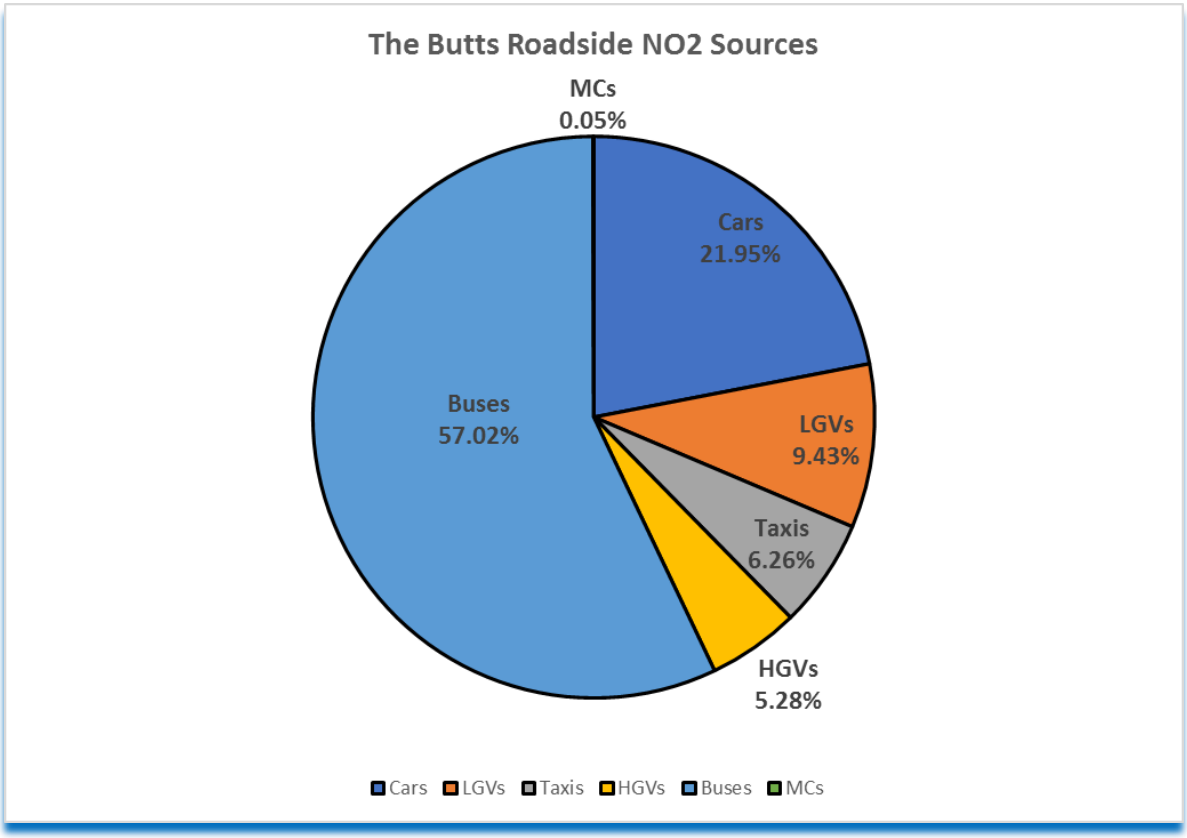
The traffic survey showed the following proportion of vehicles within the Butts.




The emissions output based on traffic composition show the following roadside contributions.



### Table 6.3 Required reduction in annual mean concentration at But2

| The Butts (But2) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 8.52 | 0.852 | 1.704 | 2.556 | 3.408 | 4.26 | 5.112 | 5.964 | 6.816 | 7.668 | 8.52 |
| Taxis | 2.43 | 0.243 | 0.486 | 0.729 | 0.972 | 1.215 | 1.458 | 1.701 | 1.944 | 2.187 | 2.43 |
| LGVs | 3.66 | 0.366 | 0.732 | 1.098 | 1.464 | 1.83 | 2.196 | 2.562 | 2.928 | 3.294 | 3.66 |
| HGVs | 2.05 | 0.205 | 0.41 | 0.615 | 0.82 | 1.025 | 1.23 | 1.435 | 1.64 | 1.845 | 2.05 |
| Buses | 22.13 | 2.213 | 4.426 | 6.639 | 8.852 | 11.065 | 13.278 | **15.491** | **17.704** | **19.917** | **22.13** |
| MC | 0.02 | 0.002 | 0.004 | 0.006 | 0.008 | 0.01 | 0.012 | 0.014 | 0.016 | 0.018 | 0.02 |
| Total Vehicles | 38.81 | 3.881 | 7.762 | 11.643 | **15.524** | **19.405** | **23.286** | **27.167** | **31.048** | **34.929** | **38.81** |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

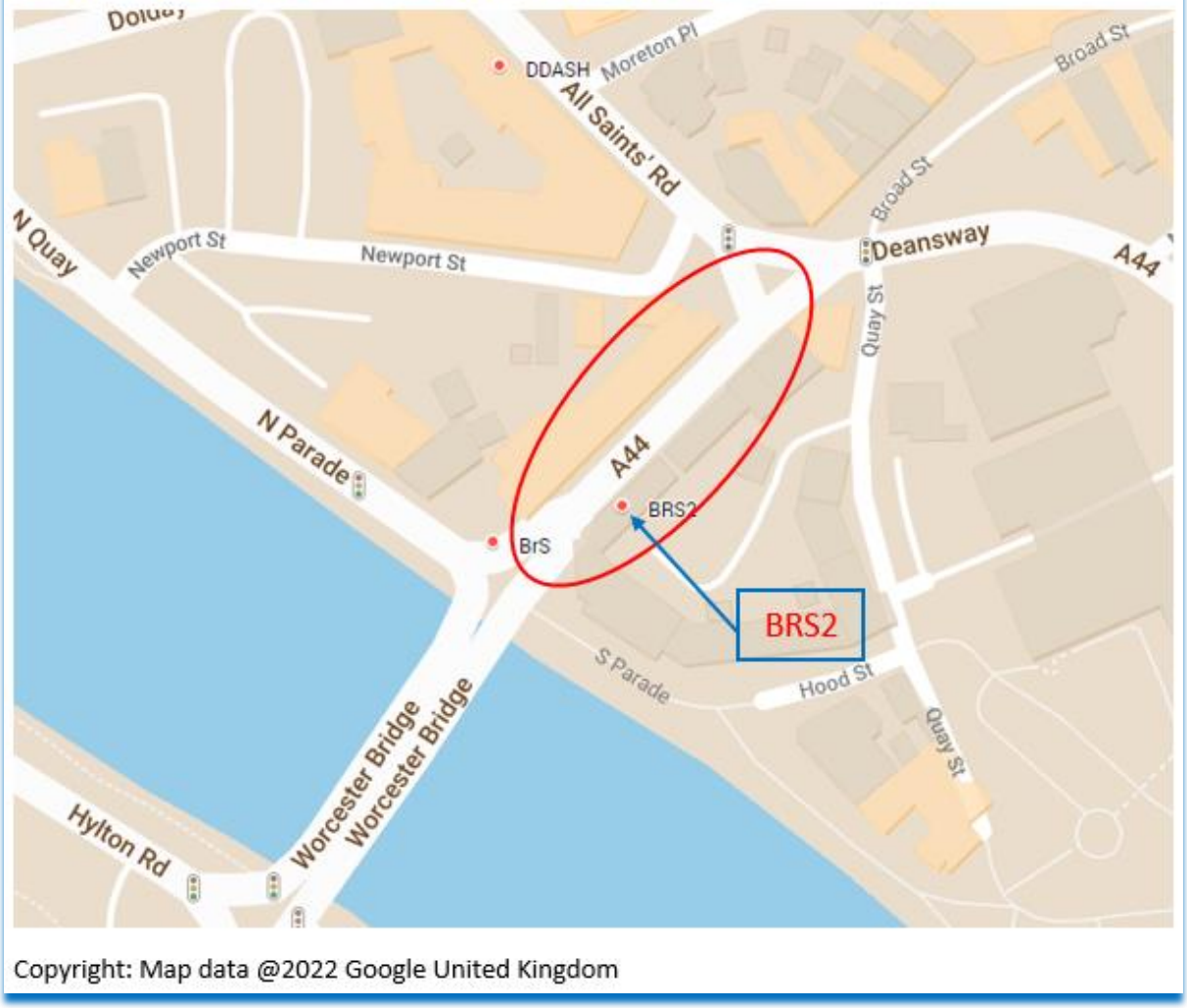
As indicated in table 6 previously a reduction of 14.63µg/m$^3$ would be required to meet the national objective, 16.67µg/m$^3$ for 5% below the objective, and 18.68µg/m$^3$ for 10% below, based on concentrations recorded at monitoring location But2.

Table 6.3 above demonstrates that it would require a large reduction of 70% or more in bus emissions to meet the annual mean objective. Actions to improve emissions are therefore likely needed to target more than one vehicle type to achieve the desired reduction. A reduction of 40% or more is required across all vehicle types to meet the objective, a 50% reduction would achieve concentrations 10% below the objective.

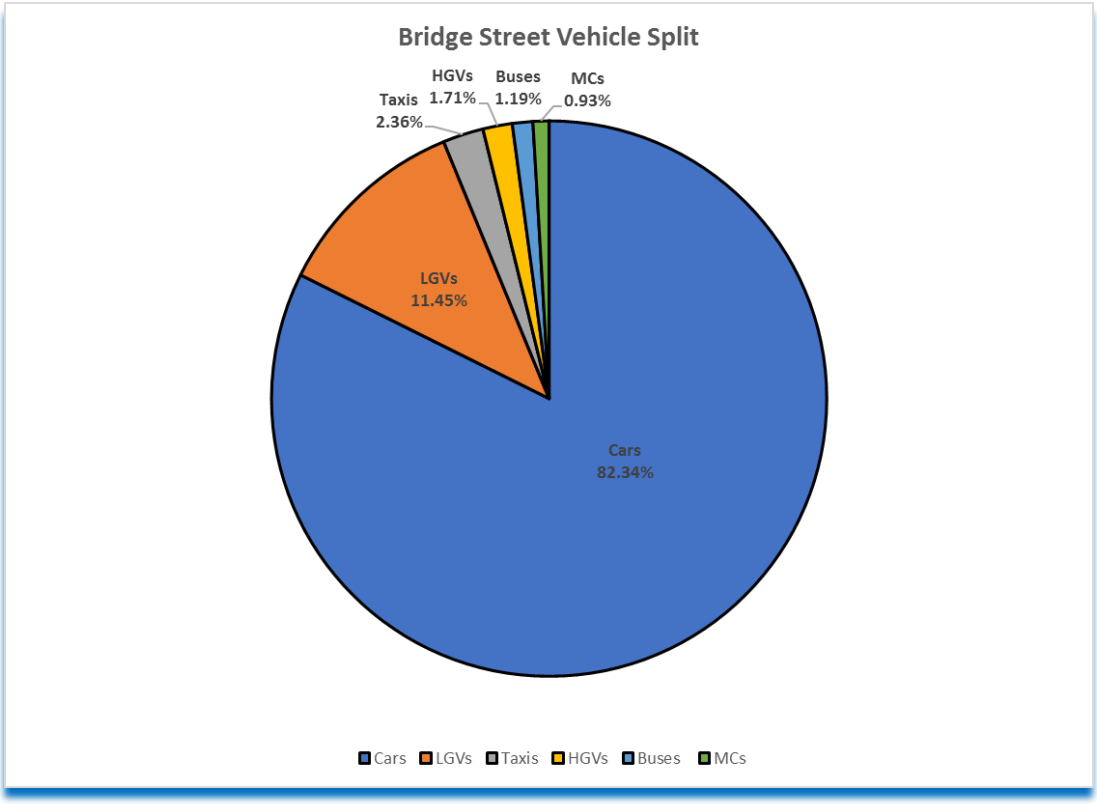
## 6.4 Bridge Street (BRS2)

The traffic data survey was undertaken along Bridge Street on the 11th November 2021 observing traffic travelling southbound along the one-way section of road. The plan below shows the study area and location of monitoring point BRS2.

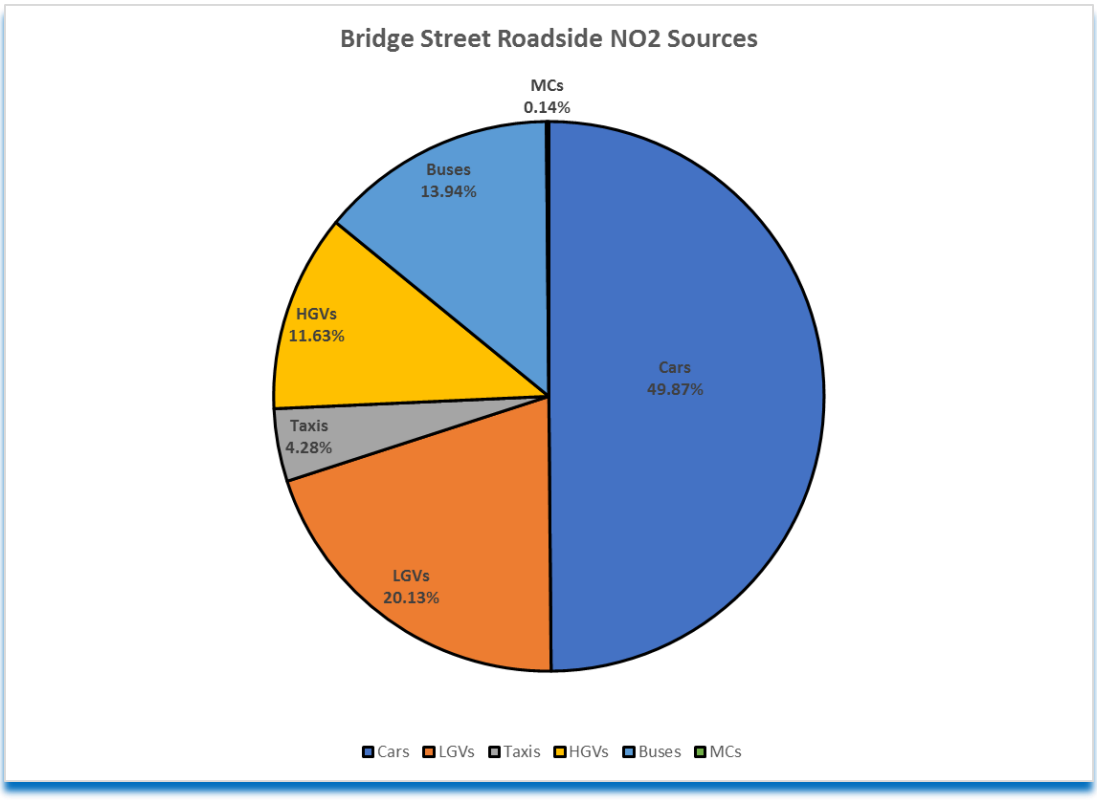
**Figure 2.4 Bridge Street (BRS2) Study Area**



The traffic survey showed the following split of vehicles within Bridge Street.




The emissions output based on traffic composition show the following roadside contributions.



### Table 6.4 Required reduction in annual mean concentration at BRS2

| Bridge Street (BRS2) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 17.24 | 1.724 | 3.448 | 5.172 | 6.896 | 8.62 | **10.344** | **12.068** | **13.792** | **15.516** | **17.24** |
| Taxis | 1.48 | 0.148 | 0.296 | 0.444 | 0.592 | 0.74 | 0.888 | 1.036 | 1.184 | 1.332 | 1.48 |
| LGVs | 6.96 | 0.696 | 1.392 | 2.088 | 2.784 | 3.48 | 4.176 | 4.872 | 5.568 | 6.264 | 6.96 |
| HGVs | 4.02 | 0.402 | 0.804 | 1.206 | 1.608 | 2.01 | 2.412 | 2.814 | 3.216 | 3.618 | 4.02 |
| Buses | 4.82 | 0.482 | 0.964 | 1.446 | 1.928 | 2.41 | 2.892 | 3.374 | 3.856 | 4.338 | 4.82 |
| MC | 0.05 | 0.005 | 0.01 | 0.015 | 0.02 | 0.025 | 0.03 | 0.035 | 0.04 | 0.045 | 0.05 |
| Total Vehicles | 34.57 | 3.457 | 6.914 | **10.371** | **13.828** | **17.285** | **20.742** | **24.199** | **27.656** | **31.113** | **34.57** |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

Table 6 previously highlighted that a reduction of 9.61µg/m$^3$ would be required to meet the national objective, 11.72µg/m$^3$ for 5% below the objective, and 13.79µg/m$^3$ for 10% below, based on concentrations monitored at location BRS2.

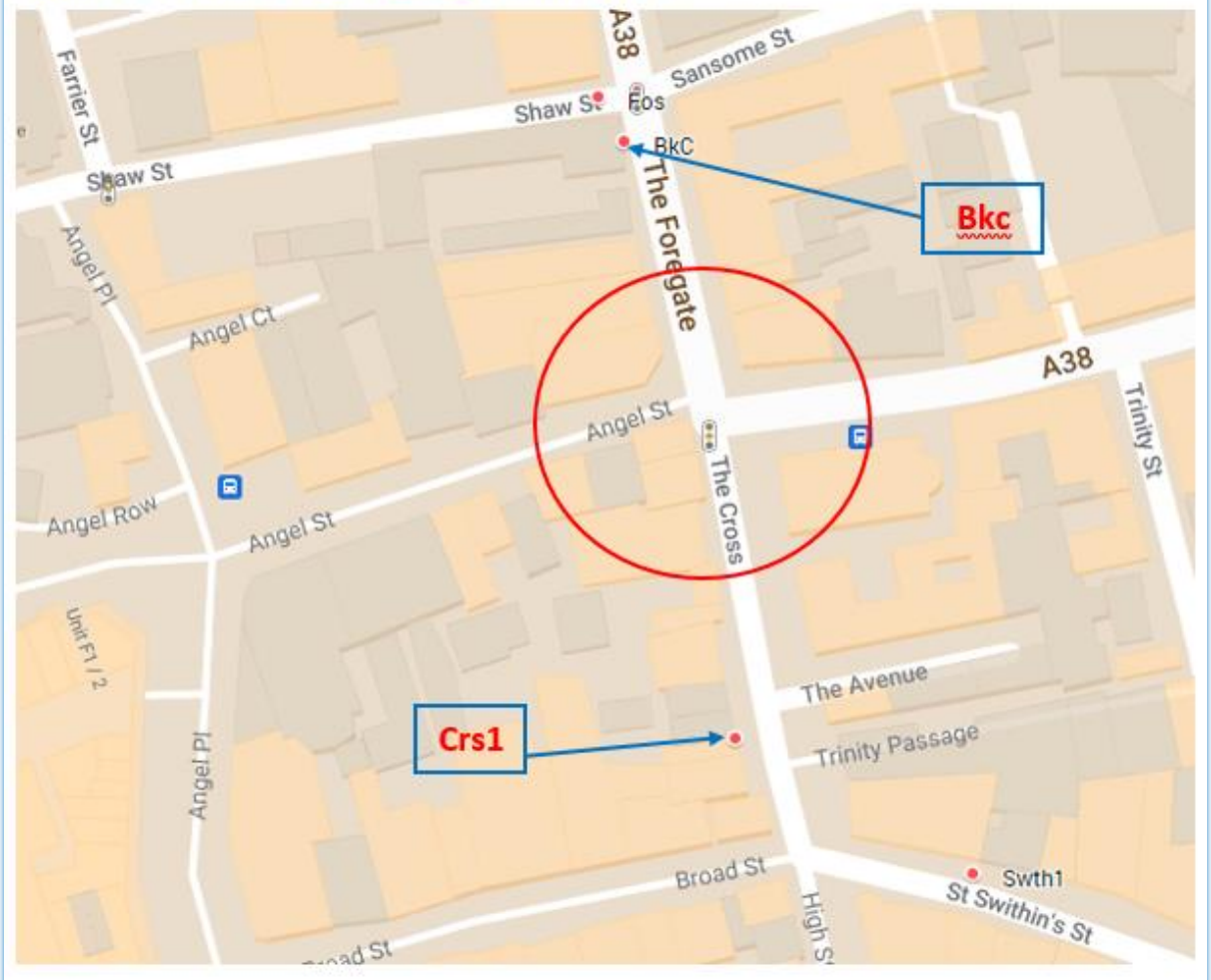
Table 6.4 indicates that to achieve the $NO_2$ results highlighted above reductions targeting individual types of vehicle in isolation generally would not lead to the annual mean objective being achieved. The data indicates that a 60% or more reduction in the number of cars would be required to meet the objective.

