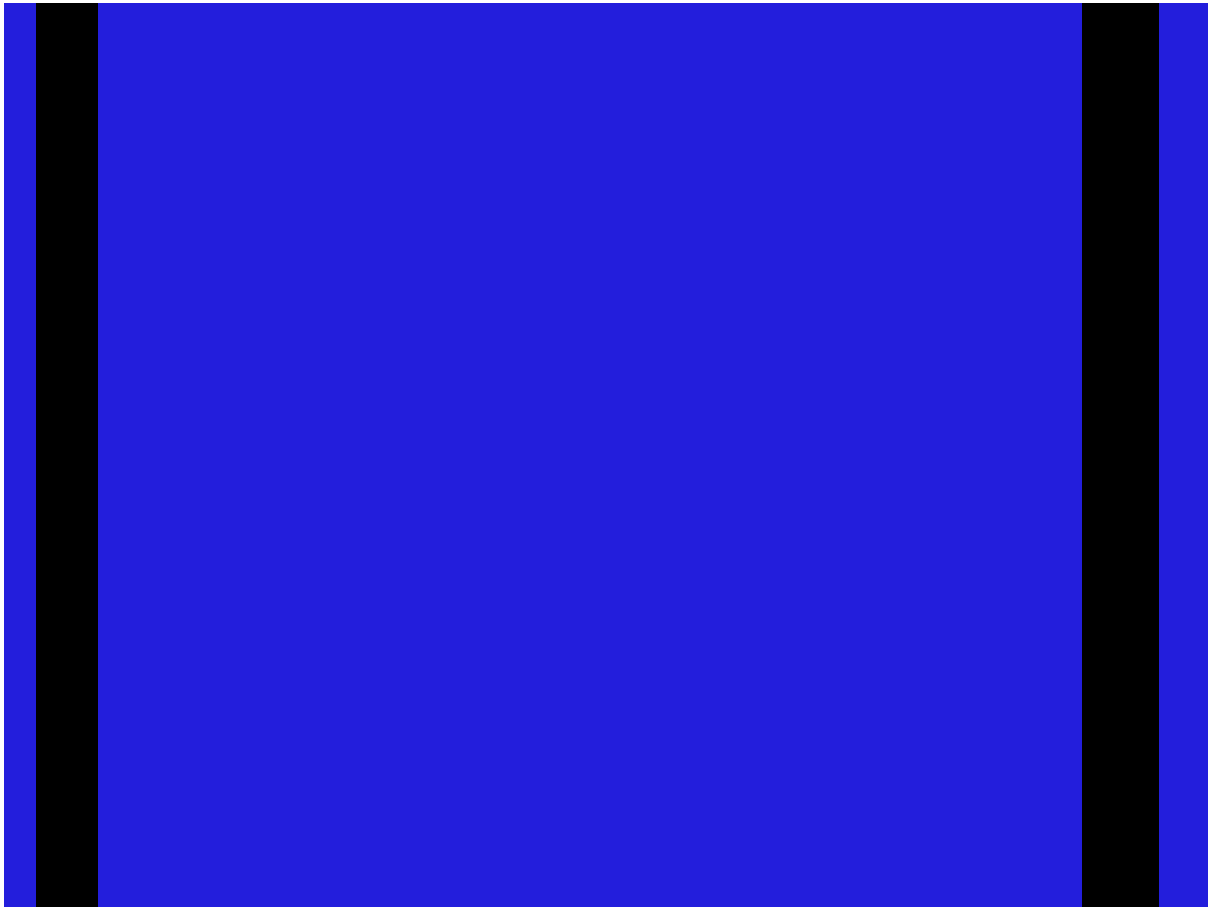


Bournville Transport Study

Document no: B2309521/Rep/003
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Birmingham City Council

Bournville Places for People
16 June 2023



Bournville Transport Study

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1. Introduction

1.1 Background

In October 2021, Birmingham City Council (BCC) published the Birmingham Transport Plan 2031 (BTP), in which one of the core aims is 'Prioritising active travel in local neighbourhoods' with the intention that active travel *"will become the choice for most people making short trips in their local neighbourhood. Cars will no longer dominate street life around homes and schools. A limit of 20mph will be standard on all local roads. Residential neighbourhoods and local centres will be places where people are put first."*

Currently, residents in many parts of Birmingham find that the streets outside their homes are dominated by motor traffic as residential roads are used to avoid congestion along the main roads. During the Covid-19 pandemic, changes to working patterns resulted in residents experiencing quieter and less congested roads. Through the Emergency Active Travel Fund (funded by the Department for Transport (DfT) in June 2020) BCC gained an opportunity to rapidly introduce schemes to maintain these benefits by piloting Places for People (PFP) in areas across Birmingham. Further to this, DfT allocated an Active Travel Fund grant to Local Authorities to enhance the initial schemes and make them permanent.

BCC's Places for People programme aims to reduce the amount of traffic and reduce car reliance in residential neighbourhoods. The aim of the programme is to increase levels of active mode uptake and reconnect communities. As part of Places for People, residents can continue to drive on to their street, but it makes it harder for traffic to drive through the area. The Bournville and Cotteridge Ward has been identified as part of this programme.

As Birmingham begins to navigate its post-Covid recovery, the longer-term impacts and changes resulting from the Covid-19 pandemic on travel and transport are still unknown. However, BCC's Covid-19 Economic Recovery Strategy outlines the need to take radical action to achieve zero carbon emissions, which can be realised through lessons learnt from the pandemic. The substantial decrease in vehicle usage during the pandemic improved air quality and made safer streets for all users.

Data suggested that vehicle use has essentially returned to pre-pandemic levels, however the same observations cannot be made for public transport, particularly traditional Monday to Friday commuting patterns, indicating a change in wider commuting behaviour. However, it is also highlighted that further work is required to build on the benefits of increased levels of walking and cycling that were realised during the pandemic. Looking forward, interventions that will sustain and encourage uptake in active travel choices need to look at areas holistically, instead of singular localised interventions, with the aim to further encourage behavioural change towards more sustainable modes and create an integrated multi-modal system that benefits all road users.

With this in mind, BCC commissioned Jacobs to carry out an area wide transport study of Bournville and its environs, to consider current and historic network performance across the study area and the impacts of the proposed Places for People measures with a view to identifying further interventions to deliver efficient network management; and develop a mitigation strategy for the residual network, (the area without Places for People measures), focusing on displaced traffic, particularly along boundary roads and those adjacent to the proposed Places for People measures.

1.2 Study area

Bournville is located to the south-west of Birmingham City Centre and was founded by the Quaker Cadbury family for the employees at the Cadbury Factory. Bournville was originally designed to be a 'garden village' as part of a 20th century urban planning movement promoting satellite communities surrounding the central city and segregated greenbelts. The study area is the extent of Bournville & Cotteridge ward which is shown in Figure 1-1.

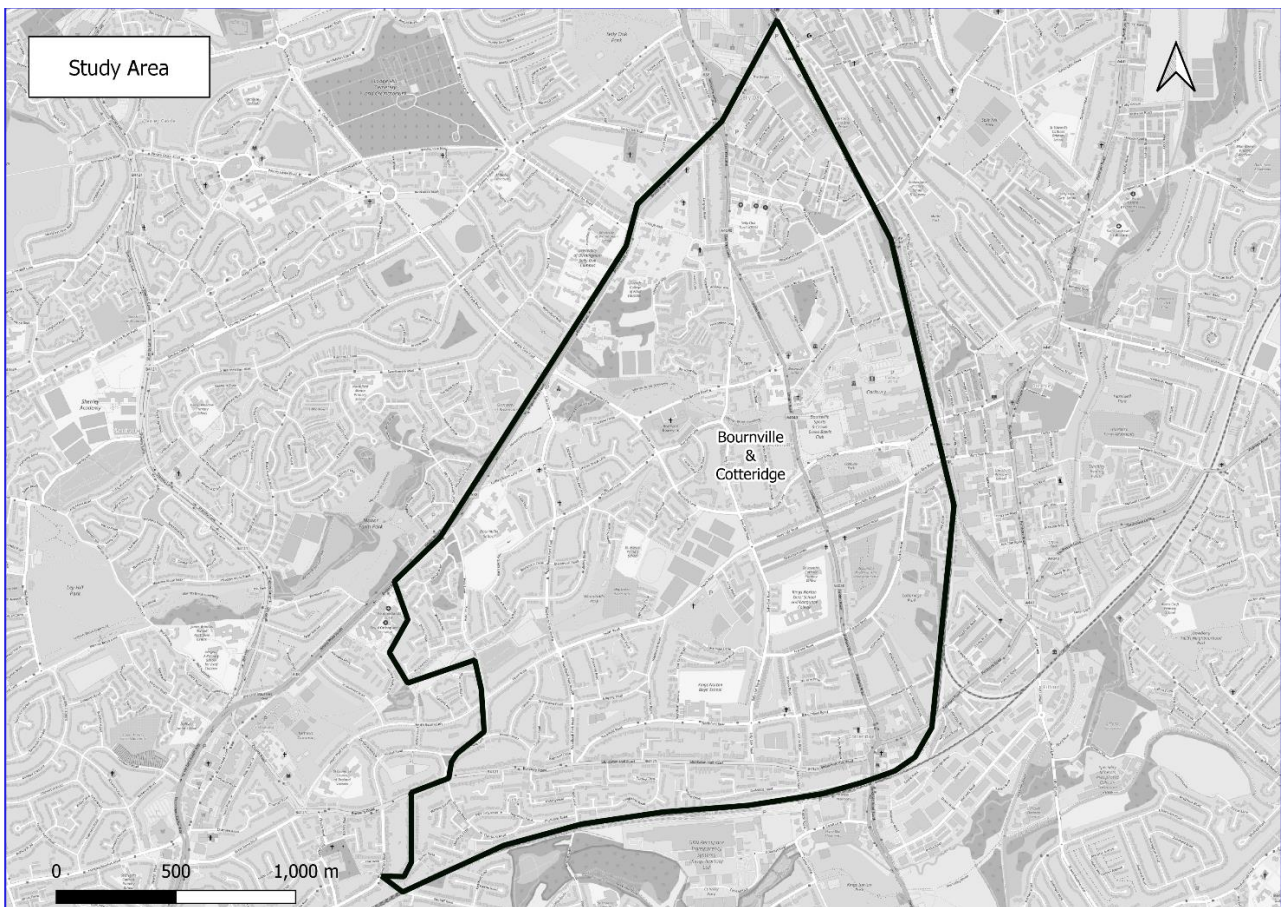


Figure 1-1: Study Area

The study area is bounded by the A38 Bristol Road to the northwest, the Worcester to Birmingham Canal and the Cross-City railway line to the east and A441 Pershore Road and B4121 Middleton Hall Road/ Bunbury Road to the south. These key roads are identified in Figure 1-2.

Further to the above, the boundary roads comprise of:

- A38 Bristol Road South;
- B4121 Middleton Hall Road; and
- A4040 Linden Road.

Key roads that lie within the study area include:

- Heath Road;
- Selly Oak Road;
- Bournville Lane;
- Mary Vale Road; and
- Franklin Road.

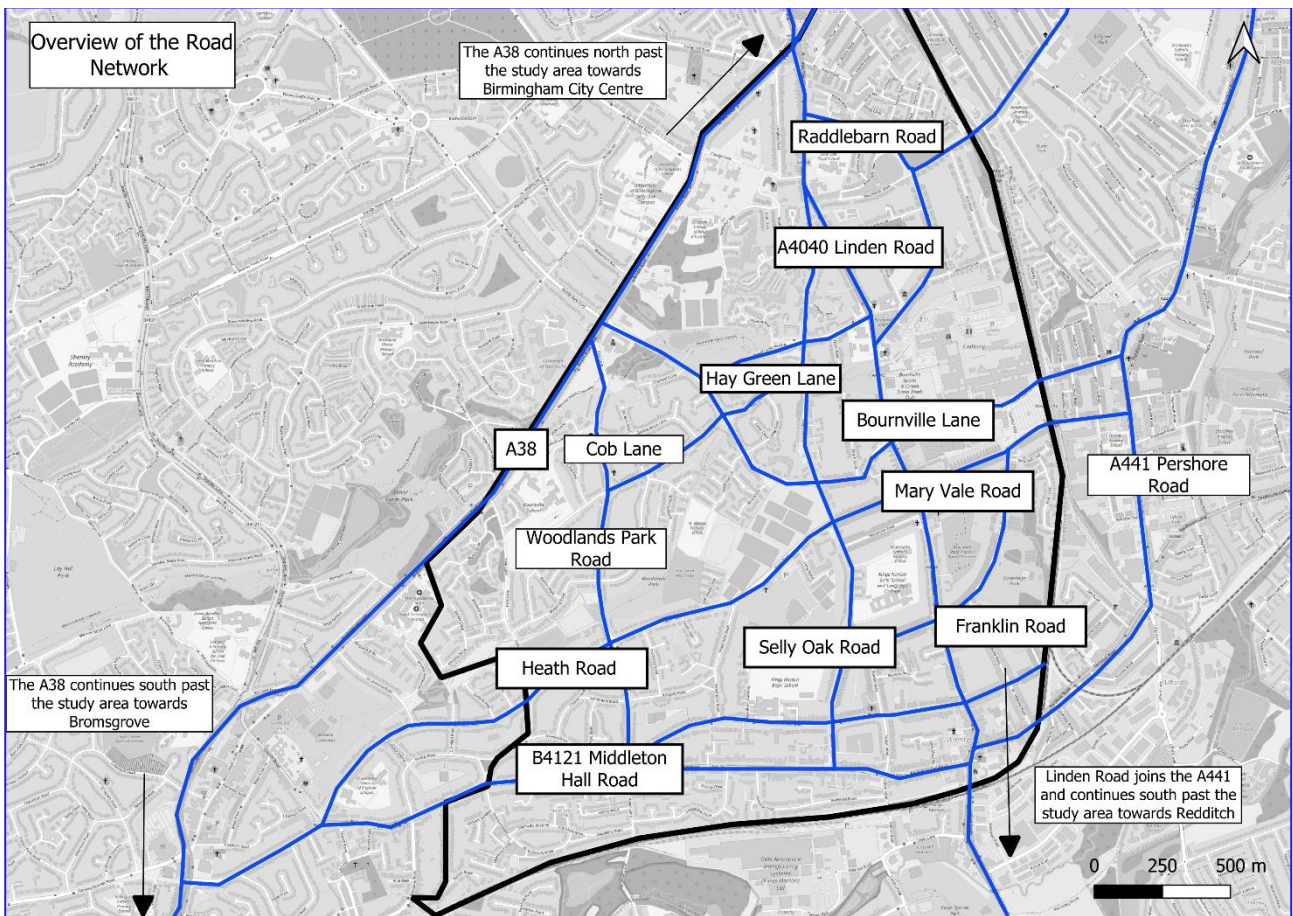


Figure 1-2: Overview of the road network

2. Baseline data

The following section outlines the existing socio-economic, transport and environmental conditions of the study area taken from various data sources.

