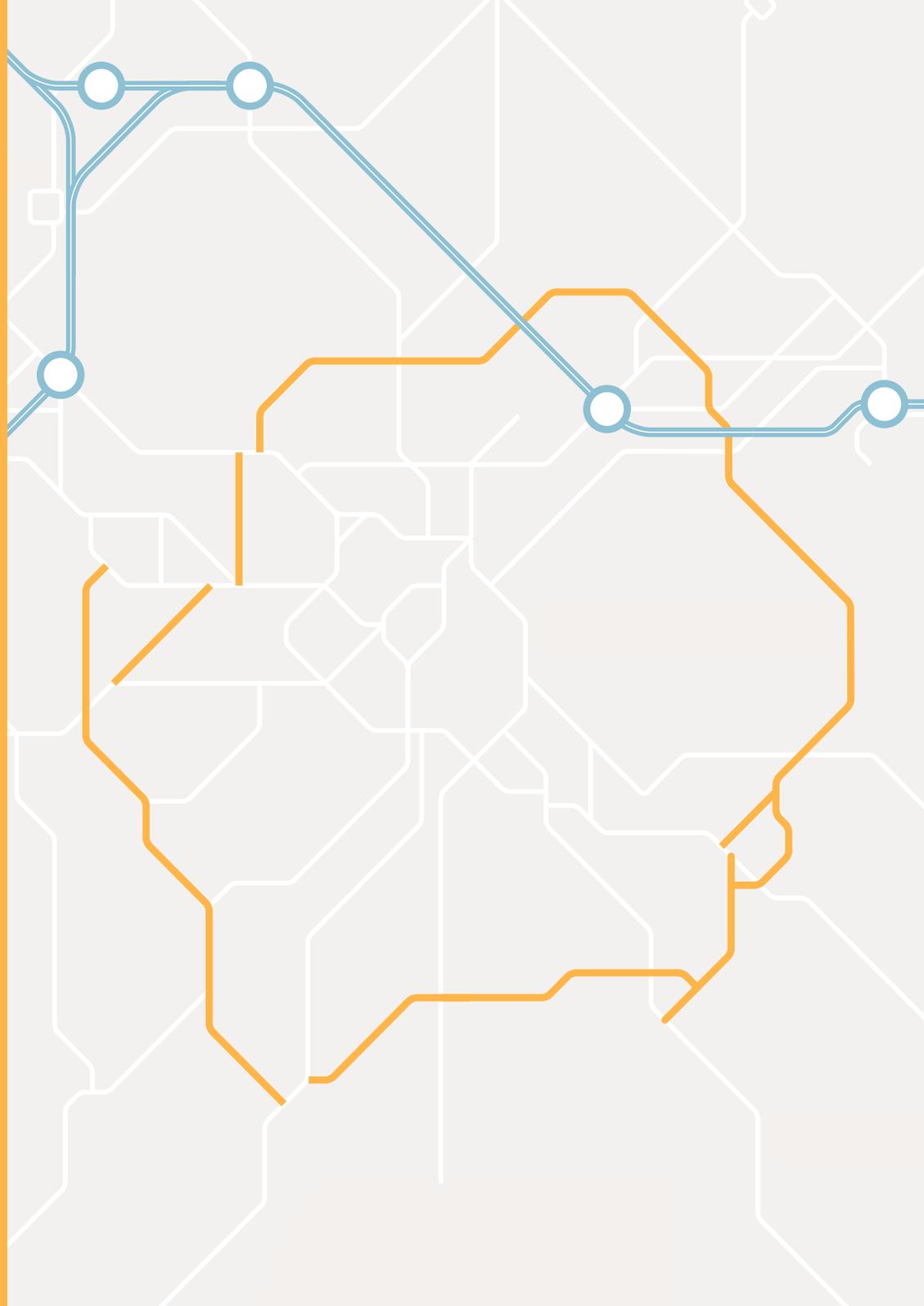


West Midlands Key Route Network

Birmingham Outer Circle



Transport for
West Midlands



The Birmingham Outer Circle route is a 27 mile/44km section of the West Midlands Key Route Network (KRN) providing connectivity between the various radial routes from the City Centre and joining key locations around suburban areas of Birmingham and Sandwell which are essential for commuters, regional tourist attractions and access to employment opportunities.

The Birmingham Outer Circle route is formed of the A4040, A4030 and B4146.

Within Birmingham, this route provides access to Aston Villa Football Club and Cadbury World which are important leisure destinations for Birmingham and the wider region. The route also enables direct access to the Queen Elizabeth Hospital, Birmingham City Hospital, Birmingham City University North Campus and the University of Birmingham campus.

This route also forms crucial connections with seven routes on the Key Route Network, these are:

Birmingham Cross City

- A4040 Aston Lane / A453 Aldridge Road
- A4040 Reservoir Road / A5127 Gravely Hill North
- A4040 Bromford Lane / A38 Tyburn Road
- A4040 Bromford Lane / A47 Heartlands Parkway / Fort Parkway

- A4040 Fordhouse Lane / A441 Pershore Road
- A4040 Watford Road / A441 Pershore Road
- A4040 Oak Tree Lane / A38 Bristol Road

Birmingham to Stafford

- A4040 Aston Lane / A34 Birchfield Road

Coventry to Birmingham

- A4040 Yardley Road / A45 Coventry Road

Solihull to Birmingham

- A4040 Stockfield Road / A41 Warwick Road
- B4146 Yardley Road / A41 Warwick Road
- A4040 Fox Hollies Road / A34 Stratford Road
- B4146 School Road / A34 Stratford Road
- B4146 Addison Road / A435 Alcester Road South

West of Birmingham

- A4040 Harborne Park Road / B4124 High Street
- A4040 Lordswood Road / A456 Hagley Road
- A4040 Barnsley Road / A456 Hagley Road