Actions to improve emissions are therefore likely needed to target more than one vehicle type to achieve the desired reduction. Table 6.4 demonstrates that a reduction of 30% or more is required across all vehicle types to meet the objective, a 40% or greater reduction would achieve concentrations 10% below the objective.

## 6.5 The Cross (Bkc)

The traffic data survey was undertaken at the Cross on the 11th November 2021 observing traffic utilising the crossroads, consisting of The Foregate, St Nicholas Street, The Cross and Angel Street. Figure 2.5 below shows the study area and location of monitoring points Bkc and Crs1. Monitoring location Bkc was utilised within the study as it is located slightly closer to the crossroads than Crs and has recorded higher concentrations of $NO_2$. Given these factors Bkc was considered the most representative monitoring location.

**Figure 2.5 The Cross (Bkc) Study Area**

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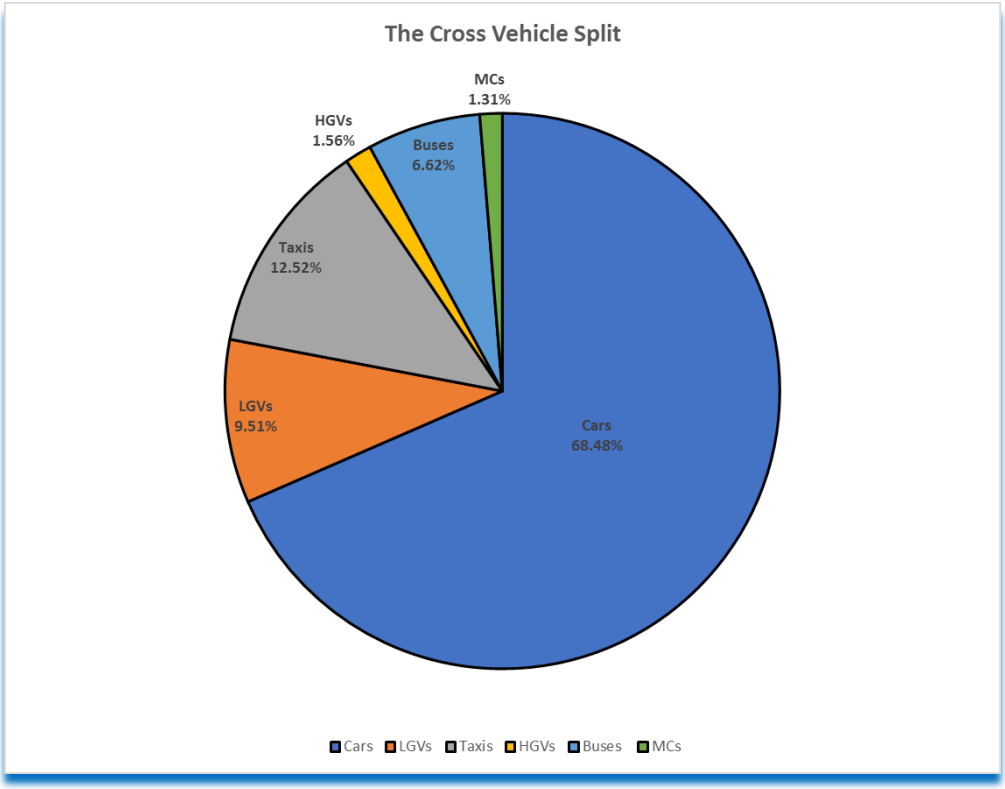
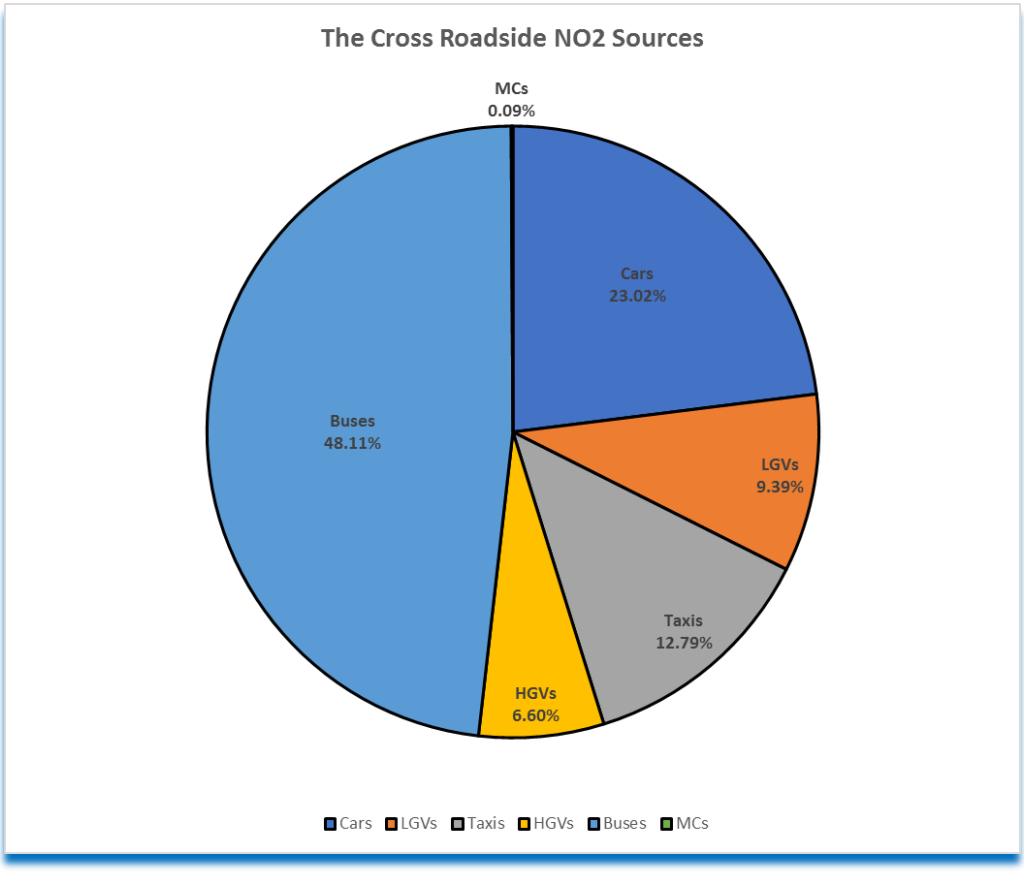
The traffic survey showed the following proportion of vehicles within the Cross.




The emissions output based on traffic composition show the following roadside contributions.



### Table 6.5 Required reduction in annual mean concentration at Bkc

| The Cross (Bkc) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 7.67 | 0.767 | 1.534 | 2.301 | 3.068 | 3.835 | 4.602 | 5.369 | 6.136 | 6.903 | 7.67 |
| Taxis | 4.26 | 0.426 | 0.852 | 1.278 | 1.704 | 2.13 | 2.556 | 2.982 | 3.408 | 3.834 | 4.26 |
| LGVs | 3.13 | 0.313 | 0.626 | 0.939 | 1.252 | 1.565 | 1.878 | 2.191 | 2.504 | 2.817 | 3.13 |
| HGVs | 2.2 | 0.22 | 0.44 | 0.66 | 0.88 | 1.1 | 1.32 | 1.54 | 1.76 | 1.98 | 2.2 |
| Buses | 16.03 | 1.603 | 3.206 | 4.809 | 6.412 | 8.015 | **9.618** | **11.221** | **12.824** | **14.427** | **16.03** |
| MC | 0.03 | 0.003 | 0.006 | 0.009 | 0.012 | 0.015 | 0.018 | 0.021 | 0.024 | 0.027 | 0.03 |
| Total Vehicles | 33.32 | 3.332 | 6.664 | **9.996** | **13.328** | **16.66** | **19.992** | **23.324** | **26.656** | **29.988** | **33.32** |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

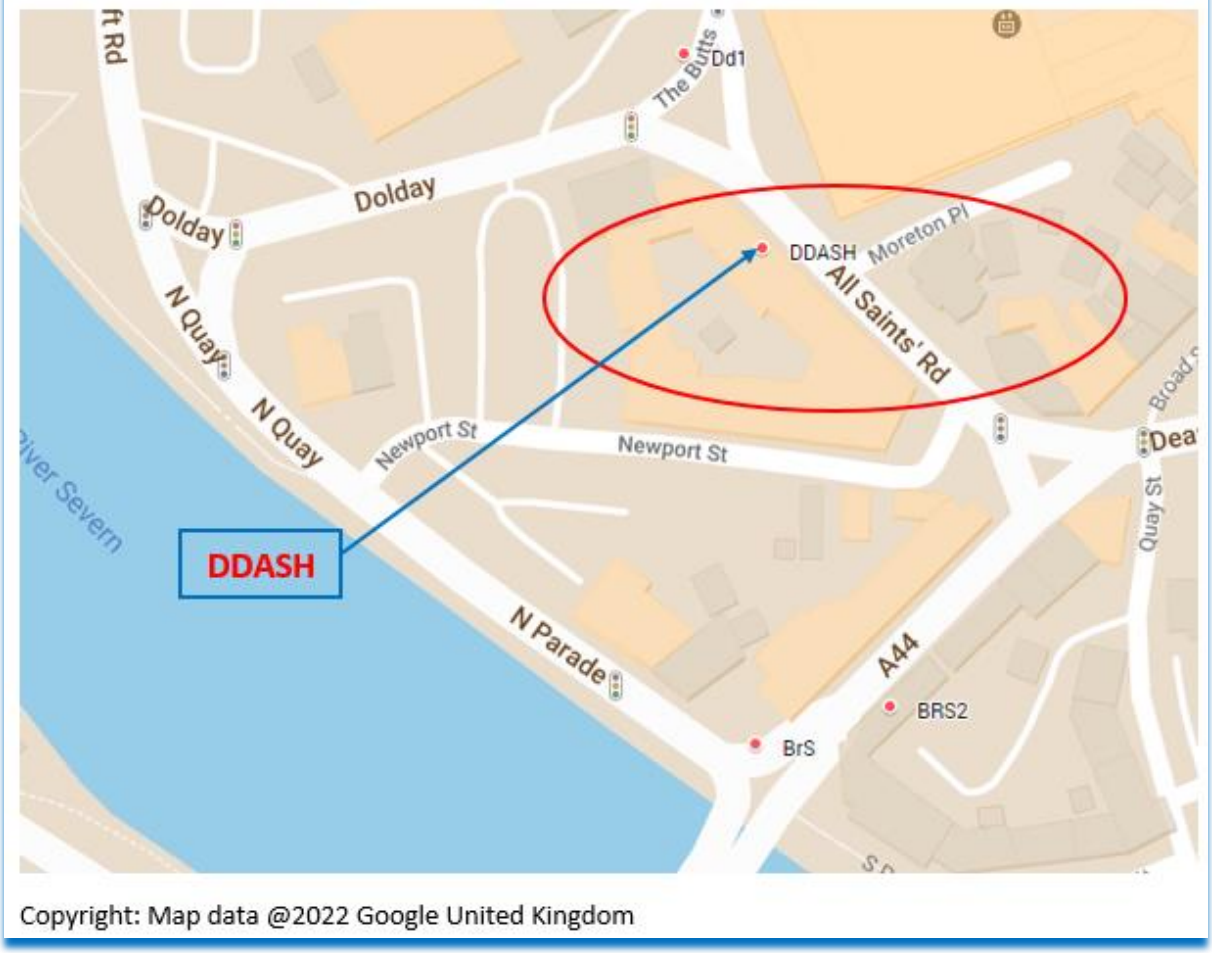
As indicated in table 6 previously a reduction of 8.22µg/m$^3$ would be required to meet the national objective, 10.34µg/m$^3$ for 5% below the objective, and 12.42µg/m$^3$ to achieve 10% below, based on concentrations recorded at monitoring location Bkc.

Table 6.5 above indicates that a reduction in bus emissions of 60% or more would be needed to meet the annual mean objective. Actions to improve emissions are therefore likely needed to target more than one vehicle type to achieve the desired reduction. A reduction of 30% is required across all vehicle types to meet the objective, a 40% or greater reduction would achieve concentrations 10% below the objective.

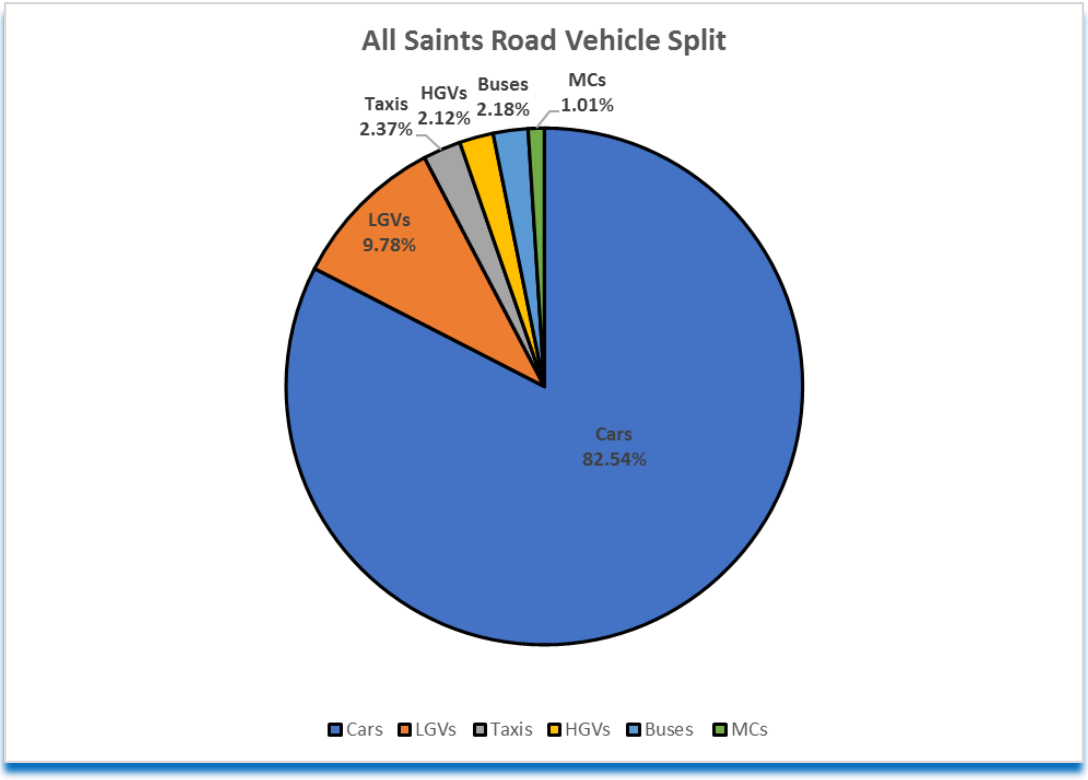
## 6.6 All Saints Road (DDASH)

The traffic data survey was undertaken along the one-way All Saints Road on the 11th November 2021. Figure 2.6 below shows the study area and location of monitoring point DDASH.

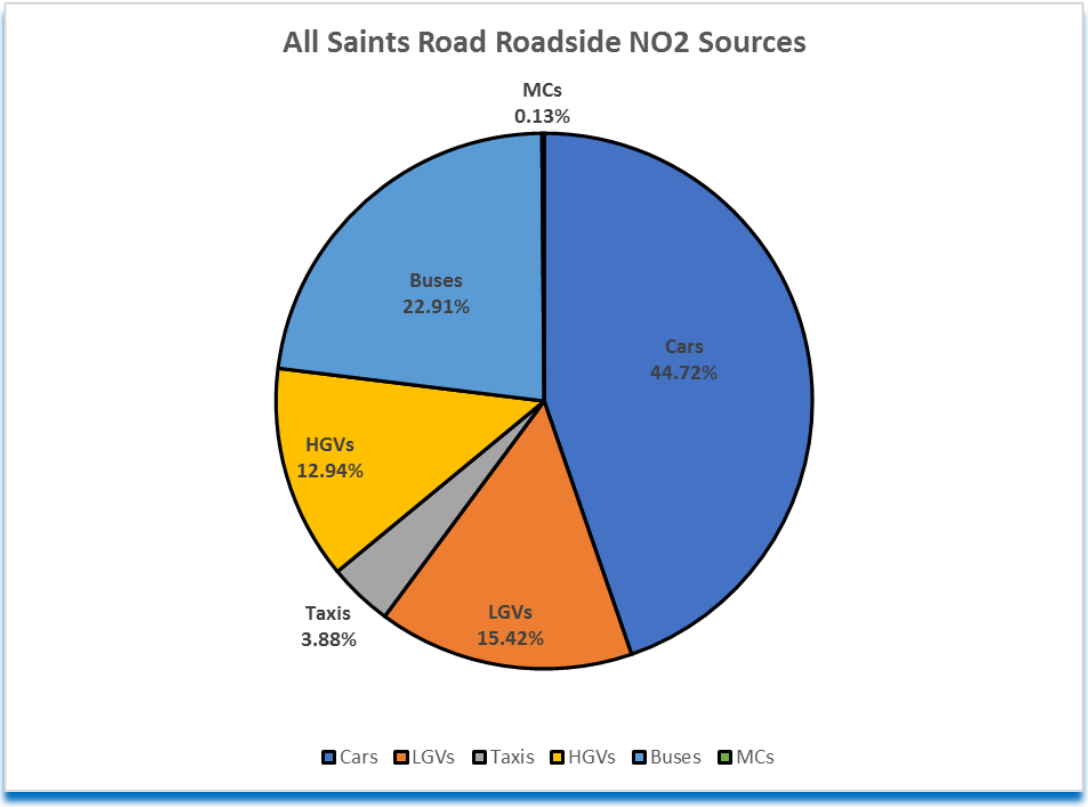
**Figure 2.6 All Saints Road (DDASH) Study Area**



The traffic survey showed the following proportion of vehicles on All Saints Road.




The emissions output based on traffic composition show the following roadside contributions.