2.1 Census data

Population statistics have been obtained from Census (2021) data, sourced from the Office of National Statistics (ONS, 2021) and has been tabulated in Table 2-1. The Lower Super Output Areas (LSOAs) selected are shown in Figure 2-1. The population of the study area equals 26,617 across all 15 LSOAs. The number of residents within each LSOA remains mostly consistent. Birmingham 096A has the most residents and Birmingham 112A the least. Overall, the population of all usual residents remains consistent across all selected LSOAs.

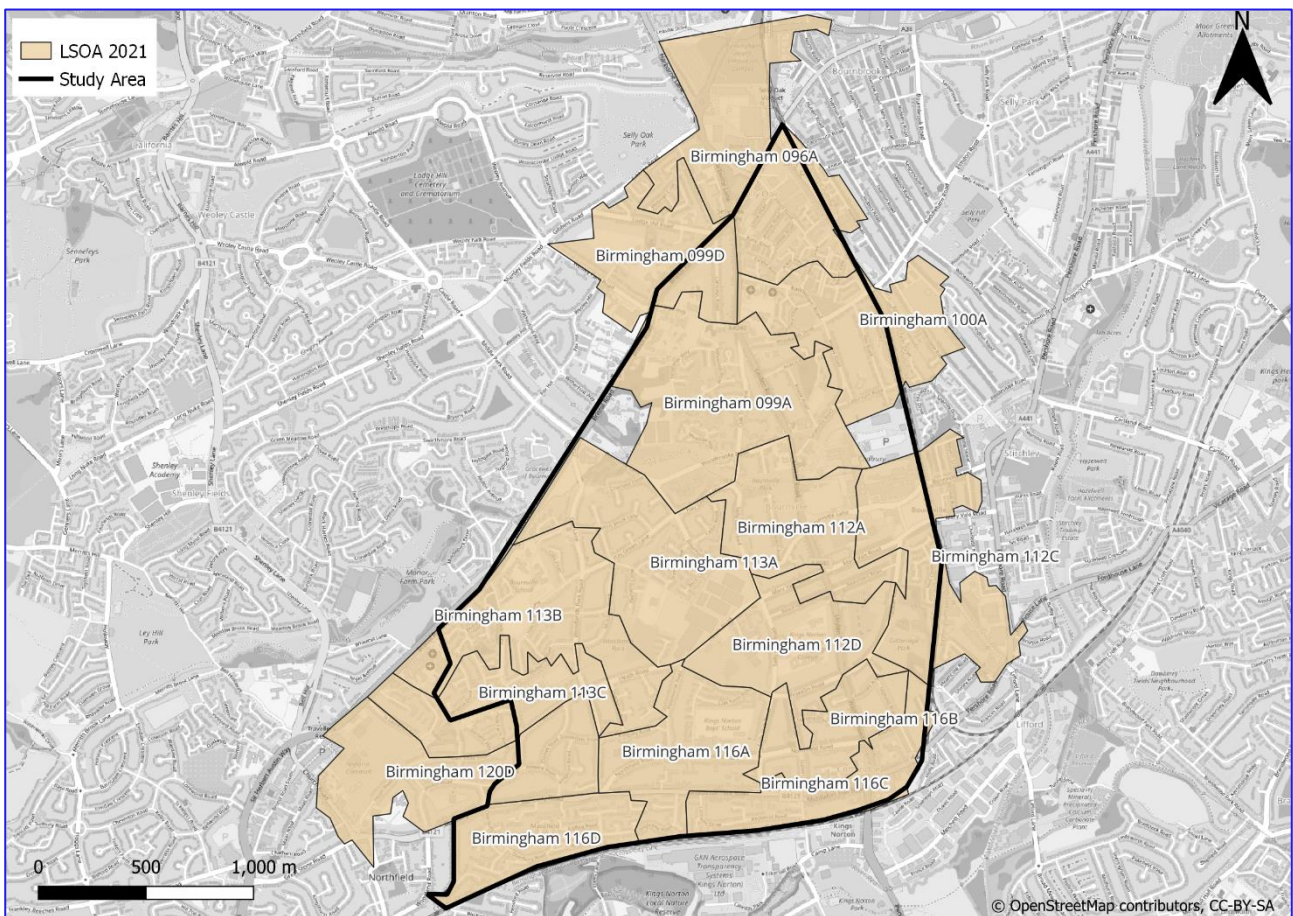


Figure 2-1: Study Area Lower Super Output Areas

Table 2-1: Population data for Study Area LSOA (ONS, 2021)

2021 super output area - lower layer	All usual residents	Area Square kilometre	Density (number of persons per Square kilometre) (2021)
E01009284: Birmingham 096A	4343	665	6.5
E01009281: Birmingham 099A	1545	683	2.3
E01009295: Birmingham 099D	1694	366	4.6
E01009280: Birmingham 100A	1728	442	3.9
E01008951: Birmingham 112A	1405	380	3.7
E01008955: Birmingham 112C	1673	483	3.5
E01008956: Birmingham 112D	1416	375	3.8
E01008950: Birmingham 113A	1428	545	2.6
E01008954: Birmingham 113B	1434	514	2.8
E01008958: Birmingham 113C	1554	326	4.8
E01008959: Birmingham 116A	1730	378	4.6
E01008960: Birmingham 116B	1543	234	6.6
E01008961: Birmingham 116C	1409	273	5.2
E01008962: Birmingham 116D	2088	278	7.5
E01009218: Birmingham 120D	1627	503	3.2
Total	26,617		

The population density is displayed in more detail in Figure 2-2. Figure 2-2 shows the population density (number of persons per hectare) by LSOA. The southeast section of the study area has more densely populated residential areas. This may reflect the employment history of the area due to the Cadburys factory being located towards the eastern section of the study area.

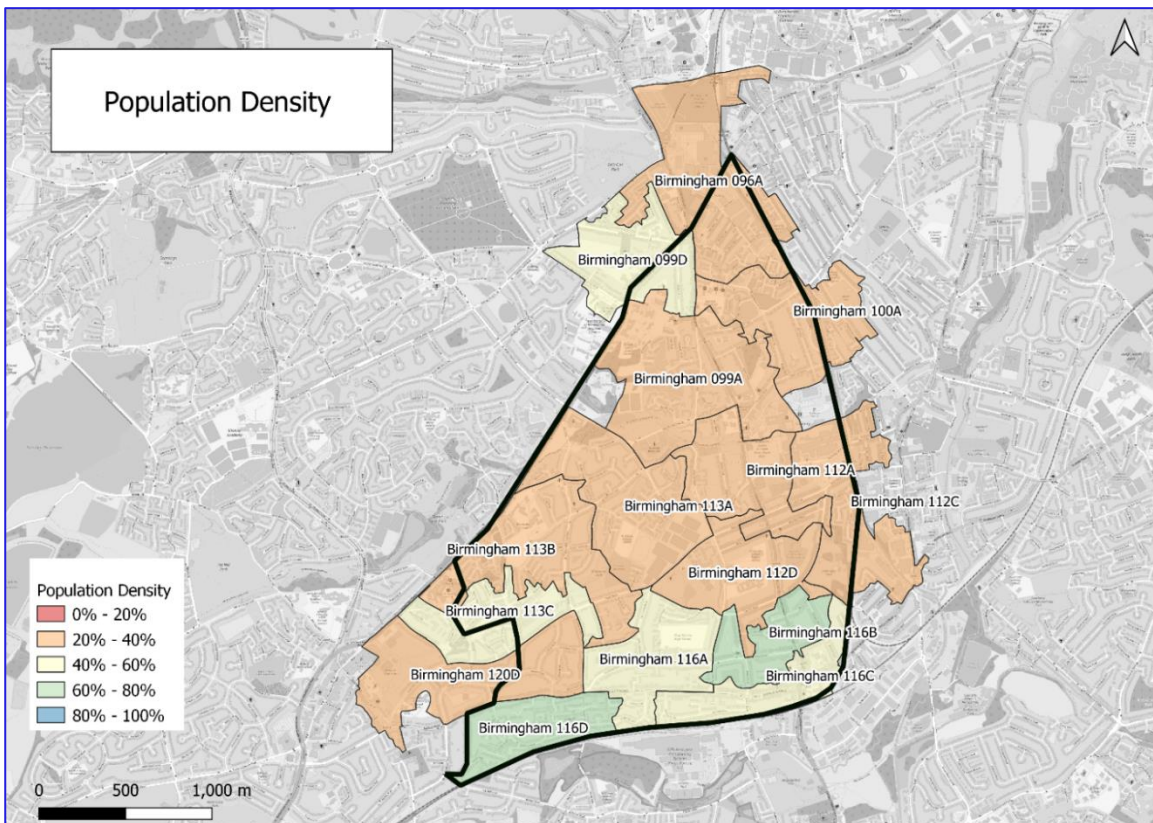


Figure 2-2: Study Area Population Density

2.2 Index of Multiple Deprivation

The English Indices of Deprivation are the official measure of relative levels of deprivation across England, split into 32,844 neighbourhood areas known as LSOAs. Index of Multiple Deprivation (IMD) is calculated by the Department of Levelling Up, Housing and Communities and is based on seven combined and weighted indicators:

- Income deprivation (22.5%);
- Employment deprivation (22.5%);
- Education, skills and training deprivation (13.5%);
- Health deprivation and disability (13.5%);
- Crime (9.3%);
- Barriers to housing and services (9.3%); and
- Living environment deprivation (9.3%).

The IMD ranks each LSOA based upon the above indicators. An LSOA with a rank of 1 is considered the most deprived and an LSOA with a rank of 32,844 is the least deprived. LSOAs are also divided into 10 deciles, with LSOAs in decile 1 falling within the most deprived 10% of LSOAs nationally and LSOAs in decile 10 falling within the least deprived 10% nationally. Figure 2-3 shows that the majority of Bournville falls within 50% most deprived neighbourhoods. However, the southwest corner of the study area falls within the bottom 10%-20% most deprived neighbourhoods nationally with a similar pattern along the eastern edge of the study area. The study area also has one of the least deprived neighbourhoods nationally which covers a section of Linden Road, Rowheath Playing Fields and Kings Norton Girls' School and Sixth Form.

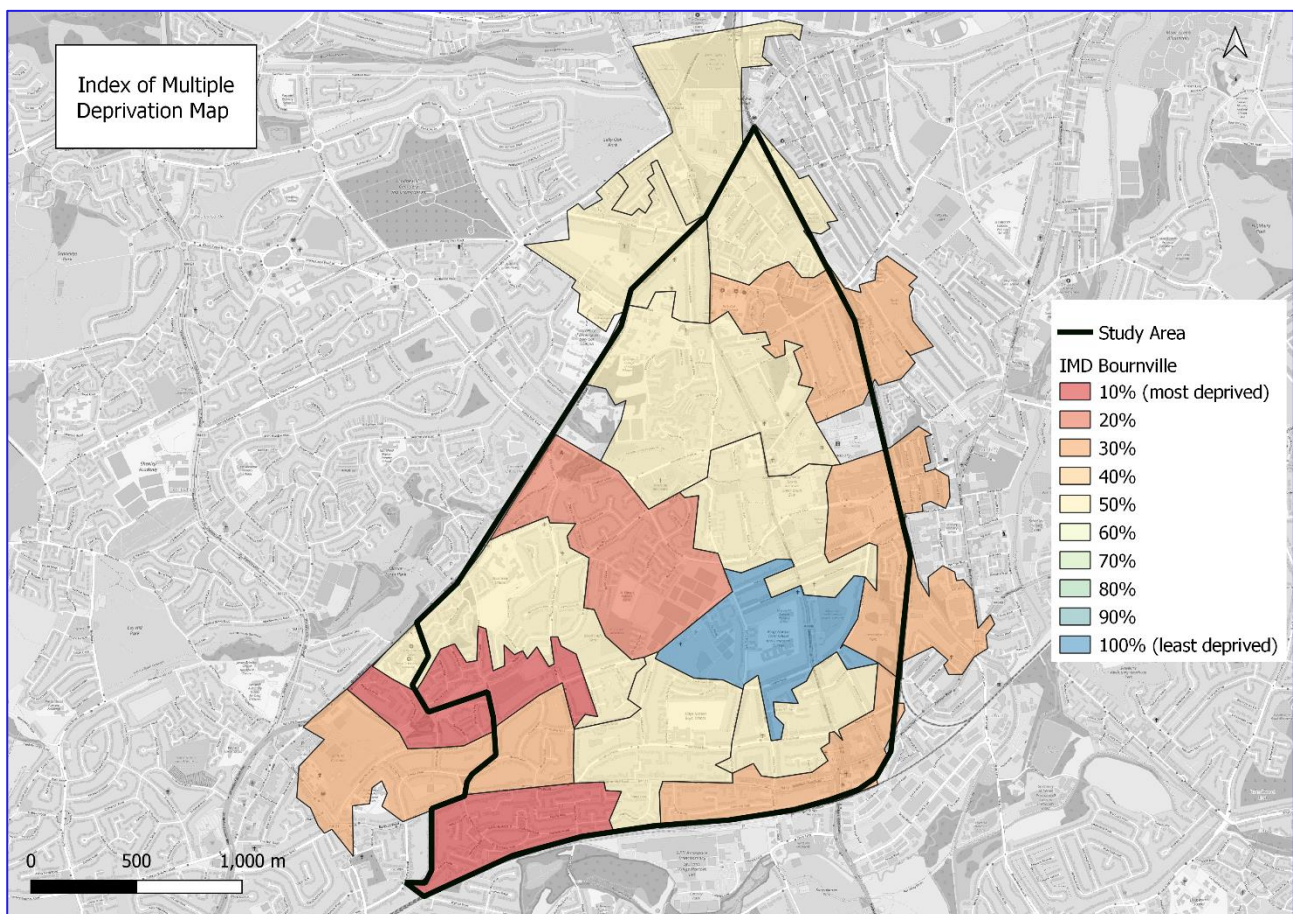


Figure 2-3: Indices of Multiple Deprivation (2019)

2.3 Age structure

Age statistics have been obtained using Census (2021) data sourced from ONS (2021) and is presented in Table 2-2. The age structure of the study area is made up of 16% of residents aged between aged 10 to 19 and 23% of residents aged 60+. There are spikes in the number of residents aged 20 to 29 (16%). Additionally, there is also a considerable number of young people with 16% of the residents aged up to 15 which presents an opportunity for uptake in walking and cycling for educational and leisure purposes.

