REPORT N^{O} 002

COVENTRY LOCAL PLAN

TRANSPORT MODELLING REPORT

CONFIDENTIAL

DECEMBER 2016

WSP | PARSONS BRINCKERHOFF

COVENTRY LOCAL PLAN

MODELLING REPORT

Coventry City Council

Report (version)
Confidential

Project no: 70001991
Date: December 2016

WSP | Parsons Brinckerhoff
One Queens Drive
Birmingham B5 4PJ

Tel: +44 (0)121 352 4700
Fax: +44 (0)121 352 4701
www.wsp-pb.com

QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2
Remarks	DRAFT for review	Final for CCC Review	Final
Date	18th November 2016	1st December 2016	7th December 2016
Prepared by	Gaelle Samaha Amina Gueciouer Christine Palmer	Gaelle Samaha Amina Gueciouer Christine Palmer	Gaelle Samaha Amina Gueciouer Christine Palmer
Signature			
Checked by		Simon Statham	Simon Statham
Signature			
Authorised by		Simon Statham	Simon Statham
Signature			
Project number		70001991	70001991
Report number		1	1
File reference		\\ser01brm1uk\Projects\70001991 - CSW WMHA Coventry Strategic Transport Modelling\C Documents\Reports\Coventry Local Plan\2016 Nov Coventry Local Plan\	\\ser01brm1uk\Projects\70001991 - CSW WMHA Coventry Strategic Transport Modelling\C Documents\Reports\Coventry Local Plan\2016 Nov Coventry Local Plan\

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

INTRODUCTION

WSP | Parsons Brinckerhoff were commissioned by Coventry City Council (CCC) to undertake a transport modelling exercise to assess the highway impacts of the Coventry Local Plan. The Coventry Area Strategic Model (CASM), a multi modal transport model, developed by CCC and Highways England, was used as an evidence base to assess the Local Plan proposals. It is important to understand that the CASM transport model is a strategic modelling tool capable of identifying the strategic impacts of future growth within the Coventry Local Authority area.

This report summarises the methodology and results of the transport modelling exercise to understand the potential highway network impacts from the emerging Coventry Local Plan development assumptions.

The report builds upon the transport modelling work completed for the Local Plan in December 2015 documented in the Coventry Local Plan – Modelling Report (WSP I Parsons Brinckerhoff, December 2015). This report responds to the questions raised by the Inspector as part of the Local Plan hearing process.

SCENARIOS AND ASSUMPTIONS

WSP | Parsons Brinckerhoff have undertaken four Coventry Local Plan scenarios within a forecasting year of 2034 which are listed below:

- Scenario 1: 2034 Full Local Plan (all development)
- Scenario 2: 2034 Local Plan (with Keresley consented development only, 800 houses)
- Scenario 3: 2034 Local Plan (without Eastern Green development)
- Scenario 4: 2034 Local Plan (without Cromwell Lane development)

In all scenarios the growth in houses and jobs between 2013 and 2034 remains consistent within Coventry Local Authority, with 25,000 houses and 28,200 jobs. The only difference between the scenarios is where the jobs and houses are located.

In addition to the Local Plan development scenarios, an assessment was also undertaken to ascertain the impact on the highway network with various stages of Keresley development, without the Keresley Link Road.

The housing, employment and school assumptions associated with the Coventry Local Plan and those in neighbouring authorities close to the Coventry boundary were discussed and agreed with CCC.

In addition to this the highway and public transport network improvements associated with the Coventry Local Plan scenarios were also outlined and agreed with CCC.

OUTPUTS

FULL LOCAL PLAN

The Full Local Plan development was compared against 2013 Base Year conditions. As a result of the proposed Local Plan growth the population in the Coventry Local Authority between 2013 and 2034 increases by 19% and the number of trips made by all modes increases by 18%. Proposed developments on the outskirts of Coventry predominantly use car as a mode of travel, whilst developments close to the city centre have a greater proportion of trips being made by public transport, walking and cycling.

Within the Full Local Plan proposals the proportion of trips travelling from Coventry to areas outside the Local Authority increases in the AM peak along with the trips travelling to Coventry from outside the Local Authority area in the PM peak. This suggests that a higher proportion of new residents of Coventry will tend to travel outside of Coventry to work in the future. This is because in the future in nearby local authorities there is a reduction in the number of workers compared to jobs, drawing workers in Coventry to jobs outside the Local Authority. Within Coventry there is an increase in the proportion of trips travelling to and from Coventry NW which is where significant new houses and jobs are located. There is also an increase in the proportion of car trips travelling to Coventry SE in the AM peak and from Coventry SE in the PM peak which is a result of the new jobs at Whitley.

As a result of the increase in traffic that occurs with the Full Local Plan, there is an increase in the amount of distance that is travelled by car and the delay which is experienced by cars across the Coventry Local Authority area. There is also a slight reduction in the average speed of vehicles in Coventry Local Authority of up to 3kph. As a result of the increase in traffic some of the spare capacity on the local highway network is filled, in particular the areas around the locations of the development sites and key routes around Coventry including the A45 and A46.

The CASM Highway Assignment Model (HAM) does not model highway junctions in detail, but it can highlight junctions which are experiencing more delay with the Full Local Plan compared to existing conditions. In both AM and PM peak time periods, junctions which experience an increase in delay as a result of the Coventry Local Plan are located on key routes into and around Coventry, particularly on the A45 and junctions around the M6. As and when planning applications for development come forward it will be important to assess the impact of the proposals on junction performance in the local area to identify the extent of the issue and ensure that appropriate mitigation is implemented.

KERESLEY

The impact the full Keresley development has on the local highway network was assessed. The key roads which car trips to and from the Keresley development site use are those within close proximity to the site including Bennett's Road, Tamworth Road and the new Keresley Link Road. Traffic from Keresley travels northbound towards the M6, southbound into Coventry and westbound towards Birmingham. The full Keresley development does not have a significant impact on the total network delay or average speed. In the more localised Keresley area there is an increase in highway delay and car travel distance but the changes are small, under 5%. The Keresley Link Road attracts vehicles to use the road, with increases in traffic on Long Lane and Bennetts Road, however all traffic flow increases still leave the roads with spare capacity. The Keresley Link Road also reduces traffic volumes on Tamworth Road and Sandpits Lane. There are some increases in junction delay around the Keresley development, which are small, less than 20 seconds. As and when a planning application for development is produced it will be important to assess the impact of the proposals on junction performance in the local area to identify the extent of the issue and ensure that appropriate mitigation is implemented.

An assessment was undertaken as to the impacts of various levels of development at Keresley with and without the Keresley Link Road and the impacts on the highway network. The operation of the local highway network was assessed by considering traffic volumes, junction delay and journey times in the local area.

As the number of houses increases at Keresley, without the Link Road there is an increase in traffic, on B4076, Tamworth Road, Bennetts Road, Brownshill Green and Watery Lane in some cases the increase in one way traffic is up to 200 vehicles. However these increases in traffic flow can be accommodated on the highway network and do not generate significant congestion issues. The increase in traffic flows results in some reductions in journey times in the area. Average junction delay increases are low, however it would be important as and when the planning application comes forward for the site that detailed junction modelling is undertaken to ensure the junctions around the site operate effectively.

With the Keresely Link Road there is a reduction in traffic on some local roads, including Tamworth Road, Sandpits Land, Bennetts Road and Watery Lane. However, there is more traffic, on roads connecting with the Keresley Link Road, including Long Lane and Coudon Wedge Drive. Highway network statistics show that the Link Road provides most improvement to the highway network performance when 3,100 houses are built. Journey time improvements with the Link Road are most significant between A45 and Bennetts Road where savings reach up to 135 seconds. The traffic flows on the Keresley Link Road are greatest in the west with two way flows approaching 1,250 vehicles. The traffic flow on the eastern section of the road is very low, 300 vehicles. As a check against the CASM HAM outputs, survey data was collected in October 2014 to identify the existing traffic which could potentially use the Link Road in the future. This indicates that by 2034, with the current development assumptions, there could be 17,850-19,820 vehicles that use the road daily, with the western part of the Link Road having a lot more trips than the eastern section. The eastern section of the road could become more popular following improvements to M6 Junction 3 and further development growth in Nuneaton and Bedworth.

EASTERN GREEN

The impact the Eastern Green development has on the local highway network was assessed. The key roads which car trips to and from the Eastern Green development site use are those within close proximity to the site including the A45, Pickford Green Lane, Broad Lane and Banner Lane. Traffic from Eastern Green travels westbound towards Birmingham, eastbound towards Coventry and southbound towards Kenilworth. The Eastern Green development area does not have a significant impact on the total network delay or average speed. In the more localised Eastern Green area, there is an increase in highway delay and car travel distance but the changes are small, under 5%.

The Eastern Green development increases traffic on the local roads around the development however there is available capacity to accommodate this increase in traffic. Journey times along the roads close to the Eastern Green development increase but the changes are relatively small, up to 42 seconds increase on a journey of over 8 minutes equating to a 9% increase. There are some increases in junction delay around the Eastern Green development, which are small, less than 20 seconds. As and when a planning application for development is produced it will be important to assess the impact of the proposals on junction performance in the local area to identify the extent of the issue and ensure that appropriate mitigation is implemented.

CROMWELL LANE

The impact the Cromwell Lane development has on the local highway network was assessed. The key roads which car trips to and from the Cromwell Lane development site use are those within close proximity to the site including Cromwell Lane, Charter Avenue and Westwood Heath Road. Traffic from the Cromwell Lane development travels eastbound towards Coventry and

westbound towards Birmingham. The volume of trips associated with the Cromwell Lane development is low and constitutes under 7% of traffic on the local highway network.

The Cromwell Lane development slightly increases traffic volumes on Cromwell Lane but the changes are very small and the road remains within an acceptable operating volume. The Cromwell Lane development does not have a significant impact on the total network delay or average speed. Journey times along the roads close to the Cromwell Lane development remain very similar to when the development is not there, with only a couple of seconds change with the development in place. There are some increases in junction delay around the Cromwell Lane development, which are small, less than 20 seconds.

A detailed junction assessment has been undertaken which indicates that some junctions in the local area currently have capacity issues which are exacerbated in the future, whether the Cromwell Lane development is built or not. Further work will be considered to investigate mitigation measures to be adopted at these junctions to help improve their operation.

SUMMARY

Overall this report has assessed the impacts CCC's Full Local Plan will have as well as three individual development sites. Junctions have been highlighted to identify where pressures may occur in the future. With the appropriate infrastructure in place, which should be assessed as planning applications come forward, the proposals put forward by CCC within the Local Plan should ensure the highway network continues to operate effectively in the future.

1 INTRODUCTION

1.1 PURPOSE OF REPORT

1.1.1 WSP | Parsons Brinckerhoff were commissioned by Coventry City Council (CCC) to undertake a transport modelling exercise to assess the highway impacts of the Coventry Local Plan. The Coventry Area Strategic Model (CASM), a multi modal transport model, was used as an evidence base to assess the Local Plan proposals. It is important to understand that the CASM transport model is a strategic modelling tool capable of identifying the strategic impacts of future growth within the Coventry Local Authority area.

1.1.2 This report summarises the methodology and results of the transport modelling exercise to understand the potential highway network impacts from the emerging Coventry Local Plan development assumptions.

1.1.3 This report builds upon the transport modelling work completed for the Local Plan in December 2015 documented in the Coventry Local Plan – Modelling Report (WSP I Parsons Brinckerhoff, December 2015). This report responds to of the Inspector as part of the Local Plan hearing process.

1.2 OVERVIEW OF STUDY

1.2.1 WSP | Parsons Brinckerhoff have undertaken four Coventry Local Plan scenarios within a forecasting year of 2034 which are listed below:

- Scenario 1: 2034 Full Local Plan (all development)
- Scenario 2: 2034 Local Plan (with Keresley consented development only, 800 houses)
- Scenario 3: 2034 Local Plan (without Eastern Green development)
- Scenario 4: 2034 Local Plan (without Cromwell Lane development)

Table 1.1: CASM Local Plan Scenarios

Local Plan Scenario	Keresley Development		Cromwell Lane Development	Eastern Green Development
	800 houses and one primary school	3100 houses and all schools		
Scenario 1	✗	✓	✓	✓
Scenario 2	✓	✗	✓	✓
Scenario 3	✗	✓	✓	✗
Scenario 4	✗	✓	✗	✓

1.2.2 In all scenarios the growth in houses and jobs between 2013 and 2034 remains consistent within Coventry Local Authority, with 25,000 houses and 28,200 jobs. The only difference between the scenarios is where the jobs and houses are allocated.

1.2.3 Scenario 1 represents the full Local Plan scenario with the growth in houses and jobs in the Coventry area between 2013 and 2034 in their proposed locations. Scenario 2 assumes the 800 houses with planning permission will be built at Keresley but the additional 2,300 proposed houses at Keresley will not be built in that location. Scenarios 3 to 4 represent the Local Plan growth in houses and jobs but without the specific development sites of Eastern Green (2,250 houses and 4,250 jobs) and Cromwell Lane (240 houses), respectively. For scenarios 2 to 4 when the proposed development is not represented in CASM the growth in houses and jobs are instead being spread out across the Coventry Local Authority area; hence all scenarios include the same overall growth in jobs and population. More details of the quantum of these developments are reported in Chapter 3.

1.2.4 The four scenarios will help us draw conclusions as to the specific impacts that the three specific developments have on Coventry and the local vicinity.

1.2.5 In addition to the Local Plan development scenarios, an assessment of the number of houses that can be built before the Keresley Link Road has to be completed is undertaken.

1.3 REPORT STRUCTURE

1.3.1 This report is structured as follows:

- **Chapter 2**: Provides an overview of the Coventry Area Strategic Model (CASM)
- **Chapter 3**: Summarises the Coventry Local Plan development assumptions
- **Chapter 4**: Outlines the highway and public transport assumptions
- **Chapter 5**: Summarises the results of Local Plan Scenario 1
- **Chapter 6**: Summarises the results of Local Plan Scenario 2
- **Chapter 7**: Summarises the results of Local Plan Scenario 3
- **Chapter 8**: Summarises the results of Local Plan Scenario 4
- **Chapter 9**: Summarises the results of the Local Plan Scenarios
- **Chapter 10**: Summarises the assumptions and results of the Keresley Link Road assessment

2 OVERVIEW OF CASM

2.1 OVERVIEW OF CASM

2.1.1 In 2015 WSP I Parsons Brinckerhoff developed the Coventry Area Strategic Model (CASM) to support the Coventry Local Plan and Highways England Junction M6 2-4 Smart Motorway Project. The model covers the area shown in Figure 2.1.

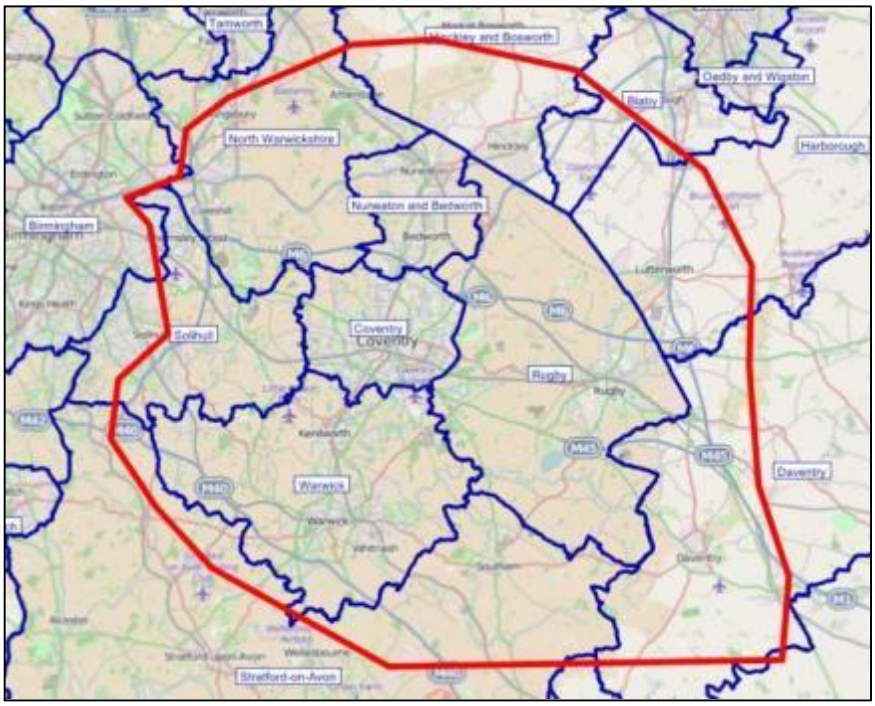


Figure 2.1: Coventry Area Strategic Model Area

2.1.2 CASM consists of the following models:

- CASM Transport Demand Model (TDM)
- CASM Highway Assignment Model (HAM)
- CASM Public Transport Assignment Model (PTAM).

2.1.3 For all CASM models there is a 2013 calibrated and validated base year model and the reports for this can be requested through Coventry City Council.

2.1.4 In December 2015 while the CASM Transport Demand Model (TDM) was still under development, the CASM Highway Assignment Model (HAM) was used to generate a 2031 forecast year to undertake impact testing of various demand and network scenarios for the emerging Coventry Local Plan. Modelling methodology and assumptions are described in Coventry Local Plan – Modelling Report (WSP I Parsons Brinckerhoff, December 2015).

2.1.5 In 2016, the CASM HE Forecast models were developed by WSP I Parsons Brinckerhoff for use by Highway England's Consultants (Jacobs) to undertake an economic assessment of the M6 Junction 2 to Junction 4 Smart Motorway scheme proposals using the full CASM suite of models

(TDM, HAM, and PTAM). Four forecast year models were produced: 2019, 2026, 2034 and 2041 with and without the M6 Junction 2 to 4 schemes proposals.

2.1.6 These forecasts contain all developments and infrastructure in the area which at the time were considered to have a high level certainty of being realised, in line with Department for Transport (DfT) TAG Unit M4 Forecasting and Uncertainty, March 2014. Note these forecasts were developed constraining to NTEM version 6.2; NTEM version 7.0 is the latest version but this was not available when the forecasting work was undertaken. The basis of the Coventry Local Plan transport models, outlined in this report, are the 2034 forecasts from the M6 Junction 2 to 4 assessment. The report outlining the forecasting process for CASM can be requested through Coventry City Council.

3 COVENTRY LOCAL PLAN DEVELOPMENT ASSUMPTIONS

3.1 INTRODUCTION

3.1.1 This chapter of the report sets out the development assumptions used in the CASM 2034 Local Plan transport model scenarios to represent the spatial strategy promoted by Coventry City Council for the delivery of both housing and employment growth between 2013 and 2034.

3.1.2 The basis of the 2034 CASM Coventry Local Plan transport model scenarios was the 2034 CASM transport model forecast developed for the M6 Junction 2 to 4 Highways England Smart Motorway scheme. This includes all housing and employment developments with a high degree of certainty within the study area, shown in Figure 2.1.

3.2 RESIDENTIAL DEVELOPMENT

3.2.1 A review of all residential developments to be included within the 2034 CASM Local Plan transport model scenarios was completed with CCC to ensure the location and numerical assumptions were in line with the current Local Plan. Table 3.1 presents the residential developments located in the CCC Local Authority area, and Figure 3.1 shows the CASM zones within which these residential developments are located. Appendix A contains more details on the developments and locations.

Table 3.1: Residential Developments in CCC Local Authority

RESIDENTIAL DEVELOPMENT	NUMBER OF DWELLINGS
Walsgrave Hill Farm	900
Manor Farm Regeneration Area	855
New Century Park	674
Former Peugeot Site	314
Coventry College, The Butts	264
Evening Telegraph Site	230
Friargate Regeneration Scheme (The Business Quarter)	400
Canley Regeneration Scheme	481
Acordis/Acetate, Foleshill Road	344
AXA Tower, Well Street	286
Paragon Park	700
Central Shopping Area North	300
Willenhall Triangle	255
Bishopgate	265
Keresley	3,100
Eastern Green	2,250
Sutton Stop, Grange Road	285
Land West of Cromwell Lane	240
Whitmore Park	730
Parkside	300
Former Formula One Hotel	285
Town Centre	2,115
Browns Lane	500
Land at Grange Hill Farm	105
London Road Allard Way	150
Former Lyng Hall Playing Field	185
Elms Farm	150
Site of LTI Factory	110

RESIDENTIAL DEVELOPMENT	NUMBER OF DWELLINGS
Former Transco Site, Abbots Lane	100
Central Depot, Foleshill Road	143
Former City College, Tile Hill Lane	115
Land West of Banner Lane	258
Former Jaguar Expansion Land	125

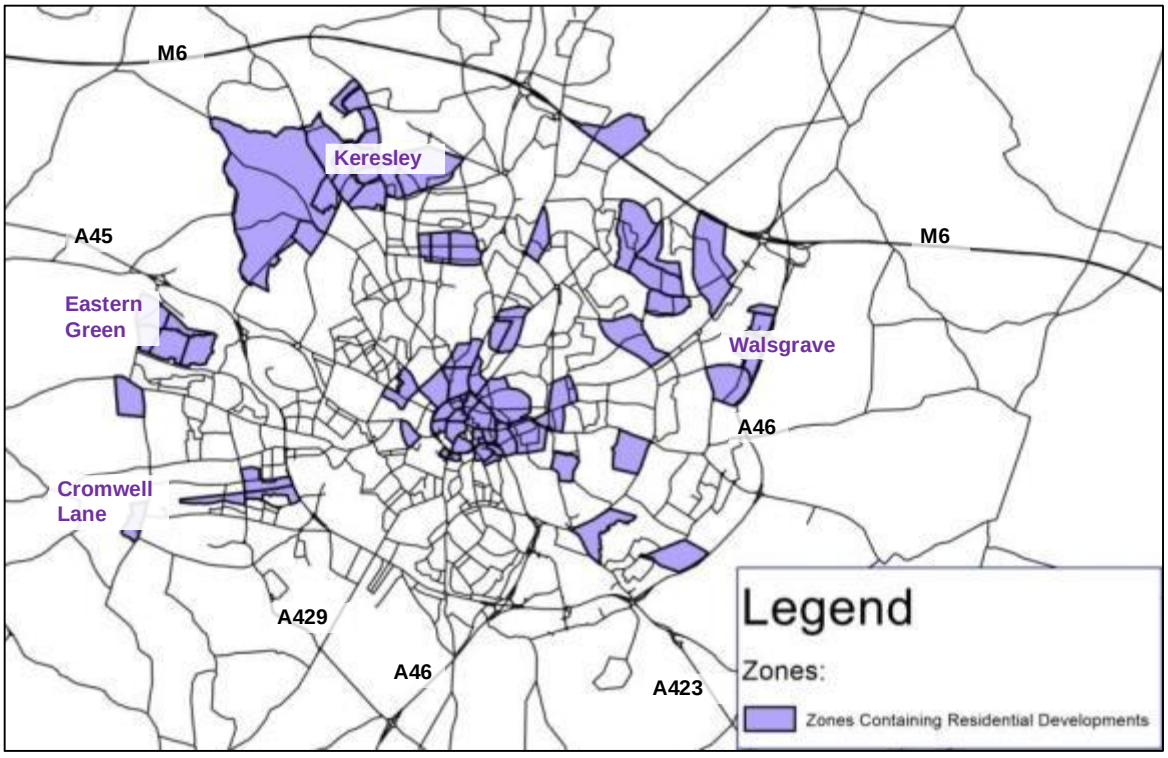


Figure 3.1: Location of Residential Developments in Coventry

3.2.2 In addition to the development within the CCC Local Authority area, two key development sites within Warwick District Council area, close to the Coventry Local Authority boundary, were also reviewed and included. These are presented in Table 3.5 and illustrated in Figure 3.2.

Table 3.2: Residential Developments within Neighbouring Authorities

RESIDENTIAL DEVELOPMENT	NUMBER OF DWELLINGS
WESTWOOD HEATH	450
KINGS HILL	1,800

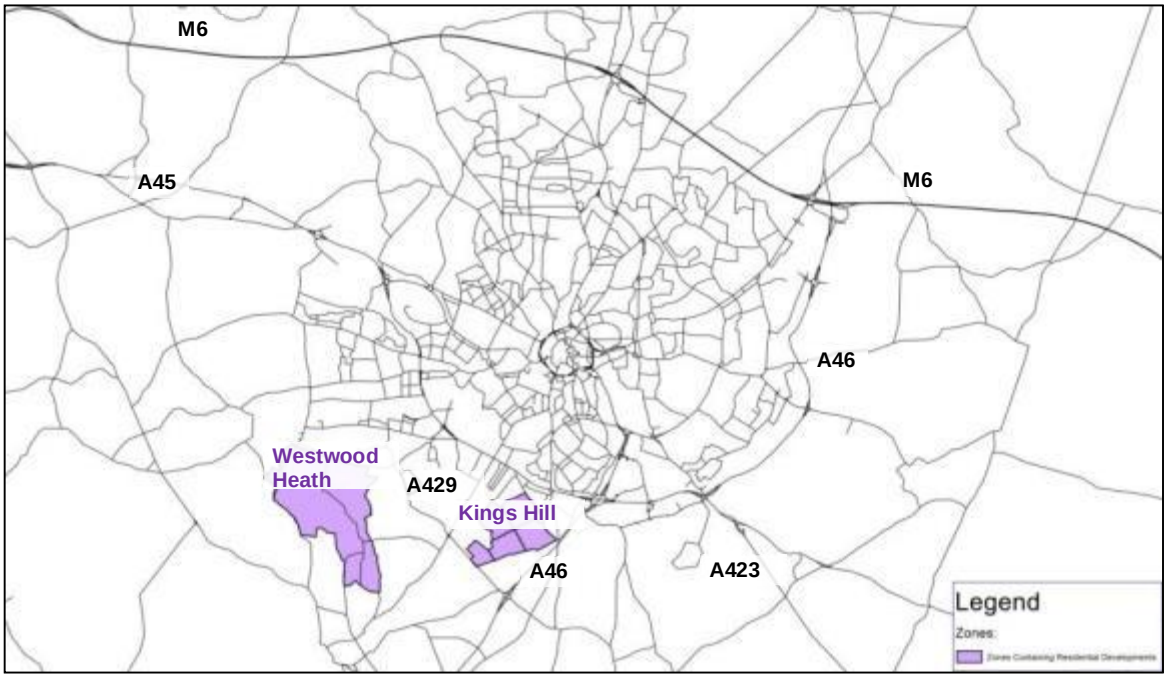


Figure 3.2: Location of Residential Developments within Warwick District Council

3.3 EMPLOYMENT GROWTH

3.3.1 Similarly, a review of all employment developments to be included within the 2034 CASM Local Plan model was completed with input from CCC, with location and quantum assumptions agreed. Table 3.3 lists the employment developments located within Coventry District, and Figure 3.3 Figure 3.1 shows the CASM zones within which these developments are located. See Appendix A for further details.

Table 3.3: Employment Developments within Coventry

EMPLOYMENT DEVELOPMENT	NUMBER OF JOBS GENERATED
Friargate Regeneration Scheme (The Business Quarter)	15,000
Central Shopping Area North	447
Eastern Green	4,250
Sutton Stop, Grange Road	135
Whitmore Park	100
Town Centre	1,191
Lyons Park	2,000
Whitley/ Whitley East	5,000

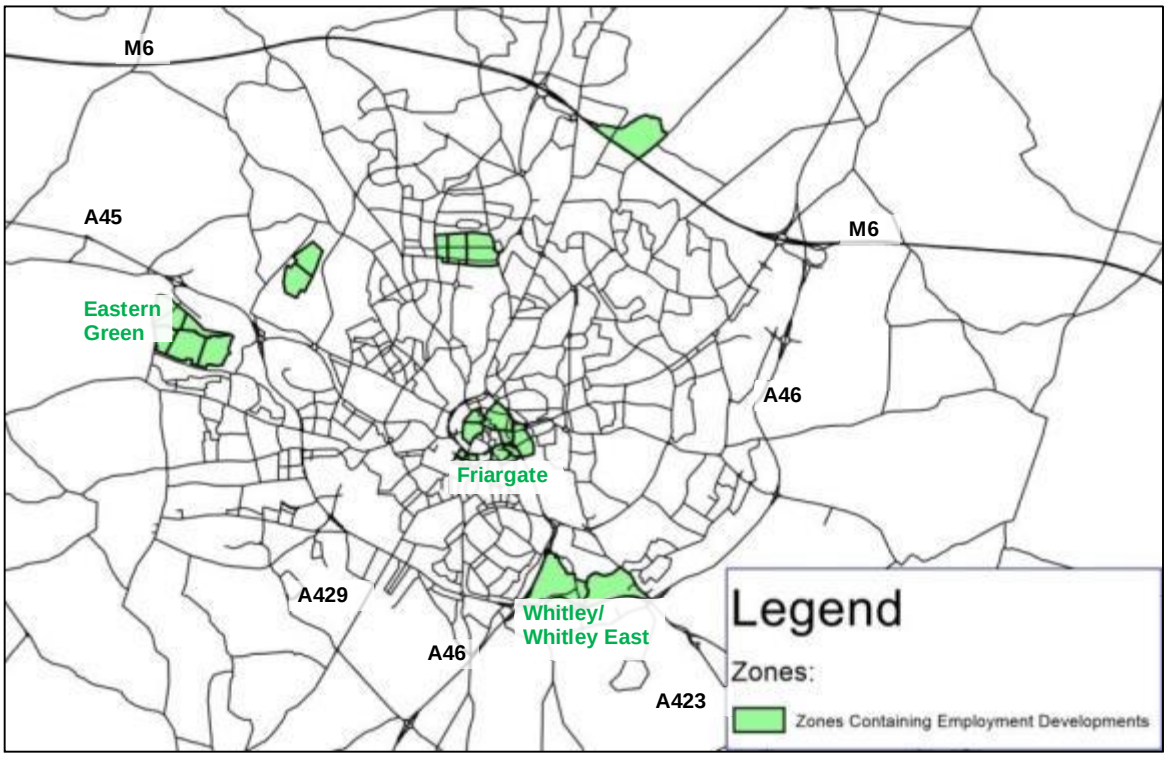


Figure 3.3: Location of Employment Developments in Coventry

3.3.2 In addition to the development within Coventry Local Authority area, key development sites within two neighbouring authorities close to Coventry were also reviewed and included; these are presented in Table 3.4 and Figure 3.4.

Table 3.4: Employment Developments within Neighbouring Authorities

RESIDENTIAL DEVELOPMENT	LOCAL AUTHORITY	QUANTUM OF JOBS GENERATED
WHITLEY SOUTH	Warwick	7,000
WARWICK UNIVERSITY	Warwick	500
PROLOGIS EXPANSION	Nuneaton & Bedworth	400

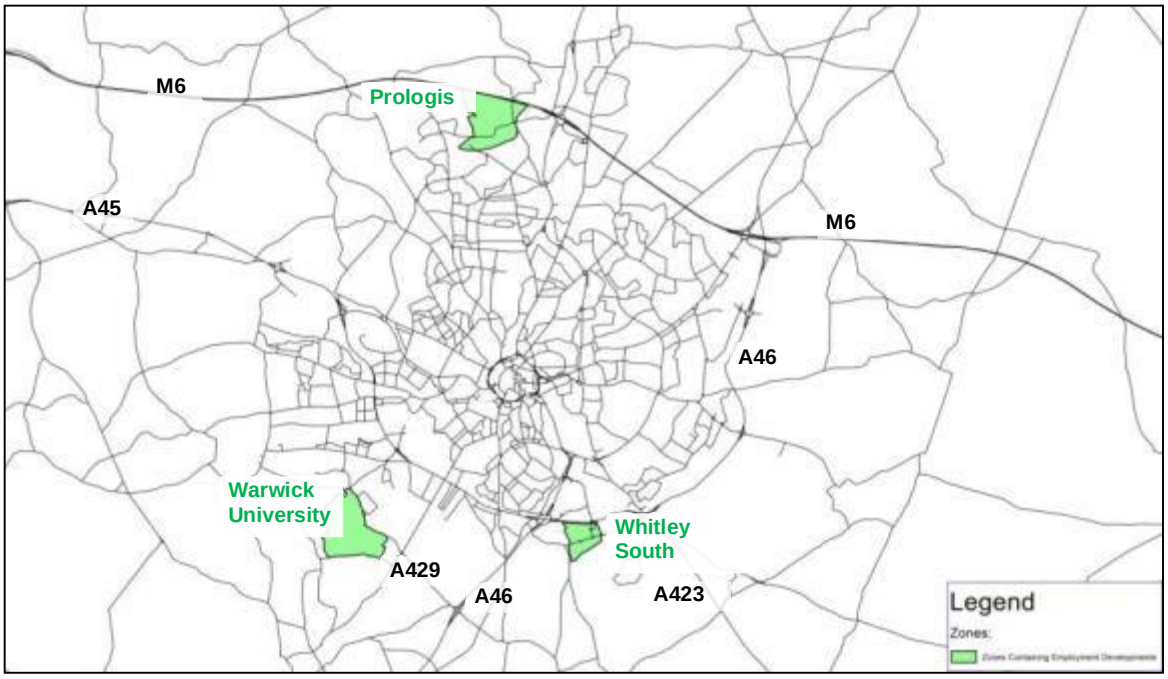


Figure 3.4: Location of Employment Developments within Neighbouring Authorities

3.4 SCHOOLS

3.4.1 Alongside the developments to be included within the 2034 CASM Local Plan model, a review was also conducted of any new development-related schools to be included.

3.4.2 Table 3.5 below lists the proposed schools included within the 2034 CASM Local Plan model within the districts of Coventry and Warwick and these are illustrated in Figure 3.5.

Table 3.5 School Assumptions

DEVELOPMENT	SCHOOL TYPE	NUMBER OF PRIMARY SCHOOL STUDENTS	NUMBER OF SECONDARY SCHOOL STUDENTS
Keresley SUE	Two Form Entry Primary School	420	0
	Eight Form Entry Secondary School	0	1200
Eastern Green SUE	Two Form Entry Primary School (split across 2 CASM zones)	420	0
Kings Hill SUE	Two Form Entry Primary School	420	0

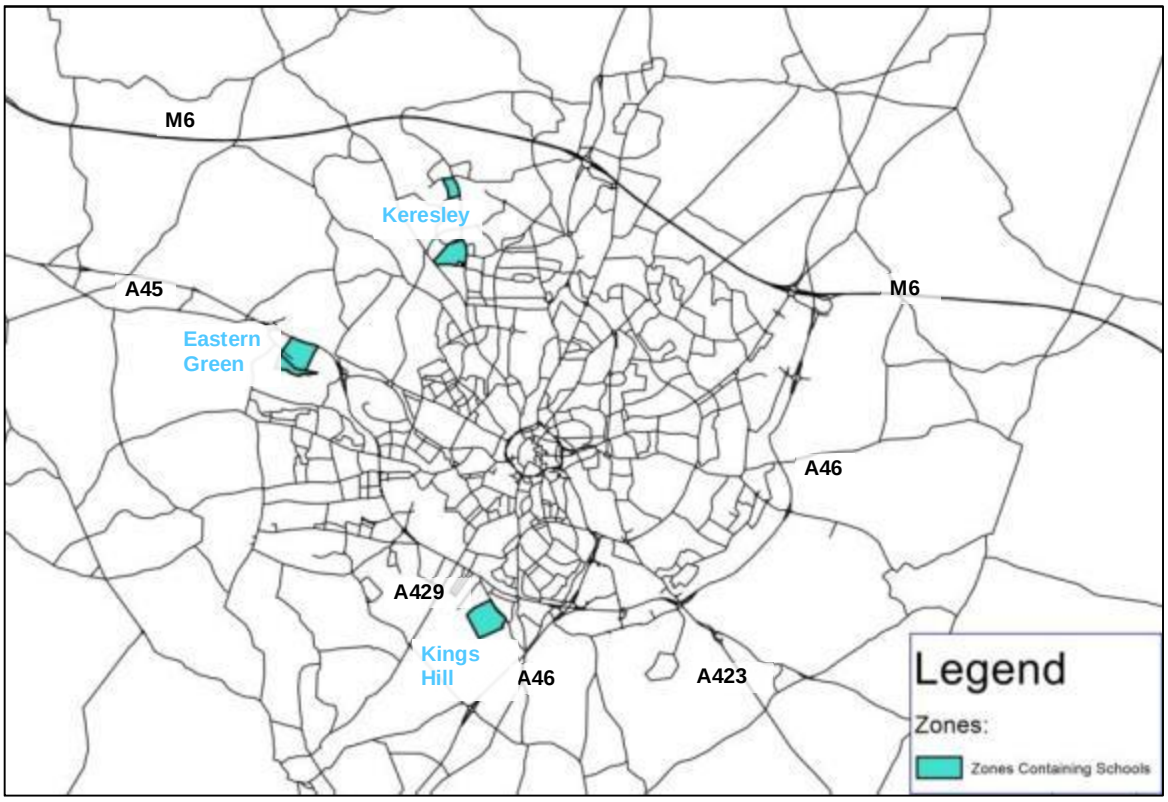


Figure 3.5: Location of Proposed Schools

3.5 LOCAL PLAN SCENARIOS

3.5.1 The development assumptions outlined above are all contained within Scenario 1. The differences between Scenario 1 and the other scenarios are outlined in Table 3.6.

Table 3.6: Local Plan Scenarios

Local Plan Scenario	Keresley Development		Cromwell Lane Development	Eastern Green Development
	800 houses and one primary school	3100 houses and all schools		
Scenario 1	✗	✓	✓	✓
Scenario 2	✓	✗	✓	✓
Scenario 3	✗	✓	✓	✗
Scenario 4	✗	✓	✗	✓

4 HIGHWAY AND PUBLIC TRANSPORT ASSUMPTIONS

4.1 INTRODUCTION

4.1.1 This chapter outlines the highway and public transport assumptions which were incorporated into the 2034 CASM Local Plan transport models for all four scenarios.

4.2 SCENARIO 1

HIGHWAY

4.2.1 The Local Plan Scenario 1 highway network was based on the 2034 CASM HE Forecast Model, which included highway improvements that were deemed to have a high enough certainty of being realised. In addition to these, following discussions with CCC, additional highway schemes were coded into the network. The highway schemes included within Coventry Local Authority area and those boarding it are in Table 4.1, and are detailed in Appendix B. The CASM M6 Junction 2-4 Forecasting Report contains all details on the highway and public transport schemes included within the 2034 CASM HE Forecast model within the districts outlined below, this document can be requested through Coventry City Council.

- Birmingham
- Blaby
- Coventry
- Daventry
- Harborough
- Hinckley ad Bosworth
- North Warwickshire
- Nuneaton and Bedworth
- Rugby
- Solihull

Table 4.1: Highway Network Schemes

HIGHWAY SCHEME
A444 Whitley Interchange / Leaf Lane
A46/A428 & Sow Valley Link Road Grade Separations
A46/A428 Junction Signalisation
North-West Link Road (Keresley)
Friargate
Eastern Green Grade Separated Junction
Broad Lane / Tile Hill Junctions
Stoneleigh Road/Kenilworth Road
A4600 Hospital
Coventry South West Improvements (Warwick University area)
A46 / Stoneleigh Rd Junction
A45 / Leamington Rd
A444 / Holbrook Way
A444 / Foleshill Rd
A444 / Bell Green Rd
A444 / Binley Rd
Paragon Park Accesses
Whitley South
Ring Road Junction 1
Ring Road Junction 2
Ring Road Junction 4

PUBLIC TRANSPORT

4.2.2 The basis for the public transport network was the 2034 CASM HE Forecast Model, which included the public transport schemes presented in Table 4.2.

Table 4.2: Public Transport Schemes

PUBLIC TRANSPORT SCHEME
NUCKLE Phase 1: Coventry to Nuneaton (including new stations at Bermuda Park and Ricoh Arena)
Leamington –Coventry NUCKLE (Shuttle Train)
Leamington-Coventry NUCKLE (Cross Country Route Alteration) including a new station at Kenilworth
Coventry Railway Masterplan including Warwick Road access
X12 bus route improvements as provided by West Midlands Combined Authority (WMCA)

4.2.6 In addition to this CCC confirmed that the public transport improvements which would service the large developments of Keresley, Eastern Green, Kings Hill and Walsgrave would be a diversion of existing bus services to serve the development. This improvement was incorporated into the CASM PTAM. In reality the Local Plan promotes new and improved public transport provisions within these developments including opportunities for Rapid Transit connections, park and ride facilities and an additional rail station at Kings Hill. The approach taken in the CASM transport model therefore should be considered a worst case scenario in this respect.

4.3 SCENARIO 2

HIGHWAY

4.3.1 The CASM 2034 Local Plan Scenario 1 highway network has been used as a basis for developing Scenario 2. The only change to the highway network was the removal of the proposed Keresley Link Road, as with only 800 houses at Keresley the Link Road would not be required.

4.3.2 Figure 4.1 shows the coding of the Scenario 1 with the Keresley Link Road (blue lines). Figure 4.2 shows the coding of the Scenario 2 without the Keresley Link Road. It should be stressed that at this time the proposed route of the Link Road is indicative and reflects the start and end points defined in the Coventry Local Plan. The exact route may differ slightly but the route contained within CASM does provide us with an appropriate proposal for the purposes of the modelling.

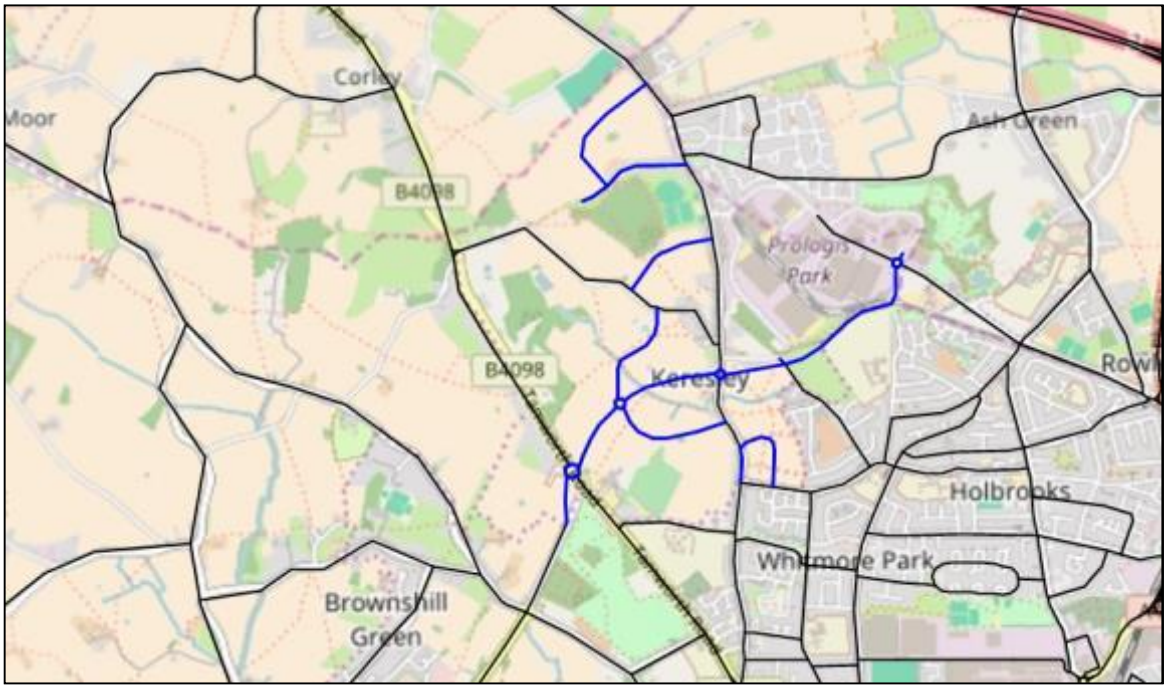


Figure 4.1: Scenario 1 - Highway Infrastructure - Keresley

Figure 4.2: Scenario 2 - Highway Infrastructure - Keresley

PUBLIC TRANSPORT

4.3.3 The only change in the public transport network was the removal of the diverted bus services to the Keresley development, keeping the connections to the 800 houses which have planning permission.

4.4 SCENARIO 3

HIGHWAY

4.4.1 The CASM 2034 Local Plan Scenario 1 highway network has been used as a basis for developing Scenario 3. The only change to the highway network was the removal of the proposed Eastern Green highway network.

4.4.2 Figure 4.3 shows the coding of the Scenario 1 with the new grade-separated junction at Eastern Green (blue lines). Figure 4.4 shows the coding of the Scenario 3 without the grade-separated junction at Eastern Green.

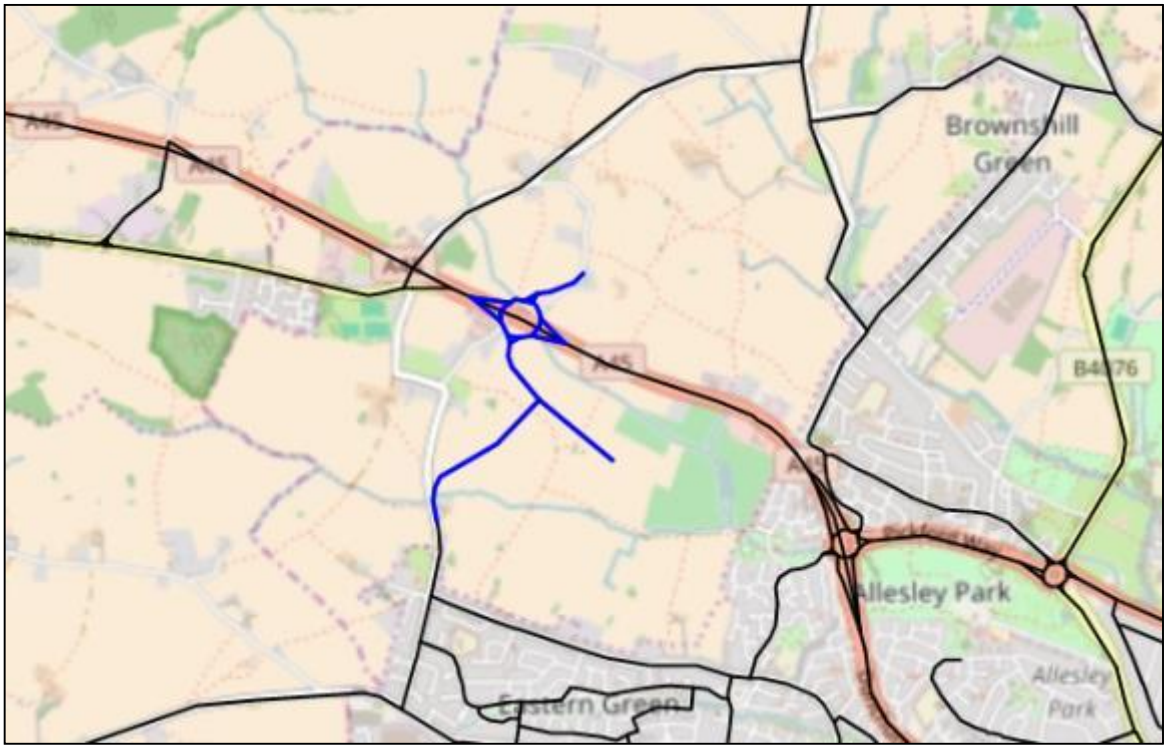


Figure 4.3: Scenario 1 - Highway Infrastructure - Eastern Green

Figure 4.4: Scenario 3 - Highway Infrastructure - Eastern Green

PUBLIC TRANSPORT

4.4.3 The only change in the public transport network was the removal of the diverted bus services to the Eastern Green development.

4.5 SCENARIO 4

4.5.1 There are no changes in the highway or public transport network associated with the Cromwell Lane development.

5 LOCAL PLAN SCENARIO 1 RESULTS

5.1 INTRODUCTION

5.1.1 This chapter presents the results of the 2034 CASM Local Plan Scenario 1 and compares them to the 2013 CASM base year models in terms of changes to:

- Total population
- Trip generation over a 12-hour period
- Mode choice
- Peak hour highway network performance

5.1.2 The changes have focused on the Coventry Local Authority area and therefore all changes outside this area are not presented in the illustrations.

5.1.3 In addition, the three local plan sites are interrogated in more detail to understand the origins and destination of these trips. Chapters 6 to 8 then go into greater detail into the traffic impacts of the individual sites.

5.2 POPULATION GROWTH

5.2.1 The increase in residential development outlined in Chapter 3, section 3.2, is converted into population using the number of people per dwelling derived from 2011 census data for the Coventry Local Authority area and fed into the CASM TDM. The increases in population in 2034 Local Plan Scenario 1 compared to 2013 are shown graphically in Figure 5.1. When compared to Figure 3.1, it is clear that areas where specific development has been located correlate to an increase in population within the 2034 CASM TDM. This implies that the growth in residential development has been fed into the CASM TDM accurately and provides a clear geographical pattern of the areas where population is increasing the most. Key developments can be identified including Keresley, Eastern Green and Walsgrave. There is also a general increase in population across Coventry which is a result of the general increase in population that is occurring. This is the Coventry Local Plan growth which is not accounted for by the development proposals and applied as growth spread across the Local Authority area.

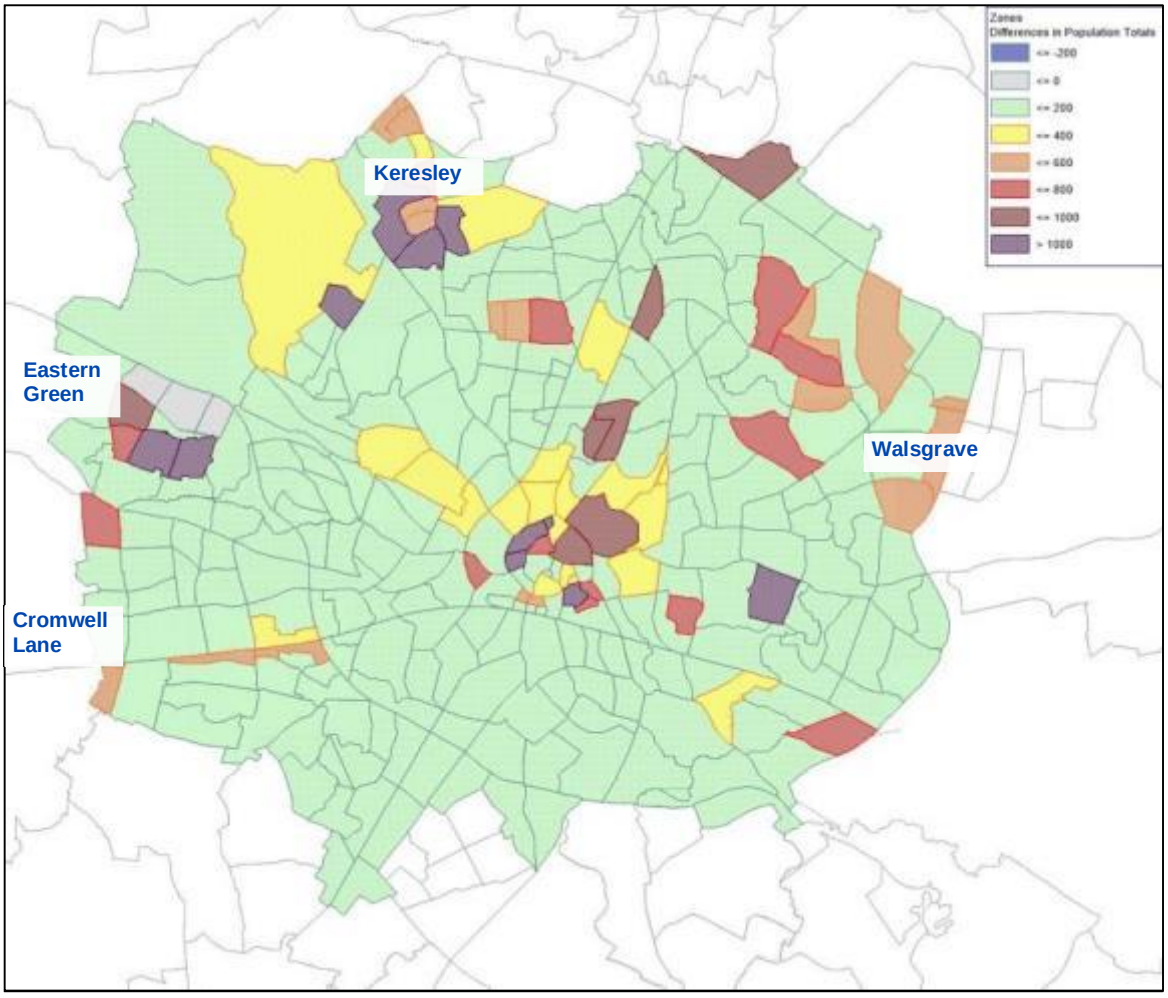


Figure 5.1: Changes in Total Population in Coventry Local Authority Area between 2034 Local Plan Scenario 1 and 2013 Base Year

5.2.2 The population growth for Coventry Local Authority area from the 2013 base year population by person type is outlined in Table 5.1. Overall within Coventry Local Authority area there is an increase in population by 62,000, an increase of 19% compared to 2013. The total numbers of employed and non-employed adults increase by 14% and 21% with children and retired persons increasing between 21% and 23%. The changes in population are in line with DfT forecasts for Coventry Local Authority area within the National Trip End Model (NTEM) 6.2, used in the development of the 2034 CASM Local Plan scenarios.