### Table 6.6 Required reduction in annual mean concentration at DDASH

| All Saints Road (DDASH) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 13.72 | 1.372 | 2.744 | 4.116 | **5.488** | **6.86** | **8.232** | **9.604** | **10.976** | **12.348** | **13.72** |
| Taxis | 1.19 | 0.119 | 0.238 | 0.357 | 0.476 | 0.595 | 0.714 | 0.833 | 0.952 | 1.071 | 1.19 |
| LGVs | 4.73 | 0.473 | 0.946 | 1.419 | 1.892 | 2.365 | 2.838 | 3.311 | 3.784 | 4.257 | 4.73 |
| HGVs | 3.97 | 0.397 | 0.794 | 1.191 | 1.588 | 1.985 | 2.382 | 2.779 | 3.176 | 3.573 | 3.97 |
| Buses | 7.03 | 0.703 | 1.406 | 2.109 | 2.812 | 3.515 | 4.218 | 4.921 | **5.624** | **6.327** | **7.03** |
| MC | 0.04 | 0.004 | 0.008 | 0.012 | 0.016 | 0.02 | 0.024 | 0.028 | 0.032 | 0.036 | 0.04 |
| Total Vehicles | 30.68 | 3.068 | **6.136** | **9.204** | **12.272** | **15.34** | **18.408** | **21.476** | **24.544** | **27.612** | **30.68** |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

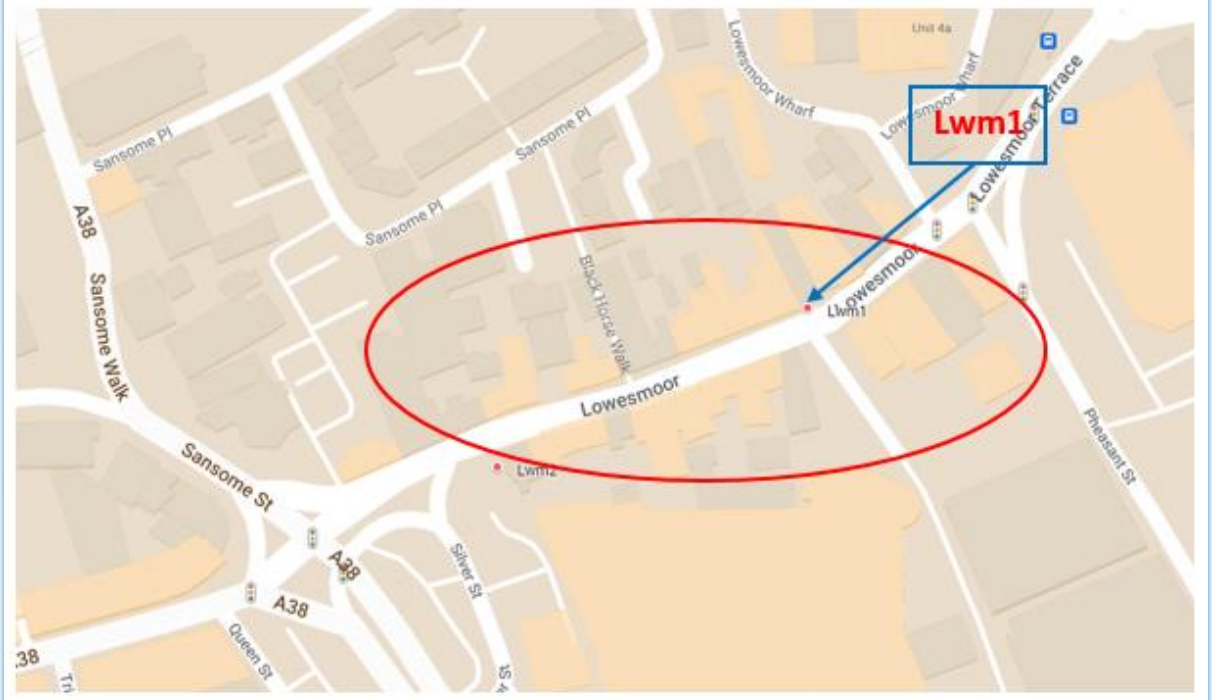
As previously highlighted a reduction of 5.28µg/m$^3$ or more would be required to meet the national objective, 7.42µg/m$^3$ for 5% below the objective, and 9.53µg/m$^3$ for 10% below, based on concentrations monitored at location DDASH..

Table 6.6 above indicates that a 40% or more reduction in the number of cars or 80% reduction in buses would be required to achieve the objective. A 20% reduction across all vehicle types is needed to meet the objective, a 30% reduction would achieve concentrations 5% below the objective, and a 40% or more reduction would be necessary to reach 10% below the objective. Unlike many of the study areas the data from All Saints Road indicates that the required reductions could be achieved by targeting various combinations of two or more categories.

## 6.7 Lowesmoor (Lwm1)

The traffic data survey was undertaken within Lowesmoor on the 11th November 2021 observing traffic travelling westbound and eastbound. Figure 2.7 below shows the study area and location of monitoring point Lwm1. Monitoring location Lwm1 was utilised within the study as the recorded concentrations have been consistently higher than Lwm2 and therefore is the most representative monitoring location.

Figure 2.7 Lowesmoor (Lwm1) Study Area

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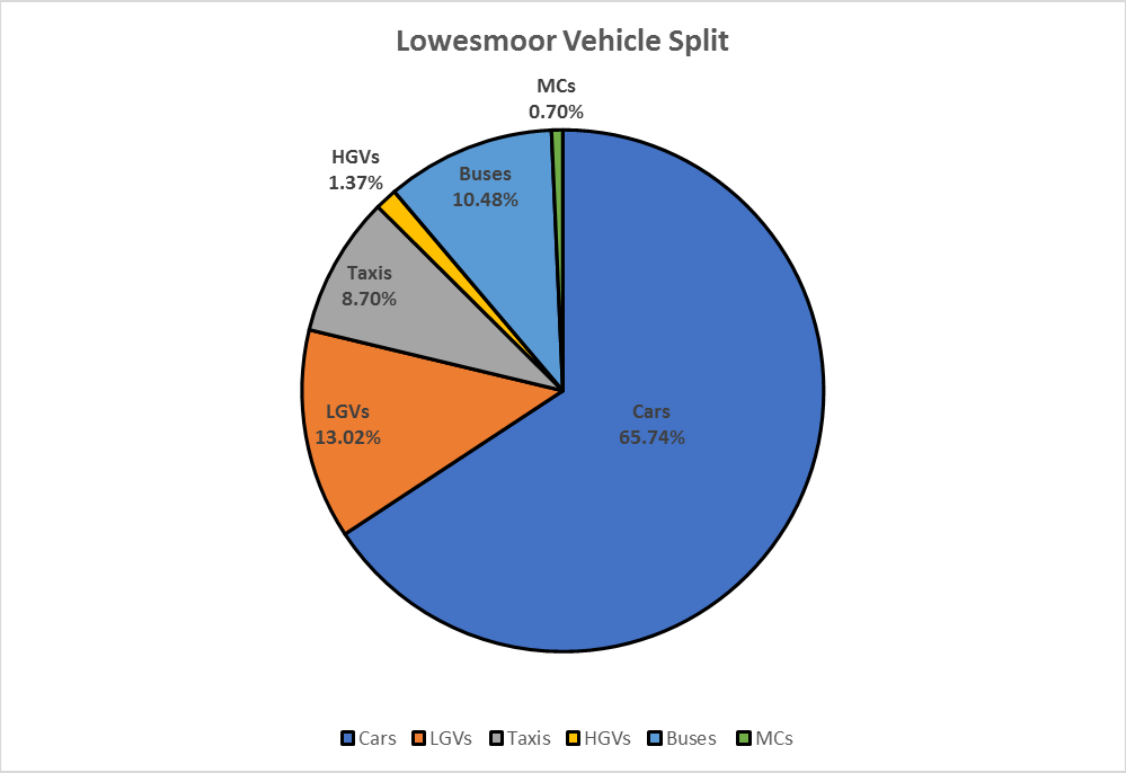
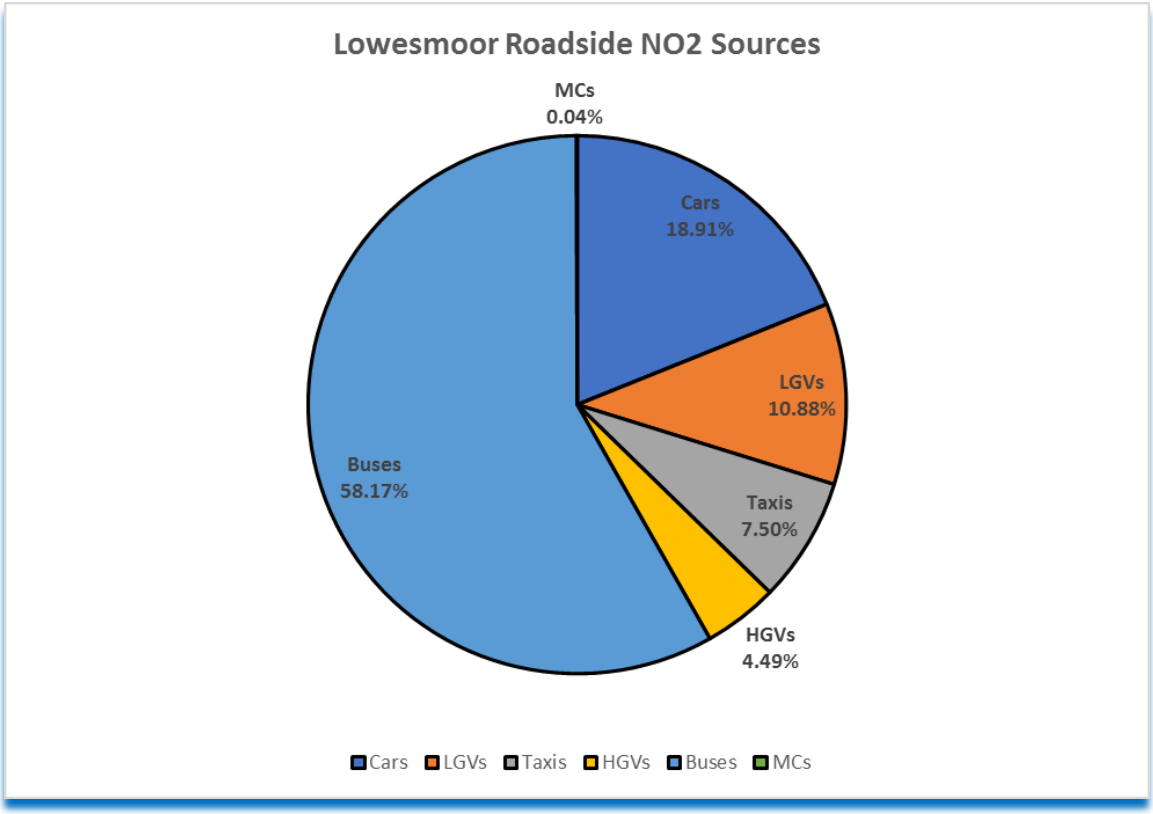
The traffic survey showed the following proportion of vehicles in Lowesmoor.




The emissions output based on traffic composition show the following roadside contributions.



### Table 6.7 Required reduction in annual mean concentration at Lwm1

| Lowesmoor (Lwm1) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 5.09 | 0.509 | 1.018 | **1.527** | **2.036** | **2.545** | **3.054** | **3.563** | **4.072** | **4.581** | **5.09** |
| Taxis | 2.02 | 0.202 | 0.404 | 0.606 | 0.808 | 1.01 | 1.212 | **1.414** | **1.616** | **1.818** | **2.02** |
| LGVs | 2.93 | 0.293 | 0.586 | 0.879 | 1.172 | **1.465** | **1.758** | **2.051** | **2.344** | **2.637** | **2.93** |
| HGVs | 1.21 | 0.121 | 0.242 | 0.363 | 0.484 | 0.605 | 0.726 | 0.847 | 0.968 | 1.089 | 1.21 |
| Buses | 15.66 | **1.566** | **3.132** | **4.698** | **6.264** | **7.83** | **9.396** | **10.962** | **12.528** | **14.094** | **15.66** |
| MC | 0.01 | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 | 0.01 |
| Total Vehicles | 26.92 | **2.692** | **5.384** | **8.076** | **10.768** | **13.46** | **16.152** | **18.844** | **21.536** | **24.228** | **26.92** |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

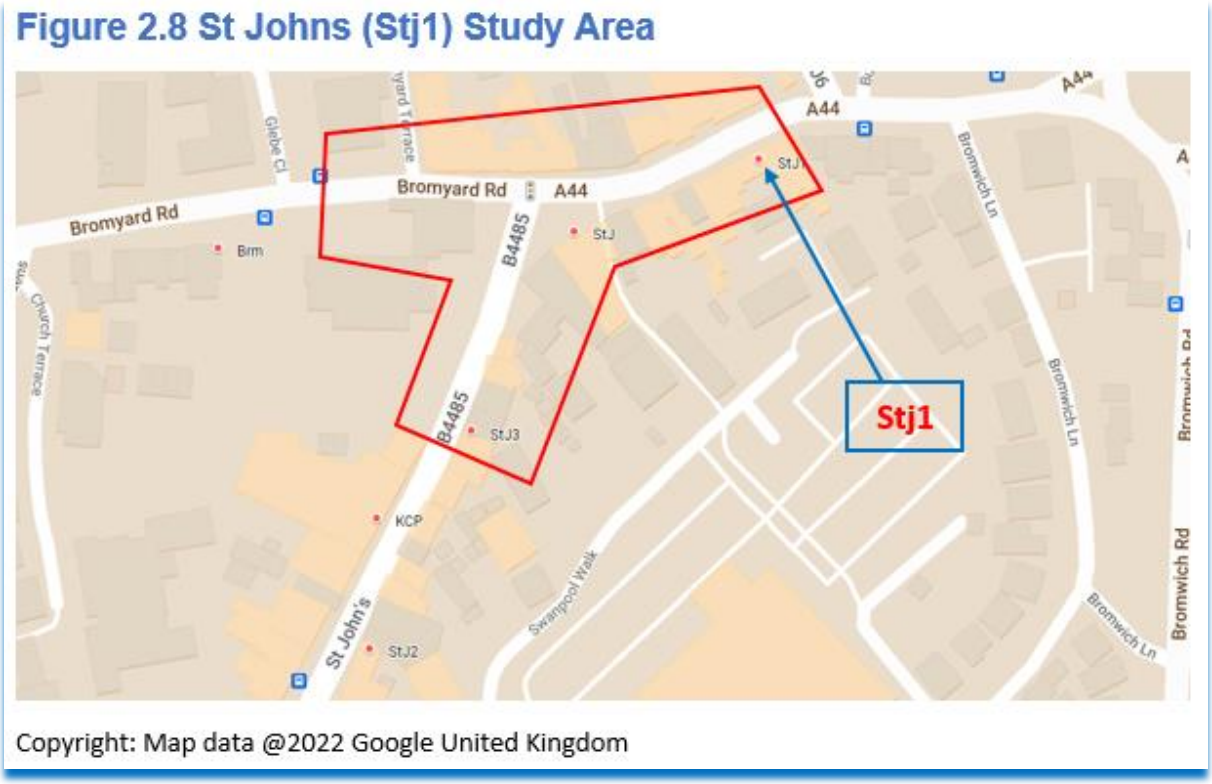
As previously highlighted in Table 6 a reduction of 1.38µg/m$^3$ or more would be required to meet the national objective, 3.53µg/m$^3$ for 5% below the objective, and 5.65µg/m$^3$ for 10% below, based on concentrations monitored at location Lwm1.

Table 6.7 above indicates that a 10% or more reduction in bus emissions, 30% or more reduction in cars, or a 50% reduction in LGVs would satisfy the objective. A 10% reduction across all vehicle types would meet the objective, a 20% reduction would achieve concentrations 5% below the objective, and a 30% or more reduction would achieve 10% below the objective. Unlike many of the other study areas the reduction required to meet the target in Lowesmoor is relatively small and therefore could be achieved by various combinations of categories or the individual vehicle types mentioned previously.

## 6.8 St Johns (Stj1)

A source apportionment exercise was undertaken by WRS in 2017 and has not been repeated as part of the more recent studies. The study site including monitoring locations is shown on the plan below.

**Figure 2.8 St Johns (Stj1) Study Area**




The nominal reductions per vehicle type for emissions at the most representative monitoring location Stj1, are shown in table 6.8 below.

**Table 6.8 Required reduction in annual mean concentration at Stj1**

| St Johns (Stj1) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 11.6 | 1.16 | 2.32 | 3.48 | 4.64 | 5.8 | 6.96 | 8.12 | 9.28 | 10.44 | 11.6 |
| LGVs | 3.3 | 0.33 | 0.66 | 0.99 | 1.32 | 1.65 | 1.98 | 2.31 | 2.64 | 2.97 | 3.3 |
| HGVs | 3.1 | 0.31 | 0.62 | 0.93 | 1.24 | 1.55 | 1.86 | 2.17 | 2.48 | 2.79 | 3.1 |
| Buses | 10.3 | 1.03 | 2.06 | 3.09 | 4.12 | 5.15 | 6.18 | 7.21 | 8.24 | 9.27 | 10.3 |
| Total Vehicles | 28.3 | 2.83 | 5.66 | 8.49 | 11.32 | 14.15 | 16.98 | 19.81 | 22.64 | 25.47 | 28.3 |

**reductions that would achieve the national objective of 40µg/m³*
***reductions that would achieve 5% below the objective (38µg/m³)*
****reductions that would achieve 10% below the objective (36µg/m³)*

The source apportionment study indicates that a reduction of 4.76µg/m³ or more would be required to meet the national objective, 6.95µg/m³ for 5% below the objective, and

9.09µg/m$^3$ for 10% below, based on concentrations monitored at location Stj1. Outside of regional and local background concentrations, the largest roadside vehicle contributions to emissions were identified as cars (40.92%) and buses (36.36%).

Table 6.8 above indicates that a 50% or more reduction in cars or buses would satisfy the objective. A 20% reduction across all vehicle types would meet the objective, a 30% reduction would achieve concentrations 5% below the objective, and a 40% or more reduction would achieve 10% below the objective. It should be noted that taxis were not differentiated as part of the traffic survey

The report summarised: - *"Targeting individual types of vehicles on these local roads in isolation would not lead to the annual mean objective being achieved unless the reductions are very large (between 40 and 50%). However, a reduction in total vehicle emissions of around 20% or targeting a combination of 30% cars and buses would be potentially effective measures for achieving the objective. Greater reductions will be required to achieve more sustainable targets of 5 or 10% below the objective".*

A full version of the report can be accessed on the WRS website via the following link: -

source-apportionment-for-st-johns-worcester-aqma-final.pdf (worcsregservices.gov.uk)

## 6.9 London Road

A source apportionment exercise was undertaken on behalf of WRS in 2017 during a detailed assessment for London Road by Air Quality Consultants (*Detailed Assessment of Air Quality along London Road, Worcester for Worcester City Council* – July 2017). This has not been repeated as part of the more recent studies.

As the study was undertaken as part of a detailed assessment it included air quality modelling at numerous sensitive receptors along the road corridor. The highest predicted concentration was recorded at R12 (5 London Road) and therefore this location was used for calculating required emissions reductions for source apportionment. The modelled receptors from the study are shown on the plan below in Figure 2.9: -

**Figure 2.9 London Road Study Area (from 2017 AQC Report)**


**Figure 2: Receptor Locations**

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The nominal reductions per vehicle type for emissions at the modelled location R12, as calculated from the report, are shown in table 6.9 below.

**Table 6.9 Required reduction in annual mean concentration at R12**

| London Road (R12) Reduction in Emissions (µg/m3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | Total Emissions | 10% reduction | 20% reduction | 30% reduction | 40% reduction | 50% reduction | 60% reduction | 70% reduction | 80% reduction | 90% reduction | 100% reduction |
| Cars | 13.41 | 1.341 | 2.682 | 4.023 | 5.364 | 6.705 | 8.046 | 9.387 | 10.728 | 12.069 | 13.41 |
| LGVs | 5.14 | 0.514 | 1.028 | 1.542 | 2.056 | 2.57 | 3.084 | 3.598 | 4.112 | 4.626 | 5.14 |
| HGVs | 8.78 | 0.878 | 1.756 | 2.634 | 3.512 | 4.39 | 5.268 | 6.146 | 7.024 | 7.902 | 8.78 |
| Buses | 1.31 | 0.131 | 0.262 | 0.393 | 0.524 | 0.655 | 0.786 | 0.917 | 1.048 | 1.179 | 1.31 |
| MC | 0.03 | 0.003 | 0.006 | 0.009 | 0.012 | 0.015 | 0.018 | 0.021 | 0.024 | 0.027 | 0.03 |
| Total Vehicles | 28.67 | 2.867 | 5.734 | 8.601 | 11.468 | 14.335 | 17.202 | 20.069 | 22.936 | 25.803 | 28.67 |

**reductions that would achieve the national objective of 40µg/m$^3$*
***reductions that would achieve 5% below the objective (38µg/m$^3$)*
****reductions that would achieve 10% below the objective (36µg/m$^3$)*

The source apportionment study carried out as part of the 2017 detailed assessment indicates that a reduction of 8.056µg/$m^3$ or more would be required to meet the national objective. Calculations for further reductions were not included in the report but would be approximately 10.137µg/$m^3$ to achieve 5% below the objective, and 12.182µg/$m^3$ for 10% below, based on modelled concentrations at location R12.

Outside of regional and local background concentrations (which would make up 39.27% of all contributions if included), the largest roadside vehicle contributions to emissions were identified as cars (46.77%), HGVs (30.62%), and LGVs (17.93%).