Sedgley to Birmingham

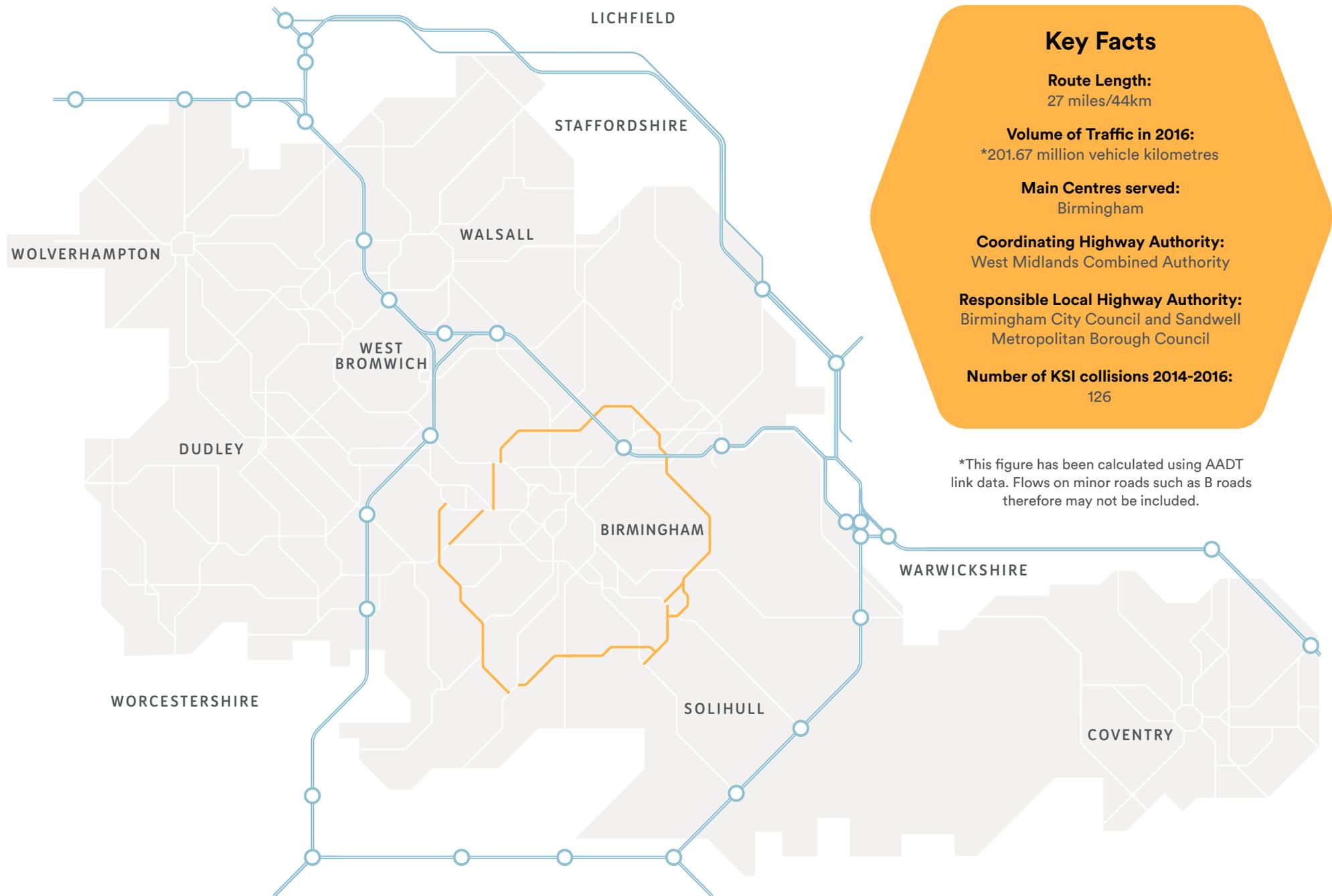
- A4040 City Road / A457 Dudley Road
- A4040 Handsworth Road / A457 Dudley Road

Black Country to Birmingham

- A4040 Boulton Road / A41 Soho Road
- A4040 Rookery Road / A41 Soho Road

The route mainly consists of single carriageway roads with dual carriageway sections along A4040 Fox Hollies Road, Stockfield Road and Bromford Lane. The Outer Circle Route passes through sub-urban residential communities and local shopping centres and provides access to retail, employment, education and communities.

There are no direct connections to the strategic road network operated by Highways England but the route links indirectly to the M5 via the A38, A456 and A41, to the M6 via the A34 and A47, and to the M42 via the A45, A34, A435 and A441.



Key Facts

Route Length:
27 miles/44km

Volume of Traffic in 2016:
*201.67 million vehicle kilometres

Main Centres served:
Birmingham

Coordinating Highway Authority:
West Midlands Combined Authority

Responsible Local Highway Authority:
Birmingham City Council and Sandwell Metropolitan Borough Council

Number of KSI collisions 2014-2016:
126

*This figure has been calculated using AADT link data. Flows on minor roads such as B roads therefore may not be included.

Figure 2

Congestion, Delay, Reliability

This route represents 7% of the total length of the West Midlands KRN. According to the latest data available from 2016, this route had a minimum annual average daily flow (AADF) of 9,000 vehicles, a maximum of 30,200 with an average of 16,600 AADF.

The route experiences large volumes of traffic, particularly on:

- The A4040 Reservoir Road between its junctions with Slade Road and Fairholme Road;
- the A4040 between the B4114 Coleshill Road and the Manor Road junction; the A4040 Stoney Lane from where it meets with Bordesley Green East as far as its junction with A41 Warwick Road;
- the B4146 Cole Bank Road where it meets with A4040 Fox Hollies Road; and
- the A4040 between the A457 Dudley Road and the A41 Soho Road.