Table 5.1: Changes in Total Population in the Coventry Local Authority between 2034 Local Plan Scenario 1 and 2013 Base Year

Population	2013 Base Year Population	2034 Local Plan Scenario 1 Population	Total Difference	% Difference
Children (0-18)	69,210	84,579	15,369	22%
Employed Adults (17-74)	133,981	153,019	19,038	14%
Non Employed Adults (17-74)	74,537	90,530	15,993	21%
Retired (75+)	52,051	64,015	11,964	23%
Total	**329,779**	**392,142**	**62,363**	**19%**

5.3 EMPLOYMENT AND SCHOOLS GROWTH

5.3.1 The workplace employment growth outlined in Chapter 3, section 3.3 is represented in the CASM TDM as increases in jobs. Jobs within the CASM TDM identify areas which work and employer business trips travel to and from. The changes shown in Figure 5.2; reflect the total workplace employment growth in Scenario 1 in the main employment growth centres of:

- Eastern Green SUE
- Whitley/ Whitley East (CCC allocation)
- Friargate

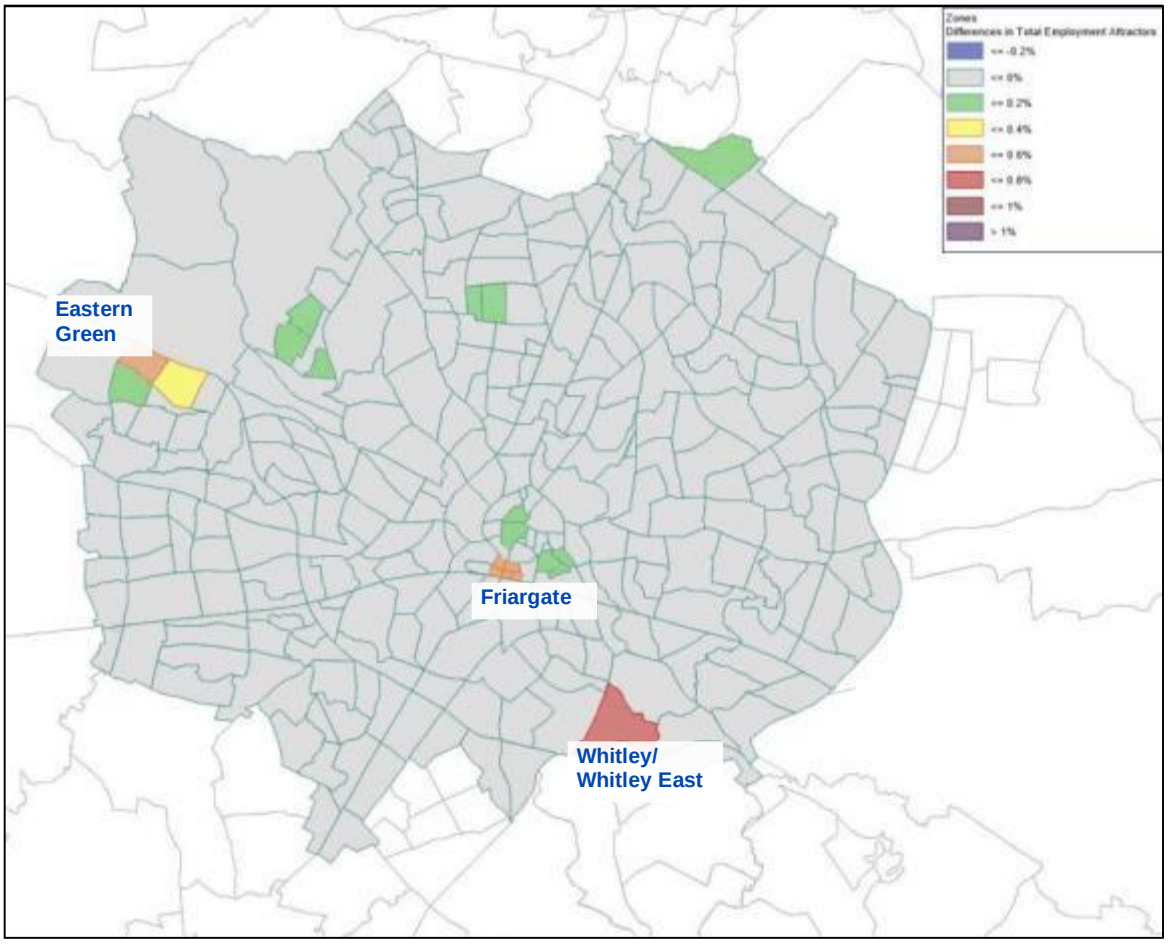


Figure 5.2: Changes in Total Employment in Coventry Local Authority between 2034 Local Plan Scenario 1 and 2013 Base Year

5.3.2 The growth in schools outlined in Chapter 3, Section 3.4 is represented in the CASM TDM as increases in pupils. Pupil numbers within the CASM TDM identify areas which education trips travel to and from. The changes in pupil numbers shown by education level in Figure 5.3 reflect the growth in schools in Scenario 1. The growth is located at:

- Two-form entry primary schools in Keresley, Eastern Green, and Kings Hill
- Eight-form secondary school in Keresley

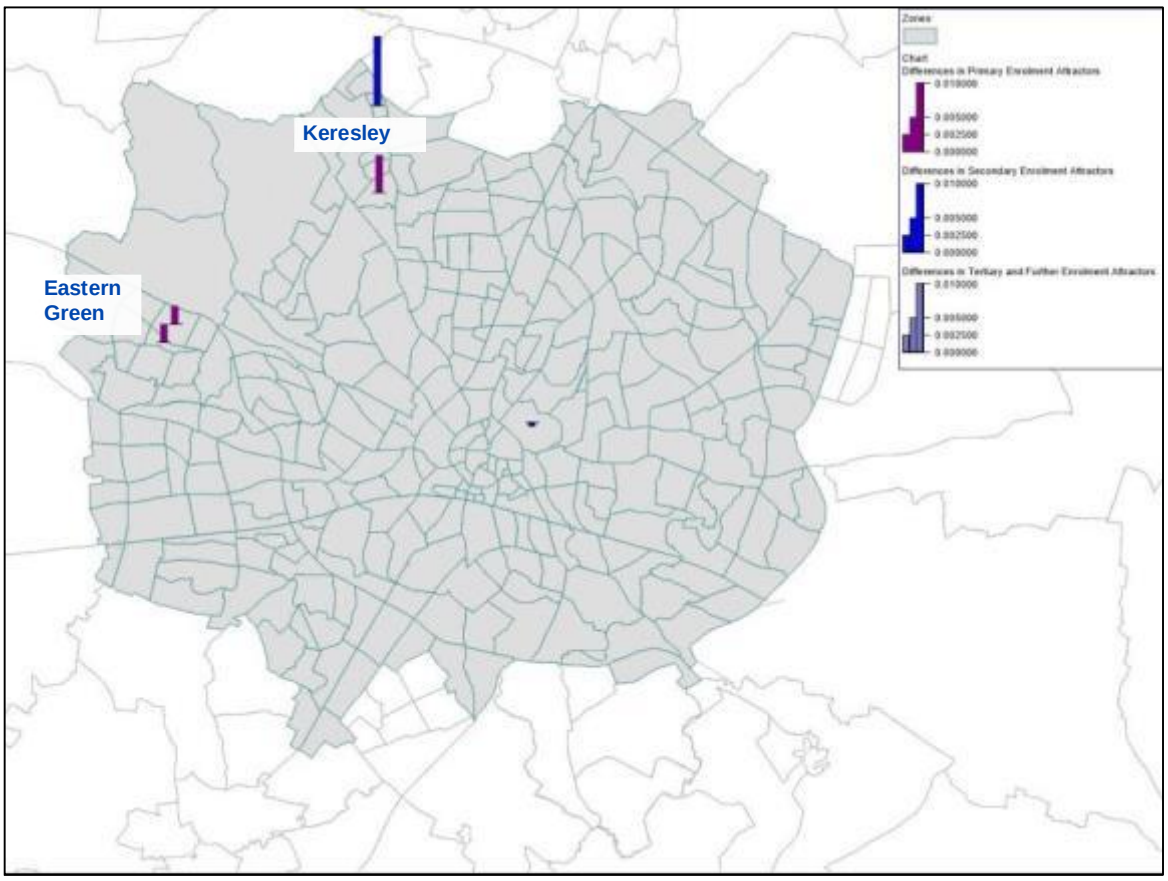


Figure 5.3: Changes in Schools in Coventry Local Authority Area between 2034 Local Plan Scenario 1 and 2013 Base Year

5.4 TRIP GENERATION

5.4.1 The increase in total population illustrated in Figure 5.1 is translated into an increase in the total number of trips generated in the 2034 Scenario 1 CASM TDM over a 12-hour period, as shown in Figure 5.4. The trip generation assumptions are by person type and trip purpose for a 12-hour period and were generated as part of the CASM TDM development. More details on this can be found within the CASM TDM Development and Calibration Report, October 2016.

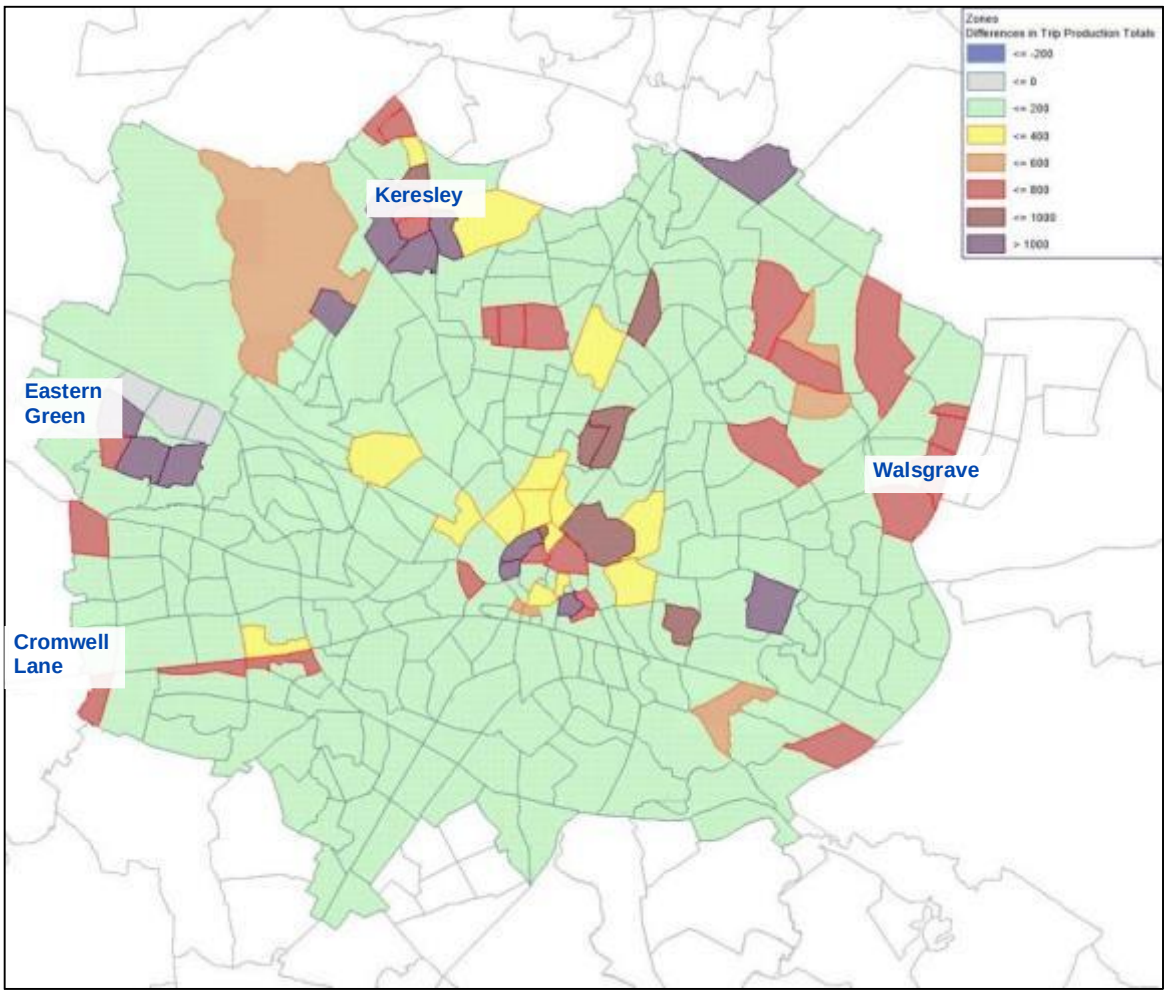


Figure 5.4: Changes in Total Trip Productions in Coventry Local Authority between 2034 Local Plan Scenario 1 and the 2013 Base Year

5.4.2 The figure above clearly shows the locations of the key proposed residential developments in the Coventry Local Plan including:

- Walsgrave
- Eastern Green
- Keresley
- Cromwell Lane

5.4.3 The changes in total trip productions by purpose in the Coventry Local Authority area are outlined in Table 5.2. In percentage terms, these changes are consistent with the changes in total population by segment relative:

- → The higher increase in retired people translates into a higher increase in home-based shopping (HBSh), home-based other (HBO), and non-home-based other (NHBO) trips
- → The higher increase in children and further enrolment of students translates into a higher increase in home-based education (HBEd) trips
- → The marginally lower increase in employed adults translates into a marginally lower increase in home-based work (HBW), home-based employer's business (HBEB), and non-home-based employer's business (NHBEB) trips

Table 5.2: Changes in Total Trips by Purpose in Coventry Local Authority between 2034 Local Plan Scenario 1 and 2013 Base Year

Trip Purposes	2013 Base Year trips	2034 Local Plan Scenario 1 Trips	Total Difference	% Difference
HBW	91,525	104,732	13,207	14%
HBEB	11,716	13,629	1,913	16%
HBEd	87,168	105,433	18,265	21%
HBO	63,041	75,446	12,404	20%
HBSh	50,039	59,817	9,778	20%
NHBEB	8,381	9,597	1,215	15%
NHBO	58,554	69,498	10,944	19%
Total	**370,425**	**438,150**	**67,726**	**18%**

5.5 MODE CHOICE

5.5.1 As a result of the mode choice stage in the CASM TDM, the total trips resulting from the trip generation stage are split by travel mode. The choice of travel mode within the CASM TDM is calculated by using the cost of travelling by car, public transport, walk and cycle from the starting location. The changes in total trips by mode in the Coventry Local Authority area are shown in Figure 5.5. Absolute values that are less than 100 trips have been hidden.

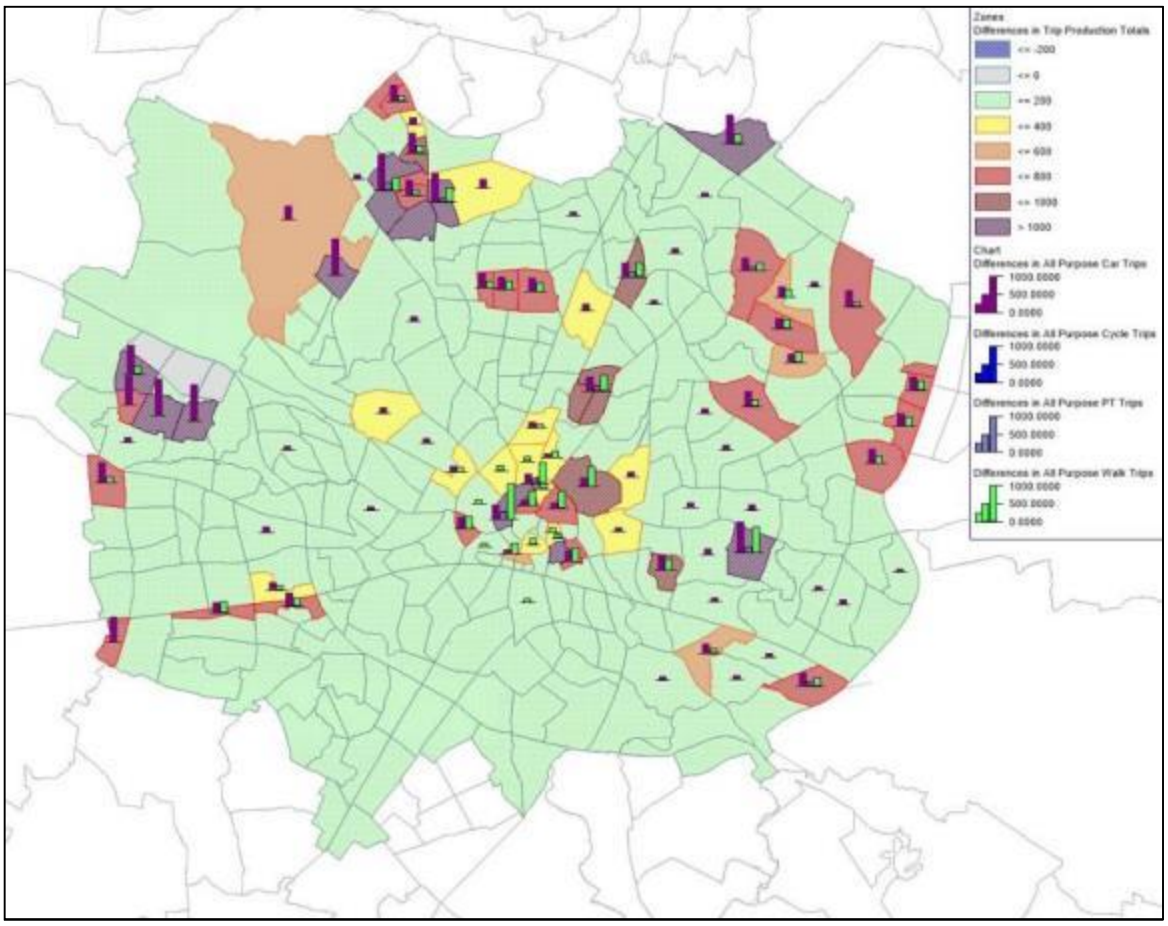


Figure 5.5 :Changes in Total Trips by Mode in Coventry Local Authority between 2034 Local Plan Scenario 1 and 2013 Base Year (person trips per 12-hour weekday)

5.5.2 There is a clear pattern in Figure 5.5 which shows that in the proposed areas of development around the outskirts of Coventry, the main mode for travel is by car. This can be seen for Walsgrave, Eastern Green, Cromwell Lane and Keresley developments. This is because public transport services included within the CASM model for these areas is limited to existing services, and therefore it is expected that the public transport use for the sites will be low.

5.5.3 If there were more dedicated public transport services from these sites to the city centre, assuming people wish to travel into the city centre, it would make public transport a more attractive mode of travel. Proposed developments closer to the city centre show that there is a greater use of public transport, cycling and walking. This is an intuitive response from the CASM TDM as there is greater accessibility to public transport in this area.

5.6 TRIP DISTRIBUTION

5.6.1 Trip distribution describes the origins and destinations of car trips travelling within the CASM model. Within the AM (8:00-9:00) and PM (17:00-18:00) peak hour CASM Highway Assignment Model (HAM), the distribution of trips travelling to and from Coventry Local Authority in 2034 Scenario 1 as well as the trips travelling within Coventry were assessed to see how they have changed between 2013 and 2034 Scenario 1. For the purpose of this assessment the following areas have been defined:

- Coventry
- Warwickshire
- Leicestershire
- Birmingham and Solihull
- Rest of the UK

5.6.2 These are presented graphically in Figure 5.6.

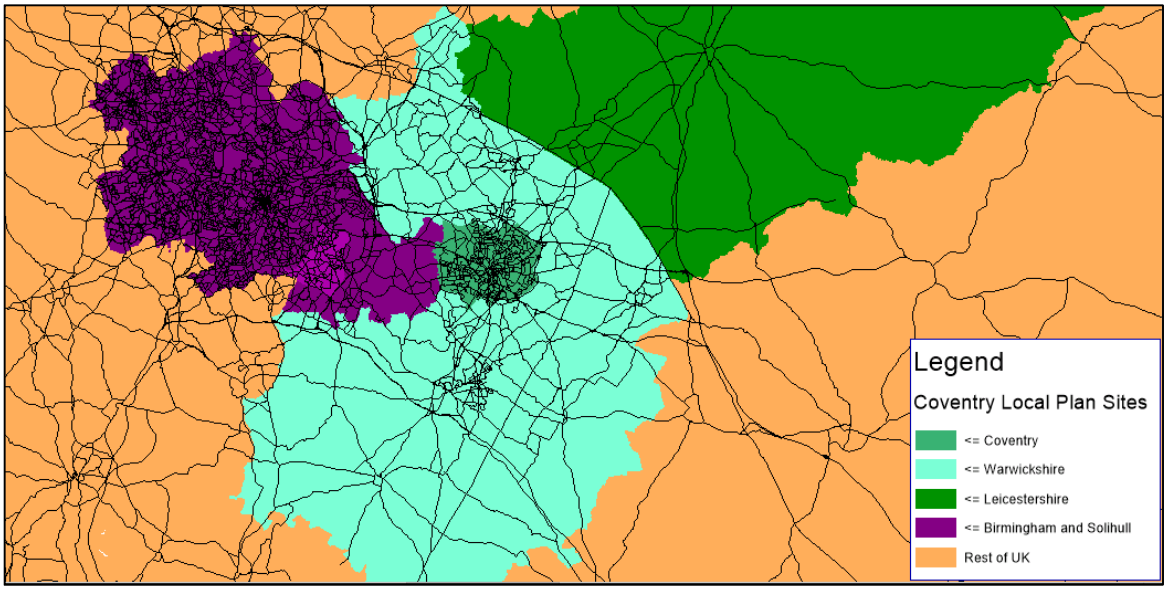


Figure 5.6: Coventry Areas for Trip Distribution

5.6.3 Table 5.3 presents the car trips leaving Coventry in the AM and PM peak and where they travel to within the CASM HAM.

Table 5.3: Trip Distribution of Car Trips Travelling from Coventry

	AM Peak			PM Peak		
	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips
Coventry	72%	70%	66%	65%	66%	71%
Warwickshire	17%	18%	20%	21%	20%	15%
Leicestershire	2%	2%	2%	3%	3%	2%
Birmingham & Solihull	4%	5%	7%	6%	6%	5%
Rest of UK	5%	5%	6%	6%	6%	7%

5.6.4 Table 5.3 shows that of car trips leaving Coventry in the AM peak the majority of them in 2013 and 2034 Scenario 1 remain within Coventry. Of the new car trips which are generated between 2013 and 2034 there is still a high proportion of trips that start and finish their journey in Coventry though a slight reduction compared to 2013 levels. There is also an increase in the proportion of car trips travelling to Warwickshire, Birmingham and Solihull and the rest of the UK. In the PM peak in 2034 there is a greater proportion of trips leaving Coventry and staying within Coventry, with 71% of new trips remaining in Coventry. With the new PM peak car trips there is a reduction in the proportion that leaves Coventry and travesl to Warwickshire, Leicestershire and Birmingham and Solihull.

5.6.5 Table 5.4 presents the car trips travelling to Coventry in the AM and PM peak and where they travel from within the CASM HAM.

Table 5.4: Trip Distribution of Car Trips Travelling to Coventry

	AM Peak			PM Peak		
	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips
Coventry	66%	67%	72%	71%	68%	67%
Warwickshire	22%	21%	16%	18%	18%	21%
Leicestershire	2%	2%	2%	2%	2%	2%
Birmingham & Solihull	5%	5%	4%	4%	4%	6%
Rest of UK	5%	6%	7%	5%	5%	5%

5.6.6 Table 5.4 shows that in the AM peak, 72% of the new trips generated between 2013 and 2034 that are travelling to Coventry start their journey in Coventry. The proportion of trips travelling to Coventry from Warwickshire decreases slightly and trips from other areas remain a similar proportion. In the PM peak the proportion of new car trips travelling to Coventry slightly reduces compared to 2013 proportions and the percentage travelling to Coventry from Warwickshire increases.

5.6.7 Overall this analysis shows that the proportion of car trips travelling away from Coventry in the AM peak has increased, along with the car trips travelling to Coventry in the PM peak. This suggests more out commuting from Coventry to other areas. However the proportion of car trips travelling to Coventry in the AM Peak and from Coventry in the PM peak reduces.

5.6.8 To understand the movement changes within Coventry itself, trips within Coventry have been split into the following areas:

- Coventry Central
- Coventry NE
- Coventry NW
- Coventry SW
- Coventry SE

5.6.9 These are presented Figure 5.7.

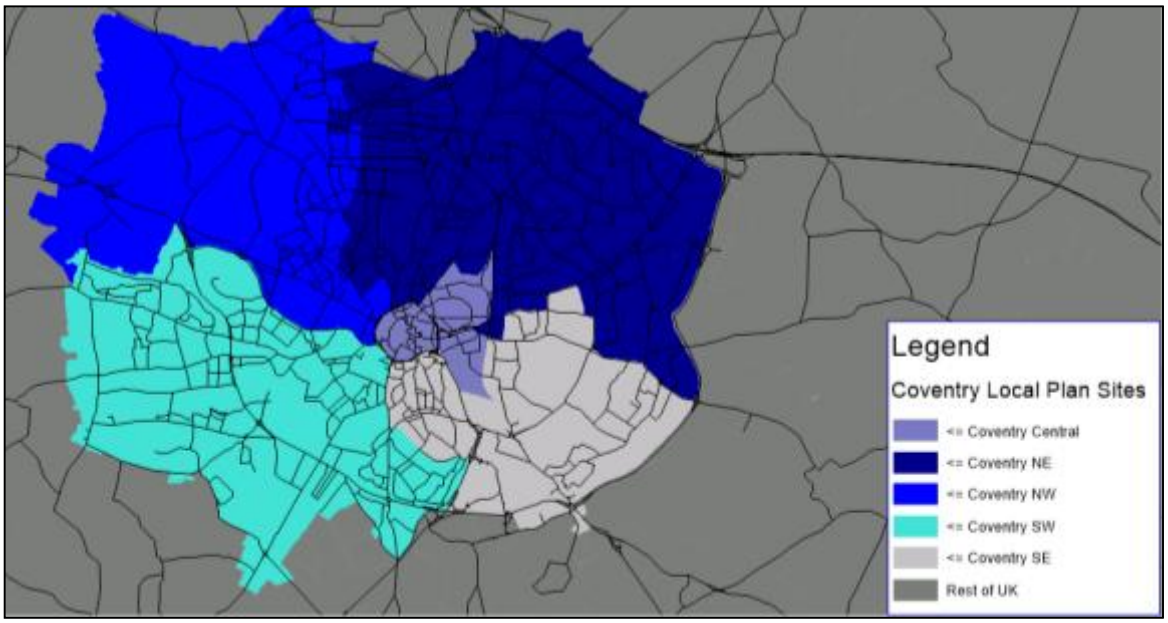


Figure 5.7: Coventry Local Authority Areas for Trip Distribution

5.6.10 Table 5.5 presents the car trips leaving the specific Coventry areas in the AM and PM peak and where they travel to within the CASM HAM.

Table 5.5: Trip Distribution of Car Trips Travelling from Specific Coventry Areas

	AM Peak			PM Peak		
	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips
Coventry Central	7%	8%	11%	15%	13%	7%
Coventry NE	37%	36%	31%	41%	36%	18%
Coventry NW	12%	14%	21%	10%	13%	21%
Coventry SW	27%	25%	19%	24%	23%	22%
Coventry SE	16%	17%	18%	16%	19%	28%

5.6.11 Table 5.5 shows that in the AM peak there is a greater proportion of new car trips starting in Coventry Central and Coventry NW, which is where quite a lot of housing development is located; Keresley and Eastern Green fall into Coventry NW. In the PM peak as in the AM peak, there is a greater proportion of trips starting within Coventry NW and also Coventry SE. Coventry SE is where the proposed employment site of Whitley/ Whitley East and Coventry NW is where the new jobs at Eastern Green are located; so an increase in trips travelling from these areas in the PM peak appears sensible as it would represent an increase in the number of people heading home from work.

5.6.12 Table 5.6 presents the car trips arriving in the specific Coventry areas in the AM and PM peak and where they travel from within the CASM HAM.

Table 5.6: Trip Distribution of Car Trips Travelling to Specific Coventry Areas

	AM Peak			PM Peak		
	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips	2013 All Trips	2034 Sc1 All Trips	2034-2013 New Trips
Coventry Central	16%	15%	12%	11%	11%	12%
Coventry NE	36%	32%	19%	40%	36%	26%
Coventry NW	9%	12%	20%	12%	15%	23%
Coventry SW	25%	24%	22%	27%	25%	19%
Coventry SE	14%	17%	27%	17%	17%	16%

5.6.13 Table 5.6 shows that in the AM peak there is a greater proportion of new car trips travelling to Coventry NW and Coventry SE, which, as mentioned previously is where some of the key new job sites are located. In the PM peak there is an increase in trips travelling to Coventry NW which is where some new housing sites like Eastern Green and Keresley are located with a proportional reduction in trips travelling to Coventry NE.

5.6.14 Overall the Coventry analysis indicates that there is an increase in the proportion of trips travelling from and to Coventry NW and Coventry SE as a result of the Coventry Local Plan proposals.

5.7 PEAK HOUR TRAFFIC

5.7.1 Overall there are increases in traffic on the highway network across Coventry Local Authority area within the 2034 Local Plan Scenario 1 compared to the 2013 Base Year.

5.7.2 Highway network statistics were extracted from the Scenario 1 and 2013 Base Year models, as shown in Table 5.7 and Table 5.8. As expected, the growth in traffic demand from 2013 to 2034 leads to increases in the total travel distance, time and highway network delay in both AM and PM peak hours. Highway network delay in particular increases by 3.9% per annum, over 21 years, in the AM peak and 2.9% in the PM peak between 2013 and 2034. The increase in traffic demand on the highway network results in a decrease in the average speed across the Coventry Local Authority area, of up to 3 kph.

Table 5.7: Highway Network Statistics 2034 Scenario 1 vs 2013 Base Year

Metric	AM PEAK					PM PEAK				
	2013 BY	SCENARIO 1	DIFFERENCE	% DIFFERENCE	% PER ANNUM	2013 BY	SCENARIO 1	DIFFERENCE	% DIFFERENCE	% PER ANNUM
Link Cruise Time (Veh/hrs)	8,613	11,370	+ 2,758	32%	1.5%	9,058	11,624	+ 2,566	28%	1.3%
Total Travel Time (Veh/Hrs)	10,228	14,504	+ 4,275	42%	2.0%	10,741	14,441	+ 3,700	34%	1.6%
Total Network Delay (Veh/Hrs)	2,012	3,640	+ 1,628	81%	3.9%	2,098	3,374	+ 1,276	61%	2.9%
Total Travel Distance (Veh/Kms)	599,925	802,621	+ 202,696	34%	1.6%	630,139	822,924	+ 192,785	31%	1.5%
Average Speed (km/h)	58.7	55.3	-3	-6%	-0.3%	58.7	57.0	-2	-3%	-0.1%

5.7.3 These highway network statistics have also been produced as averages by vehicle. They show that the increase in network delay by vehicle equates to to 1.8% per annum in the AM peak and 1.3% per annum in the PM peak, with an average increase in delay of around 34 seconds in the AM peak and 25 seconds in the PM peak.

Table 5.8: Highway Network Statistics 2034 Scenario 1 vs 2013 Base Year Per Vehicle

	AM Peak					PM Peak				
	2013 BY	SCENARIO 1	DIFFERENCE	% DIFFERENCE	% PER ANNUM	2013 BY	SCENARIO 1	DIFFERENCE	% DIFFERENCE	% PER ANNUM
Average Link Cruise Time (seconds)	396	395	0.3	-0.1%	0.0%	397	404	7.1	1.8%	0.1%
Average Total Travel Time (seconds)	470	504	34.4	7.3%	0.3%	471	503	31.4	6.7%	0.3%
Average Total Network Delay (seconds)	92	127	34.1	36.9%	1.8%	92	117	25.4	27.6%	1.3%

5.7.4 The area from which these highway network statistics were extracted is shown in black in Figure 5.8.

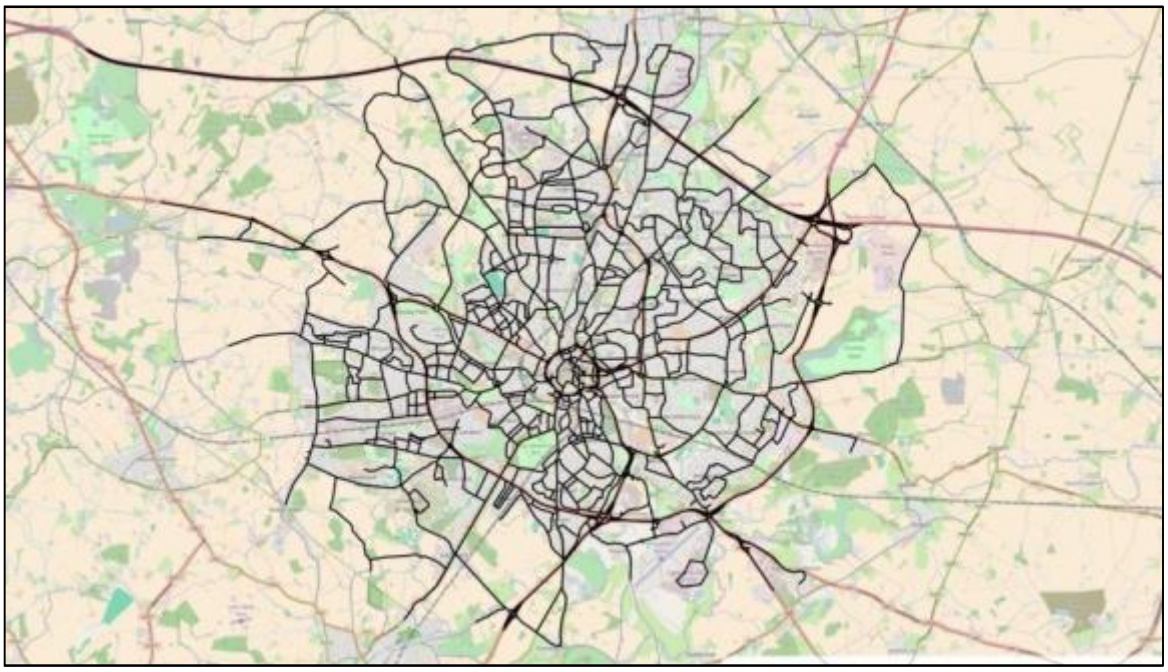


Figure 5.8: Coventry Local Authority Area Highway Network Statistics Area of Coverage

5.7.5 Within the highway network, in the CASM model, each road will have a volume of traffic travelling along it and a capacity, which represents the total number of vehicles that could possibly travel along the road. The Volume/Capacity (V/C) ratio provides an understanding as to the unused capacity on the road and is in effect a measure of how congested a road could be. A V/C of under 90% indicates an acceptable level of spare capacity on the highway network, anything over 90% should be investigated in more detail. Figure 5.9 to Figure 5.13 present the V/C plots for both the 2013 Base Year and 2034 Scenario 1 for the AM and PM peak hours, along with the differences occurring between 2013 and 2034 Scenario 1. These figures represent an averaged flow over a peak hour period; and therefore do not show spikes in congestion which happen within the hour.

Figure 5.9: AM Peak 2013 Base Year V/C Ratio Plot

Figure 5.10: AM Peak 2034 Scenario 1 V/C Ratio Plot

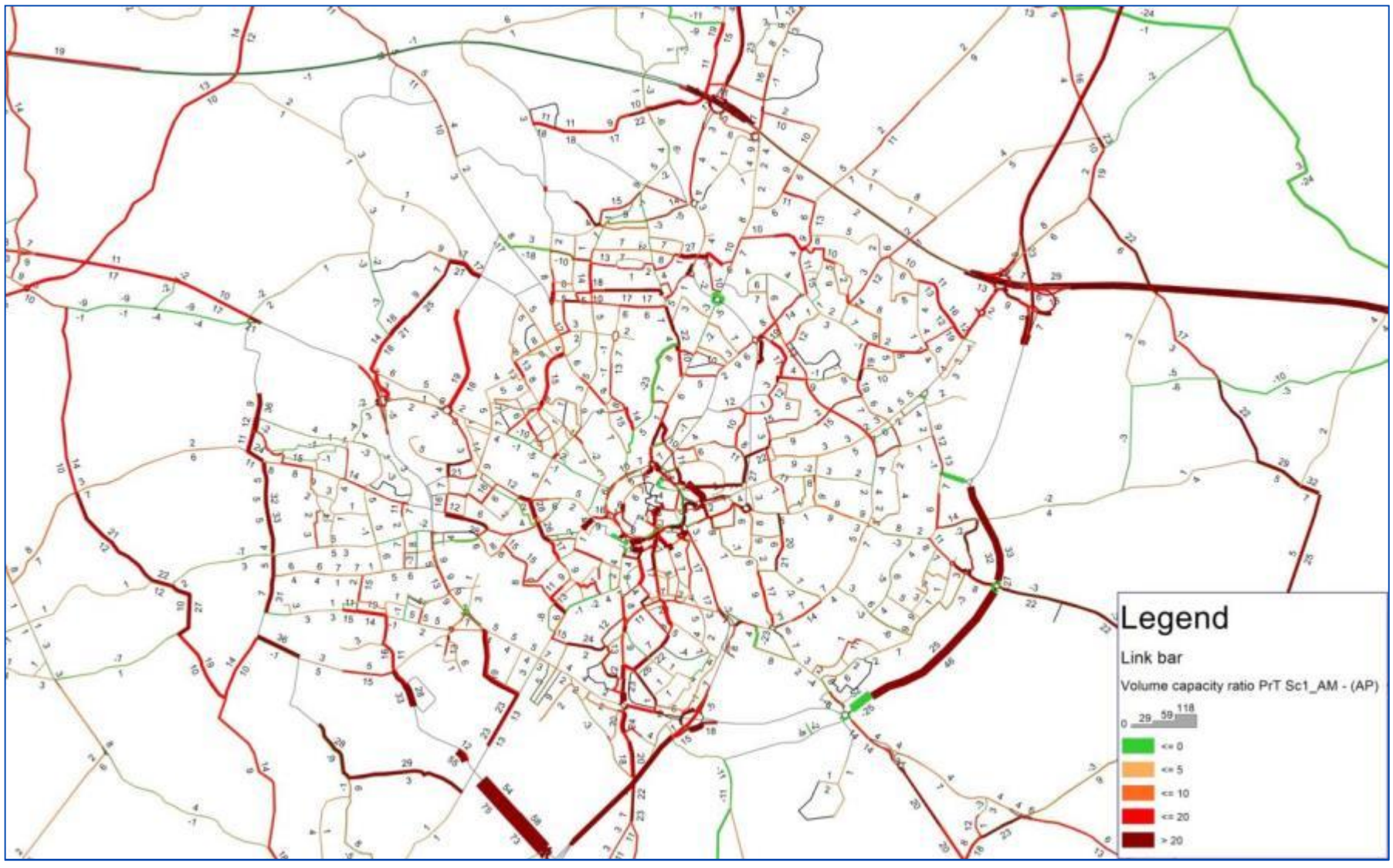


Figure 5.11: AM Peak 2013 Base Year vs Scenario 1 V/C Ratio Difference Plot

5.7.6 Figure 5.9 and Figure 5.10 show that generally there is an increase in the V/C ratio across Coventry Local Authority area in 2034 Scenario 1 as a result of the Coventry Local Plan and the general background growth in traffic in Coventry and the surrounding areas. Key areas where V/C increases are M6, A45/ A46 and key radial routes into Coventry city centre. Overall though the number of roads experiencing a V/C of greater than 90% is low. Figure 5.11 shows the difference in V/C ratio between the 2034 Scenario 1 and 2013 base year in the AM peak. The overall trend shows there is a reduction in V/C ratio across the Coventry area.

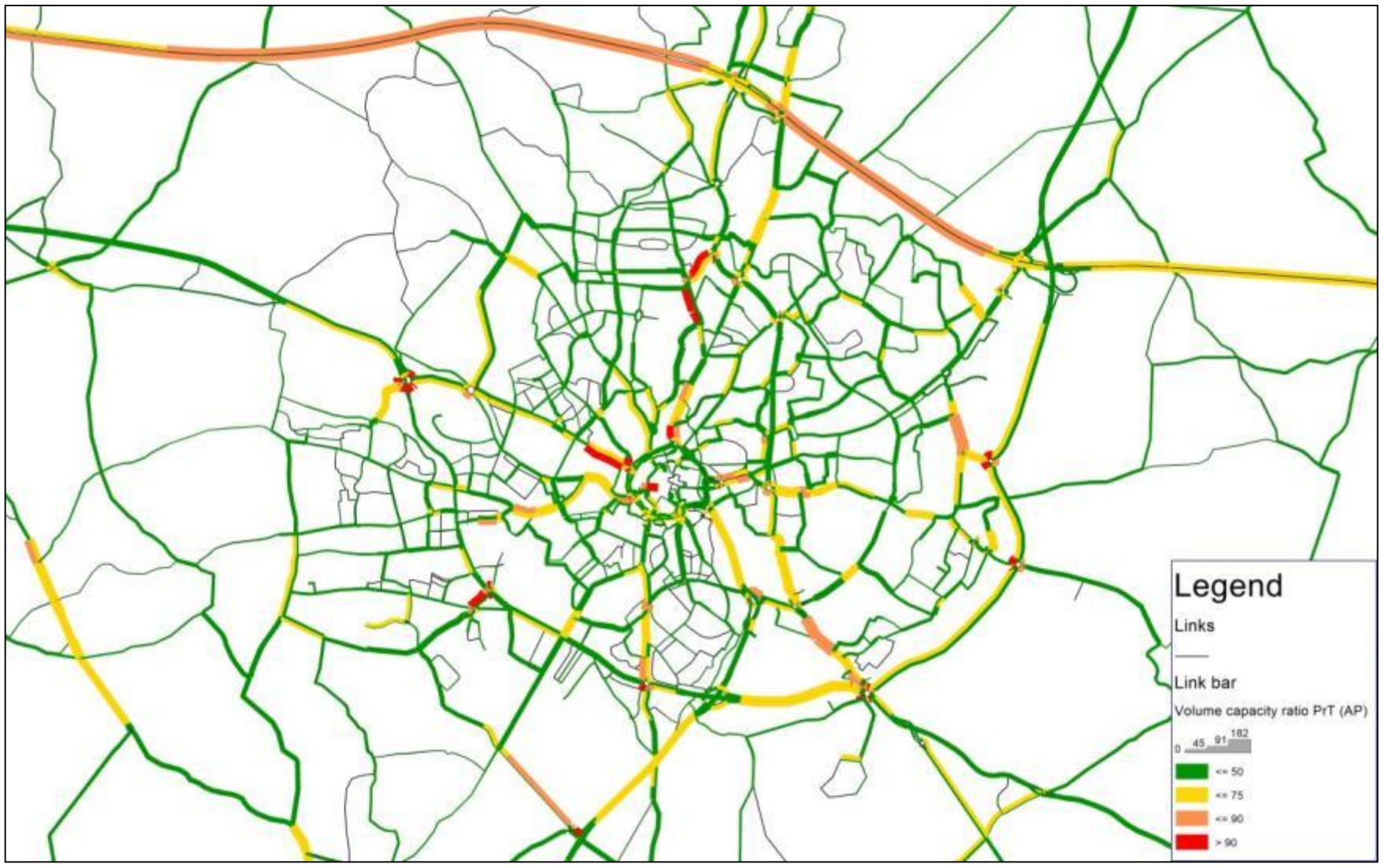


Figure 5.12: PM Peak 2013 Base Year V/C Ratio Plot

Figure 5.13: PM Peak 2034 Scenario 1 V/C Ratio Plot

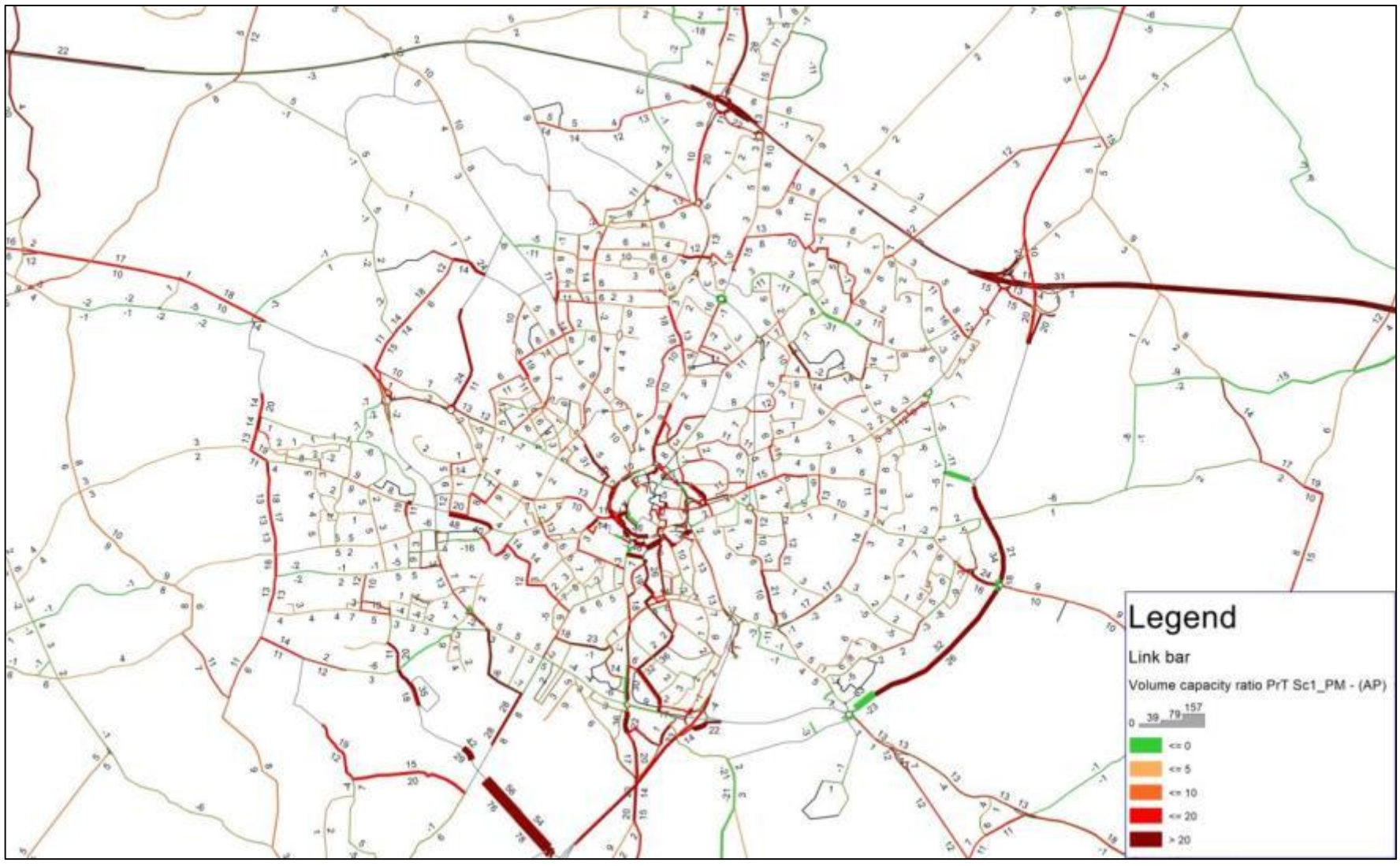


Figure 5.14: PM Peak 2013 Base Year vs Scenario 1 V/C Ratio Difference Plot

5.7.7 Figure 5.12 and Figure 5.13 show that generally there is an increase in the V/C ratio across Coventry Local Authority area in 2034 Scenario 1 as a result of the Coventry Local Plan and the general background growth in traffic in Coventry and the surrounding areas. Key areas where V/C increases are M6, A45/ A46 and key radial routes into Coventry city centre. Overall though the number of roads experiencing a V/C of greater than 90% is low. Figure 5.14 shows the difference in V/C ratio between the 2034 Scenario 1 and 2013 base year in the PM peak. . The overall trend shows there is a reduction in V/C ratio across the Coventry area.

5.8 JUNCTION PERFORMANCE

5.8.1 The CASM HAM does not model highway junctions in detail, but it can highlight junctions which are experiencing more delay in the 2034 Local Plan Scenario 1 compared to the 2013 Base Year. Figure 5.15 illustrates the junction delay experienced in the AM peak 2013 CASM HAM highlighting the average delay in 20 second increments.

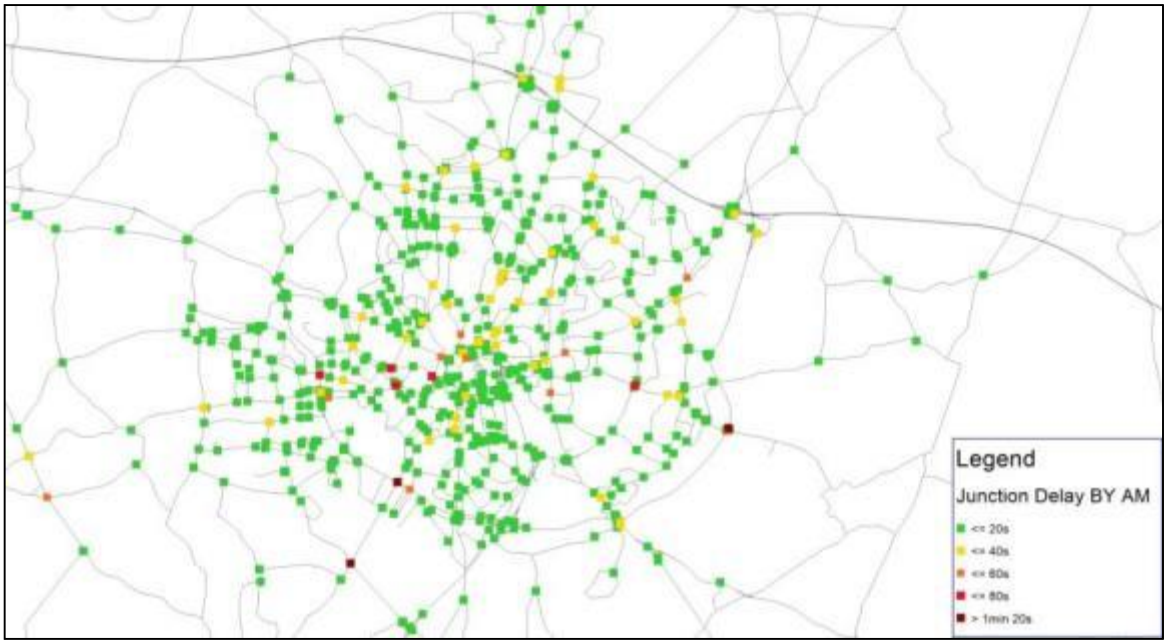


Figure 5.15: AM Peak 2013 Year Average Junction Delay

5.8.2 Figure 5.15 shows that in the base year the majority of junctions have an average delay of 20 seconds or less with a few junctions having more than 60 seconds average delay. These are generally located towards the south of the Local Authority area on key routes into and around Coventry.

5.8.3 Figure 5.16 shows the average delay in the AM peak for 2034 Scenario 1, with the Coventry Local Plan sites highlighted on it.

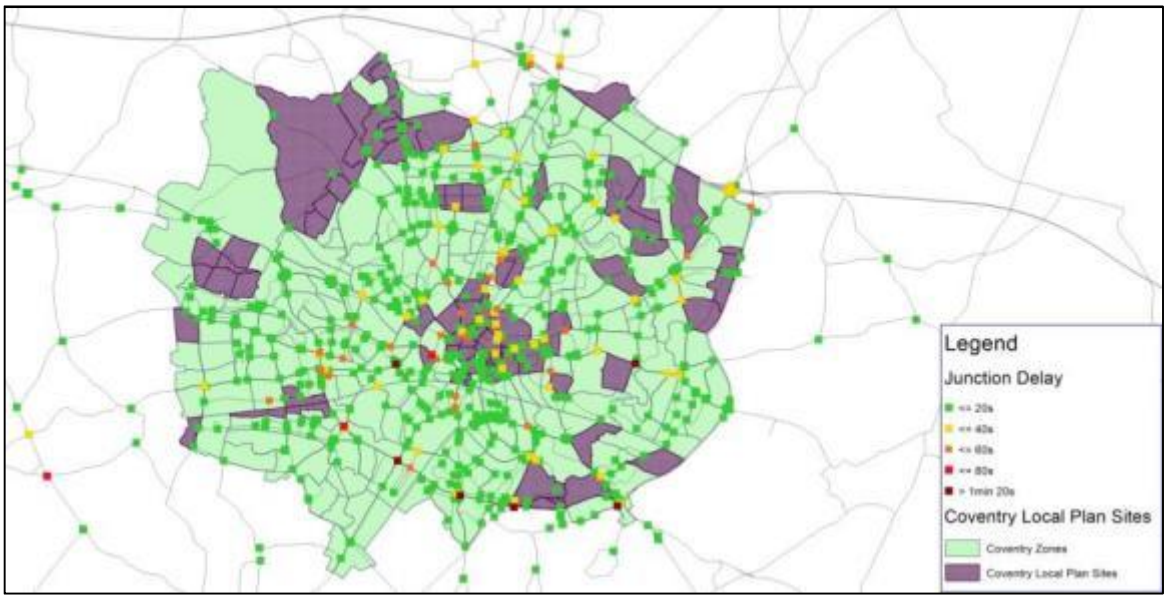


Figure 5.16: AM Peak 2034 Scenario 1 Average Junction Delay

5.8.4 Figure 5.16 shows that the number of junctions which have over 1min 20seconds of delay has increased from 3 junctions in the base year to 6 junctions in 2034 Scenario 1 and these tend to be close to Coventry Local Plan sites. The junctions with high average delay are located towards the south and west of Coventry which is the area which is experiencing a higher proportion of car trips within 2034 Scenario 1. These junctions should be assessed as and when the proposed developments in the vicinity come forward for planning application, to ensure the junctions operate effectively with the proposed developments.