Table 6.9 above indicates that it would require at least a 70% reduction in emissions from cars or 100% removal of HGVs to satisfy the objective. A 30% reduction across all vehicle types would meet the objective, a 40% reduction would achieve concentrations 5% below the objective, and a 50% or more reduction would be necessary to achieve 10% below the objective.

The report summarises with the following: -

*"Source apportionment of the local traffic emissions has been undertaken. This shows that, in the majority of cases, local background concentrations contribute the largest proportion to the overall concentration, followed by emissions from cars on the local roads. In a number of cases, emissions from regional background and HGVs also contribute a significant proportion to the overall concentration.*

*A reduction in traffic emissions along predominantly London Road would result in a decrease in the concentrations of nitrogen dioxide. Reductions in vehicle emissions from local traffic of up to 28.1% would be required to achieve the annual mean nitrogen dioxide objective where the highest concentrations are predicted to occur"* (Detailed Assessment of Air Quality along London Road, Worcester for Worcester City Council – Air Quality Consultants – July 2017 (pg.20).

## 6.10 Overview of all Locations

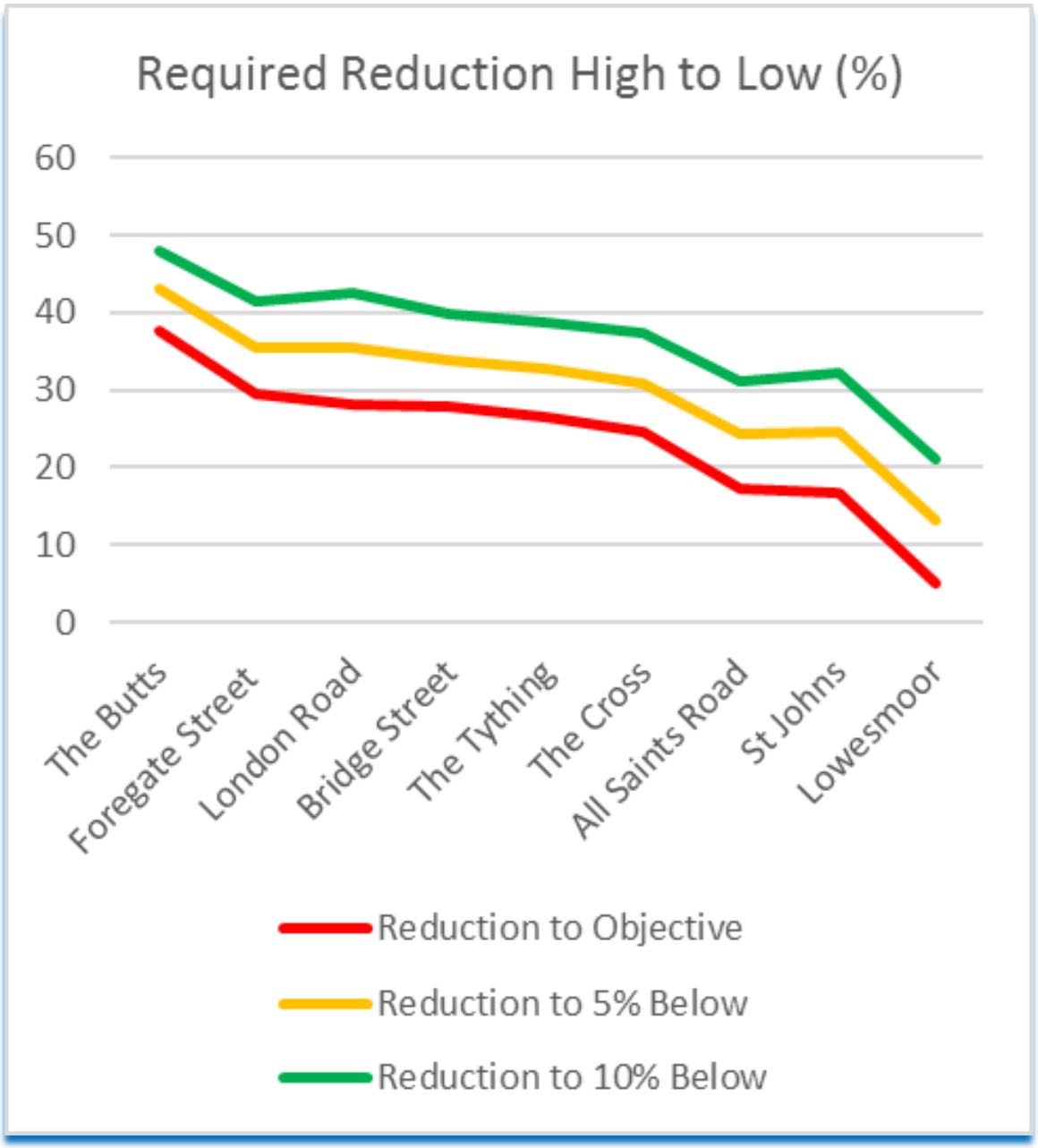
The source apportionment study undertaken is comprised of a number of separate areas or sections of the road network where exceedances of the annual mean objective for nitrogen dioxide has been identified via the monitoring network. Source apportionment for two of the areas, London Road and St Johns, was carried out separately in 2017 prior to the declaration of the citywide AQMA as each represented an area of concern at that time. Since then other areas of concern (the Tything, Foregate Street, the Butts, the Cross, Bridge Street, All Saints Road, and Lowesmoor) have presented themselves and have been looked at in detail above. Each study area is subject to different conditions and usage and therefore the outcomes vary between the locations as would be expected although there are similarities in some areas. To try and provide more of an overview and understand commonality between the areas, Table 6.10 below, presents the summary of findings.

**Table 6.10 Comparison of Emissions Reductions at All Locations**

| Location | Emission Reduction Required to Meet Objective | All Vehicle Reduction to Meet Objective (%) | Reduction for 5% b/l objective (%) | Reduction for 10% b/l objective (%) | Highest Roadside Contributor | 2nd Roadside Contributor | 3rd Roadside Contributor | 4th Roadside Contributor | Single Vehicle Reduction to Achieve Objective |
|---|---|---|---|---|---|---|---|---|---|
| The Tything | 8.91 | 26.5 | 32.7 | 38.8 | Diesel Cars 41.9% | Diesel LGVs 18.3% | Buses 13.7% | HGVs 12.4% | Cars 60% |
| Foregate Street | 10.34 | 29.6 | 35.6 | 41.4 | Diesel Cars 30.12% | Buses 30.08% | Taxis 13.41% | Diesel LGVs 13.3% | Cars 90% / Buses 100% |
| The Butts | 14.63 | 37.7 | 43 | 48.1 | Buses 57.03% | Diesel Cars 19.15% | Diesel LGVs 9.37% | Taxis 6.26% | Buses 70% |
| Bridge Street | 9.61 | 27.8 | 33.9 | 39.9 | Diesel Cars 43.38% | Diesel LGVs 20.09% | Buses 13.93% | HGVs 11.63% | Cars 60% |
| The Cross | 8.22 | 24.7 | 31 | 37.3 | Buses 48.1% | Diesel Cars 20.15% | Taxis 12.79% | Diesel LGVs 9.36% | Buses 60% |
| All Saints Road | 5.28 | 17.2 | 24.2 | 31.1 | Diesel Cars 39.03% | Buses 22.09% | Diesel LGVs 15.38% | HGVs 12.94% | Cars 40% / Buses 80% |
| Lowesmoor | 1.38 | 5.1 | 13.1 | 21 | Buses 58.19% | Diesel Cars 16.44% | Diesel LGVs 10.84% | Taxis 7.51% | Buses 10% / Cars 30% / LGVs 50% / Taxis 70% |
| St Johns | 4.76 | 16.8 | 24.6 | 32.1 | Buses 36.36% | Diesel Cars 35.16% | Diesel LGVs 11.41% | HGVs 11.08% | Cars 50% / Buses 50% |
| London Road | 8.06 | 28.1 | 35.4 | 42.5 | Cars - 46.77% | HGVs- 30.62% | LGVs - 17.93% | Buses - 4.57% | Cars 70% / HGVs 100% |

The required reductions to meet the objective, and to achieve 5% and 10% below the objective, are presented in the graph below from highest to lowest.

**Figure 3.0 Reductions Required at Each Location**



When comparing the equivalent $NO_2$ reduction required, demonstrated in Tables 6 to 6.10, the results highlight that targeting individual categories of vehicle in isolation would not lead to the annual mean objective being achieved within most of the areas of concern unless the reductions were very large. The exception to this is within Lowesmoor where the required reduction is relatively small and therefore could be achieved by reducing emissions across all vehicle categories, or numbers of one type of vehicle, to the desired level.

In reality, in most cases, actions to improve emissions are likely to have to target more than one type of vehicle. Table 6.10 illustrates that:

- The required reduction across all vehicle types varies between the lowest of 5.1% at Lowesmoor and a highest of 37.7% at the Butts to achieve the objective. A 16.8% to 29.6% reduction is required at all other areas.
- A 13.1% to 43% reduction across all vehicle types is required to achieve concentrations 5% below the objective.
- A 21% to 48.1% reduction across all vehicle types is required to achieve concentrations 10% below the objective.
- Reducing emissions from cars and buses by 25% in St Johns, 30% in All Saints Road, 40% at the Cross, and 50% at the Butts and Foregate Street would potentially be effective measures for achieving the objective.
- Reducing emissions from cars and LGVs by 40% within the Tything and Bridge Street would potentially be an effective measure for achieving the objective.
- Reducing emissions from cars and HGVs by 40% within the London Road would potentially be an effective measure for achieving the objective.
- Reducing emissions from buses by 10% or cars and LGVs by 20% within Lowesmoor would potentially be effective measures for achieving the objective.

# 7.0 Summary and Conclusions

Worcester City Council consolidated a number of existing AQMAs by declaration of the Worcester City AQMA (Political Boundary of Worcester City) on the 11th June 2019 for likely breach of the nitrogen dioxide annual mean. The AQMA encompasses the boundary of the district.

Source apportionment of background and local sources has been undertaken to inform the development of an Air Quality Action Plan. The source apportionment exercise has been undertaken following guidance set out out in LAQM Technical Guidance 16.

Work previously commenced at the start of 2020 but was suspended due to the outbreak of the Covid-19 Pandemic which had severe impacts on traffic movements and behaviour. The level of traffic flow was deemed to have returned to normal, or as near as could be expected, towards the end of 2021 and therefore progress was resumed, and the outstanding traffic surveys carried out.

Source apportionment studies have been carried out for a number of areas of concern within the city; the Tything, Foregate Street, the Butts, the Cross, Bridge Street, All Saints Road, and Lowesmoor. Source apportionment was undertaken previously for St Johns and London Road in 2017. These reports have been reviewed and relevant data presented to feed into this study. Section 6 of this report provides a review in relation to each specific area of concern.

The outcome of the source apportionment exercise shows that background concentration contributes a significant proportion of the overall concentration of $NO_2$ measured within each of the study areas varying from 25.97% to 39.27%. Cars were shown to comprise the largest proportion of traffic volume with between 65.74% and 82.54% contributing to between 18.91% and 49.87% of vehicle source emissions. Buses comprise a much smaller proportion of the traffic volume ranging between 1.19% and 10.47% but contributing much larger proportions of vehicle emissions of between 13.7% and 58.19%.

Targeting individual types of vehicles in isolation within most areas of concern is unlikely to lead to the annual mean objective being achieved unless the reductions are very large. For example, reductions of 50% or greater in the emissions from cars would be required within 5

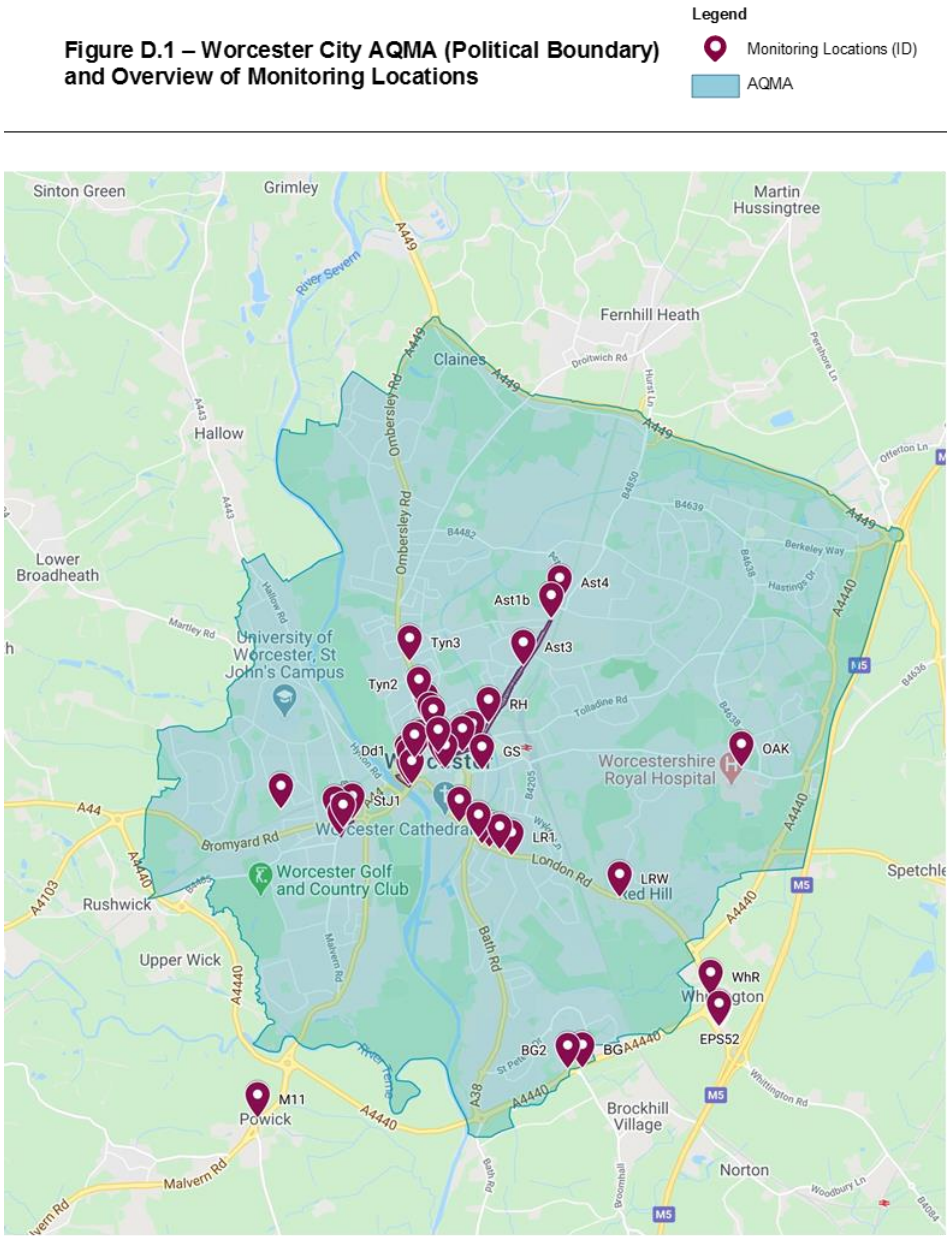
of the areas, with a 100% reduction not being sufficient to achieve compliance within 2 of the locations. In those two locations a 60 to 70% reduction in the number of buses would be necessary to attain the objective. Lowesmoor is an exception where relatively small reductions across one or more vehicle types could see concentrations of $NO_2$ fall to within the desired levels.

For the majority of the locations it is likely that a reduction across all vehicle types, or combination of several categories, would be required to achieve the objective. The data indicates that a maximum reduction in $NO_2$ of 37.7% would be required to achieve the objective within all areas. A maximum reduction of 43% would be necessary across all vehicle types to achieve results 5% below the objective, and 48.1% to achieve 10% below the objective.

# Appendix A – AQMA & diffusion tube location plans

## Figure A1: Worcester City Wide AQMA plan

**Figure D.1 – Worcester City AQMA (Political Boundary) and Overview of Monitoring Locations**




| Date: 21.05.2020 | Copyright: Map data @2020 Google United Kingdom |
|---|---|

# Appendix B – EFT data inputs & outputs

## Table B1: Traffic count data

worcestershire county council

### Classification Count Sheet

Site Number. 2009500

Road No. A38 | Location. The Tything, Worcester | Day&Date. Tuesday, 3.3.2020 | Remarks. North of St. Marys St.

| Hour Commencing | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pedal | NB | 0 | 6 | 9 | 3 | 3 | 7 | 3 | 7 | 6 | 10 | 15 | 19 | 14 | 0 | 0 | 0 | **102** |
| Cycles | SB | 0 | 27 | 35 | 12 | 11 | 10 | 7 | 8 | 7 | 8 | 13 | 13 | 12 | 0 | 0 | 0 | **163** |
| | Both | 0 | 33 | 44 | 15 | 14 | 17 | 10 | 15 | 13 | 18 | 28 | 32 | 26 | 0 | 0 | 0 | **265** |
| Motor | To | 0 | 5 | 5 | 3 | 3 | 3 | 10 | 9 | 4 | 3 | 8 | 5 | 3 | 0 | 0 | 0 | **61** |
| Cycles | From | 0 | 5 | 6 | 3 | 5 | 4 | 7 | 4 | 9 | 3 | 9 | 4 | 4 | 0 | 0 | 0 | **63** |
| | Both | 0 | 10 | 11 | 6 | 8 | 7 | 17 | 13 | 13 | 6 | 17 | 9 | 7 | 0 | 0 | 0 | **124** |
| | To | 0 | 678 | 618 | 494 | 444 | 435 | 522 | 563 | 656 | 640 | 700 | 639 | 694 | 0 | 0 | 0 | **7083** |
| Cars | From | 0 | 699 | 729 | 653 | 541 | 478 | 466 | 464 | 493 | 516 | 543 | 665 | 557 | 0 | 0 | 0 | **6804** |
| | Both | 0 | 1377 | 1347 | 1147 | 985 | 913 | 988 | 1027 | 1149 | 1156 | 1243 | 1304 | 1251 | 0 | 0 | 0 | **13887** |
| | To | 0 | 7 | 11 | 9 | 11 | 8 | 9 | 8 | 12 | 14 | 9 | 6 | 4 | 0 | 0 | 0 | **108** |
| Buses | From | 0 | 6 | 18 | 13 | 13 | 10 | 10 | 12 | 12 | 18 | 10 | 9 | 10 | 0 | 0 | 0 | **141** |
| | Both | 0 | 13 | 29 | 22 | 24 | 18 | 19 | 20 | 24 | 32 | 19 | 15 | 14 | 0 | 0 | 0 | **249** |
| Light | To | 0 | 99 | 86 | 78 | 84 | 90 | 86 | 88 | 95 | 108 | 76 | 56 | 49 | 0 | 0 | 0 | **995** |
| Goods | From | 0 | 102 | 82 | 61 | 43 | 76 | 69 | 76 | 78 | 67 | 64 | 45 | 56 | 0 | 0 | 0 | **819** |
| Vehicles | Both | 0 | 201 | 168 | 139 | 127 | 166 | 155 | 164 | 173 | 175 | 140 | 101 | 105 | 0 | 0 | 0 | **1814** |
| Smaller | To | 0 | 5 | 3 | 8 | 7 | 8 | 6 | 10 | 7 | 7 | 6 | 5 | 6 | 0 | 0 | 0 | **78** |
| 2-Axle | From | 0 | 8 | 12 | 10 | 15 | 7 | 9 | 5 | 5 | 2 | 4 | 3 | 3 | 0 | 0 | 0 | **83** |
| Lorries | Both | 0 | 13 | 15 | 18 | 22 | 15 | 15 | 15 | 12 | 9 | 10 | 8 | 9 | 0 | 0 | 0 | **161** |
| Bigger | To | 0 | 7 | 5 | 8 | 5 | 4 | 5 | 4 | 7 | 4 | 2 | 2 | 1 | 0 | 0 | 0 | **54** |
| 2-Axle | From | 0 | 7 | 9 | 7 | 4 | 5 | 4 | 3 | 4 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | **50** |
| Lorries | Both | 0 | 14 | 14 | 15 | 9 | 9 | 9 | 7 | 11 | 6 | 4 | 4 | 2 | 0 | 0 | 0 | **104** |
| 3-Axle | To | 0 | 2 | 2 | 2 | 5 | 3 | 2 | 2 | 3 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | **26** |
| Rigid/Artic | From | 0 | 3 | 4 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | **21** |
| | Both | 0 | 5 | 6 | 4 | 7 | 5 | 3 | 3 | 5 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | **47** |
| 4 Axles or | To | 0 | 4 | 5 | 4 | 5 | 6 | 3 | 5 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | **38** |
| more | From | 0 | 4 | 2 | 5 | 5 | 2 | 3 | 2 | 6 | 3 | 2 | 1 | 2 | 0 | 0 | 0 | **37** |
| Rigid/Artic | Both | 0 | 8 | 7 | 9 | 10 | 8 | 6 | 7 | 9 | 5 | 3 | 1 | 2 | 0 | 0 | 0 | **75** |
| | **NB** | **0** | **813** | **744** | **609** | **567** | **564** | **646** | **696** | **793** | **790** | **818** | **734** | **771** | **0** | **0** | **0** | **8545** |
| **Totals** | **SB** | **0** | **861** | **897** | **766** | **639** | **594** | **576** | **575** | **616** | **621** | **648** | **743** | **645** | **0** | **0** | **0** | **8181** |
| | **Both** | **0** | **1674** | **1641** | **1375** | **1206** | **1158** | **1222** | **1271** | **1409** | **1411** | **1466** | **1477** | **1416** | **0** | **0** | **0** | **16726** |

worcestershire county council

# Classification Count Sheet

Site Number. 2009500B

Road No. A38 | Location. The Tything, Worcester | Day&Date. Tuesday, 3.3.2020 | Remarks. North of St. Marys St.

