

Feasibility Report

Lichfield City Centre Pedestrianisation

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ameyconsulting



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1. Executive Summary

This report outlines options to reduce vehicle numbers within Lichfield City Centre pedestrian zone, to redress the balance between pedestrians and motor vehicles. The options have been designed to improve pedestrian safety, the public realm environment and to promote sustainable travel within the City Centre.

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2. Introduction

2.1. Scope

This report has been produced by the Design Team following a brief received from Strategic Transport and Community Highways working together under the terms of the Staffordshire County Council Infrastructure + partnership contract.

The commission considers the possible options in relation to the existing pedestrianised Lichfield City Centre in order to redress the balance of vehicles and pedestrians and to review the implications of each design option.

2.2. Site Description

Lichfield City is an historic city located in Staffordshire, 18 miles north of Birmingham. Lichfield (Figure 1) is famed for its three spired Cathedral and vibrant city centre, hosting outdoor markets three times a week (Tuesday, Friday and Saturday) in its Market Square. The streets are lined with historically significant buildings, accommodating a range of boutique stores, eating establishments and other businesses.

The streets making up the city centre are largely in a pedestrian zone, with access to Tamworth Street, Conduit Street, Market Street, Breadmarket Street and Bore Street for permit holders, disabled badge holders and for loading. Bird Street and Sandford Street are subject to similar restrictions except disabled badge holders are not permitted at any time. The nature of the streets mean pedestrians are often unaware of the presence of vehicles causing concerns for safety, particularly for more vulnerable pedestrians.

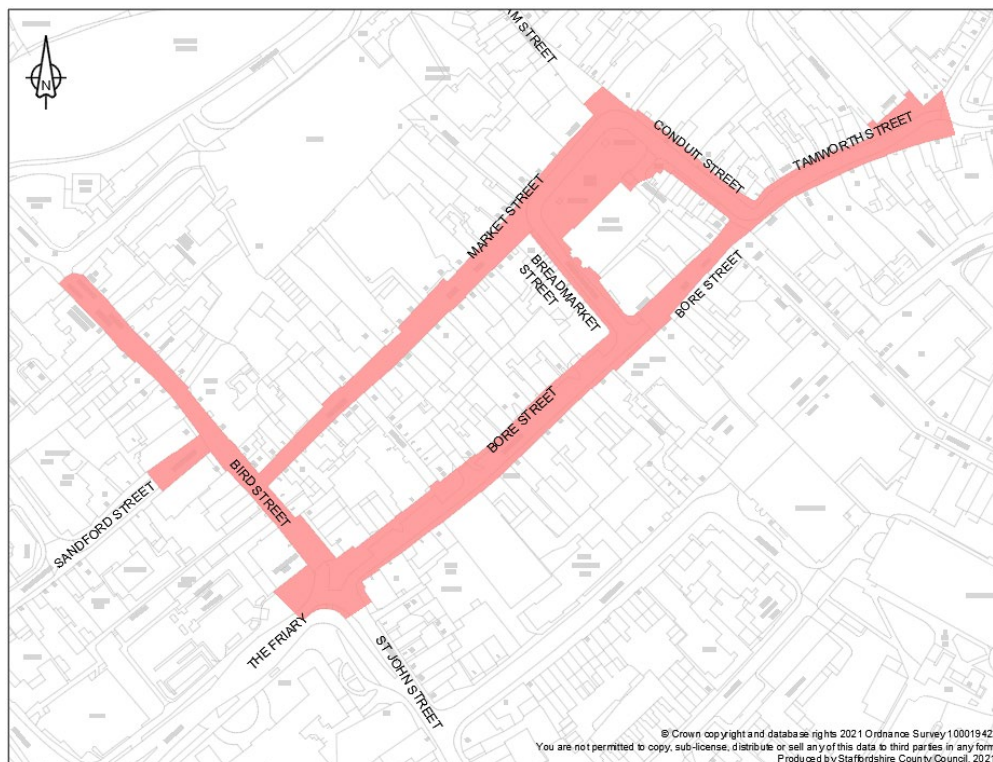


Figure 1: Lichfield City Centre pedestrianisation scheme extents

3. Existing Site Conditions

3.1. Existing Traffic Regulation Orders

3.1.1 Pedestrian Zones

Lichfield City Centre is subject to two different pedestrian zone traffic regulation orders (Figure 2). All vehicles except for loading, permit holders, disabled and cycles are prohibited in Tamworth Street, Bore Street (part of), Conduit Street, Breadmarket Street and Market Street (part of), between the hours of 9am and 6pm.

Dam Street, Bird Street and the remaining lengths of Market Street and Bore Street are restricted to all motor vehicles at any times. Similar to the preceding restrictions, loading, cyclists and permit holders are permitted to enter the zone, however, disabled badge holders are not. It should be noted that this section of Bore Street is not signed on site and disabled users would be unaware they are not permitted to drive this section, however, the road alignment at the junction of Tamworth Street and Conduit Street discourages this manoeuvre.

Loading is permitted within both zones by any vehicle except on Friday and Saturday 10am – 4pm. 'Loading generally refers to commercial loading or to objects that are too heavy or bulky to be carried very far by hand but does not include time for purchasing the goods' chapter 3 Traffic signs manual. The Pedestrian zone restrictions within Lichfield permit loading by any vehicle not just by goods vehicle.

The wording within the Traffic regulation permits access for Taxis requiring access to residential properties to pick up or drop off passengers. Taxis are also permitted to access Bird Street via Sandford Street between 6pm and 9am. The definition of a Taxi given within the traffic regulation order includes both Hackney Carriages and licenced Private Hire vehicles.

Permits to enter the pedestrian zone are issued by Staffordshire County Council. Those eligible for a permit as stipulated in the associated Traffic Regulation Order are:

- A person or business that has unavoidable operational or personal difficulties
- A business which has exceptional servicing problems due to the nature of the operations
- Business premises within the central area which have off-street parking spaces
- Residents living within the central area who have off-street car parking space(s)
- Residents living within the central area who do not have an off-street parking space



Figure 2: Pedestrian zone traffic regulation orders

3.1.2 One-Way Restrictions

The streets within the Pedestrian zone form a one-way system (Figure 3) with access permissible from Sandford Street, The Friary and Tamworth Street.

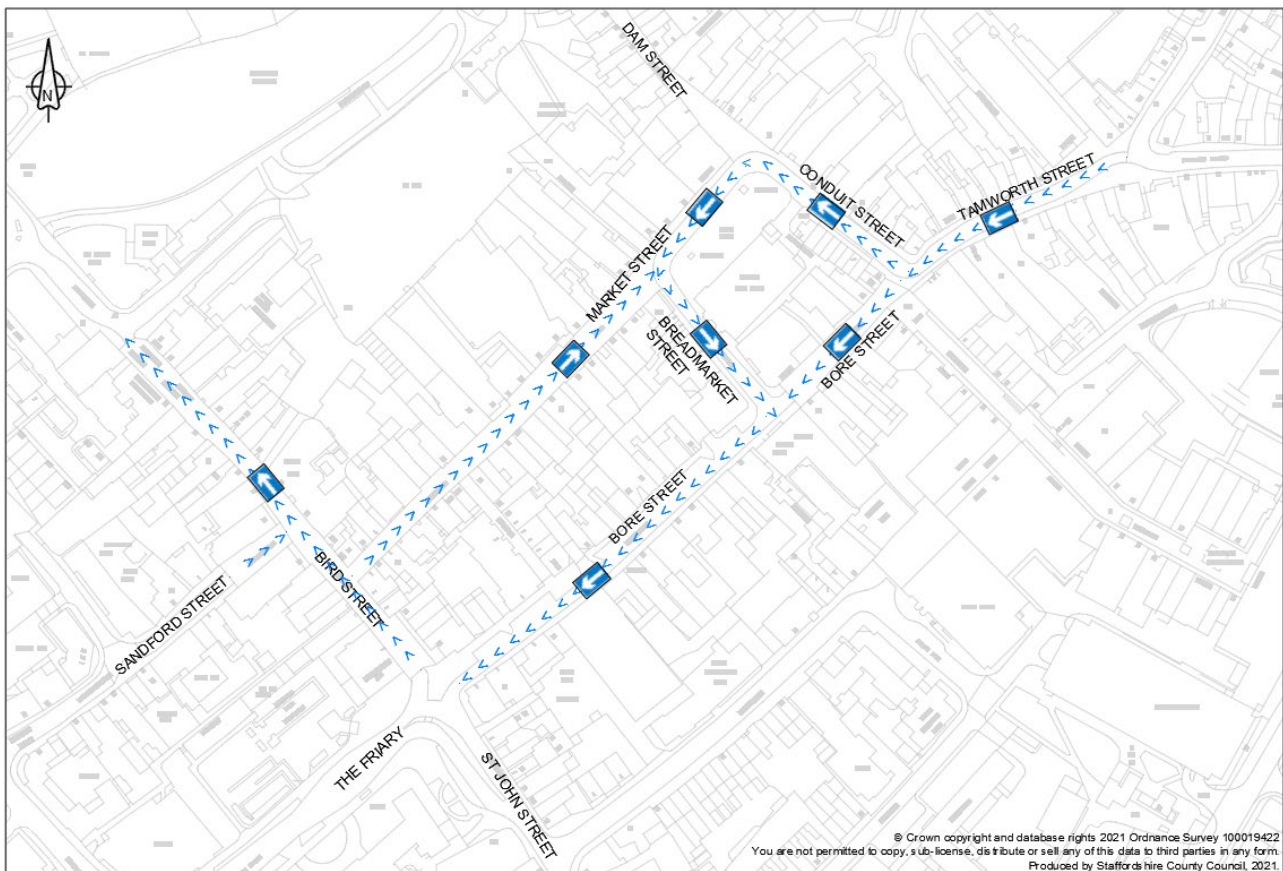


Figure 3: One-way restrictions

3.1.3 Parking Restrictions

A traffic regulation order restricts all streets within the pedestrian zones to no waiting at any time, except in signed bays. This is indicated on site using signs at the zone entry points removing the need for double yellow line road markings. It should be noted that the text "except in signed bays" is not present on the existing signage which may cause ambiguity.