The locations of the most significant congestion-related delays (>60 sec/km) are set out in tables 1 and 2.

Table 1: AM Peak Congestion-Related Delays

Road	Location	Direction
A4040	Aston Lane, Wellhead Lane to Birchfield Road, Perry Barr	Anticlockwise
A4040	Witton Road/Brookvale Road, Witton Lane to George Road, Witton	Anticlockwise
A4040	Marsh Hill/Reservoir Road, Bleak Hill Road to High Street, Erdington	Clockwise
A4040	Bromford Lane, A38 Tyburn Road to A47 Heartlands Parkway	Clockwise
A4040	Bromford Lane, B4114 Washwood Heath Road to A47 Heartlands Parkway, Hodge Hill	Anticlockwise
A4040	Bromford Lane, B4114 Washwood Heath Road to Cotterills Lane, Ward End	Clockwise
A4040	Bromford Lane, B4128 Bordesley Green East to Cotterills Lane, Ward End	Anticlockwise
A4040	Station Road, Blakesley Road to B4128 Bordesley Green East, Stetchford	Anticlockwise
A4040	Stockfield Road, B4146 Wharfdale Road to A45 Coventry Road, Tyseley	Anticlockwise
B4146	Yardley Road, A41 Warwick Road to A4040 Stockfield Road, Tyseley	Anticlockwise
A4040	Fox Hollies Road, York Road to A41 Warwick Road, Hall Green	Anticlockwise
B4146	Cole Bank Road, Sarehole Road to A34 Stratford Road, Springfield	Anticlockwise
A4040	Brook Lane, Yardley Wood Road to B4146 Coldbath Road, Billesley	Clockwise
B4146	Addison Road, Barn Lane to A435 Alcester Road South, Kings Heath	Clockwise
A4040	Howard Road/Vicarage Road, Priory Road to A435 Alcester Road South, Kings Heath	Both
A4040	Fordhouse Lane, Barn Close to A441 Pershore Road, Lifford	Clockwise
A4540	Icknield Port Road to Five Ways Island	Anticlockwise

ROUTE PERFORMANCE

Peak hour journey time on the sections of the route experiencing the highest delays has been found to be 150% higher than (i.e. 2½ times) the equivalent free flow time, which is based on the average journey time between 22:00 – 06:00.

A particular impact of the congestion on this route is to create problems with access to the Queen Elizabeth Hospital, Birmingham City Hospital, Birmingham Heartlands Hospital and Jaguar Land Rover at Castle Bromwich which relies on just-in-time deliveries.

Road	Location	Direction
A4040	Lindon Road, Franklin Road to A41 Pershore Road, Cotteridge	Anticlockwise
A4040	Lindon Road/Oak Tree Lane, Franklin Road to A38 Bristol Road, Bourneville/Selly Oak	Clockwise
A4040	Lindon Road, Willow Road to Heath Road, Bourneville	Anticlockwise
A4040	Harborne Lane, B4129 Metchley Lane to A38 Aston Webb Boulevard, Selly Oak	Anticlockwise
A4040	Lordswood Road, Court Oak Road to B4124 High Street, Harborne	Anticlockwise
A4040	Lordswood Road, Knightlow Road to A456 Hagley Road West, Bearwood	Clockwise
A4030	Bearwood Road, B4182 Sandon Road to A456 Hagley Road West, Bearwood	Both
A4040	City Road, B4182 Sandon Road to B4125 Portland Road, Bearwood	Both
A4040	City Road, Rotton Park Road to A457 Dudley Road, Edgbaston	Both
A4040	Winson Green Road, Lodge Road to A457 Dudley Road, Edgbaston	Both
A4040	Boulton Road, Victoria Road to A41 Soho Road, Winson Green	Clockwise
A4040	Rookery Road, Albert Road to A41 Holyhead Road, Handsworth	Anticlockwise
A4040	Oxhill Road/Church Street, Rookery Road to B4124 Handsworth Wood Road, Handsworth Wood	Both
A4040	Wellington Road, Wood Lane to Birchfield Road, Perry Barr	Clockwise
A441	Masshouse Lane, Kings Norton to Selly Park Road, Stirchley	Inbound to City
A4540	Ryland Road to Five Ways Island	Clockwise
A4540	Icknield Port Road to Five Ways Island	Anticlockwise

Average Speeds

The average speed for this route in the AM peak is between 10-20mph throughout its busiest sections. The areas approaching Erdington, Ward End, Hay Mills, Sparkhill, Smethwick and Witton are particularly slow during the morning and evening peaks and speed can be as low as less than 10 mph. The sections where average speeds are below 10 mph in the peak ours are as follows:

- A4040 Witton- Stockland Green
- A4040 between B125/A457 (Rotton Park
- A4030 Bearwood Road- A4040/Knightlow Road (northbound only)
- A4040 Howard Road
- A4040 Fox Hollies Road from B4146-B4514
- A4040 Stechford Train Station- Bromford Lane (Fox and Goose)
- A4040 Six Ways Island, Erdington