| Hour Commencing | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NB | 0 | 13 | 19 | 19 | 19 | 18 | 18 | 17 | 27 | 27 | 21 | 18 | 20 | 0 | 0 | 0 | **236** |
| **TAXIS** | SB | 0 | 14 | 12 | 19 | 22 | 18 | 14 | 13 | 25 | 22 | 12 | 11 | 17 | 0 | 0 | 0 | **199** |
| | Both | 0 | 27 | 31 | 38 | 41 | 36 | 32 | 30 | 52 | 49 | 33 | 29 | 37 | 0 | 0 | 0 | **435** |
| | **NB** | **0** | **13** | **19** | **19** | **19** | **18** | **18** | **17** | **27** | **27** | **21** | **18** | **20** | **0** | **0** | **0** | 236 |
| **Totals** | **SB** | **0** | **14** | **12** | **19** | **22** | **18** | **14** | **13** | **25** | **22** | **12** | **11** | **17** | **0** | **0** | **0** | 199 |
| | **Both** | **0** | **27** | **31** | **38** | **41** | **36** | **32** | **30** | **52** | **49** | **33** | **29** | **37** | **0** | **0** | **0** | 435 |

worcestershire county council

# Classification Count Sheet

Site Number. 20090509

Road No. A38 | Location. Foregate Street, Worcester | Day&Date. Tuesday, 10.3.2020 | Remarks. (Shaw St. to Castle St.)

| Hour Commencing | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pedal | NB | 0 | 10 | 12 | 5 | 7 | 16 | 9 | 9 | 9 | 12 | 12 | 28 | 10 | 0 | 0 | 0 | **139** |
| Cycles | SB | 0 | 14 | 18 | 9 | 5 | 11 | 6 | 5 | 9 | 6 | 4 | 1 | 2 | 0 | 0 | 0 | **90** |
| | Both | 0 | 24 | 30 | 14 | 12 | 27 | 15 | 14 | 18 | 18 | 16 | 29 | 12 | 0 | 0 | 0 | **229** |
| Motor | To | 0 | 2 | 2 | 2 | 4 | 2 | 1 | 5 | 3 | 3 | 5 | 4 | 5 | 0 | 0 | 0 | **38** |
| Cycles | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| | Both | 0 | 2 | 2 | 2 | 4 | 2 | 1 | 5 | 3 | 3 | 5 | 4 | 5 | 0 | 0 | 0 | **38** |
| | To | 0 | 255 | 303 | 247 | 252 | 260 | 248 | 286 | 354 | 371 | 377 | 471 | 378 | 0 | 0 | 0 | **3802** |
| Cars | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| | Both | 0 | 255 | 303 | 247 | 252 | 260 | 248 | 286 | 354 | 371 | 377 | 471 | 378 | 0 | 0 | 0 | **3802** |
| | To | 0 | 9 | 8 | 13 | 13 | 12 | 12 | 10 | 8 | 5 | 8 | 7 | 4 | 0 | 0 | 0 | **109** |
| Buses | From | 0 | 6 | 6 | 10 | 10 | 9 | 10 | 10 | 9 | 7 | 5 | 3 | 8 | 0 | 0 | 0 | **93** |
| | Both | 0 | 15 | 14 | 23 | 23 | 21 | 22 | 20 | 17 | 12 | 13 | 10 | 12 | 0 | 0 | 0 | **202** |
| Light | To | 0 | 46 | 40 | 49 | 47 | 46 | 41 | 44 | 45 | 48 | 46 | 36 | 26 | 0 | 0 | 0 | **514** |
| Goods | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Vehicles | Both | 0 | 46 | 40 | 49 | 47 | 46 | 41 | 44 | 45 | 48 | 46 | 36 | 26 | 0 | 0 | 0 | **514** |
| Smaller | To | 0 | 1 | 2 | 6 | 4 | 2 | 3 | 4 | 4 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | **32** |
| 2-Axle | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Lorries | Both | 0 | 1 | 2 | 6 | 4 | 2 | 3 | 4 | 4 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | **32** |
| Bigger | To | 0 | 2 | 5 | 8 | 3 | 1 | 3 | 3 | 1 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | **33** |
| 2-Axle | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Lorries | Both | 0 | 2 | 5 | 8 | 3 | 1 | 3 | 3 | 1 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | **33** |
| 3-Axle | To | 0 | 5 | 3 | 2 | 1 | 3 | 2 | 2 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | **24** |
| Rigid/Artic | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| | Both | 0 | 5 | 3 | 2 | 1 | 3 | 2 | 2 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | **24** |
| 4 Axles or | To | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **7** |
| more | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Rigid/Artic | Both | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **7** |
| | **NB** | **0** | **331** | **376** | **334** | **331** | **343** | **319** | **364** | **427** | **443** | **455** | **549** | **426** | **0** | **0** | **0** | **4698** |
| **Totals** | **SB** | **0** | **20** | **24** | **19** | **15** | **20** | **16** | **15** | **18** | **13** | **9** | **4** | **10** | **0** | **0** | **0** | **183** |
| | **Both** | **0** | **351** | **400** | **353** | **346** | **363** | **335** | **379** | **445** | **456** | **464** | **553** | **436** | **0** | **0** | **0** | **4881** |

worcestershire county council

# Classification Count Sheet

Site Number. 20090509B

Road No. A38 | Location. Foregate Street, Worcester | Day&Date. Tuesday, 10.3.2020 | Remarks. Shaw St. to Castle St.

| Hour Commencing | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | To | 0 | 15 | 25 | 39 | 24 | 27 | 31 | 31 | 26 | 28 | 26 | 29 | 26 | 0 | 0 | 0 | **327** |
| **TAXIS** | From | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| | Both | 0 | 15 | 25 | 39 | 24 | 27 | 31 | 31 | 26 | 28 | 26 | 29 | 26 | 0 | 0 | 0 | **327** |
| | **NB** | **0** | **15** | **25** | **39** | **24** | **27** | **31** | **31** | **26** | **28** | **26** | **29** | **26** | **0** | **0** | **0** | **327** |
| **Totals** | **SB** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| | **Both** | **0** | **15** | **25** | **39** | **24** | **27** | **31** | **31** | **26** | **28** | **26** | **29** | **26** | **0** | **0** | **0** | **327** |

worcestershire county council

# Classification Count Sheet

Site Number. 20090503

Road No. | Location. The Butts, Worcester | Day&Date. Thursday, 12.3.2020 | Remarks. One way eastbound

| Hour Commencing | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pedal | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Cycles | EB | 0 | 9 | 5 | 6 | 3 | 1 | 2 | 4 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | **34** |
| | Both | 0 | 9 | 5 | 6 | 3 | 1 | 2 | 4 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | **34** |
| Motor | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Cycles | From | 0 | 6 | 2 | 2 | 3 | 6 | 3 | 3 | 2 | 1 | 4 | 3 | 4 | 0 | 0 | 0 | **39** |
| | Both | 0 | 6 | 2 | 2 | 3 | 6 | 3 | 3 | 2 | 1 | 4 | 3 | 4 | 0 | 0 | 0 | **39** |
| | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Cars | From | 0 | 402 | 410 | 331 | 283 | 275 | 280 | 353 | 306 | 309 | 434 | 376 | 347 | 0 | 0 | 0 | **4106** |
| | Both | 0 | 402 | 410 | 331 | 283 | 275 | 280 | 353 | 306 | 309 | 434 | 376 | 347 | 0 | 0 | 0 | **4106** |
| | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Buses | From | 0 | 32 | 45 | 41 | 53 | 50 | 46 | 51 | 49 | 44 | 60 | 46 | 45 | 0 | 0 | 0 | **562** |
| | Both | 0 | 32 | 45 | 41 | 53 | 50 | 46 | 51 | 49 | 44 | 60 | 46 | 45 | 0 | 0 | 0 | **562** |
| Light | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Goods | From | 0 | 71 | 54 | 49 | 49 | 47 | 48 | 50 | 57 | 55 | 63 | 42 | 32 | 0 | 0 | 0 | **617** |
| Vehicles | Both | 0 | 71 | 54 | 49 | 49 | 47 | 48 | 50 | 57 | 55 | 63 | 42 | 32 | 0 | 0 | 0 | **617** |
| Smaller | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| 2-Axle | From | 0 | 4 | 3 | 8 | 5 | 2 | 3 | 1 | 2 | 1 | 2 | 3 | 1 | 0 | 0 | 0 | **35** |
| Lorries | Both | 0 | 4 | 3 | 8 | 5 | 2 | 3 | 1 | 2 | 1 | 2 | 3 | 1 | 0 | 0 | 0 | **35** |
| Bigger | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| 2-Axle | From | 0 | 2 | 5 | 5 | 6 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | **29** |
| Lorries | Both | 0 | 2 | 5 | 5 | 6 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | **29** |
| 3-Axle | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Rigid/Artic | From | 0 | 3 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **17** |
| | Both | 0 | 3 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **17** |
| 4 Axles or | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| more | From | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **8** |
| Rigid/Artic | Both | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **8** |
| | **NB** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Totals | **SB** | **0** | **529** | **530** | **446** | **405** | **385** | **385** | **464** | **420** | **412** | **565** | **474** | **432** | **0** | **0** | **0** | **5447** |
| | **Both** | **0** | **529** | **530** | **446** | **405** | **385** | **385** | **464** | **420** | **412** | **565** | **474** | **432** | **0** | **0** | **0** | **5447** |

worcestershire county council

# Classification Count Sheet

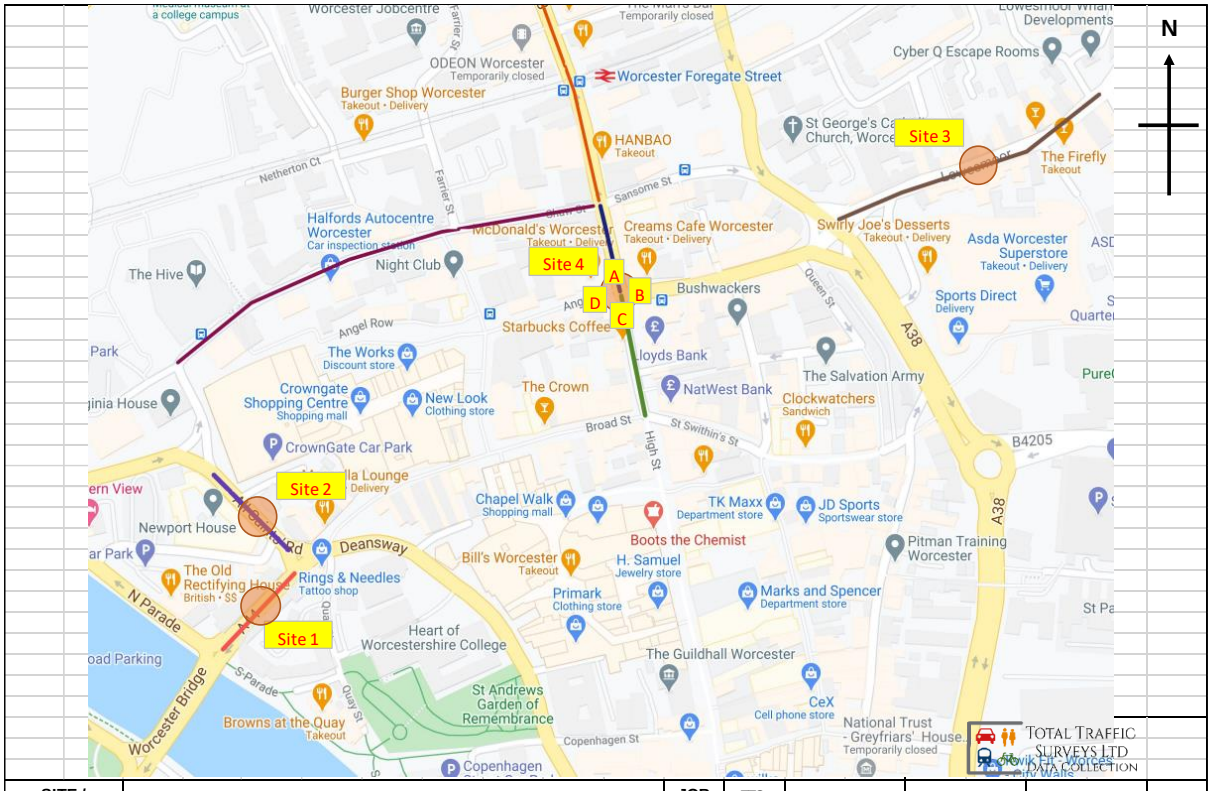
Site Number. 20090503B

Road No. | Location. The Butts, Worcester | Day&Date. Thursday, 12.3.2020 | Remarks. Taxis only

| Hour Commencing | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | To | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Taxis** | EB | 0 | 12 | 23 | 36 | 18 | 24 | 19 | 16 | 17 | 27 | 24 | 16 | 28 | 0 | 0 | 0 | **260** |
| | Both | 0 | 12 | 23 | 36 | 18 | 24 | 19 | 16 | 17 | 27 | 24 | 16 | 28 | 0 | 0 | 0 | **260** |
| | **NB** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Totals** | **SB** | **0** | **12** | **23** | **36** | **18** | **24** | **19** | **16** | **17** | **27** | **24** | **16** | **28** | **0** | **0** | **0** | **260** |
| | **Both** | **0** | **12** | **23** | **36** | **18** | **24** | **19** | **16** | **17** | **27** | **24** | **16** | **28** | **0** | **0** | **0** | **260** |

TOTAL TRAFFIC SURVEYS LTD
DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Client: | Worcestershire CC |
| Survey Date: | Thursday 11th November 2021 |
| Survey Period: | 0700-1900 |
| Survey Type: | Manual Classified Counts |
| Comments: | There were no incidents likely to affect the outcome of the surveys. Weather - Dry |




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SITE / LOCATION:** | Worcester Town Centre MCC's | **JOB NO:** | TTS-1320 | **DWG NO:** | TTS-1320-001 | **DRAWN:** | SES |
| **SURVEY DATE:** | Thursday 11th November 2021 | **DWG TITLE:** | Location Plan and Observed Movements | | | | |
| **SURVEY TIMES:** | 0700-1900 | **JOB TITLE:** | Worcester Town Centre MCC's | | | | |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 1

Location: Bridge Street, Worcester

| | Southbound - One way | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | M/C | Cars | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 1 | 3 | 149 | 0 | 50 | 8 | 5 | 5 | 221 |
| 07:15 | 2 | 0 | 235 | 1 | 71 | 10 | 2 | 5 | 326 |
| 07:30 | 5 | 3 | 324 | 9 | 67 | 6 | 4 | 4 | 422 |
| 07:45 | 2 | 1 | 316 | 9 | 80 | 8 | 1 | 8 | 425 |
| H/TOT | 10 | 7 | 1024 | 19 | 268 | 32 | 12 | 22 | 1394 |
| 08:00 | 2 | 3 | 305 | 9 | 55 | 5 | 3 | 5 | 387 |
| 08:15 | 2 | 1 | 333 | 13 | 34 | 3 | 1 | 3 | 390 |
| 08:30 | 1 | 3 | 321 | 8 | 66 | 7 | 0 | 5 | 411 |
| 08:45 | 3 | 0 | 332 | 10 | 56 | 9 | 1 | 2 | 413 |
| H/TOT | 8 | 7 | 1291 | 40 | 211 | 24 | 5 | 15 | 1601 |
| 09:00 | 1 | 2 | 270 | 9 | 65 | 6 | 5 | 8 | 366 |
| 09:15 | 2 | 1 | 240 | 15 | 64 | 10 | 6 | 3 | 341 |
| 09:30 | 1 | 0 | 221 | 9 | 45 | 6 | 0 | 7 | 289 |
| 09:45 | 0 | 3 | 213 | 7 | 47 | 6 | 1 | 3 | 280 |
| H/TOT | 4 | 6 | 944 | 40 | 221 | 28 | 12 | 21 | 1276 |
| 10:00 | 1 | 1 | 199 | 4 | 37 | 5 | 4 | 5 | 256 |
| 10:15 | 0 | 3 | 252 | 6 | 47 | 11 | 2 | 3 | 324 |
| 10:30 | 0 | 7 | 246 | 9 | 50 | 5 | 1 | 9 | 327 |
| 10:45 | 1 | 2 | 248 | 7 | 31 | 4 | 3 | 5 | 301 |
| H/TOT | 2 | 13 | 945 | 26 | 165 | 25 | 10 | 22 | 1208 |
| 11:00 | 0 | 0 | 256 | 4 | 51 | 7 | 5 | 5 | 328 |
| 11:15 | 0 | 3 | 252 | 6 | 44 | 6 | 0 | 4 | 315 |
| 11:30 | 0 | 2 | 273 | 8 | 47 | 8 | 2 | 5 | 345 |
| 11:45 | 2 | 5 | 293 | 3 | 54 | 5 | 1 | 5 | 368 |
| H/TOT | 2 | 10 | 1074 | 21 | 196 | 26 | 8 | 19 | 1356 |
| 12:00 | 1 | 5 | 277 | 8 | 50 | 6 | 3 | 4 | 354 |
| 12:15 | 3 | 5 | 270 | 9 | 45 | 5 | 2 | 6 | 345 |
| 12:30 | 3 | 2 | 276 | 4 | 32 | 5 | 1 | 7 | 330 |
| 12:45 | 2 | 4 | 308 | 9 | 44 | 4 | 1 | 6 | 378 |
| H/TOT | 9 | 16 | 1131 | 30 | 171 | 20 | 7 | 23 | 1407 |
| 13:00 | 5 | 7 | 282 | 2 | 39 | 4 | 1 | 3 | 343 |
| 13:15 | 1 | 4 | 294 | 2 | 42 | 6 | 3 | 3 | 355 |
| 13:30 | 1 | 1 | 276 | 8 | 48 | 8 | 4 | 6 | 352 |
| 13:45 | 3 | 6 | 292 | 5 | 42 | 7 | 1 | 6 | 362 |
| H/TOT | 10 | 18 | 1144 | 17 | 171 | 25 | 9 | 18 | 1412 |
| 14:00 | 3 | 8 | 288 | 4 | 31 | 4 | 3 | 3 | 344 |
| 14:15 | 6 | 5 | 356 | 8 | 45 | 6 | 1 | 5 | 432 |
| 14:30 | 2 | 5 | 323 | 11 | 33 | 3 | 2 | 7 | 386 |
| 14:45 | 3 | 4 | 348 | 11 | 43 | 5 | 2 | 7 | 423 |
| H/TOT | 14 | 22 | 1315 | 34 | 152 | 18 | 8 | 22 | 1585 |
| 15:00 | 1 | 4 | 345 | 20 | 39 | 5 | 2 | 5 | 421 |
| 15:15 | 4 | 5 | 335 | 8 | 43 | 5 | 2 | 7 | 409 |
| 15:30 | 2 | 4 | 356 | 13 | 40 | 5 | 1 | 6 | 427 |
| 15:45 | 2 | 3 | 391 | 8 | 45 | 7 | 0 | 3 | 459 |
| H/TOT | 9 | 16 | 1427 | 49 | 167 | 22 | 5 | 21 | 1716 |
| 16:00 | 6 | 7 | 431 | 3 | 39 | 1 | 2 | 3 | 492 |
| 16:15 | 6 | 6 | 421 | 3 | 49 | 1 | 0 | 5 | 491 |
| 16:30 | 3 | 1 | 434 | 2 | 49 | 2 | 0 | 5 | 496 |
| 16:45 | 2 | 0 | 415 | 0 | 44 | 1 | 2 | 4 | 468 |
| H/TOT | 17 | 14 | 1701 | 8 | 181 | 5 | 4 | 17 | 1947 |
| 17:00 | 1 | 2 | 431 | 0 | 45 | 1 | 0 | 5 | 485 |
| 17:15 | 5 | 5 | 443 | 0 | 30 | 1 | 0 | 5 | 489 |
| 17:30 | 3 | 3 | 415 | 1 | 34 | 0 | 2 | 0 | 458 |
| 17:45 | 3 | 11 | 412 | 0 | 29 | 1 | 0 | 2 | 458 |
| H/TOT | 12 | 21 | 1701 | 1 | 138 | 3 | 2 | 12 | 1890 |
| 18:00 | 4 | 9 | 416 | 1 | 23 | 1 | 0 | 3 | 457 |
| 18:15 | 2 | 7 | 343 | 0 | 21 | 0 | 2 | 2 | 377 |
| 18:30 | 1 | 4 | 323 | 0 | 13 | 0 | 0 | 1 | 342 |
| 18:45 | 0 | 2 | 324 | 0 | 17 | 0 | 2 | 2 | 347 |
| H/TOT | 7 | 22 | 1406 | 1 | 74 | 1 | 4 | 8 | 1523 |
| P/TOT | 104 | 172 | 15103 | 286 | 2115 | 229 | 86 | 220 | 18315 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 2