Table 2-2: Age Structure within the study area (ONS, 2021).

Age Categories	No.	%
All usual residents	26,617	100%
Age 0-9	2,652	10%
Age 10-19	4,204	16%
Age 20-29	4,175	16%
Age 30-39	3,310	12%
Age 40-49	3,146	12%
Age 50-59	3,123	12%
Age 60-69	2,595	10%
Age 70-79	2,058	8%
Age 80+	1,354	5%

2.4 Private vehicles

Table 2-3 shows the car and van availability within the study area. The data shows that majority of households in each LSOA have access to either one car or van. However, there are also a significant proportion of households that do not have a car or van, particularly in the southern and northern extents of the study area. Low private vehicle ownership levels in the southern extents of the study area aligns with the IMD data that identifies high levels of deprivation in some LSOAs. However, where IMD identifies less deprived areas (particularly in the central regions of the study area) there is a higher level of car ownership, with over 50% of households in Birmingham 112A, 112C and 112D having access to one or more private vehicles.

Table 2-3: Car and van availability within the study area (ONS, 2021).

2021 super output area - lower layer	All categories: Car or van availability	No cars or vans in household %	1 car or van in household %	2 cars or vans in household %	3 cars or vans in household%
E01009284: Birmingham 096A	992	43%	39%	14%	4%
E01009281: Birmingham 099A	696	29%	46%	20%	5%
E01009295: Birmingham 099D	667	40%	39%	14%	7%
E01009280: Birmingham 100A	745	22%	50%	23%	5%
E01008951: Birmingham 112A	612	25%	50%	21%	4%
E01008955: Birmingham 112C	744	26%	56%	15%	3%
E01008956: Birmingham 112D	555	21%	50%	25%	5%
E01008950: Birmingham 113A	717	31%	44%	19%	6%
E01008954: Birmingham 113B	599	18%	44%	30%	8%
E01008958: Birmingham 113C	767	39%	40%	18%	3%
E01008959: Birmingham 116A	802	28%	45%	23%	5%
E01008960: Birmingham 116B	624	21%	46%	24%	8%
E01008961: Birmingham 116C	725	35%	45%	15%	5%
E01008962: Birmingham 116D	856	42%	39%	15%	4%
E01009218: Birmingham 120D	644	26%	32%	33%	9%
Total	10,745	31%	44%	20%	5%

2.5 Method of travel to work

Method of travel to work data is shown below in Table 2-4. It should be noted that this census was carried out during the Covid-19 pandemic and therefore a substantial number of people were working from home during this time.

From the data, the most common way to travel to work is by private car or van with 4,013 residents choosing this mode. This indicates a high car dependency within the study area. However, the second most popular mode of travel is by walking, with 847 residents walking to work, followed by bus (680), rail (451) and then cycling (242). This shows that active modes (walking and cycling) and public transport infrastructure are being underutilised within the study area, therefore there is likely room for improvement if infrastructure becomes available.

Table 2-4: Method of travel to work data (ONS, 2021).

2021 super output area - lower layer	All categories: Method of travel to work	Rail	Bus, Minibus, Coach	Driving a car or van	Bicycle	On foot
E01009284: Birmingham 096A	1,120	85	97	295	22	149
E01009281: Birmingham 099A	591	5	20	215	17	47
E01009295: Birmingham 099D	590	17	48	202	15	57
E01009280: Birmingham 100A	859	18	26	336	18	70
E01008951: Birmingham 112A	650	24	28	213	12	55
E01008955: Birmingham 112C	904	61	43	277	17	85
E01008956: Birmingham 112D	673	28	27	228	25	43
E01008950: Birmingham 113A	533	14	33	223	12	39
E01008954: Birmingham 113B	578	9	28	274	6	34
E01008958: Birmingham 113C	582	10	64	291	9	41
E01008959: Birmingham 116A	736	32	44	285	15	47
E01008960: Birmingham 116B	848	46	38	293	33	42
E01008961: Birmingham 116C	743	53	49	272	17	61
E01008962: Birmingham 116D	724	35	115	317	13	41
E01009218: Birmingham 120D	690	14	20	292	11	36
Total	10,821	451	680	4,013	242	847

2.6 Active mode

Table 2-4 above shows that walking and cycling are not as popular a mode of transport as driving within the study area, only making up 10% of all commuting trips. Figure 2-4 shows the current cycle routes and the BCC Local Cycling and Walking Infrastructure Plan (LCWIP) proposed cycling routes within the study area. The Rea Valley National Cycle Network Route 5 (NCN5) is located to the east of the study area and connects Kings Norton to Birmingham City Centre and is also shown in Figure 2-4. Most of the routes, both proposed and existing are situated towards the Western side of the study area and do not connect to the Rea Valley Cycle Route 5 or the Canal towpath. Low levels of cycle uptake as detailed in Table 2-4 may be due to the lack of connectivity between existing cycling infrastructure. Additionally, if the current trend of high-level private vehicle ownership continues then uptake in the number of residents walking and cycling is likely to stay low.

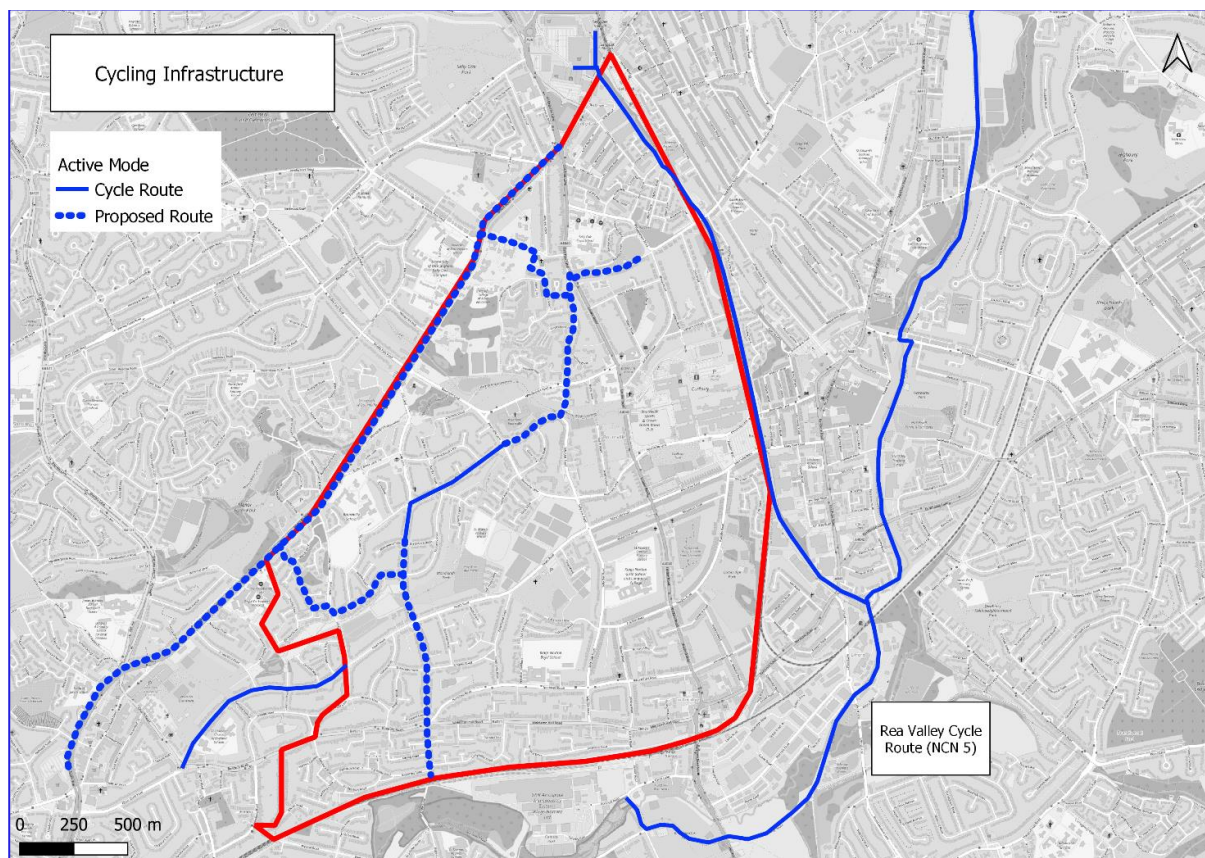


Figure 2-4: Study Area Cycling Infrastructure

2.7 Walking and cycling isochrone map

It is important to emphasise how Places for People aims to encourage individuals to reconsider their mode of transport for those shorter journeys within their local area. As stated in Section 2.6, there is limited uptake in walking and cycling within the study area. To examine whether key locations and trip attractors can be reached by walking and cycling, shapefiles have been taken from BCC's People for Places website and have been used to create the isochrone figures below (Figure 2-5 to Figure 2-10) which display how easy it is to reach key services within 5 to 15 minutes via walking and cycling.

The isochrones are centred around key locations in the area, which include¹:

- Bournville railway station;
- Selly Oak railway station;
- Kings Norton railway station;
- Kafenion (at Sycamore Road); and
- Clean Kilo (at Mary Vale Road).

Distances have been calculated against 5-15 minutes travel time. The isochrones represent the distance that can be covered during this time through both walking and cycling. The isochrones indicate that the entire extent of the study area can be covered in around 15 minutes of walking and just 10 minutes of cycling.

¹ [Bournville | Places for People | Birmingham City Council](#)

The results from isochrone maps indicate there is an opportunity to encourage an uptake in cycling and walking due to the accessibility to key trip attractors and distances that can be covered in such short times.