All parking within signed bays is restricted to disabled badge holders only between 9am and 6pm and is located as follows:

- Tamworth Street (Figure 4) - parking for approximately 5 cars between 9am and 6pm with a 3 hour limit and no return within 1 hour; however, due to the Covid-19 pandemic, the parking bays have been partially suspended.

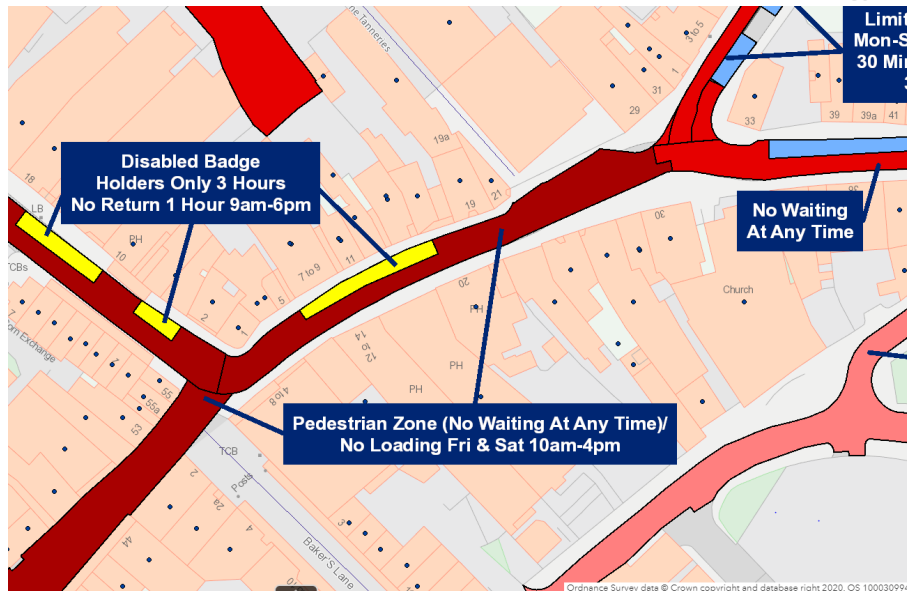


Figure 4: Tamworth Street parking restrictions

- Conduit Street (Figure 5)– parking for approximately 5 cars between 9am and 6pm, however, due to the Covid-19 pandemic, the parking bays have been partially suspended.
- Market Street (Figure 5) - parking for approximately 8 cars between 9am and 6pm, however, due to the Covid-19 pandemic, the parking bays have been partially suspended.

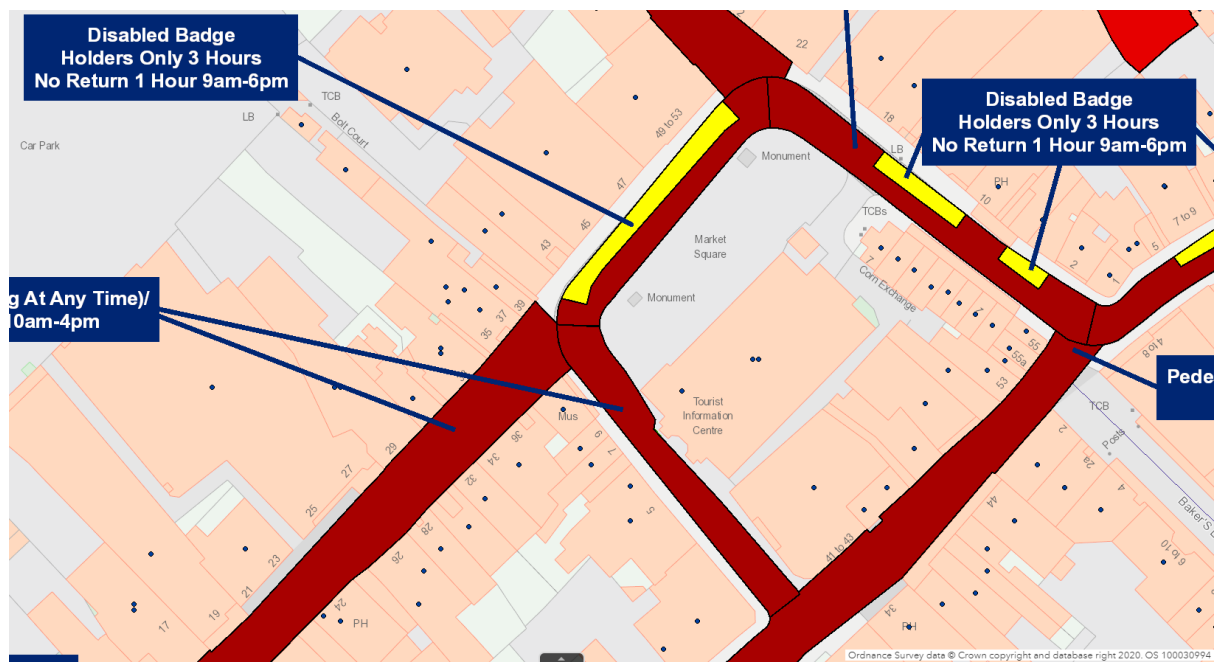


Figure 5: Conduit St, Market St (part), Breadmarket St & Bore St (part) parking restrictions

- Bore Street from Breadmarket Street to St Johns Street (Figure 6) - parking for approximately 18 cars between 9am and 6pm, however, due to the Covid-19 pandemic, the parking bays have been partially suspended.

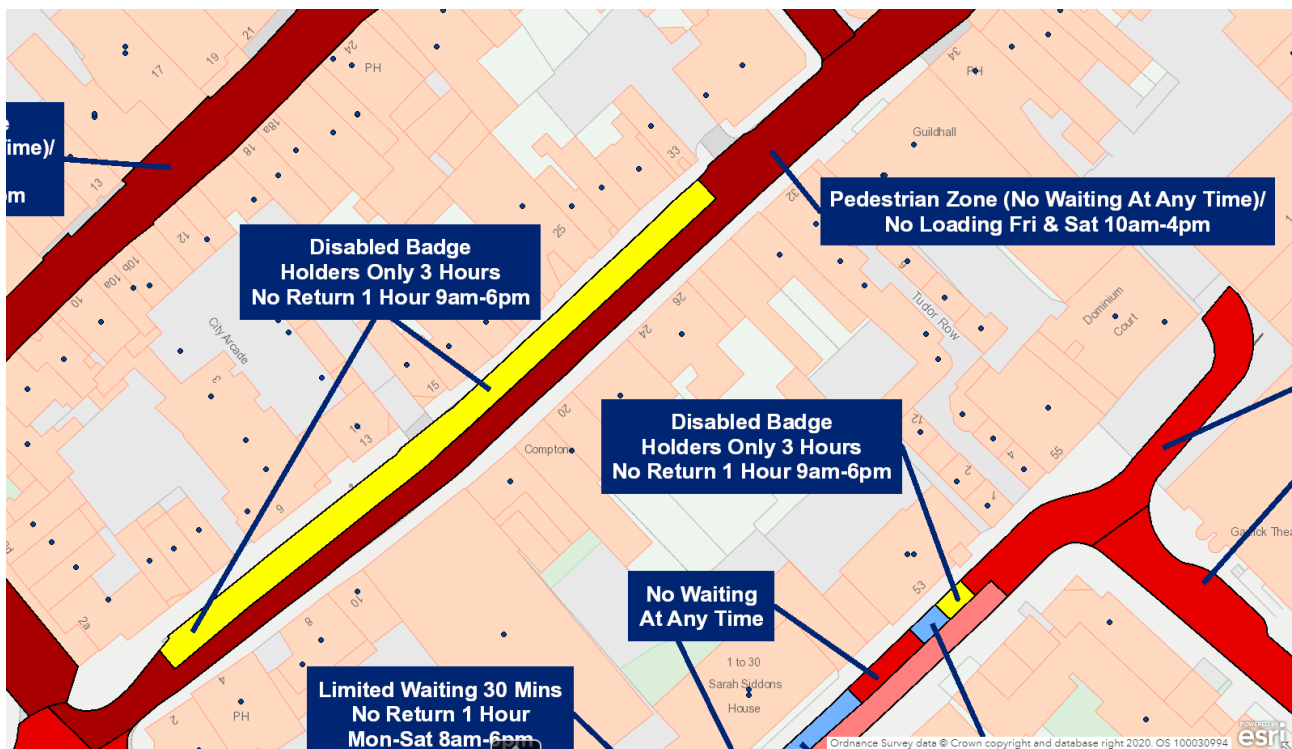


Figure 6: Bore Street (From Breadmarket Street to St Johns Street) parking restrictions

3.2. Existing City Centre Parking Provision

A significant amount of public car parking is available within the immediate vicinity of the city centre (Figure 7). Throughout the Covid-19 pandemic disabled parking bays were temporarily suspended within Tamworth Street, Conduit Street, Market Street and Bore Street to provide additional space for social distancing. To mitigate this loss, standard parking bays were reallocated to create 10 temporary disabled bays within Bird Street car park and 7 temporary disabled bays in Lombard Street car park. Guidance on the recommended maximum walking distance without rest according to disability is given in Table 1. It should be noted that this relocated disabled parking provision is approximately 65m and 125m away from the pedestrianised zone.

Table 1: Recommended maximum walking distance without a rest according to disability (TAL 5-95)

Disability	Distance (metres)
Visually Impaired	150
Wheelchair users	150
Ambulatory without walking aid	100
Stick users	50

All disabled parking within the city centre is free and there are no waiting time restrictions within the off street car parks. All on-street disabled parking is limited to 3 hours.

A minimum of 6% of spaces within a car park should be allocated for the blue badge holders (BS8300-1:2018). Existing disabled parking provision within Lichfield City centre car parks is 4% (pre Covid-19) with no provision within the University or Friary Inner car parks. When combined with all on street parking this increases to the recommended 6% due to the high number of spaces provided within the Pedestrian Zone.

Additional weekend parking provision is available at Lombard Street and District Council House (Saturday only) car parks.