5.8.5 Figure 5.17 shows the differences in average delay in the AM peak between the 2034 Scenario 1 and the 2013 Base Year.

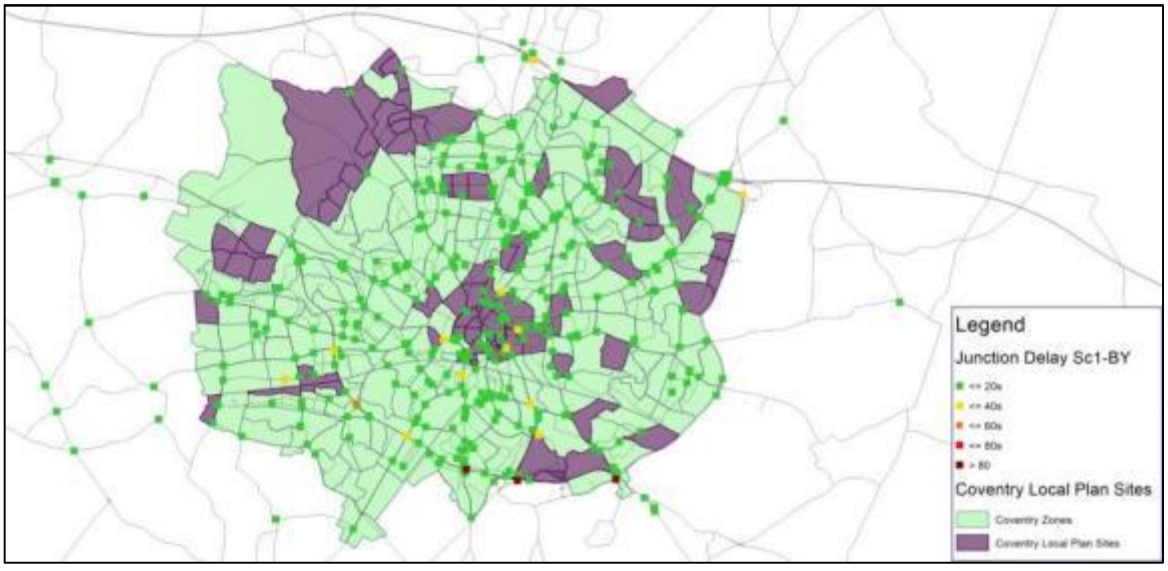


Figure 5.17: AM Peak 2034 Scenario 1 – 2013 Base Year Average Junction Delay

5.8.6 Figure 5.17 illustrates similar patterns to the previous figures showing the impact of junction delay focused to the south and west of Coventry particularly along the A45 and its associated junctions. These should be assessed using detailed junction models as and when developments in the area come forward for planning applications.

5.8.7 Figure 5.18 illustrates the average junction delay experienced in the PM peak 2013 CASM HAM highlighting the average delay in 20 second increments.

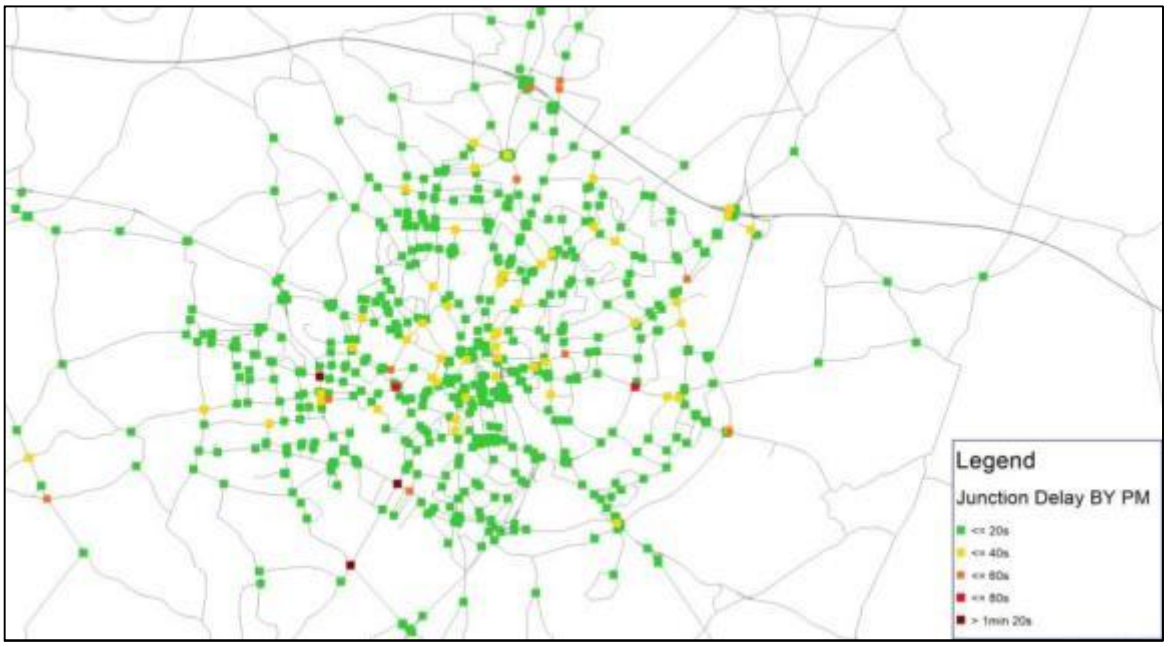


Figure 5.18: PM Peak Base Year Average Junction Delay

5.8.8 Figure 5.18 shows that in the base year the majority of junctions have a delay of 20 seconds or less with a handful having more than 60 seconds. These are generally located towards the south of the Local Authority area on key routes into and around Coventry. However there are some junctions with between 40 and 60 seconds delay to the north of Coventry close to the M6.

5.8.9 Figure 5.19 shows the average delay in the PM peak for 2034 Scenario 1, with the Coventry Local Plan sites highlighted on it.

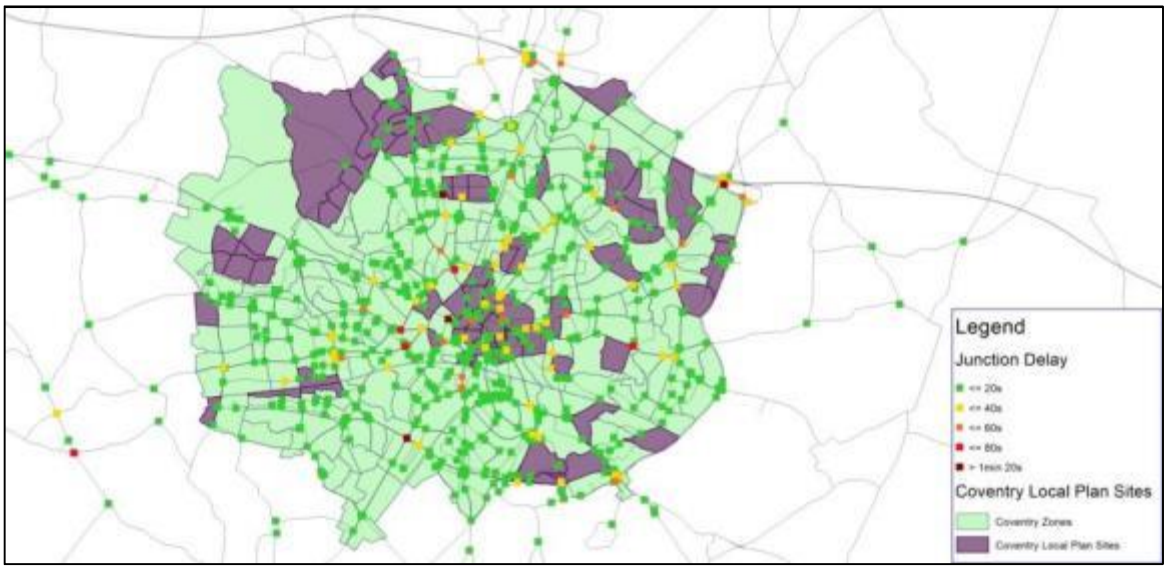


Figure 5.19: PM Peak 2034 Scenario 1 Average Junction Delay

5.8.10 Figure 5.19 shows that the number of junctions which have over 1min 20seconds of average delay has increased from 3 junctions in the base year to 4 junctions in 2034 Scenario 1; these tend to be close to Coventry Local Plan sites. To ensure these junctions operate effectively in the future and are not significant problems when planning applications come forward in the area it will be necessary to undertake individual junction models to ensure congestion problems will not be generated. The junctions with high average delay are located across the Coventry area on key roads into and around Coventry, including the A45.

5.8.11 Figure 5.20 shows the differences in average delay in the PM peak between the 2034 Scenario 1 and the 2013 Base Year.

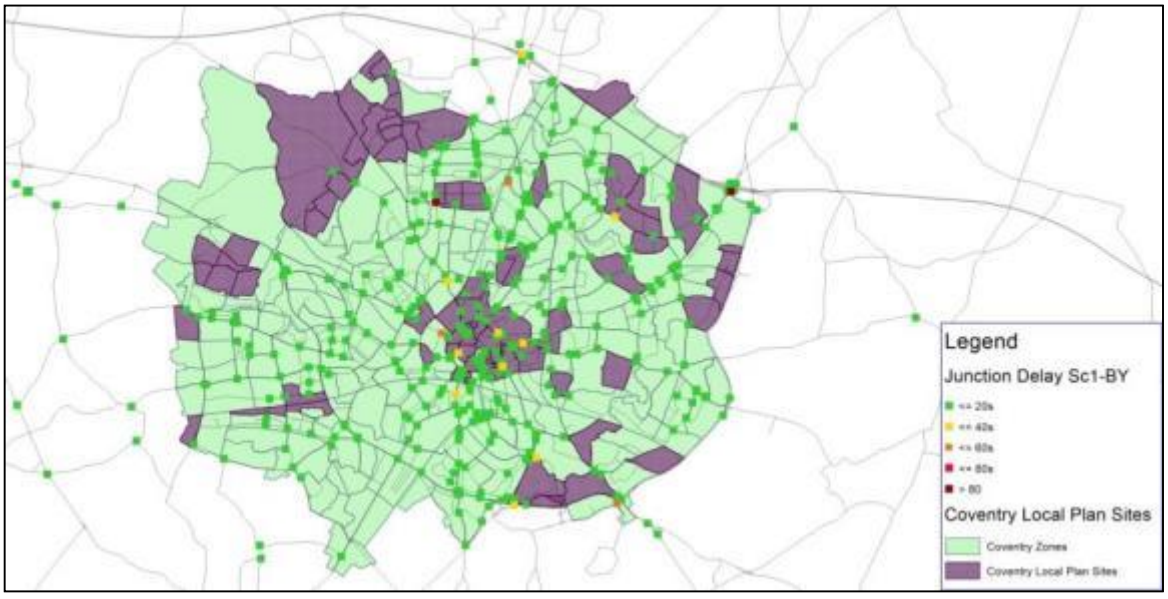


Figure 5.20: PM Peak 2034 Scenario 1 – 2013 Base Year Average Junction Delay

5.8.12 Figure 5.20 illustrates similar patterns to the previous figures showing the impact of junction delay focused to the south and west of Coventry particularly along the A45.

5.9 SUMMARY

5.9.1 2034 Scenario 1 compared against the 2013 Base Year model within Coventry has the following impacts:

- 19% increase in population
- 18% increase in trips generated by all modes
- Proposed developments close to the city centre have a greater proportion of trips being made by public transport, walking and cycling
- Sites on the edge of the city centre generate predominantly car trips
- A greater proportion of trips starting in Coventry in the AM peak travel to areas outside of Coventry Local Authority
- A greater proportion of trips arriving in Coventry in the PM peak travel from areas outside of Coventry Local Authority
- An increase in the proportion of trips in Coventry travelling to/ from Coventry NW (Including Keresley and Eastern Green)
- An increase in the proportion of car trips travelling to Coventry SE (Whitley) in the AM peak and from Coventry SE in the PM peak
- 34% increase in vehicle/km's undertaken in Coventry which is a result of the increase in traffic as well as increases in distance travelled
- Up to a 37% increase in highway network delay per vehicle, equating to up to 34 seconds
- A reduction in average speed of 3 kph
- Junctions which experience the most increase in delays are on key routes in and around Coventry, particularly on the A45 and around the M6. There are 3 junctions in the AM and 4 junction in the PM which experience increases of over 1min 20seconds between 2013 and 2034. These should be assessed using individual junction models as and when planning applications in the local area come forward.

6 LOCAL PLAN SCENARIO 2 RESULTS

6.1 INTRODUCTION

6.1.1 This chapter of the report presents the results of the 2034 CASM Local Plan Scenario 2 and compares them to the 2034 CASM Local Plan Scenario 1. The comparisons undertaken include changes in:

- Population
- Trip generation over a 12-hour period
- Mode choice
- Peak hour highway network performance

6.1.2 In addition to this the Keresley local plan site is interrogated in more detail to understand the impact this site has on the highway network within and around Coventry.

6.2 POPULATION CHANGES

6.2.1 The changes in population in 2034 Local Plan Scenario 2 compared to 2034 Local Plan Scenario 1 are graphically shown in Figure 6.1. This shows that the housing development from the Keresley area has been removed and as a result the growth in population has been spread across Coventry Local Authority area.

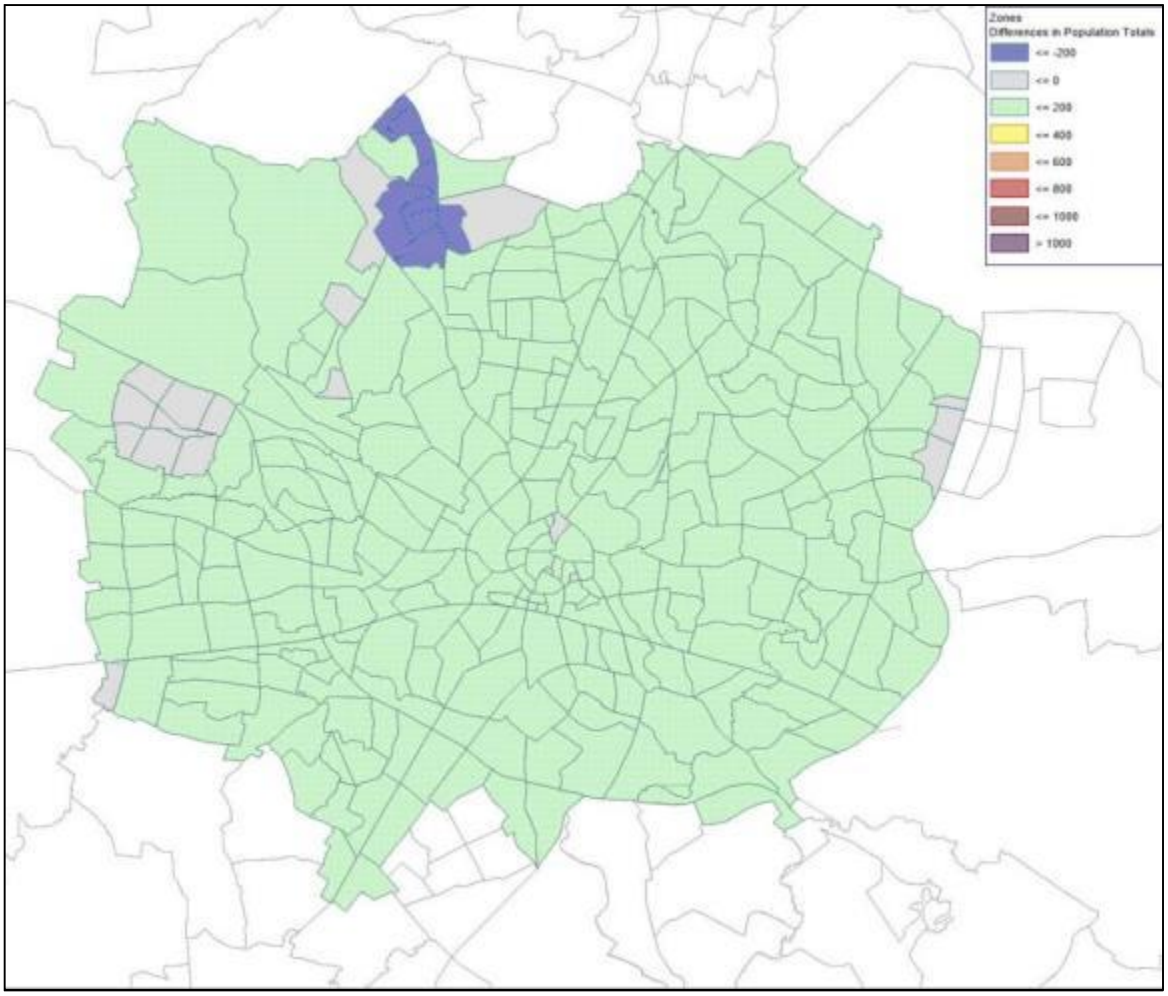


Figure 6.1: Changes in Population within Coventry Local Authority between 2034 Local Plan Scenario 2 and Scenario 1

6.3 SCHOOLS CHANGES

6.3.1 With the removal of the Keresley development the secondary school associated with the wider development is removed, as shown in Figure 6.2.

Figure 6.2: Changes in Schools by Education Level in Coventry Local Authority between 2034 Local Plan Scenario 2 and Scenario 1

6.4 TRIP GENERATION CHANGES

6.4.1 The changes in population illustrated in Figure 6.1 are translated into changes in the trips generated in the 2034 Scenario 2CASM TDM over a 12-hour period, as shown in Figure 6.3.

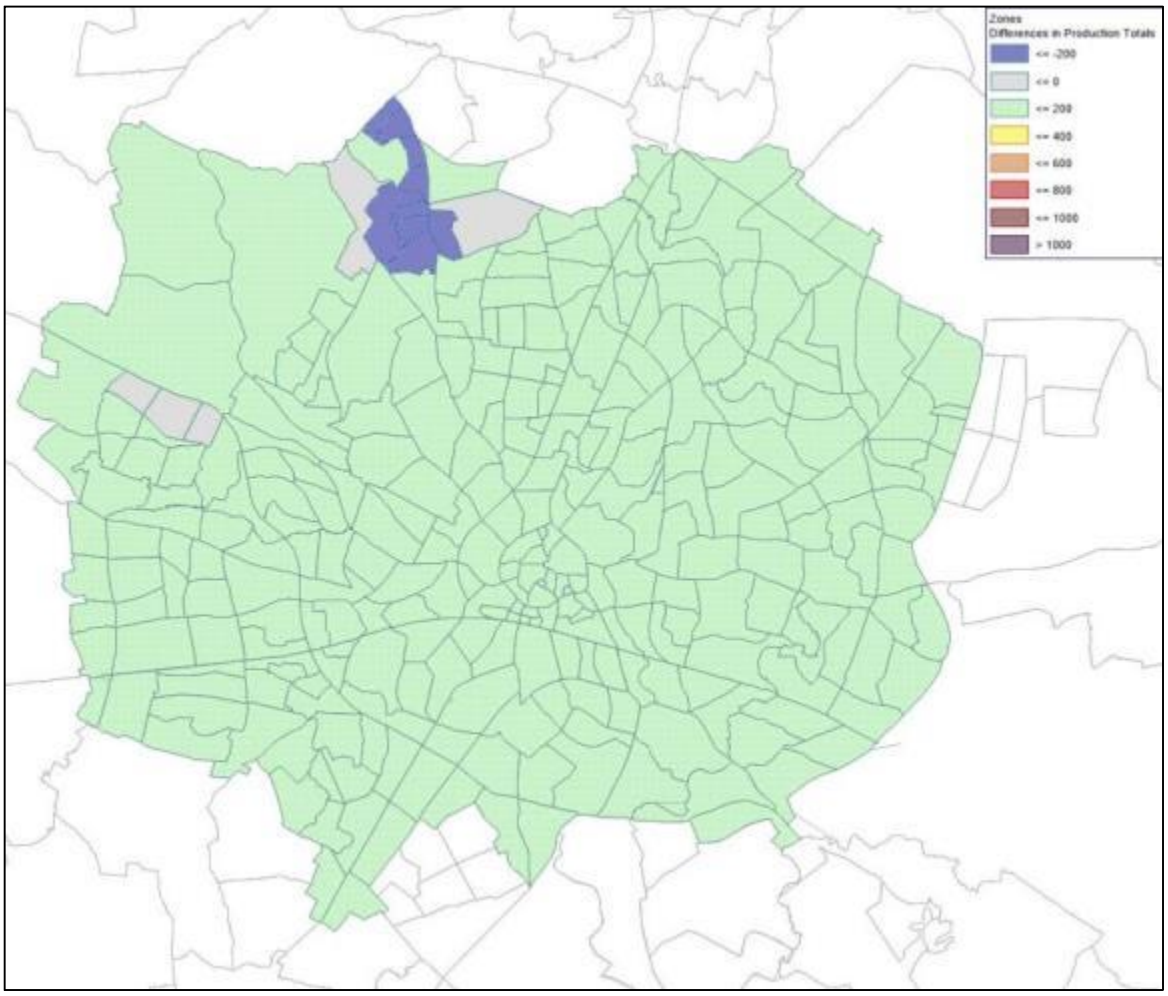


Figure 6.3: Changes in Total Trip Generations in Coventry Local Authority between 2034 Local Plan Scenario 2 and Scenario 1

6.5 MODE CHOICE

6.5.1 Figure 6.4 shows the change in mode choice between Scenario 1 and Scenario 2. It shows the reduction in travel demand in the Keresley area with increasing travel demand across Coventry Local Authority. The changes in modes at individual zone level are very small, with 2,300 houses spread across nearly 300 zones, i.e. approx. 7 new homes a zone.

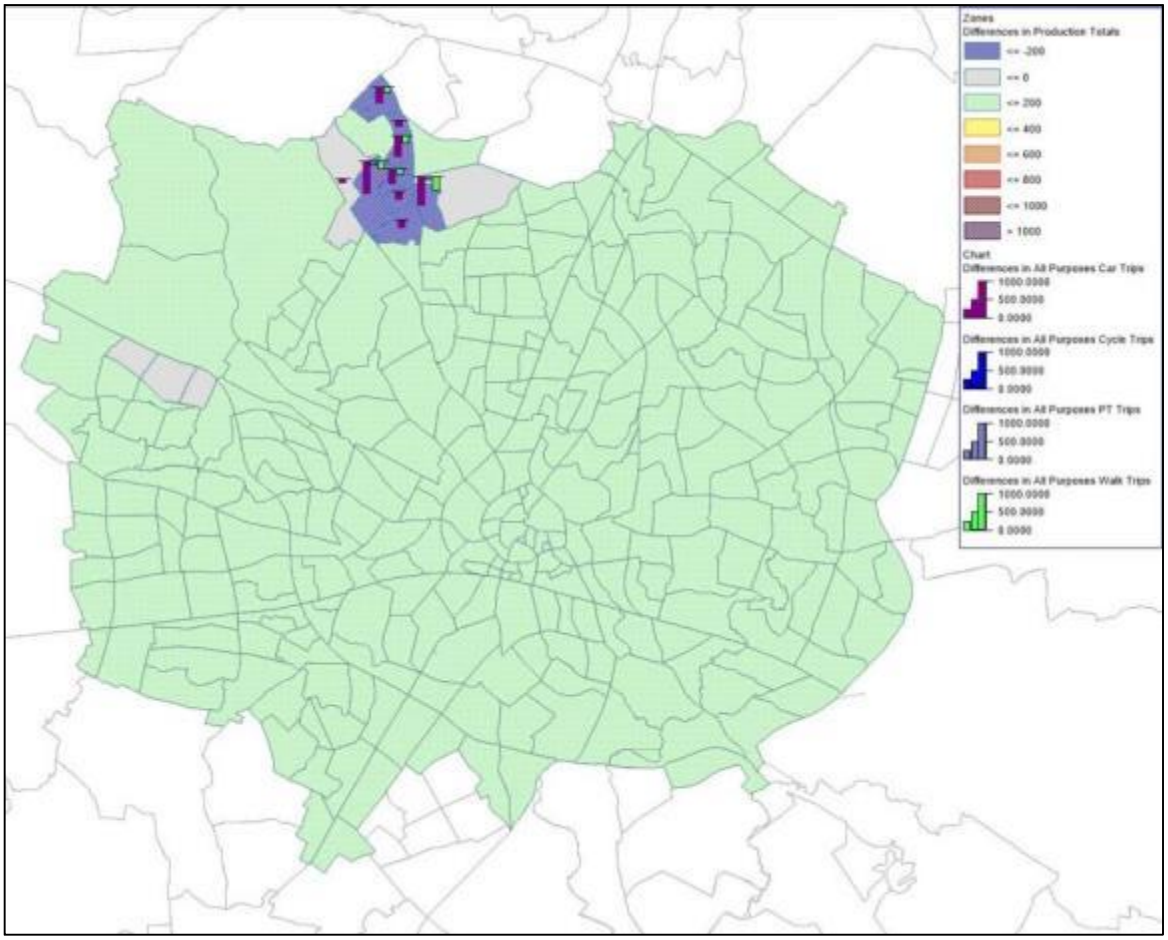


Figure 6.4: Changes in Total Trips by Mode in Coventry Local Authority between 2034 Local Plan Scenario 2 and Scenario 1 (person trips per 12-hour weekday)

6.6 TRIP DISTRIBUTION

6.6.1 The car trips travelling to and from the Keresley development as a percentage of the traffic flow on the highway network are shown below for the AM and PM peak, in Figure 6.5 and Figure 6.6, respectively.

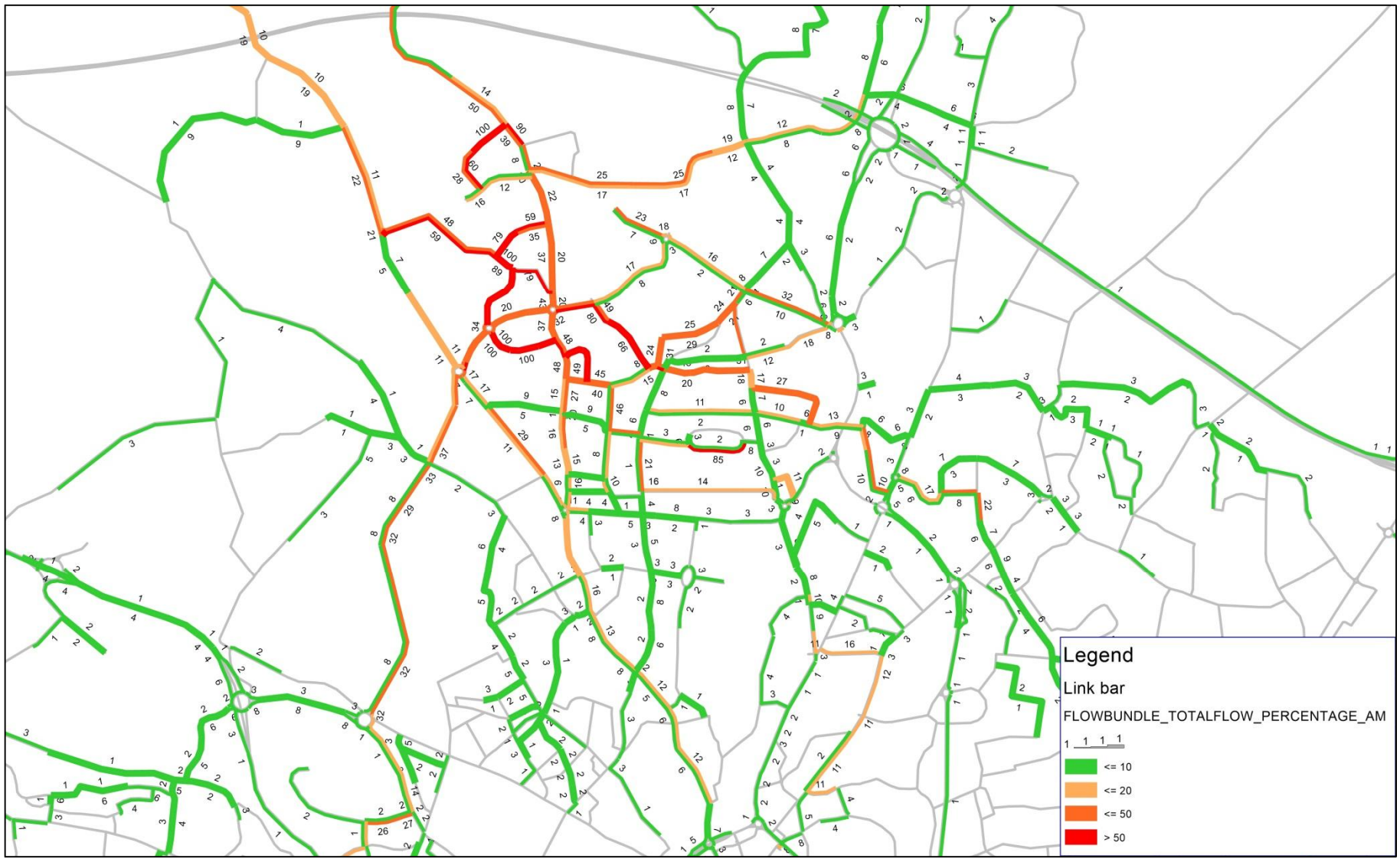


Figure 6.5: Scenario 1 AM Peak - Keresley Origin & Destination as a Percentage of the Total Traffic Flow on Network

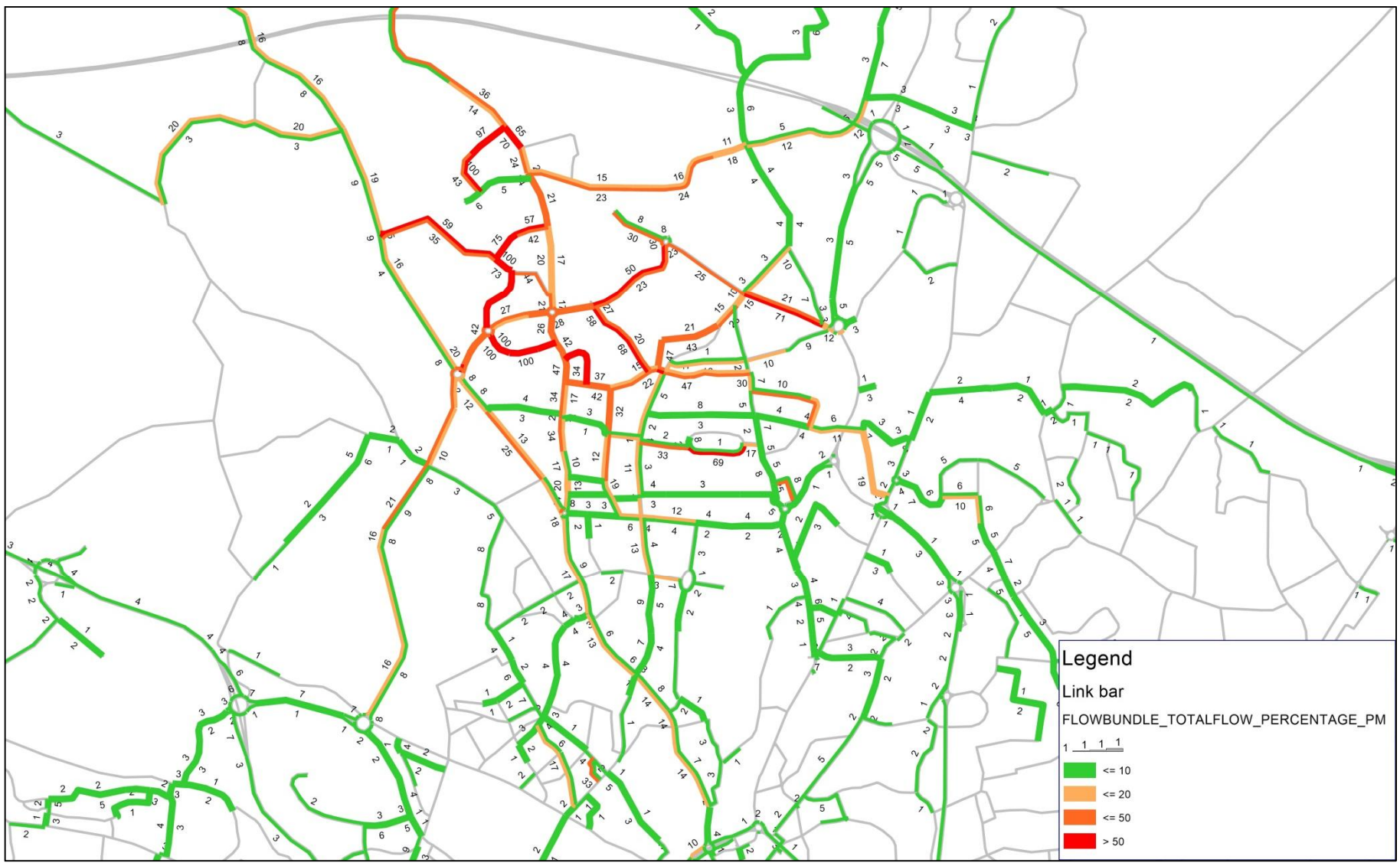


Figure 6.6: Scenario 1 PM Peak - Keresley Origin & Destination as a Percentage of the Total Traffic Flow on Network

6.6.2 Figure 6.5 and Figure 6.6 show the key routes that car trips to and from the development will use. The plots show that in both the AM and PM peak there is a strong draw of commuting trips southbound towards Coventry, northwards towards the M6 and westbound to Birmingham.

6.7 PEAK HOUR TRAFFIC

6.7.1 Highway network statistics have been extracted from the Scenario 1 and Scenario 2 models for the Coventry Local Authority area, as shown in Table 6.1. The highway network from which these statistics have been extracted is shown in Figure 5.8.

Table 6.1: Coventry Local Authority Highway Network Statistics Scenario 2 vs Scenario 1

Metric	AM Peak				PM Peak			
	Scenario 1	Scenario 2	Difference	% Difference	Scenario 1	Scenario 2	Difference	% Difference
Link Cruise Time (Veh/Hrs)	11,370	11,285	- 85	- 0.75%	11,624	11,555	- 69	- 0.59%
Total Travel Time (Veh/Hrs)	14,504	14,427	- 76	- 0.53%	14,441	14,356	- 85	- 0.59%
Total Network Delay (Veh/Hrs)	3,640	3,652	+ 12	+ 0.34%	3,374	3,367	- 8	- 0.23%
Total Travel Distance (Veh/Kms)	802,621	798,614	- 4,007	- 0.50%	822,924	819,231	- 3,693	- 0.45%
Average Speed (km/h)	55.3	55.4	+ 0.02	+ 0.03%	57.0	57.1	+ 0.08	+ 0.14%

6.7.2 The highway network statistics indicate that, between Scenario 1 and Scenario 2, the overall impact in the Coventry Local Authority area is very small. There are slight reductions in travel time and travel distance and slight increases in speed, but overall the additional houses at Keresley do not have a significant impact on the performance of the overall highway network in the Coventry Local Authority area.

6.7.3 Overall highway statistics were also extracted for a smaller area around the Keresley site, illustrated in Figure 6.7. Table 6.2 presents the comparisons of the highway statistics for this smaller area.

Table 6.2: Keresley Area Highway Network Statistics Scenario 2 vs Scenario 1

Metric	AM PEAK				PM PEAK			
	Scenario 1	Scenario 2	Difference	% Difference	Scenario 1	Scenario 2	Difference	% Difference
Link Cruise Time (Veh/hrs)	2,366	2,293	-73	-3%	2,475	2,413	-62	-3%
Total Travel Time (Veh/Hrs)	3,115	3,025	-91	-3%	3,107	3,036	-71	-2%
Total Network Delay (Veh/Hrs)	929	906	-23	-2%	829	813	-17	-2%
Total Travel Distance (Veh/Kms)	131,780	128,360	-3,419	-3%	138,256	135,106	-3,150	-2%
Average Speed (km/h)	42.3	42.4	0	0%	44.5	44.5	0	0%

6.7.4 The highway network statistics show that without the Keresley development in the local area there is a reduction in network delay of up to 2% and a reduction in travel distance of up to 3%. Average speed remains very similar in the area in both scenarios. This suggests that within the area assessed the full Keresley development does not have a significant impact on the performance of the local highway network.

Figure 6.7: Keresley Highway Network

6.7.5 Within the highway network, in the CASM model, each road will have a volume of traffic travelling along it and a capacity, which represents the total number of vehicles that could possibly travel along the road. The Volume/Capacity (V/C) ratio provides an understanding as to the unused capacity on the road; in effect this is a measure of how congested a road could be. Figure 6.8 and Figure 6.9 present the change in Volume/ Capacity between Scenario 1 and Scenario 2. These figures represent an average flow over a peak hour period; and therefore do not show spikes in congestion which happen within the hour.

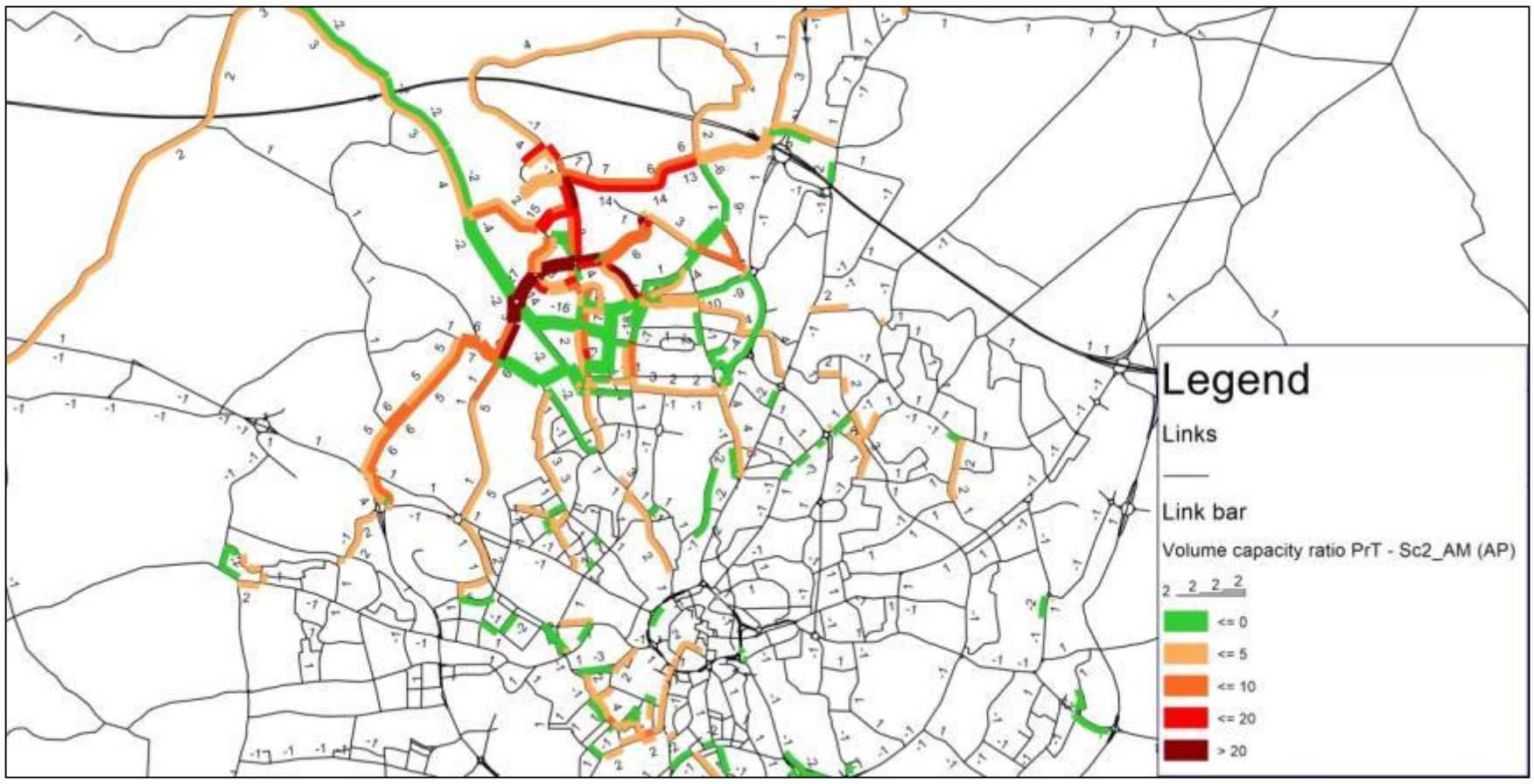


Figure 6.8: AM Peak Scenario 1 vs Scenario 2 V/C Ratio Difference Plot

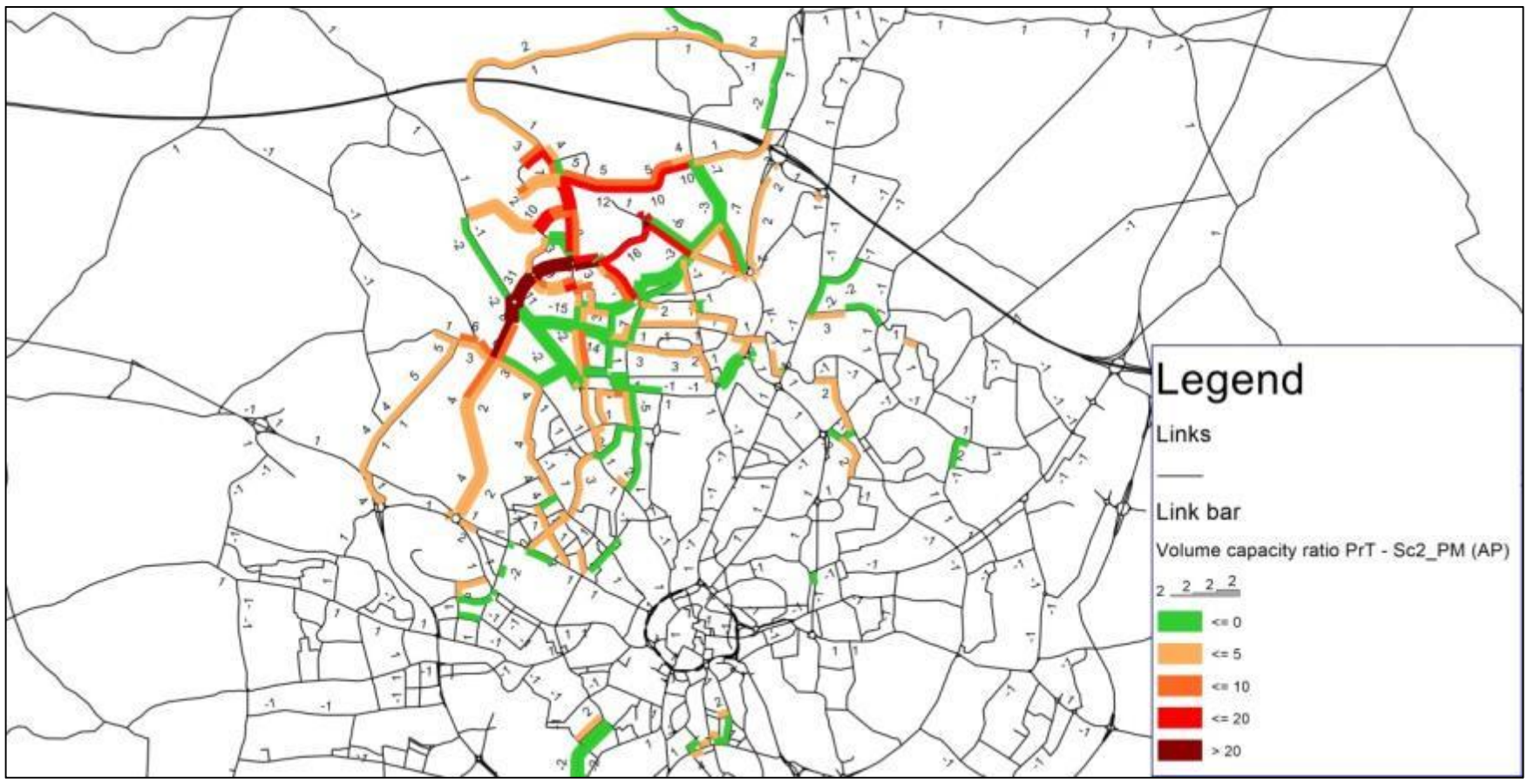


Figure 6.9: PM Peak Scenario 1 vs Scenario 2 V/C Ratio Difference Plot

6.7.6 The figures show that in Scenario 1, compared to Scenario 2, there is an increase in traffic going to the Keresley area from the A4114 and around the M6 junction 3. This is a result of the increased housing in Keresley in Scenario 1 which is generating and attracting new traffic into the area, resulting in slightly less spare capacity on the highway network. However on some of the highway network there is an improvement in V/C ratio as a result of Scenario 1, especially along Tamworth Road and Sandpits lane. This is a result of the Keresley Link Road which is built in Scenario 1 which traffic uses instead of the existing network.

6.7.7 Table 6.3 shows the Volume/ Capacity ratio for specific locations around the Keresley area, shown below in Figure 6.10.

Table 6.3: Volume/ Capacity Scenario 2 vs Scenario 1

Highway Network	Direction	AM Peak			PM Peak		
		Scenario 1	Scenario 2	Difference	Scenario 1	Scenario 2	Difference
Tamworth Road	NB	18	20	2	19	21	2
	SB	20	24	4	24	25	1
Sandpits Lane	EB	30	45	15	29	44	15
	WB	16	41	25	23	43	20
Long Lane	EB	54	51	-3	63	48	-15
	WB	61	48	-13	50	50	0
Bennetts Road	NB	20	11	-9	36	24	-12
	SB	47	34	-13	30	22	-8
Keresley Link Road	EB	27			31		
	WB	40			28		

6.7.8 The table shows that the V/C is higher in Scenario 2 compared to Scenario 1 on Tamworth Road and Sandpits Lane. This is because in Scenario 1 despite there being more houses, the Keresley Link Road attracts traffic away from these routes. However, in Scenario 1 on Bennetts Road there is an increase in V/C as a result of the additional houses and car trips on this road; this is because quite a lot of the development to the north of Keresley connects directly onto Bennetts Road. Despite the increase however, the V/C is still relatively low and does not cause any significant concern.

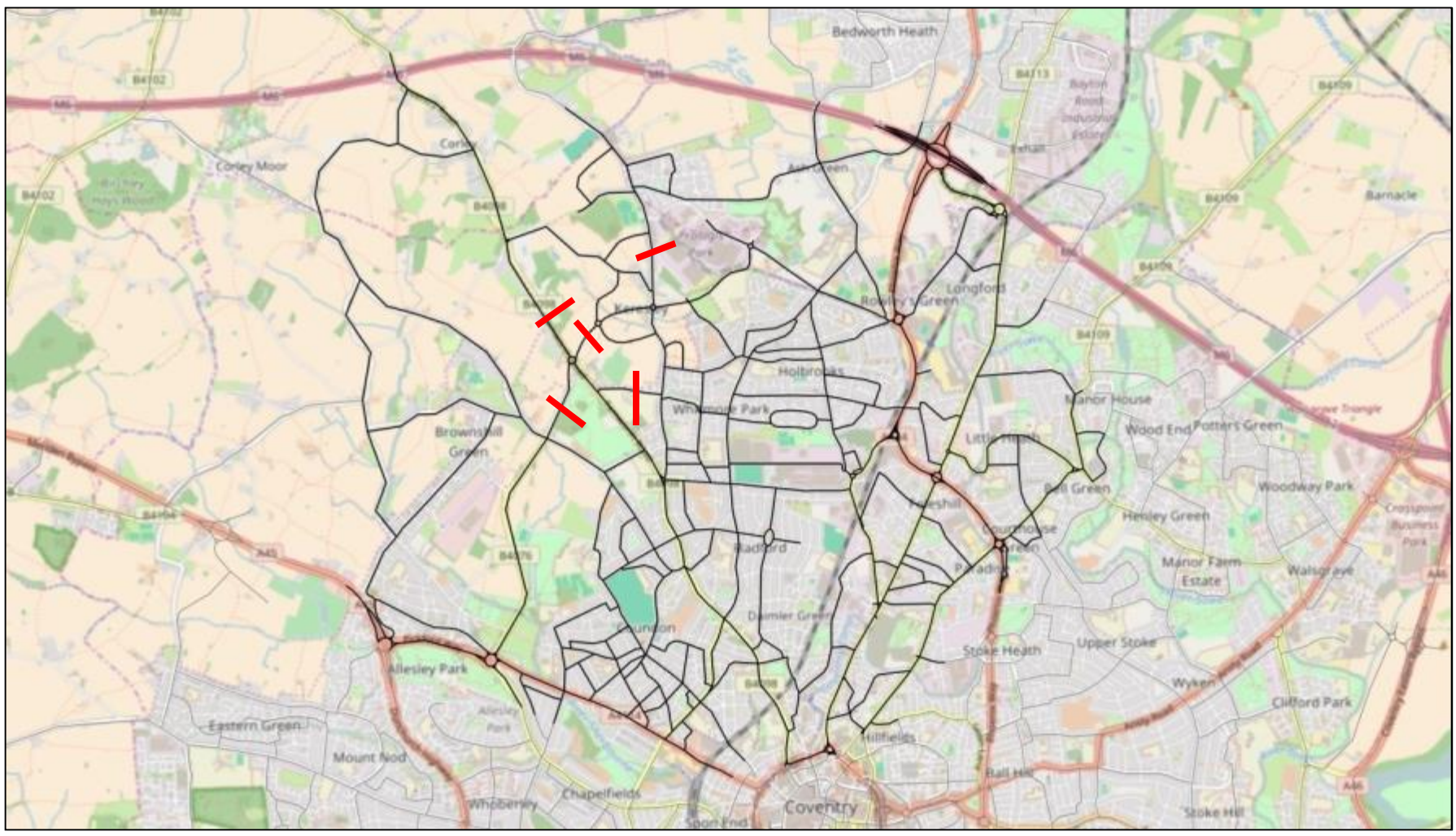


Figure 6.10: Locations for Keresley V/C Table

6.8 JUNCTION PERFORMANCE

6.8.1 The CASM HAM does not model highway junctions in detail, but it can highlight junctions which are experiencing more delay in the 2034 Local Plan Scenario 1 compared to Scenario 2. Figure 6.11 illustrates the junction delay experienced in the AM peak 2034 Local Plan Scenario 1 highlighting the average delay in 20 second increments. Scenario 1 assumes the full Keresley build out of houses and the Keresley Link Road.

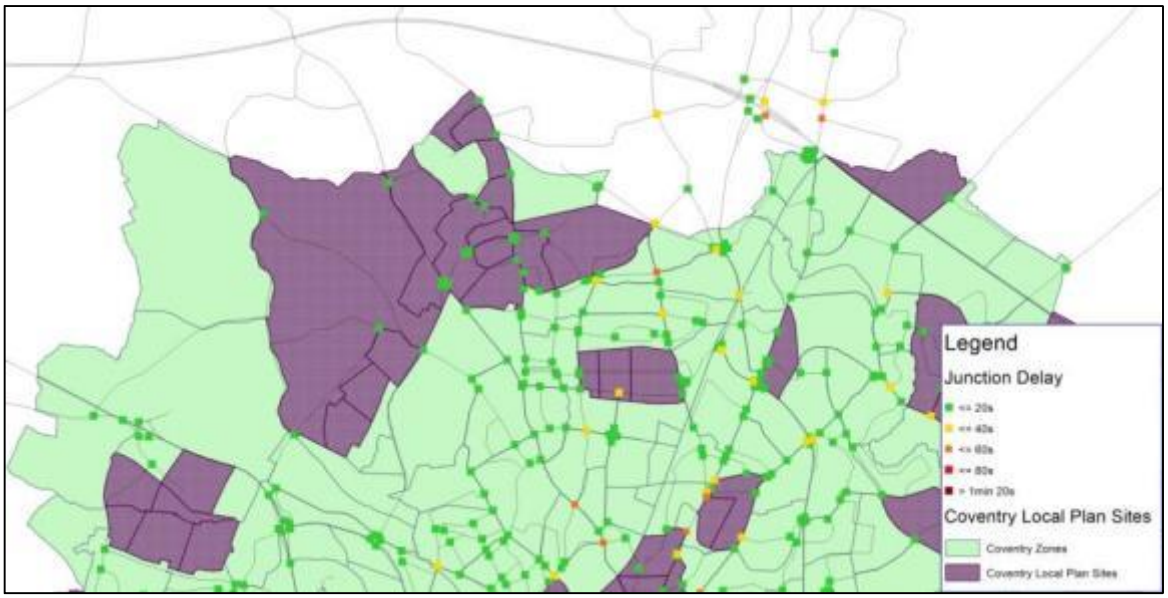


Figure 6.11: AM Peak 2034 Scenario 1 Average Junction Delay

6.8.2 Figure 6.11 shows that in Scenario1 in the Keresley area the majority of junctions have an average delay of 20 seconds or less with a handful having between 40 and 60 seconds delay close to the development and the M6 junction 3. This indicates that with the Keresley Link Road and the full Keresley site there are a few junctions which should be examined in detail to ensure they operate effectively with the proposals.