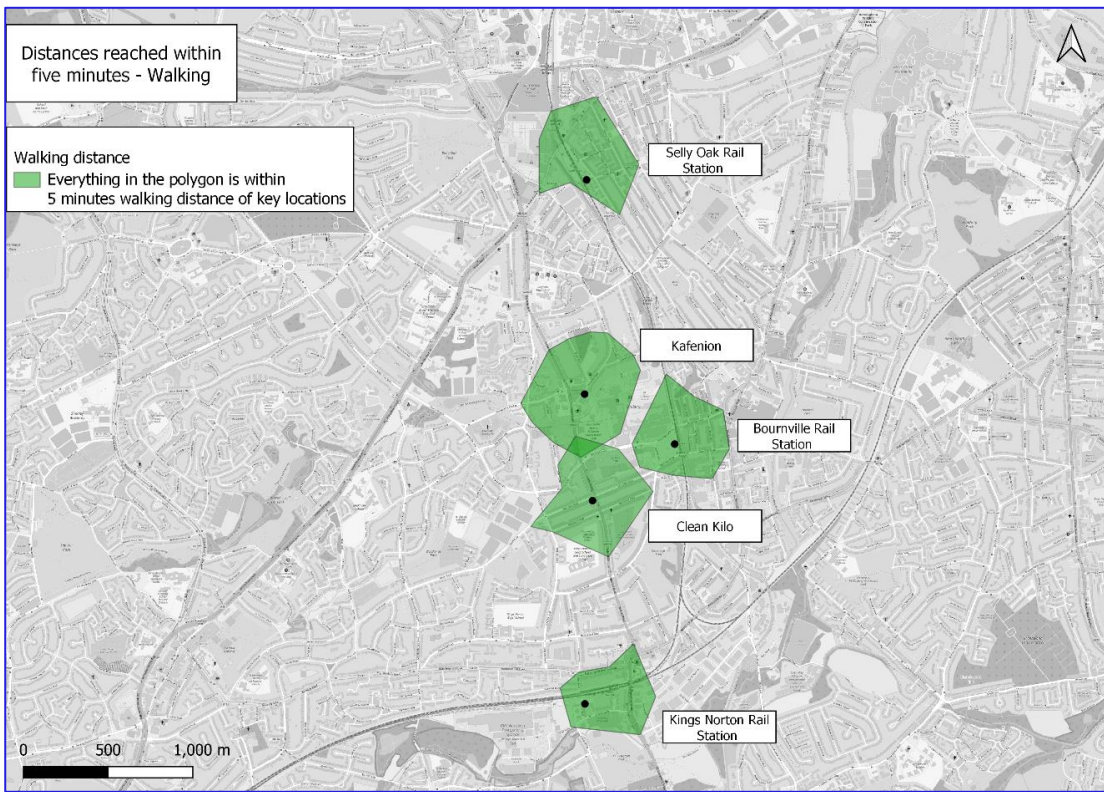


Figure 2-5: Walking distances within 5 minutes of key locations

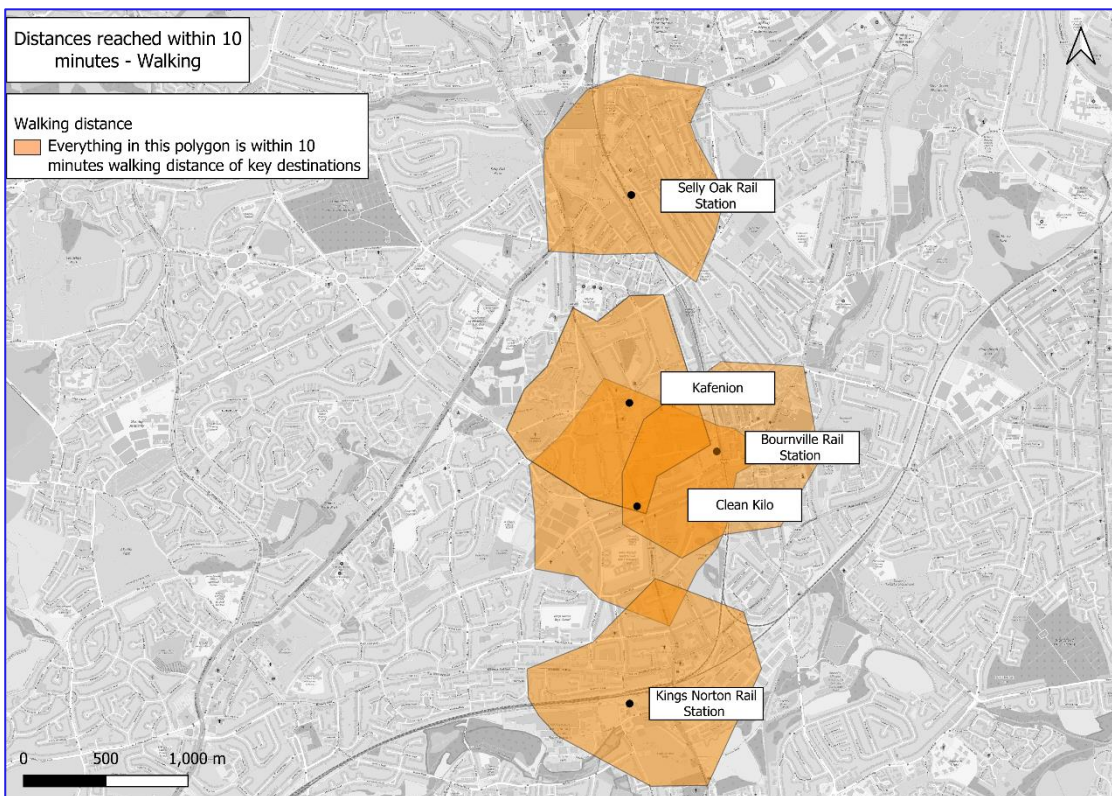


Figure 2-6: Walking distances within 10 minutes of key locations

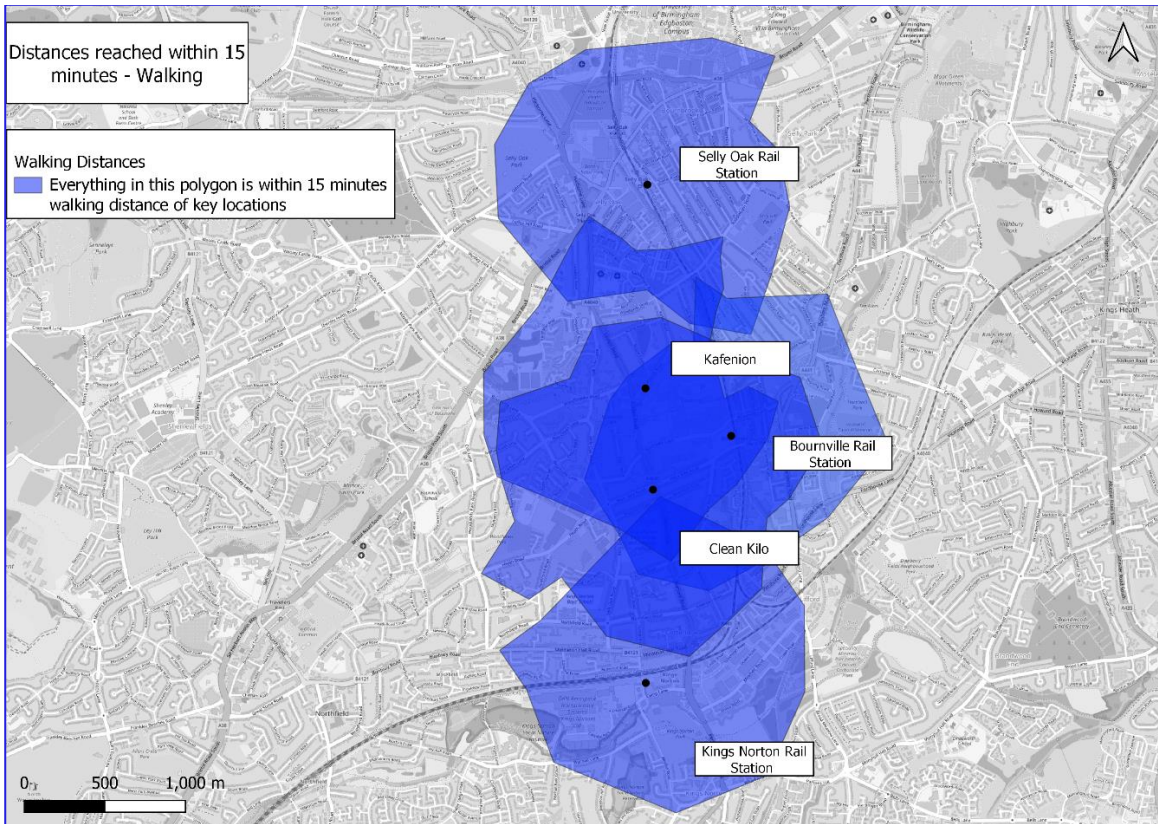


Figure 2-7: Walking distances within 15 minutes of key locations

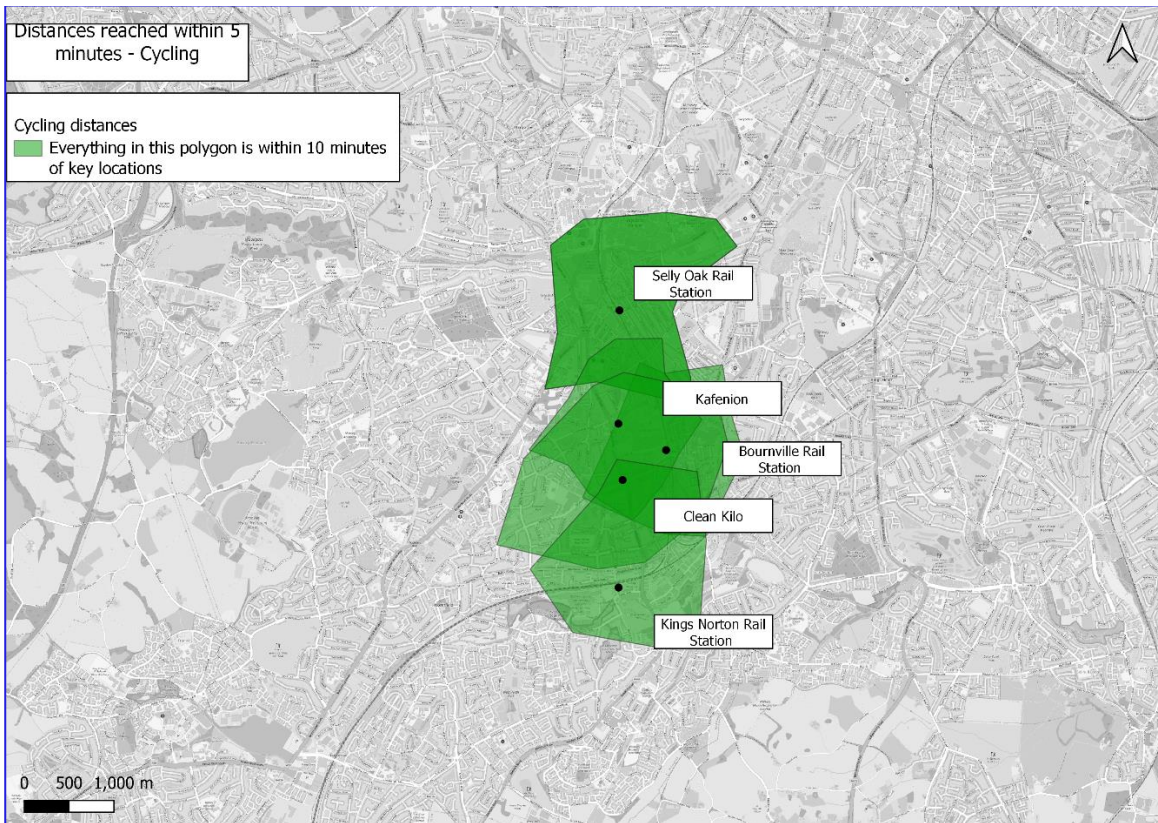


Figure 2-8: Cycling distances with 5 minutes of key locations

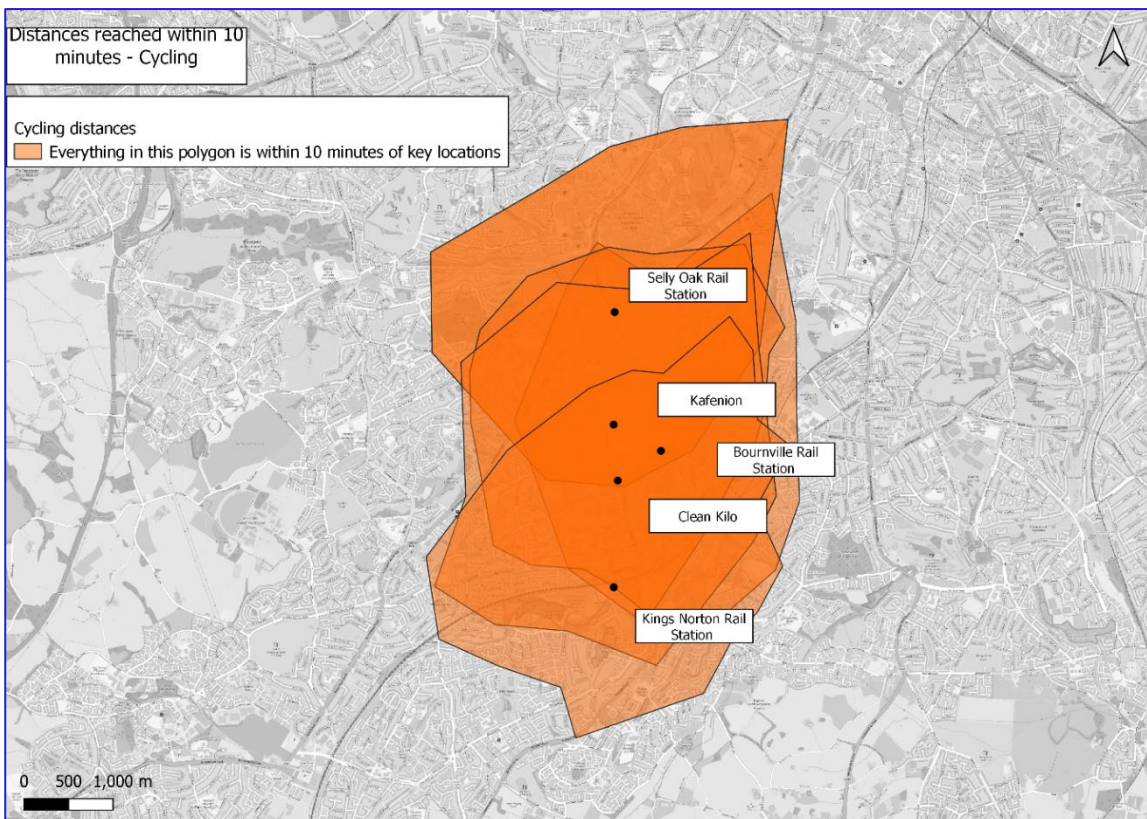


Figure 2-9: Cycling distances within 10 minutes of key locations

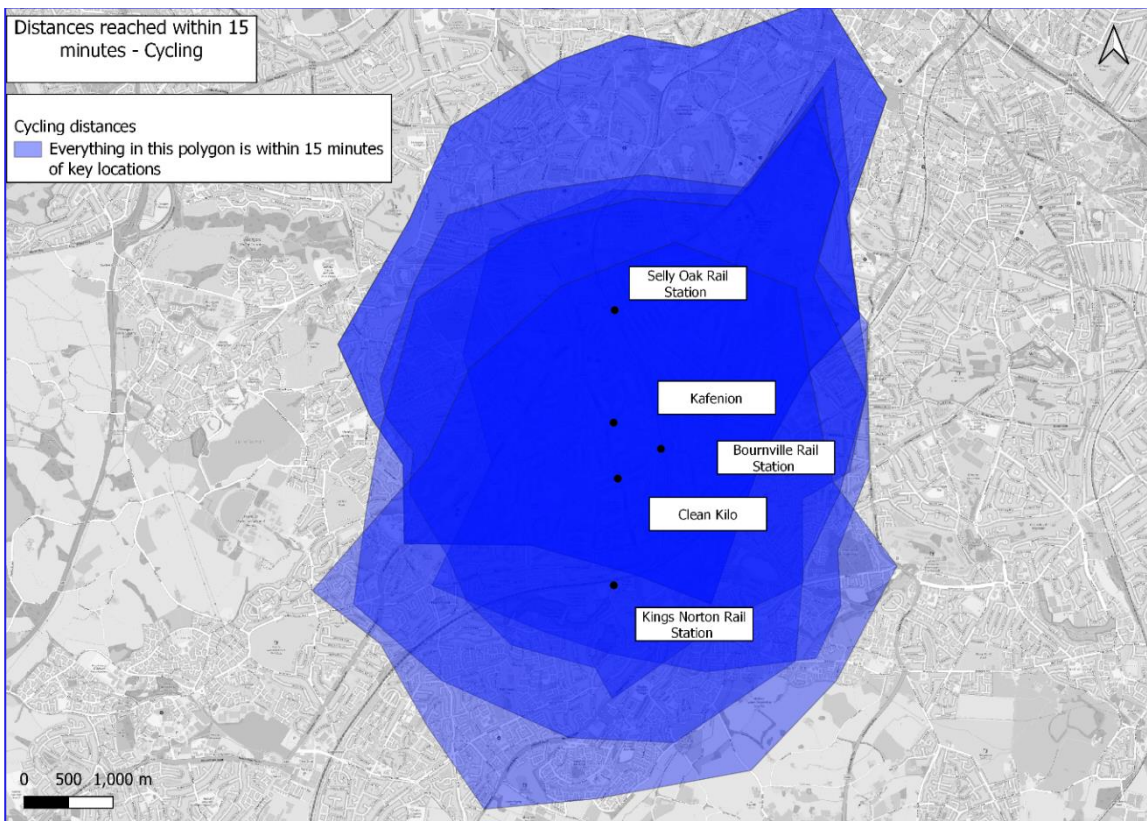


Figure 2-10: Cycling distances within 15 minutes of key locations

2.8 Safety

STATS19 collision data from 2015-2019 was obtained to help understand the safety conditions in and around the study area. The data covers a five-year period to not include Covid-19 pandemic years in which the amount of traffic reduced. A buffer was applied to the study area using a GIS Tool to capture the collisions that also occurred outside of the immediate study area.