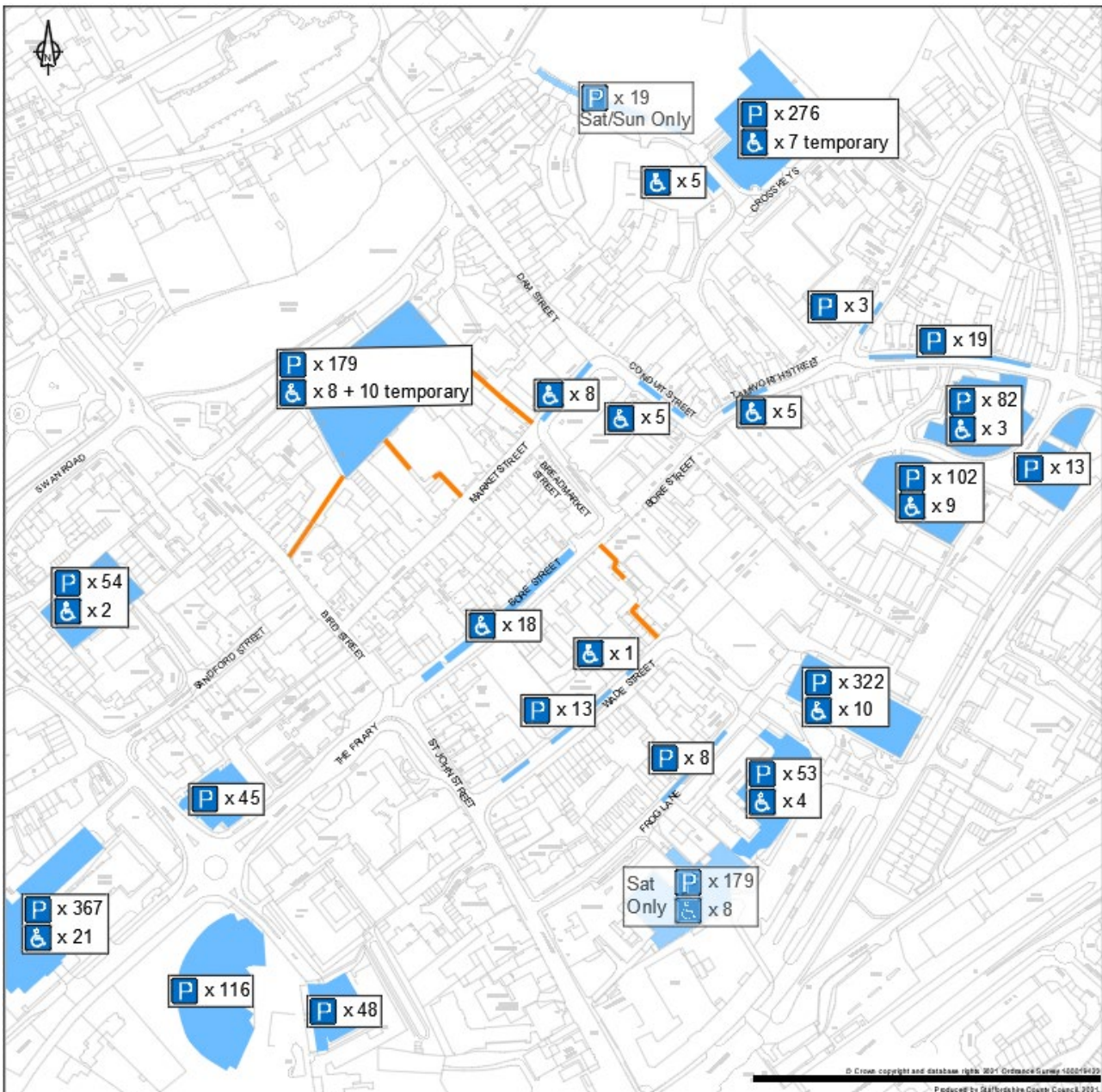


Figure 7: Lichfield City Centre parking provisions

3.3. Traffic and Pedestrian Surveys

Traffic and pedestrian surveys were undertaken on Tamworth Street, Conduit Street, Market Street, Breadmarket Street and Bore Street. The following data was collected for 7 days between 7am and 7pm from 13:00 on 21st May to 13:00 on 28th May 2021:

- 12-hour pedestrian count
- 12-hour classified junction vehicle counts

A 12-hour vehicle count survey was also undertaken at Sandford Street over the same 7 day period.

This data was collected during step 2 of the [roadmap out of lockdown](#), part of the UK government response to Covid-19 global pandemic. During step 2, shops were open, as well as hairdressers, libraries, zoo's, and gyms. Pubs, restaurants, and cafés were also open to outdoor diners only.

In response to Covid-19 and social distancing requirements, much of the on-street parking throughout Tamworth Street, Conduit Street, Market Street, Breadmarket Street and Bore Street has been temporarily suspended; as a result of this, vehicle flows are likely to be less than pre-Covid-19 levels.

Tamworth Street junction with Conduit Street

The classified junction counts undertaken at Tamworth Street junction with Conduit Street and Bore Street recorded a daily average of 546 vehicles travelling through the city centre to Conduit Street on market days (Figure 8). A slightly lower daily average vehicle count of 534 vehicles was recorded on non-market days (Figure 9). An average of 13 and 17 vehicles per day were observed to be accessing Bore Street from Tamworth Street.

On a market day, an average of 6 vehicles were observed to be making illegal manoeuvres at the junction, opposing the one-way restriction and on non-market days an average of 8 vehicles were making illegal manoeuvres.

Of the 565 vehicles driving through the junction per day on market days, around 15% are delivery vehicles (Light Goods Vehicles or larger), while on non-market days delivery vehicles account for 19% of all traffic at the junction. Over half of the total number of vehicles are using the junction between the hours of 10am and 4pm (Table 2).

Pedestrian volumes were observed to be higher on market days in all directions. The highest volume recorded a daily average of 1524 pedestrians crossing south to north on Bore Street on market days, where the vehicle flows are the lowest (Figure 8).

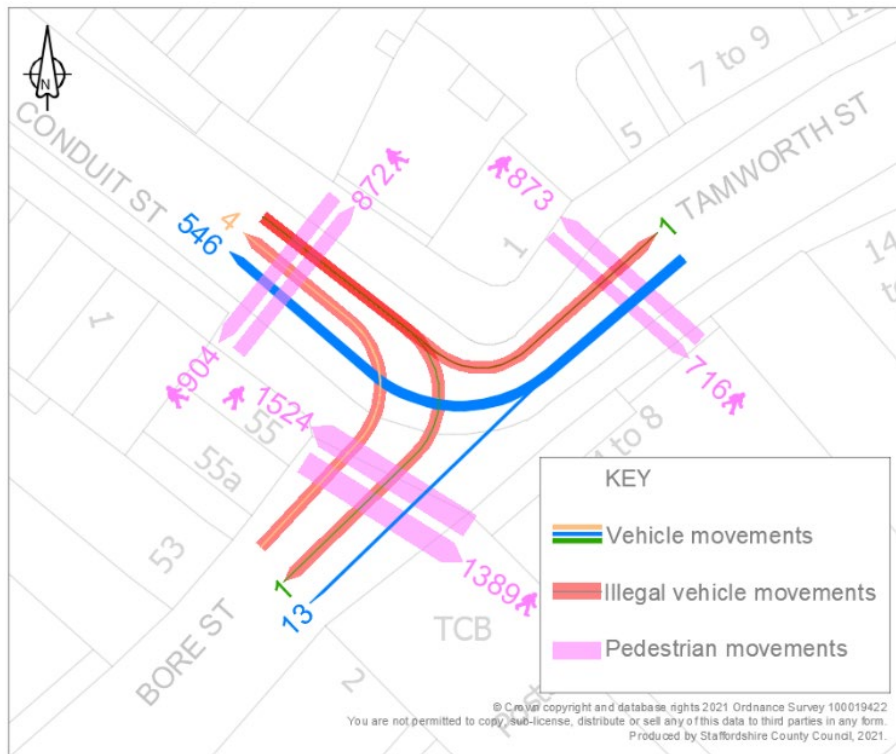


Figure 8: Tamworth Street junction with Conduit Street, market day (Tues, Fri, Sat) daily average vehicle and pedestrian movements (7am-7pm)

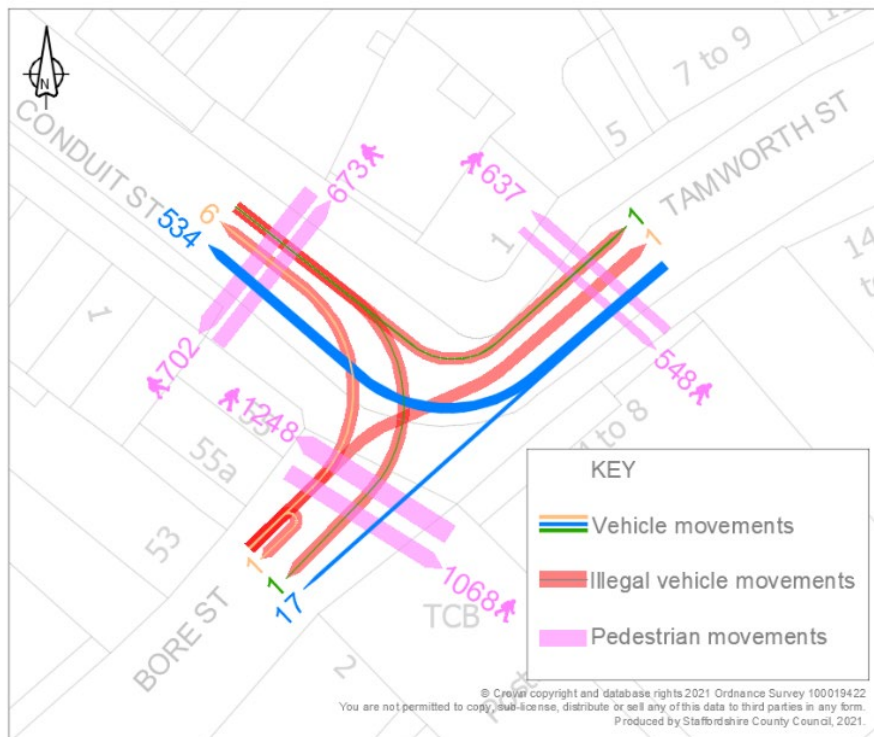


Figure 9: Tamworth Street junction with Conduit Street, non-market day (Mon, Wed, Thurs) daily average vehicle and pedestrian movements (7am-7pm)

Conduit Street junction with Market Street and Dam Street

The classified junction counts recorded at Conduit Street junction with Market Street and Dam Street recorded a daily average of 520 vehicles travelling through the city centre to Market Street on market days (Figure 10). A slightly lower daily average vehicle count of 493 vehicles was recorded on non-market days (Figure 11).