6.8.3 Figure 6.12 shows the junction performance in the AM peak with just the Keresley development which has planning permission and without the Keresley Link Road (Scenario 2).

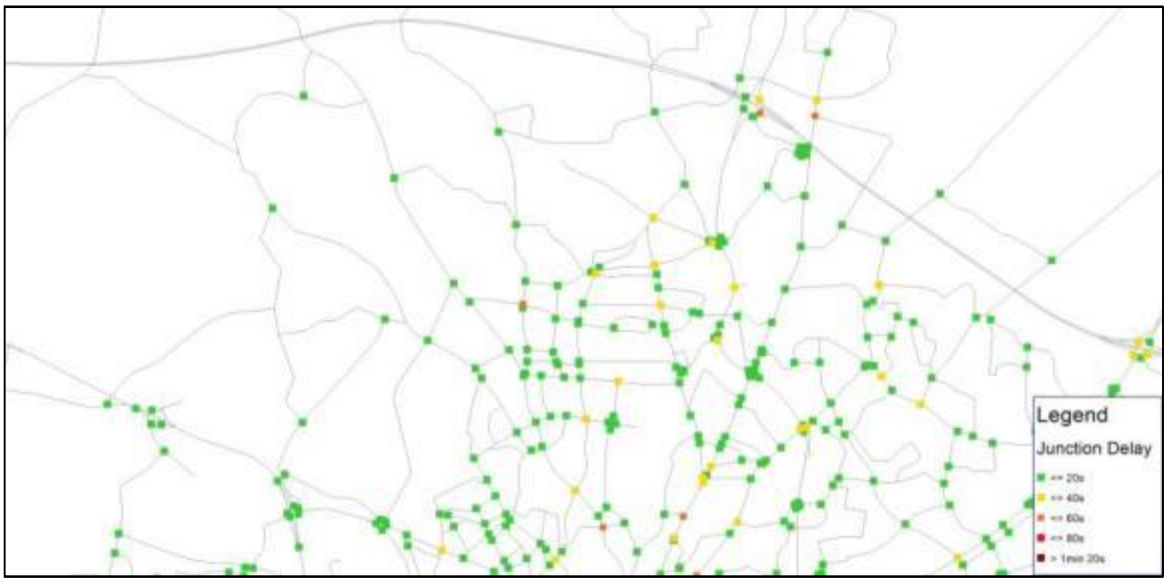


Figure 6.12: AM Peak 2034 Scenario 2 Average Junction Delay

6.8.4 Figure 6.12 shows that in Scenario 2 the junction with Sandpits Lane experiences between 40-60 seconds of delay but most other junctions in the area experience between 0-40 seconds of delay which are not of significant concern.

6.8.5 Figure 6.13 illustrates the junctions which experience an increase in average delay between Scenario 2 and 1. This shows that all increases in delay around Keresley with the Link Road are 20seconds or less which is not of significant concern. However it would be prudent to assess the localised impacts of the development within standalone junction models to ensure that they would still operate effectively as and when a planning application comes forward for the site.

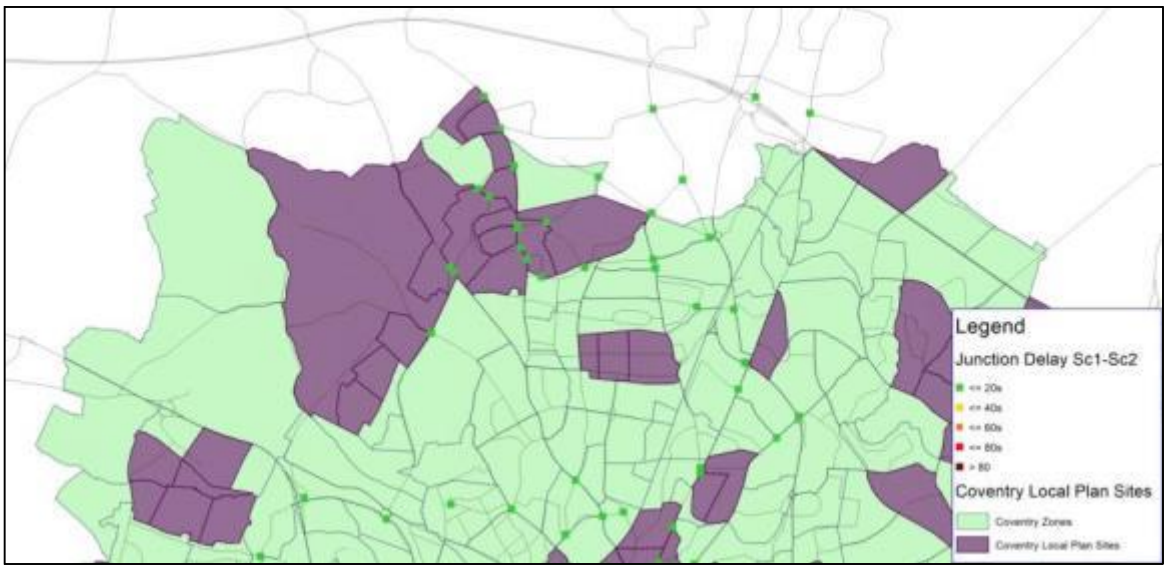


Figure 6.13: AM Peak 2034 Scenario 1 – Scenario 2 Average Junction Delay

6.8.6 Figure 6.14 illustrates the junction delay experienced in the PM peak 2034 Local Plan Scenario 1 highlighting the average delay in 20 second increments.

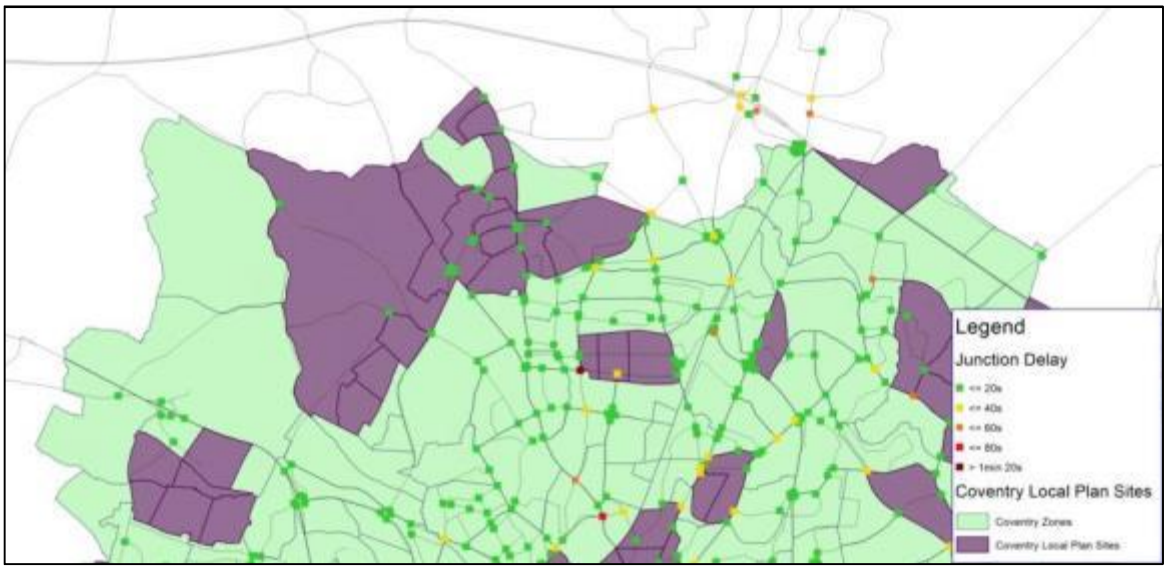


Figure 6.14: PM Peak 2034 Scenario 1 Average Junction Delay

6.8.7 Figure 6.14 shows that in Scenario1 in the Keresley area the majority of junctions have an average delay of 20 seconds or less with a handful having between 40 and 60 seconds close to the development and the M6 junction 3. This indicates that with the Keresley Link Road and the full Keresley site there are a few junctions which would be worth further assessment to ensure they operate effectively with the proposals.

6.8.8 Figure 6.15 shows the junction performance in the PM peak with just the Keresley development which has planning permission and without the Keresley Link Road (Scenario 2).

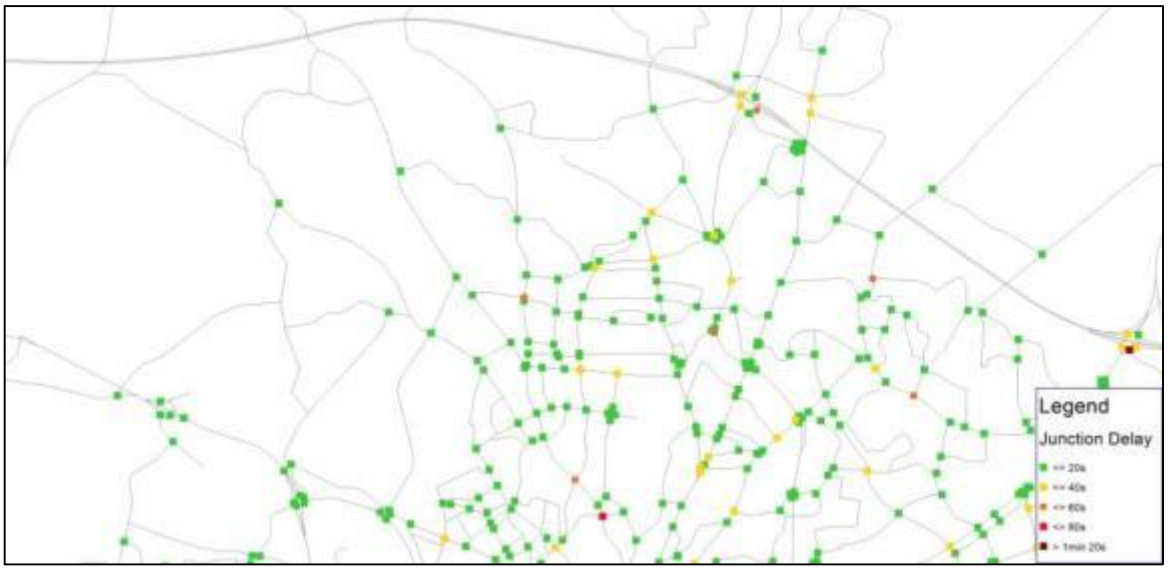


Figure 6.15: PM Peak 2034 Scenario 2 Average Junction Delay

6.8.9 Figure 6.15 shows that in Scenario 2 the junction with Sandpits Lane experiences between 40-60 seconds of delay but most other junctions in the area experience between 0-40 seconds of delay.

6.8.10 Figure 6.16 illustrates the junctions which experience an increase in delay between Scenario 2 and 1. This shows that all increases in delay around Keresley with the Link Road are 20 seconds or less which is not of significant concern. However it would be prudent to assess the localised impacts of the development within standalone junction models to ensure that they would still operate effectively.

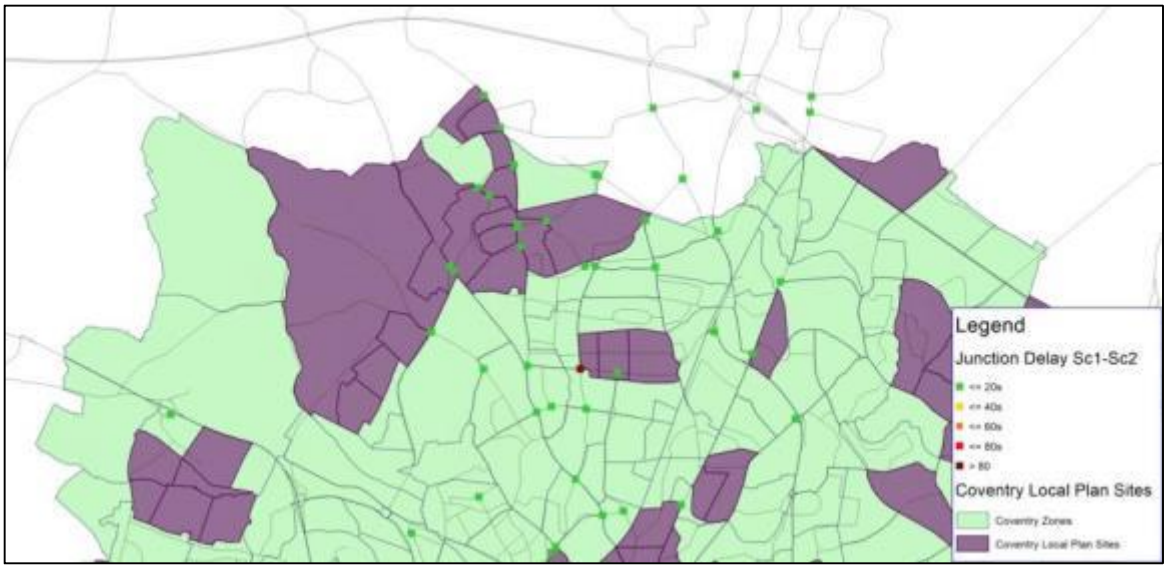


Figure 6.16: PM Peak 2034 Scenario 1 – Scenario 2 Average Junction Delay

6.9 SUMMARY

6.9.1 2034 Scenario 2 compared against Scenario 1 within Coventry and the Keresley area has the following impacts:

- Scenario 2 only has 800 houses at Keresley, additional houses and trips are spread across Coventry
- Key roads which cars use to and from Keresley include Bennetts Road and Tamworth Road which constitute up to 50% of development traffic in Scenario 1
- Overall highway network performance across Coventry is not significantly affected by the Keresley development
- In the Keresley area there is an increase in delay and travel distance as a result of Scenario 1, however average speeds remain similar
- As a result of the full Keresley development and the Link Road there is generally an increase in V/C ratio on roads leading to the development, however on Sandpits Lane and Tamworth Road V/C reduces as more traffic uses the new Link Road rather than the existing highway network
- There are some junctions around the Keresley area which experience an increase in delays as a result of the full Keresley development, these are relatively small
- Additional junction modelling would be required to assess the localised impacts of the full Keresley development to ensure the junctions in the close vicinity operate well in the future.

7 LOCAL PLAN SCENARIO 3 RESULTS

7.1 INTRODUCTION

7.1.1 This chapter of the report presents the results of the 2034 CASM Local Plan Scenario 3 and compares them to the 2034 CASM Local Plan Scenario 1. The comparisons undertaken include changes in:

- Population
- Trip generation over a 12-hour period
- Mode choice
- Peak hour highway network performance

7.1.2 In addition to this the Eastern Green local plan site is interrogated in more detail to understand the impact this site has on the highway network within and around Coventry.

7.2 POPULATION CHANGES

7.2.1 The changes in population in 2034 Local Plan Scenario 3 compared to 2034 Local Plan Scenario 1 are graphically shown in Figure 7.1. This shows that the housing development from the Eastern Green area has been removed and as a result the growth in population has been spread across Coventry Local Authority area.

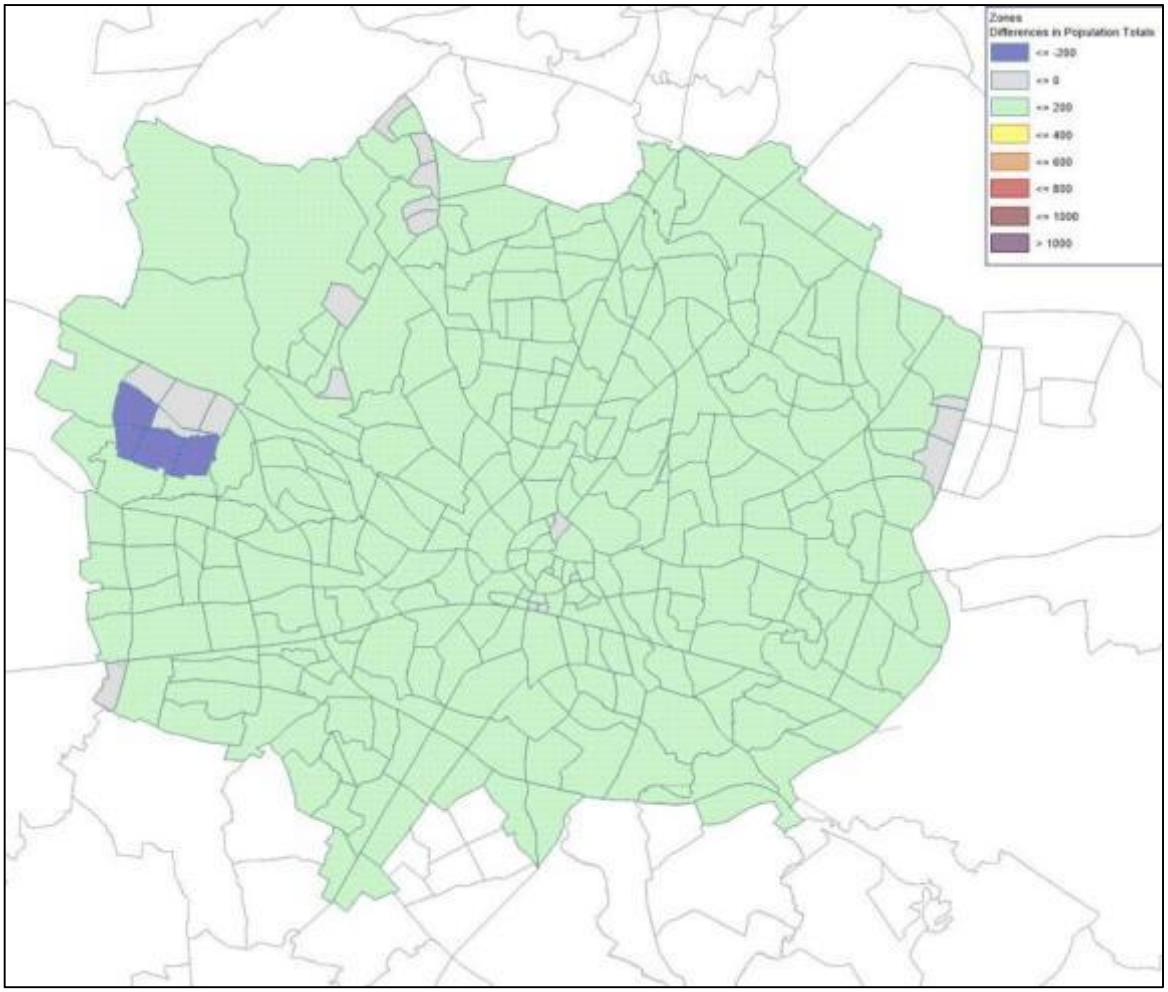


Figure 7.1: Changes in Population within Coventry Local Authority between 2034 Local Plan Scenario 3 and Scenario 1

7.3 EMPLOYMENT AND SCHOOL GROWTH

7.3.1 Figure 7.2 shows the changes in number of jobs in Scenario 3 compared to Scenario 1. The figure shows that the jobs associated with Eastern Green are removed and there is an overall increase in jobs across the Coventry Local Authority area.

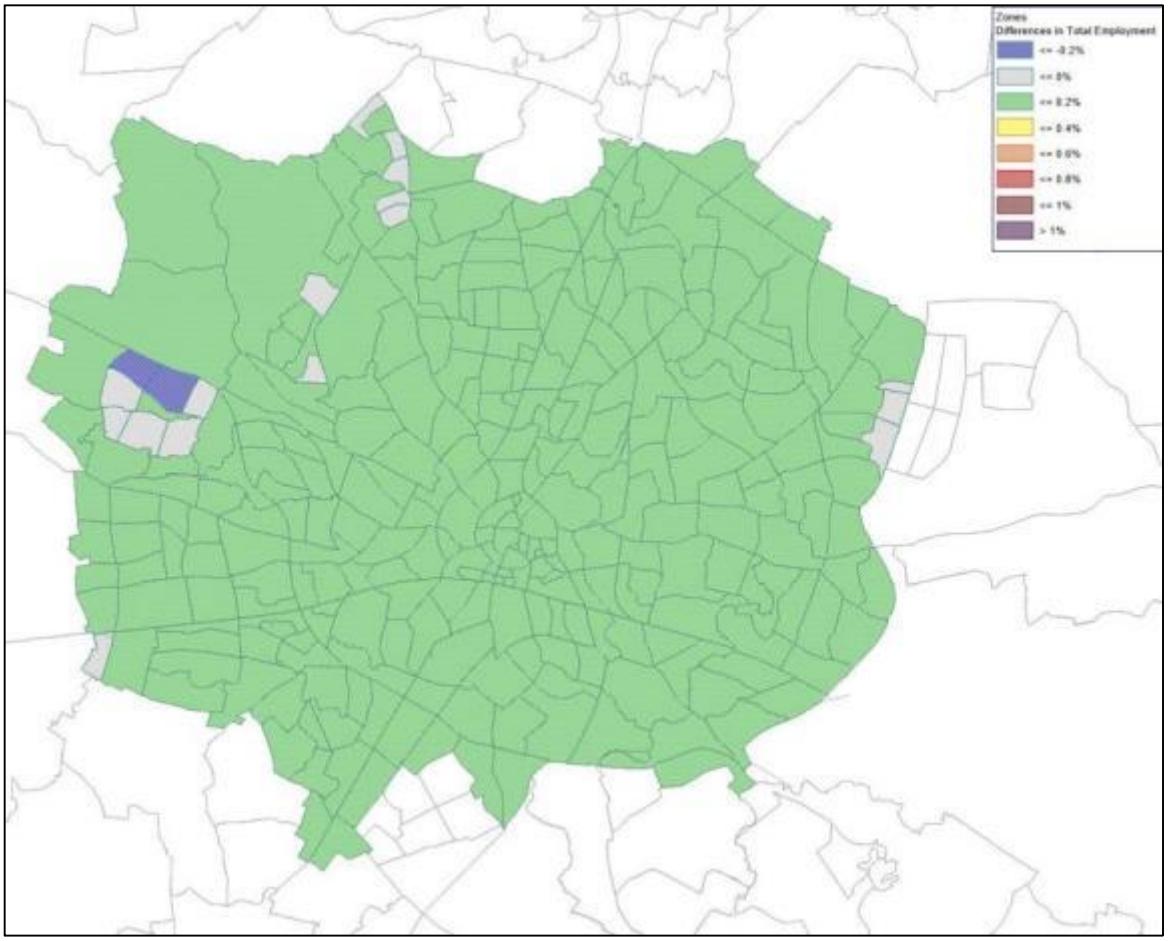


Figure 7.2: Changes in Total Employment in Coventry Local Authority between 2034 Local Plan Scenario 1 and Scenario 3

7.3.2 As a result of the Eastern Green development not being contained within Local Plan Scenario 3 the school associated with the proposed development has also been removed, as shown in Figure 7.3.

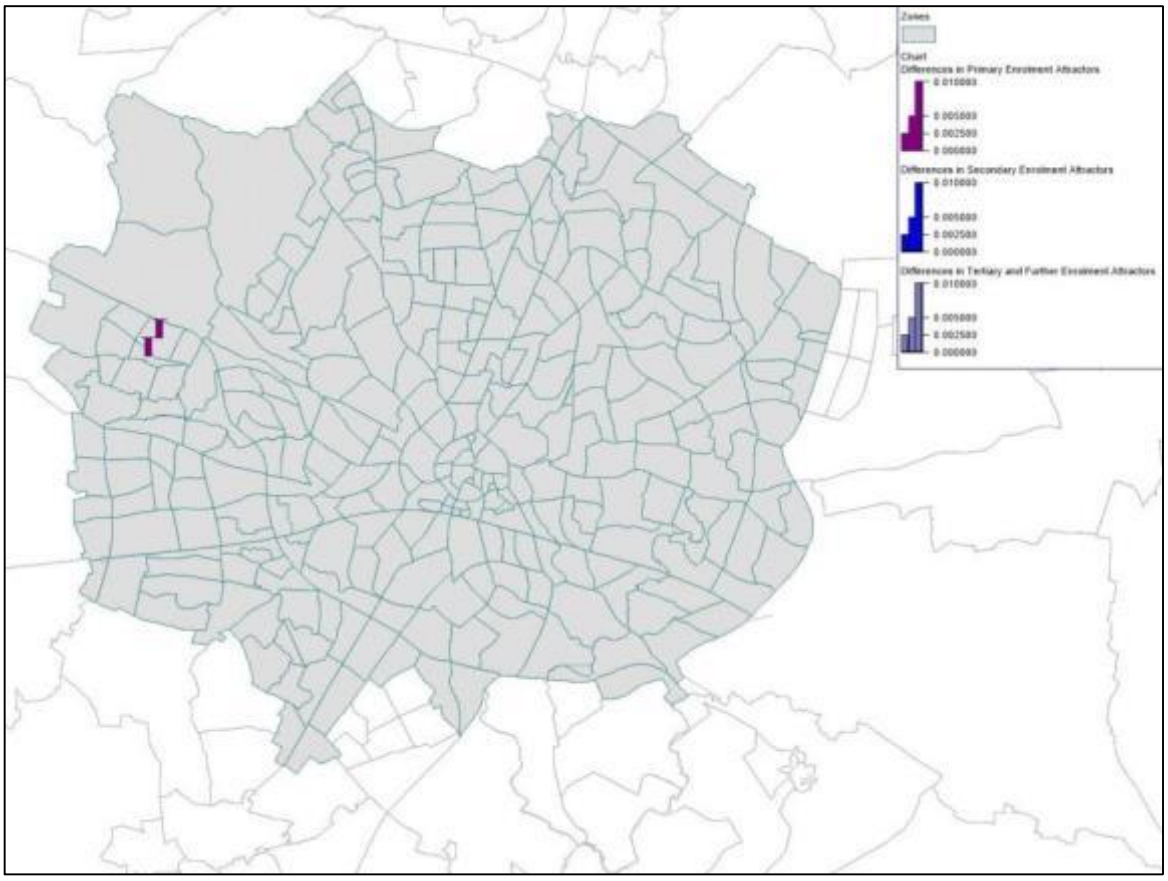


Figure 7.3: Changes in Schools by Education Level in Coventry Local Authority between 2034 Local Plan Scenario 3 and Scenario 1

7.4 TRIP GENERATION CHANGES

The changes in population shown in Figure 7.1 are translated into changes in trips generated in the 2034 Scenario 3 CASM TDM over a 12-hour period, as shown in Figure 7.4.

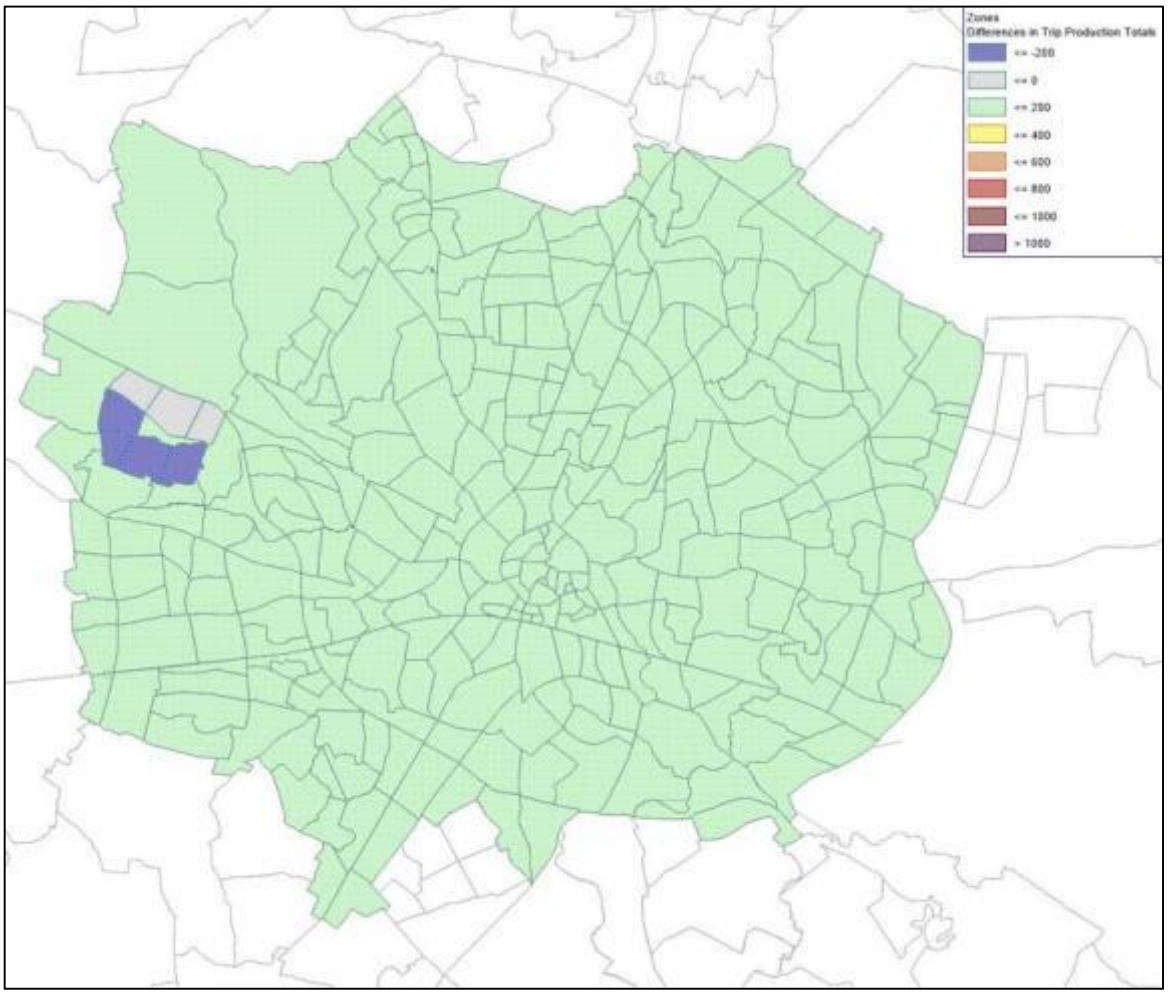


Figure 7.4: Changes in Total Trip Productions in Coventry Local Authority between 2034 Local Plan Scenario 3 and Scenario 1

7.5 MODE CHOICE CHANGES

7.5.1 Figure 7.5 shows the change in mode choice between Scenario 1 and Scenario 3. It shows the reduction in travel demand in the Eastern Green area with increasing travel demand across Coventry Local Authority. The changes in modes at individual zone level are very small, with 2,250 houses and 4,250 jobs, spread across nearly 300 zones.

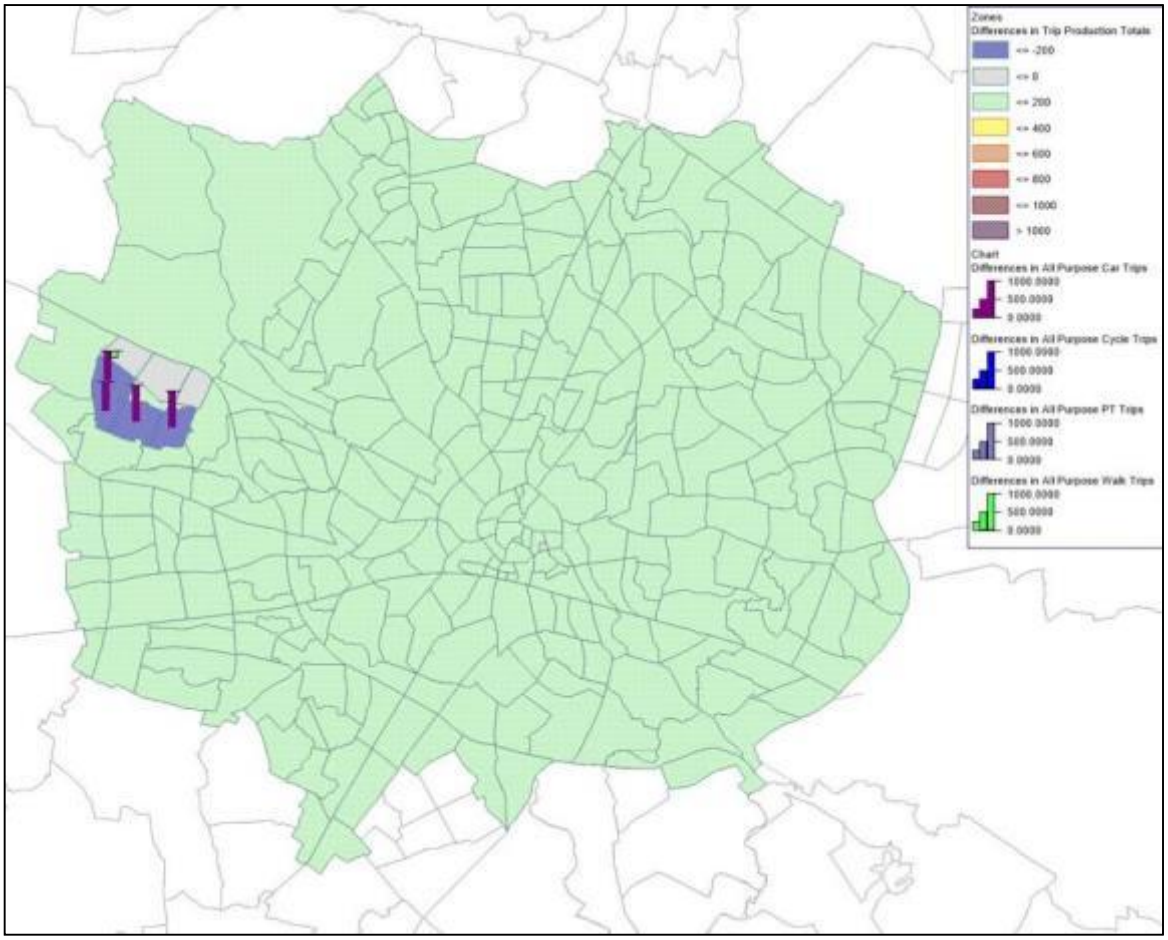


Figure 7.5 :Changes in Total Trip Productions by Mode in Coventry Local Authority between 2034 Local Plan Scenario 3 and Scenario 1

7.6 TRIP DISTRIBUTION

7.6.1 The trip distributions to and from the Eastern Green development are shown for the AM and PM peak, in Figure 7.6 and Figure 7.7, respectively.

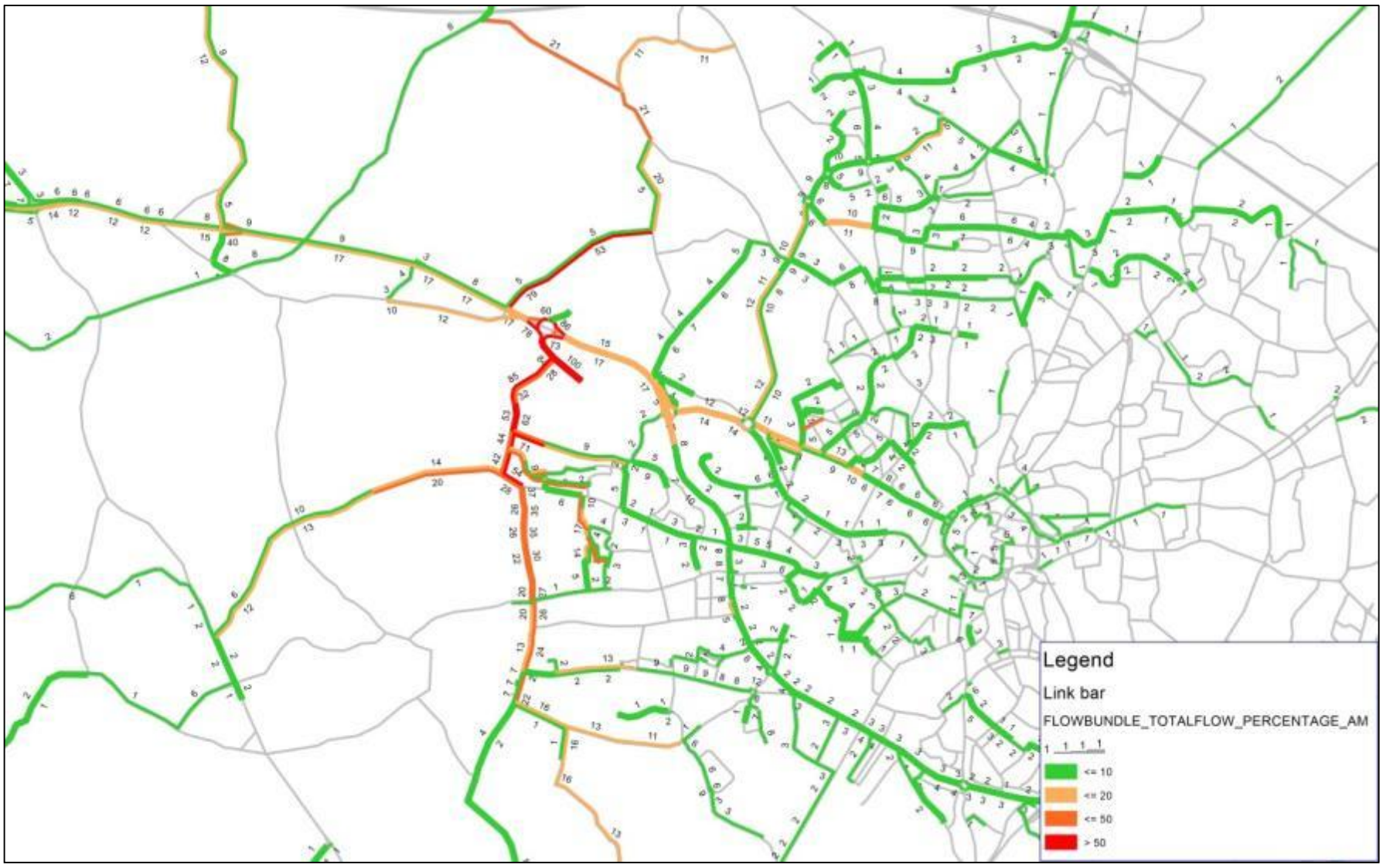


Figure 7.6: 2034 Scenario 1 AM Peak - Eastern Green Origin & Destinations as a Percentage of the Total Traffic Flow on Network

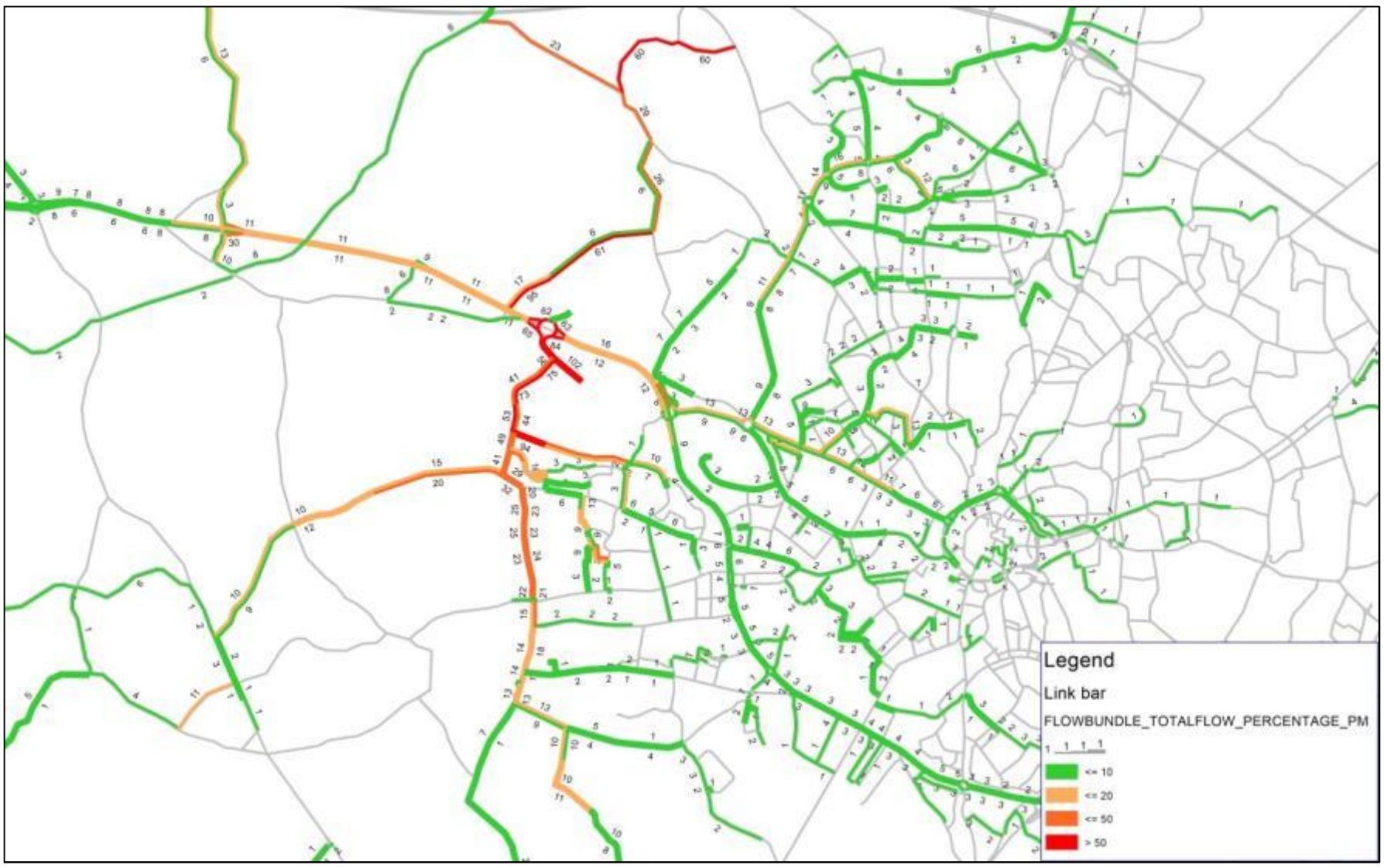


Figure 7.7: 2034 Scenario 1 PM Peak - Eastern Green Origin & Destinations as a Percentage of the Total Traffic Flow on Network

7.6.2 Figure 7.6 and Figure 7.7 show the key routes for car trips to and from the development. The plots show that in both the AM and PM peak there is a strong draw of commuting trips both westbound towards Birmingham, east towards Coventry and south towards Kenilworth.

7.7 PEAK HOUR TRAFFIC

7.7.1 Highway network statistics have been extracted from the Scenario 1 and Scenario 3 models, as shown in Table 7.1, for the Coventry Local Authority area. The roads from which these statistics have been extracted have been illustrated previously in Chapter 5, within Figure 5.8.

Table 7.1: Coventry Local Authority Highway Network Statistics Scenario 3 vs Scenario 1

Metric	AM Peak				PM Peak			
	Scenario 1	Scenario 3	Difference	% Difference	Scenario 1	Scenario 3	Difference	% Difference
Link Cruise Time (Veh/hrs)	11,370	11,221	- 149	-1.31%	11,624	11,501	- 123	- 1.06%
Total Travel Time (Veh/Hrs)	14,504	14,300	- 203	-1.40%	14,441	14,279	- 162	- 1.12%
Total Network Delay (Veh/Hrs)	3,640	3,568	- 72	-1.98%	3,374	3,347	- 27	- 0.81%
Total Travel Distance (Veh/Kms)	802,621	790,701	- 11,919	-1.49%	822,924	811,834	- 11,090	- 1.35%
Average Speed (km/h)	55.3	55.3	- 0.046	-0.08%	57.0	56.9	- 0.13	- 0.23%

7.7.2 The highway network statistics indicate that between Scenario 1 and Scenario 3, the overall impact in the Coventry Local Authority area is very small. There are slight reductions in travel time and travel distance in Scenario 3 and slight decreases in speed, but overall the additional homes and jobs at Eastern Green do not have a significant impact on the performance of the overall highway network in the Coventry Local Authority area.

7.7.3 Overall highway statistics were also extracted for a smaller area around the Eastern Green site, illustrated in Figure 7.8. Table 7.2 presents the comparisons of the highway statistics for this smaller area.

Table 7.2: Eastern Green Area Highway Network Statistics Scenario 3 vs Scenario 1

Metric	AM PEAK				PM PEAK			
	Scenario 1	Scenario 3	Difference	% Difference	Scenario 1	Scenario 3	Difference	% Difference
Link Cruise Time (Veh/hrs)	2,674	2,575	-100	-4%	2,772	2,699	-73	-3%
Total Travel Time (Veh/Hrs)	3,427	3,333	-95	-3%	3,388	3,298	-90	-3%
Total Network Delay (Veh/Hrs)	908	893	-15	-2%	779	772	-7	-1%
Total Travel Distance (Veh/Kms)	155,152	148,330	-6,822	-4%	161,523	156,140	-5,383	-3%
Average Speed (km/h)	45.3	44.5	-1	-2%	47.7	47.3	-0	-1%

7.7.4 The highway network statistics show that without the Eastern Green development in the local area there is a reduction in network delay of up to 2% and a reduction in travel distance, of up to 4%. Average speed reduces by just under 1 kph in the area in the AM peak. This suggests that within the area assessed the full Eastern Green development does not have significant impacts on the performance of the local highway network.

Figure 7.8: Eastern Green Highway Network

7.7.5 The difference in Volume/Capacity (V/C) Ratio on network links between Scenario 1 and Scenario 3 are shown below in Figure 7.9 and Figure 7.10. These difference plots illustrate that the capacity impacts on the network are quite localised. As the highway network around the proposed new grade separated junction is new, comparisons in this area against the base year are not possible, hence why they are blank in the figures below. Further on in this section the V/C ratios will be presented on the A45 with and without the Eastern Green development.

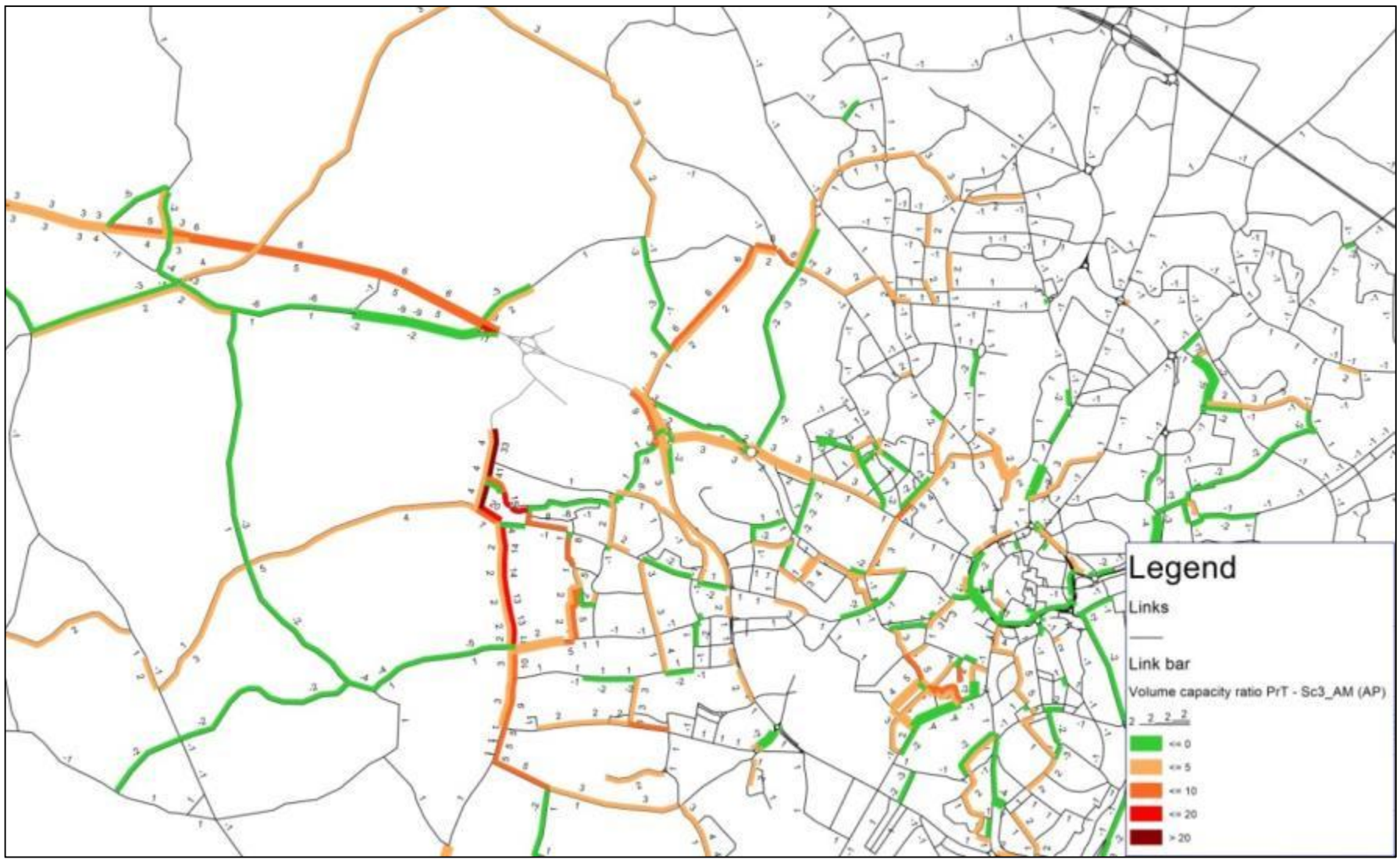


Figure 7.9: AM Peak Scenario 1 vs Scenario 3 V/C Ratio Difference Plot

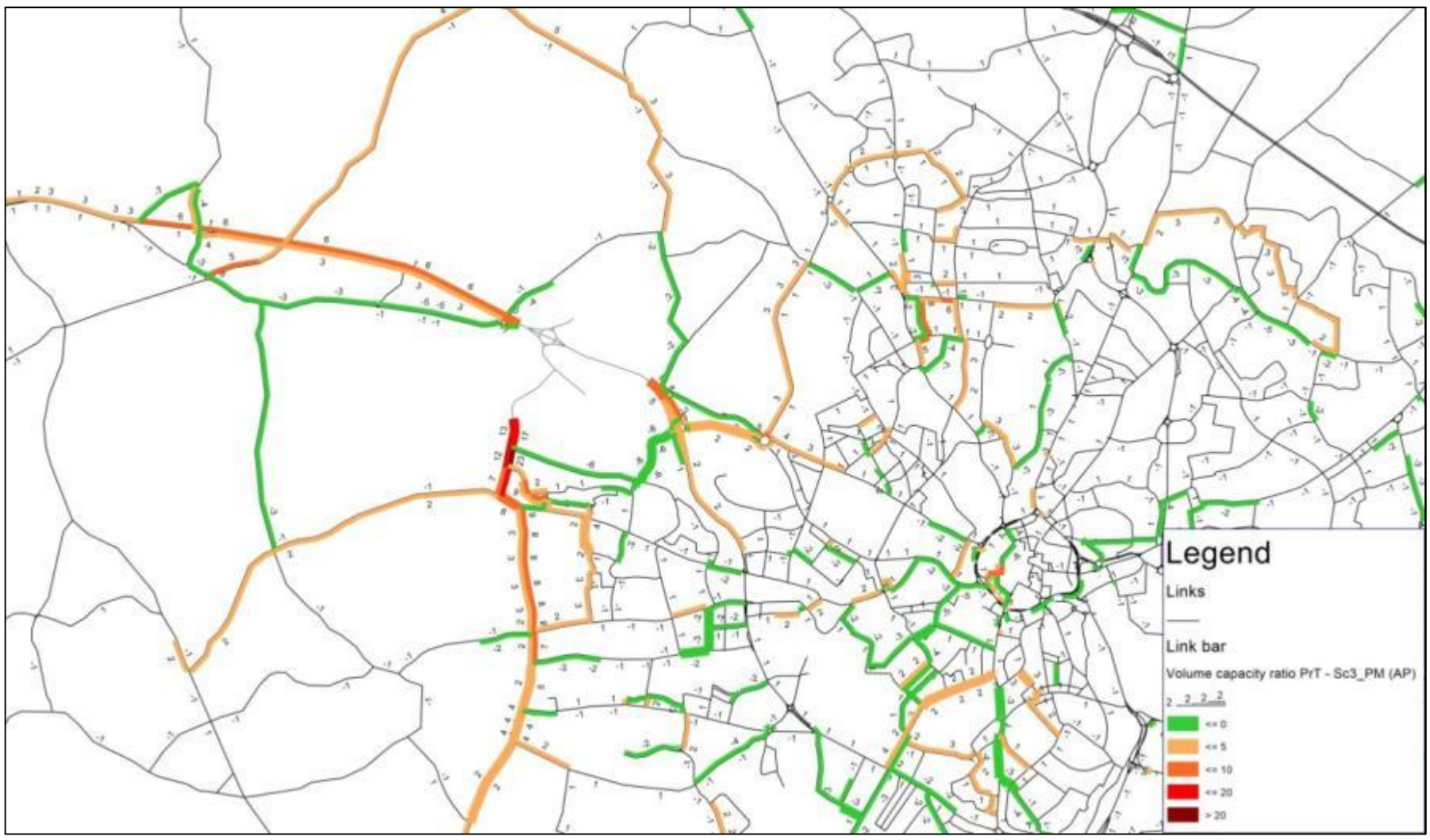


Figure 7.10: PM Peak Scenario 1 vs Scenario 3 V/C Ratio Difference Plot

7.7.6 Figure 7.9 and Figure 7.10 show that the greatest increase in V/C ratio occurs on Pickford Green Road and Banner Lane, with a smaller increase on the A45. Table 7.3 shows the Volume/ Capacity ratio for specific locations around the Eastern Green area, shown in Figure 7.11.