Table 2-5 summarises the total number of collisions by year and their severity, the location of these collisions has been mapped in Figure 2-11. The overall number of collisions is reducing slightly in the most recent years. A total of six fatal collisions have occurred in the five-year period analysed.

Table 2-5: Summary table of STATS19 Collision Data

Year	Slight	Serious	Fatal	Total	Including NMUs
2015	123	14	1	138	41
2016	69	20	1	117	37
2017	99	12	0	111	45
2018	95	14	1	110	41
2019	83	17	3	103	34
Total	469	77	6	579	198

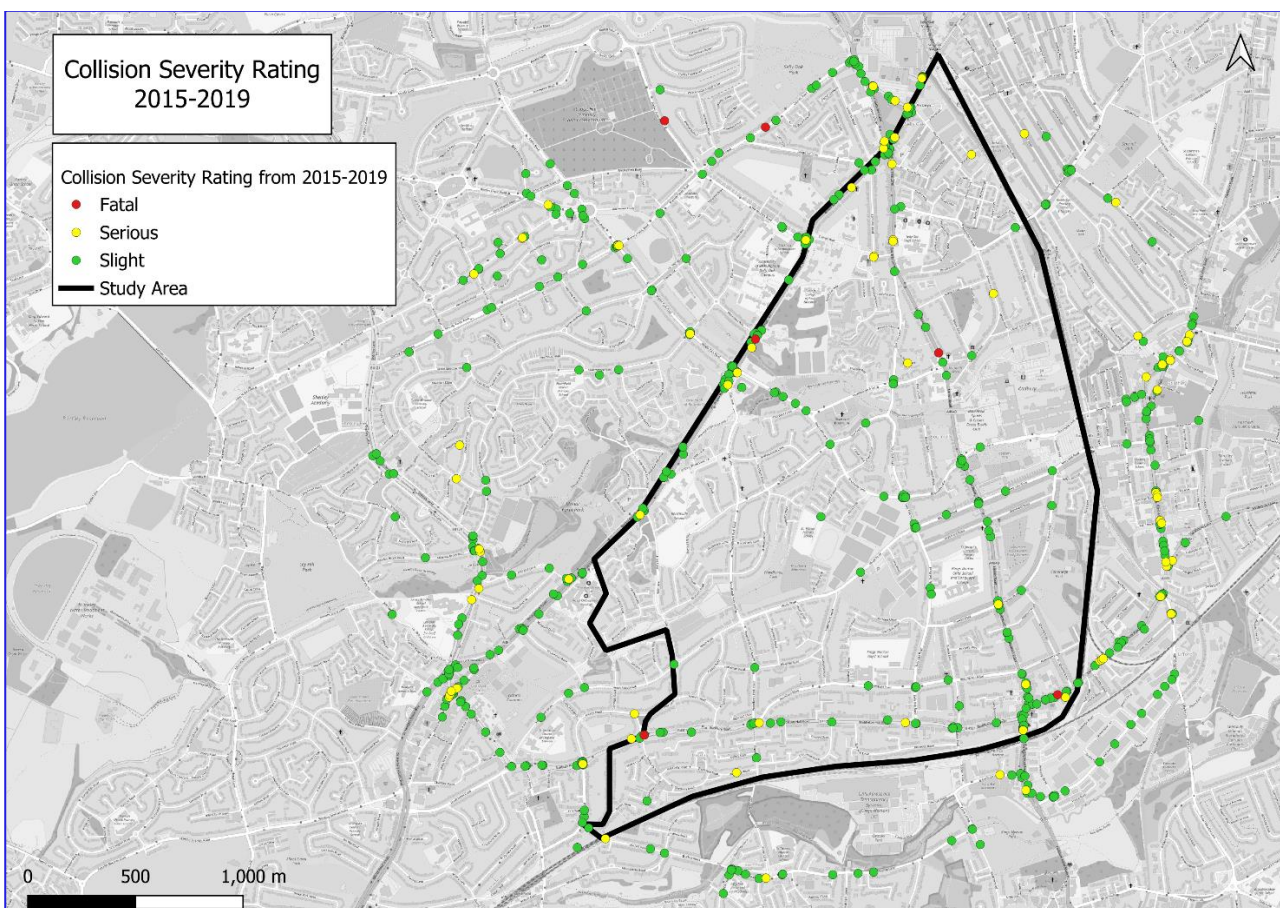


Figure 2-11: Study Area Collisions (2015-2019)

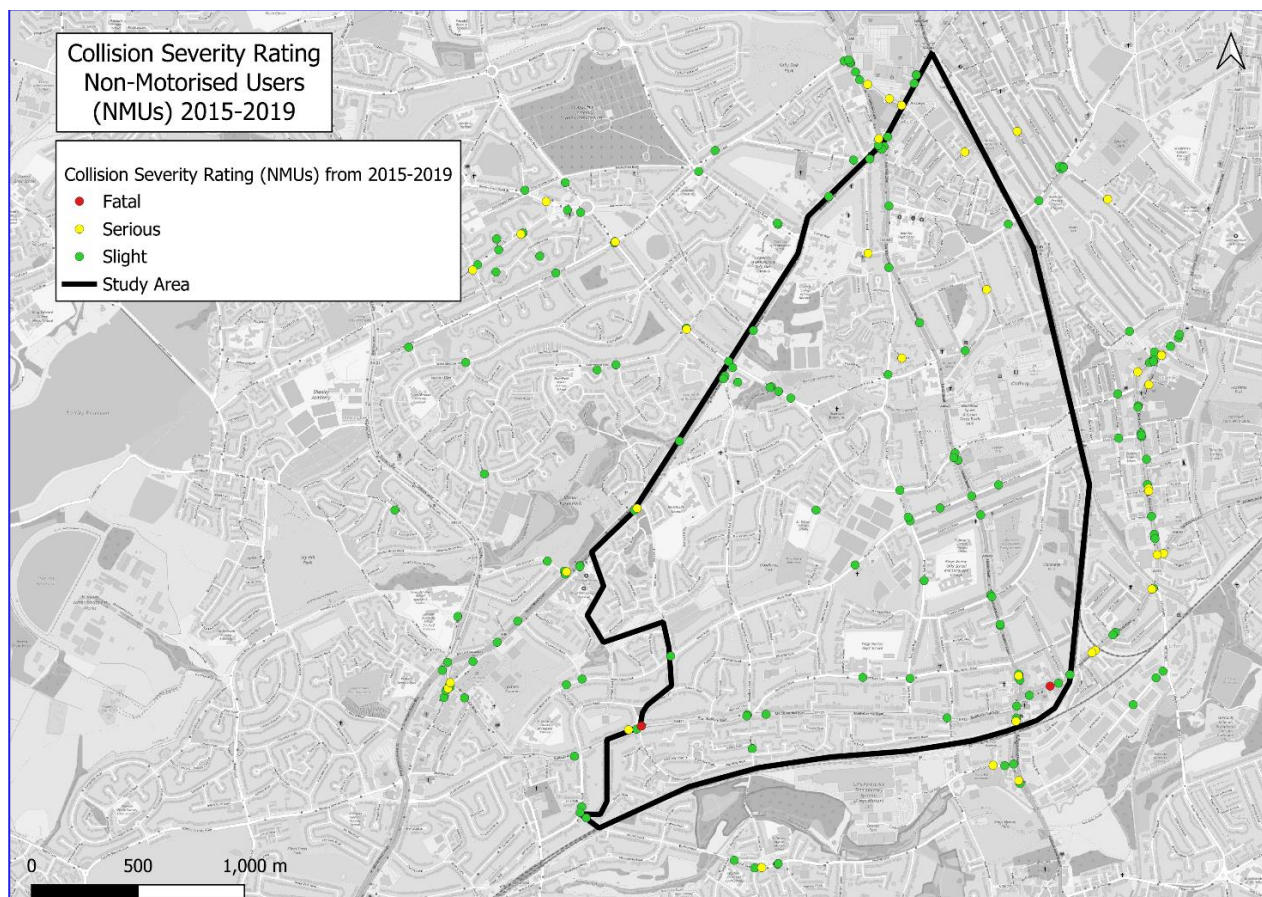


Figure 2-12: Study Area Non-Motorised User Collisions (2015-2019)

The locations of the six fatal collisions are listed below:

Within the study area:

- Linden Road near to Birmingham City University Bournville Campus;
- Bristol Road, near to Witherford Way;
- Pershore Road near to Midland Road; and
- Bunbury Road near to Hole Lane.

In the study area buffer zone:

- Gibbins Road near to Lodge Hill Road; and
- Weoley Avenue, near to Lodge Hill Cemetery and Crematorium.

Figure 2-13 shows the location of collision clusters which have been tabulated in Table 2-6. A 50m buffer was applied to each collision and then intersected with all collisions over a five-year period, if four or more collisions occurred within a 50m boundary then these were classified as a 'cluster'.

It should be noted that the number of collisions to determine a cluster, as part of this study, differs from Birmingham City Council's criteria for identifying collision clusters to determine eligibility for Local Safety Scheme funding. This BCC definition of collision clusters includes nine injury collisions per km over the last three years.

Table 2-6. Collision Cluster locations

ID	Collision Cluster locations	Number of collisions
1	Pershore Road Mini roundabout	31
2	Station Road	5
3	Northfield Road	4
4	Bunbury Road Woodlands Road Junction	5
5	Bunbury Road Hole Lane Junction	5
6	Bristol Road South and Hole Lane Junction	5
7	Bristol Road South near to Bournville Lane, Cob Lane, Middle Park Road	26
8	Bristol Road Witherford Way Junction	8
9	Bristol Road Weoley Park Road	9
10	Bristol Road, Oak Tree Lane, and Harborne Lane Junction	15
11	Bristol Road Chapel Lane Junction	9
12	Bristol Road north of Chapel Lane	5
13	Linden Road Bournville Lane Junction	4
14	Selly Oak Road, Bournville Lane Junction	5
15	Linden Road between Mary Vale and Beaumont Road	9
16	Linden Road, Franklin Road Junction	7
17	Selly Oak, Heath Road and Mary Vale Road Junction	4

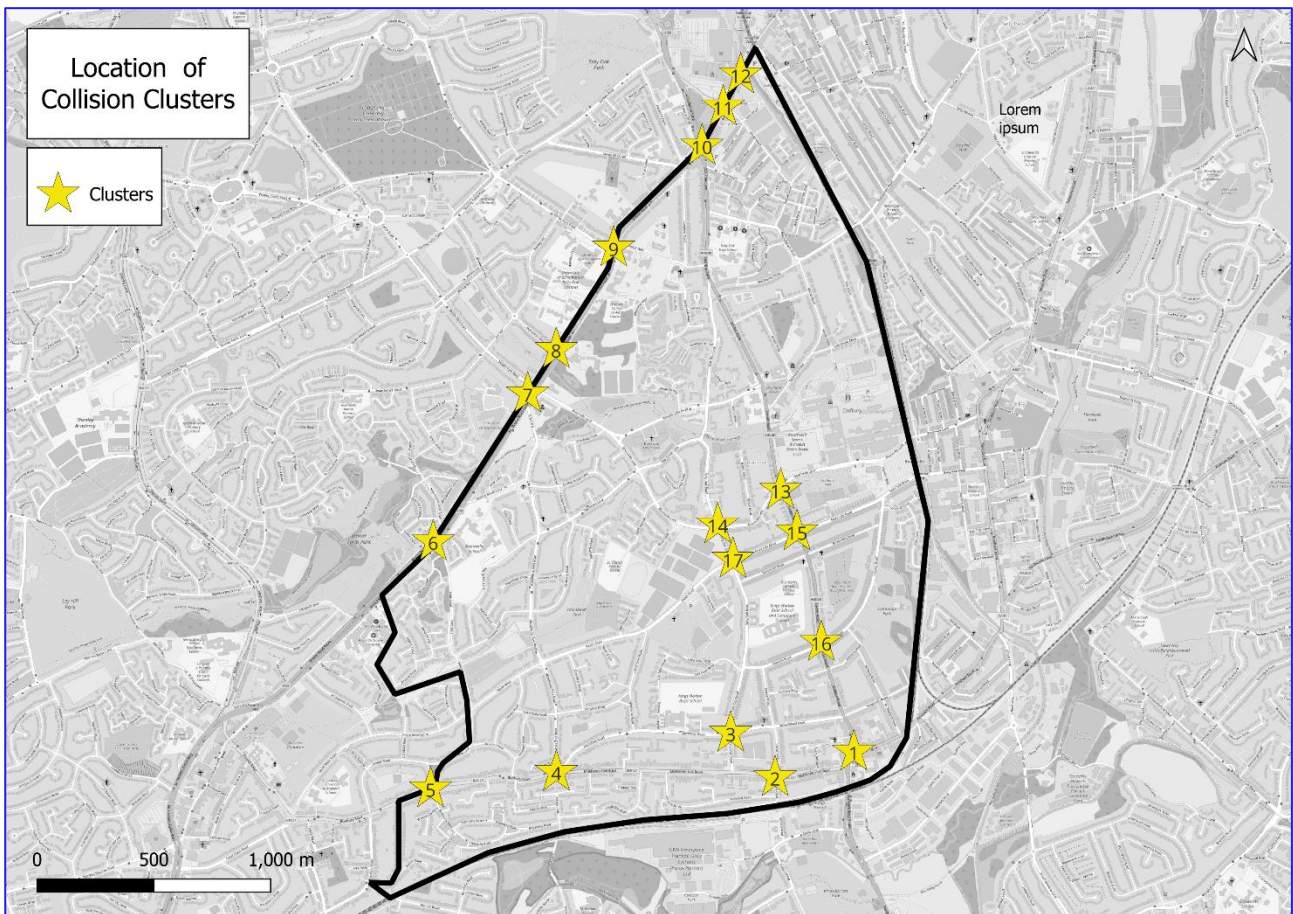


Figure 2-13: Study Area Collision Clusters (2015-2019)

2.9 Bus provision

The study area is served by 12 bus routes that operate from Birmingham City Centre to Bournville and surrounding areas, connecting key centres in the region – the routes are shown in Figure 214. Buses access Birmingham City Centre via Bristol Road (A38) or Pershore Road (A441). Most of the buses operate along the boundary roads (A38 Bristol Road South, A4040 Linden Road, Church Road, and B4121 Middleton Hall Road) that define the study area. The 27 and 46 bus services operate within the study area boundary travelling down from Woodbrooke Road, Hay Green Lane and southwards via Woodlands Park Road. The 883 also operates within the study area, travelling across the northern section of the reach. Information on the different bus services is displayed below in Table 2-7.