On a market day, an average of 2 vehicles were observed to be making illegal manoeuvres at the junction, opposing the one-way restriction and on non-market days an average of 3 vehicles were making illegal manoeuvres.

Of the 581 vehicles driving through the junction per day on market days, around 15% are delivery vehicles (Light Goods Vehicles or larger), while on non-market days delivery vehicles account for 19% of all traffic at the junction. Over half of the total number of vehicles are using the junction between the hours of 10am and 4pm (Table 2).

Pedestrian volumes were observed to be higher on market days crossing Conduit Street and Market Street in both directions than non-market days. Pedestrian volumes crossing Dam Street in both directions are almost double the volumes recorded crossing Market Street and Conduit Street. However, there was little difference between pedestrian volumes crossing Dam Street on market days and non-market days. The highest volume recorded a daily average of 1882 pedestrians crossing from southwest to northeast on Dam Street on market days (Figure 10).

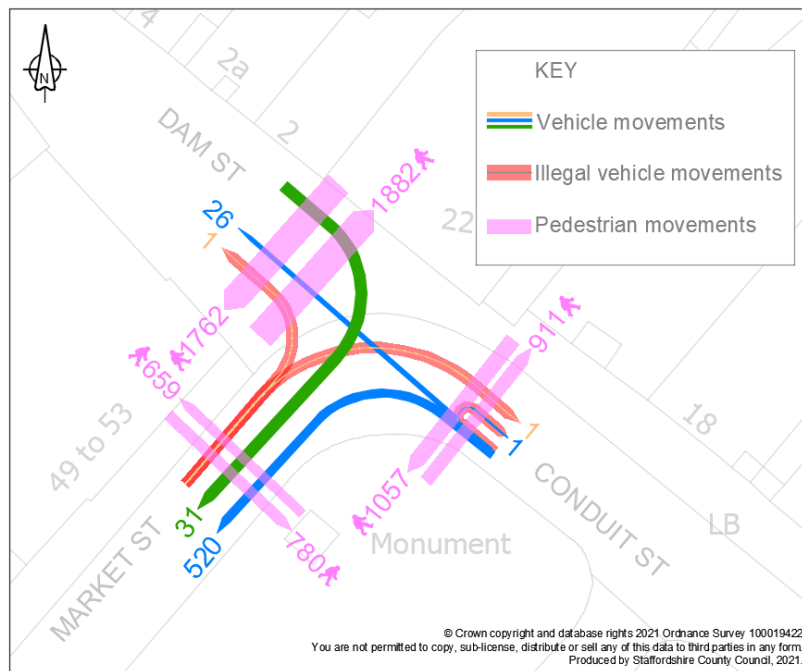


Figure 10: Conduit Street junction with Market Street and Dam Street, market day (Tues, Friday, Saturday) daily average vehicle and pedestrian flows (7am-7pm)

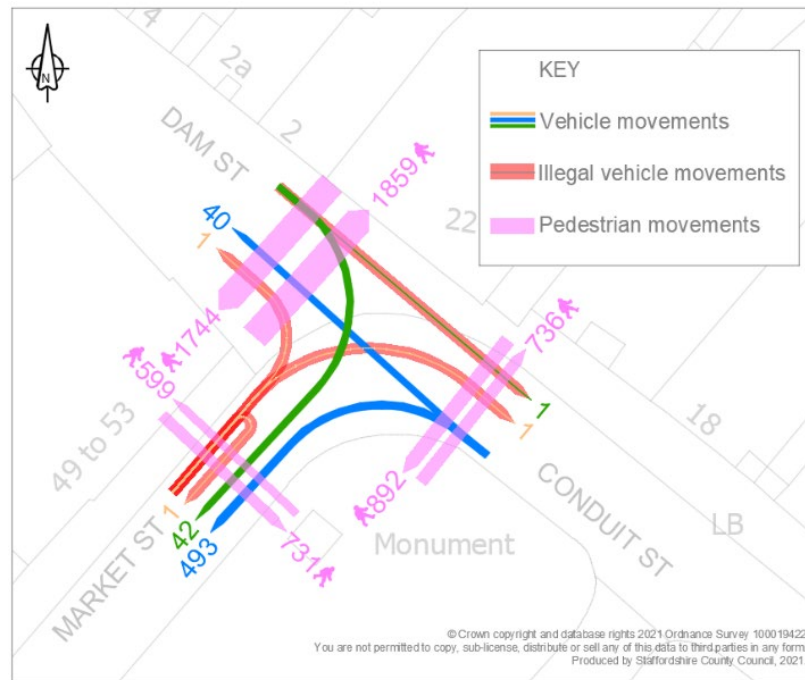


Figure 11: Conduit Street junction with Market Street and Dam Street, non-market day (Mon, Wed, Thurs) daily average vehicle and pedestrian movements (7am-7pm)

Market Street junction with Breadmarket Street

The classified junction counts recorded at Market Street junction with Breadmarket Street recorded a daily average of 555 vehicles travelling through from Market Street to Breadmarket St on market days (Figure 12). A slightly lower daily average vehicle count of 535 vehicles was recorded on non-market days (Figure 13).

On a market day, an average of 11 vehicles were observed to be making illegal manoeuvres at the junction, opposing the one-way restriction and on both market and non-market days.

Of the 620 vehicles driving through the junction per day on market days, around 17% are delivery vehicles (Light Goods Vehicles or larger), while on non-market days delivery vehicles account for 20% of all traffic at the junction. Half of all vehicles are using the junction between the hours of 10am and 4pm on market days (Table 2).

Pedestrian volumes were observed to be higher on market days for all pedestrian crossing movements. The highest volume recorded a daily average of 1610 pedestrians crossing from southwest to northeast on Breadmarket Street on market days (Figure 12).

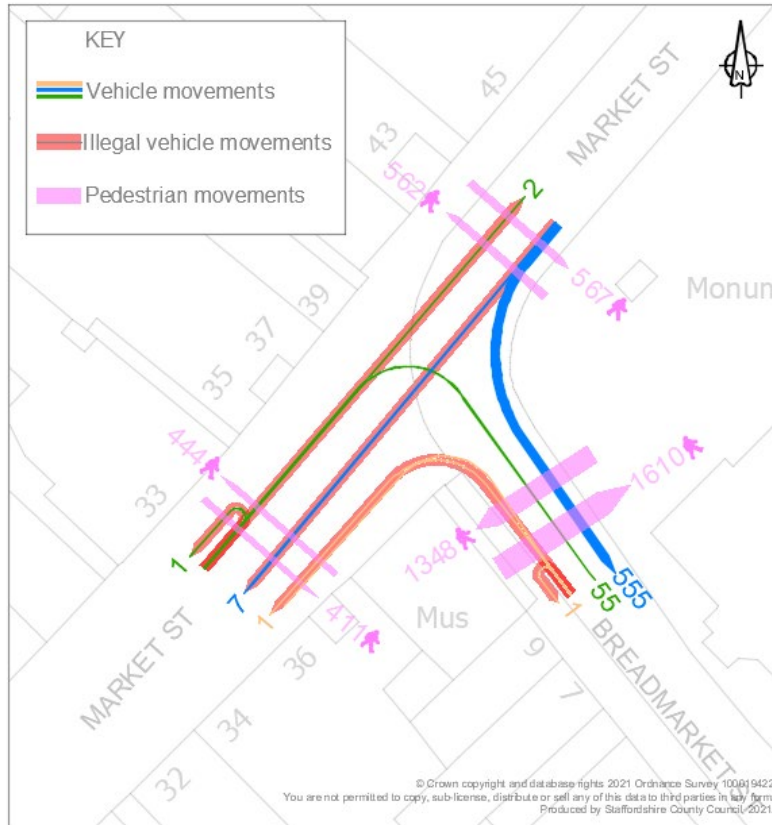


Figure 12: Market Street junction with Breadmarket Street, market day (Tues, Friday, Saturday) daily average vehicle and pedestrian flows (7am-7pm)

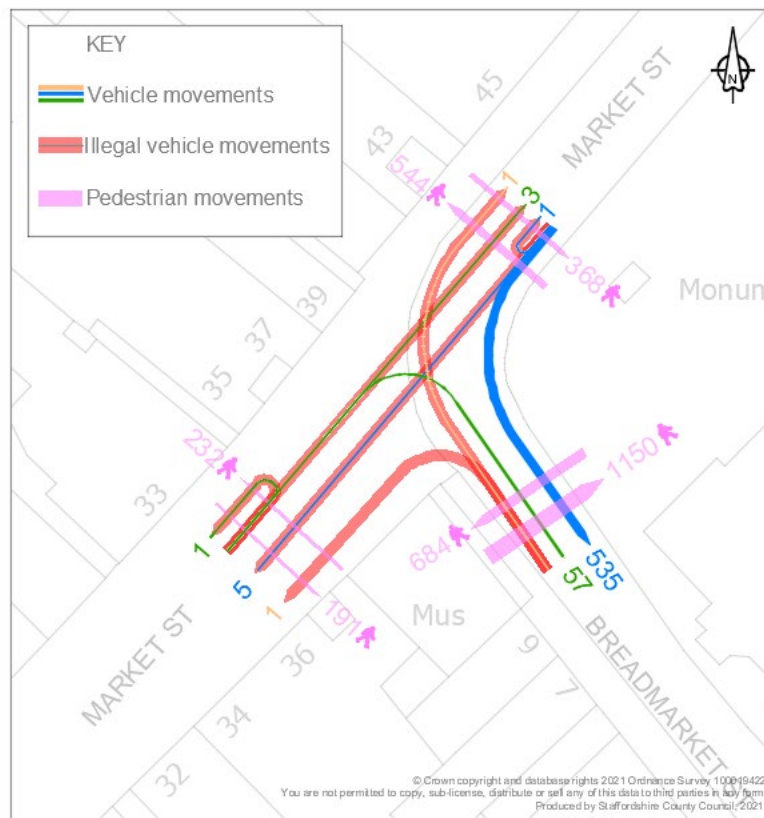


Figure 13: Market Street junction with Breadmarket Street, non-market day (Mon, Wed, Thurs) daily average vehicle and pedestrian movements (7am-7pm)

Breadmarket Street junction with Bore Street

The classified junction counts recorded at Breadmarket Street junction with Bore Street recorded a daily average of 607 vehicles travelling through from Breadmarket Street to Bore Street on market days (Figure 14). A slightly lower daily average vehicle count of 589 vehicles was recorded on non-market days (Figure 15).