Table 7.3: Volume/ Capacity Scenario 1 vs Scenario 3

Highway Network	Direction	AM Peak			PM Peak		
		Scenario 1	Scenario 3	Difference	Scenario 1	Scenario 3	Difference
A45 East of New Junction	EB	58%	54%	-4%	64%	56%	-8%
	WB	66%	57%	-9%	65%	60%	-5%
Pickford Green Lane	NB	20%	16%	-4%	25%	13%	-12%
	SB	44%	11%	-33%	35%	18%	-17%
A45 West of New Junction	EB	61%	55%	-6%	60%	54%	-6%
	WB	63%	58%	-5%	59%	56%	-3%
Broad Lane	EB	25%	17%	-8%	14%	11%	-3%
	WB	20%	21%	1%	22%	22%	0%
Banner Lane	NB	25%	22%	-3%	43%	41%	-2%
	SB	71%	57%	-14%	44%	36%	-8%

7.7.7 The table shows that the V/C is higher in Scenario 1 compared to Scenario 3 in all locations around Eastern Green; however the increases are small, under 10% with the only exception to this on Pickford Green Lane and Banner Lane where the development connects onto the main highway network. None of the roads around the development has an unacceptably high V/C ratio in Scenario 1; they are deemed to be able to cope with the increase in traffic from Eastern Green.

Figure 7.11: Locations for Eastern Green V/C Table

7.7.8 To further understand the impact that the development has, journey time routes along the A45 through to Holyhead Road and along Cromwell Lane have been considered. The routes are illustrated in Figure 7.12 to Figure 7.14 and the results are presented in Table 7.4.

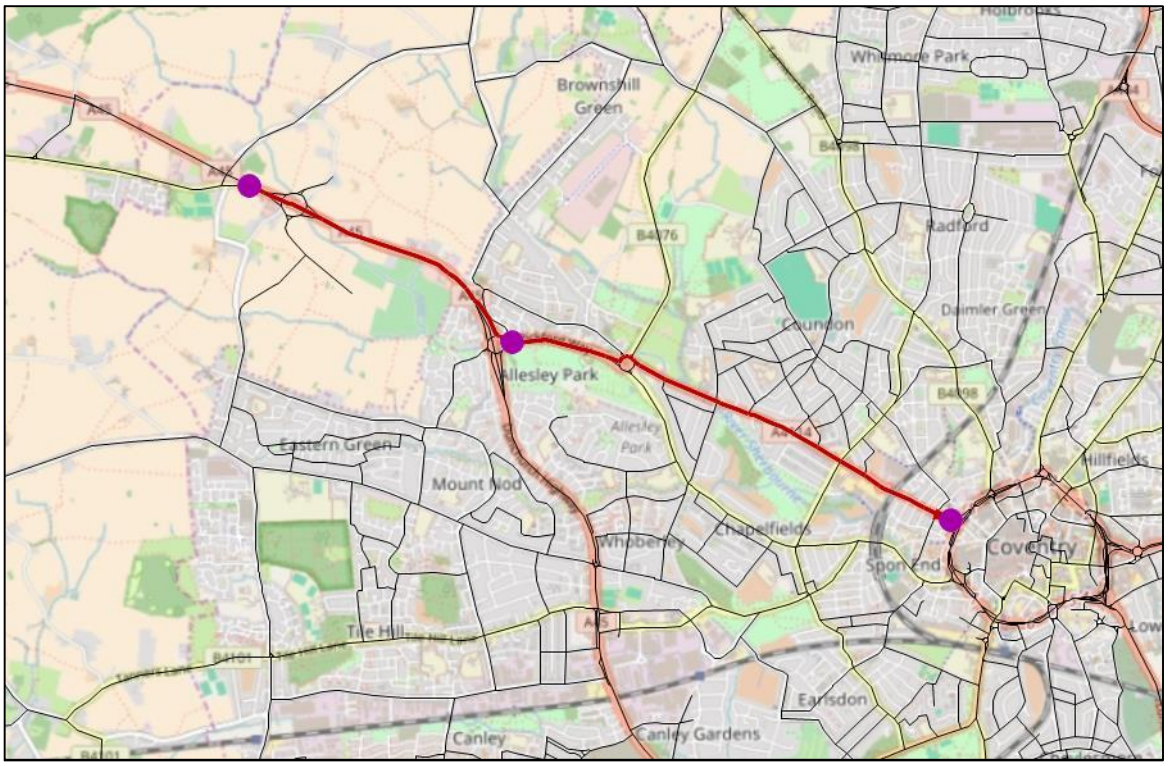


Figure 7.12 Scenario 3 Journey Time Route A along A45 through to Holyhead Road

Figure 7.13: Scenario 3 Journey Time Route B along Cromwell Lane

Figure 7.14: Scenario 3 Journey Time Route C along Broad Lane

Table 7.4: Journey Time Route Comparison Scenario 1 vs Scenario 3

DIRECTION	AM PEAK				PM PEAK			
	SCENARIO 1	SCENARIO 3	DIFFERENCE	% DIFFERENCE	SCENARIO 1	SCENARIO 3	DIFFERENCE	% DIFFERENCE
ROUTE A EB	14 MIN 17 S	14 MIN 37 S	+ 20 S	2.3%	9 MIN 32 S	9 MIN 13 S	- 19 S	-3.3%
ROUTE A WB	10 MIN 7 S	9 MIN 42 S	- 25 S	-4.1%	12 MIN 43 S	12 MIN 19 S	- 24 S	-3.1%
ROUTE B NB	7MIN 51 S	7MIN 23 S	- 28	-6.3%	7 MIN 57 S	7 MIN 41 S	- 16 S	-3.4%
ROUTE B SB	8MIN 42 S	8 MIN S	-42S	-8.8%	7 MIN 25 S	6 MIN 59 S	- 26 S	-5.8%
ROUTE C EB	4MIN 52SS	4MIN 48 S	-4S	-1.3%	4 MIN 29 S	4 MIN 30 S	+ 1 S	0.4%
ROUTE C WB	4MIN 20S	4MIN 22S	-2S	1%	4 MIN 47 S	4 MIN 47 S	0 S	0.0%

7.7.9 The journey time comparisons between Scenario 1 and Scenario 3 show slightly longer journey times with the Eastern Green development in place. However the increases in journey times in Scenario 1 compared to Scenario 3 are small: less than 10% or a maximum of 42 seconds. The only exception to this is Route A EB which takes longer in Scenario 3 compared to Scenario 1 which is a result of local re-routing.

7.8 JUNCTION PERFORMANCE

7.8.1 The CASM HAM does not model highway junctions in detail, but it can highlight junctions which are experiencing more delay in the 2034 Local Plan Scenario 1 compared to Scenario 3. Figure 7.15 illustrates the junction delay experienced in the AM peak 2034 Local Plan Scenario 1 highlighting the average delay in 20 second increments. Scenario 1 assumes that Eastern Green houses and employment is built out.

Figure 7.15: AM Peak 2034 Scenario 1 Average Junction Delay

7.8.2 Figure 7.15shows that in Scenario1 in the Eastern Green area, that the majority of junctions have an average delay of 20 seconds or less with a handful having between 40 and 60 seconds in the wider area around the development. Further assessment of the junction performance using

standalone junction models would be required in the Eastern Green local area to ensure they operate effectively with the proposals.

7.8.3 Figure 7.16 shows the junction performance without the Eastern Green development (Scenario 3) in the AM peak.

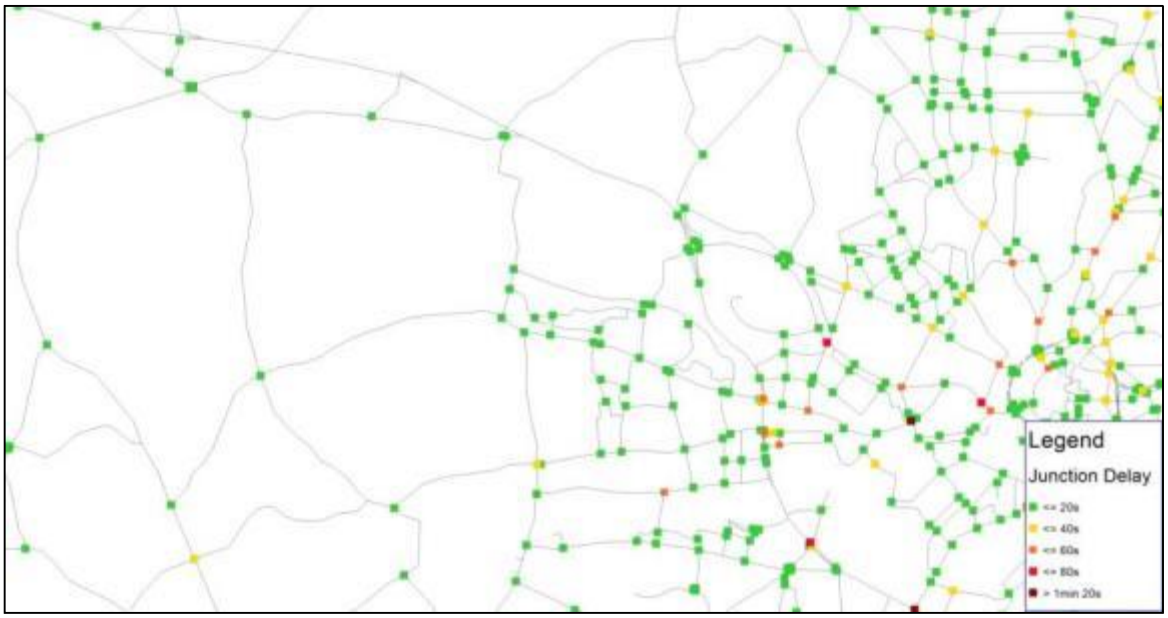


Figure 7.16: AM Peak 2034 Scenario 3 Average Junction Delay

7.8.4 Figure 7.16 shows that in Scenario 3 most junctions are operating without significant delays around the Eastern Green area.

7.8.5 Figure 7.17 illustrates the junctions which experience an increase in average delay between Scenario 3 and 1. This shows that all increases in junction delay around the Eastern Green development site are 20 seconds or less, which is not of significant concern. However it is advised that assessment would be required to assess the localised impacts of the development within standalone junction models to ensure that they would still operate effectively.

Figure 7.17: AM Peak 2034 Scenario 1 – Scenario 3 Average Junction Delay

7.8.6 Figure 7.18 illustrates the junction delay experienced in the PM peak 2034 Local Plan Scenario 1 highlighting the average delay in 20 second increments.

Figure 7.18: PM Peak 2034 Scenario 1 Average Junction Delay

7.8.7 Figure 7.18 shows that in Scenario1 in the Eastern Green area the majority of junctions have a delay of 20 seconds or less with a few having between 40 and 60 seconds in the wider area around the development.

7.8.8 Figure 7.19 shows the junction performance without the Eastern Green development (Scenario 3) in the PM peak.

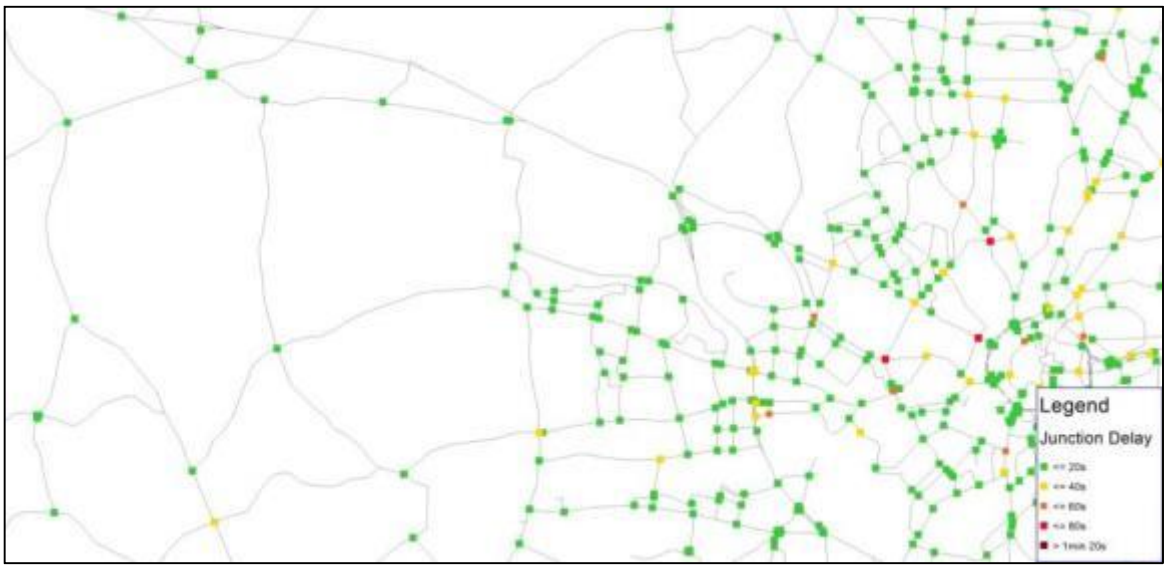


Figure 7.19: PM Peak 2034 Scenario 3 Average Junction Delay

7.8.9 Figure 7.19 shows that in Scenario 3 most junctions close to the site have an average delay of 20 seconds or less.

7.8.10 Figure 7.20 illustrates the junctions which experience an increase in delay between Scenario 3 and 1. This shows that all increases in average delay around Eastern Green are 20 seconds or less which is not of significant concern. However it is advisable to assess the localised impacts of the development within standalone junction models to ensure that they would still operate effectively.

Figure 7.20: PM Peak 2034 Scenario 1 – Scenario 3 Average Junction Delay

7.9 SUMMARY

7.9.1 2034 Scenario 3 compared against Scenario 1 within Coventry and the Eastern Green area has the following impacts:

- Scenario 3 has no Eastern Green development within it and the houses and jobs associated with the development area are spread across the Coventry Local Authority area
- Key roads which car trips use to and from Eastern Green development include A45, Pickford Green Lane, Banner Lane and Cromwell Lane
- Overall highway network performance across Coventry is not significantly affected by the Eastern Green development
- In the Eastern Green area, Pickford Green and Banner Lane experience increases in V/C ratio, however all increases that occur can all be accommodated within the link capacity of the existing network.
- There are some junctions around the Eastern Green area which experience an increase in delays as a result of the proposed development
- Additional junction modelling would be required to assess the localised impacts of the full Eastern Green development to ensure the junctions in the close vicinity operate well in the future.

8 LOCAL PLAN SCENARIO 4 RESULTS

8.1 INTRODUCTION

8.1.1 This chapter of the report presents the results of the 2034 CASM Local Plan Scenario 4 and compares them to the 2034 CASM Local Plan Scenario 1. The comparisons undertaken include changes in:

- Population
- Trip generation over a 12-hour period
- Mode choice
- Peak hour highway network performance

8.1.2 In addition to this the Cromwell Lane local plan site is interrogated in more detail to understand the impact this site has on the highway network within and around Coventry.

8.2 POPULATION CHANGES

8.2.1 The changes in population in 2034 Local Plan Scenario 4 compared to 2034 Local Plan Scenario 1 are graphically shown in Figure 8.1. This shows that the development from the Cromwell Lane area has been removed and as a result the growth in population has been spread across Coventry Local Authority area.

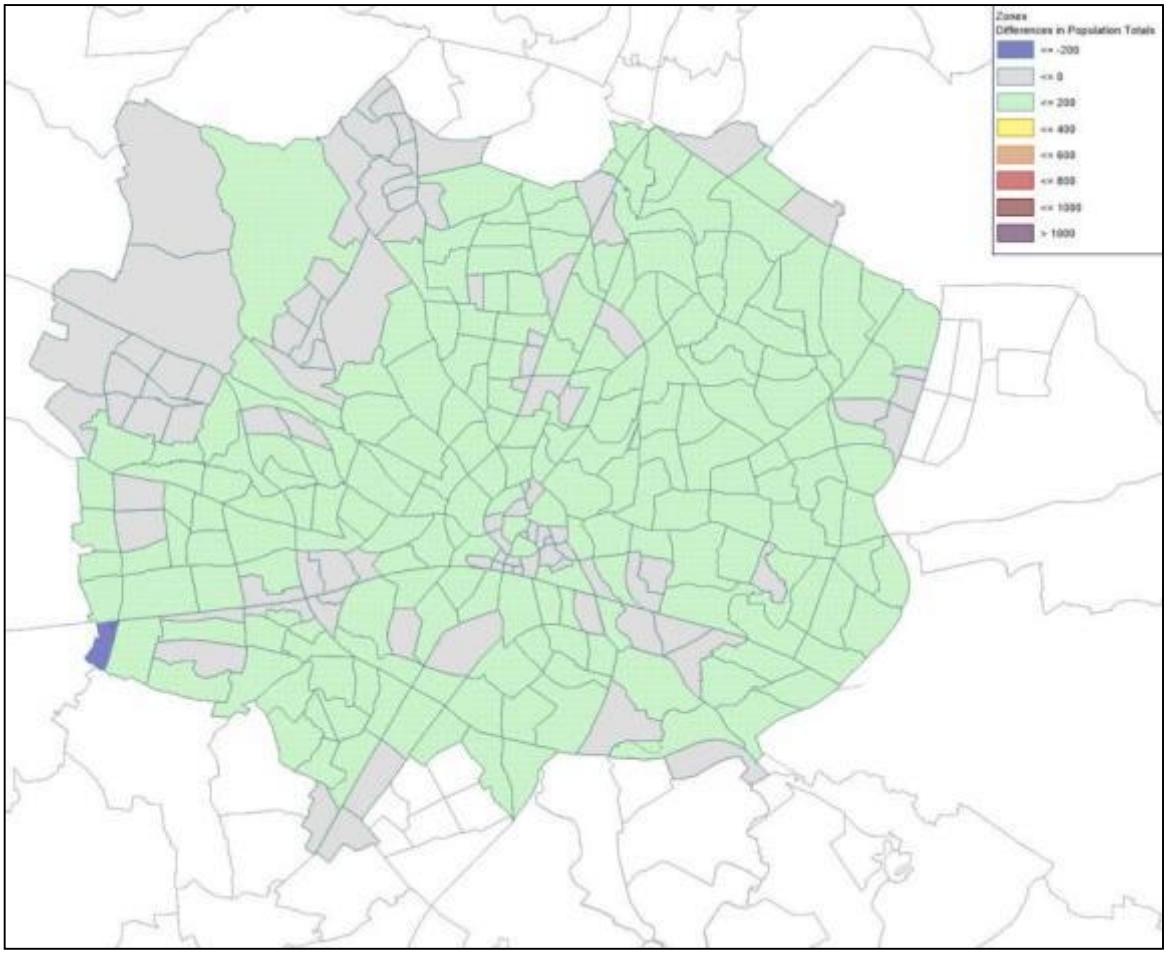


Figure 8.1: Changes in Population within Coventry Local Authority between 2034 Local Plan Scenario 4 and Scenario 1

8.3 TRIP GENERATION CHANGES

The changes in population shown in Figure 8.1 are translated into changes in trips generated in the 2034 Scenario 4 CASM TDM over a 12-hour period, as shown Figure 8.2.

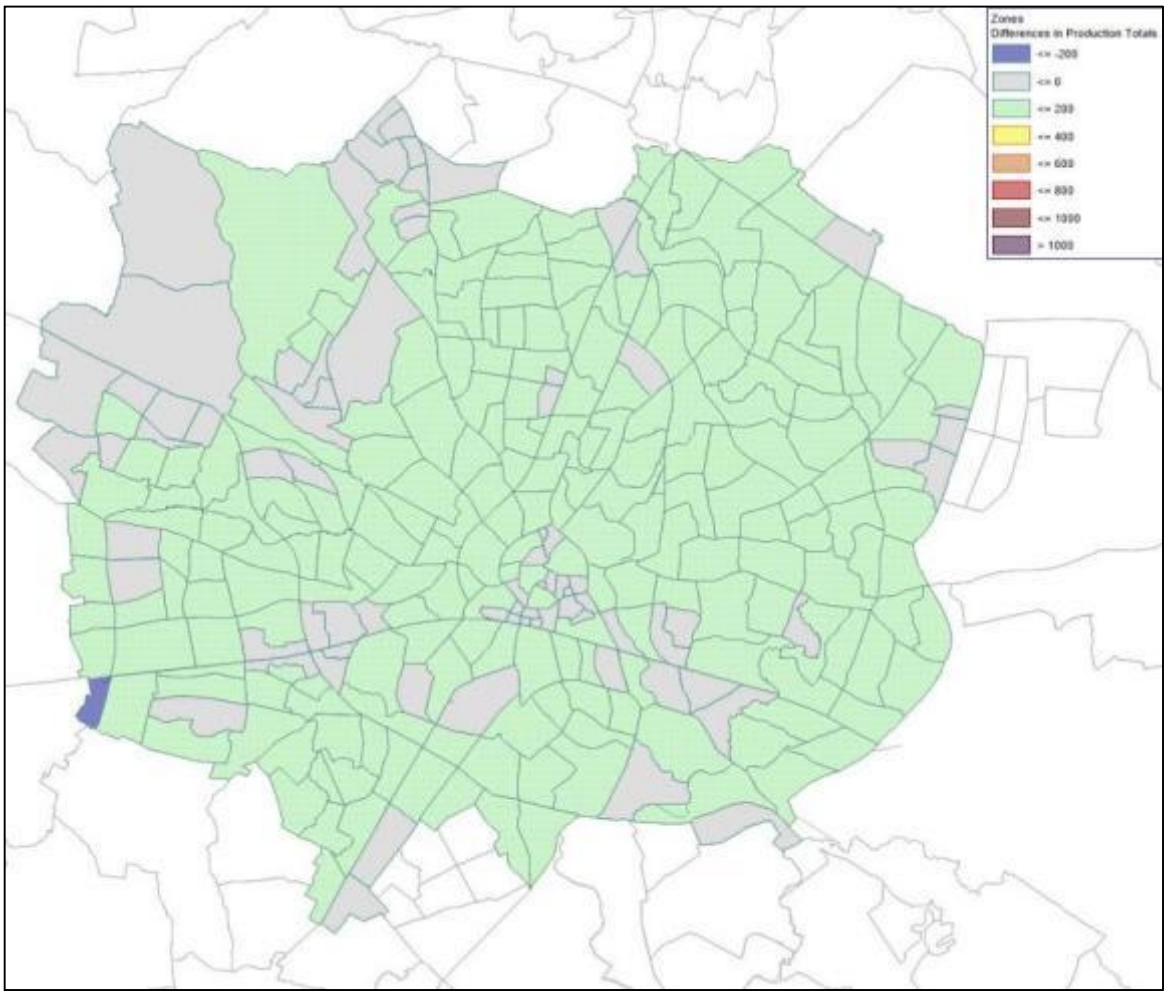


Figure 8.2: Changes in Total Trip Productions in Coventry Local Authority between 2034 Local Plan Scenario 4 and Scenario 1

8.4 MODE CHOICE CHANGES

8.4.1 Figure 8.3 shows the change in mode choice between Scenario 1 and Scenario 4. It shows the reduction in travel demand from the Cromwell Lane site with increasing travel demand across the Coventry Local Authority area. The changes in modes at individual zone level are very small, with 240 homes spread across nearly 300 zones.

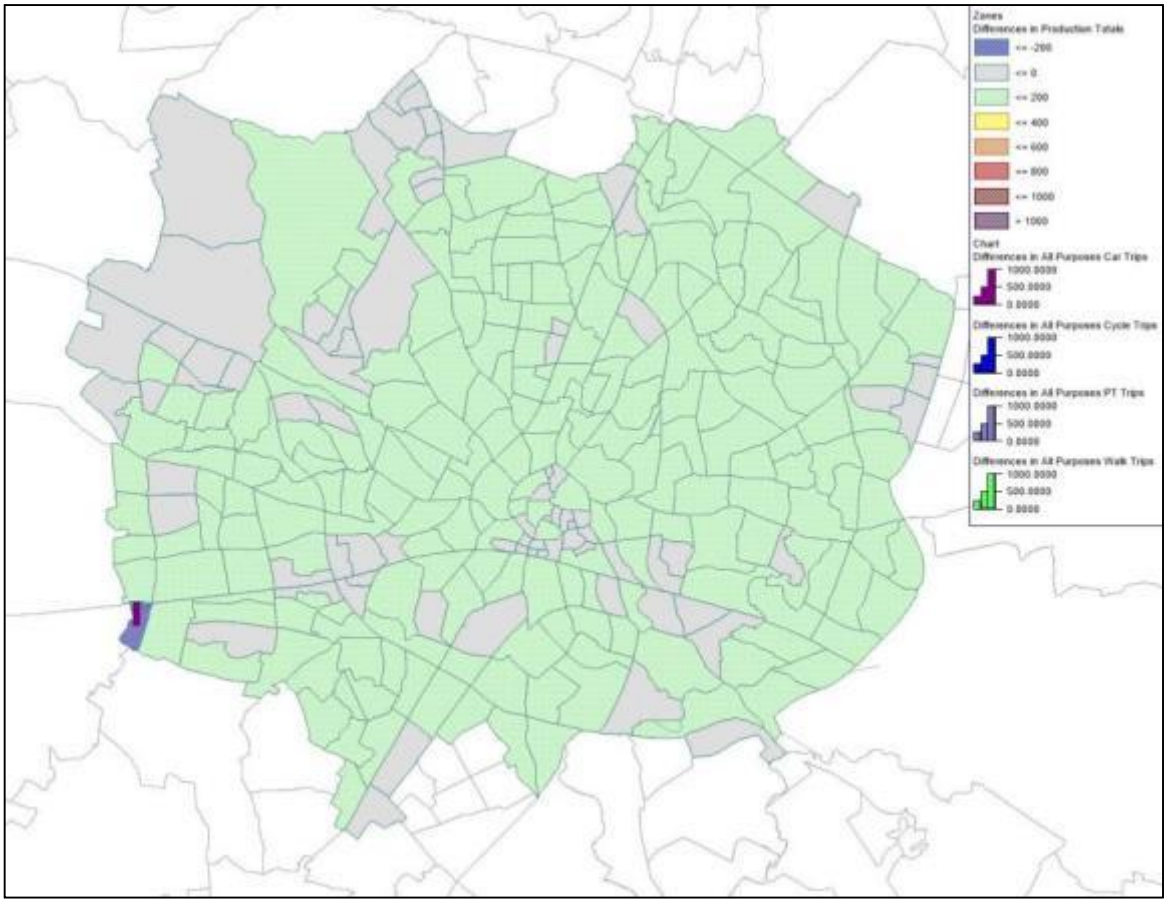


Figure 8.3 :Changes in Total Trip Productions by Mode in Coventry Local Authority between 2034 Local Plan Scenario 4 and Scenario 1

8.5 TRIP DISTRIBUTION

8.5.1 The trip distributions to and from the Cromwell Lane development are shown below for the AM and PM peak, in Figure 8.4 and Figure 8.5, respectively.

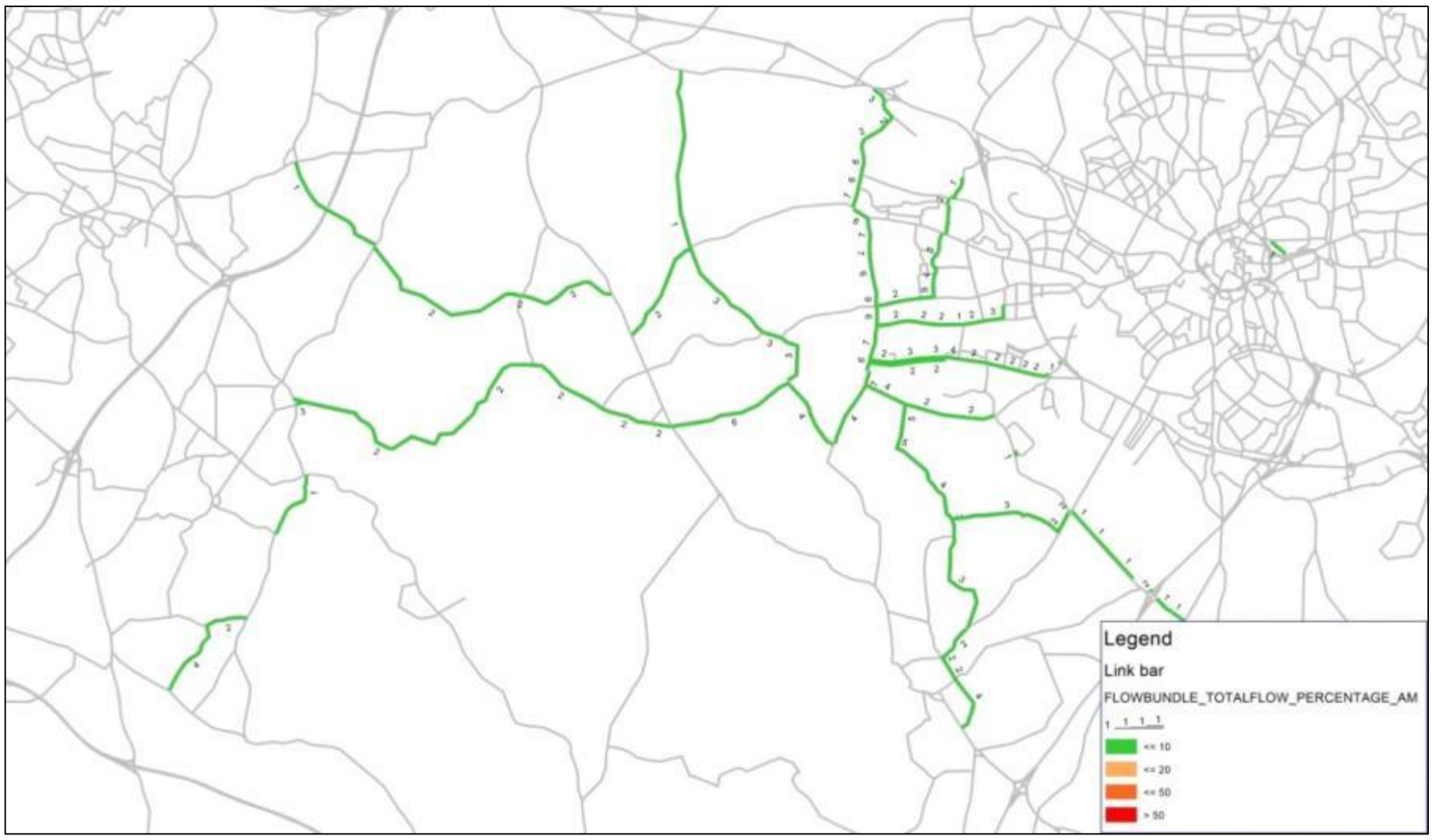


Figure 8.4: 2034 Scenario 1 AM Peak - Cromwell Lane Origin & Destination as a Percentage of the Total Traffic Flow on Network

Figure 8.5: 2034 Scenario 1 PM Peak - Cromwell Lane Origin & Destination as a Percentage of the Total Traffic Flow on Network

8.5.2 Figure 8.4 and Figure 8.5 show the key routes that car trips to and from the development will use. The plots show that in both the AM and PM peak there is a draw of commuting trips towards Coventry and westbound towards Birmingham. It is also noticeable that the volume of trips as a percentage of the traffic flow for Cromwell Lane is significantly lower than both Keresley and Eastern Green, which is because the proposed development for Cromwell Lane is only 240 homes, compared to 3,100 at Keresley and 2,250 homes and 4,250 jobs at Eastern Green. Therefore the proposed trips have a smaller impact on the highway network.

8.6 PEAK HOUR TRAFFIC

8.6.1 Highway network statistics have been extracted from the Scenario 1 and Scenario 4 models, as shown below in Table 8.1. These statistics show that in Scenario 4, there are minimal changes, and the impact of the 240 dwellings within the Cromwell Lane development is not significant and bears little impact on the wider network. As aforementioned, the links from which these statistics have been extracted have been illustrated previously in Chapter 5, within Figure 5.8

Table 8.1: Coventry Local Authority Highway Network Statistics Scenario 4 vs Scenario 1

Metric	AM PEAK				PM PEAK			
	Scenario 1	Scenario 4	Difference	% Difference	Scenario 1	Scenario 4	Difference	% Difference
Link Cruise Time (Veh/hrs)	11,370	11,354	- 16	- 0.14%	11,624	11,603	- 21	- 0.18%
Total Travel Time (Veh/Hrs)	14,504	14,437	- 67	- 0.46%	14,441	14,419	- 22	- 0.15%
Total Network Delay (Veh/Hrs)	3,640	3,579	- 67	- 1.68%	3,374	3,386	+ 12	+ 0.34%
Total Travel Distance (Veh/Kms)	802,621	801,710	- 911	- 0.11%	822,924	821,681	- 1,243	- 0.15%
Average Speed (km/h)	55.3	55.5	+ 0.2	+ 0.35%	57.0	57.0	0.00	0.00%

8.6.2 Overall highway statistics were also extracted for a smaller area around the Cromwell Lane site, illustrated in Figure 8.6. Table 8.2 presents the comparisons of the highway statistics for this smaller area.

Table 8.2: Cromwell Lane Local Area Highway Network Statistics Scenario 4 vs Scenario 1

Metric	AM PEAK				PM PEAK			
	Scenario 1	Scenario 4	Difference	% Difference	Scenario 1	Scenario 4	Difference	% Difference
Link Cruise Time (Veh/hrs)	897	891	-6	-1%	837	834	-4	0%
Total Travel Time (Veh/Hrs)	1,101	1,090	-10	-1%	983	982	-1	0%
Total Network Delay (Veh/Hrs)	225	220	-5	-2%	172	175	3	1%
Total Travel Distance (Veh/Kms)	52,845	52,515	-330	-1%	49,775	49,538	-237	0%
Average Speed (km/h)	48.0	48.2	0	0%	50.6	50.4	-0	0%

8.6.3 The highway network statistics shows that without the Cromwell Lane development in the local area there is a reduction in network delay of 2% in the AM peak and a reduction in travel distance of 1%. Average speed remains very similar in the area in both peaks. This suggests that within the area assessed the full Cromwell Lane development does not have significant impacts on the performance of the local highway network.

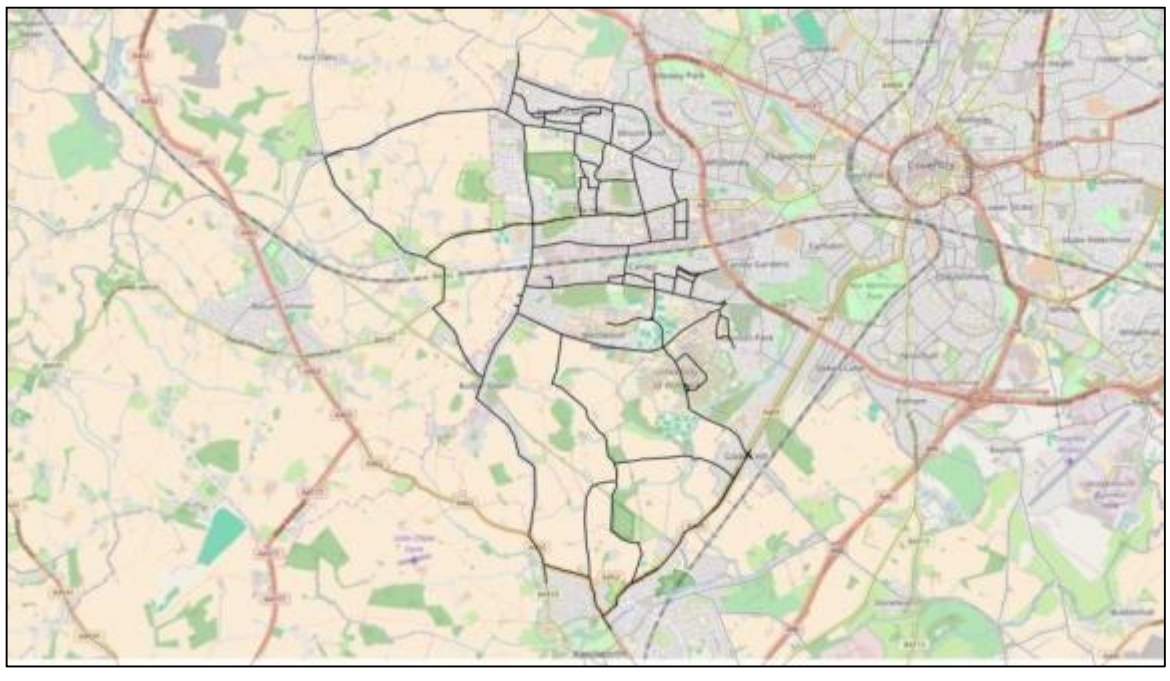


Figure 8.6: Cromwell Lane Highway Network

8.6.4 The differences in Volume/Capacity ratio along Cromwell Lane between Scenario 1 and Scenario 4 in the AM and PM peaks are illustrated in Figure 8.7 and Figure 8.8, respectively. The plots show that in Scenario 1 as a result of the Cromwell Lane development there is increased V/C along Cromwell Lane and Charter Avenue, although the changes are small between 1 and 4%. Overall, the impact of the development on the volume/capacity ratio of the network in the site's vicinity is minimal.

Figure 8.7: AM Peak Scenario 1 vs Scenario 4 V/C Difference Plot

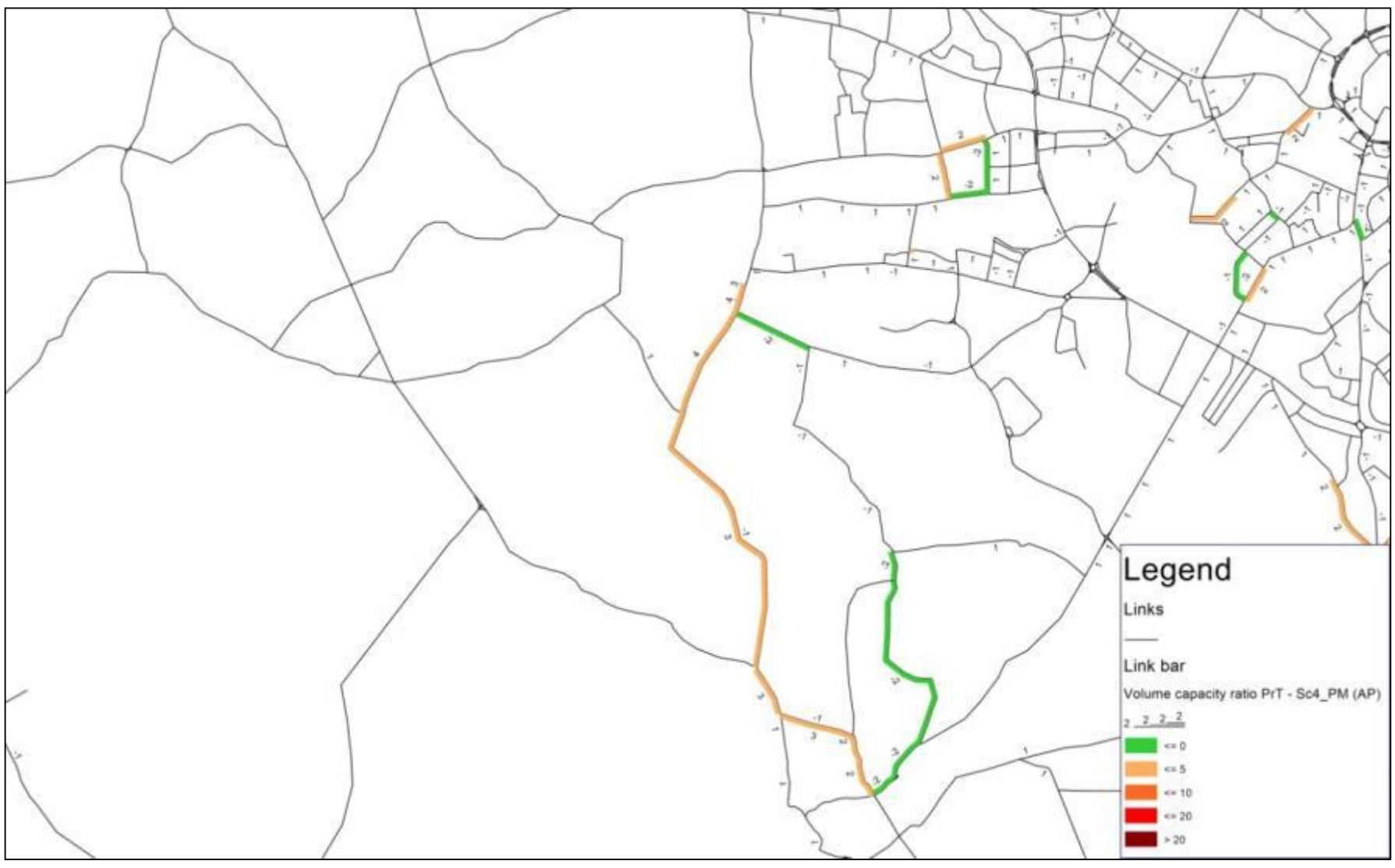


Figure 8.8: PM Peak Scenario 1 vs Scenario 4 V/C Difference Plot

8.6.5 To further understand the impact that the development has, a journey time route along Cromwell Lane has been considered. The route is illustrated in Figure 8.9, and the results are presented in Table 8.4. The increases in journey time along this route as a result of the development are very minimal, with the highest value being 3 seconds.

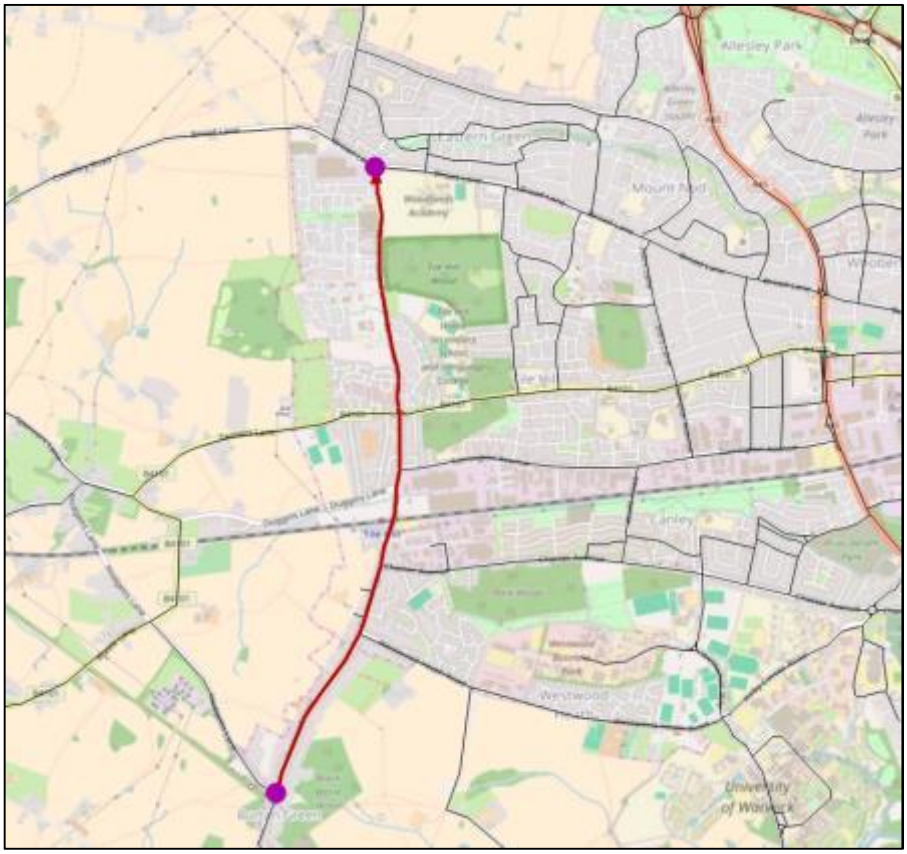


Figure 8.9: Scenario 4 Journey Time Route along Cromwell Lane

Table 8.3: Journey Time Route Comparison Scenario 1 vs Scenario 4

DIRECTION	AM PEAK			PM PEAK		
	SCENARIO 1	SCENARIO 4	DIFFERENCE	SCENARIO 1	SCENARIO 4	DIFFERENCE
NB	4 MIN 53 S	4 MIN 50 S	3 S	5 MIN 18 S	5 MIN 16 S	2 S
SB	5 MIN 57 S	5 MIN 57 S	0 S	4 MIN 38 S	4 MIN 37 S	1 S

8.7 JUNCTION PERFORMANCE

8.7.1 The CASM HAM does not model highway junctions in detail, but it can highlight junctions which are experiencing more delay in the 2034 Local Plan Scenario 1 compared to Scenario 4. Figure 8.10 illustrates the junction delay experienced in the AM peak 2034 Local Plan Scenario 1 highlighting the average delay in 20 second increments. Scenario 1 assumes the Cromwell Lane housing site is built.

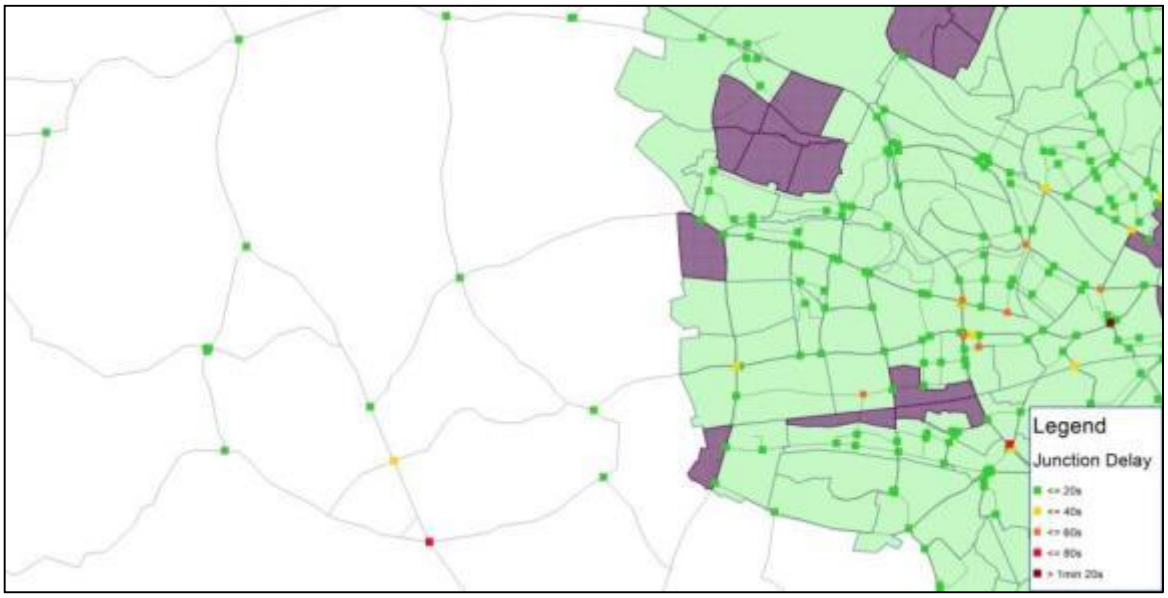


Figure 8.10: AM Peak 2034 Scenario 1 Average Junction Delay

8.7.2 Figure 8.10 shows that in Scenario1 in the Cromwell Lane area the majority of junctions have an average junction delay of 20 seconds or less with a handful having between 20 and 60 seconds close to the development, including the junction between Tile Hill Lane and Cromwell Lane. Individual junction modelling would be required to ensure these junctions operate well in the future.

8.7.3 Figure 8.11 shows the junction performance in Scenario 4 in the AM peak.

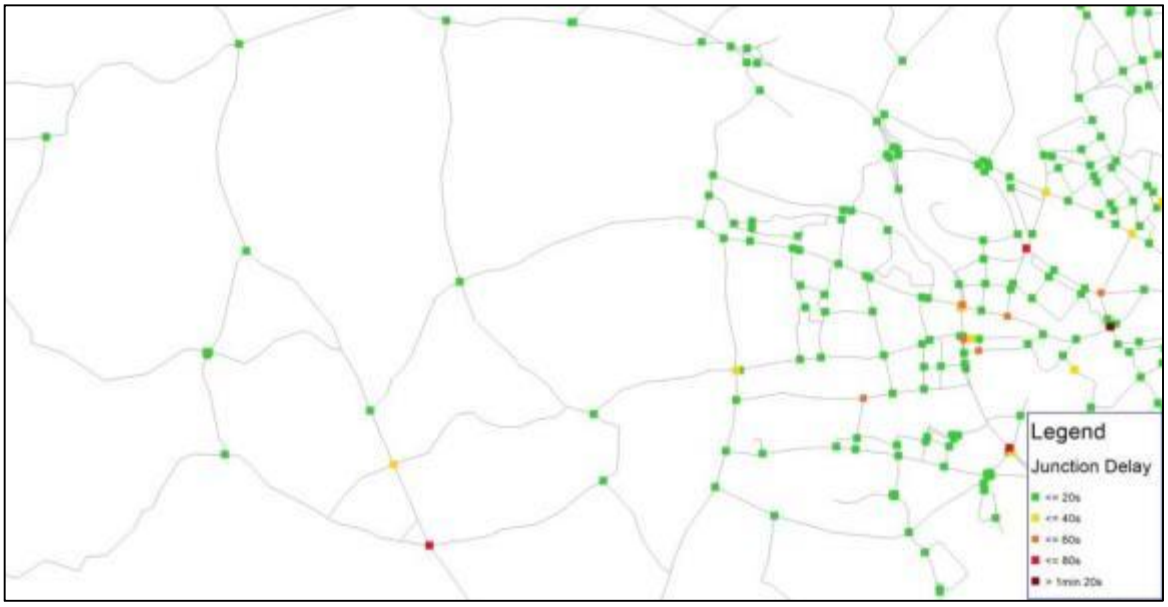


Figure 8.11: AM Peak 2034 Scenario 4 Average Junction Delay

8.7.4 Figure 8.11 shows that in Scenario 4 the junction between Tile Hill Lane and Cromwell Lane also has delay between 20-40 seconds which suggests the delay is occurring at this junction without the new homes at Cromwell Lane.

8.7.5 Figure 8.12 illustrates the junctions which experience an increase in average delay between Scenario 4 and 1. This shows that all increases in average delay around the Cromwell Lane site are 20 seconds or less which is not of significant concern. However it would be prudent to assess the localised impacts of the development within standalone junction models to ensure that they would operate effectively.

Figure 8.12: AM Peak 2034 Scenario 1 – Scenario 4 Average Junction Delay

8.7.6 Figure 8.13 illustrates the average junction delay experienced in the PM peak 2034 Local Plan Scenario 1 highlighting the average delay in 20 second increments.

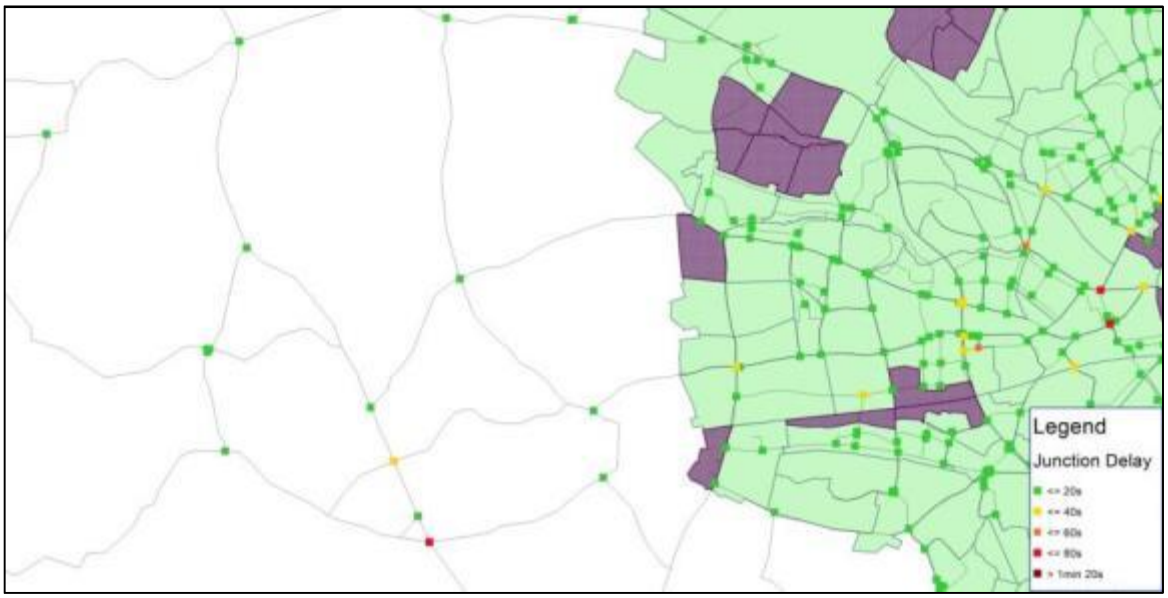


Figure 8.13: PM Peak 2034 Scenario 1 Average Junction Delay

8.7.7 Figure 8.13 shows that in Scenario1 in the Cromwell Lane area the majority of junctions have an average junction delay of 20 seconds or less with a handful having between 20 and 60 seconds close to the development, including the junction between Till Hill Lane and Cromwell Lane.