Table 2-7: Bus Service Information (2023, Q1)

Service Number	Operator	Route	Frequency		
			Mon-Fri	Sat	Sun
11A	National Express West Midlands	Birmingham Outer Circle - Acocks Green	Every 8 mins	Every 10 mins	Every 15 mins
11C	National Express West Midlands	Birmingham Outer Circle - Clockwise	Every 4 mins	Every 10 mins	Every 15 mins
20	National Express West Midlands	QE Hospital - Cofton Hackett	Every 30 mins	Every 30 mins	Every 30 mins
27	National Express West Midlands	Maypole - Cofton Hackett	Every 30 mins	Every 30 mins	Every 30 mins
38	Keys Cars and Coaches	Northfield - Selly Oak via Cotteridge	Hourly	Hourly	-
46	National Express West Midlands	QE Hospital – Northfield	Every 30 mins	Every 30 mins	Every 30 mins
48	National Express West Midlands	West Bromwich - Q.E. Hospital	Every 20 mins	Every 30 mins	Every 30 mins
61	National Express West Midlands	Birmingham – Frankley	Every 12 mins	Every 15 mins	Every 20 mins
63	National Express West Midlands	Birmingham – Frankley	Every 12 mins	Every 15 mins	Every 20 mins
848	The Green Bus	Longbridge - King Edward VI School	School Service	-	-
882	The Green Bus	King Edwards VI Five Ways - Nisham High School	School Service	-	-
883	The Green Bus	King Edwards VI Five Ways School - Small Heath	School Service	-	-

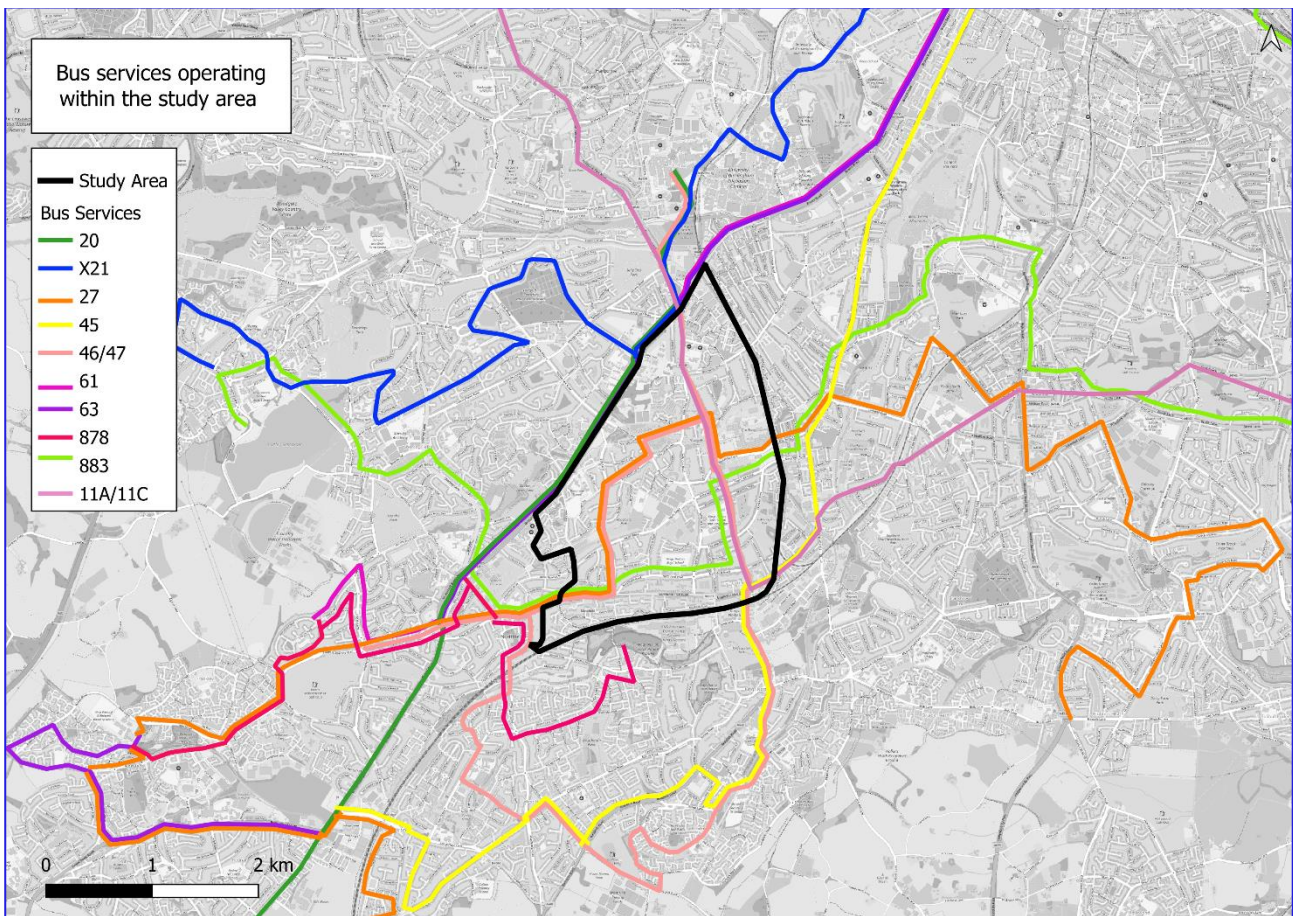


Figure 2-14: Bus network operating within and around the study area (2023, Q1).

2.10 Rail network

The study area is well connected to the National Rail service with four railway stations operating frequent rail services nearby. Bournville Railway station sits on the cross-city line which runs from Redditch to Lichfield Via Birmingham New Street. The other surrounding stations: Selly Oak, Northfield and Kings Norton operate along the same route, Table 2-8 details the current operating hours and frequencies of available services. The location of the stations in proximity to the study area is shown in Figure 2-15.

Table 2-8 Rail Service Information (2023, Q1)

Stations	Destinations	Operating Hours	Frequency
Bournville	Lichfield Trent Valley via Birmingham New Street	06:47-22:26	Every 30 mins
Bournville	Four Oaks via Birmingham New Street	06:29-23:19	Every 10-20 mins
Bournville	Bromsgrove	06:06-23:16	Every 30 mins
Bournville	Redditch	05:54-23:28	Every 30 mins
Selly Oak	Lichfield Trent Valley via Birmingham New Street	06:50-22:29	Every 30 mins
Selly Oak	Four Oaks via Birmingham New Street	06:32-23:22	Every 10-20 mins
Selly Oak	Bromsgrove	06:03-23:13	Every 30 mins

Stations	Destinations	Operating Hours	Frequency
Selly Oak	Redditch	05:51-23:25	Every 30 mins
Northfield	Lichfield Trent Valley via Birmingham New Street	06:42-22:21	Every 30 mins
Northfield	Four Oaks via Birmingham New Street	06:23-23:14	Every 10-20 mins
Northfield	Bromsgrove	06:12-23:23	Every 30 mins
Northfield	Redditch	06:00-23:34	Every 30 mins
Kings Norton	Lichfield Trent Valley via Birmingham New Street	06:45-22:24	Every 30 mins
Kings Norton	Four Oaks via Birmingham New Street	06:27-23:17	Every 10-20 mins
Kings Norton	Bromsgrove	06:09-23:19	Every 30 mins
Kings Norton	Redditch	05:57-23:31	Every 30 mins

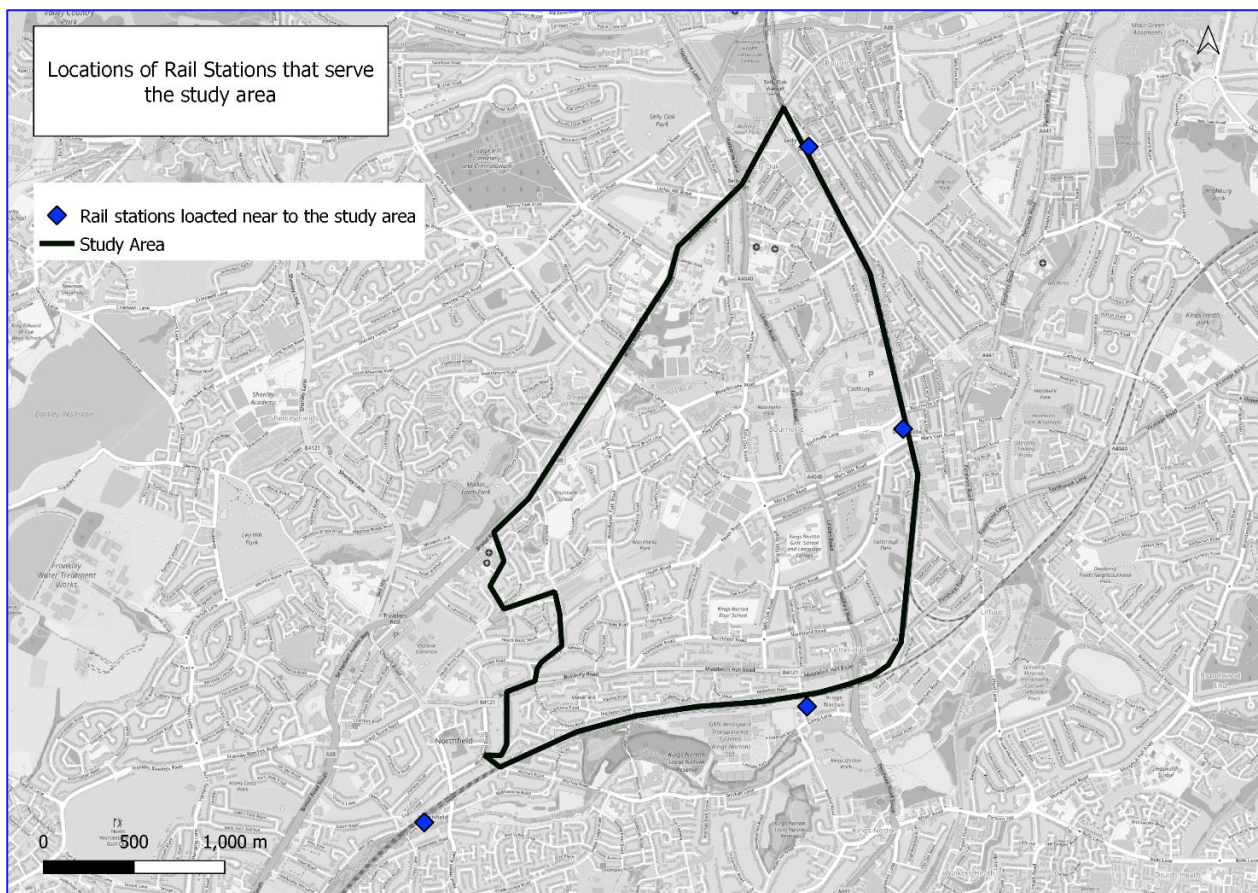


Figure 2-15: Location of railway stations in close proximity to the study area

2.11 Conservation Area

Bournville conservation area falls partially within the study area and is shown below in Figure 2-16. The conservation area is located towards the eastern section of the study area. The conservation area also contains listed buildings.