On a market day, an average of 7 vehicles were observed to be making illegal manoeuvres at the junction, opposing the one-way restriction and on both market and non-market days.

Of the 630 vehicles driving through the junction per day on market days, around 17% are delivery vehicles (Light Goods Vehicles or larger), while on non-market days delivery vehicles account for 20% of all traffic at the junction. The total number vehicles travelling through the junction on non-market day is lower than market days, but the total number of vehicles between 10am - 4pm is greater on non-market days (Table 2).

Pedestrian volumes were observed to be higher on market days for all pedestrian crossing movements. The highest volume recorded a daily average of 1231 pedestrians crossing from southwest to northeast on Breadmarket Street on market days (Figure 14).

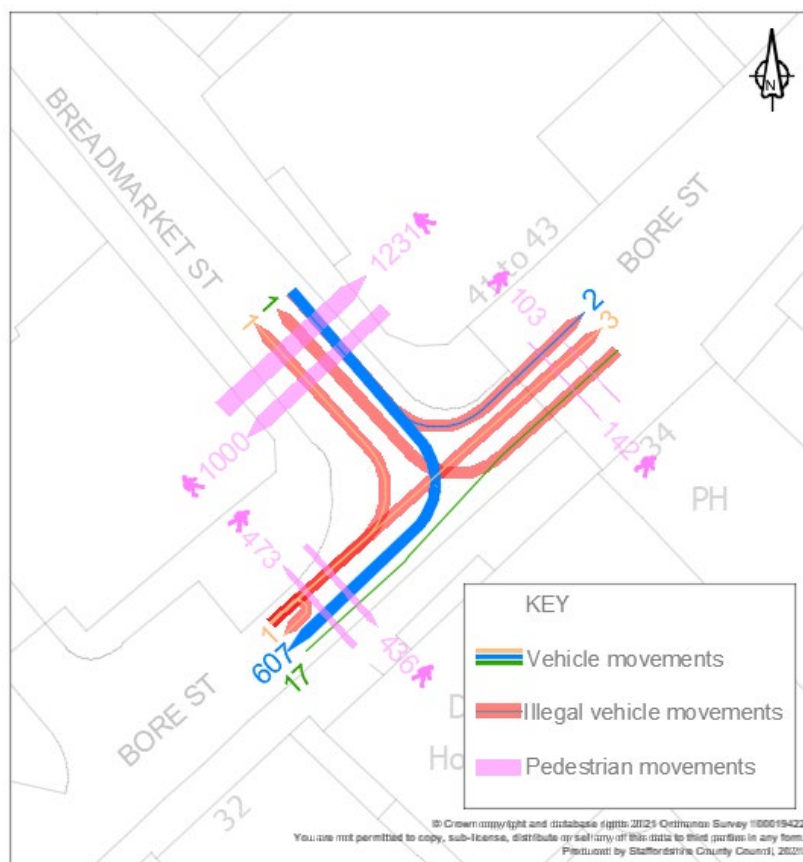


Figure 14: Breadmarket Street junction with Bore Street, market day (Tues, Friday, Saturday) daily average vehicle and pedestrian flows (7am-7pm)

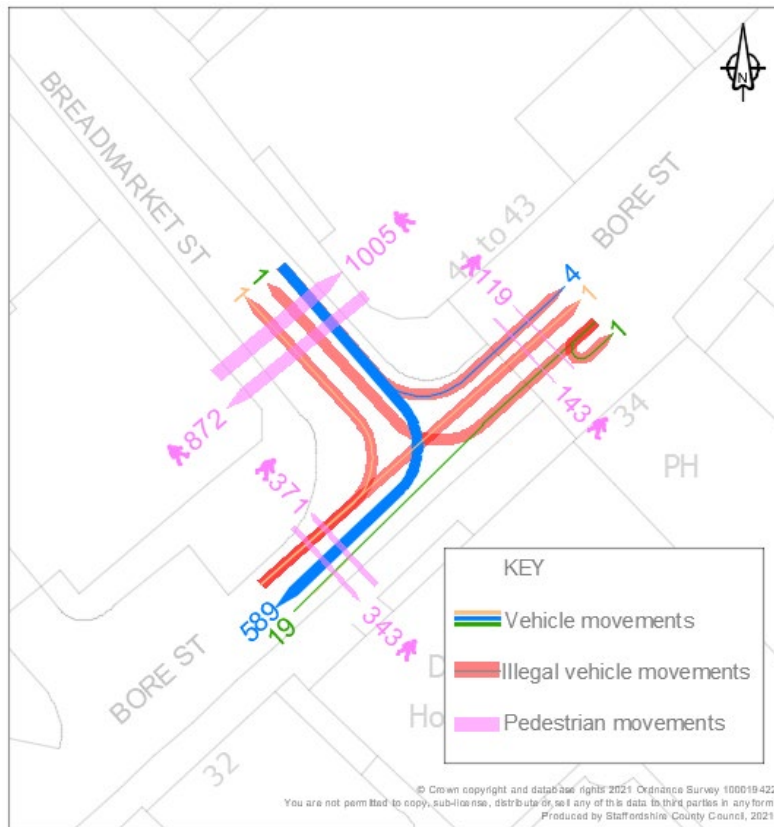


Figure 15: Breadmarket Street junction with Bore Street, non-market day (Mon, Wed, Thurs) daily average vehicle and pedestrian movements (7am-7pm)

Bore Street and Bird Street Junction with The Friary/St John Street

The classified junction counts recorded at Bore Street junction with St John Street recorded a daily average of 659 vehicles turning left from Bore Street onto St John St on market days (Figure 16) and 632 vehicles on non-market days (Figure 17). Of the total number of vehicles using the junction on market days 15% were delivery vehicles and on non-market days 17% were recorded to be delivery vehicles (Table 2). On a market day, an average of 14 vehicles were observed to be illegally turning right out of Bore Street onto The Friary, with 13 vehicles driving on the wrong side of the road to access Bird Street or The Friary and 1 vehicle driving across the pedestrian refuge island to access The Friary (Figure 18 & 19). On non-market days an average of 4 vehicles per day were illegally turning right onto the Friary (Figure 18).

On market days an average of 131 vehicles per day were accessing Bird Street, 36% of which are delivery vehicles. An average of 75 vehicles per day were recorded between 10am and 4pm with 16% of these being delivery vehicles. On non-market days 109 vehicles per day were accessing Bird Street, 30% of which are delivery vehicles. An average of 40 vehicles per day were recorded between 10am and 4pm with only 2% of these being delivery vehicles. An average of 2 vehicles per day were illegally driving southbound on Bird Street on market days and an average of 1 vehicle per day on non-market days (Figure 20).

Pedestrian volumes were observed to be higher on market days in all directions. The highest volume recorded a daily average of 1031 pedestrians crossing west to east across Bird Street junction on market days (Figure 16).

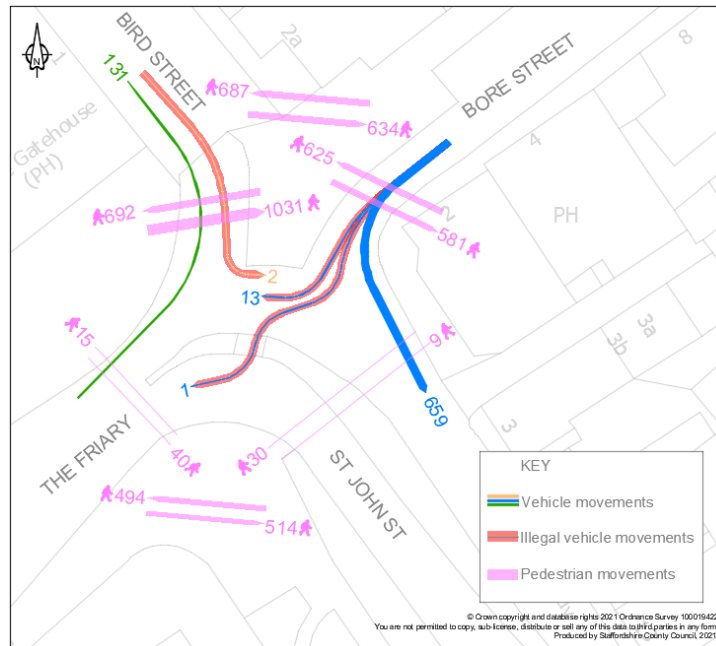


Figure 16: Bore St junction with St John St and Bird St junction with The Friary, market day (Tues, Friday, Saturday) daily average vehicle and pedestrian flows (7am – 7pm)

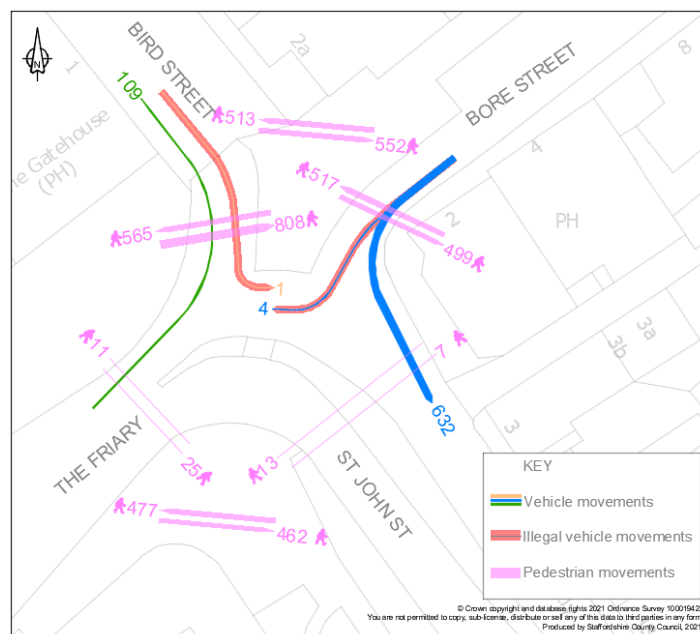


Figure 17: Bore St junction with St John St and Bird St junction with The Friary, non-market day (Mon, Wed, Thurs) daily average vehicle and pedestrian flows (7am – 7pm)