8.7.8 Figure 8.14 shows the junction performance in Scenario 4 in the PM peak.

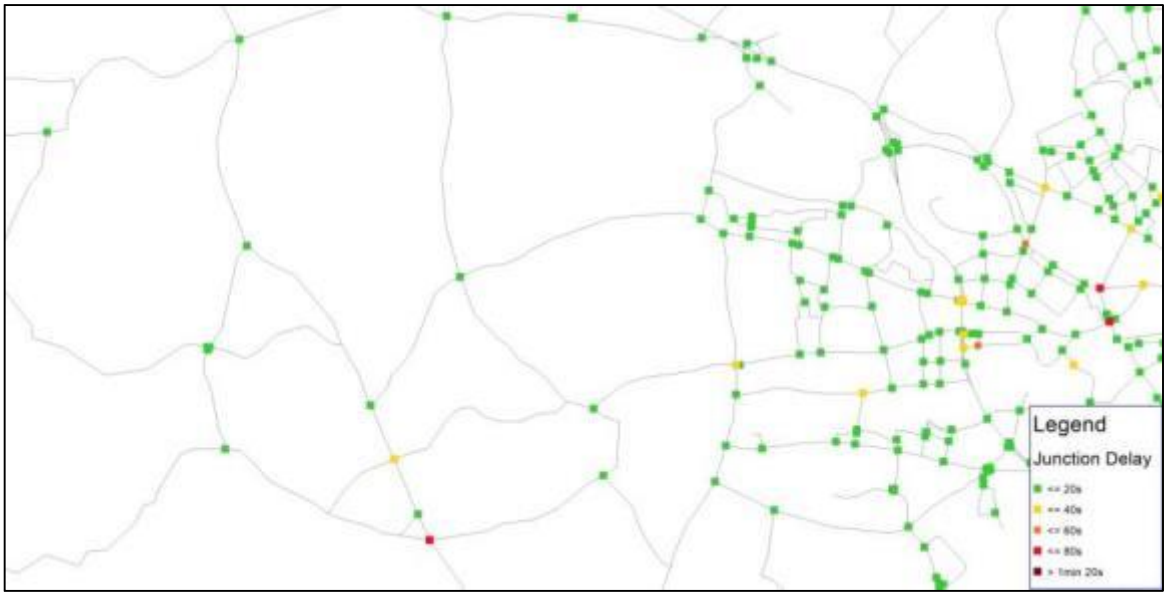


Figure 8.14: PM Peak 2034 Scenario 4 Average Junction Delay

8.7.9 Figure 8.14 shows that in Scenario 4 the junction between Tile Hill Lane and Cromwell Lane experiences a higher than average delay at a strategic level than adjacent junctions, both with and without the Cromwell Lane development.

8.7.10 Figure 8.15 illustrates the junctions which experience an increase in average delay between Scenario 4 and 1. This shows that all increases in average delay around the Cromwell Lane site are 20 seconds or less. However it would be prudent to assess the localised impacts of the development within standalone junction models to ensure that they would still operate effectively.

Figure 8.15: PM Peak 2034 Scenario 1 – Scenario 4 Average Junction Delay

8.7.11 Individual junction modelling has been undertaken in the Cromwell Lane area, representing 2016 traffic flows and future year flows with and without the Cromwell Lane development for the following junctions:

- Cromwell Lane / Westwood Heath Rd (priority junction)
- Cromwell Lane / Charter Avenue (priority junction)
- Station Avenue / Duggins Lane (priority junction)
- Station Avenue Torrington Avenue (priority junction)
- Banner Lane / Broad Lane (priority junction)
- Station Avenue / Tile Hill Lane / Banner Lane (signalised junction)

8.7.12 Observed traffic turning counts and queue length surveys were undertaken in July 2016 on two weekdays at all the junctions above during the AM (8:00-9:00) and PM (17:00-18:00) peak time periods. Individual junction models were generated using the 2016 traffic flows to represent the queuing and traffic volumes travelling through these junctions.

8.7.13 The ratio of volume to capacity (RFC) for the operation of the priority junctions in 2016 is shown in Table 8.4. The highest RFC for all approaches to the junction, from the peak 15 minutes, has been presented. Junctions which have an approach RFC of over 0.85 are considered to have congestion issues on that approach which require additional investigation and potentially mitigation.

Table 8.4: Cromwell Lane Junction RFC Performance 2016 Priority Junctions

	AM Peak	PM Peak
Cromwell Lane /Westwood Heath Rd	1.02	0.83
Cromwell Lane / Charter Avenue	0.61	0.94
Station Avenue / Duggins Lane	0.88	0.56
Station Avenue Torrington Avenue	0.22	0.27
Banner Lane / Broad Lane	0.76	0.98

8.7.14 Table 8.5 The tables show that the following junctions have capacity issues in 2016:

- Cromwell Lane /Westwood Heath Rd
- Cromwell Lane / Charter Avenue
- Station Avenue / Duggins Lane
- Banner Lane / Broad Lane

8.7.15 In the future with increased traffic growth the congestion issues occurring at these junction would be exacerbated.

8.7.1 For the signalised junction between Station Avenue, Tile Hill Lane and Banner Lane the PRC (Practical Reserved Capacity) which represents the percentage of available capacity at the junction is presented in Table 8.5. Junctions which have a negative PRC are considered to have congestion issues on that approach which require additional investigation and potentially mitigation. The results show that the junction operates within capacity on all approaches and there are no congestion issues in 2016.

Table 8.5: Cromwell Lane Junction Performance 2016 Signalised Junction

	AM Peak	PM Peak
Station Avenue / Tile Hill Lane / Banner Lane	23.6%	10.2%

8.7.2 The indicative impacts of a future scenario, with and without the Cromwell Lane development on these junctions is shown in Table 8.6 and Table 8.7.

Table 8.6: Cromwell Lane Future Year Junction Performance Priority Junctions

	AM Peak		PM Peak	
	Without Cromwell Lane	With Cromwell Lane	Without Cromwell Lane	With Cromwell Lane
Cromwell Lane /Westwood Heath Rd	1.11	1.13	0.85	0.90
Cromwell Lane / Charter Avenue	0.83	0.87	1.21	1.32
Station Avenue / Duggins Lane	1.10	1.15	0.64	0.66
Station Avenue Torrington Avenue	0.22	0.23	0.30	0.31
Banner Lane / Broad Lane	1.03	1.04	1.05	1.06

Table 8.7: Cromwell Lane Junction Future Year Performance Signalised Junction

	AM Peak		PM Peak	
	With Cromwell Lane	Without Cromwell Lane	With Cromwell Lane	Without Cromwell Lane
Station Avenue / Tile Hill Lane / Banner Lane	9.2%	8.9%	14.7%	12.7%

8.7.3 Table 8.6 and Table 8.7 show that the Cromwell Lane development has minimal impact on the junction performance and the junctions which are operating over capacity, do so in the future without the Cromwell Lane development in place. The tables indicate that the following junctions require further investigation into mitigation which could be adopted to improve the performance of these junctions in the future:

- Cromwell Lane /Westwood Heath Rd
- Cromwell Lane / Charter Avenue
- Station Avenue / Duggins Lane
- Banner Lane / Broad Lane

8.7.4 Detailed junction modelling reports can be requested through CCC if required.

8.8 SUMMARY

8.8.1 2034 Scenario 4 compared against Scenario 1 within Coventry and the Cromwell Lane area has the following impacts:

- Scenario 4 does not contain the Cromwell Lane development; the additional houses and trips are spread across Coventry
- Key roads which car trips use to and from the Cromwell Lane development include Cromwell Lane, Charter Avenue and Westwood Heath Road
- Overall highway network performance across Coventry and the localised Cromwell Lane area is not significantly affected by the Cromwell Lane development
- As a result of the Cromwell Lane development there is a very small increase in V/C ratio on Cromwell Lane and Charter Avenue, however the increases are small and the overall impact of the development on V/C ratio is minimal.
- The time to undertake journeys around the Cromwell Lane development only increases by 1-3 seconds, which is minimal, as a result of the Cromwell Lane development
- There are some junctions around the Cromwell Lane area which experience a slight increase in delay as a result of the Cromwell Lane development
- Some junction modelling around the Cromwell Lane area has been undertaken using traffic surveys from 2016
- The junction modelling indicates that some junctions and approaches currently have congestion issues and require additional investigation and potential mitigation
- In the future with increases in traffic flow the Cromwell Lane development has minimal impact on the junction performance and junctions which experience congestion issues in 2016 are exacerbated in the future
- Further investigation into potential mitigation measures at these junctions needs to be considered

9 SUMMARY OF LOCAL PLAN SCENARIOS

9.1 INTRODUCTION

9.1.1 This chapter summarises the impacts of each local plan scenario.

9.2 LOCAL PLAN SCENARIO 1

9.2.1 2034 Scenario 1 compared against the 2013 Base Year model within Coventry has the following impacts:

- 19% increase in population
- 18% increase in trips generated by all modes
- Proposed developments close to the city centre have a greater proportion of trips being made by public transport, walking and cycling
- Sites on the edge of the city centre generate predominantly car trips
- A greater proportion of trips starting in Coventry in the AM peak travels to areas outside of Coventry Local Authority
- A greater proportion of trips arriving in Coventry in the PM peak travels from areas outside of Coventry Local Authority
- An increase in the proportion of trips in Coventry travelling to/ from Coventry NW (Including Keresley and Eastern Green)
- An increase in the proportion of car trips travelling to Coventry SE (Whitley) in the AM peak and from Coventry SE in the PM peak
- 34% increase in vehicle/km's undertaken in Coventry which is a result of the increase in traffic as well as increases in distance travelled
- Up to a 37% increase in highway network delay per vehicle, equating to up to 34 seconds
- A reduction in average speed of 3 kph
- Junctions which experience the most increase in delays are on key routes in and around Coventry, particularly on the A45 and around the M6. There are 3 junctions in the AM and 4 junction in the PM which experience increases of over 1min 20seconds between 2013 and 2034. These should be assessed using individual junction models as and when planning applications in the local area come forward.

9.3 LOCAL PLAN SCENARIO 2

9.3.1 2034 Scenario 2 compared against Scenario 1 within Coventry and the Keresley area has the following impacts:

- Scenario 2 only has 800 houses at Keresley, additional houses and trips are spread across Coventry
- Key roads which cars use to and from Keresley include Bennetts Road and Tamworth Road which constitute up to 50% of development traffic in Scenario 1
- Overall highway network performance across Coventry is not significantly affected by the Keresley development

- In the Keresley area there is an increase in delay and travel distance as a result of Scenario 1, however average speeds remain similar
- As a result of the full Keresley development and the Link Road there is generally an increase in V/C ratio on roads leading to the development, however on Sandpits Lane and Tamworth Road V/C reduces as more traffic uses the new Link Road rather than the existing highway network
- There are some junctions around the Keresley area which experience an increase in delays as a result of the full Keresley development, these are relatively small
- Additional junction modelling would be required to assess the localised impacts of the full Keresley development to ensure the junctions in the close vicinity operate well in the future.

9.4 LOCAL PLAN SCENARIO 3

9.4.1 2034 Scenario 3 compared against Scenario 1 within Coventry and the Eastern Green area has the following impacts:

- Scenario 3 has no Eastern Green development within it and the houses and jobs associated with the development area are spread across the Coventry Local Authority area
- Key roads which car trips use to and from Eastern Green development include A45, Pickford Green Lane, Banner Lane and Cromwell Lane
- Overall highway network performance across Coventry is not significantly affected by the Eastern Green development
- In the Eastern Green area, Pickford Green and Banner Lane experience increases in V/C ratio, however all increases that occur can all be accommodated within the link capacity of the existing network.
- There are some junctions around the Eastern Green area which experience an increase in delays as a result of the proposed development
- Additional junction modelling would be required to assess the localised impacts of the full Eastern Green development to ensure the junctions in the close vicinity operate well in the future.

9.5 LOCAL PLAN SCENARIO 4

9.5.1 2034 Scenario 4 compared against Scenario 1 within Coventry and the Cromwell Lane area has the following impacts:

- Scenario 4 does not contain the Cromwell Lane development; the additional houses and trips are spread across Coventry
- Key roads which car trips use to and from the Cromwell Lane development include Cromwell Lane, Charter Avenue and Westwood Heath Road
- Overall highway network performance across Coventry and the localised Cromwell Lane area is not significantly affected by the Cromwell Lane development
- As a result of the Cromwell Lane development there is a very small increase in V/C ratio on Cromwell Lane and Charter Avenue, however the increases are small and the overall impact of the development on V/C ratio is minimal.
- The time to undertake journeys around the Cromwell Lane development only increases by 1-3 seconds, which is minimal, as a result of the Cromwell Lane development
- There are some junctions around the Cromwell Lane area which experience a slight increase in delay as a result of the Cromwell Lane development

- Some junction modelling around the Cromwell Lane area has been undertaken using traffic surveys from 2016
- The junction modelling indicates that some junctions and approaches currently have congestion issues and require additional investigation and potential mitigation
- In the future with increases in traffic flow the Cromwell Lane development has minimal impact on the junction performance and junctions which experience congestion issues in 2016 are exacerbated in the future
- Further investigation into potential mitigation measures at these junctions needs to be considered

10 KERESLEY LINK ROAD ASSESSMENT

10.1 INTRODUCTION

10.1.1 This chapter of the report summarises the work undertaken to generate 2034 CASM HAM with various levels of development at the Keresley SUE with and without the Keresley Link Road.

10.1.2 The objective of this study is to identify the impacts that the increasing number of houses at Keresley and the Keresley Link Road has on the highway network.

10.2 MODELLING INPUTS AND ASSUMPTIONS

10.2.1 The 2034 Coventry Local Plan Scenario 2 model (with Keresley consented development, no Keresley Link Road) was used as a basis for this assessment.

10.2.2 The scenarios which were assessed are:

- Scenario A2: 800 houses without Keresley Link Road
- Scenario B2: 1150 houses without Keresley Link Road
- Scenario C1: 1950 houses with Keresley Link Road
- Scenario C2: 1950 houses without Keresley Link Road
- Scenario D1 : 3100 houses with Keresley Link Road
- Scenario D2: 3100 houses without Keresley Link Road

10.2.3 All scenarios without the Link Road are tested with the 2034 Scenario 2 highway network, those with the Link Road use the 2034 Scenario 1 highway network.

10.2.4 Keresley development is represented within the CASM HAM within 11 zones, or areas as shown in Figure 10.1. The split of houses between these Keresley zones can be found in Table 10.1.

Figure 10.1: Keresley Zones

Table 10.1: Spilt of Keresley Houses

	ScA	ScB	ScC	ScD
Zone	**800**	**1150**	**1950**	**3100**
20711				67
20714			43	43
220001	350	350	471	471
220002			441	441
220003	100	100	218	218
220004	350	558	558	804
220005		143	219	219
220006				289
220007				86
220008				232
220009				232
Total	**800**	**1150**	**1950**	**3100**

10.2.5 The agreed vehicle trip rates were provided to WSP | Parsons Brinckerhoff in Table 10.2. The total number of trips for each scenario can be found in Table 10.3. It has been assumed that all these vehicles are car trips, and there are no LGV or HGV trips.

10.2.6 The CASM HAM has two car user classes:

- Car Work trips (trips made whilst people are working)
- Car Non Work trips (trips made whilst people are going to and from work, the shops, schools etc)

10.2.7 Trips are split between Car Work trips and Car Non Work trips based on the modal split in the 2034 Coventry Local Plan Scenario 1. Car Work trips and Car Non Work trips are also then distributed according to the trip distribution from the 2034 Coventry Local Plan Scenario 1.

Table 10.2: Keresley Trip Rate

AM			PM		
Arrivals/ Destinations	Departures/ Origins	Two Way	Arrivals/ Destinations	Departures/ Origins	Two Way
0.18	0.45	0.63	0.47	0.25	0.72

Table 10.3: Keresley Trip Generation

Scenario	Number of Houses	AM			PM		
		Arrivals/ Destinations	Departures/ Origins	Two Way	Arrivals/ Destinations	Departures/ Origins	Two Way
	Trip Rate	0.18	0.45	0.63	0.47	0.25	0.72
A	800	144	360	504	376	200	576
B	1151	207	518	725	541	288	829
C	1950	351	878	1229	917	488	1404
D	3102	558	1396	1954	1458	776	2233

10.3 RESULTS WITHOUT KERESLEY LINK ROAD

10.3.1 This section of the report presents the CASM outputs for the scenarios without the Keresley Link Road, showing:

- Volume Capacity Ratio
- Network Statistics
- Journey Times
- Traffic Flows
- Junction Performance

VOLUME CAPACITY RATIO

10.3.2 Volume / Capacity Ratio plots were produced to provide a comparison between Scenario A2, B2, C2 and Scenario D2, in the AM and PM peaks, as shown in Figure 10.2 to Figure 10.9.

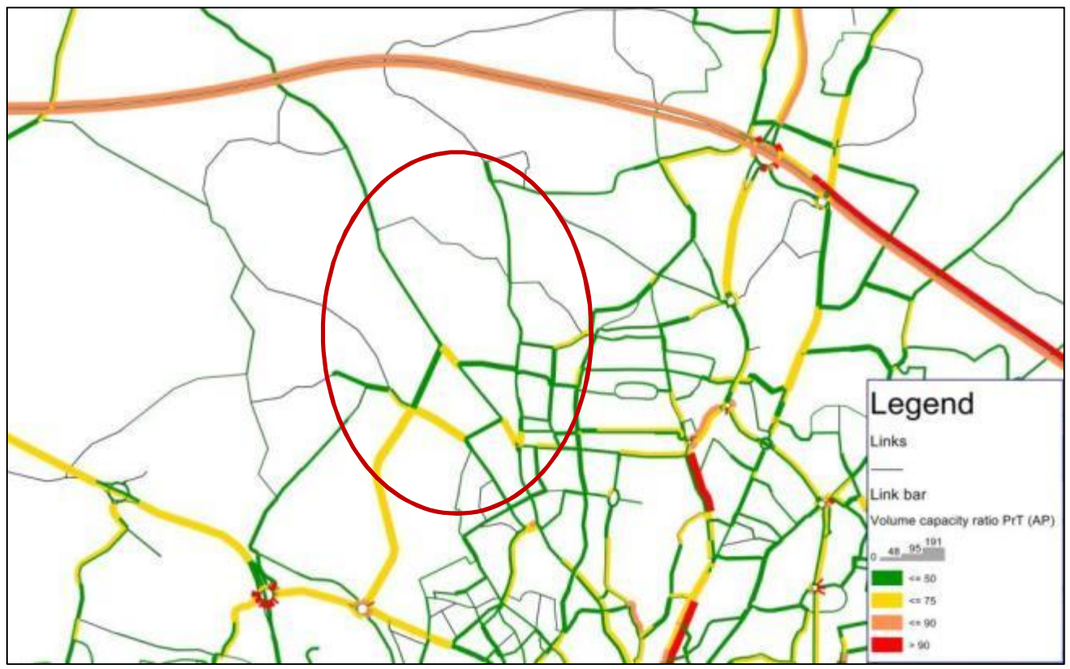


Figure 10.2: AM Peak Volume/Capacity Plot – Scenario A2

Figure 10.3: AM Peak Volume/Capacity Plot – Scenario B2

Figure 10.4: AM Peak Volume/Capacity Plot – Scenario C2

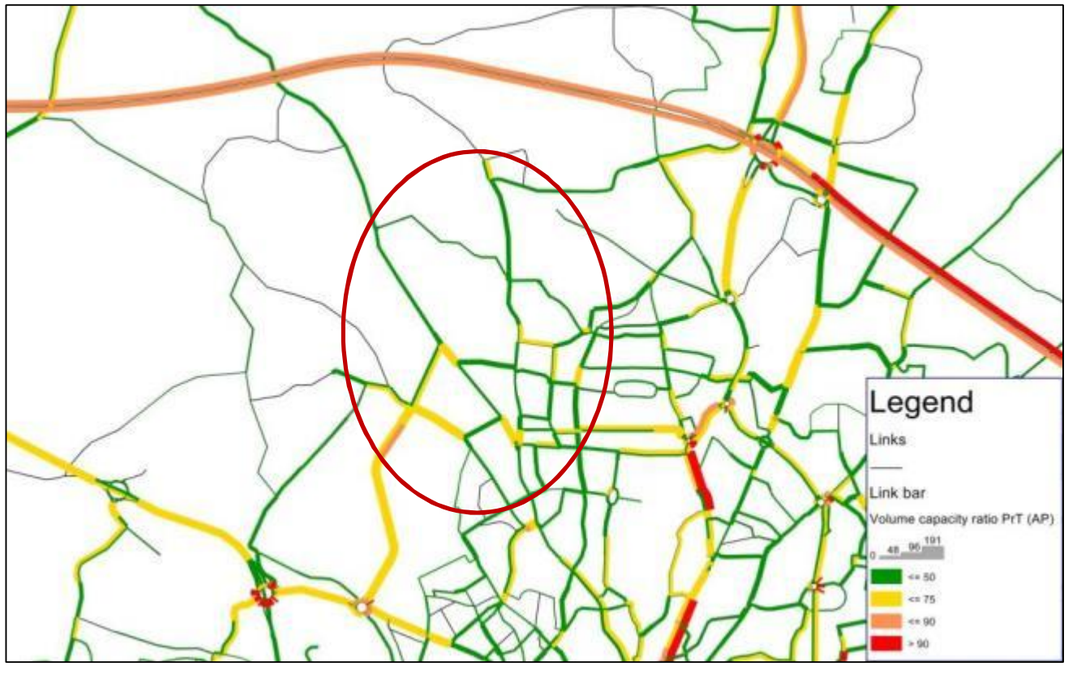


Figure 10.5: AM Peak Volume/Capacity Plot – Scenario D2

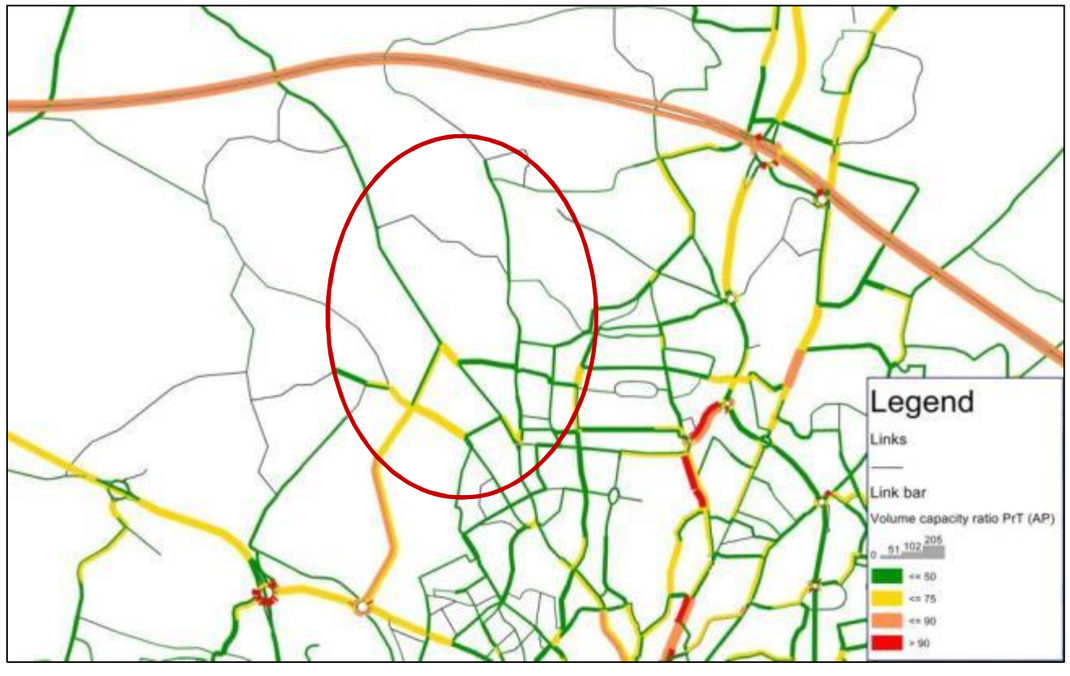


Figure 10.6: PM Peak Volume/Capacity Plot – Scenario A2

Figure 10.7: PM Peak Volume/Capacity Plot – Scenario B2

Figure 10.8: PM Peak Volume/Capacity Plot – Scenario C2

Figure 10.9: PM Peak Volume/Capacity Plot – Scenario D2

10.3.3 In the AM peak with the increasing number of houses at Keresley there are some sections of the highway network which experience an increasing amount of vehicles, which results in a higher V/C ratio. The sections of highway network where this occurs are:

- B4076 increases from V/C of under 75% in Scenario A2 to a V/C of between 75 to 90% in Scenario C2 and D2
- Bennetts Road at the northern end increases from a V/C ratio of under 50% in Scenario A2 to between 50 to 75% in Scenario D2.

10.3.4 These changes in V/C ratio do not generate significant issues as there still remains available capacity on the highway network for additional traffic. All other changes in V/C ratios increase, for example on Watery Lane and Five Field Road but remain within the ranges identified.

10.3.5 In the PM peak with the increasing number of houses at Keresley there are some sections of the highway network which experience an increasing amount of vehicles, which results in a higher V/C ratio. The sections of highway network where this occurs are:

- Bennetts Road just north of Sandpits Lane increases from a V/C ratio of under 50% in Scenario A2 to between 50 to 75% in Scenario C2 and D2.
- Brownshill Green Lane increases from V/C ratio from between 50 to 75% to between 75 to 90% in Scenario C2 and D2.

10.3.6 These changes in V/C ratio do not generate significant issues as there still remains available capacity on the highway network for additional traffic. All other changes in V/C ratios increase, for example on Watery Lane and Five Field Road but remain within the ranges identified.

10.3.7 Overall, the changes in V/C ratios experienced in the AM and PM peak in all scenarios are within acceptable levels; there are some increases but these remain acceptable V/C ratios.

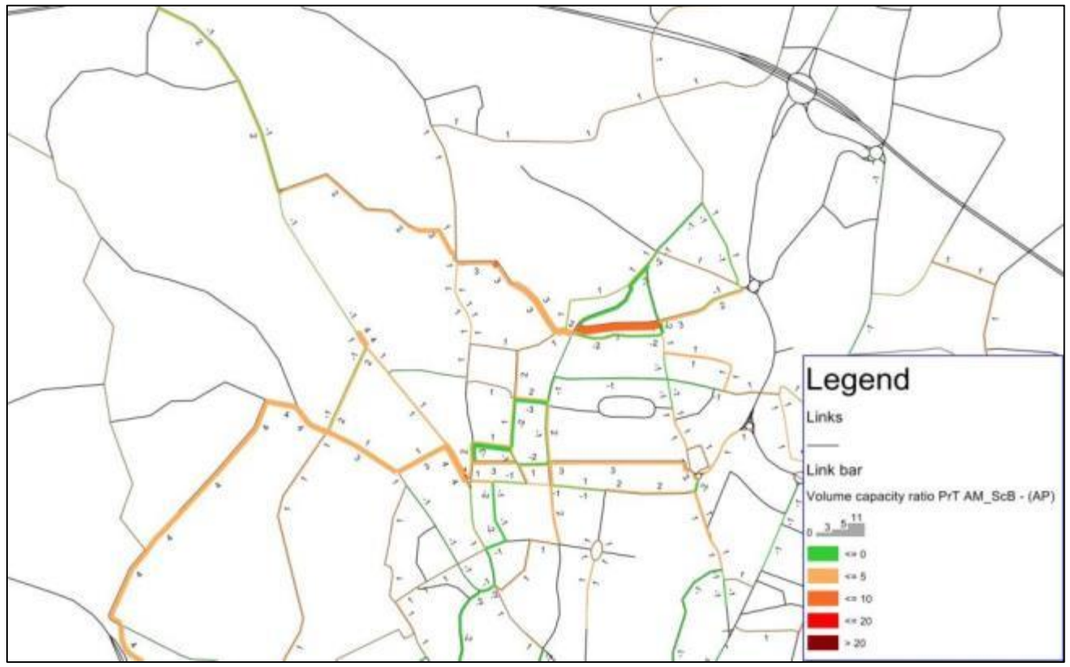


Figure 10.10: AM Peak Volume/Capacity Difference Plot AM 2034 Scenario B2 - AM 2034 Scenario A2

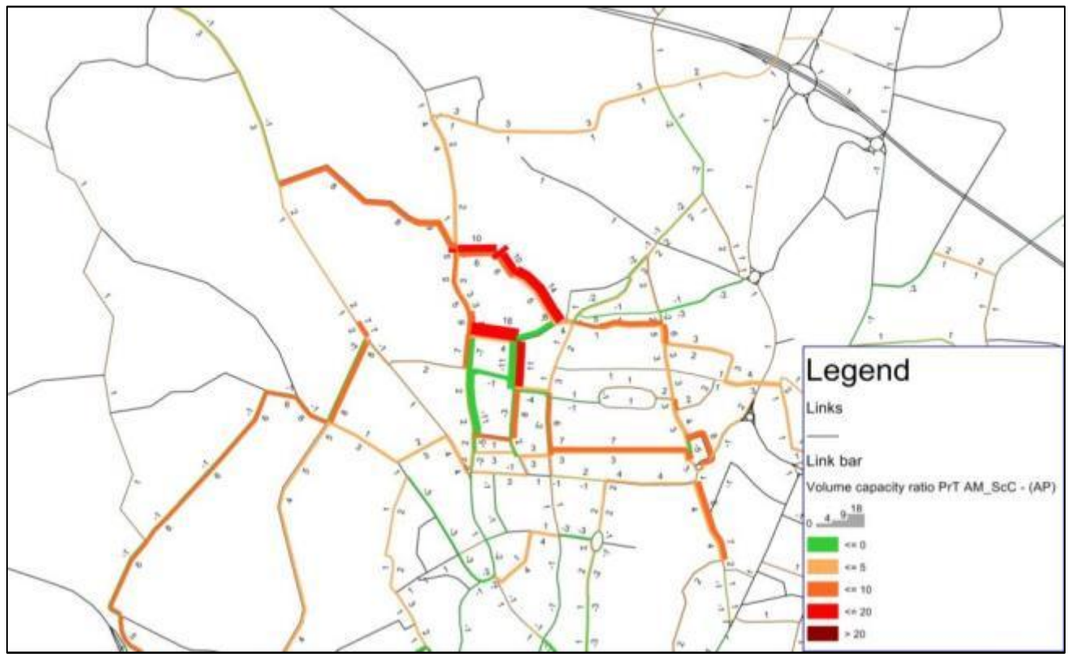


Figure 10.11: AM Peak Volume/Capacity Difference Plot AM 2034 Scenario C2 - AM 2034 Scenario A2

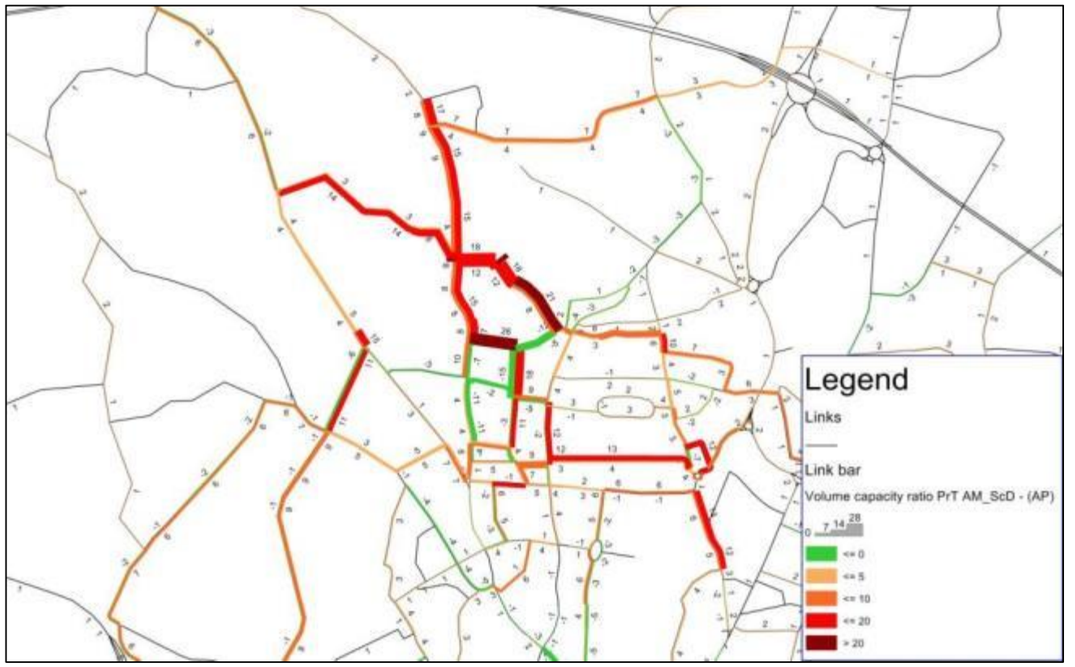


Figure 10.12: AM Peak Volume/Capacity Difference Plot AM 2034 Scenario D2 - AM 2034 Scenario A2

10.3.8 Figure 10.10 to Figure 10.12 present the changes in V/C ratio in the AM peak comparing Scenario B2, C2 and D2 against Scenario A2. The plots show that, as the number of houses and car trips increase at Keresley, the changes in V/C ratio increase on the local highway network. The plots show the local highway network which the Keresley developments are likely to use; these will include some local residential roads within the area. With Scenario D2 there are increases in V/C ratio of over 20% on Watery Lane and Penny Park Lane. However. as seen in Figure 10.5, these increases in V/C ratio still keep the V/C ratio under 50%.

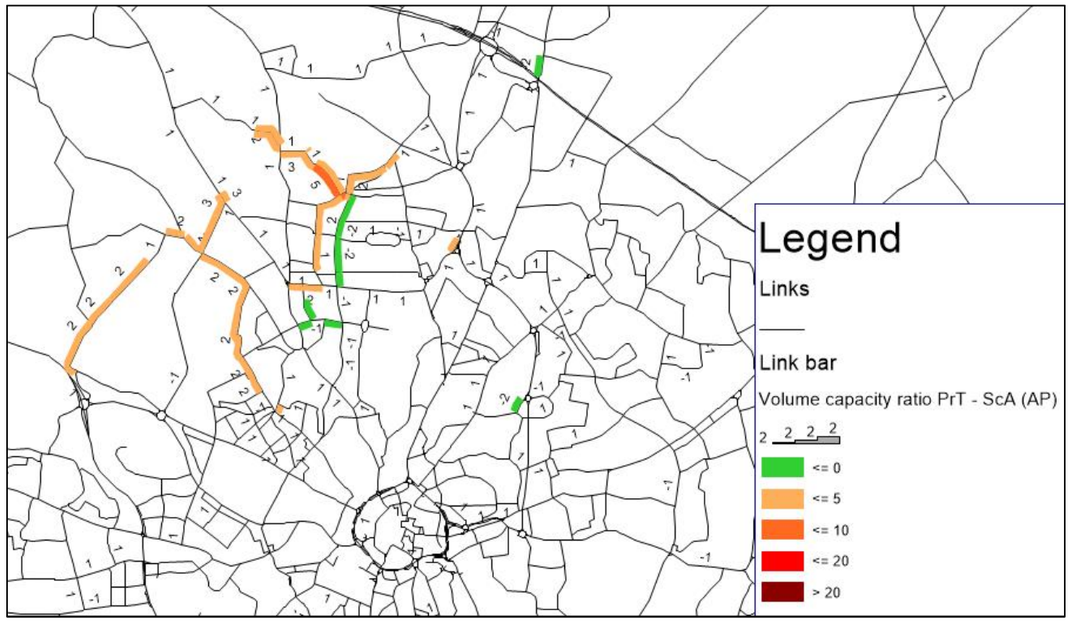


Figure 10.13: PM Peak Volume/Capacity Difference Plot PM 2034 Scenario B - PM 2034 Scenario A

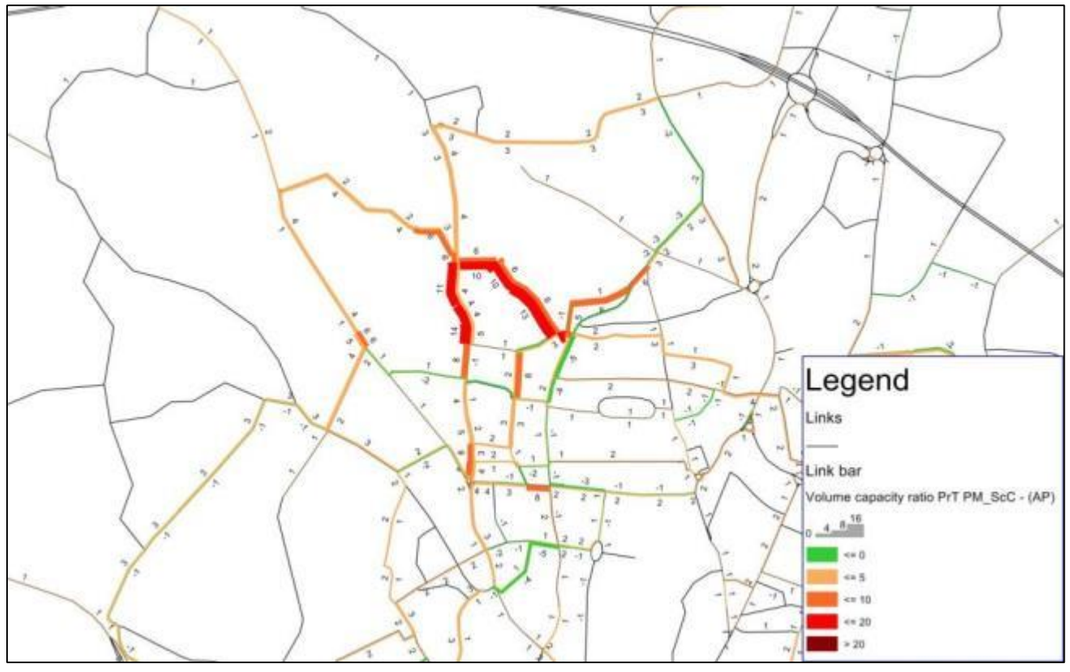


Figure 10.14: PM Peak Volume/Capacity Difference Plot PM 2034 Scenario C - PM 2034 Scenario A

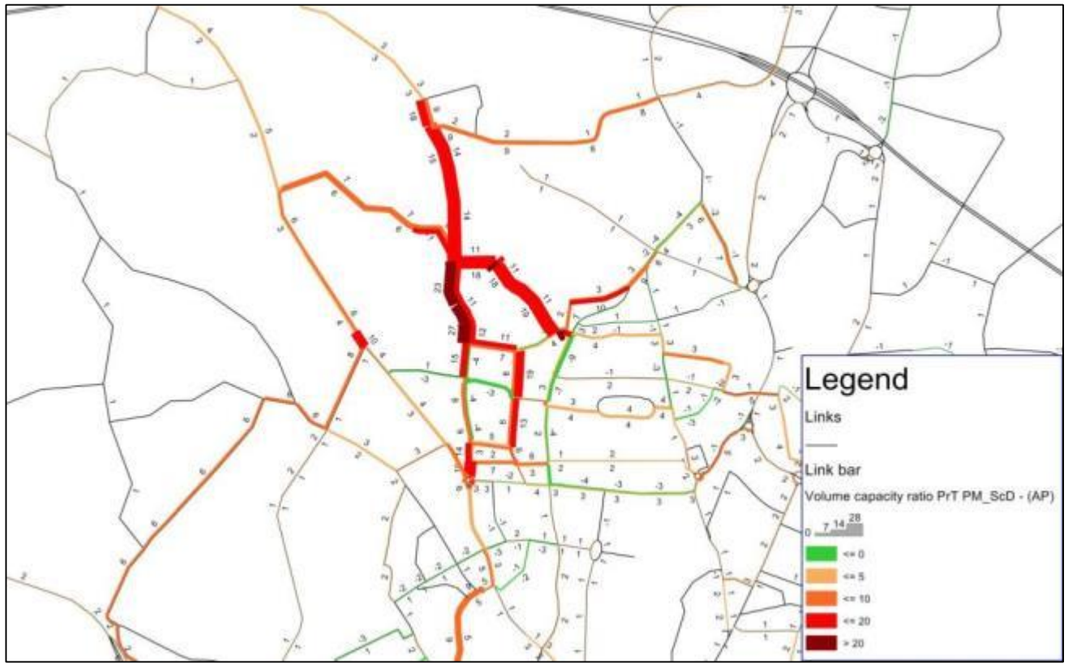


Figure 10.15: PM Peak Volume/Capacity Difference Plot PM 2034 Scenario D - PM 2034 Scenario A

10.3.9 Figure 10.13 to Figure 10.15 present the changes in V/C ratio in the PM peak comparing Scenario B2, C2 and D2 against Scenario A2. The plots show that as the number of houses and car trips increase at Keresley the changes in V/C ratio increase on the local highway network. The plots show the local highway network which the Keresley developments are likely to use; these will include some local residential roads within the area. With Scenario D2 there are increases in V/C ratio of over 20% on Bennetts Road. However, as seen in Figure 10.9 these increases in V/C ratio still keep the V/C ratio between 50% and 75%.

HIGHWAY NETWORK STATISTICS

10.3.10 Highway network statistics were extracted from each scenario for both AM and PM peak, as shown below in Table 10.4 and Table 10.5. These were extracted from the area presented in Figure 6.7.

Table 10.4: Keresley Highway Network Statistics AM Peak

	AM Peak									
	Scenario A	Scenario B	Scenario C	Scenario D	B - A	C - A	D - A	B - A %	C - A %	D - A %
Link Cruise Time (Veh/hrs)	2,308	2,323	2,353	2,403	15	45	95	1%	2%	4%
Total Travel Time (Veh/Hrs)	3,033	3,063	3,127	3,252	30	95	220	1%	3%	7%
Total Network Delay (Veh/Hrs)	911	923	964	1,035	12	54	125	1%	6%	14%
Total Travel Distance (Veh/Kms)	129,082	129,814	131,350	133,982	732	2,269	4,901	1%	2%	4%
Average Speed (km/h)	42.6	42.4	42.0	41.2	0	-1	-1	0%	-1%	-3%

Table 10.5: Keresley Highway Network Statistics PM Peak

	AM Peak									
	Scenario A2	Scenario B2	Scenario C2	Scenario D2	B - A	C - A	D - A	B - A %	C - A %	D - A %
Link Cruise Time (Veh/hrs)	2,434	2,451	2,489	2,559	17	55	125	1%	2%	5%
Total Travel Time (Veh/Hrs)	3,065	3,086	3,140	3,240	22	76	176	1%	2%	6%
Total Network Delay (Veh/Hrs)	820	828	852	901	8	32	81	1%	4%	10%
Total Travel Distance (Veh/Kms)	136,155	137,011	138,936	142,397	856	2,781	6,241	1%	2%	5%
Average Speed (km/h)	44.4	44.4	44.2	43.9	0	0	0	0%	0%	-1%

10.3.11 As expected, the growth in demand from Scenario A2 to D2 has led to increases in the total travel time, of up to 7%, increases in network delay; of up to 14% and increases in total travel distance, of up to 5%, however the increases are not particularly concerning. The average speed across the Keresley area also decreases with higher number of houses, with reductions in speed of 1kph from Scenario A2 to D2 in the AM peak; however the reduction in speed is not significant. The changes from Scenario A2 to D2 in travel time and delay do increase by up to 10%, an increase is to be expected as the volume of traffic in the area has increased.

JOURNEY TIME

10.3.12 To understand in more detail the impact that the development has, three journey time routes were identified within the model and the time taken for vehicles to travel along these routes was extracted for each scenario in each time period.

10.3.13 The journey routes extracted are:

- **Journey time route 1**: Between A45/ A4114 junction to Bennett's Road, see Figure 10.16
- **Journey time route 2**: Along Tamworth Road from Keresley Road to north of Keresley development, see Figure 10.17
- **Journey time route 3**: Along Bennetts Road from Keresley Road to north of Keresley development, see Figure 10.18

Figure 10.16: Journey Time Route 1

Figure 10.17: Journey Time Route 2

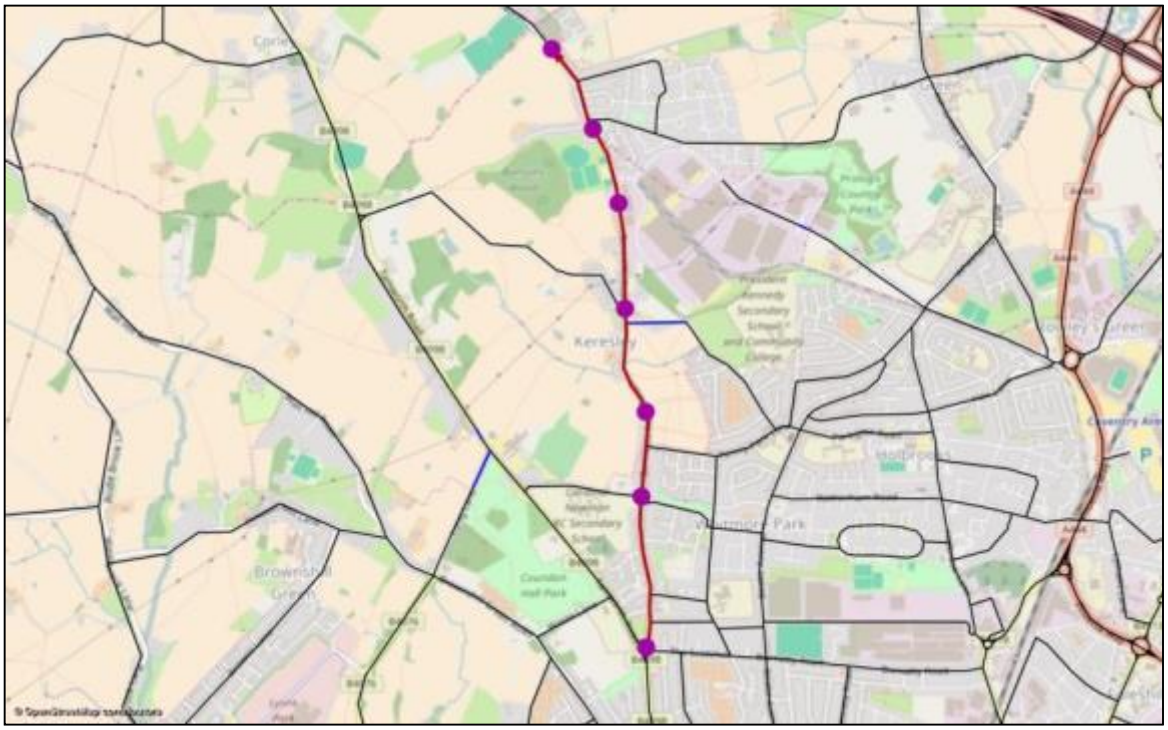


Figure 10.18: Journey Time Route 3

10.3.14 Table 10.6 presents the journey times for each scenario and direction during the AM peak; it also present the percentage increase/ decrease in journey time which occurs compared to the Scenario A.

Table 10.6: AM Journey Times

Route	Direction	Distance km	Scenario A2	Scenario B2	Scenario C2	Scenario D2	B - A % Change	C - A % Change	D - A % Change
1	NB	4.8	6min 58s	7min 7s	7min 18s	7min 44s	2%	5%	11%
1	SB	4.9	7min 9s	7min 11s	7min 23s	7min 34s	0%	3%	6%
2	NB	2.1	2min 33s	2min 34s	2min 34s	2min 35s	1%	1%	1%
2	SB	2.1	2min 37s	2min 38s	2min 38s	2min 39s	1%	1%	1%
3	NB	3.3	4min 59s	4min 59s	5min 1s	5min 12s	0%	1%	4%
3	SB	3.3	5min 46s	5min 37s	5min 46s	6min 18s	-3%	0%	9%

10.3.15 Table 10.6 shows that journey times in the local Keresley area increase as a result of the increasing number of houses at Keresley. The greatest increase in journey times is experienced on route 1 in both directions, between Sandpits Lane and the A45, which is where increases in traffic were identified through the V/C ratio plots. This journey time increases by 46 seconds in Scenario D2, which is an 11% increase. There are also increases in delay along Bennetts Road, which experiences increasing traffic volumes of up to 9%, equating to journey time increases of up to 32 seconds.

10.3.16 Table 10.7 presents the journey times for each scenario and direction during the PM peak; it also present the percentage increase/ decrease in journey time which occurs compared to the Scenario A.

Table 10.7: PM Journey Time

Route	Direction	Distance km	Scenario A2	Scenario B2	Scenario C2	Scenario D2	B - A % Change	C - A % Change	D - A % Change
1	NB	4.8	7min 9s	7min 11s	7min 19s	7min 29s	0%	2%	5%
1	SB	4.9	7min 4s	7min 6s	7min 4s	7min 5s	0%	0%	0%
2	NB	2.1	2min 35s	2min 36s	2min 35s	2min 37s	1%	0%	1%
2	SB	2.1	2min 37s	2min 37s	2min 38s	2min 41s	0%	1%	3%
3	NB	3.3	4min 44s	4min 45s	5min 0s	5min 20s	0%	6%	13%
3	SB	3.3	5min 4s	5min 5s	5min 16s	5min 31s	0%	4%	9%

10.3.17 Table 10.7 shows that journey times in the local Keresley area increase as a result of the increasing number of houses at Keresley. The greatest increase in journey times is experienced on route 3 along Bennetts Road in both directions, which is where increases in traffic were identified through the V/C ratio plots. This journey time increases by 36 seconds in Scenario D2, which is a 13% increase. When a planning application comes forward for the 2,300 houses at Keresley detailed junction assessments of the junctions along this route would be required to ensure that delay along routes in the area is minimised. All other increases in journey times are relatively small, between 0 and 3%, up 20 seconds.

LOCALISED TRAFFIC FLOW ANALYSIS

10.3.18 Changes in traffic flows on local roads around the Keresley development were extracted and compared for all four scenarios. The locations of where traffic flows were extracted are shown in Figure 10.19.

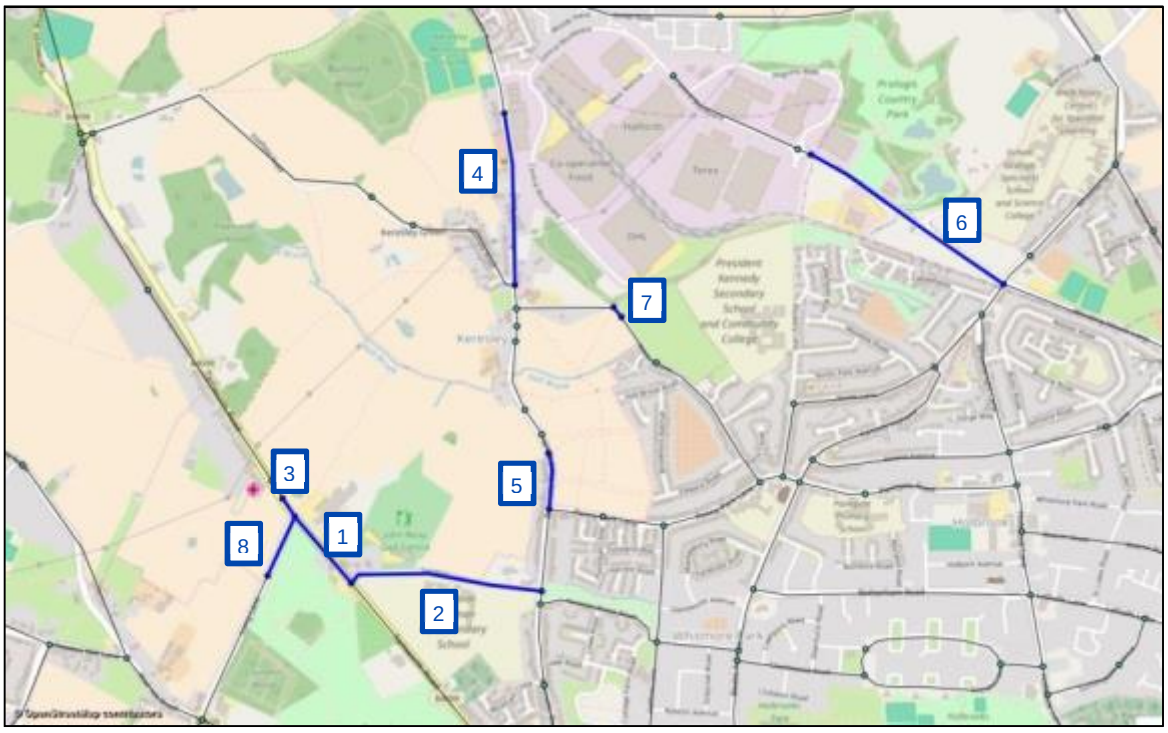


Figure 10.19: Traffic Flow Locations around Keresley Development

10.3.19 Table 10.8 shows the traffic flows in vehicles at the locations illustrated in Figure 10.19 in the AM peak for all four model scenarios as well as the changes in flow within each scenario against Scenario A. The cells are highlighted according to the volume of traffic, green is for flows between 0-250 and flow changes between -100 and 100. The orange cells are for flows between 250-500 and flow changes between -100 to -200 and 100-200. Red cells indicate flows greater than 500 and differences greater than -200 and 200.