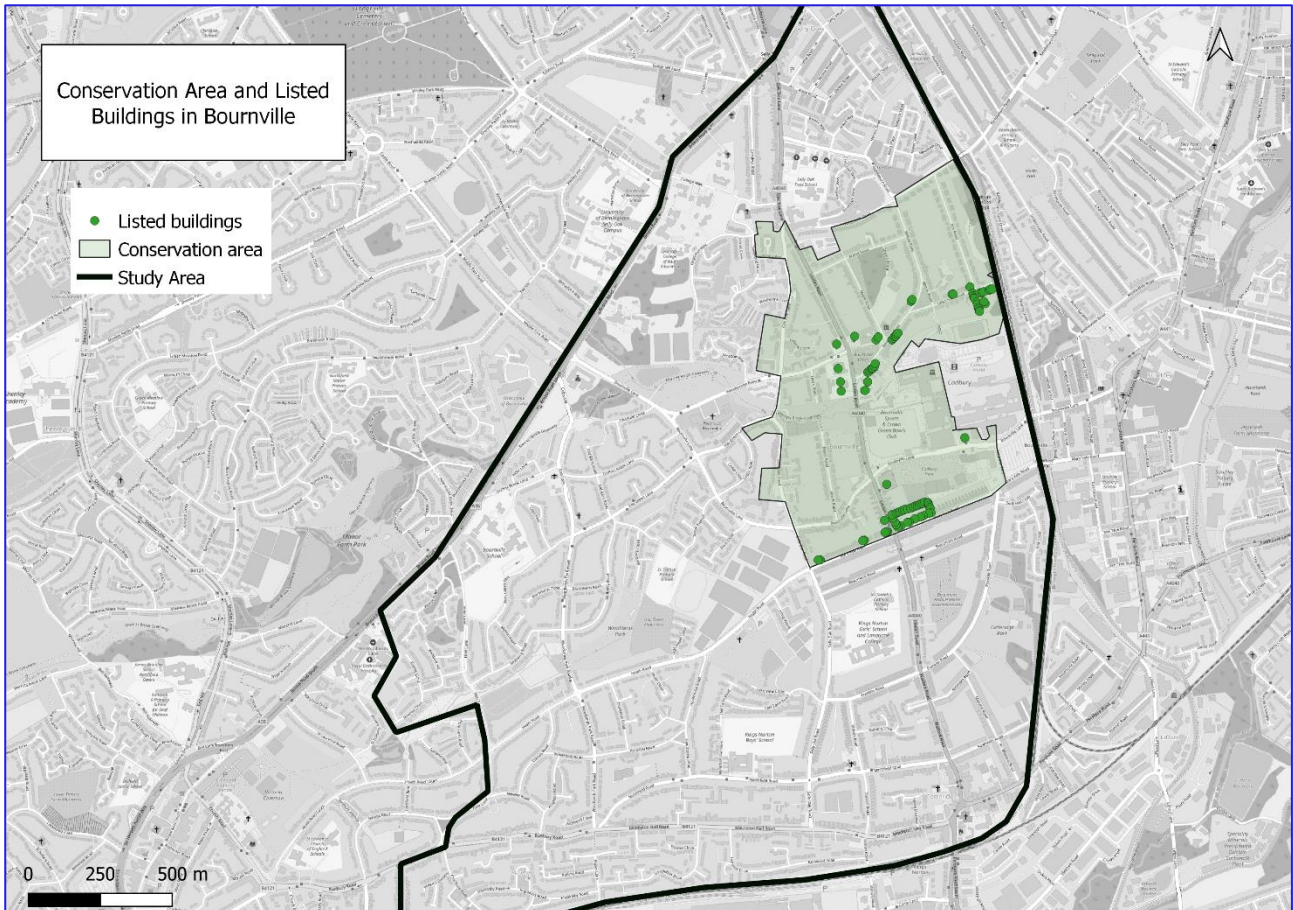


Figure 2-16: Conservation area and listed buildings

2.12 Air quality

The nearest Air Quality Monitoring Station is in Selly Oak; therefore, air quality data was obtained from National Atmospheric Emissions Inventory for the study area which covers the period of 1990-2019. The key pollutants and their total emissions for all sectors and road transport are listed in Table 2-9.

According to the Transport and Environment statistics published by the government in Autumn 2021, the most significant air pollutants from the transport sector are nitrogen oxides and particulate matter. In the study area, nitrogen oxide emissions from road transport make up a large proportion of the overall nitrogen oxide emissions from all sectors, as detailed in Table 2-9.

Table 2-9: Pollutants table, by emission type, all sector emissions and road transport emissions.

Pollutant	Emissions – all sectors (t)	Emissions - Road Transport (t)
Carbon Dioxide (as Carbon)	31059.47	11169.29
PM 10 (Particulate Matter <10µm)	52.15	8.47
PM 2.5 (Particulate Matter <2.5µm)	32.62	5.41
Nitrous Oxide as NO2	197.33	96.33
Nitrous Oxide	4.1	1.34

2.13 Traffic flow data

Existing traffic flow data was collected from various Department for Transport (DfT) count points across the study area. There are 19 count locations which lie within and close to the study area, the location of these count points is shown in Figure 2-17.

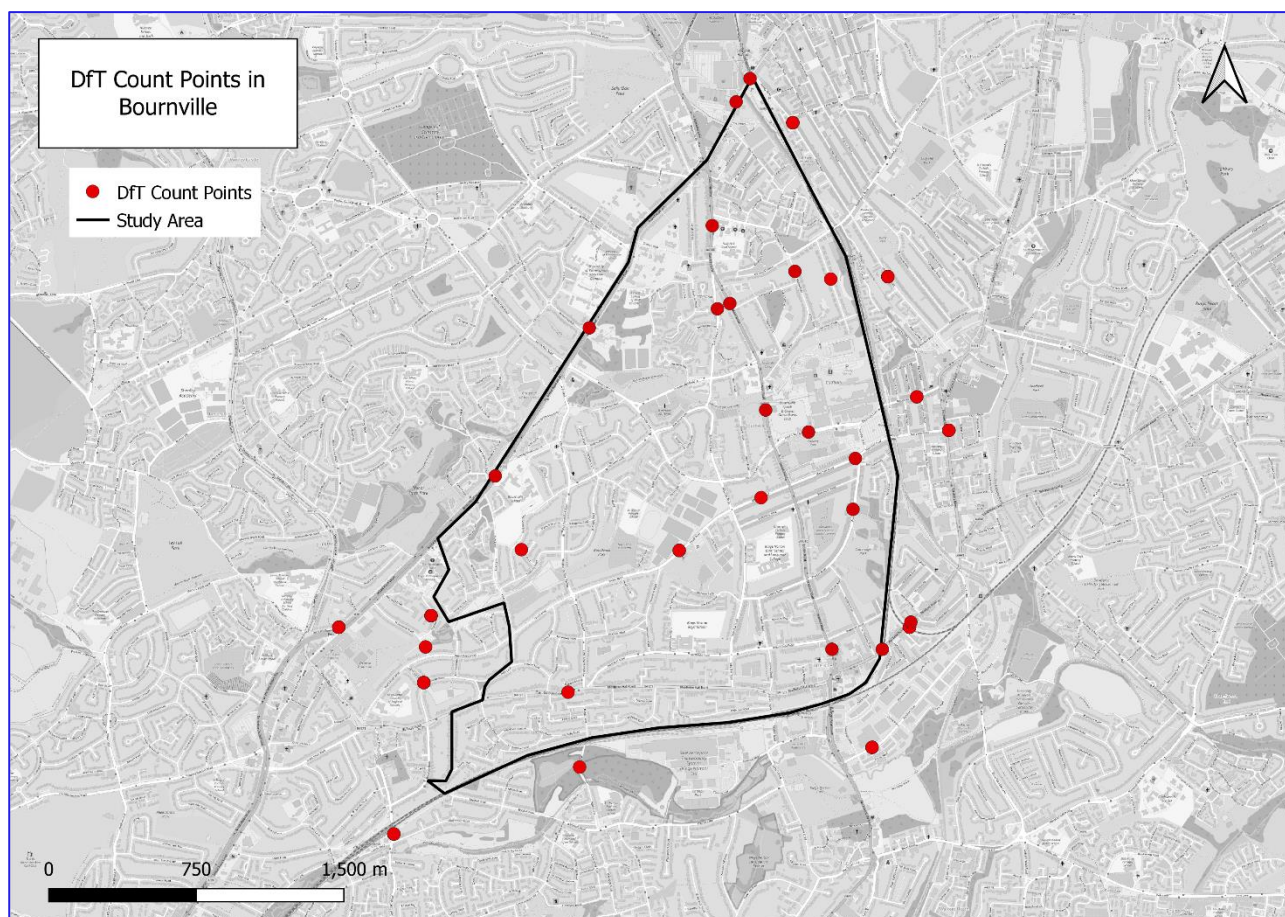


Figure 2-17: Location of DfT count points in the study area

2.14 Commissioned traffic data surveys

Additional traffic data surveys were commissioned in November 2022 to inform the transport study. Table 2- and Figure 2-18 provide an overview of the commissioned surveys.

Table 2-10. Traffic survey overview

Survey/ Data Source	Description	Locations
Automatic Traffic Count (ATC)	Counts collected between Tuesday 15 November 2022 to Thursday 01 December for seven consecutive days (24 hours per day).	<ul style="list-style-type: none"> Refer to Figure 2-18 Refer to Appendix A for tabulated flows
Manual Classified Turning Count (MCTC)	Tuesday 15 November 2022 (0700-1900)	<ul style="list-style-type: none"> Refer to Figure 2-18 Refer to Appendix A for tabulated flows
Journey Times	TrafficMaster data provided by BCC for the month of October 2022.	<ul style="list-style-type: none"> All A roads and B roads within the modelled area.

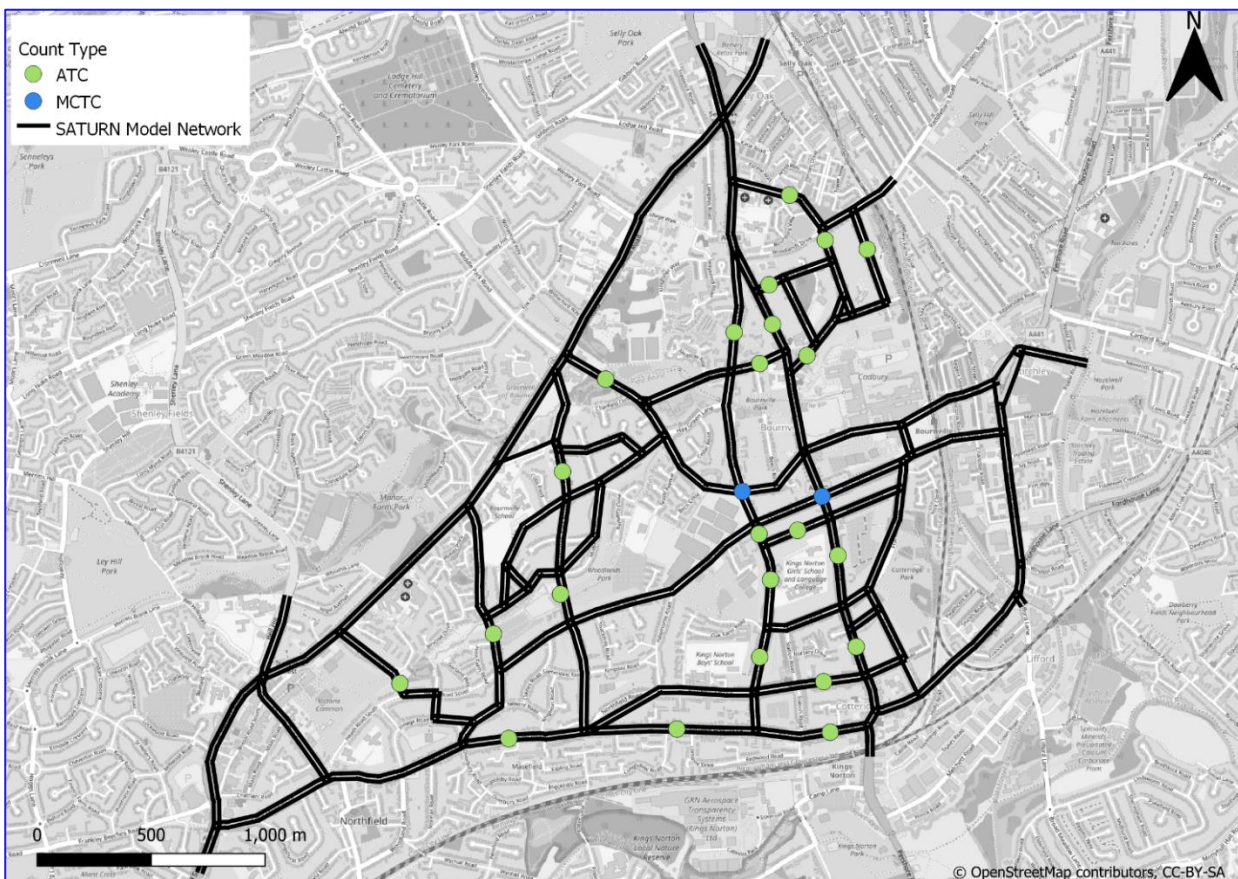


Figure 2-18: Overview of traffic surveys and other data sources used to inform the Base Model development

2.14.1 Manual Classified Turning Counts

A number of 12-hour Manual Classified Turning Counts (MCTCs) have been carried out on Tuesday 15 November 2022 between 07:00 and 19:00.

MCTCs were classified into Car, Light Goods Vehicle (LGV), Other Goods Vehicle (OGV) 1, OGV 2 and Public Service Vehicle (PSV). Car and LGV have been considered as light vehicles and OGV1, OGV2 and PSV have been considered as HGVs (Heavy Goods Vehicle).

2.14.2 Automatic Traffic Count

Automatic Traffic Count (ATC) surveys were undertaken for one week between Tuesday 15 November 2022 to Thursday 01 December. The ATCs recorded traffic in both directions based on 12 vehicle classes and provided speeds for that location.

2.14.3 TrafficMaster

TrafficMaster data (2019) was downloaded from Transport for West Midlands (TfWM) Data Insight site and has been mapped using GIS software. It should be noted that the only existing data available was limited to the boundary roads of the study area. Neutral months of June and November were selected due to the lack of school holidays and limited seasonal changes in traffic flow. The AM and PM peak speeds for both months are shown in Figure 2-19 to Figure 2-22.

June 2019 AM peak shows that Bristol Road South was operating normally with speeds averaging between 30-40 mph. On Linden Road speeds were lower, averaging between 10-20mph in some locations, particularly heading northbound. Typically speeds between 0-10 mph were recorded at major junctions on the boundary roads, Bell Lane and A38, Middleton Hall Lane and A441 and Oak Tree Lane and the A38. Results from the November AM data showed a similar picture, with low speeds on the major junctions on the boundary roads.