Location: All Saints Road, Worcester

| | Southbound - One way | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | M/C | Cars | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 1 | 128 | 1 | 30 | 10 | 3 | 8 | 181 |
| 07:15 | 1 | 1 | 193 | 2 | 50 | 9 | 3 | 8 | 267 |
| 07:30 | 1 | 2 | 270 | 5 | 47 | 4 | 2 | 4 | 335 |
| 07:45 | 0 | 2 | 269 | 2 | 48 | 4 | 2 | 10 | 337 |
| H/TOT | 2 | 6 | 860 | 10 | 175 | 27 | 10 | 30 | 1120 |
| 08:00 | 1 | 1 | 288 | 3 | 35 | 2 | 3 | 6 | 339 |
| 08:15 | 1 | 3 | 273 | 6 | 35 | 4 | 0 | 8 | 330 |
| 08:30 | 1 | 2 | 237 | 8 | 39 | 7 | 0 | 7 | 301 |
| 08:45 | 0 | 4 | 229 | 11 | 37 | 8 | 1 | 9 | 299 |
| H/TOT | 3 | 10 | 1027 | 28 | 146 | 21 | 4 | 30 | 1269 |
| 09:00 | 2 | 1 | 240 | 8 | 36 | 8 | 5 | 7 | 307 |
| 09:15 | 1 | 0 | 204 | 11 | 32 | 8 | 3 | 8 | 267 |
| 09:30 | 0 | 2 | 186 | 7 | 34 | 6 | 2 | 7 | 244 |
| 09:45 | 1 | 0 | 198 | 8 | 35 | 6 | 1 | 7 | 256 |
| H/TOT | 4 | 3 | 828 | 34 | 137 | 28 | 11 | 29 | 1074 |
| 10:00 | 1 | 2 | 186 | 3 | 25 | 4 | 3 | 4 | 228 |
| 10:15 | 0 | 3 | 207 | 9 | 38 | 10 | 1 | 4 | 272 |
| 10:30 | 0 | 5 | 177 | 8 | 30 | 9 | 0 | 9 | 238 |
| 10:45 | 0 | 1 | 204 | 5 | 30 | 8 | 3 | 6 | 257 |
| H/TOT | 1 | 11 | 774 | 25 | 123 | 31 | 7 | 23 | 995 |
| 11:00 | 0 | 1 | 182 | 6 | 29 | 9 | 4 | 9 | 240 |
| 11:15 | 0 | 2 | 212 | 6 | 33 | 4 | 1 | 5 | 263 |
| 11:30 | 0 | 3 | 203 | 6 | 29 | 8 | 3 | 7 | 259 |
| 11:45 | 0 | 3 | 188 | 4 | 29 | 5 | 3 | 6 | 238 |
| H/TOT | 0 | 9 | 785 | 22 | 120 | 26 | 11 | 27 | 1000 |
| 12:00 | 1 | 3 | 213 | 8 | 28 | 6 | 3 | 5 | 267 |
| 12:15 | 3 | 2 | 219 | 8 | 27 | 7 | 2 | 9 | 277 |
| 12:30 | 0 | 4 | 237 | 6 | 15 | 4 | 1 | 9 | 276 |
| 12:45 | 1 | 6 | 246 | 6 | 29 | 2 | 3 | 7 | 300 |
| H/TOT | 5 | 15 | 915 | 28 | 99 | 19 | 9 | 30 | 1120 |
| 13:00 | 1 | 5 | 188 | 3 | 31 | 5 | 2 | 7 | 242 |
| 13:15 | 0 | 4 | 230 | 3 | 20 | 6 | 2 | 7 | 272 |
| 13:30 | 1 | 4 | 205 | 7 | 31 | 7 | 2 | 7 | 264 |
| 13:45 | 0 | 7 | 209 | 4 | 39 | 5 | 2 | 6 | 272 |
| H/TOT | 2 | 20 | 832 | 17 | 121 | 23 | 8 | 27 | 1050 |
| 14:00 | 1 | 6 | 220 | 5 | 30 | 7 | 2 | 4 | 275 |
| 14:15 | 0 | 4 | 244 | 6 | 21 | 6 | 1 | 10 | 292 |
| 14:30 | 0 | 2 | 249 | 4 | 25 | 1 | 4 | 8 | 293 |
| 14:45 | 0 | 5 | 262 | 5 | 30 | 3 | 11 | 5 | 321 |
| H/TOT | 1 | 17 | 975 | 20 | 106 | 17 | 18 | 27 | 1181 |
| 15:00 | 1 | 2 | 221 | 6 | 14 | 2 | 1 | 11 | 258 |
| 15:15 | 1 | 4 | 251 | 4 | 29 | 6 | 3 | 7 | 305 |
| 15:30 | 0 | 0 | 319 | 5 | 31 | 3 | 0 | 6 | 364 |
| 15:45 | 0 | 3 | 288 | 6 | 36 | 5 | 0 | 5 | 343 |
| H/TOT | 2 | 9 | 1079 | 21 | 110 | 16 | 4 | 29 | 1270 |
| 16:00 | 2 | 4 | 320 | 2 | 31 | 2 | 1 | 6 | 368 |
| 16:15 | 0 | 2 | 305 | 2 | 20 | 2 | 0 | 9 | 340 |
| 16:30 | 0 | 3 | 354 | 3 | 47 | 1 | 0 | 5 | 413 |
| 16:45 | 0 | 2 | 336 | 1 | 25 | 3 | 0 | 6 | 373 |
| H/TOT | 2 | 11 | 1315 | 8 | 123 | 8 | 1 | 26 | 1494 |
| 17:00 | 0 | 1 | 334 | 1 | 28 | 1 | 0 | 5 | 370 |
| 17:15 | 0 | 2 | 338 | 2 | 17 | 2 | 0 | 10 | 371 |
| 17:30 | 0 | 3 | 338 | 2 | 31 | 0 | 0 | 2 | 376 |
| 17:45 | 0 | 8 | 329 | 1 | 19 | 0 | 0 | 5 | 362 |
| H/TOT | 0 | 14 | 1339 | 6 | 95 | 3 | 0 | 22 | 1479 |
| 18:00 | 0 | 3 | 289 | 0 | 26 | 1 | 0 | 4 | 323 |
| 18:15 | 0 | 8 | 267 | 1 | 9 | 1 | 0 | 4 | 290 |
| 18:30 | 0 | 4 | 252 | 1 | 5 | 0 | 1 | 1 | 264 |
| 18:45 | 0 | 5 | 241 | 2 | 9 | 0 | 0 | 4 | 261 |
| H/TOT | 0 | 20 | 1049 | 4 | 49 | 2 | 1 | 13 | 1138 |
| P/TOT | 22 | 145 | 11778 | 223 | 1404 | 221 | 84 | 313 | 14190 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 3

Location: Lowesmoor, Worcester

| | Eastbound | | | | | | | | | Westbound | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | M/C | Cars | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | M/C | Cars | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 3 | 0 | 48 | 1 | 13 | 0 | 0 | 4 | 69 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 5 | 9 |
| 07:15 | 1 | 1 | 74 | 2 | 23 | 1 | 0 | 3 | 105 | 1 | 0 | 3 | 0 | 1 | 1 | 0 | 5 | 11 |
| 07:30 | 2 | 0 | 71 | 2 | 22 | 0 | 1 | 3 | 101 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 12 |
| 07:45 | 1 | 0 | 69 | 3 | 18 | 3 | 0 | 3 | 97 | 2 | 0 | 7 | 2 | 1 | 0 | 1 | 4 | 17 |
| H/TOT | 7 | 1 | 262 | 8 | 76 | 4 | 1 | 13 | 372 | 7 | 0 | 18 | 2 | 2 | 1 | 1 | 18 | 49 |
| 08:00 | 3 | 0 | 77 | 2 | 13 | 2 | 0 | 4 | 101 | 2 | 1 | 13 | 1 | 1 | 1 | 0 | 5 | 24 |
| 08:15 | 0 | 0 | 74 | 4 | 14 | 2 | 0 | 4 | 98 | 4 | 0 | 12 | 1 | 1 | 1 | 0 | 1 | 20 |
| 08:30 | 0 | 0 | 80 | 6 | 12 | 1 | 0 | 5 | 104 | 1 | 0 | 20 | 0 | 3 | 0 | 0 | 4 | 28 |
| 08:45 | 0 | 0 | 56 | 3 | 13 | 0 | 0 | 9 | 81 | 1 | 0 | 15 | 3 | 4 | 0 | 0 | 2 | 25 |
| H/TOT | 3 | 0 | 287 | 15 | 52 | 5 | 0 | 22 | 384 | 8 | 1 | 60 | 5 | 9 | 2 | 0 | 12 | 97 |
| 09:00 | 1 | 1 | 55 | 3 | 11 | 1 | 0 | 6 | 78 | 1 | 1 | 11 | 4 | 7 | 0 | 0 | 3 | 27 |
| 09:15 | 0 | 0 | 49 | 6 | 13 | 1 | 1 | 6 | 76 | 3 | 0 | 16 | 1 | 5 | 0 | 0 | 4 | 29 |
| 09:30 | 0 | 0 | 42 | 1 | 11 | 0 | 0 | 5 | 59 | 1 | 0 | 5 | 0 | 2 | 0 | 0 | 6 | 14 |
| 09:45 | 0 | 0 | 49 | 8 | 9 | 1 | 0 | 5 | 72 | 0 | 0 | 8 | 3 | 0 | 0 | 1 | 3 | 15 |
| H/TOT | 1 | 1 | 195 | 18 | 44 | 3 | 1 | 22 | 285 | 5 | 1 | 40 | 8 | 14 | 0 | 1 | 16 | 85 |
| 10:00 | 0 | 0 | 39 | 3 | 16 | 2 | 0 | 3 | 63 | 0 | 0 | 11 | 0 | 1 | 0 | 0 | 3 | 15 |
| 10:15 | 1 | 0 | 38 | 8 | 13 | 1 | 0 | 5 | 66 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 5 | 15 |
| 10:30 | 2 | 0 | 48 | 3 | 13 | 1 | 1 | 5 | 73 | 0 | 0 | 7 | 2 | 3 | 0 | 0 | 5 | 17 |
| 10:45 | 0 | 1 | 56 | 7 | 16 | 0 | 0 | 7 | 87 | 1 | 0 | 10 | 2 | 3 | 0 | 0 | 2 | 18 |
| H/TOT | 3 | 1 | 181 | 21 | 58 | 4 | 1 | 20 | 289 | 1 | 0 | 37 | 4 | 8 | 0 | 0 | 15 | 65 |
| 11:00 | 1 | 0 | 46 | 10 | 12 | 2 | 0 | 2 | 73 | 0 | 0 | 15 | 1 | 3 | 0 | 0 | 5 | 24 |
| 11:15 | 0 | 0 | 45 | 5 | 17 | 2 | 0 | 6 | 75 | 1 | 0 | 7 | 1 | 3 | 0 | 0 | 6 | 18 |
| 11:30 | 0 | 1 | 50 | 12 | 9 | 0 | 0 | 2 | 74 | 1 | 0 | 17 | 3 | 3 | 0 | 0 | 3 | 27 |
| 11:45 | 1 | 0 | 42 | 6 | 11 | 0 | 0 | 5 | 65 | 2 | 2 | 17 | 3 | 3 | 0 | 0 | 6 | 33 |
| H/TOT | 2 | 1 | 183 | 33 | 49 | 4 | 0 | 15 | 287 | 4 | 2 | 56 | 8 | 12 | 0 | 0 | 20 | 102 |
| 12:00 | 3 | 2 | 50 | 4 | 14 | 2 | 0 | 5 | 80 | 1 | 0 | 9 | 1 | 1 | 1 | 0 | 3 | 16 |
| 12:15 | 0 | 0 | 43 | 4 | 11 | 2 | 0 | 3 | 63 | 1 | 0 | 21 | 5 | 1 | 1 | 0 | 3 | 32 |
| 12:30 | 0 | 0 | 60 | 7 | 10 | 0 | 0 | 4 | 81 | 3 | 0 | 13 | 3 | 0 | 0 | 0 | 8 | 27 |
| 12:45 | 0 | 0 | 47 | 6 | 7 | 3 | 0 | 9 | 72 | 0 | 0 | 20 | 1 | 3 | 0 | 0 | 3 | 27 |
| H/TOT | 3 | 2 | 200 | 21 | 42 | 7 | 0 | 21 | 296 | 5 | 0 | 63 | 10 | 5 | 2 | 0 | 17 | 102 |
| 13:00 | 2 | 1 | 43 | 6 | 11 | 1 | 0 | 2 | 66 | 0 | 0 | 23 | 1 | 3 | 0 | 0 | 3 | 30 |
| 13:15 | 2 | 1 | 48 | 11 | 10 | 4 | 0 | 3 | 79 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 6 | 15 |
| 13:30 | 2 | 0 | 39 | 2 | 14 | 0 | 0 | 6 | 63 | 1 | 2 | 12 | 0 | 2 | 0 | 0 | 5 | 22 |
| 13:45 | 2 | 1 | 38 | 6 | 14 | 0 | 0 | 3 | 64 | 1 | 1 | 15 | 0 | 0 | 0 | 0 | 2 | 19 |
| H/TOT | 8 | 3 | 168 | 25 | 49 | 5 | 0 | 14 | 272 | 2 | 3 | 59 | 1 | 5 | 0 | 0 | 16 | 86 |
| 14:00 | 4 | 1 | 38 | 2 | 11 | 4 | 1 | 3 | 64 | 4 | 0 | 9 | 0 | 1 | 0 | 0 | 5 | 19 |
| 14:15 | 0 | 1 | 50 | 6 | 9 | 1 | 0 | 4 | 71 | 5 | 0 | 17 | 1 | 3 | 0 | 1 | 3 | 30 |
| 14:30 | 0 | 1 | 51 | 7 | 12 | 1 | 0 | 3 | 75 | 4 | 0 | 16 | 0 | 2 | 1 | 0 | 5 | 28 |
| 14:45 | 2 | 4 | 36 | 5 | 4 | 2 | 0 | 4 | 57 | 0 | 0 | 15 | 0 | 1 | 0 | 0 | 5 | 21 |
| H/TOT | 6 | 7 | 175 | 20 | 36 | 8 | 1 | 14 | 267 | 13 | 0 | 57 | 1 | 7 | 1 | 1 | 18 | 98 |
| 15:00 | 4 | 0 | 50 | 5 | 6 | 0 | 0 | 5 | 70 | 1 | 0 | 19 | 0 | 3 | 0 | 0 | 1 | 24 |
| 15:15 | 1 | 0 | 37 | 2 | 11 | 0 | 0 | 2 | 53 | 2 | 0 | 6 | 0 | 0 | 0 | 1 | 5 | 14 |
| 15:30 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 4 | 8 | 0 | 0 | 13 | 1 | 1 | 0 | 0 | 12 | 27 |
| 15:45 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 6 | 11 | 2 | 0 | 6 | 0 | 3 | 0 | 0 | 2 | 13 |
| H/TOT | 8 | 0 | 92 | 8 | 17 | 0 | 0 | 17 | 142 | 5 | 0 | 44 | 1 | 7 | 0 | 1 | 20 | 78 |
| 16:00 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 10 | 1 | 0 | 12 | 2 | 0 | 0 | 0 | 2 | 17 |
| 16:15 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 8 | 0 | 0 | 11 | 1 | 1 | 0 | 0 | 3 | 16 |
| 16:30 | 5 | 0 | 4 | 0 | 1 | 0 | 0 | 9 | 19 | 4 | 1 | 13 | 0 | 1 | 0 | 0 | 4 | 23 |
| 16:45 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 12 | 5 | 0 | 13 | 0 | 0 | 0 | 0 | 2 | 20 |
| H/TOT | 11 | 0 | 15 | 0 | 1 | 0 | 0 | 22 | 49 | 10 | 1 | 49 | 3 | 2 | 0 | 0 | 11 | 76 |
| 17:00 | 3 | 0 | 4 | 1 | 1 | 0 | 0 | 3 | 12 | 4 | 0 | 19 | 1 | 1 | 0 | 0 | 4 | 29 |
| 17:15 | 6 | 0 | 3 | 0 | 1 | 0 | 0 | 4 | 14 | 1 | 0 | 15 | 0 | 2 | 0 | 0 | 2 | 20 |
| 17:30 | 6 | 0 | 9 | 0 | 0 | 0 | 0 | 4 | 19 | 2 | 1 | 26 | 1 | 0 | 0 | 0 | 5 | 35 |
| 17:45 | 1 | 0 | 6 | 0 | 1 | 0 | 0 | 7 | 15 | 1 | 0 | 17 | 2 | 2 | 0 | 0 | 3 | 25 |
| H/TOT | 16 | 0 | 22 | 1 | 3 | 0 | 0 | 18 | 60 | 8 | 1 | 77 | 4 | 5 | 0 | 0 | 14 | 109 |
| 18:00 | 3 | 0 | 6 | 0 | 1 | 0 | 0 | 7 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 4 | 21 |
| 18:15 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 18 | 1 | 1 | 19 | 0 | 6 | 0 | 0 | 3 | 30 |
| 18:30 | 0 | 1 | 45 | 3 | 2 | 0 | 0 | 6 | 57 | 1 | 1 | 23 | 3 | 1 | 0 | 0 | 3 | 32 |
| 18:45 | 0 | 0 | 55 | 2 | 4 | 0 | 0 | 7 | 68 | 1 | 0 | 21 | 1 | 0 | 0 | 0 | 3 | 26 |
| H/TOT | 5 | 1 | 114 | 5 | 7 | 0 | 0 | 28 | 160 | 3 | 2 | 80 | 4 | 7 | 0 | 0 | 13 | 109 |
| P/TOT | 73 | 17 | 1894 | 175 | 434 | 40 | 4 | 226 | 2863 | 71 | 11 | 640 | 51 | 83 | 6 | 4 | 190 | 1056 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | A - B | | | | | | | | | A - C | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| P/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