Table 10.8: AM Peak Keresley Traffic Flow Changes (vehicles)

Link Number	Direction	AM									
		Scenario A	Scenario B	Scenario C	Scenario D	B - A	C - A	D - A	B - A %	C - A %	D - A %
1	NB	760	768	797	790	8	37	30	1%	5%	4%
1	SB	895	909	889	861	14	-6	-34	2%	-1%	-4%
2	EB	589	594	583	545	5	-6	-44	1%	-1%	-7%
2	WB	538	533	560	534	-5	22	-4	-1%	4%	-1%
3	NB	373	397	400	466	24	27	93	6%	7%	25%
3	SB	523	589	636	780	66	113	257	13%	22%	49%
4	NB	150	162	202	264	12	52	114	8%	35%	76%
4	SB	370	374	391	565	4	21	195	1%	6%	53%
5	NB	151	159	226	263	8	75	112	5%	50%	74%
5	SB	445	453	519	678	8	74	233	2%	17%	52%
6	NB	201	203	209	216	2	8	15	1%	4%	7%
6	SB	9	10	11	14	1	2	5	11%	22%	56%
7	NB	105	141	191	268	36	86	163	34%	82%	155%
7	SB	68	71	208	305	3	140	237	4%	206%	349%
8	NB	647	639	619	565	-8	-28	-82	-1%	-4%	-13%
8	SB	662	690	764	808	28	102	146	4%	15%	22%

10.3.20 Table 10.8 shows that the greatest increases in traffic flows occur on Tamworth Road, Bennetts Road and Watery Lane which experience increases in traffic of over 200 vehicles in the southbound direction. For Watery Lane in particular, in Scenario C2 and D2, this represents a very high percentage increase in traffic compared to the volumes of traffic that would use the road in Scenario A2.

10.3.21 Similarly, Table 10.9 shows the traffic flows at the locations illustrated in Figure 10.19 in the PM peak for all four model scenarios as well as the changes in flow within each scenario against Scenario A2. The cells are highlighted in the same way as for the AM Peak.

Table 10.9: PM Peak Keresley Traffic Flow Changes

Link Number	Direction	PM									
		Scenario A	Scenario B	Scenario C	Scenario D	B - A	C - A	D - A	B - A %	C - A %	D - A %
1	NB	887	903	868	885	16	-19	-2	2%	-2%	0%
1	SB	888	903	909	948	15	21	60	2%	2%	7%
2	EB	597	599	607	608	2	10	11	0%	2%	2%
2	WB	589	592	561	543	3	-28	-46	1%	-5%	-8%
3	NB	454	526	534	653	72	80	199	16%	18%	44%
3	SB	503	549	599	677	46	96	174	9%	19%	35%
4	NB	331	349	366	538	18	35	207	5%	11%	63%
4	SB	294	300	341	466	6	47	172	2%	16%	59%
5	NB	428	432	612	788	4	184	360	1%	43%	84%
5	SB	286	286	348	450	0	62	164	0%	22%	57%
6	NB	11	13	16	20	2	5	9	18%	45%	82%
6	SB	215	218	226	234	3	11	19	1%	5%	9%
7	NB	118	151	259	356	33	141	238	28%	119%	202%
7	SB	99	118	172	234	19	73	135	19%	74%	136%
8	NB	638	676	685	735	38	47	97	6%	7%	15%
8	SB	686	698	709	696	12	23	10	2%	3%	1%

10.3.22 Table 10.9 shows that the greatest increases in traffic flows occur on Bennetts Road and Watery Lane which experience increases in traffic of over 200 vehicles in the northbound direction. For Watery Lane in particular, in Scenario C2 and D2, the increase in traffic flow represents a very high percentage compared to the volumes of traffic that would use the road in Scenario A2.

10.3.23 Overall the traffic increases, between Scenario A2 and D2, around the Keresley development site, in the AM and PM peak are relatively high, over 200 vehicles on roads such as Tamworth Road, Bennetts Road and Watery Lane. The impacts in percentage terms are greatest on Watery Lane, a residential road, which has low traffic flows in Scenario A2 but experiences an over three fold increase in traffic flow equating to 235 vehicles in the AM peak.

JUNCTION PERFORMANCE

10.3.24 The CASM HAM does not model highway junctions in detail, but it can highlight junctions which are experiencing more delay in the Keresley scenarios. Figure 10.20 to Figure 10.25 present the increases in average junction delay which occur as the number of houses increases on the development site.

Figure 10.20: AM Peak Keresley Scenario B2 – Scenario A2 Average Junction Delay

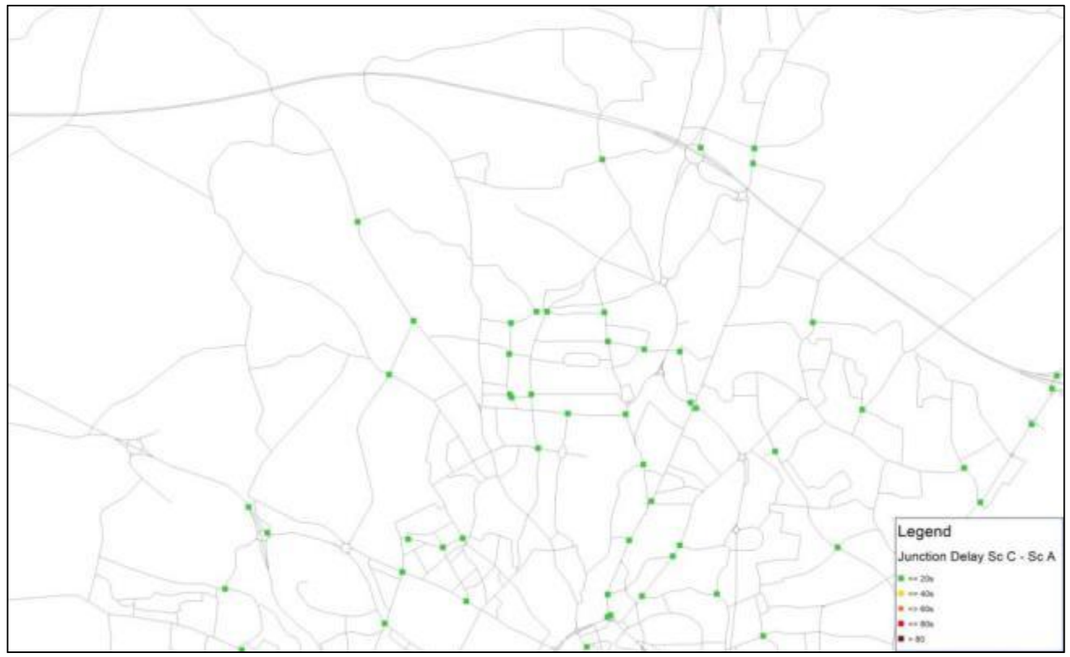


Figure 10.21: AM Peak Keresley Scenario C2 – Scenario A2 Average Junction Delay

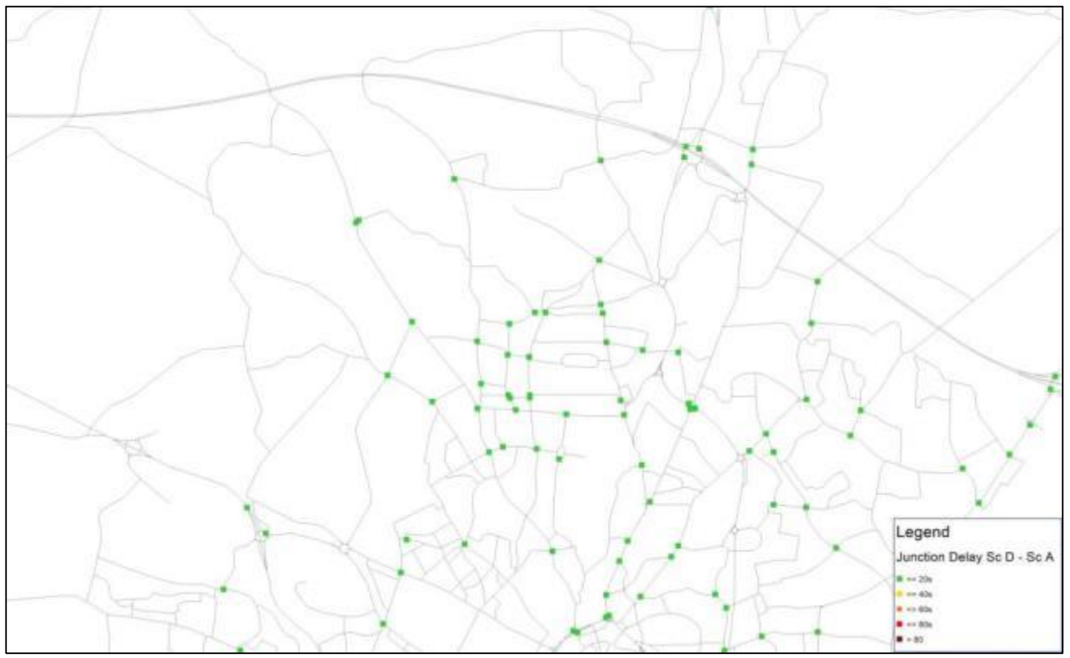


Figure 10.22: AM Peak Keresley Scenario D2 – Scenario A2 Average Junction Delay

10.3.25 Figure 10.20 to Figure 10.22 show the increases in average junction delay that occur in Scenario B2, C2 and D2 compared to Scenario A2. The plots show that as a result of the increase in car trips, there are some increases in average junction delay but these remain 20 seconds or lower, which is not too significant. It would be important that, and when the planning application for the site comes forward detailed junction modelling is undertaken to ensure the junctions around the site operate effectively.

Figure 10.23: PM Peak Keresley Scenario B2 – Scenario A2 Average Junction Delay

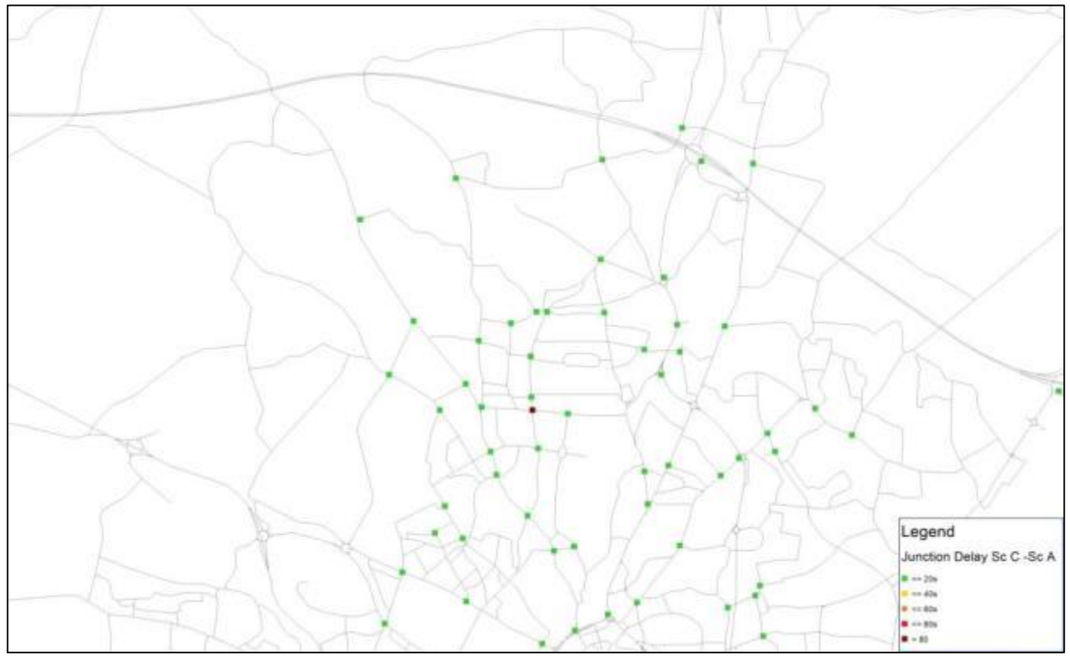


Figure 10.24: PM Peak Keresley Scenario C2 – Scenario A2 Average Junction Delay

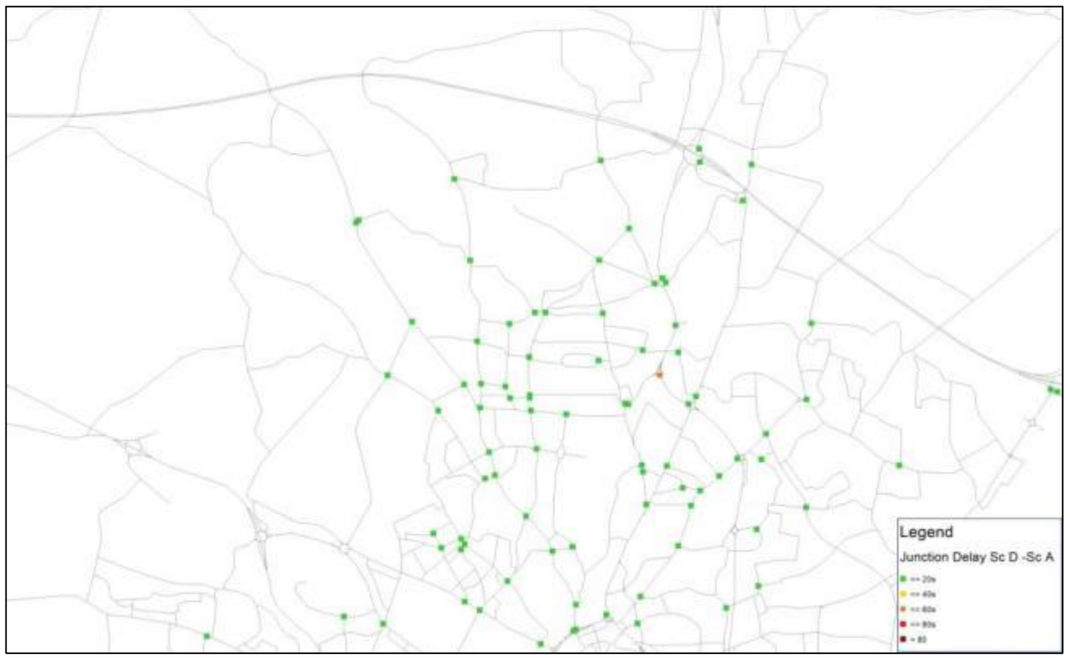


Figure 10.25: AM Peak Keresley Scenario D2 – Scenario A2 Average Junction Delay

10.3.26 Figure 10.23 to Figure 10.25 show the increases in average junction delay that occur in Scenario B2, C2 and D2 compared to Scenario A2. The plots show that as a result of the increase in car trips there are some increases in average junction delay but the majority of these are 20 seconds or lower which is not too significant. There are two junctions in Scenario C2 and D2 which experience average junction delays that are greater than 40 seconds.

- In Scenario C2 this is the junction between The Scotchill and Beake Avenue which experiences an increase in delay of over 80 seconds. In Scenario D2 however this junction experiences less of an increase in delay as traffic takes different routes.
- In Scenario D2 an approach to the A444 junction with Holbrook way experiences an increasing delay of between 40 to 60 seconds.

10.3.27 It would be important that, as and when the planning application for the site comes forward detailed junction modelling is undertaken to ensure the junctions around the site operate effectively.

10.4 RESULTS WITH KERESLEY LINK ROAD

10.4.1 This section of the report presents the CASM outputs for the scenarios with the Keresley Link Road, showing:

- Volume Capacity Ratio
- Network statistics
- Journey Times
- Traffic Flows

VOLUME CAPACITY RATIO

10.4.2 Figure 10.26 to Figure 10.29 present the change in V/C ratio plots comparing Scenario C1 to C2 and Scenario D1 to D2 (with and without the Keresley Link Road) for both the AM and PM peak.

10.4.3 The figures show that in both time periods with both 1,900 and 3,100 houses and the Keresley Link Road in place there is an improvement in V/C ratio. This equates to a reduction in traffic on roads in and around the Keresley development including Watery Lane, which experiences the greatest increase in traffic in percentage terms when there is no Link Road. There is however an increase in V/C ratio (more traffic(on roads connecting with the Keresley Link Road, as a result of some traffic being drawn into the area to use the new Link Road, including Long Lane and Coudon Wedge Drive.

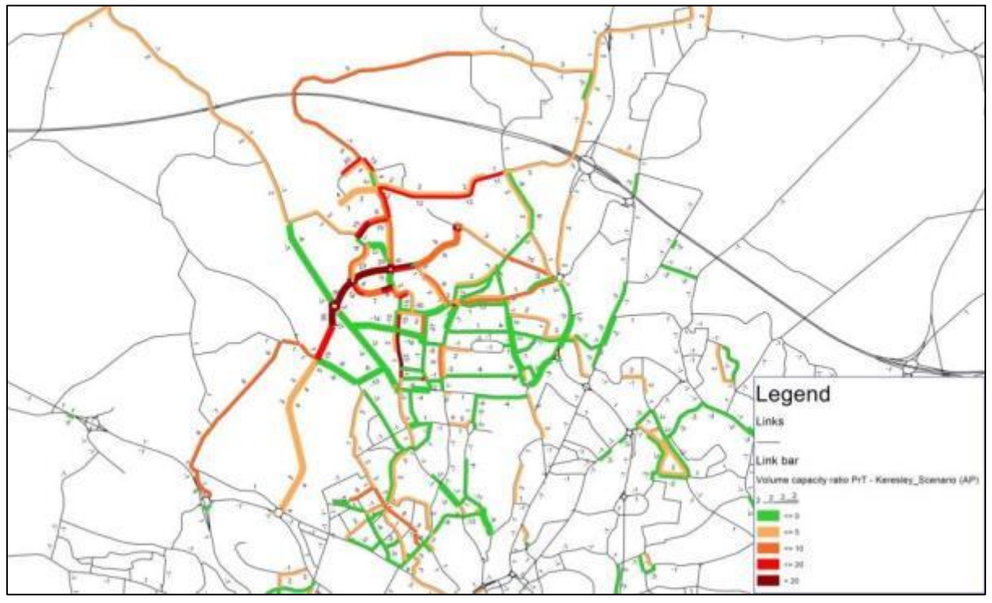


Figure 10.26: AM Peak Volume/Capacity Difference Plot Scenario C1 vs Scenario C2

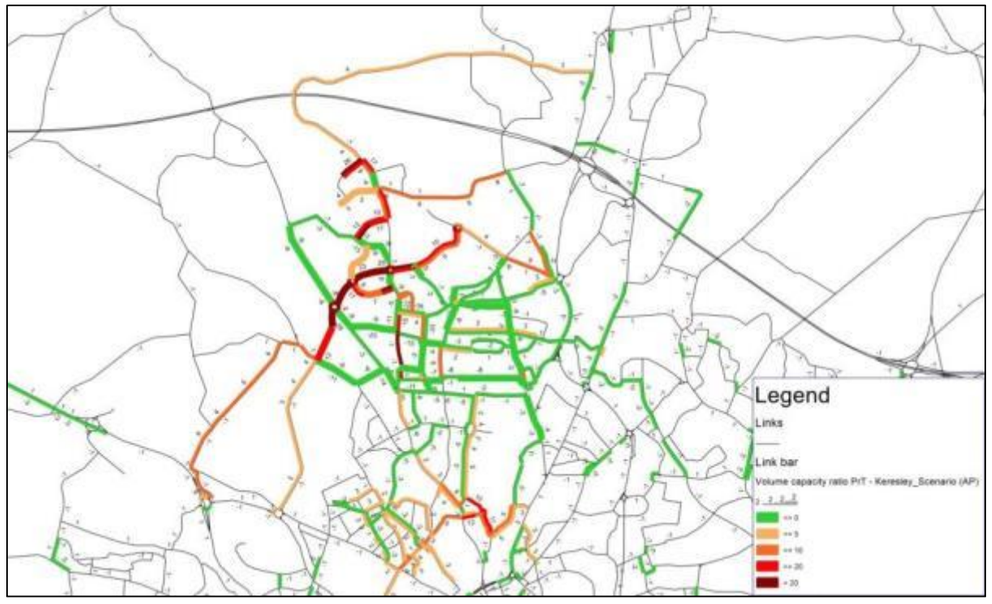


Figure 10.27: AM Peak Volume/Capacity Difference Plot Scenario D1 vs Scenario D2

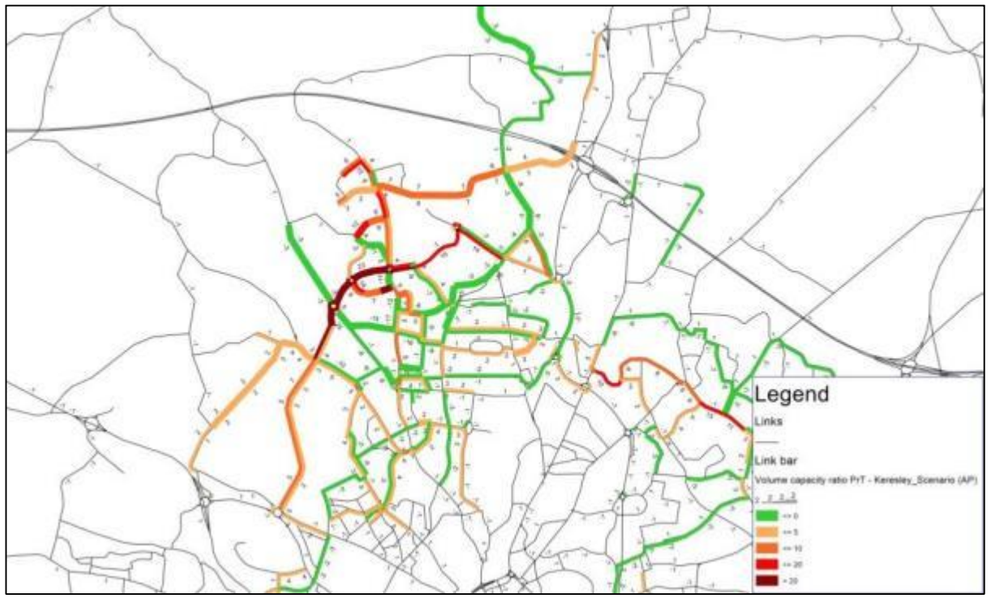


Figure 10.28: PM Peak Volume/Capacity Difference Plot Scenario C1 vs Scenario C2

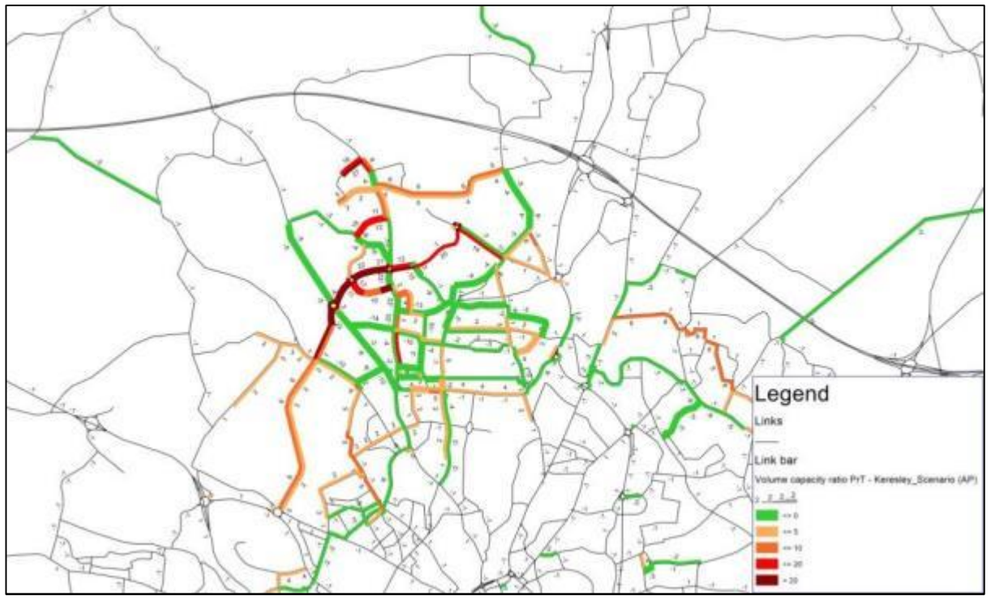


Figure 10.29: PM Peak Volume/Capacity Difference Plot Scenario D1 vs Scenario D2

HIGHWAY NETWORK STATISTICS

10.4.4 Highway network statistics were extracted from each scenario for both AM and PM peak, as shown below in Table 10.10 and Table 10.11. These were extracted from the area presented in Figure 6.7.

Table 10.10: Keresley Highway Network Statistics AM Peak

	AM Peak							
	Scenario C1	Scenario C2	Scenario D1	Scenario D2	C1 – C2	D1 – D2	C1 – C2 %	D1 – D2%
Link Cruise Time (Veh/hrs)	2,384	2,353	2,384	2,407	31	3	1.3%	0.1%
Total Travel Time (Veh/Hrs)	3,199	3,127	3,199	3,187	72	-66	2.3%	-2.0%
Total Network Delay (Veh/Hrs)	995	964	995	957	31	-79	3.2%	-7.6%
Total Travel Distance (Veh/Kms)	132,724	131,350	132,724	133,840	1,374	-142	1.0%	-0.1%
Average Speed (km/h)	41.5	42.0	41.5	42.0	-1	1	-1.2%	2.0%

Table 10.11: Keresley Highway Network Statistics PM Peak

	AM Peak							
	Scenario C1	Scenario C2	Scenario D1	Scenario D2	C1 – C2	D1 – D2	C1 – C2 %	D1 – D2%
Link Cruise Time (Veh/hrs)	2,525	2,489	2,559	2,559	36	-0	1.4%	0.0%
Total Travel Time (Veh/Hrs)	3,174	3,140	3,223	3,240	33	-17	1.1%	-0.5%
Total Network Delay (Veh/Hrs)	848	852	857	901	-3	-44	-0.4%	-4.9%
Total Travel Distance (Veh/Kms)	140,747	138,936	142,376	142,397	1,811	-20	1.3%	0.0%
Average Speed (km/h)	44.4	44.2	44.2	43.9	0	0	0.2%	0.5%

10.4.5 Table 10.10 and Table 10.11 show that, in both the AM and PM peak, in Scenario C1 with the Keresley Link Road in place, there is an increase in travel time and distance travelled in both time periods. However, in the AM peak, there is also a slight increase in network delay and in the PM peak there is a slight reduction. In the AM peak, the average speed reduces with the Link Road, whilst it slightly increases in the PM peak. Overall with 1,900 houses the Keresley Link Road does not have significant improvements on the operation of the highway network in the area.

10.4.6 However with 3,100 houses in both time periods there are reductions in travel time, delay and travel distance in Scenario D1, compared to Scenario D2; the greatest improvement is in network delays which in the AM peak improve by 7.6%, a reduction in 79 vehicle hours. This indicates that, if a Keresley Link Road were to be built, it would provide the greatest improvements to the local highway network when there is the full build out of houses.

JOURNEY TIMES

10.4.7 Journey time information was extracted from the CASM models for the , routes shown in Figure 10.30 and Figure 10.31, along with the two routes shown in Figure 10.17 and Figure 10.18.

Figure 10.30: Keresley Journey Time 1 without Link Road

Figure 10.31: Keresley Journey Time 1 with Link Road

10.4.8 Table 10.12 presents the journey times with and without the Keresley Link Road during the AM peak.

Table 10.12: AM Keresley Journey Times

Route	Direction	Distance km (no link road)	Distance (with link rd)	Scenario C1	Scenario C2	Scenario D1	Scenario D2	C1 – C2	D1 – D2
1	NB	6.4	5.7	8min 10s	9min 41s	8 min 9s	10min 6s	-1min 31s	-1min 57s
1	SB	6.4	5.7	9min 42s	11 min	9 min 53s	11min 38s	-1min 18s	-1min 45s
2	NB	2.1	2.1	2 min 53s	2min 34s	2 min 54s	2min 35s	19s	19s
2	SB	2.1	2.1	2 min 47s	2min 38s	2 min 50s	2min 39s	9s	11s
3	NB	3.3	3.3	4 min 48s	5min 1s	4 min 49s	5min 14s	-3s	-15s
3	SB	3.3	3.3	5 min 22 s	5min 46s	5 min 21s	6min 18s	-24s	-57s

10.4.9 Table 10.12 shows that some journey times in the Keresley area increase and some reduce as a result of the Link Road being in place. Journey time route 1 with the Keresley Link Road provides a significant reduction in journey time, up to 117 seconds, for both directions. The changes in the journey times with the Keresley are less pronounced for routes 2 and 3 journey time reductions along Bennetts Road and slight increases along Tamworth Road as a result of the new roundabout; which traffic now has to give way too.

10.4.10 Table 10.13 presents the journey times with and without the Keresley Link Road during the PM peak.

Table 10.13: PM Keresley Journey Time

Route	Direction	Distance km (no Link Road)	Distance (with link rd)	Scenario C1	Scenario C2	Scenario D1	Scenario D2	C1 – C2	D1 – D2
1	NB	6.4	5.7	8 min 44s	11min 58s	8 min 50s	10min 44s	-2min 14s	-1min 56s
1	SB	6.4	5.7	8 min 47s	10min 15s	8 min 51s	10min 28s	-1min 28s	-1min 37s
2	NB	2.1	2.1	2 min 54 s	2min 35s	2 min 56s	2min 37s	19 s	21 s
2	SB	2.1	2.1	2 min 50s	2min 38s	2 min 52s	2min 41s	12 s	11 s
3	NB	3.3	3.3	5min 0s	5min 0s	5 min 8s	5min 20s	0 s	- 12 s
3	SB	3.3	3.3	4 min 44s	5min 16s	4 min 50s	5min 31s	- 32 s	- 41 s

10.4.11 Table 10.13 presents similar patterns to the AM peak with significant journey time reductions for route 1 in both directions, with savings up to 134 seconds, with the Keresley Link Road in place. The journey times with the Link Road get slightly slower along Tamworth Road, as a result of the new roundabout and get slightly quicker along Bennetts Road.

LOCALISED TRAFFIC FLOW ANALYSIS

10.4.12 Changes in traffic flows on local roads around the Keresley development were extracted and compared for all four scenarios. The locations of where traffic flows were extracted are shown in Figure 10.19. In addition to this the traffic flows on the Keresley Link Road were extracted between Tamworth Road and Bennetts Road.

10.4.13 Table 10.14 shows the traffic flows in vehicles at the locations illustrated in Figure 10.19 in the AM peak for all four model scenarios as well as the changes in flow between scenarios with and without the Keresley Link Road. The cells are highlighted according to the volume of traffic, green is for flows between 0-250 and flow changes between -100 and 100. The orange cells are for flows between 250-500 and flow changes between -100 to -200 and 100-200. Red cells indicate flows greater than 500 and differences greater than -200.

Table 10.14: AM Peak Keresley Traffic Flow Changes (vehicles)

Link Number	Direction	AM							
		Scenario C1	Scenario C2	Scenario D1	Scenario D2	C1 – C2	D1 – D2	C1 – C2%	D1 – D2%
1	NB	432	797	437	790	-365	-353	-46%	-45%
1	SB	670	889	743	861	-219	-118	-25%	-14%
2	EB	399	583	427	545	-184	-118	-31%	-22%
2	WB	233	560	221	534	-327	-313	-58%	-59%
3	NB	308	400	311	466	-92	-155	-23%	-33%
3	SB	330	636	347	780	-306	-433	-48%	-56%
4	NB	255	202	255	264	53	-9	26%	-3%
4	SB	552	391	614	565	161	49	41%	9%
5	NB	222	226	198	263	-4	-65	-2%	-25%
5	SB	473	519	483	678	-46	-195	-9%	-29%
6	NB	205	209	200	216	-4	-16	-2%	-8%
6	SB	53	11	62	14	42	48	378%	346%
7	NB	205	191	181	268	14	-87	7%	-33%
7	SB	229	208	216	305	21	-89	10%	-29%
8	NB	798	619	785	565	179	220	29%	39%
8	SB	890	764	899	808	126	91	17%	11%

10.4.14 Table 10.14 shows that with the Keresley Link Road in both scenarios there is a reduction in traffic flow on Tamworth Road, Sandpits Lane and Bennetts Road. There is also a slight reduction in traffic in Scenario D on Watery Lane, although traffic volumes remain higher compared to Scenario A2 when there's only 800 houses at Keresley. There are also traffic flow increases on Long Lane which experiences flow increases as a result of the Keresley Link Road.

10.4.15 Figure 10.32 and Figure 10.33 illustrate the volumes of traffic using the Keresley Link Road. The plots show that traffic volumes are highest at the western side of the link but lower at the eastern end in both scenarios.

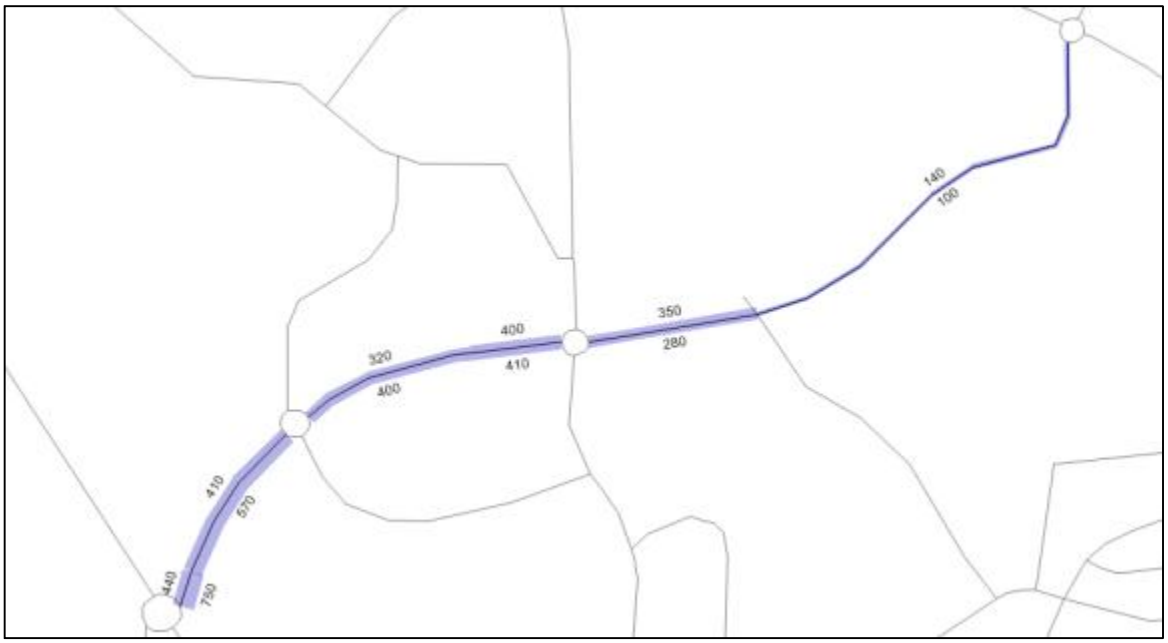


Figure 10.32: AM Peak Scenario C1 Keresley Link Road Traffic

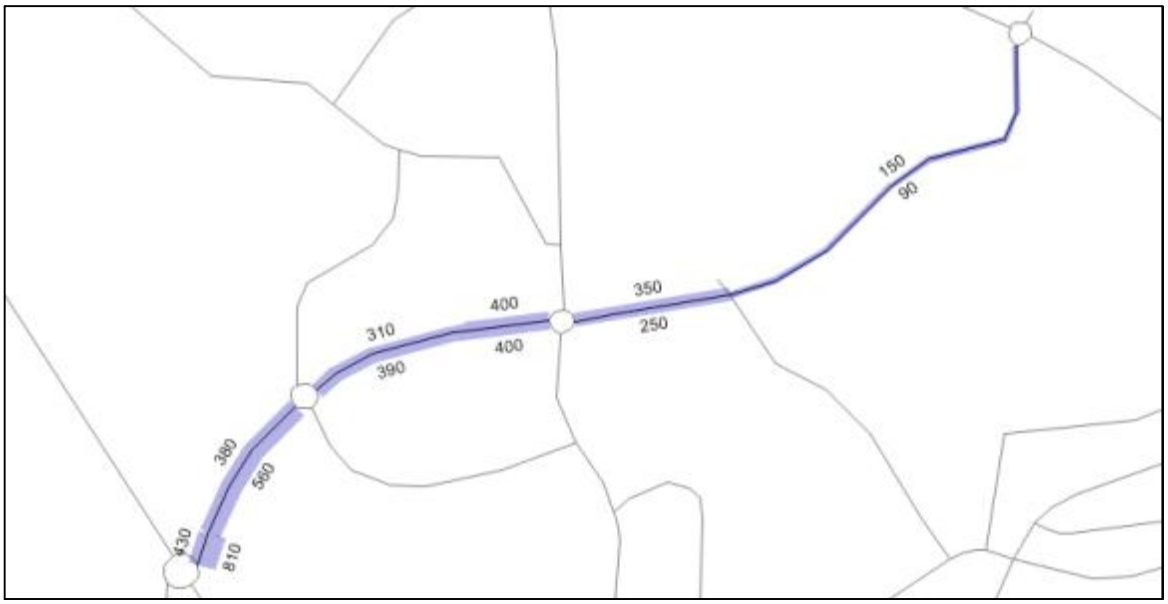


Figure 10.33: AM Peak Scenario D1 Keresley Link Road Traffic

10.4.16 Similarly, Table 10.15 shows the traffic flows in vehicles at the locations illustrated in Figure 10.19 in the AM peak for all four model scenarios as well as the changes in flow between scenarios with and without the Keresley Link Road. The cells are highlighted in the same way as for the AM Peak.

Table 10.15: PM Peak Keresley Traffic Flow Changes

Link Number	Direction	PM							
		Scenario C1	Scenario C2	Scenario D1	Scenario D2	C1 – C2	D1 – D2	C1 – C2%	D1 – D2%
1	NB	527	868	572	885	-341	-313	-39%	-35%
1	SB	694	909	730	948	-215	-218	-24%	-23%
2	EB	409	607	421	608	-198	-187	-33%	-31%
2	WB	294	561	306	543	-268	-237	-48%	-44%
3	NB	324	534	339	653	-210	-314	-39%	-48%
3	SB	455	599	469	677	-144	-208	-24%	-31%
4	NB	494	366	529	538	128	-9	35%	-2%
4	SB	387	341	424	466	46	-42	13%	-9%
5	NB	446	612	493	788	-166	-295	-27%	-37%
5	SB	307	348	350	450	-41	-100	-12%	-22%
6	NB	203	16	202	20	187	182	1168 %	910%
6	SB	137	226	136	234	-89	-98	-39%	-42%
7	NB	132	259	152	356	-127	-204	-49%	-57%
7	SB	215	172	196	234	43	-38	25%	-16%
8	NB	974	685	1013	735	289	278	42%	38%
8	SB	762	709	787	696	53	91	7%	13%
9	EB								
9	WB								

10.4.17 Table 10.15 shows that with the Keresley Link Road in both scenarios there is a reduction in traffic flow on Tamworth Road, Sandpits Lane and Bennetts Road NB. There is also a reductions in traffic in both scenarios on Watery Lane NB. There are also traffic flow increases on Long Lane which experiences flow increases as a result of the Keresley Link Road.

10.4.18 Figure 10.34 and Figure 10.35 illustrate the volumes of traffic using the Keresley Link Road. As in the AM peak, the plots show that traffic volumes are highest at the western side of the link and are very low at the eastern end in both scenarios.

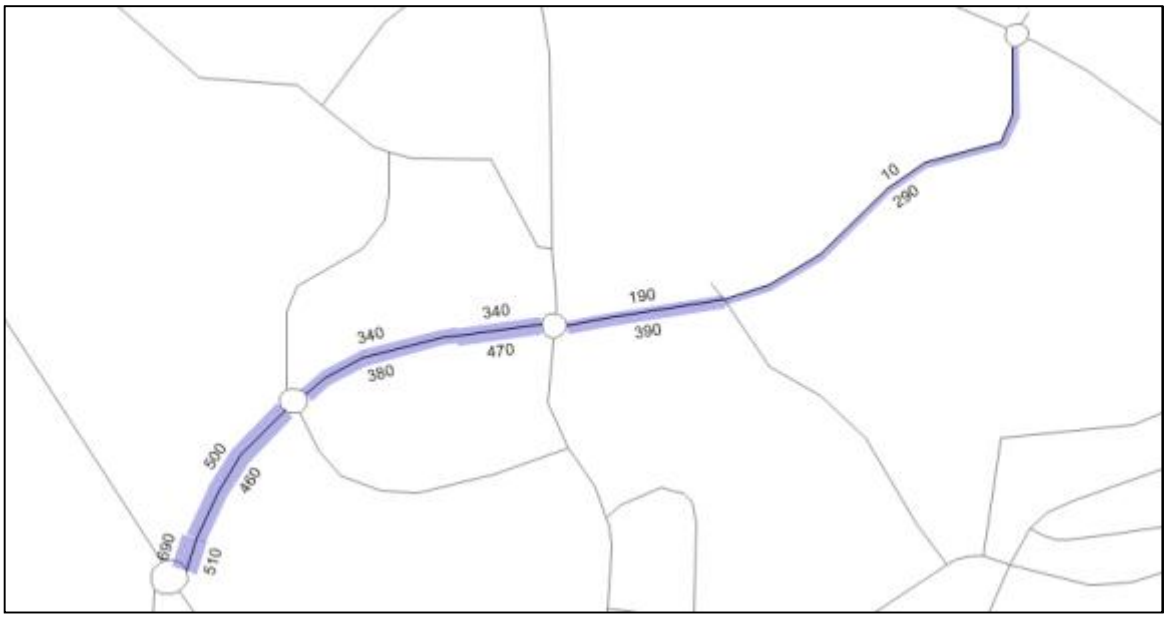


Figure 10.34: PM Peak Scenario C1 Keresley Link Road Traffic

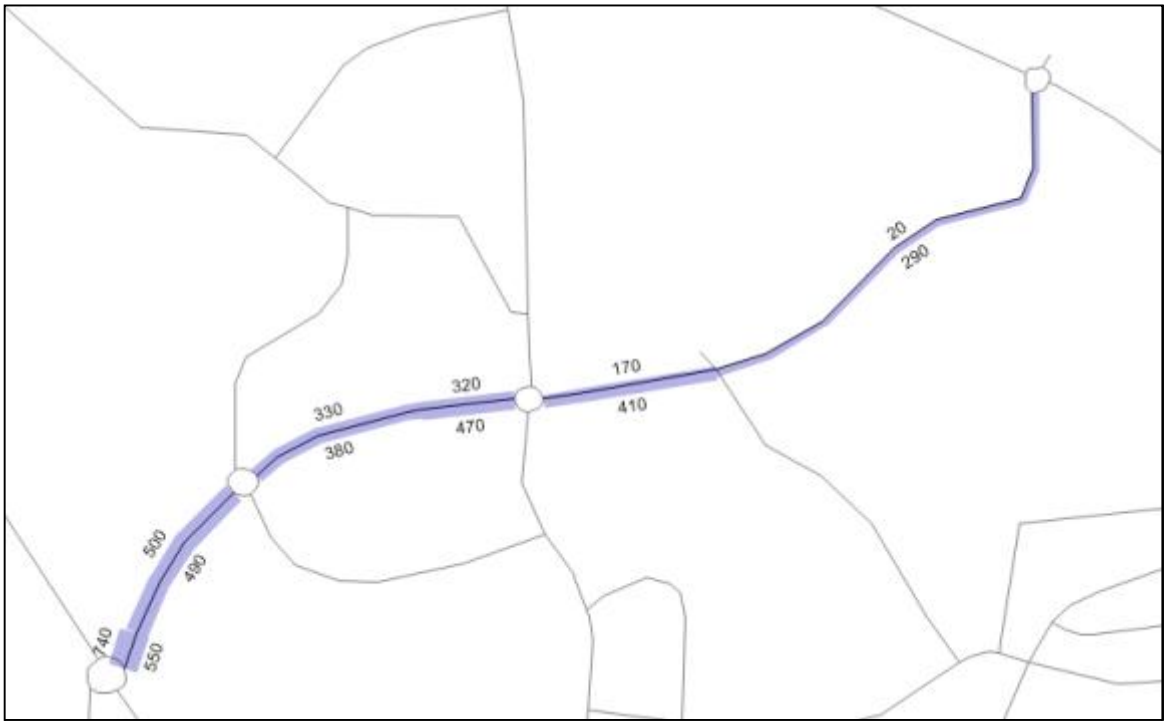


Figure 10.35: PM Peak Scenario D1 Keresley Link Road Traffic

10.5 NUMBER PLATE MATCHING

10.5.1 As a check against the traffic volumes the CASM HAM is predicting for the Keresley Link Road survey data collected in October 2014 in the Keresley area has been drawn upon. In October 2014, WSP commissioned a number plate recognition surveys to analyse traffic flow patterns through the area of the proposed Link Road. Vehicles were counted in both directions at seven locations around the Keresley area. Figure 10.36 shows the location of the counts and the approximate location of the Link Road in blue.

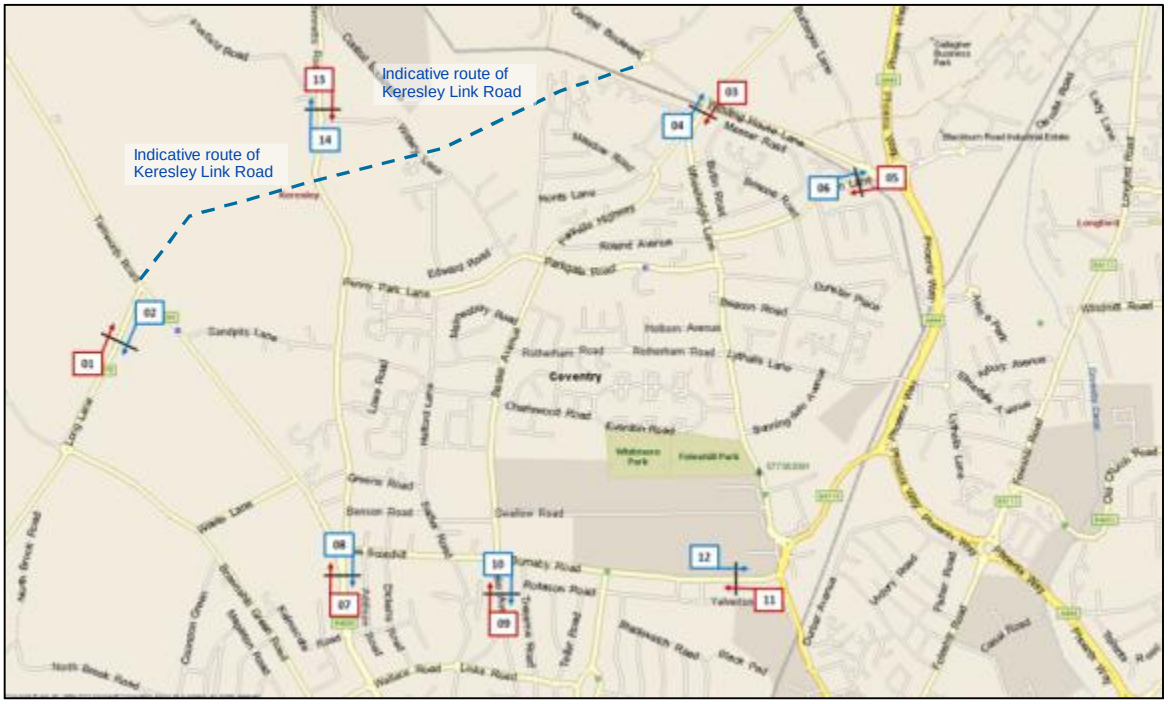


Figure 10.36: Count Locations for ANPR data

10.5.2 Surveys were analysed and routes selected which could potentially shift to the proposed Link Road for part of it or the whole length. A summary is presented below in Table 10.16.

10.5.3 A slight note of caution should be applied to these results: because the survey area was relatively tight we cannot be sure of the true origin and destinations of some of these vehicles. We have assumed that matches between particular pairs of cameras will have travelled a sufficient distance for them to re-route towards the Keresley Link Road to complete their journeys. However, it is also possible that some trips will have travelled shorter distances and so re-routing on to the Link Road would not be viable. Therefore, we applied a sensitivity test to some routes – assuming only 50% of matched vehicles would shift to the proposed Link Road – to provide an upper and a lower band estimate.

10.5.4 Analysis showed that around 4,390 to 6,035 vehicles, 13 to 18% of all traffic counted across all seven sites between 7am and 7pm, could potentially shift to the proposed road under current conditions. During the morning peak hour this is 420-560 and in the evening peak hour it is 545-750 vehicles (two-way).

10.5.5 As a comparison to the traffic flows the CASM model is suggesting, an estimate for how many vehicles could be using the road in the future was calculated. To the 2014 observed figures, before any development is considered, we applied 2034 NTEM growth rates. This increased the demand on the full link to 5,270 to 7,250 vehicles per day. (Please note that the NTEM growth factor will include growth from all homes planned around the Coventry area, so some growth is double-counted with the Keresley development. Although any double counting is considered likely to be minimal.)

10.5.6 Finally, we added the trips generated by the Keresley development, as predicted by the 2034 CASM HAM. These trips would predominantly use the western end of the link (between Tamworth Road and Bennetts Road South – see Figure 10.37), bringing traffic in the peak period up to 1,705 to 1,870 vehicles in the morning peak hour, and 1,945 to 2,190 in the afternoon peak hour (two-way). Again there is an element of double counting with this approach as some of the existing trips in 2014 will form part of the 2034 CASM HAM traffic flows, nevertheless it provides an optimistic scenario for the potential traffic that could use the Link Road. Based on this, we estimate a potential demand of up to 17,850-19,820 vehicles over the day on the western side of the Link Road.

Table 10.16: Potential Traffic Demand for the Keresley Link Road

Link Number	Peak Hour		Peak Period		12 hour period
	AM	PM	AM (7-9am)	PM (4-6pm)	7:00-19:00
2014 Potential Demand	420-560	545-770	815 -1,105	1,025-1,410	4,390-6,035
2034 Potential Demand	505-670	655-900	980-1,225	1,230-1,690	5,270-7,240
2034 demand from development	1,200	1,290	2,335*	2,425*	12,580*
2034 demand on Western Link Road	1,705-1,870	1,945-2,190	2,315-3,560*	3,655-4,115*	17,850-19,820*

* These were estimated using the same proportion as the figures for 2014 potential demand

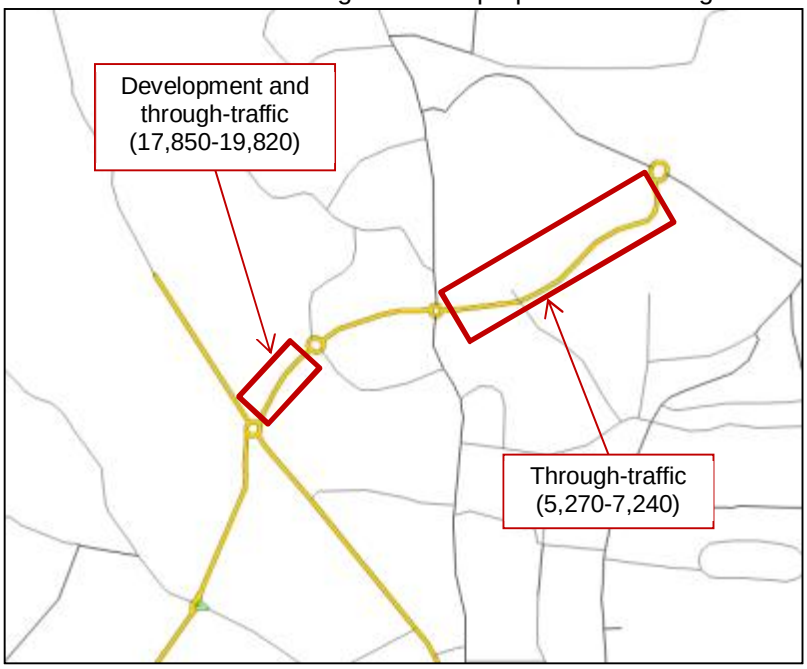


Figure 10.37: Estimated Demand on the Keresley Link Road over a 12-hour period in 2034 (7am-7pm)

10.6 SUMMARY

10.6.1 This chapter has assessed the impacts of various levels of development at Keresley without the Keresley Link Road and the impacts on the highway network. It has also considered for two scenarios when the Keresley development has 1,900 houses and 3,100 houses the impacts with and without the Keresley Link Road.