Table 2: PM Peak Congestion - Related Delays

Road	Location	Direction
A4040	Aston Lane, Birchfield Road to B4140 Witton Road, Perry Barr	Both
A4040	Brookvale Grove, Amberley Road to B4140 Witton Road, Perry Barr	Anticlockwise
A4040	Bromford Lane, A38 Tyburn Road to A47 Heartlands Parkway	Clockwise
A4040	Bromford Lane, B4114 Washwood Heath Road to A47 Heartlands Parkway, Hodge Hill	Anticlockwise
A4040	Bromford Lane, B4114 Washwood Heath Road to Flaxley Road, Ward End	Clockwise
A4040	Bromford Lane, B4128 Bordesley Green East to Cotterills Lane, Ward End	Anticlockwise
A4040	Station Road, Manor Road to B4128 Bordesley Green East, Stetchford	Clockwise
A4040	Station Road, Blakesley Road to B4128 Bordesley Green East, Stetchford	Anticlockwise
A4040	Stoney Lane, Foliot Fields to Hob Moor Lane, South Yardley	Clockwise
A4040	Stoney Lane, Harvey Road to Hob Moor Road, South Yardley	Anticlockwise
A4040	Stockfield Road, B4146 Wharfdale Road to A45 Coventry Road, Tyseley	Anticlockwise
B4146	Yardley Road, The Avenue to Douglas Road, Acocks Green	Both
A4040	Stockfield Road, B4146 Wharfdale Road to A41 Warwick Road, Tyseley	Clockwise
B4146	Cole Bank Road, Sarehole Road to A34 Stratford Road, Springfield	Anticlockwise
A4040	Fox Hollies Road, Robin Hood Lane to Priory Road	Southbound
B4146	Addison Road, Barn Lane to A435 Alcester Road South, Kings Heath	Clockwise

ROUTE PERFORMANCE

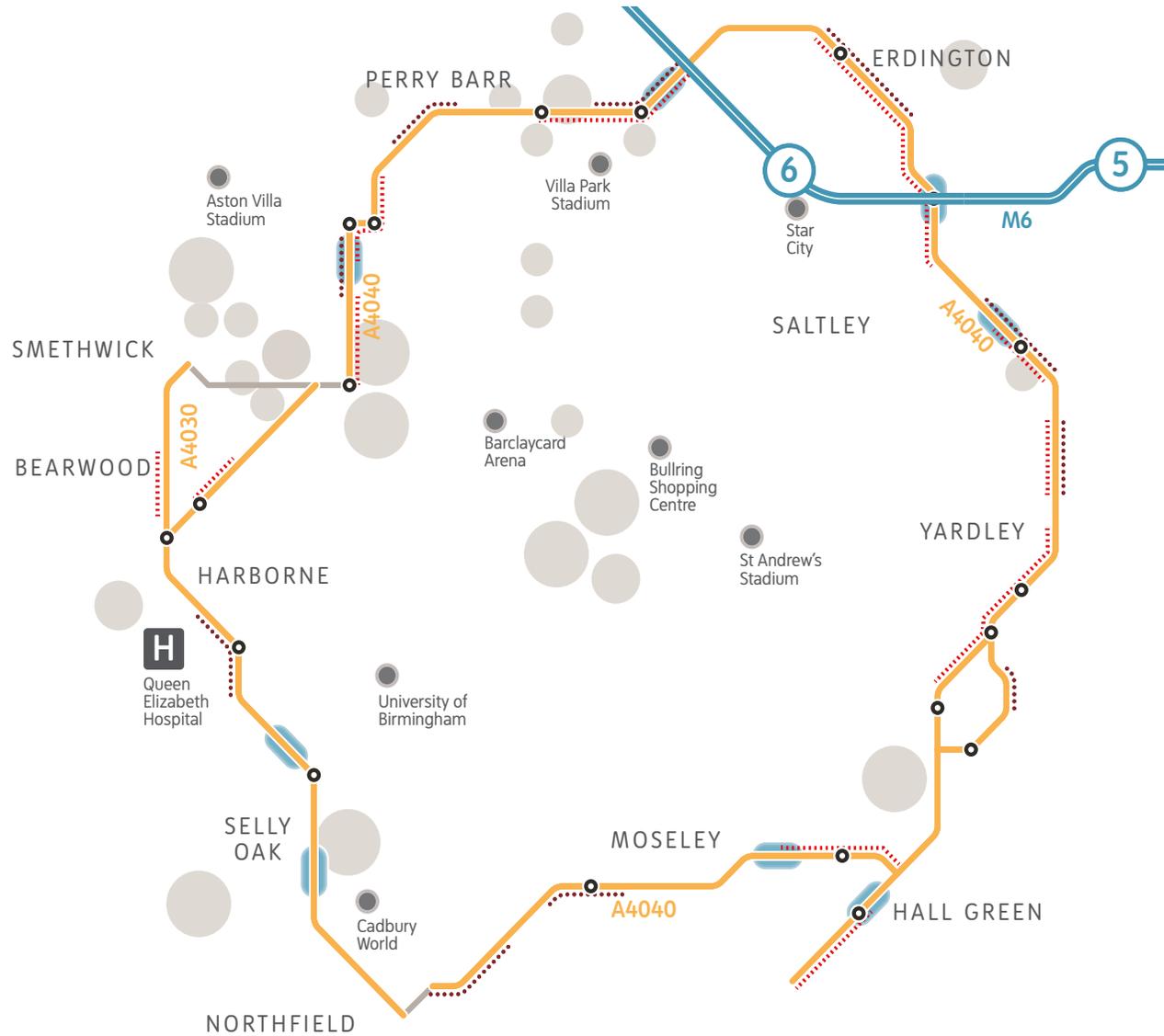
Road	Location	Direction
A4040	Vicarage Road, Priory Road to Howard Road, Kings Heath	Anticlockwise
A4040	Fordhouse Lane, The Worthings to A441 Pershore Road, Kings Norton	Clockwise
A4040	Watford Road, Franklin Road to A441 Pershore Road, Kings Norton	Anticlockwise
A4040	Linden road, Oak Tree lane to Bourneville Lane, Bourneville	Anticlockwise
A4040	Harborne Park Road/High Street, St Peters Road to Albert Road, Harborne	Clockwise
A4040	Lordswood Road, Knightlow Road to A456 Hagley Road West, Bearwood	Clockwise
A4030	Bearwood Road, B4182 Sandon Road to A456 Hagley Road West, Bearwood	Both
A4030	Bearwood Road, Marlborough Road to B4182 Sandon Road, Bearwood	Southbound
A4040	City Road, Rotton Park Road to A457 Dudley Road, Edgbaston	Both