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|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | A - D | | | | | | | | | A - A | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 3 | 0 | 0 | 0 | 3 | 1 | 0 | 8 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 1 | 3 | 2 | 0 | 0 | 11 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 13 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 10 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P/TOT | 25 | 0 | 2 | 6 | 6 | 2 | 0 | 101 | 142 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

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| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | B - C | | | | | | | | | B - D | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 12 | 14 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 13 | 17 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 6 | 9 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 9 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 2 | 1 | 0 | 38 | 49 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 7 | 11 |
| 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 4 | 10 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 9 | 14 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 8 | 13 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 4 | 6 | 1 | 2 | 1 | 28 | 48 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 1 | 0 | 0 | 11 | 17 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 9 | 15 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 5 | 0 | 0 | 0 | 6 | 14 |
| 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 7 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 14 | 1 | 0 | 0 | 32 | 53 |
| 10:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 5 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 7 | 10 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 9 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 7 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 23 | 31 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 5 | 9 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 7 | 11 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 7 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 9 | 12 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 10 | 2 | 0 | 0 | 25 | 39 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 4 | 8 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 5 | 8 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 1 | 0 | 0 | 11 | 19 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 6 | 9 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 10 | 2 | 0 | 0 | 26 | 44 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 5 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 8 | 10 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 5 | 13 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 5 | 10 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 14 | 0 | 0 | 0 | 20 | 38 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 6 | 11 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 11 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 7 | 12 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 7 | 1 | 0 | 0 | 23 | 39 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 5 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 6 | 10 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 14 | 20 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 9 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 13 | 0 | 0 | 0 | 29 | 44 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 7 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 7 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 9 | 16 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 8 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 7 | 0 | 0 | 0 | 25 | 38 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 3 | 0 | 0 | 0 | 4 | 11 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 0 | 0 | 0 | 5 | 11 |
| 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 7 | 11 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 6 | 11 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 7 | 10 | 0 | 0 | 0 | 22 | 44 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 5 | 13 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 5 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 3 | 0 | 0 | 0 | 6 | 15 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 6 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 10 | 7 | 0 | 0 | 0 | 17 | 39 |
| P/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 41 | 0 | 34 | 109 | 9 | 4 | 1 | 308 | 506 |

TOTAL TRAFFIC SURVEYS LTD
DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | B - A | | | | | | | | | B - B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 28 | 3 | 6 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 54 | 4 | 17 | 4 | 0 | 0 | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 1 | 1 | 46 | 2 | 9 | 2 | 0 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 1 | 0 | 85 | 5 | 8 | 2 | 0 | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 2 | 1 | 213 | 14 | 40 | 8 | 0 | 0 | 278 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 3 | 2 | 88 | 7 | 8 | 2 | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 2 | 1 | 87 | 4 | 9 | 0 | 0 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 72 | 7 | 20 | 1 | 0 | 1 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 0 | 1 | 89 | 3 | 14 | 0 | 0 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 5 | 4 | 336 | 21 | 51 | 3 | 0 | 1 | 421 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 2 | 78 | 7 | 13 | 3 | 0 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 0 | 0 | 77 | 5 | 14 | 3 | 1 | 1 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 1 | 65 | 6 | 10 | 3 | 0 | 0 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 0 | 0 | 69 | 4 | 8 | 3 | 0 | 2 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 3 | 289 | 22 | 45 | 12 | 1 | 3 | 375 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 5 | 57 | 5 | 10 | 2 | 0 | 1 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 63 | 7 | 14 | 4 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 1 | 66 | 4 | 8 | 5 | 1 | 1 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 0 | 1 | 65 | 9 | 12 | 1 | 2 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 7 | 251 | 25 | 44 | 12 | 3 | 2 | 344 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 1 | 63 | 4 | 14 | 4 | 0 | 0 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 2 | 70 | 2 | 15 | 4 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 1 | 1 | 70 | 5 | 11 | 0 | 0 | 1 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 2 | 93 | 3 | 5 | 0 | 0 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 6 | 296 | 14 | 45 | 8 | 0 | 1 | 371 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 1 | 1 | 77 | 4 | 8 | 1 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 1 | 4 | 66 | 5 | 13 | 2 | 0 | 0 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 2 | 71 | 4 | 8 | 1 | 1 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 2 | 2 | 67 | 2 | 9 | 0 | 0 | 0 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 4 | 9 | 281 | 15 | 38 | 4 | 1 | 0 | 352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 77 | 5 | 5 | 1 | 0 | 1 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 2 | 79 | 1 | 4 | 4 | 0 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 1 | 63 | 4 | 9 | 1 | 0 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 1 | 1 | 73 | 8 | 9 | 1 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 4 | 292 | 18 | 27 | 7 | 0 | 1 | 350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 1 | 5 | 68 | 1 | 8 | 0 | 1 | 0 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 1 | 82 | 4 | 5 | 2 | 0 | 1 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 2 | 1 | 72 | 4 | 8 | 0 | 0 | 1 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 1 | 71 | 4 | 7 | 1 | 0 | 0 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 3 | 8 | 293 | 13 | 28 | 3 | 1 | 2 | 351 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 1 | 0 | 74 | 2 | 5 | 2 | 1 | 0 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 1 | 2 | 68 | 2 | 8 | 0 | 0 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 0 | 0 | 64 | 3 | 6 | 1 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 1 | 3 | 54 | 3 | 6 | 0 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 3 | 5 | 260 | 10 | 25 | 3 | 1 | 0 | 307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 0 | 1 | 45 | 3 | 6 | 0 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 1 | 4 | 71 | 4 | 0 | 0 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 2 | 0 | 56 | 3 | 13 | 1 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 1 | 0 | 43 | 0 | 5 | 0 | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 4 | 5 | 215 | 10 | 24 | 1 | 0 | 0 | 259 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 1 | 0 | 45 | 1 | 3 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 2 | 2 | 58 | 1 | 6 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 1 | 3 | 83 | 0 | 7 | 0 | 0 | 1 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 1 | 1 | 69 | 4 | 5 | 0 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 5 | 6 | 255 | 6 | 21 | 0 | 0 | 1 | 294 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 3 | 71 | 1 | 5 | 1 | 0 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15 | 1 | 6 | 81 | 5 | 0 | 0 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 2 | 99 | 3 | 3 | 0 | 0 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 1 | 0 | 93 | 2 | 6 | 0 | 0 | 0 | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 2 | 11 | 344 | 11 | 14 | 1 | 0 | 0 | 383 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P/TOT | 30 | 69 | 3325 | 179 | 402 | 62 | 7 | 11 | 4085 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

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| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | C - D | | | | | | | | | C - A | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 3 | 0 | 2 | 3 | 0 | 0 | 11 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 2 | 8 | 1 | 0 | 0 | 15 |
| 07:30 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 9 | 4 | 4 | 1 | 0 | 0 | 20 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 2 | 6 | 1 | 0 | 0 | 19 |
| H/TOT | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 3 | 6 | 0 | 25 | 8 | 20 | 6 | 0 | 0 | 65 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 2 | 1 | 0 | 0 | 0 | 10 |
| 08:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 7 | 4 | 4 | 2 | 0 | 0 | 20 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 6 | 2 | 7 | 0 | 0 | 0 | 16 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 7 | 1 | 0 | 0 | 16 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 5 | 0 | 24 | 11 | 19 | 3 | 0 | 0 | 62 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 8 | 9 | 1 | 0 | 0 | 41 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 6 | 4 | 1 | 0 | 0 | 30 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 21 | 6 | 10 | 0 | 0 | 0 | 38 |
| 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 4 | 12 | 1 | 0 | 0 | 33 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 78 | 24 | 35 | 3 | 0 | 0 | 142 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 24 | 6 | 4 | 3 | 0 | 0 | 38 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 18 | 5 | 1 | 0 | 0 | 0 | 26 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 5 | 9 | 1 | 0 | 0 | 34 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 32 | 6 | 7 | 0 | 0 | 0 | 47 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 93 | 22 | 21 | 4 | 0 | 0 | 145 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 9 | 2 | 0 | 0 | 0 | 29 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 6 | 2 | 0 | 0 | 0 | 36 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 9 | 4 | 1 | 0 | 0 | 35 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 23 | 8 | 4 | 1 | 0 | 0 | 38 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 90 | 32 | 12 | 2 | 0 | 0 | 138 |
| 12:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 28 | 1 | 3 | 0 | 0 | 0 | 33 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 5 | 2 | 0 | 0 | 0 | 26 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 10 | 5 | 0 | 0 | 0 | 33 |
| 12:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 19 | 5 | 4 | 1 | 0 | 0 | 31 |
| H/TOT | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 83 | 21 | 14 | 1 | 0 | 0 | 123 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 4 | 3 | 0 | 0 | 0 | 28 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 26 | 7 | 3 | 0 | 0 | 0 | 37 |
| 13:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 16 | 8 | 1 | 2 | 0 | 0 | 28 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 6 | 4 | 0 | 0 | 0 | 30 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 83 | 25 | 11 | 2 | 0 | 0 | 123 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 17 | 6 | 2 | 0 | 0 | 0 | 26 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 19 | 6 | 6 | 0 | 0 | 0 | 34 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 18 | 9 | 2 | 0 | 0 | 0 | 31 |
| 14:45 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 15 | 3 | 2 | 0 | 0 | 0 | 21 |
| H/TOT | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 2 | 69 | 24 | 12 | 0 | 0 | 0 | 112 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 15 | 4 | 2 | 0 | 0 | 0 | 25 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 23 | 5 | 1 | 0 | 0 | 0 | 30 |
| 15:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 17 | 4 | 2 | 0 | 0 | 0 | 25 |
| 15:45 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 12 | 4 | 3 | 0 | 0 | 0 | 20 |
| H/TOT | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 6 | 2 | 67 | 17 | 8 | 0 | 0 | 0 | 100 |
| 16:00 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 11 | 7 | 2 | 0 | 0 | 0 | 20 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 15 | 4 | 3 | 0 | 0 | 0 | 26 |
| 16:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 14 | 1 | 7 | 0 | 0 | 0 | 24 |
| 16:45 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 13 | 5 | 0 | 0 | 0 | 0 | 19 |
| H/TOT | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 7 | 0 | 53 | 17 | 12 | 0 | 0 | 0 | 89 |
| 17:00 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 16 | 1 | 2 | 0 | 0 | 0 | 20 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 18 | 2 | 2 | 0 | 0 | 0 | 27 |
| 17:30 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 19 | 2 | 4 | 0 | 0 | 0 | 26 |
| 17:45 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 15 | 1 | 1 | 0 | 0 | 0 | 19 |
| H/TOT | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 6 | 9 | 0 | 68 | 6 | 9 | 0 | 0 | 0 | 92 |
| 18:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 14 | 4 | 2 | 0 | 0 | 0 | 22 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 12 | 4 | 2 | 0 | 0 | 0 | 19 |
| 18:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 27 | 4 | 2 | 0 | 0 | 0 | 36 |
| 18:45 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 20 | 2 | 3 | 0 | 0 | 0 | 28 |
| H/TOT | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 2 | 73 | 14 | 9 | 0 | 0 | 0 | 105 |
| P/TOT | 10 | 1 | 1 | 6 | 5 | 2 | 0 | 0 | 25 | 53 | 13 | 806 | 221 | 182 | 21 | 0 | 0 | 1296 |

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION

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|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | C - B | | | | | | | | | C - C | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

TOTAL TRAFFIC SURVEYS LTD
DATA COLLECTION

| | |
|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

| | D - A | | | | | | | | | D - B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| P/TOT | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |

TOTAL TRAFFIC SURVEYS LTD
DATA COLLECTION

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|---|---|
| Job Title: | Worcester Town Centre MCC's |
| Job Number: | TTS-1320-Nov |
| Survey Date: | Thursday 11th November 2021 |
| Survey Type: | Manual Classified Counts |

Site: 4

Location: The Cross/The Foregate - 4 arm T/Signal Crossroads

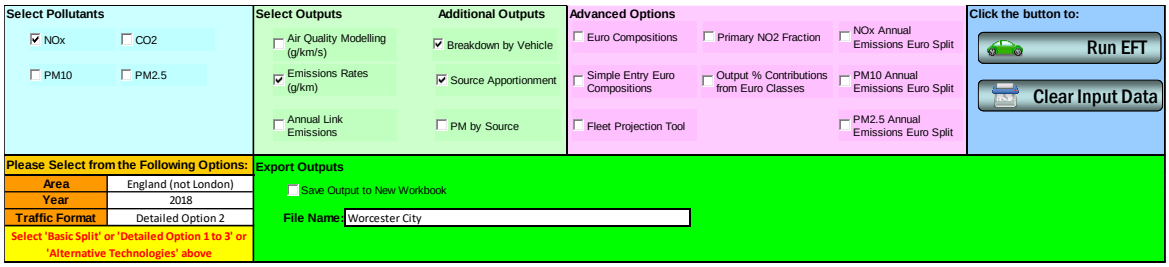
| | D - C | | | | | | | | | D - D | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT | PC | MC | Car | Taxi | LGV | OGV1 | OGV2 | PSV | TOT |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H/TOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P/TOT | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
|---|---|---|---|---|---|---|---|---|
| The Tything | 124 | 13887 | 435 | 1814 | 265 | 122 | 249 | 16896 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 153 | 17081 | 1001 | 2231 | 326 | 150 | 306 | 21248 |
| | | | | | | | | |
| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
| Foregate Street | 38 | 3802 | 327 | 514 | 65 | 31 | 202 | 4979 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 47 | 4676 | 752 | 632 | 80 | 38 | 248 | 6474 |
| | | | | | | | | |
| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
| Butts | 39 | 4106 | 260 | 617 | 64 | 25 | 562 | 5673 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 48 | 5050 | 598 | 759 | 79 | 31 | 691 | 7256 |
| | | | | | | | | |
| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
| Bridge St | 172 | 15103 | 286 | 2115 | 229 | 86 | 220 | 18211 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 212 | 18577 | 658 | 2601 | 282 | 106 | 271 | 22706 |
| | | | | | | | | |
| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
| All Saints Road | 145 | 11778 | 223 | 1404 | 221 | 84 | 313 | 14168 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 178 | 14487 | 513 | 1727 | 272 | 103 | 385 | 17665 |
| | | | | | | | | |
| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
| Lowesmoor | 28 | 2534 | 226 | 517 | 46 | 8 | 416 | 3775 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 34 | 3117 | 520 | 636 | 57 | 10 | 512 | 4885 |
| | | | | | | | | |
| Site ID | MC | CARS | TAXIS | LGV | OGV1 | OGV2 | PSV | TOTAL |
| The Cross | 83 | 4169 | 521 | 604 | 91 | 8 | 420 | 5896 |
| Scale Factor | 1.23 | 1.23 | 2.3 | 1.23 | 1.23 | 1.23 | 1.23 | |
| Total | 102 | 5128 | 1198 | 743 | 112 | 10 | 517 | 7810 |

# Table B2: Traffic speed data

| Location | Average Speed |
|---|---|
| Butts | 10.29 |
| Butts + Shaw Street | 15.67 |
| Cross | 8.80 |
| The Foregate | 17.41 |
| Foregate St | 17.23 |
| Tything N | 19.24 |
| Upper Tything N | 19.57 |
| Barborne Rd N | 24.88 |
| Barborne Rd S | 29.95 |
| Upper Tything S | 31.22 |
| Tything S | 18.46 |
| Barborne Rd N&S | 27.41 |
| Upper Tything N&S | 25.40 |
| Tything N&S | 18.85 |
| **Average** | **20.31** |

# Table B4: Emission Factor Toolkit v8.01 Input




| SourceID | Road Type | Traffic Flow | % Car | % Taxi (black cab) | % LGV | % Rigid HGV |
|---|---|---|---|---|---|---|
| Bridge St | Urban (not London) | 22707 | 82.34 | 2.36 | 11.46 | 1.24 |
| All Saints Road | Urban (not London) | 17665 | 82.54 | 2.37 | 9.78 | 1.54 |
| Lowesmoor | Urban (not London) | 4886 | 65.74 | 8.7 | 13.02 | 1.17 |
| The Cross | Urban (not London) | 15620 | 68.48 | 12.53 | 9.51 | 1.43 |
| The Tything | Urban (not London) | 21248 | 81.25 | 3.85 | 10.5 | 1.53 |
| Foregate Street | Urban (not London) | 6473 | 74.37 | 9.49 | 9.76 | 1.24 |
| The Butts | Urban (not London) | 7256 | 71.11 | 6.73 | 10.46 | 1.09 |

| % Artic HGV | % Bus and Coach | % Motorcycle | Speed(kph) | No of Hours | Link Length (km) | % Gradient | Flow Direction | % Load |
|---|---|---|---|---|---|---|---|---|
| 0.47 | 1.19 | 0.94 | 13 | 24 | | | | |
| 0.58 | 2.18 | 1.01 | 13 | 24 | | | | |
| 0.2 | 10.47 | 0.7 | 13 | 24 | | | | |
| 0.13 | 6.61 | 1.31 | 10 | 24 | | | | |
| 0.71 | 1.44 | 0.72 | 19 | 24 | | | | |
| 0.59 | 3.82 | 0.73 | 17 | 24 | | | | |
| 0.43 | 9.52 | 0.66 | 13 | 24 | | | | |