Figure 18: Vehicle observed making an illegal right turn out of Bore Street onto The Friary

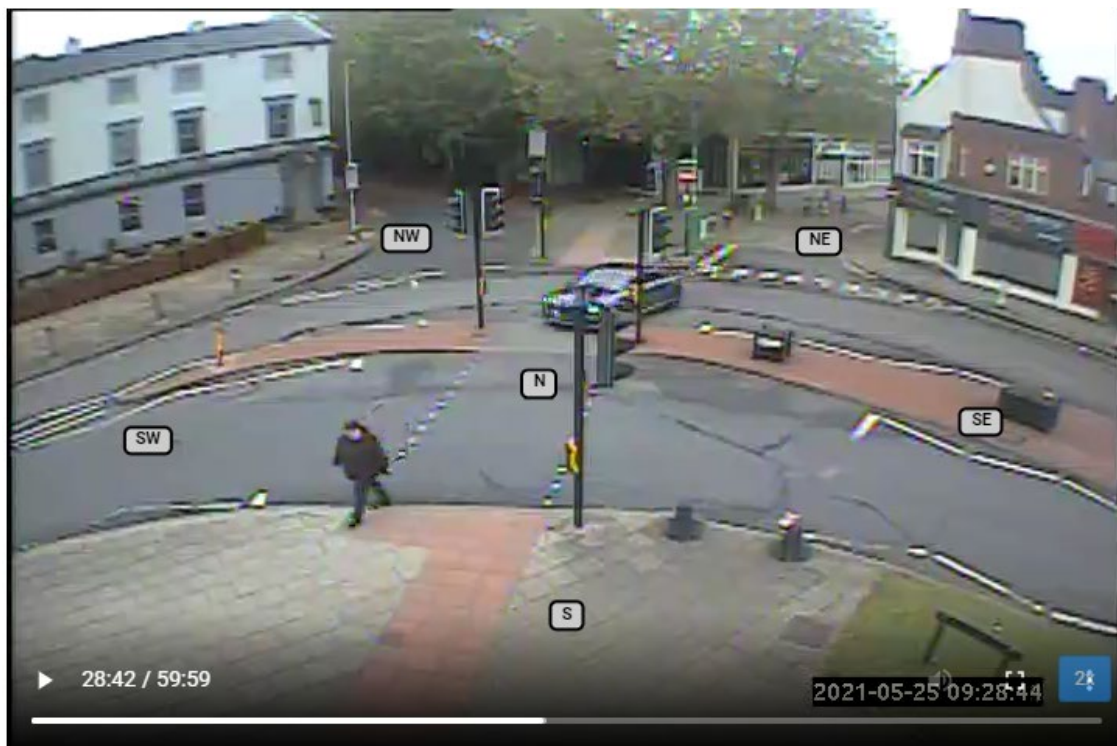


Figure 19: Vehicle observed making an illegal right turn out of Bore Street across a controlled pedestrian crossing and onto The Friary

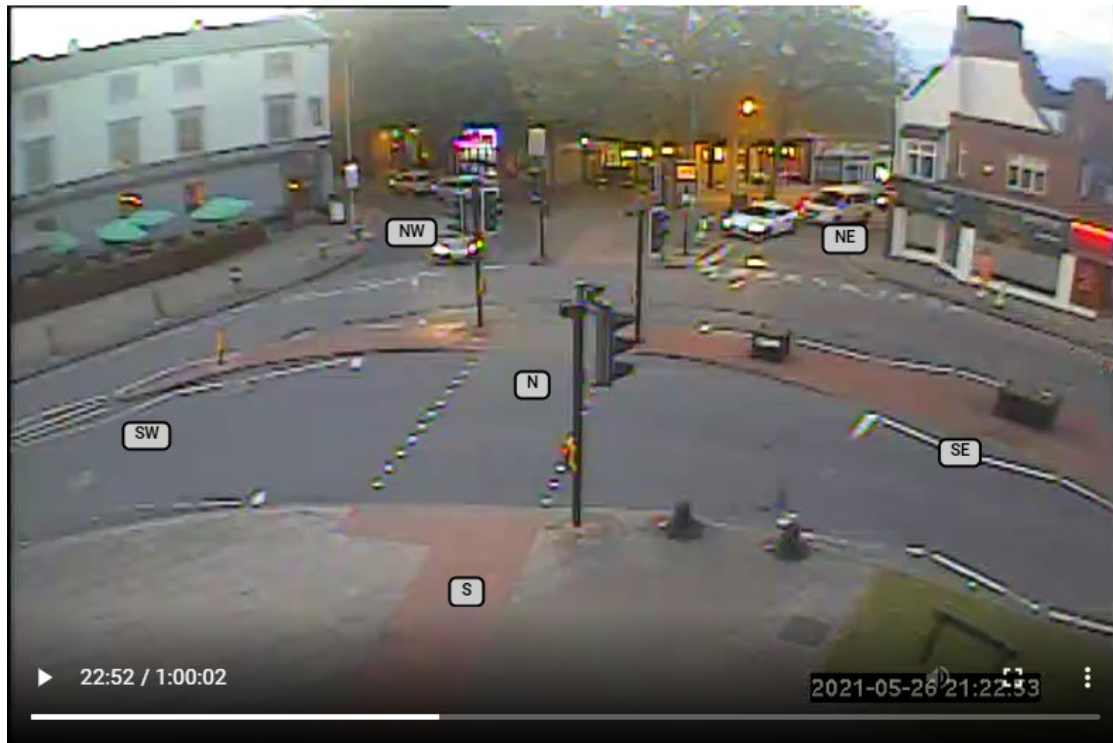


Figure 20: Vehicle observed illegally driving southbound on Bird Street before turning left onto St John Street

Sanford Street junction with Bird Street

An average of 330 vehicles per day were observed to be accessing Bird Street via Sanford Street on market days between 7am and 7pm, with 209 vehicles between 10am and 4pm. On non-market days an average of 336 vehicles per day were observed between 7am and 7pm, with 267 vehicles between 10am and 4pm (Table 2). It has been calculated that a daily average of 400 vehicles per day are accessing Bird Street junction with the car park access road, via Sanford Street or Bird Street/The Friary.

Table 2: Average daily vehicle counts Lichfield City Centre

	Market Day				Non-Market Day			
	7am-7pm		10am – 4pm		7am – 7pm		10am - 4pm	
	Vehicles per day	Delivery vehicles per day (% of total)	Vehicles per day	Delivery vehicles per day (% of total)	Vehicles per day	Delivery vehicles per day (% of total)	Vehicles per day	Delivery vehicles per day (% of total)
Tamworth Street with Conduit Street	565	15%	327	16%	562	19%	337	18%
Conduit St with Dam Street	581	15%	340	16%	579	19%	547	12%
Market St with Breadmarket St	620	17%	297	17%	602	20%	318	19%
Breadmarket St with Bore St	630	17%	299	17%	614	20%	324	20%
Bird Street with The Friary	132	36%	75	16%	110	30%	40	2%
Bore Street with St John Street	665	15%	342	15%	636	17%	369	17%
Sandford Street with Bird Street	330	-	209	-	366	-	267	-

3.4. Accident Data

In a 5-year period between January 2015 and December 2019 there was one recorded road traffic accident within the site extents. The slight injury accident occurred on Bore Street whereby a pedestrian was struck by a driver reversing their vehicle (Figure 21).