Junction Capacity Issues

There are currently several junctions along the route where the evidence suggest there are capacity issues restricting the free flow of traffic in peak hours; these are:

- A4040 Bromford Lane and its junction with A47 Fort Parkway
- A4040 Stockfield Road and its junction with B4146 Yardley Road
- A34 Stratford Road and its junction with B4146 School Road
- A35 Alcester Road and its junction with B4146 Addison Road
- A441 Pershore Road and its junction with A4040 Fordhouse Lane
- A4040 Oak Tree Lane and its junction with A38 Bristol Road
- A4040 Harborne Park Road and its junction with B4124 High Street
- A4030 Bearwood Road and its junction with A456 Hagley Road
- A457 Dudley Road and its junction with A4040 Winson Green Road
- A4040 Boulton Road and its junction with A41 Soho Road
- A41 Soho Road and its junction with Grove Lane
- A4040 Aston Lane and its junction with A34 Birchfield Road
- A4040 Aston Lane and its junction with B4137 Witton Lane
- A4040 Marsh Hill and its junction with B4531 Streetly Road

West Midlands Key Route Network Birmingham Outer Circle



Key

Roads	The Route
	Strategic Road Network operated by Highways England
Environment, Flows and Junction Capacity	Flooding area
	Congestion area
	Junction capacity issue
Route Safety	KSI hotspot zone – high number of serious or fatal incidents
Key Considerations	Housing development area
	Named site of strategic importance
	District and local centres



Figure 3

Improving Road Safety is critical to the overall vision of the West Midlands Strategic Transport Plan – Movement for Growth. The development of a new West Midlands Road Safety Strategy and Action Plan will make reference to the current West Midlands forecasts to achieve a 40% reduction in fatalities and serious injury casualties by 2020, from the 2015 baseline.

During the 2016 calendar year, we noted the following key statistics:

Collisions

- 281 collisions, involving 518 vehicles
- Main contributory factor – Failed to look properly (pedestrian) (22% of all collisions)
 - The KSI ratio for this group is one of the highest for this route at 24% with 28% of serious injuries attributed to this group.

Casualties

- Total casualties: 374
- Killed and Seriously Injured: 50 (13% of all casualties, up 3% when compared to 2015 figure of 47)
 - Killed: 0 (down by 0.2%)
 - Seriously injured: 50 (13% of all casualties, up by 3%)
- Slight: 324 (87% of all casualties)

Casualty Types

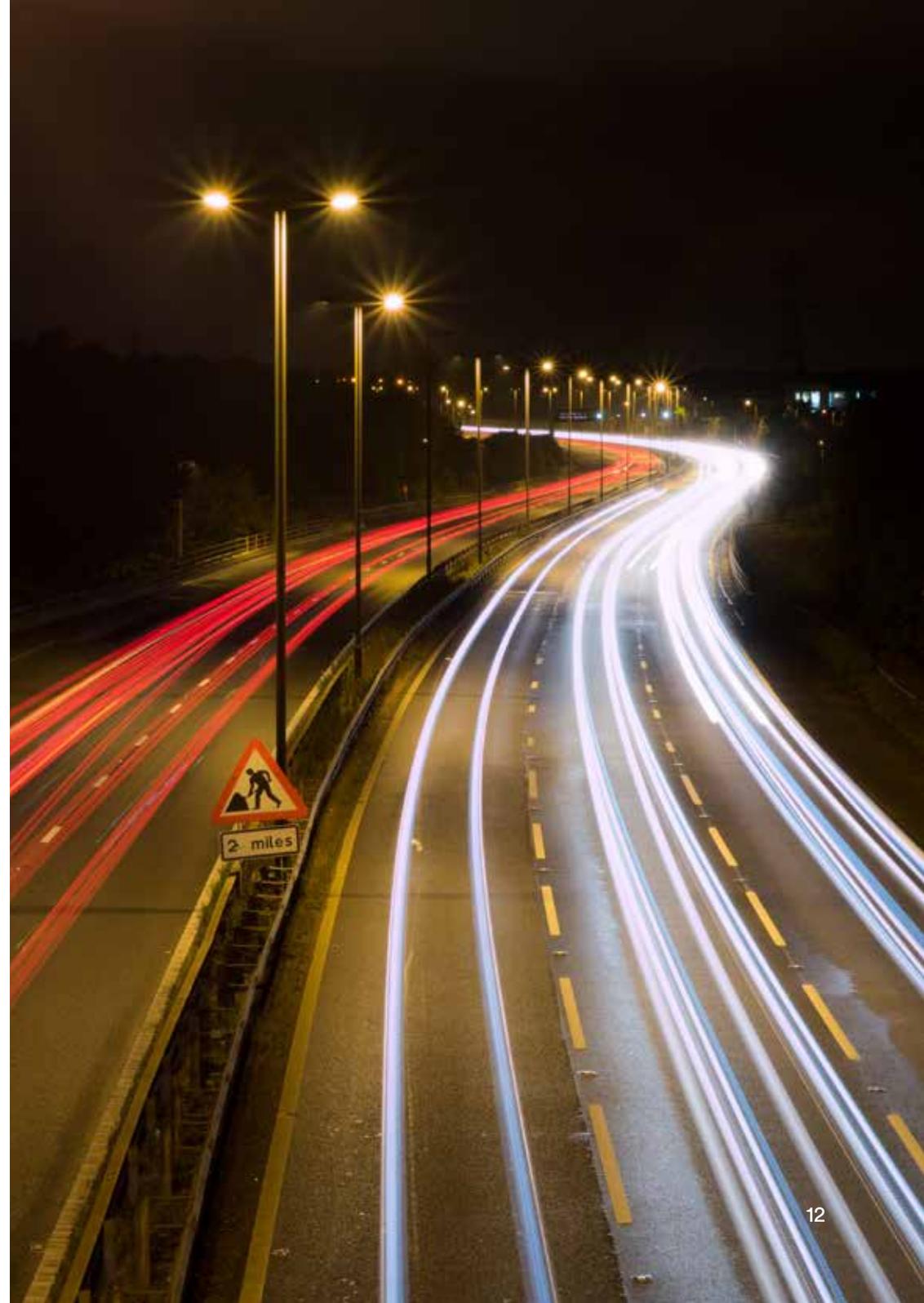
We noted the following key statistics in relation to casualties falling into specific groups:

- Pedestrians: 84 (an increase of 2% compared to 2015)
- Powered Two wheel vehicles: 51 (a reduction of 0.6% compared to 2015)
- Pedal cyclists: 33 (a reduction of 0.5% compared to 2015)
- Car occupants: 2026 (a reduction of 2% compared to 2015)

KSI Clusters

There is a spread of KSI clusters on the A4040 forming the Birmingham Outer Circle. The main locations of KSI clusters are:

- On the A4040 (Harborne), between Court Oak Rd Roundabout and High St, a single carriageway in a built-up residential/ High St environment, there has been a fatal in this section.
- On the A4040, between A41 and Oxhill Rd, a single carriageway in a built-up residential area; there has been a fatal accident in this section.
- On the A4040 (Witton), in the vicinity of the roundabout with the B4137, a single carriageway in a built-up residential/ commercial area.
- On the A4040 (Erdington), in the vicinity of the roundabout with the A5127, a single carriageway in a built-up residential area.
- On the route B4146/A435/B4122 (King's Heath), between the intersection with the A4040; this area is urban dual carriageway in a built-up residential area.
- On the A4040 (Erdington), in the vicinity of the intersection with the A441, a single carriageway in a built-up residential/ commercial area.

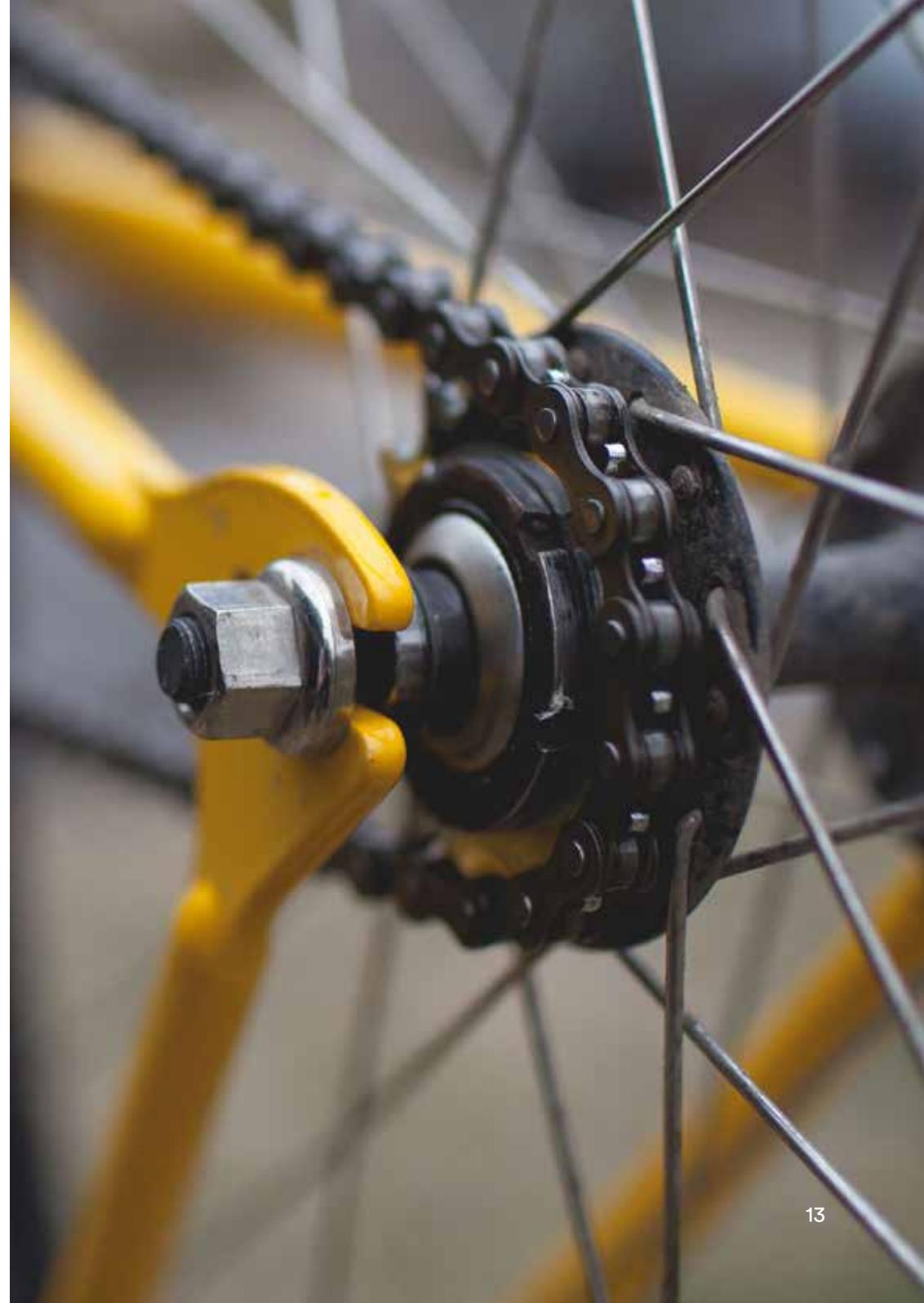


Along each section of the route in Birmingham, there are no formal provisions, however they do intersect with canal towpath and greenways a number of times.