Similarly, the PM peaks showed similar speeds along the boundary roads. In June, the PM peak speeds along Church Road and south sections of Linden Road were low, averaging between 0-10 mph. However, overall speeds averaged between 20-30 mph. Results from the November PM data were almost identical with low speeds on Church Road and Linden Road.

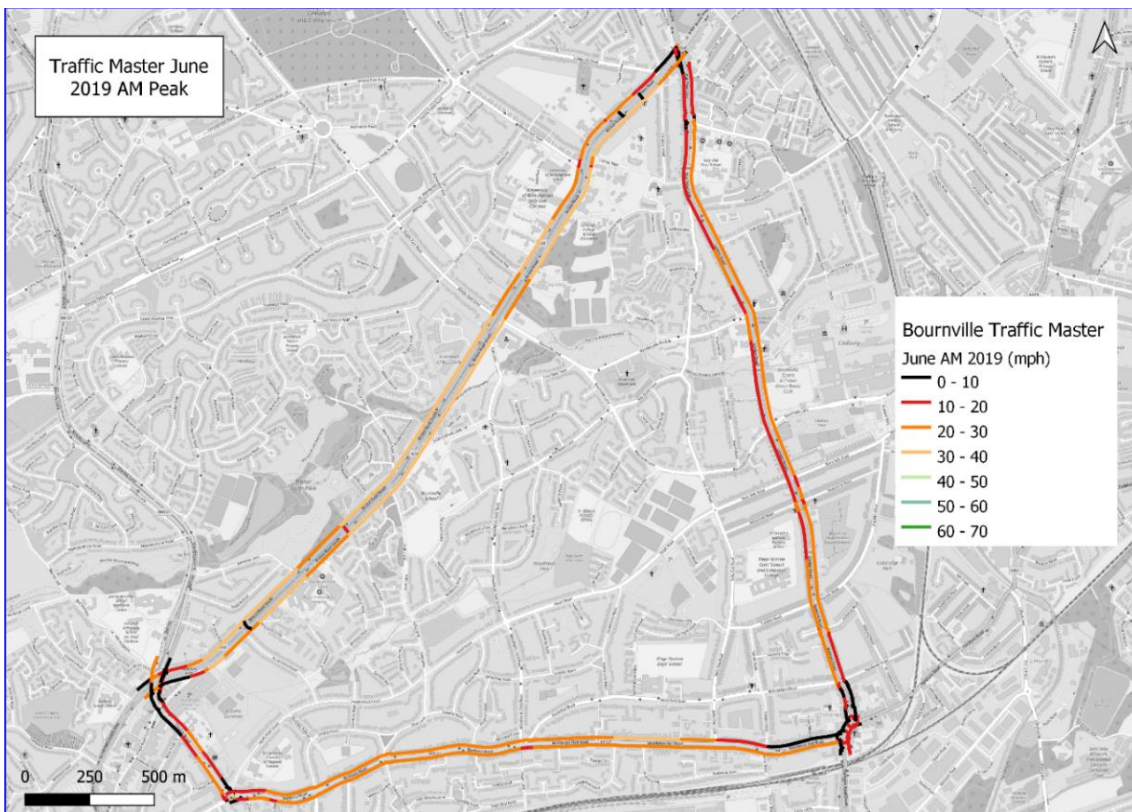


Figure 2-19: Traffic Master data – June 2019 AM Peak

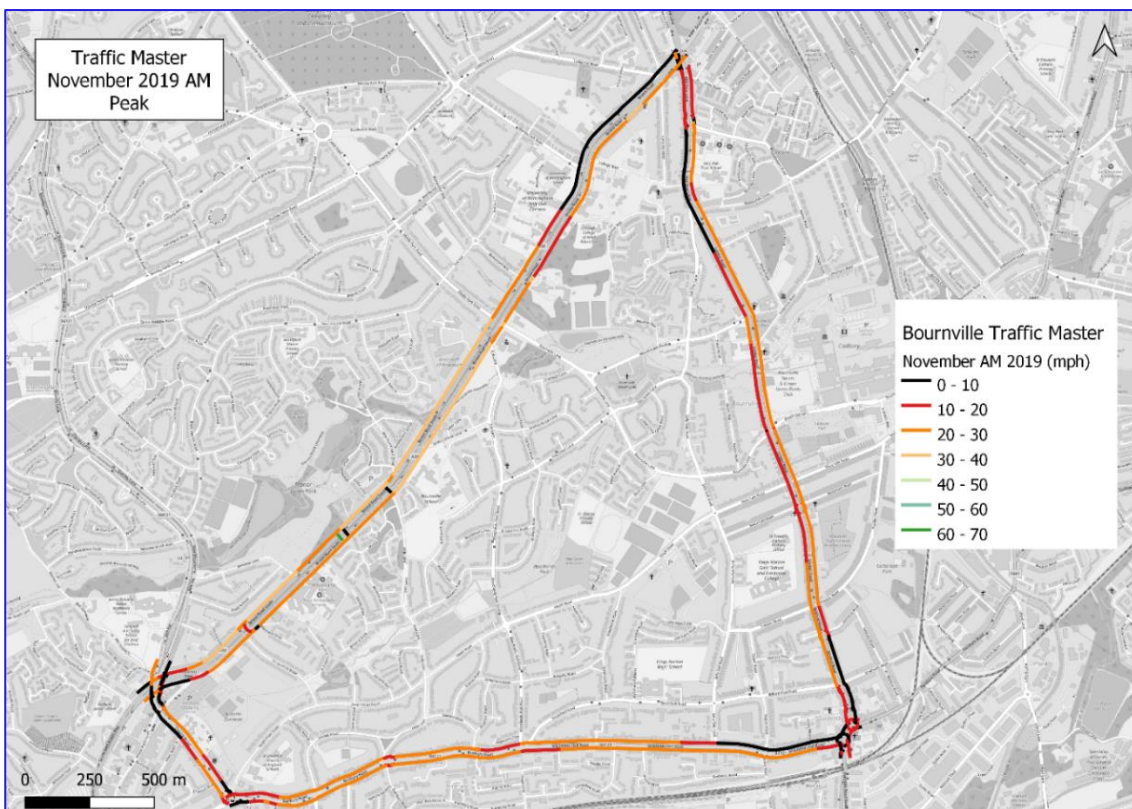


Figure 2-20: Traffic Master data – November 2019 AM Peak

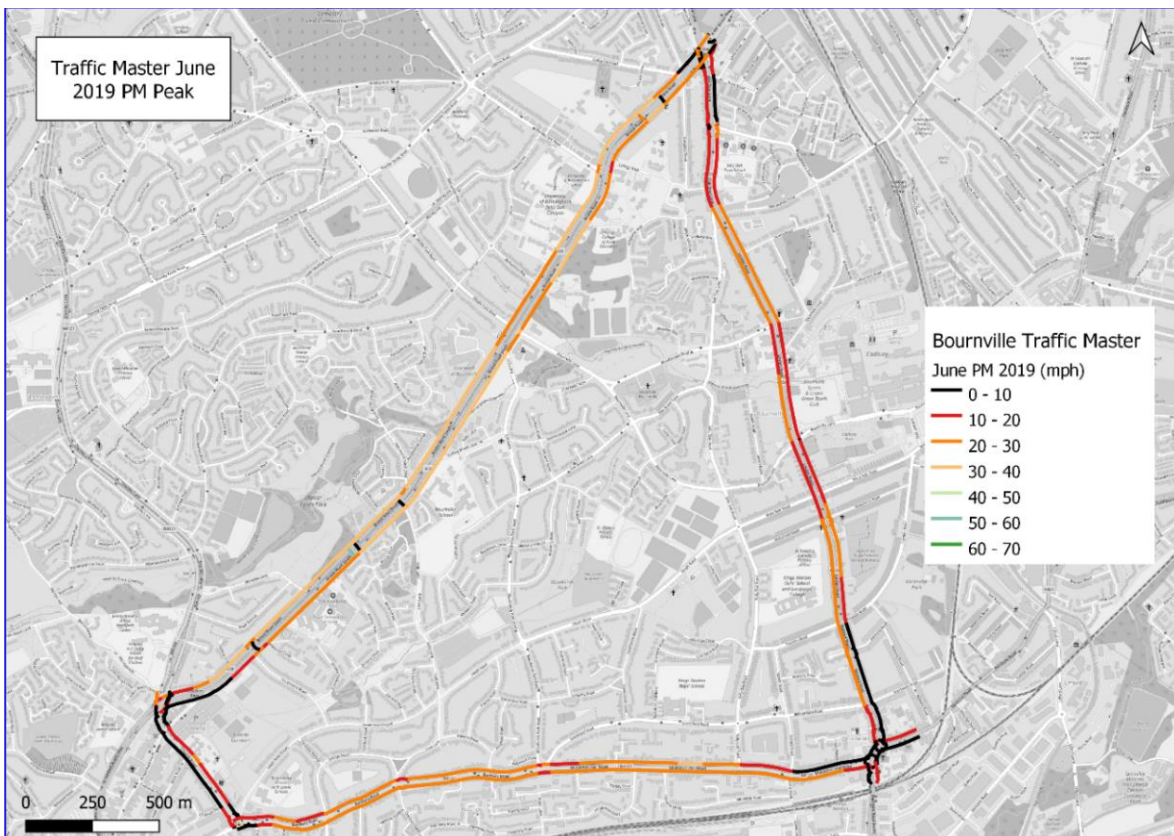


Figure 2-21: Traffic Master data – June 2019 PM Peak

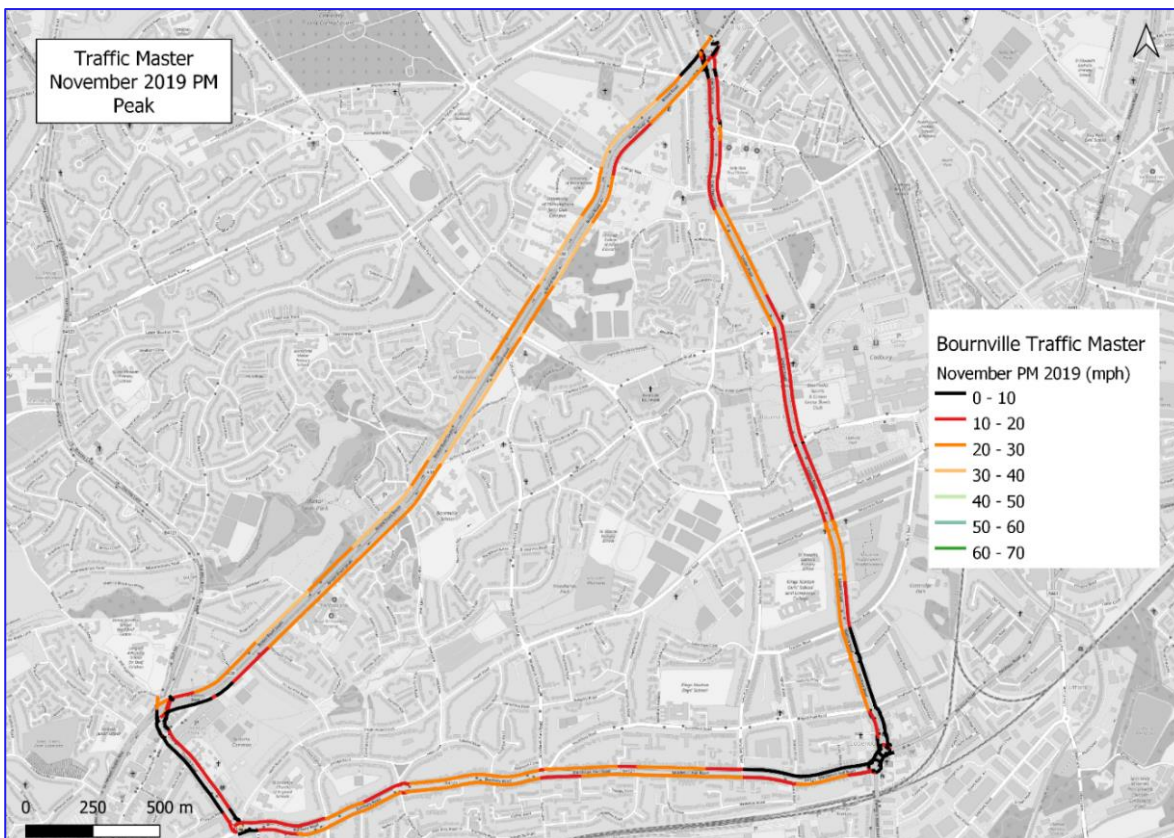


Figure 2-22: Traffic Master data – November 2019 PM Peak

2.15 Delay

As with the TrafficMaster data, 2019 delay data was downloaded from TfWM Insight site and has been mapped using GIS software, with data also restricted to the boundary roads of the study area. Neutral months of June and November were again selected due to the lack of school holidays and limited seasonal changes in traffic flow. The AM and PM peak speeds for both months are shown in Figure 2-23 to Figure 2-26.

All four datasets showed delays on at least one approach to the A441 Pershore Road / A4040 Linden Road / B4121 Middleton Hall Road double mini roundabout junction. At its worst, in the November PM dataset, the delays on the A4040 Linden Road and the B4121 Middleton Hall Road both stretched back approximately 500m to Franklin Road and Selly Oak Road, respectively.

Delays were also seen at the A38 Bristol Road / A4040 Oak Tree Lane junction in the November AM and June PM datasets. The worst-case scenario, in November AM, saw high delays on the A38 northbound stretching back approximately 780m to College Walk, with delays on the A4040 Oak Tree Lane northbound also stretching back approximately 780m to Acacia Road.

Finally, delays were also seen at the A38 Bristol Road / Bell Hill / Bell Lane junction in all datasets. The worst-case scenario, in June PM, saw delays on Bell Lane and Church Road for approximately 450m, nearly all the way back to the B4121 Middleton Hall Road junction. There were also short sections of delays on both A38 approaches and Bell Hill.