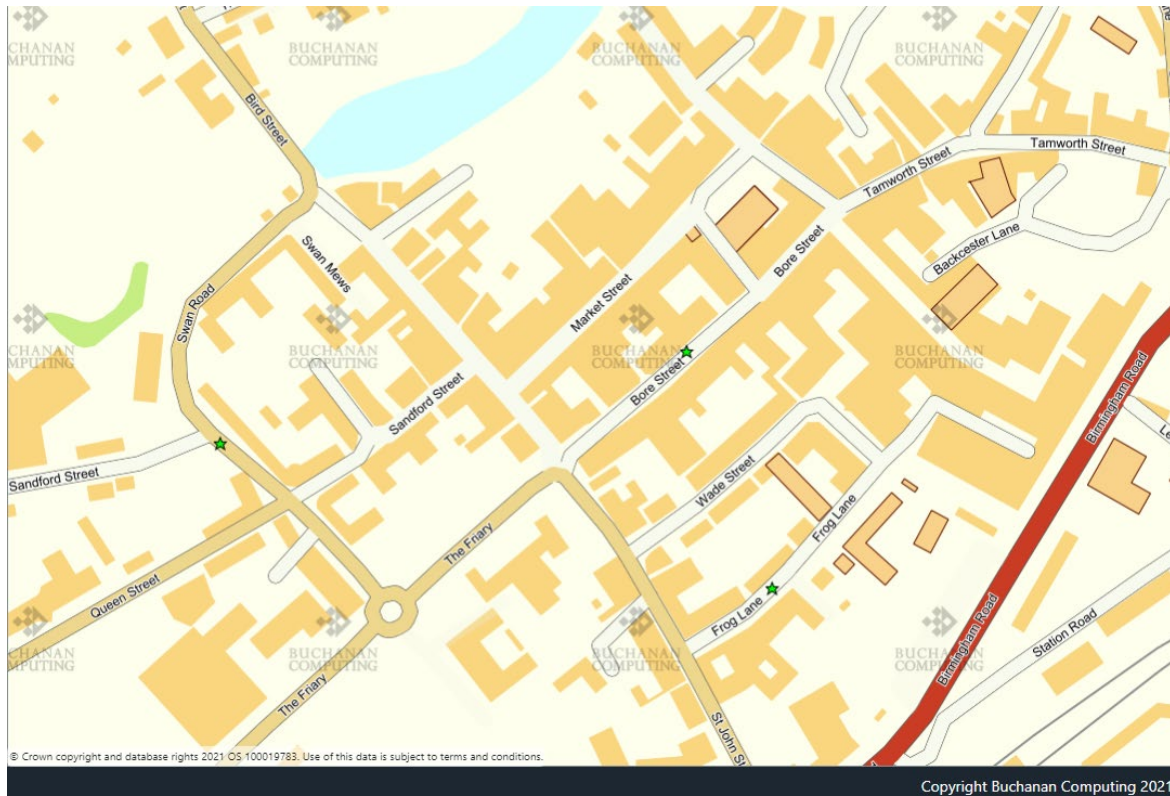


Figure 21 Lichfield City Centre Road Traffic Accidents 2015-2019

4. Site Observations

4.1. Pedestrian Zones

As discussed in 2.3.1 Lichfield City Centre is a restricted pedestrian zone. Such zones are generally shopping areas where pedestrians will normally predominate and have full use of the width of the highway extents. The current restrictions permit access for loading, disabled badge holders and permit holders resulting in an average daily flow of approximately 550 vehicles with a peak hourly flow within the restricted period of 81 vehicles (9-10am, non-market day). Traffic volumes of this magnitude would not generally be associated with a pedestrian zone as they restrict pedestrian access to the 'footway' giving greater priority to motorists. Traffic surveys indicate little change in traffic flows when the pedestrian zone is in operation which suggests a high level of noncompliance from drivers.

Following concerns from groups representing pedestrians that have loss of sight, the government issued a memorandum halting the introduction for 'shared space' schemes. The Royal National Institute of Blind People (RNIB) and The Guide Dogs for the Blind Association are currently promoting their Accessible Streets and Streets Ahead campaigns. In accordance with the Equality Act 2010 Highway Authorities are required to provide adequate guidance for those with loss of sight. Current guidance states that a carriageway should be defined by a raised kerb with a minimum height of 60mm. Where kerbs are not provided i.e. at dropped crossings suitable tactile guidance paving should be provided. Between 6pm and 9am access to the city centre is unrestricted, therefore, defined footways and carriageway should be provided. The existing low level kerbs on Tamworth Street, Conduit Street and Breadmarket Street do not conform to this guidance.

Updates to The Traffic Signs Regulations and General Directions 2016 simplified the signing requirements for pedestrian zones where cyclists are permitted with the introduction of a "PEDESTRIAN and CYCLE ZONE" sign. If any changes are to be made to the existing zone entry signage these new signs should be specified.

5. Proposals

5.1. Access Enforcement Options

The prevention of unauthorised access to any pedestrian zone relies on the use of either legal enforcement, or a physical barrier. Signage should be simplified as much as possible with the installation of updated “pedestrian and cycle zone” signs and any access and parking restriction timings should be rationalised throughout the city centre to aid compliance and successful enforcement.

It is not feasible to distinguish or quantify permitted (loading, disabled and permit holders) and non-permitted vehicle access to the pedestrian zones via the traffic survey data, however, site observations indicate a number of vehicles do use the route as a ‘cut through’ particularly the use of Bird Street, where 60-70% of recorded vehicles were passenger cars. It is also understood that the access permit scheme is no longer actively managed and there are no permit holders for Lichfield City Centre, therefore, although some of these vehicles may be entering the zone for legitimate reasons, they are technically in breach of the current traffic regulation order. There are approximately 230 commercial and residential properties within the extents of the pedestrian zone which are eligible for an access permit. Enforcement of the current or proposed restrictions will therefore reduce traffic movements within the pedestrian zone.

In order to maintain access to the pedestrian zone for permitted vehicles, the use of legal enforcement is the preferable option, however, given the limited resource available, it is doubtful that this would result in any long-term changes to driver behaviour. Fixed camera enforcement could be considered to detect, deter and disrupt vehicles should all vehicles be banned for a set period each day (e.g. 10am-4pm), providing a long-term enforcement solution. This system relies on automatic number plate recognition (ANPR) which is capable of distinguishing between registered permitted vehicles or non-permitted vehicles during its operational period. As deliveries are undertaken daily by unknown and constantly changing vehicles it is not practicable for these to be registered on an ANPR system. Similarly, disabled badges are associated to individuals rather than specific vehicles, therefore, it is not feasible to identify such users with the use of ANPR. For these reasons the use of ANPR enforcement is not practicable where access for such vehicles is permitted and the use of traditional enforcement methods remains essential during such times. Although the exact cost cannot be determined at this stage, based on previous similar schemes, installation costs are estimated at £110,000 per ANPR unit; in addition to this, there will be ongoing management and maintenance costs which may be prohibitive for a site of this nature.

The use of a physical barrier or gate is feasible where all vehicle access is prohibited for set periods at Tamworth Street, Bird Street and Sandford Street. To permit access, a human operator, either on site or within a control centre, is required should an automatic system be installed. The installation of automatic movable physical barriers, such as a rising bollard, would be costly to install and maintain. Such a system can facilitate the controlled entry of permitted vehicles either with the use of an ANPR or a key fob type system, however, as discussed above, an automated system like this is not feasible where disabled or

loading is permitted. Should there be a desire for the barrier to operate under these access conditions then a camera and intercom system will need to be maned throughout the hours of any restrictions (this can be linked to existing council call centre operators). Although used extensively within town centres their failures are well documented with a number of systems being removed or abandoned. It should be noted that it is Staffordshire County Council policy not to take on the liability of these systems so they would therefore need to be maintained and managed solely by Lichfield District Council. An alternative solution is the use of manually operated rise/fall bollards, however, as with any inground apparatus they are prone to failure over time due to dirt and water ingress; for this reason, the use of lockable swing gates would be the preferred manually operated barrier, however would require twice daily operation and add to street clutter.

The traffic data obtained for this report has highlighted a pattern of illegal vehicle manoeuvres particularly at the junction of The Friary, Bore Street, Bird Street and St John Street (Figure 16 and 17). Consideration should be given to kerb realignment and the use of bollards to physically prevent any form of left turn out of Bore Street. The majority of these manoeuvres are believed to be taking place early morning and evening therefore in the short-term details should be passed to the community policing team who can provide targeted enforcement.

	Pros	Cons
Legal enforcements	Minimal ongoing maintenance costs	Requires police resource Ineffective
Automatic Number Plate Recognition	Effective during hours of operation Able to identify/allow access for permit holders	High ongoing costs Unable to identify disabled or delivery vehicles
Automated rising bollard/gate	Effective during hours of operation Able to identify/allow access for permit holders	High ongoing costs Inherently known to fail Human operator required to permit access for disabled or delivery vehicles
Manual gate	Effective during hours of operation Minimal ongoing maintenance costs	Ongoing operational costs No access for any users when closed

5.2. Traffic Regulation Order Access Restriction Proposals

5.2.1 Option 1 (Drg No. D4281K.R01.001)

To enhance the pedestrian environment of the city centre, additional restrictions should be introduced during times of peak pedestrian activity to prohibit all motorised vehicles from entering. It is proposed that the pedestrian zone of Tamworth Street, Bore Street, Conduit Street, Market Street and Bird Street, are restricted to all vehicles throughout core trading hours i.e. 10am – 4pm, with only delivery vehicles, permit holders and disabled badge holders permitted outside these times. Traffic survey data indicates that during core trading hours in excess of 300 vehicles a day from the Bore Street Pedestrian Zone and a further 300 vehicles a day from the Bird Street Pedestrian Zone will be prevented from entering the pedestrian zone which will improve accessibility and mobility for pedestrians.

Such proposals will also restrict access for permit holders and delivery vehicles throughout the proposed pedestrian zone period therefore further consultation with residents and business owners will be required to fully understand the implications and gain local support for such restrictions. A permit system for permitted resident and business vehicles should be reinstated to clearly identify those vehicles with a right to access the pedestrian zone.

To maintain current disabled parking provision within the city centre during core trading hours, it is proposed to reallocate existing limited waiting on-street parking spaces within Wade Street and across the city centre car parks. More detailed consideration of the most suitable location of this disabled parking should be undertaken should this option be progressed to ensure an even coverage of disabled parking provision throughout the city centre. Consideration should also be given to limiting waiting within a proportion of city centre car parks to provide regular turnover of the space available.

It should be noted that proposed restriction timings are indicative and can be amended to accommodate stakeholder requirements as required. It is advisable where the pedestrian zone is operational for a limited period, that a review of existing kerbs and tactile provision should be undertaken to ensure adequate guidance is provided to those pedestrians who have loss of sight outside of any pedestrianisation period.

Implementation of this option would require installation of manual or automatic gates or rising bollards at all entry points into the pedestrian zone (Tamworth Street, Bird Street and Sandford Street) as well as changes to the existing TRO and on street signage. Based on comparable schemes within Staffordshire it is anticipated that these works will cost approximately £30,000 (subject to confirmation of public consultation requirements)

Pros	Cons
Enhanced pedestrian environment during core trading hours	Restricted access for residents and businesses

Easily enforceable with the use of a physical barrier between 10am and 4pm	Loss of disabled parking within pedestrian zone during core trading hours
Disabled parking possible immediately adjacent to shops outside of core trading hours	Ongoing operational cost to open/close gate

5.2.2 Option 2 (Drg No. D4281K.R01.002)

Option 2 proposes to close Conduit Street, Market Street, Breadmarket Street to disabled badge holders. Loading and permit holder access will remain as existing. The section of Bore Street between Conduit Street and Breadmarket Street will be repaved to provide defined carriageway and footways delineated by a kerb to ensure inclusivity and allow vulnerable pedestrians to navigate safely. Uncontrolled pedestrian crossings will be provided on desire lines. This will become the principal route through the pedestrian zone reducing vehicle flow through the market area. Disabled badge holders will continue to be permitted to access parking spaces on Tamworth Street and Bore Street at all times. The use of Bore Street provides a direct route for vehicles through the city centre, creating potential for higher volumes of traffic using the road as a 'cut through', and therefore, should be combined with a prohibited period as discussed in Option 1. The direct alignment has the potential to increase vehicle speeds, which would need to be mitigated with traffic calming measures, such as a narrow carriageway. While this option will improve pedestrian movements within Market Square, opening the existing successful pedestrian zone of Bore Street to vehicles will create a barrier between Market Square and Three Spires shopping centre, negatively effecting in excess of 2300 pedestrian movements per day.