# Table B5: Emission Factor Toolkit v8.01 Output

| Source Name | Pollutant Name | All Vehicles (g/km) | All LDVs (g/km) | All HDVs (g/km) | Petrol Cars (g/km) | Diesel Cars (g/km) | Taxis (g/km) | Petrol LGVs (g/km) | Diesel LGVs (g/km) |
|---|---|---|---|---|---|---|---|---|---|
| Bridge St | NOx | 14,425.67511 | 10,737.10383 | 3,688.57128 | 903.33926 | 6,258.00224 | 619.04389 | 3.61483 | 2,897.99994 |
| All Saints Road | NOx | 12,522.89922 | 8,038.95112 | 4,483.94810 | 704.46329 | 4,880.26267 | 483.62825 | 2.39992 | 1,924.00631 |
| Lowesmoor | NOx | 6,538.06337 | 2,439.89869 | 4,098.16469 | 155.18989 | 1,075.09849 | 491.04624 | 0.88371 | 708.46507 |
| The Cross | NOx | 19,247.43933 | 8,722.23639 | 10,525.20294 | 537.25845 | 3,879.09080 | 2,460.78590 | 2.11535 | 1,800.22437 |
| The Tything | NOx | 12,151.10158 | 8,989.51148 | 3,161.59010 | 777.48545 | 5,090.53681 | 848.43855 | 2.97270 | 2,228.86474 |
| Foregate Street | NOx | 4,899.47427 | 3,018.04167 | 1,881.43260 | 221.72319 | 1,475.88773 | 656.57392 | 0.85264 | 650.68771 |
| The Butts | NOx | 9,017.14375 | 3,400.78731 | 5,616.35644 | 249.29193 | 1,727.00281 | 564.10768 | 1.05432 | 845.24567 |

| Rigid HGVs (g/km) | Artic HGVs (g/km) | Buses/Coaches (g/km) | Motorcycles (g/km) | Full Hybrid Petrol Cars (g/km) | Plug-In Hybrid Petrol Cars (g/km) | Full Hybrid Diesel Cars (g/km) |
|---|---|---|---|---|---|---|
| 1,238.07002 | 439.85659 | 1,989.70480 | 21.74110 | 10.88316 | 2.40317 | 20.07625 |
| 1,196.18437 | 422.27476 | 2,835.64632 | 18.17309 | 8.48716 | 1.87410 | 15.65633 |
| 251.36400 | 40.27513 | 3,766.88248 | 3.48374 | 1.86968 | 0.41285 | 3.44902 |
| 1,172.30206 | 104.25076 | 9,151.18845 | 22.33060 | 6.51113 | 1.43683 | 12.48296 |
| 1,059.41958 | 442.77205 | 1,641.95432 | 13.57481 | 9.27402 | 2.05077 | 16.31364 |
| 285.92426 | 124.09741 | 1,455.93003 | 4.34811 | 2.65274 | 0.58628 | 4.72934 |
| 347.76633 | 128.59356 | 5,086.46604 | 4.87792 | 3.00339 | 0.66320 | 5.54038 |

| CNG Buses (g/km) | Biomethane Buses (g/km) | Biogas Buses (g/km) | Hybrid Buses (g/km) | FCEV Buses (g/km) | B100 Coaches (g/km) |
|---|---|---|---|---|---|
| 0.33932 | - | - | 20.60055 | - | - |
| 0.48358 | - | - | 29.35906 | - | - |
| 0.64239 | - | - | 39.00068 | - | - |
| 1.29652 | - | - | 96.16516 | - | - |
| 0.38422 | - | - | 17.05993 | - | - |
| 0.31050 | - | - | 15.17040 | - | - |
| 0.86743 | - | - | 52.66308 | - | - |

| All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Taxis (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 74.4% | 25.6% | 6.3% | 43.4% | 4.3% | 0.0% | 20.1% | 8.6% | 3.0% | 13.8% | 0.2% | 0.1% | 0.0% | 0.1% |
| 64.2% | 35.8% | 5.6% | 39.0% | 3.9% | 0.0% | 15.4% | 9.6% | 3.4% | 22.6% | 0.1% | 0.1% | 0.0% | 0.1% |
| 37.3% | 62.7% | 2.4% | 16.4% | 7.5% | 0.0% | 10.8% | 3.8% | 0.6% | 57.6% | 0.1% | 0.0% | 0.0% | 0.1% |
| 45.3% | 54.7% | 2.8% | 20.2% | 12.8% | 0.0% | 9.4% | 6.1% | 0.5% | 47.5% | 0.1% | 0.0% | 0.0% | 0.1% |
| 74.0% | 26.0% | 6.4% | 41.9% | 7.0% | 0.0% | 18.3% | 8.7% | 3.6% | 13.5% | 0.1% | 0.1% | 0.0% | 0.1% |
| 61.6% | 38.4% | 4.5% | 30.1% | 13.4% | 0.0% | 13.3% | 5.8% | 2.5% | 29.7% | 0.1% | 0.1% | 0.0% | 0.1% |
| 37.7% | 62.3% | 2.8% | 19.2% | 6.3% | 0.0% | 9.4% | 3.9% | 1.4% | 56.4% | 0.1% | 0.0% | 0.0% | 0.1% |

| CNG Buses (%) | Biomethane Buses (%) | Biogas Buses (%) | Hybrid Buses (%) | FCEV Buses (%) | B100 Coaches (%) |
|---|---|---|---|---|---|
| 0.0% | - | - | 0.1% | - | - |
| 0.0% | - | - | 0.2% | - | - |
| 0.0% | - | - | 0.6% | - | - |
| 0.0% | - | - | 0.5% | - | - |
| 0.0% | - | - | 0.1% | - | - |
| 0.0% | - | - | 0.3% | - | - |
| 0.0% | - | - | 0.6% | - | - |

# Appendix C – Source Apportionment calculations

## Tables C1 to 8: The local contribution apportioned to vehicle class at each monitoring location (calculated in accordance with LAQM.TG16 Box 7.5)

| Box 7.5 calculation – Tyn | Local Source (%) | $NO_2$ µg/m$^3$ | Total (%) |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **47.21** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.62 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 18.45 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 12.35 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 6.10 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **9.12** | 19.32% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.50** | 9.53% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **33.59** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 6.39% | 2.15 | |
| Diesel Cars | 41.89% | 14.07 | |
| Hybrid Cars | 0.19% | 0.07 | |
| **Total cars** | **48.47%** | **16.29** | **34.51%** |
| **Taxis** | **6.99%** | **2.35** | **4.98%** |
| Petrol LGVs | 0.10% | 0.03 | |
| Diesel LGVs | 18.29% | 6.15 | |
| **Total LGVs** | **18.39%** | **6.18** | **13.09%** |
| **HGVs** | **12.38%** | **4.16** | **8.82%** |
| **Buses/Coaches** | **13.69%** | **4.60** | **9.75%** |
| **Motorcycles** | **0.09%** | **0.03** | **0.07%** |
| **Total vehicles** | **100%** | **33.59** | **100%** |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – Fos | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **48.51** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.62 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 18.45 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 12.35 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 6.10 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **9.12** | 18.82% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.50** | 9.29% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **34.89** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 4.53% | 1.58 | |
| Diesel Cars | 30.12% | 10.51 | |
| Hybrid Cars | 0.07% | 0.02 | |
| **Total cars** | **34.72%** | **12.11** | 24.95% |
| **Taxis** | 13.41% | **4.68** | 9.64% |
| Petrol LGVs | 0.02% | 0.01 | |
| Diesel LGVs | 13.30% | 4.64 | |
| **Total LGVs** | **13.32%** | **4.65** | 9.58% |
| **HGVs** | **8.37%** | **2.92** | 6.03% |
| **Buses/Coaches** | **30.08%** | **10.49** | 21.60% |
| **Motorcycles** | **0.09%** | **0.03** | 0.06% |
| **Total vehicles** | **100%** | **34.88** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – Fos2 | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **35.81** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.62 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 18.45 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 12.35 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 6.10 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **9.12** | 25.49% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.50** | 12.58% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **22.19** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 4.53% | 1.01 | |
| Diesel Cars | 30.12% | 6.68 | |
| Hybrid Cars | 0.07% | 0.02 | |
| **Total cars** | **34.72%** | **12.11** | 21.50% |
| **Taxis** | 13.41% | **2.98** | 8.31% |
| Petrol LGVs | 0.02% | 0.00 | |
| Diesel LGVs | 13.30% | 2.95 | |
| **Total LGVs** | **13.32%** | **2.95** | 8.25% |
| **HGVs** | **8.37%** | **1.86** | 5.19% |
| **Buses/Coaches** | **30.08%** | **6.67** | 18.62% |
| **Motorcycles** | **0.09%** | **0.02** | 0.06% |
| **Total vehicles** | **100%** | **22.19** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – But2 | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **52.43** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.62 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 18.45 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 12.35 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 6.10 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **9.12** | 17.39% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.50** | 8.58% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **38.81** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 2.76% | 1.07 | |
| Diesel Cars | 19.15% | 7.43 | |
| Hybrid Cars | 0.04% | 0.02 | |
| **Total cars** | **21.95%** | **8.52** | 16.25% |
| **Taxis** | 6.26% | **2.43** | 4.63% |
| Petrol LGVs | 0.04% | 0.02 | |
| Diesel LGVs | 9.37% | 3.64 | |
| **Total LGVs** | **9.41%** | **3.66** | 6.96% |
| **HGVs** | **5.29%** | **2.05** | 3.92% |
| **Buses/Coaches** | **57.03%** | **22.13** | 42.21% |
| **Motorcycles** | **0.05%** | **0.02** | 0.04% |
| **Total vehicles** | | | |
| | **100%** | **38.81** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – BRS2 | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **47.70** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.12 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 17.65 | |
| RB-Nox (Regional Background nitrous oxides[1]) | | 11.34 | |
| Step 1: LB-Nox[2] = TB-Nox – RB-Nox | | 6.31 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-Nox / TB-Nox) | | **8.43** | 17.67% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-Nox / TB-Nox) | | **4.69** | 9.83% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **34.58** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 4.53% | 2.16 | |
| Diesel Cars | 30.12% | 15.00 | |
| Hybrid Cars | 0.07% | 0.08 | |
| **Total cars** | **34.72%** | **17.24** | 36.16% |
| **Taxis** | 13.41% | **1.48** | 3.11% |
| Petrol LGVs | 0.02% | 0.01 | |
| Diesel LGVs | 13.30% | 6.95 | |
| **Total LGVs** | **13.32%** | **6.96** | 14.59% |
| **HGVs** | **8.37%** | **4.02** | 8.43% |
| **Buses/Coaches** | **30.08%** | **4.82** | 10.10% |
| **Motorcycles** | **0.09%** | **0.05** | 0.11% |
| **Total vehicles** | **100%** | **34.57** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – Bkc | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **46.94** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.62 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 18.45 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 12.35 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 6.10 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **9.12** | 19.40% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.50** | 9.58% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **33.32** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 2.79% | 0.93 | |
| Diesel Cars | 20.15% | 6.71 | |
| Hybrid Cars | 0.10% | 0.03 | |
| **Total cars** | **23.04%** | **7.67** | 16.39% |
| **Taxis** | 12.79% | **4.26** | 9.07% |
| Petrol LGVs | 0.01% | 0.01 | |
| Diesel LGVs | 9.36% | 3.12 | |
| **Total LGVs** | **9.37%** | **3.13** | 6.66% |
| **HGVs** | **6.60%** | **2.20** | 4.69% |
| **Buses/Coaches** | **48.10%** | **16.03** | 34.12% |
| **Motorcycles** | **0.10%** | **0.03** | 0.09% |
| **Total vehicles** | **100%** | **33.32** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – DDASH | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **43.80** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 13.12 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 17.65 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 11.34 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 6.31 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **8.43** | 19.25% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.69** | 10.71% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **30.68** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 5.64% | 1.73 | |
| Diesel Cars | 39.03% | 11.97 | |
| Hybrid Cars | 0.07% | 0.02 | |
| **Total cars** | **44.74%** | **13.72** | 31.38% |
| **Taxis** | 3.87% | **1.19** | 2.70% |
| Petrol LGVs | 0.02% | 0.01 | |
| Diesel LGVs | 15.38% | 4.72 | |
| **Total LGVs** | **15.40%** | **4.73** | 10.77% |
| **HGVs** | **12.94%** | **3.97** | 9.05% |
| **Buses/Coaches** | **22.90%** | **7.03** | 16.02% |
| **Motorcycles** | **0.15%** | **0.04** | 0.11% |
| **Total vehicles** | **100%** | **30.68** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

| Box 7.5 calculation – Lwm1 | Local Source (%) | $NO_2$ µg/$m^3$ | Total % |
|---|---|---|---|
| T-$NO_2$ (Total (Monitored) nitrogen dioxide) | | **41.20** | |
| TB-$NO_2$ (Total Background nitrogen dioxide[1]) | | 14.28 | |
| TB-NOx (Total Background nitrous oxides[1]) | | 19.51 | |
| RB-NOx (Regional Background nitrous oxides[1]) | | 13.76 | |
| Step 1: LB-NOx[2] = TB-NOx – RB-NOx | | 5.75 | |
| Step2: RB-$NO_2$[3] = TB-$NO_2$ × (RB-NOx / TB-NOx) | | **10.07** | 24.44% |
| Step2: LB-$NO_2$[4] = TB-NO2 × (LB-NOx / TB-NOx) | | **4.21** | 10.22% |
| Step3: L-$NO_2$[5] = T-$NO_2$ – TB-$NO_2$ | | **26.92** | |
| **Step4: % of vehicles from EfT** | | | |
| Petrol Cars | 2.37% | 0.64 | |
| Diesel Cars | 16.44% | 4.43 | |
| Hybrid Cars | 0.09% | 0.02 | |
| **Total cars** | **18.90%** | **5.09** | 12.35% |
| **Taxis** | 7.51% | **2.02** | 4.91% |
| Petrol LGVs | 0.01% | 0.01 | |
| Diesel LGVs | 10.84% | 2.92 | |
| **Total LGVs** | **10.85%** | **2.93** | 7.06% |
| **HGVs** | **4.50%** | **1.21** | 2.94% |
| **Buses/Coaches** | **58.19%** | **15.66** | 38.04% |
| **Motorcycles** | **0.05%** | **0.01** | 0.03% |
| **Total vehicles** | **100%** | **26.92** | 100% |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

## Tables C9 to C16: Nitrous Oxides and Nitrogen Dioxide equivalent reduction required for monitoring locations (in accordance with LAQM.TG16 Box 7.6).

| Box 7.6 Calculation – Tyn | $NOx/NO_2$ µg/m³ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 91.55 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 18.45 | |
| Step 3 Local Sources NOx | 73.10 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.70 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.17 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.72 | |
| Step 5 NOx equivalent for NO2 40µg/m³ | 19.40 | 26.5 |
| Step 5 NOx equivalent for NO2 38µg/m³ | 23.93 | 32.7 |
| Step 5 NOx equivalent for NO2 36µg/m³ | 28.38 | 38.8 |
| Local NO2 reduction required for 40µg/m³ | 8.91 | |
| Local NO2 reduction required for 38µg/m³ | 11.00 | |
| Local NO2 reduction required for 36µg/m³ | 13.04 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – Fos | $NOx/NO_2$ µg/m³ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 94.76 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 18.45 | |
| Step 3 Local Sources NOx | 76.31 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.70 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.17 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.72 | |
| Step 5 NOx equivalent for NO2 40µg/m³ | 22.61 | 29.6 |
| Step 5 NOx equivalent for NO2 38µg/m³ | 27.14 | 35.6 |
| Step 5 NOx equivalent for NO2 36µg/m³ | 31.59 | 41.4 |
| Local NO2 reduction required for 40µg/m³ | 10.34 | |
| Local NO2 reduction required for 38µg/m³ | 12.41 | |
| Local NO2 reduction required for 36µg/m³ | 14.44 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – Fos2 | $NOx/NO_2$ µg/m$^3$ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 64.98 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 18.45 | |
| Step 3 Local Sources NOx | 46.53 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.70 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.17 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.72 | |
| Step 5 NOx equivalent for NO2 40µg/m$^3$ | - | - |
| Step 5 NOx equivalent for NO2 38µg/m$^3$ | - | - |
| Step 5 NOx equivalent for NO2 36µg/m$^3$ | 1.81 | 3.89 |
| Local NO2 reduction required for 40µg/m$^3$ | - | |
| Local NO2 reduction required for 38µg/m$^3$ | - | |
| Local NO2 reduction required for 36µg/m$^3$ | 0.86 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – But2 | $NOx/NO_2$ µg/m$^3$ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 104.65 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 18.45 | |
| Step 3 Local Sources NOx | 86.20 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.70 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.17 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.72 | |
| Step 5 NOx equivalent for NO2 40µg/m$^3$ | 32.50 | 37.7 |
| Step 5 NOx equivalent for NO2 38µg/m$^3$ | 37.03 | 43 |
| Step 5 NOx equivalent for NO2 36µg/m$^3$ | 41.48 | 48.1 |
| Local NO2 reduction required for 40µg/m$^3$ | 14.63 | |
| Local NO2 reduction required for 38µg/m$^3$ | 16.67 | |
| Local NO2 reduction required for 36µg/m$^3$ | 18.68 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – BRS2 | $NOx/NO_2$ µg/m$^3$ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 92.22 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 17.65 | |
| Step 3 Local Sources NOx | 74.57 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.85 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.30 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.84 | |
| Step 5 NOx equivalent for NO2 40µg/m$^3$ | 20.72 | 27.8 |
| Step 5 NOx equivalent for NO2 38µg/m$^3$ | 25.27 | 33.9 |
| Step 5 NOx equivalent for NO2 36µg/m$^3$ | 29.73 | 39.9 |
| Local NO2 reduction required for 40µg/m$^3$ | 9.61 | |
| Local NO2 reduction required for 38µg/m$^3$ | 11.72 | |
| Local NO2 reduction required for 36µg/m$^3$ | 13.79 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – DDASH | $NOx/NO_2$ µg/m$^3$ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 82.69 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 17.65 | |
| Step 3 Local Sources NOx | 65.04 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.85 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.30 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.84 | |
| Step 5 NOx equivalent for NO2 40µg/m$^3$ | 11.19 | 17.2 |
| Step 5 NOx equivalent for NO2 38µg/m$^3$ | 15.74 | 24.2 |
| Step 5 NOx equivalent for NO2 36µg/m$^3$ | 20.20 | 31.1 |
| Local NO2 reduction required for 40µg/m$^3$ | 5.28 | |
| Local NO2 reduction required for 38µg/m$^3$ | 7.42 | |
| Local NO2 reduction required for 36µg/m$^3$ | 9.53 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – Bkc | $NOx/NO_2$ µg/m³ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 89.93 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 18.45 | |
| Step 3 Local Sources NOx | 71.48 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.85 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.30 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.84 | |
| Step 5 NOx equivalent for NO2 40µg/m³ | 17.63 | 24.7 |
| Step 5 NOx equivalent for NO2 38µg/m³ | 22.18 | 31 |
| Step 5 NOx equivalent for NO2 36µg/m³ | 26.64 | 37.3 |
| Local NO2 reduction required for 40µg/m³ | 8.22 | |
| Local NO2 reduction required for 38µg/m³ | 10.34 | |
| Local NO2 reduction required for 36µg/m³ | 12.42 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

| Box 7.6 Calculation – Lwm1 | $NOx/NO_2$ µg/m³ | Reduction required (%) |
|---|---|---|
| Step 1 Total NOx | 76.26 | |
| Step 2 TB-NOx (Total Background nitrous oxides[1]) | 19.51 | |
| Step 3 Local Sources NOx | 56.75 | |
| Step 4 Road NOx = 40 NO2 - TB-NO2 | 53.85 | |
| Step 4 Road NOx = 38 NO2 - TB-NO2 | 49.30 | |
| Step 4 Road NOx = 36 NO2 - TB-NO2 | 44.84 | |
| Step 5 NOx equivalent for NO2 40µg/m³ | 2.90 | 5.1 |
| Step 5 NOx equivalent for NO2 38µg/m³ | 7.45 | 13.1 |
| Step 5 NOx equivalent for NO2 36µg/m³ | 11.91 | 21 |
| Local NO2 reduction required for 40µg/m³ | 1.38 | |
| Local NO2 reduction required for 38µg/m³ | 3.53 | |
| Local NO2 reduction required for 36µg/m³ | 5.65 | |

1) Data from Defra 2018 Background Maps for model year of 2018 for relevant local coordinates

## Table C 17: Defra's NOx to NO2 Conversion Spreadsheet v8.1 for calculations

| Local Authority: | Worcester District | | | Year: Traffic Mix: | 2018 All non-urban UK traffic |
|---|---|---|---|---|---|
| Site ID | Diffusion tube $NO_2$, µg m$^{-3}$ | Background µg m$^{-3}$ | | Road $NO_x$, µg m$^{-3}$ | User defined local traffic mix fraction emitted as $NO_2$ ($fNO_2$) | Notes |
| | µg m$^{-3}$ | $NO_x$ | $NO_2$ | | | |
| Tyn | 47.21 | 18.45 | | 73.1 | | |
| Fos | 48.51 | 18.45 | | 76.31 | | |
| Fos2 | 35.81 | 18.45 | | 46.53 | | |
| But2 | 52.43 | 18.45 | | 86.2 | | |
| BRS2 | 47.7 | 17.65 | | 74.3 | | |
| Bkc | 46.94 | 18.45 | | 71.48 | | |
| DDASH | 43.8 | 17.65 | | 64.82 | | |
| Lwm1 | 41.2 | 19.51 | | 56.56 | | |
| 40 | 40 | | 13.62 | 53.85 | | |
| 38 | 38 | | 13.62 | 49.3 | | |
| 36 | 36 | | 13.62 | 44.84 | | |

## References


1. Air Quality Consultants (July 2017) Detailed Assessment of Air Quality along London Road, Worcester for Worcester City Council
2. Defra (February 2018) Local Air Quality Management Technical Guidance LAQM.TG(16)
3. Defra (November 2021) Emissions Factor Toolkit v.11.0 User Guide
4. Defra (Oct 2016) Background Concentration Maps User Guide
5. Worcestershire Regulatory Services (2017) Worcester Road, St Johns Source Apportionment Report
6. Worcestershire Regulatory Services (2021) Air Quality Annual Status Report for Worcester City