There are no formal provisions for cycling along the sections in Sandwell.

There are a number of priority cycling corridors defined for the Sustainable Transport Delivery Excellence Programme (STDEP) in the West Midlands region that intersect with this route:

- A34 Corridor;
- Aston/Witton Corridor running parallel to A34 corridor;
- A41 Corridor;
- A456 Corridor;
- A38 Corridor;
- A435 Corridor;
- A45 Corridor and;
- A34 Corridor;



The route is well served by a number of high frequency bus services operating every 10 minutes on the core outer circle clockwise and anticlockwise bus services and the corridor has some other bus services operating over sections of the corridor. These services provide access between a number of district centres and communities (Perry Barr, Witton, Erdington, Stechford, Yardley, Acocks Green, Hall Green, Kings Heath, Cotteridge, Harborne, Bearwood, Winson Green and Handsworth) and to leisure destinations, as well as employment sites including Queen Elizabeth Hospital, Birmingham City Hospital and Birmingham Heartlands Hospital.

The average bus speed along this route is 10.8mph (data taken from the 11C bus route). The average total number of daily bus trips is 44,025.

The route is part of the Core Bus Network and received bus showcase investment. It is also identified for further upgrade as a Sprint corridor in the West Midlands Strategic Transport Plan - Movement for Growth.

The route crosses the radial railway lines and connects to stations at Perry Barr and Witton on the Walsall Line, Winson Green (Midland Metro), Selly Oak and Kings Norton stations on the Cross City South line, Spring Road (Shirley Line), Hall Green, Stechford (Coventry Line). A station is planned at The Fort shopping park in the Midlands Rail Hub plan.

Table 3: Main Bus Routes

Road(s) Served	Frequency	Route No.
A4040 Perry Barr - Bearwood - Cotteridge - Kings Heath - Acocks Green - Erdington - Perry Barr	Every 10 mins	11A
A4040 Perry Barr - Erdington - Acocks Green - Kings Heath - Cotteridge - Bearwood - Perry Barr	Every 10 mins	11C
A4040/A4030 Harborne - Bearwood	Every 30 mins	48
A4040 Cotteridge - Selly Oak	Every 60 mins	84
A4040 Bearwood - Perry Barr	Every 75–90 mins	40X

*Note- All daily averages have been obtained by analysing 15 days data (Mon-Fri) during the month of March 2017.

Of these stations the following have park and ride facilities:

- Selly Oak
- Kings Norton
- Hall Green

There are no plans for an orbital rail or Metro service in this corridor.

FREIGHT AND LOGISTICS

The AADF data for 2016 has been used to analyse HGV flows on each respective route. Due to the nature of this route linking smaller centres and not interacting with the city centre, freight flows are minimal, with the exception of large HGV flows of >1,000 per day on Fox Hollies Road (A4040) between Acocks Green and Hall Green. The average number of Heavy Goods Vehicles using the route on a daily basis was 299, which represents 2% of all vehicular traffic.



Resilience

Several sections of the Birmingham Outer Circle Route have parallel strategic roads either closer into the City Centre or further out, such as the A452 in the northeast, Colebrook Road and Maypole lane to the south, the B4124 and A4030 in the west and the B4144 / A41 in the northwest. In addition, some journeys could use two radial routes and the Ring Road (A4540) closer to the City Centre. There is a degree of resilience contained within the Birmingham and Sandwell networks for orbital journeys.

However, certain longitudinal barriers to movement limit the alternative routes in some sections – such as the River Tame and West Coast Main Railway Line in the East, the River Tame to the northwest and M5 to the west and there is a particular pinch-point at Perry Barr. Given the existing capacity constraints in the peaks in the Birmingham network, a restriction on any of the roads will have considerable adverse implications for journey times on the remainder of this route and surrounding routes.

Diversion Route

No part of the Birmingham Outer Circle Route is used as a signed Emergency Diversion Route by Highways England when there are closures or incidents on the strategic road network. However, any restriction on the Motorway Box gives rise to informal traffic diversions onto the roads forming this route.

Flooding

Flooding on this route impacts on overall performance, safety of road users and affects the lives of those living in the vicinity. The evidence gathered indicates that there are several areas on this route that pose flood risk; these are:

- A457/A4040 junction
- A41/A4040 junction
- A4040/A34 junction
- A4040/Witton Road junction
- A4040/A5127 junction
- A4040/A47 junction
- A4040/Yardley Road junction
- A4040/A34 junction
- A4040/A435 junction
- A4040/A441 junction
- A4040/A38 junction
- A4030/A456 junction
- A4040/A4123 junction

West Midlands Key Route Network Birmingham Outer Circle



Figure 4

Key

- Roads**
- The Route
 - Strategic Road Network operated by Highways England
- Asset Location & Conditions**
(where known & information available)
- CCTV
 - Split Cycle Offset Optimisation Technique (SCOOT) locations
 - Automatic Number Plate Recognition (ANPR) / Journey Time Monitoring System (JTMS) locations
 - Traffic Camera locations



KRN 2 – Birmingham Outer Circle

There are inequalities in health between the local authorities within the West Midlands – at local authority level the lowest healthy life expectancy at birth for men is 56.4 years, and the highest is 63.8 years. Amongst women the lowest is 59 years and highest 67.9 years. Similarly there are inequalities in healthy life expectancies within each local authority. Closing this gap in health inequalities and increasing the healthy life expectancy by 2030 is an objective of the WMCA's Strategic Economic Plan.

The Birmingham Outer Circle Route runs through areas of high deprivation, particularly on the east side of the city. Both sides of the A4040 have large areas of lower healthy life expectancy, particularly inside the ring road; with an average healthy life expectancy lower than 55 in many areas (far below the national average of 83).

More than one third of inhabitants close to the A4040 are children under the age of 17, and typically at least 2 out of every 5 children in year 6 are obese in some areas.