In combination with this option visible police enforcement will be required to ensure vehicle numbers are kept to a minimum and discourage 'cut through' traffic from using the route. A permit system for permitted resident and business vehicles should be reinstated to clearly identify those vehicles with a right to access the pedestrian zone.

It is proposed that 13no existing disabled badge holder parking spaces would be relocated to Wade Street and other car parks around the city centre. More detailed consideration of the most suitable location of this disabled parking should be undertaken should this option be progressed to ensure an even coverage of disabled parking provision throughout the city centre. Consideration should also be given to limiting waiting within a proportion of city centre car parks to provide regular turnover of the space available.

A review of existing kerbs and tactile provision should be undertaken to ensure adequate guidance is provided to those pedestrians who have loss of sight outside of the pedestrianisation period. In addition, the materials choices from the previous phase should be replicated for continuity.

Implementation of this option would require significant paving and kerbing works within Bore Street as well as changes to the existing TRO and on street signage. Based on comparable schemes within Staffordshire

and assuming a high quality material pallet to match the existing it is anticipated that these works will cost approximately £500,000 (subject to confirmation of public consultation requirements)

Pros	Cons
Enhanced pedestrian environment by significant reduction in traffic flows around Conduit Street, Market Street and Breadmarket Street.	Relies on driver compliance and legal enforcement
Access for loading and permit holders maintained	Expensive to implement with significant paving and kerbing works required
23 Disabled parking spaces remain within city centre	High vehicle flows (for a pedestrian zone) will remain or potentially increase and be diverted onto the currently restricted section of Bore Street
	Conflict with existing street trader licence agreements (Riley's Greengrocer)
	Proposed alignment potentially increases vehicle speeds
	Diminish pedestrian access between Market Square and Three Spires shopping centre

5.2.3 Option 3 (Drg No. D4281K.R01.003)

Option 3 proposes to remove all existing disabled parking from within the pedestrian zone. Access rights for disabled badge holders would be removed from Tamworth Street, Conduit Street, Market Street, Breadmarket Street and Bore Street with the pedestrian zone extended to at any time, resulting in a consistent pedestrian zone restriction within the city centre and allowing for the removal of some existing signage within the zone. Access for loading would be maintained reducing any impact on residents and businesses. Although it is not feasible to distinguish between disabled badge holders and permit holders within the traffic survey data, it is anticipated that such proposals would reduce traffic flows within the pedestrian zone by up to 80%. At present there are no registered permit holders therefore it is anticipated that a small proportion of this figure would be eligible for a permit and would continue to have the right to access the pedestrian zone under this proposed option. The use of physical barriers to prevent unauthorised access is not practicable for this option, however, removal of the disabled parking which acts an attractor will greatly reduce the need for vehicles to enter the pedestrian zone. A permit system for

permitted resident and business vehicles should be reinstated to clearly identify those vehicles with a right to access the pedestrian zone.

To maintain current disabled parking provision throughout the pedestrian zone period it is proposed to reallocate existing limited waiting on-street parking spaces within Wade Street and across the city centre car parks. More detailed consideration of the most suitable location of this disabled parking should be undertaken should this option be progressed to ensure an even coverage of disabled parking provision throughout the city centre. Consideration should also be given to limiting waiting within a proportion of city centre car parks to provide regular turnover of the space available.

A review of existing kerbs and tactile provision should be undertaken to ensure adequate guidance is provided to those pedestrians who have loss of sight; however, the removal of all non-essential traffic at all times will create a standardised pedestrian zone and considerably reduce the potential pedestrian/vehicle conflict. Reallocation of parking bays provides an opportunity for public realm improvements and promotion of 'café culture' and further street trading enhancements.

It should be noted that the proposed restriction timings are indicative and can be amended or remain in operation from 9am to 6pm if deemed appropriate.

Implementation of this option would require changes to the existing TRO and on street signage. The existing kerbing and paving alignment can remain until funds are made available to progress any desired public realm improvements, the most significant of which would be to Bore Street. Based on comparable schemes within Staffordshire it is anticipated that the initial TRO amendments will cost approximately £20,000 (subject to confirmation of public consultation requirements)

Pros	Cons
Enhanced pedestrian environment by significant reduction in traffic flows	Relies on driver compliance and legal enforcement
Access for loading and permit holders maintained	Loss of disabled parking within Pedestrian Zone
Potential to improve the public realm by reallocation of spaces away from parking provision	
Relatively cost effective to implement with potential for trial period	

5.2.4 Bird Street One Way System Alteration Options (Drg No. D4281K.R01.004)

In addition to options 1-3, consideration should be given to measures to reducing vehicle numbers on Bird Street. As discussed in the preceding options the use of physical measures is not practicable whilst maintaining access for permit holders throughout the day. Traffic surveys indicate an average of 400 vehicles a day travel along the street which is currently restricted to permit holders and loading only. Almost 300 of these vehicles gain access to Bird Street via Sandford Street. Given the number of premises fronting

Bird Street this is excessive indicating a significant number of drivers are using the route as a cut through. The average peak hourly flow is 48 vehicles per hour at 19:00 however flows are relatively evenly spread throughout the day. Between 10am and 4pm the average peak hourly flow is 39 vehicles per hour at 15:00.

Option A

To remove the potential cut through the existing one-way restriction on Bird Street, north of the junction with Sandford Street, should be reversed, as should the restriction on Sandford Street. This arrangement will permit access from either end of Bird Street with all traffic being required to exit via Sandford Street.

Option B

To remove the potential cut through, the existing one-way restriction on Sandford Street should be reversed allowing vehicles to exit from Bird Street using this route. Traffic data shows an average of approximately 350 vehicles a day access Bird Street via the Sandford Street junction with only 120 coming from the Friary junction. This indicates that a large proportion of unauthorised vehicles feel there is a benefit of using this route. It is therefore anticipated that removal of the option to use this route will greatly reduce vehicle flows on Bird Street.

Public realm enhancements to Bird Street are proposed within the Lichfield City Centre Master Plan report therefore any changes to the existing one-way system should be considered in conjunction with these proposals.

Implementation of either of these options would require changes to the existing street furniture and paving at the junction of Bird Street and Sandford Street, as well as to the existing TRO and on street signage. Based on comparable schemes within Staffordshire and assuming a high quality material pallet to match the existing it is anticipated that these works will cost approximately £80,000 (subject to confirmation of public consultation requirements)

Pros	Cons
All existing permitted loading and permit holder access to be maintained	Relatively high cost of Bird Street/Sandford Street junction realignment
Reduced vehicle flows by removal of unauthorised cut through traffic	

5.3. Pedestrian Improvements

Regardless to any traffic regulation order changes the junction of The Friary, Bore Street, Bird Street and St John Street will benefit from pedestrian improvements across the Bird Street and Bore Street approaches where significant pedestrian flows have been recorded. Dropped kerbs with tactile paving provision should be provided as near as practicable to these desire lines. These improvements should be completed as part of works to prevent illegal vehicle manoeuvres as discussed in 4.1 Access Enforcement Options

6. Street Furniture

Road Signage

Regulatory road signs will be required to inform drivers of the various restrictions (parking, one way, access etc.) throughout the site. Legal requirements for the positioning and lighting of such signs are set out in the TSRGD 2016. A full road sign review should be undertaken at the detailed design stage with all required signage being incorporated into the overall street furniture layout to minimise street clutter. Where feasible signs should be integrated into other street furniture, moved back to the building line, mounted onto lighting columns or building facades. Any signposts should be painted to match other furniture throughout the city centre with the addition of a contrasting, coloured band (150mm deep) to aid those pedestrians with loss of sight.

Bollards/Gates

Where bollards or gates are required to physically restrict vehicle access or protect structures they should be of a colour and style to match existing bollards used throughout the city. Any bollard should be a minimum of 1.0m tall with contrasting colour at the top to increase their conspicuity for partially those with loss of sight (as stated within the DfT Inclusive Mobility guidance document) and be 'socketed' to help reduce future maintenance costs should damage occur.

Cycle Parking

To encourage sustainable travel, additional secure cycle parking should be provided within the pedestrian zone. The use of simple Sheffield stands is recommended as they offer a robust and cost-effective solution. Any proposed areas identified will need to allow sufficient width so that parked bikes will not obstruct the free flow of pedestrians. If spaced at 1.2m (1.0m minimum) centres in accordance with best practice two bikes can be secured to the same rack with a range of locking positions. As with other items of street furniture cycle racks should have contrasting coloured bands to aid the visually impaired. It is recommended they have a powder coated finish to protect against chips, scratches and maximise longevity.

7. Recommendations / Summary

The most desirable option should be self-enforcing whilst remaining easily maintainable. Without significant changes to the existing pedestrian zone exclusions, it is not practicable to provide a physical means of enforcement to prevent unlawful access and reduce vehicle numbers. Traffic survey data indicates that the approximately 80% of vehicles within the pedestrian zone are private cars therefore removal of the need to access the zone by removing disabled parking and reversal of the Bird Street one way system will have the greatest effect to traffic flows by removing the reason for vehicles to enter. Therefore options 3 and 4 offer the maximum benefit to pedestrians and positive change to the pedestrian zone environment.

It is acknowledged that there are many permutations of the options discussed within this report with potential for a hybrid option including a combination of restriction proposals and enforcement options. Should this be deemed preferable then further consideration can be given to the implications of such an option.

The options discussed within this report should be carefully considered at cabinet level with the preferred option or options being progressed via considerable stakeholder and public consultation to ensure good public support.

Appendix A: Drawings

Drawing Number	Rev.	Drawing Name
D4281K.R01.001	P01	Option 1 - Proposed No Vehicle access between 10am and 4pm
D4281K.R01.002	P01	Option 2 - Removal of Disabled Badge Holder Access to Market Area
D4281K.R01.003	P01	Option 3- Removal of Disabled Badge Holder Access within Pedestrian Zone
D4281K.R01.004	P01	Bird Street One Way System Alteration Options