The route falls within the Birmingham Air Quality Management Area (AQMA) declared for Nitrogen Oxide (NO₂) and Particulate Matter (PM₁₀), as well as the Sandwell AQMA declared for NO₂.

The West Midlands has significant air quality problems. Every year there are between 2,000 and 2,400 deaths caused by air pollution. This is a huge health issue for people in the region, increasing the risk of lung disease and heart disease. There are parts of our region where considerable action such as the introduction of Clean Air Zones (CAZs) is required by Government to improve air quality.

Across the West Midlands the local authorities have a statutory duty to maintain its highway network in a safe condition. This also includes carrying out routine maintenance of highway assets which could include up to 12 specific groups. An Asset Management Plan is produced which aims to ensure that any future issues with the assets could be address in a proactive way.

Carriageway Condition

The carriageway across this route is in a fair and safe condition. Over the past five years there has been a systematic planned programme of capital maintenance carried out on the A4030.

Footway Condition

The footway across the Birmingham Outer Circle route is in a fair and safe condition. There is no systematic planned programme of capital maintenance carried out on the A4030. Any defective footway repairs are identified and carried out on a reactive basis.

Refer to the Technical Annex for further details on asset condition.



Development proposals directly affecting this route

Housing

- Selly Oak Hospital 650 dwellings (2017-30)

Employment

- Food Hub 6000 jobs (2017-25)
- Former Alstom Site 3900 jobs (2017-30)
- Life Science Campus 4500 jobs (2020-25)

Development proposals indirectly affecting this route

Housing

- Icknield Port Loop /Heath Street/City Hospital 2350 dwellings (2017-30)
- Wider Smethwick Area 760 dwellings (2020-25)

Employment

- Wider Handsworth Area 3000 jobs (2017-30)
- Aston Regional Investment 4000 jobs (2017-25)
- Wider Tyseley Area 3000 jobs (2017-25)

Committed Transport Improvements (as outlined in Movement for Growth - 2026 Delivery Plan for Transport)

- 20mph zones Phase B

- AADF** – Annual average daily flow
- AQMA** – Air Quality Management Areas
- DfT** – Department for Transport
- EDR** – Emergency Diversion Route
- HGV** – Heavy Goods Vehicles
- HLE** – Healthy life expectancy
- HS2** – High Speed Rail Two
- JTMS** – Journey Time Measurement Systems
- KRN** – Key Route Network
- KSI** – Killed or seriously injured
- LE** – Life expectancy
- LEP** – Local Enterprise Partnership
- LSOA** – Lower Layer Super Output Areas
- MDST** – MDS Transmodal
- MSOA** – Middle Layer Super Output Areas
- PIA** – Personal injury accidents
- SRN** – Strategic Road Network
- STDEP** – Sustainable Transport Delivery Excellence Programme
- TfWM** – Transport for the West Midlands
- TCG** – Tactical Co-ordination Group
- UKTI** – UK Trade and Investment
- UTMC** – Urban Traffic Management Control
- VMS** – Variable Message Sign
- WM** – West Midlands
- WMCA** – West Midlands Combined Authority

AADF Data:

AADF counts for A roads on each route:
<https://bit.ly/2fbapuc>

Route Safety:

Reported casualty and accident rates by urban and rural roads, road class, road user type, severity and pedestrian involvement, Great Britain, 2015.

Committed Schemes:

West Midlands Combined Authority. Movement for Growth: The West Midlands Strategic Transport plan.

West Midlands Strategic Cycle

Network:

West Midlands Combined Authority Board Report, 20 January 2017, item 4.3 - Strategic Cycle Network
<https://bit.ly/2hrrCAi>

Freight Information:

MDS Transmodal Data. Provided in Confidence for Midlands Connect Freight Study.

Enterprise Zones:

<https://bit.ly/2uZLDTe>
<https://bit.ly/2u7DCN1>

Road Haulage Companies:

UK Trade & Investment Road Haulage Industry, Midlands Hauliers. Provided in Confidence for Midlands Connect Freight Study.

National Cycle Routes, Sustrans:

<https://bit.ly/18FFBsT>

HS2 Connectivity Package:

HS2 Growth Strategy, Connectivity Programme. GBSLEP. <https://bit.ly/2woBqxp>

Average Speeds and Congestion Data:

West Midlands Strategic Highways Phase 2: Key Route Network Definition and Outline Performance. Produced by Mott Macdonald for West Midlands Integrated Transport Authority. March 2016.

Route Safety:

Department for Transport. Reported Road Casualties Great Britain, annual report: 2015.
<https://bit.ly/2hrcldb>

Air Quality Management Areas:

Department for Environment, Food and Rural Affairs, March 2017 AQMA Dataset.
<https://bit.ly/2fEduLf>

Male and Female Healthy Life

Expectancy:

Office for National Statistics. Life Expectancy (LE) and Healthy Life Expectancy (HLE) at birth for males by Middle Layer Super Output Areas (MSOAs) in England, 2009 to 2013. Published 2015. <https://bit.ly/2vwtxd1>

Childhood obesity:

Public Health England. National Child Measurement Programme data from 2012/13 to 2014/15, aggregated by MSOA. Published 2016
<https://bit.ly/2p3ocVV>

Younger population:

ONS: 2011 Census aggregate data. Population aged 0-17, as a percentage of total population by LSOA.

Older population:

ONS: 2011 Census aggregate data. Population aged 65+, as a percentage of total population by LSOA.

Living with a disability:

ONS: 2011 Census aggregate data. Households with at least one person living with a disability, as a percentage of all households by LSOA.

Unemployment:

ONS: 2011 Census aggregate data. No adults in employment in household, as a percentage of all households by LSOA.

West Midlands Cycling Charter:

<https://bit.ly/2xbg4oK>