10.6.2 The assessment without the Keresley Link Road has indicated there are some parts of the highway network which experience an increase in traffic which increases the V/C ratio. These include B4076, Bennetts Road and Brownshill Green. Despite the increase in traffic on these roads the increases do not generate significant issues. There are also increases in traffic on Watery Lane and Penny Park Lane but these remain within a V/C ratio of under 50% which shows there's still a lot of available space on the highway network. The highway network statistics show an increase in network travel time and delay, with slight reductions in average speed however it is not significant, a reduction in 1kph from Scenario A2 to D2. There are also some increases in journey time in the local area as a result of the increased Keresley development, however the maximum journey time increase is 46 seconds over an 11% increase. Traffic flows on the local highway network do increase on some parts quite significantly with increases of over 200 vehicles in one direction on Tamworth Road, Bennetts Road and Watery Lane. Average junction delay increases are low, with some junctions experiencing up to 20 seconds increase and two experiencing over 40 seconds in the PM peak. It would be important that, as and when the planning application for the site comes forward detailed junction modelling is undertaken to ensure the junctions around the site operate effectively.

10.6.3 The assessment with the Keresley Link Road for Scenario C and D shows there is an improvement in V/C on local roads around the Keresley area, including Watery Lane. However there is an increase in the V/C ratio and more traffic on roads connecting with the Keresley Link Road, as a result of some traffic being drawn into the area to use the new Link Road, including Long Lane and Coudon Wedge Drive. Highway network statistics show that the Link Road provides most improvement to the highway network performance when 3,100 houses are built. Journey times with the Link Road in place improve the most for movements between A45 and Bennetts Road, with savings up to 135 seconds. With the Keresley Link Road in place there is a reduction in traffic flow on Tamworth Road, Sandpits Land and Bennetts Road, with some reduction on Watery lane. Traffic volumes increase on Long Lane as a result of the Link Road attracting more traffic. The traffic flow on the Keresley Link Road are greater in the west with two way flows approaching 1,250 vehicles. The traffic flow on the eastern section of the road is lower, 300 vehicles as a two way flow. The eastern section of the road could become more popular following improvements to M6 Junction 3 and further development growth in Nuneaton and Bedworth. As a check against the CASM HAM outputs survey data collected in October 2014 was used to try and identify the existing traffic which could potentially use the Link Road in the future. This indicates that by 2034 there could be 17,850-19,820 vehicles using the road daily, with the western part of the Link Road having a lot more trips than the eastern section.

11 CASM MODEL REGISTRY

11.1 CASM TDM MODEL RECORD

SCENARIO	CASM MODEL VERSION (FILE PATH LINKED)
Scenario 1	\\ukcol2app14\Data\05 Coventry\01 NDM Ver Files\Forecasting\2034 CCC Local Plan Scenarios\Scenario 1
Scenario 2	\\ukcol2app14\Data\05 Coventry\01 NDM Ver Files\Forecasting\2034 CCC Local Plan Scenarios\Scenario 3
Scenario 3	\\ukcol2app14\Data\05 Coventry\01 NDM Ver Files\Forecasting\2034 CCC Local Plan Scenarios\Scenario 3
Scenario 4	\\ukcol2app14\Data\05 Coventry\01 NDM Ver Files\Forecasting\2034 CCC Local Plan Scenarios\Scenario 4

11.2 CASM HAM MODEL RECORD

SCENARIO	CASM MODEL VERSION (FILE PATH LINKED)
2013 Base Year AM Peak	CASM_2013_v89_AM_Final.ver
2013 Base Year PM Peak	CASM_2013_v89_PM_Final.ver
2034 Scenario 1 AM Peak	CASM_Forecast_2034_LocalPlan_v16_AM_Sc1_It06_Revised_Assigned.ver
2034 Scenario 1 PM Peak	CASM_Forecast_2034_LocalPlan_v16_PM_Sc1_06_Revised_Signals_Assigned.ver
2034 Scenario 2 AM Peak	CASM_Forecast_2034_LocalPlan_Sc2_AM_It04_Revised_Assigned.ver
2034 Scenario 2 PM Peak	CASM_Forecast_2034_LocalPlan_Sc2_PM_Revised_Signals_It04_Assigned.ver
2034 Scenario 3 AM Peak	CASM_Forecast_2034_LocalPlan_Sc3_AM_Revised_It08_Assigned.ver
2034 Scenario 3 PM Peak	CASM_Forecast_2034_LocalPlan_Sc3_PM_Revised_Signals_It08_Update_Assigned.ver
2034 Scenario 4 AM Peak	CASM_Forecast_2034_LocalPlan_Sc4_AM_It10_Revised_Assigned.ver
2034 Scenario 4 PM Peak	CASM_Forecast_2034_LocalPlan_Sc4_PM_It10_Revised_Signals_Assigned.ver
Keresley Scenario A AM Peak	CASM_Forecast_2034_Kereley Link Road_AM_ScA_Assigned.ver
Keresley Scenario A PM Peak	CASM_Forecast_2034_Kereley Link Road_PM_ScA_Sig_Asgd.ver
Keresley Scenario B AM Peak	CASM_Forecast_2034_Kereley Link Road_AM_ScB_Assigned.ver
Keresley Scenario B PM Peak	CASM_Forecast_2034_Kereley Link Road_PM_ScB_Sig_Asgd.ver
Keresley Scenario C AM Peak	CASM_Forecast_2034_Kereley Link Road_AM_ScC_Assigned.ver
Keresley Scenario C PM Peak	CASM_Forecast_2034_Kereley Link Road_PM_ScC_Sig_Asgd.ver
Keresley Scenario D AM Peak	CASM_Forecast_2034_Kereley Link Road_AM_ScD_Assigned.ver
Keresley Scenario D PM Peak	CASM_Forecast_2034_Kereley Link Road_PM_ScD_Sig_Asgd.ver

11.3 CASM PTHAM MODEL RECORD

SCENARIO	CASM MODEL VERSION (FILE PATH LINKED)
Scenario 1 and 4	\\uk.wspgroup.com\ukcentral\Projects\70001991 - CSW WMHA Coventry\D Design and Analysis\Transportation\VISUM\CASM Model Files\Future Year\PTAM\Version Including Future Year Schemes\2034\2034 Coventry Local Plan Schemes\Scenario 3
Scenario 2	\\uk.wspgroup.com\ukcentral\Projects\70001991 - CSW WMHA Coventry\D Design and Analysis\Transportation\VISUM\CASM Model Files\Future Year\PTAM\Version Including Future Year Schemes\2034\2034 Coventry Local Plan Schemes\Scenario 2
Scenario 3	\uk.wspgroup.com\ukcentral\Projects\70001991 - CSW WMHA Coventry\D Design and Analysis\Transportation\VISUM\CASM Model Files\Future Year\PTAM\Version Including Future Year Schemes\2034\2034 Coventry Local Plan Schemes\Scenario 3

Appendix A

COVENTRY CITY COUNCIL LOCAL PLAN DEVELOPMENT ASSUMPTIONS

APPENDIX A-1

LOCAL PLAN DEVELOPMENT ASSUMPTIONS

DATA SOURCES

- **Uncertainty Logs**
- **Additional Developments from CCC (Whitley South, Lyons Park etc)**
- **Developments within GIS Layer (that have not been captured in any other source)**
- **Cross reference against developments within the CCC 2031 Local Plan HAM (given this information was collated 18 months ago)**

NTEM CONSTRAINED?

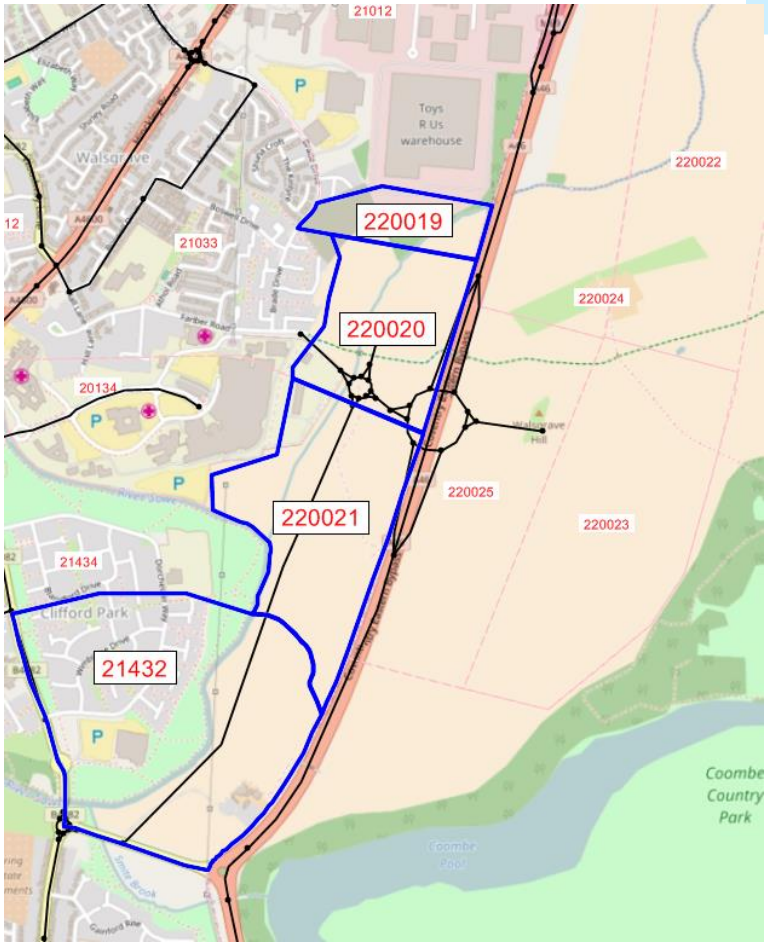
→ Household and employment growth in Coventry authority constrained to NTEM predictions?

	Households	Employment
2034	37,703	18,080
	25,000	18,080

WSP | PARSONS BRINCKERHOFF

C1: WALSGRAVE HILL FARM

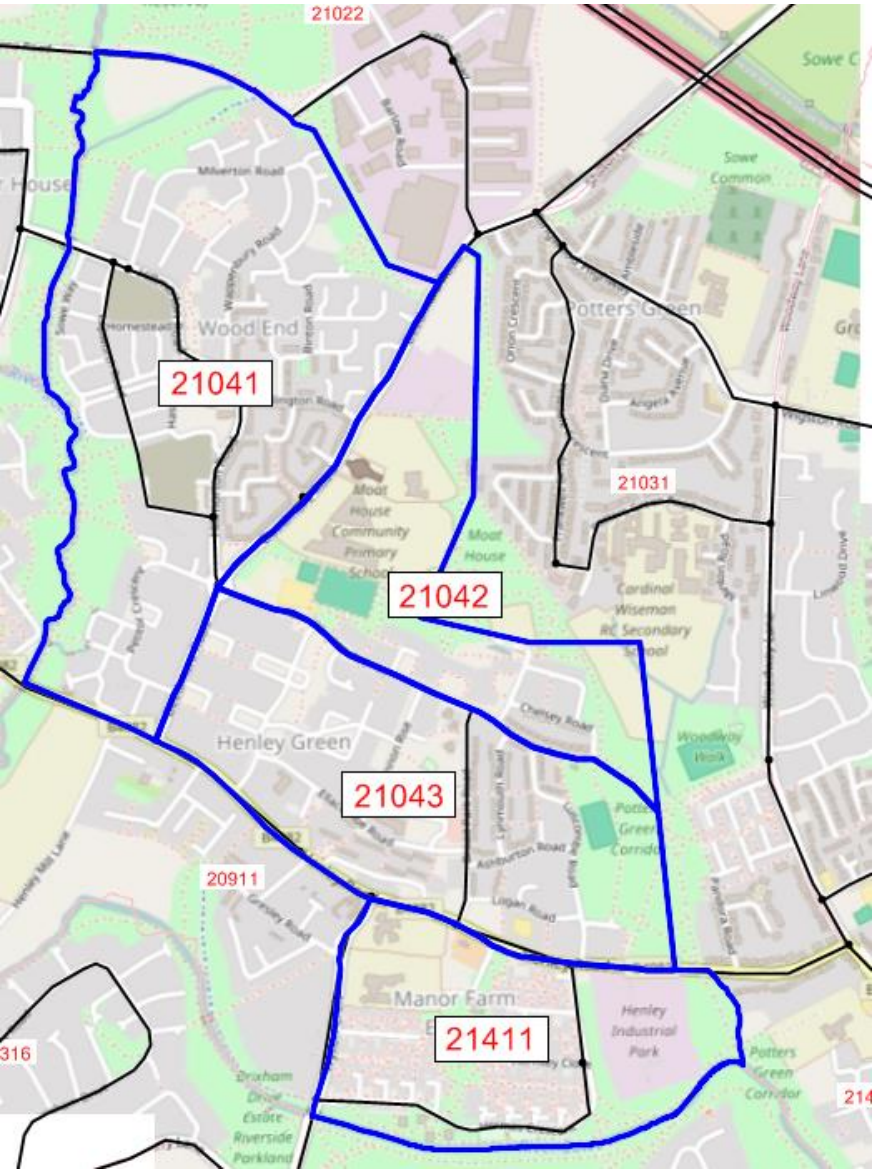
- → Split evenly across 4 zones
- → Schools none



Year	Dwellings	Population
2026	700	1,661
2034	900	2,135

WSP | PARSONS BRINCKERHOFF

C2 (A+B) : MANOR FARM



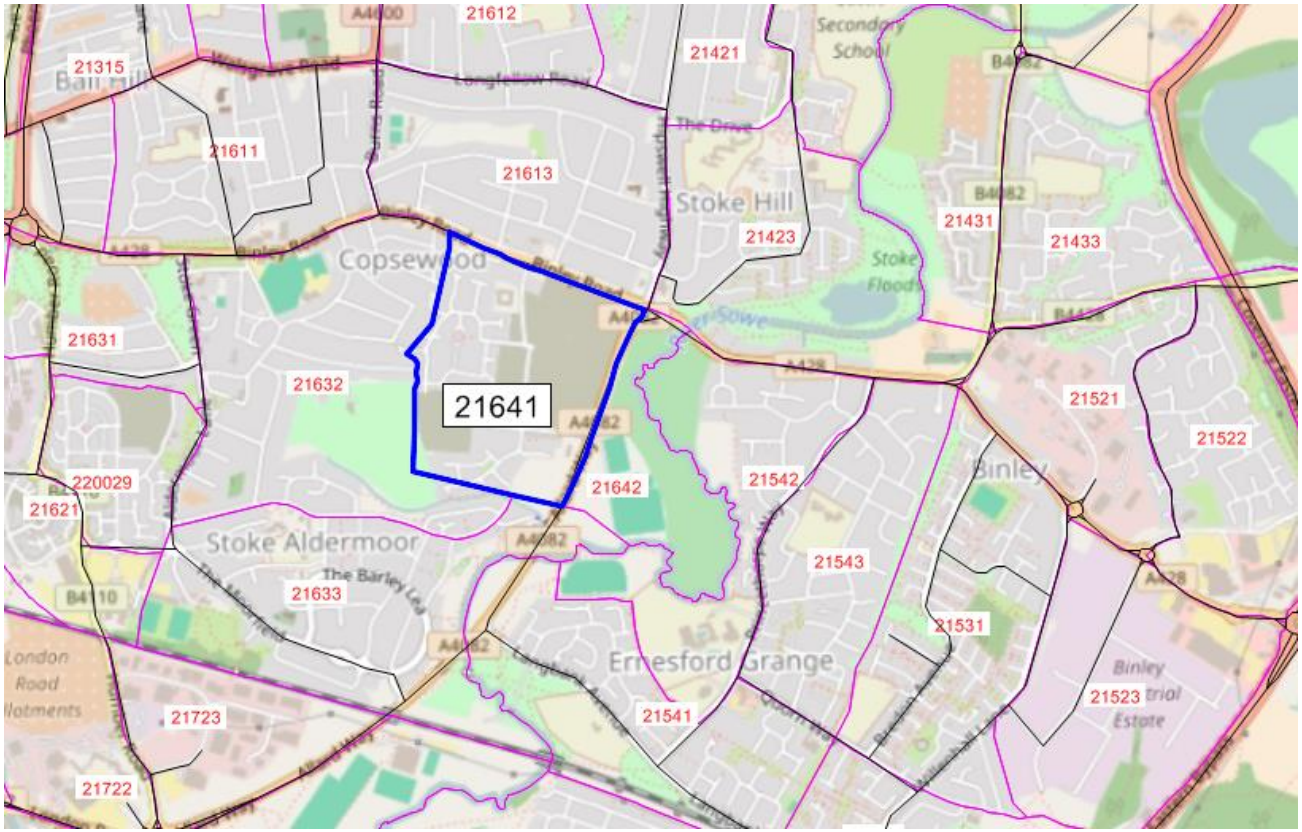
→ Split evenly across 5 zones

Year	Dwellings	Population
2026	855	2,028
2034	855	2,028

WSP | PARSONS BRINCKERHOFF

C3A+B: NEW CENTURY PARK

Year	Dwellings	Population
2026	674	1,599
2034	674	1,599



WSP | PARSONS BRINCKERHOFF

C4A+B: FORMER PEUGEOT SITE

→ Just 220029

Year	Dwellings	Population
2026	314	745
2034	314	745

WSP | PARSONS BRINCKERHOFF

C5: COVENTRY COLLEGE

Year	Dwellings	Population
2026	264	626
2034	264	626

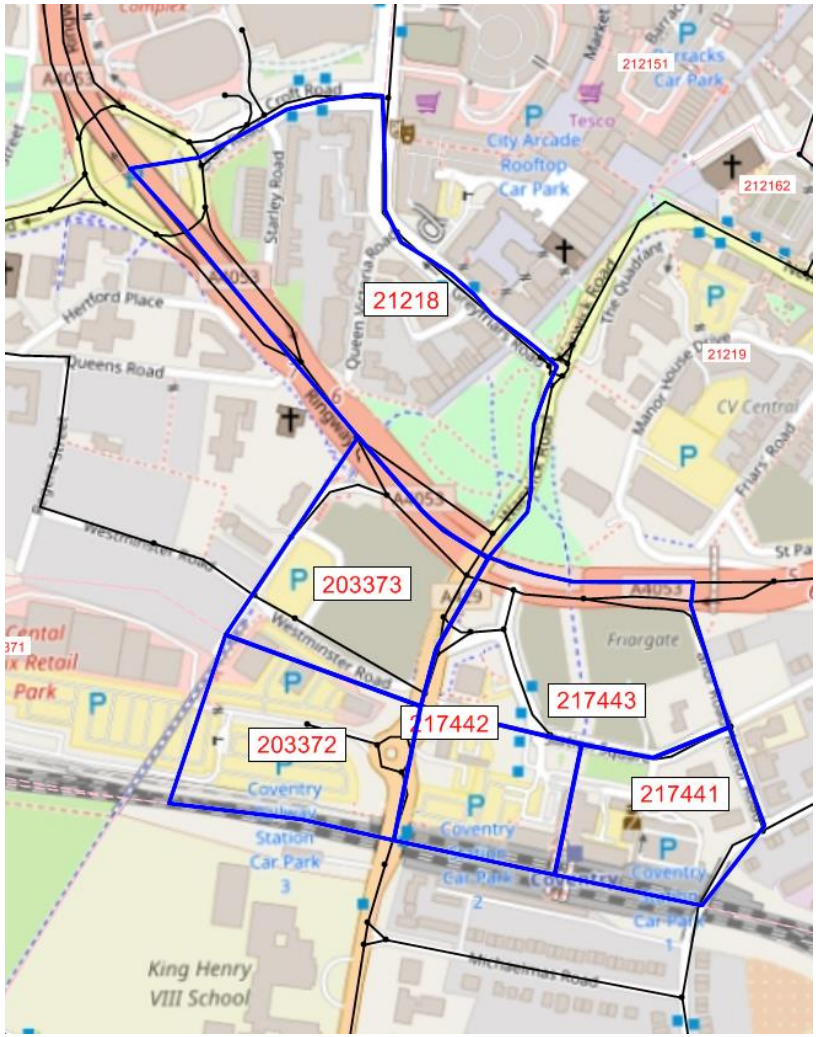
WSP | PARSONS BRINCKERHOFF

C6: EVENING TELEGRAPH SITE

Year	Dwellings	Population
2026	230	546
2034	230	546

WSP | PARSONS BRINCKERHOFF

C7: FRIARGATE



- Houses Split evenly between 203363, 217443
- Employment evenly every zone apart from 21218

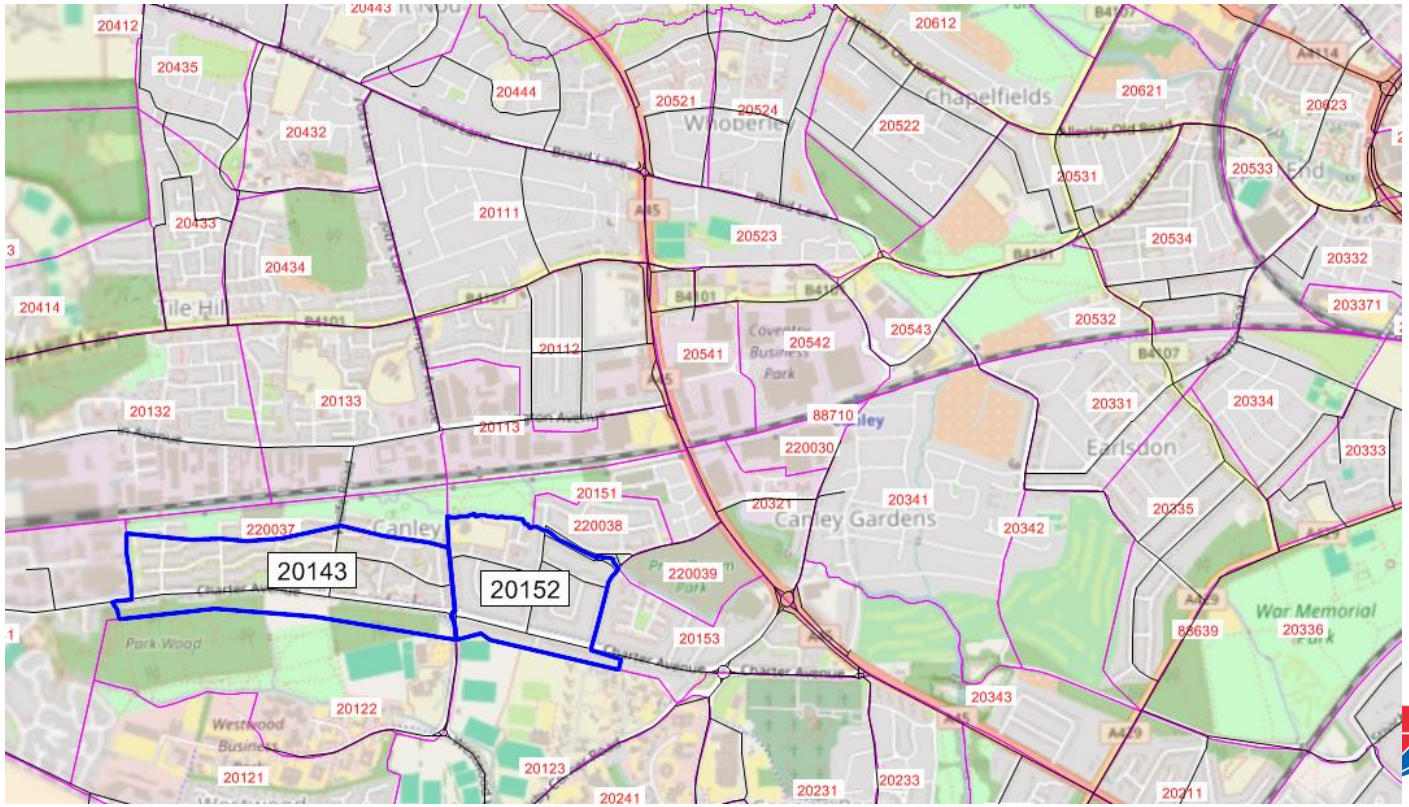
Year	Dwellings	Population	Jobs
2019	0	0	1,800
2026	300	712	11,250
2034	400	949	15,000

WSP | PARSONS BRINCKERHOFF

C8A+B: CANLEY

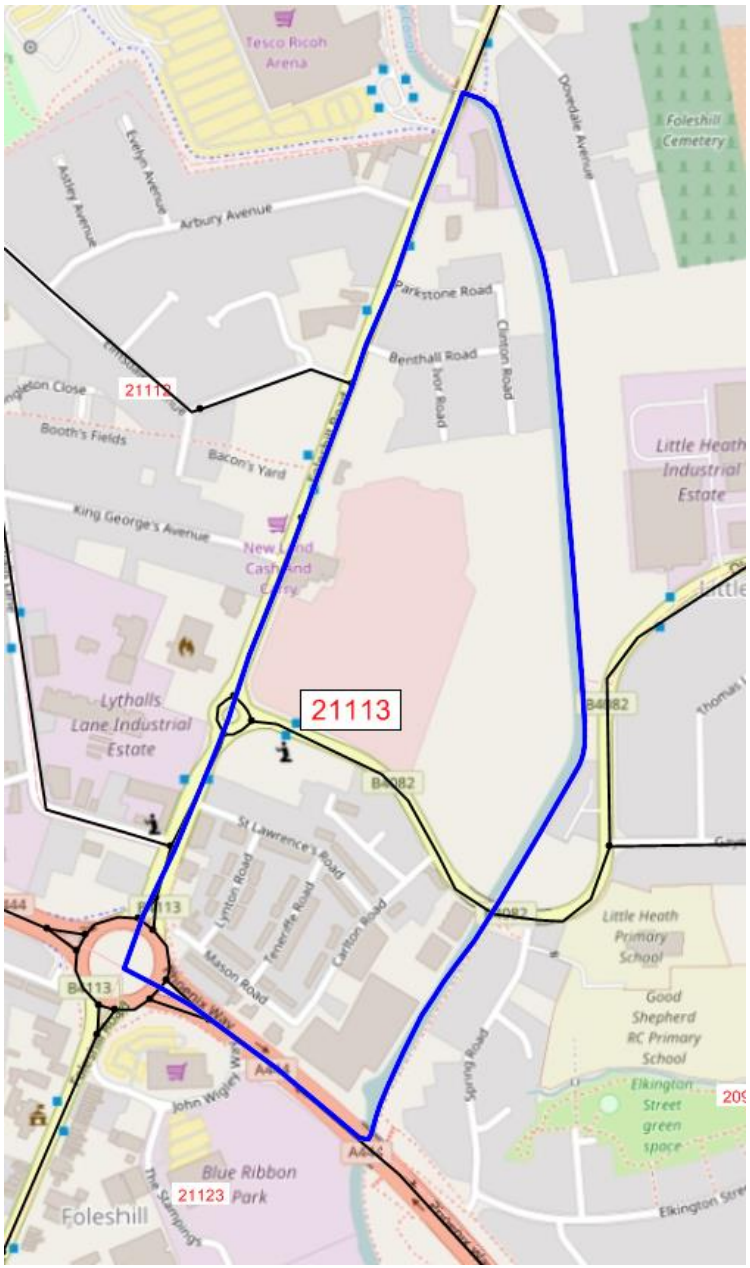
→ Split evenly across 220037 and 20151

Year	Dwellings	Population
2026	481	1141
2034	481	1141



WSP | PARSONS BRINCKERHOFF

C9: ACCORDIS, FOLESHILL ROAD

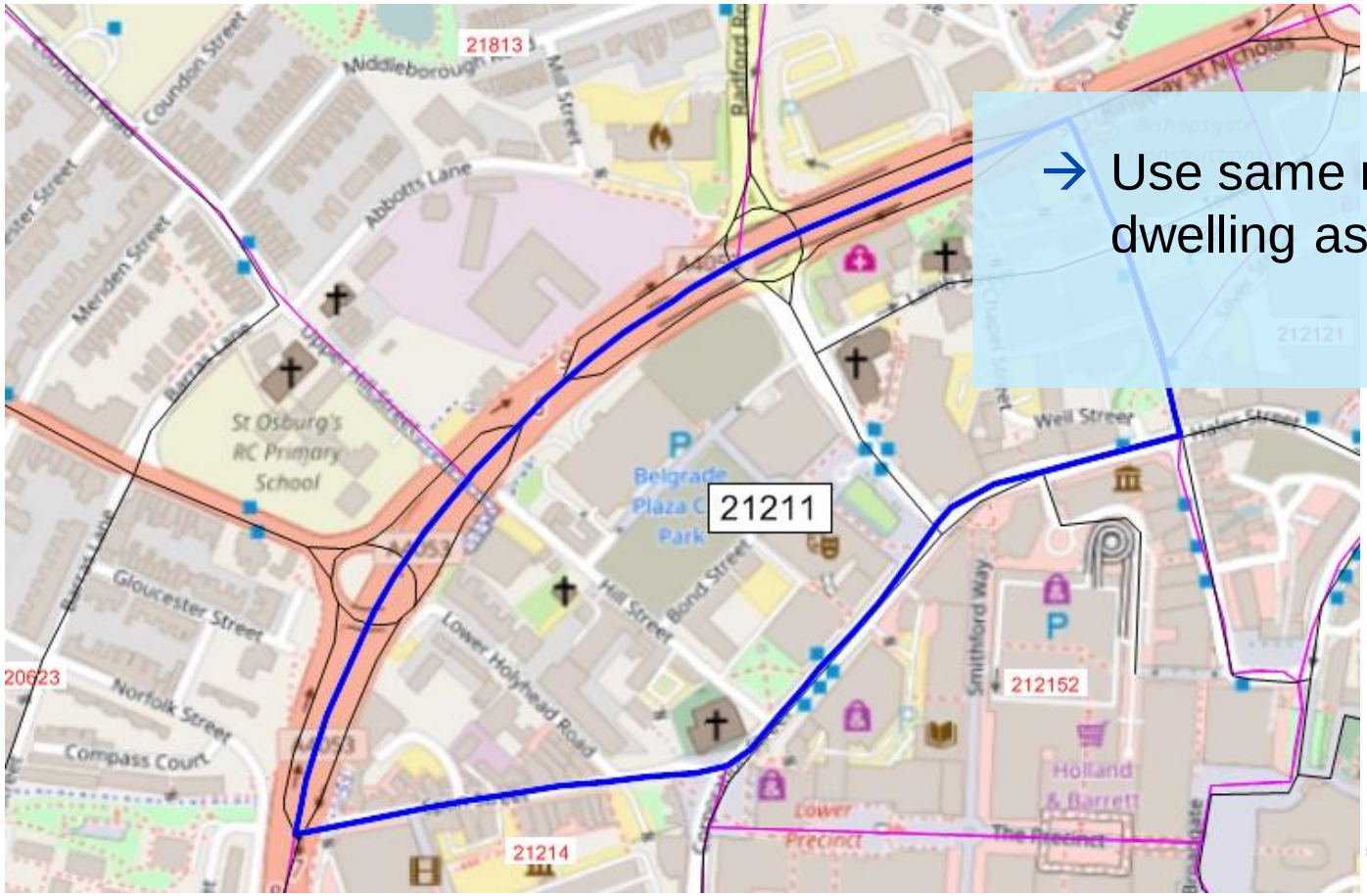


Year	Dwellings	Population
2026	344	816
2034	344	816

WSP | PARSONS BRINCKERHOFF

C10: AXA TOWER, WELL STREET

Year	Dwellings	Population
2026	286	678
2034	286	678



→ Use same number of people per dwelling as Bishopsgate

WSP | PARSONS BRINCKERHOFF

C11: PARAGON PARK

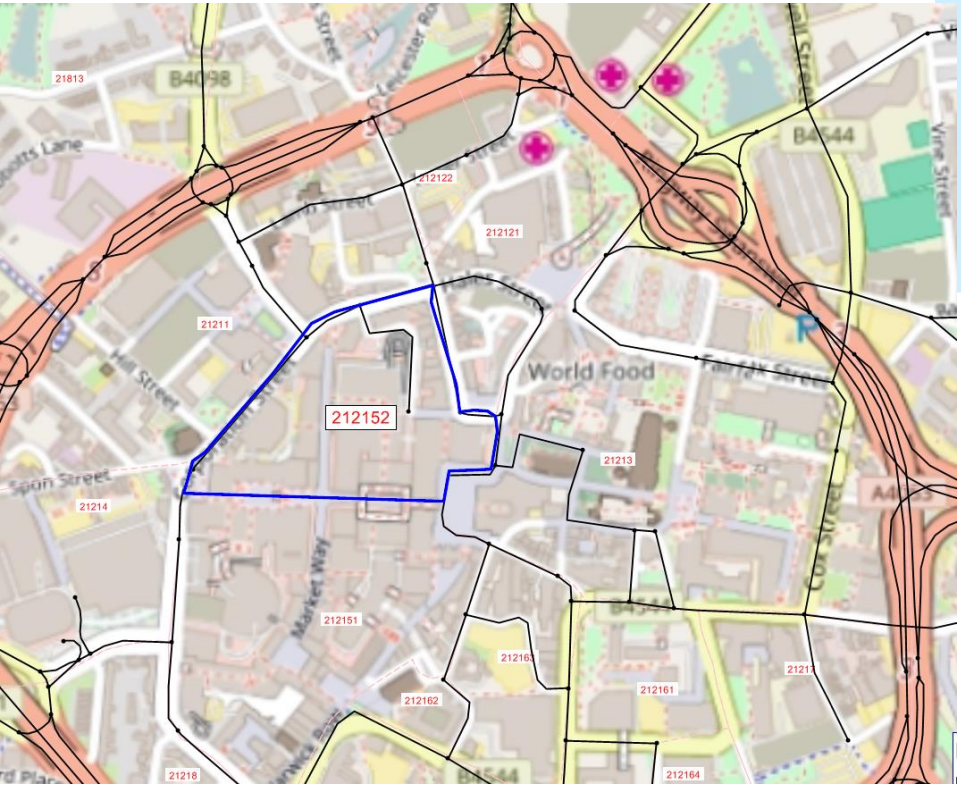
→ Split evenly across 2 zones

Year	Dwellings	Population
2026	700	1661
2034	700	1661

WSP | PARSONS BRINCKERHOFF

C12: CENTRAL SHOPPING AREA NORTH

Year	Dwellings	Population	Jobs
2026	90	214	0
2034	300	712	447

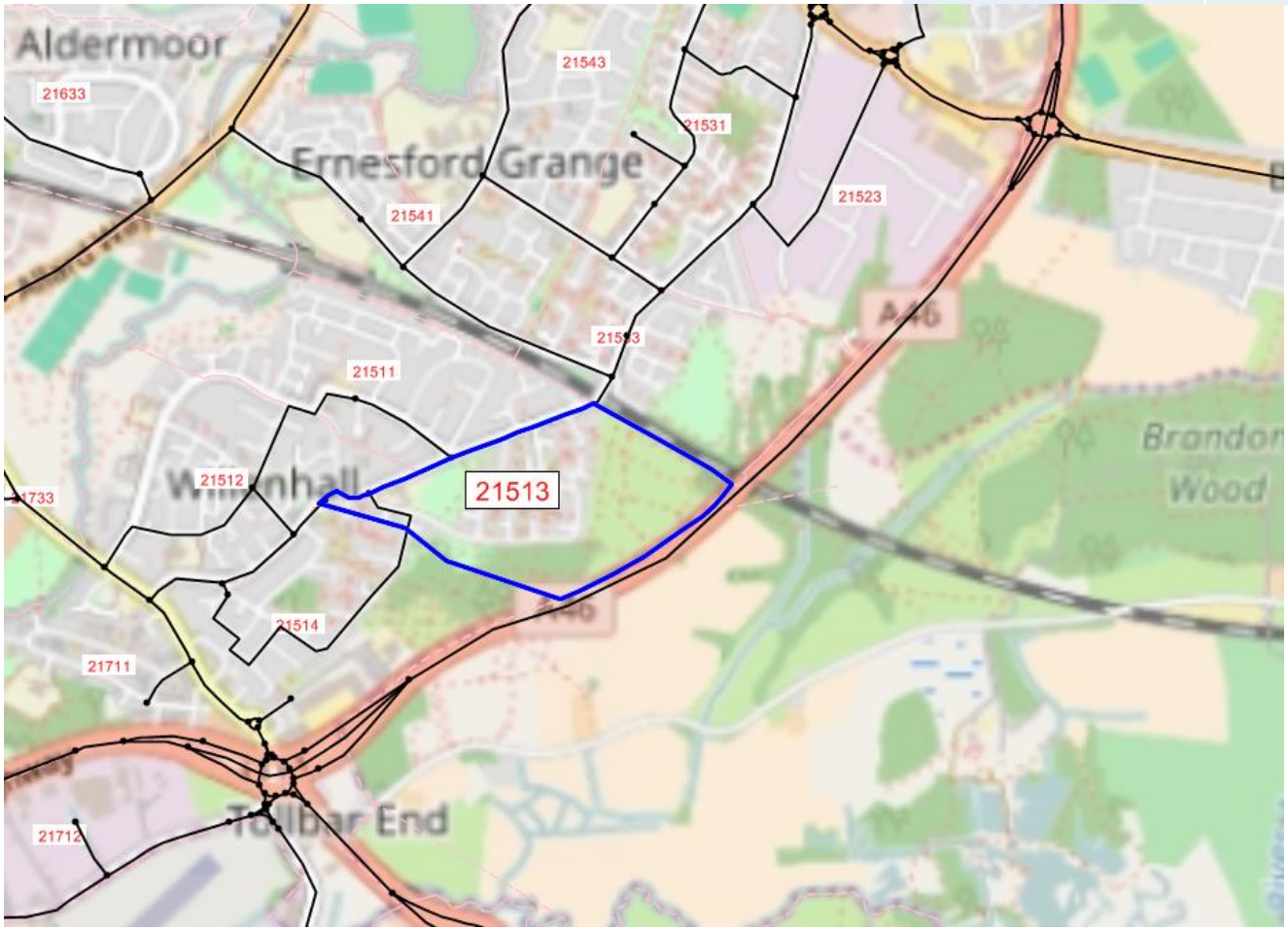


- Assumed 10,000 sqm of retail is GFA of High Street Retail (19 sqm per FTE)
- If, for example, land use was Superstore, there would be 94 jobs

WSP | PARSONS BRINCKERHOFF

C13: WILLENHALL TRIANGLE

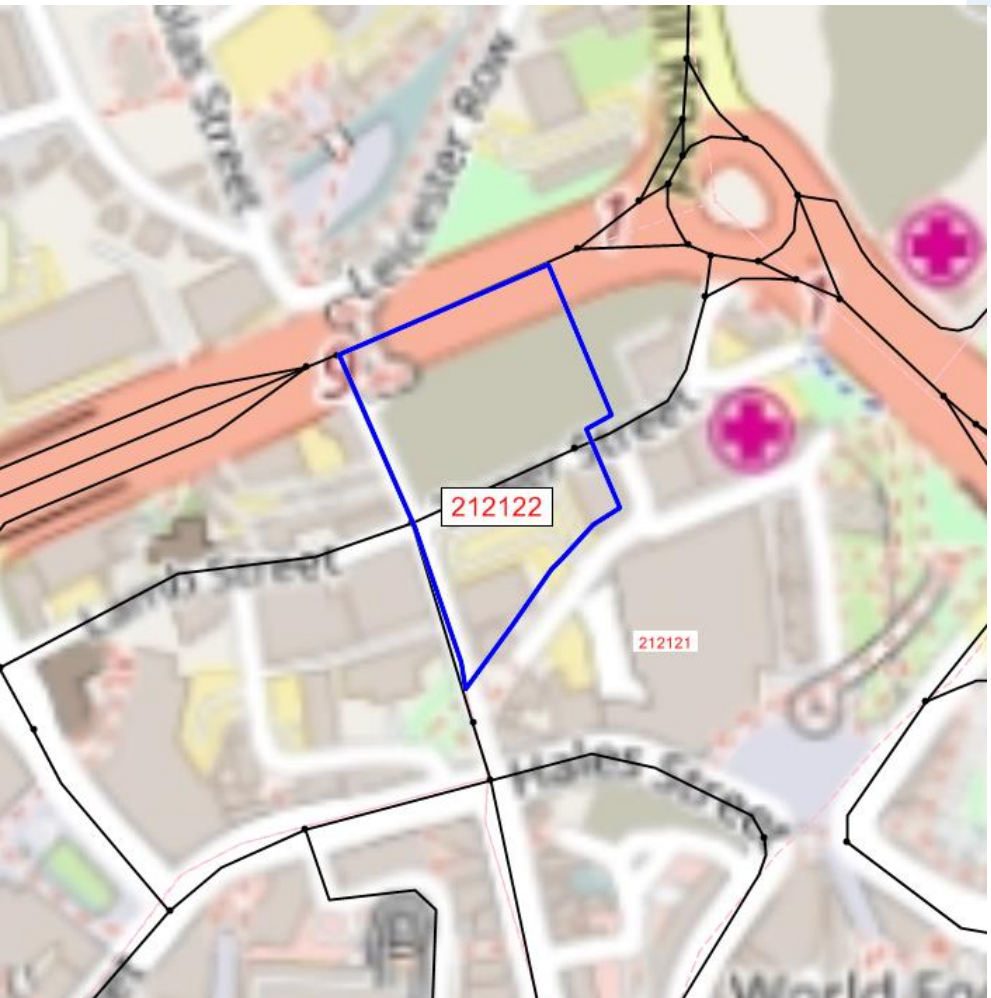
Year	Dwellings	Population
2026	255	605
2034	255	605



WSP | PARSONS BRINCKERHOFF

C14: BISHOPGATE

Year	Dwellings	Population
2026	265	1,006
2034	265	1,006

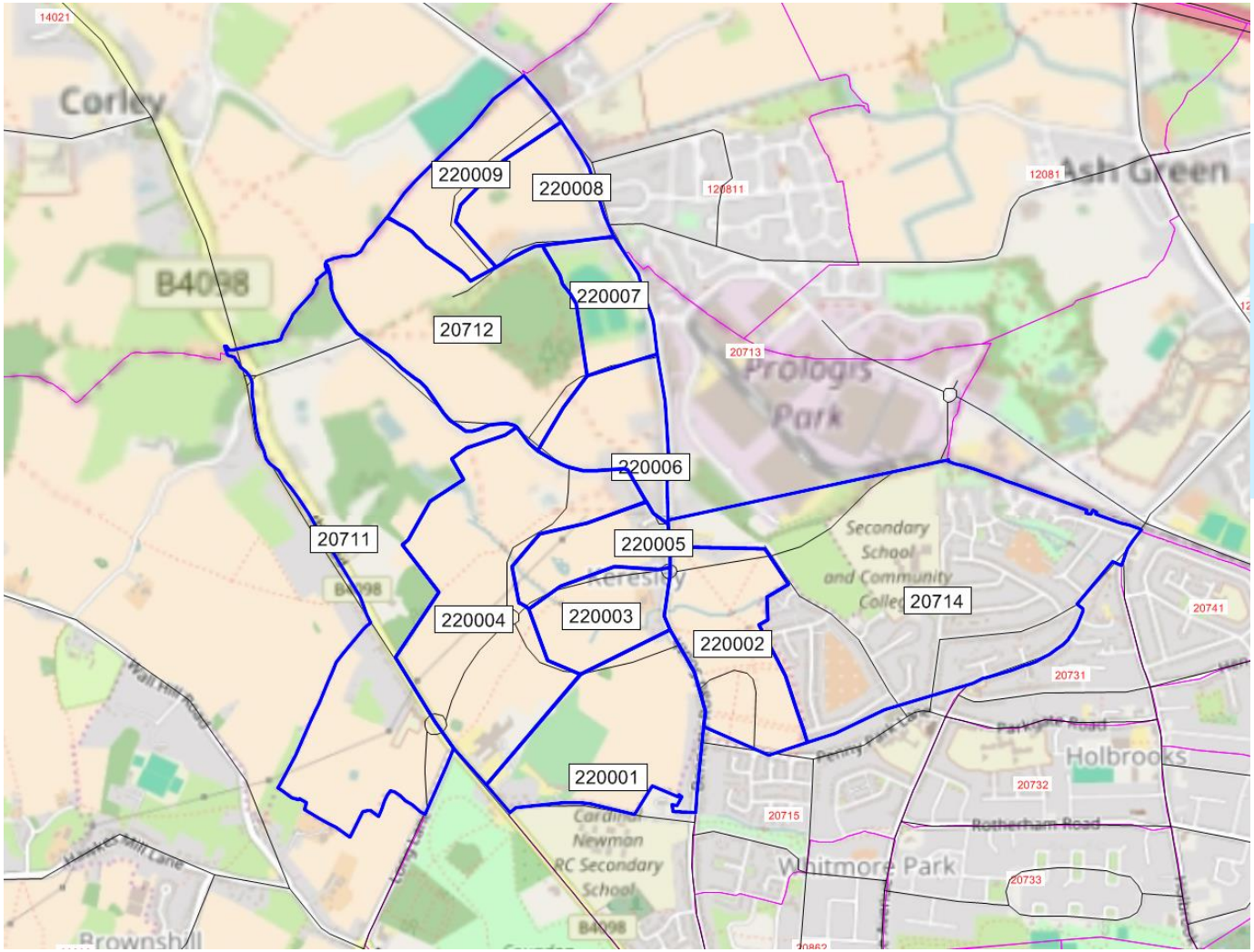


→ Greater population density, as the dwellings are student accommodation [as agreed by CCC on 13/10/2016]

WSP | PARSONS BRINCKERHOFF

C15/17/18 KERESLEY

Year	Dwellings	Population
2019	50	119
2026	1,850	4,389
2034	3,100	7,354



- Schools? Two-form entry primary & 8th-form secondary
- Primary 200001
- Secondary 200007

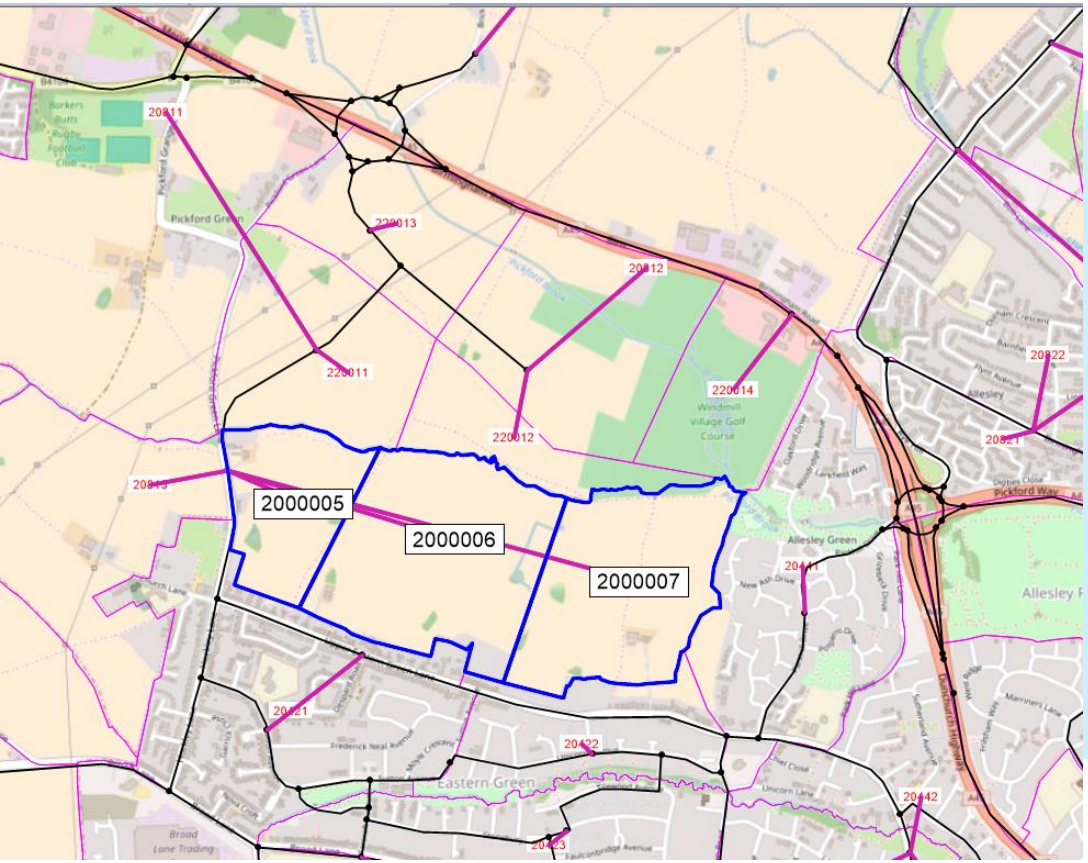
WSP | PARSONS BRINCKERHOFF

C15/17/18: KERESLEY

CASM ZONE	Dwellings	Percentage
220008	232	7%
200009	232	7%
220007	86	3%
200006	289	9%
20711	67	2%
220004	804	26%
220005	219	7%
220003	218	7%
220001	471	15%
220002	441	14%
20714	43	1%

C16A+B C22: EASTERN GREEN

Year	Dwellings	Population	Jobs
2026	1175	2787	4250
2034	2250	5338	4250

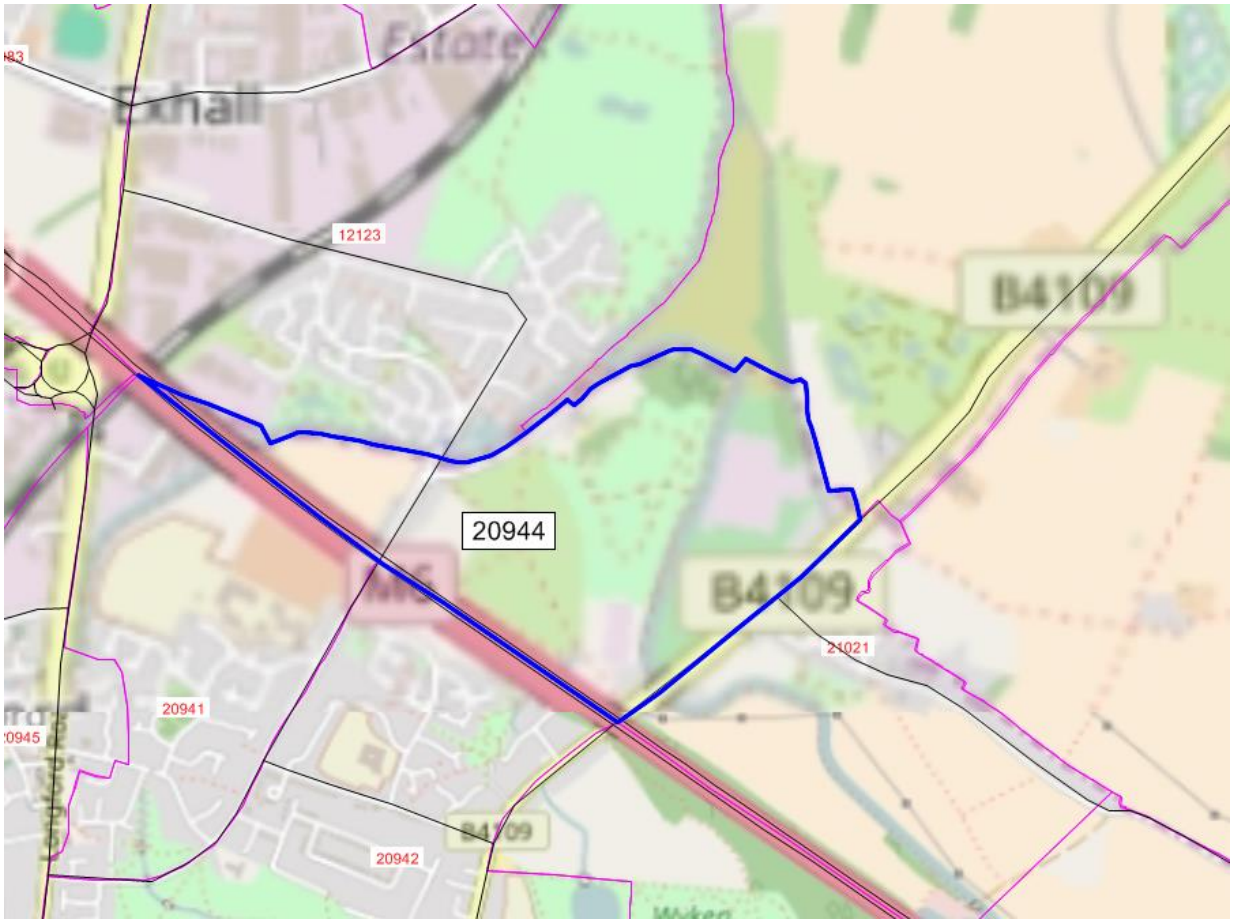


- Associated highway infrastructure is a grade-separated roundabout (not developer internal network)
- Schools? A two-form primary school locate same location as Eastern Green work
- Zone 20813 split into zones # 2000005, 2000006, 2000007 (these three zones were previously spare zones).
- The development is spread across these three new zones and existing zones 20812, 220011, 220012, 2200113 [refer to Eastern Green developer assumptions]

WSP | PARSONS BRINCKERHOFF

C19: SUTTON STOP

Year	Dwellings	Population	Jobs
2026	285	676	135
2034	285	676	135

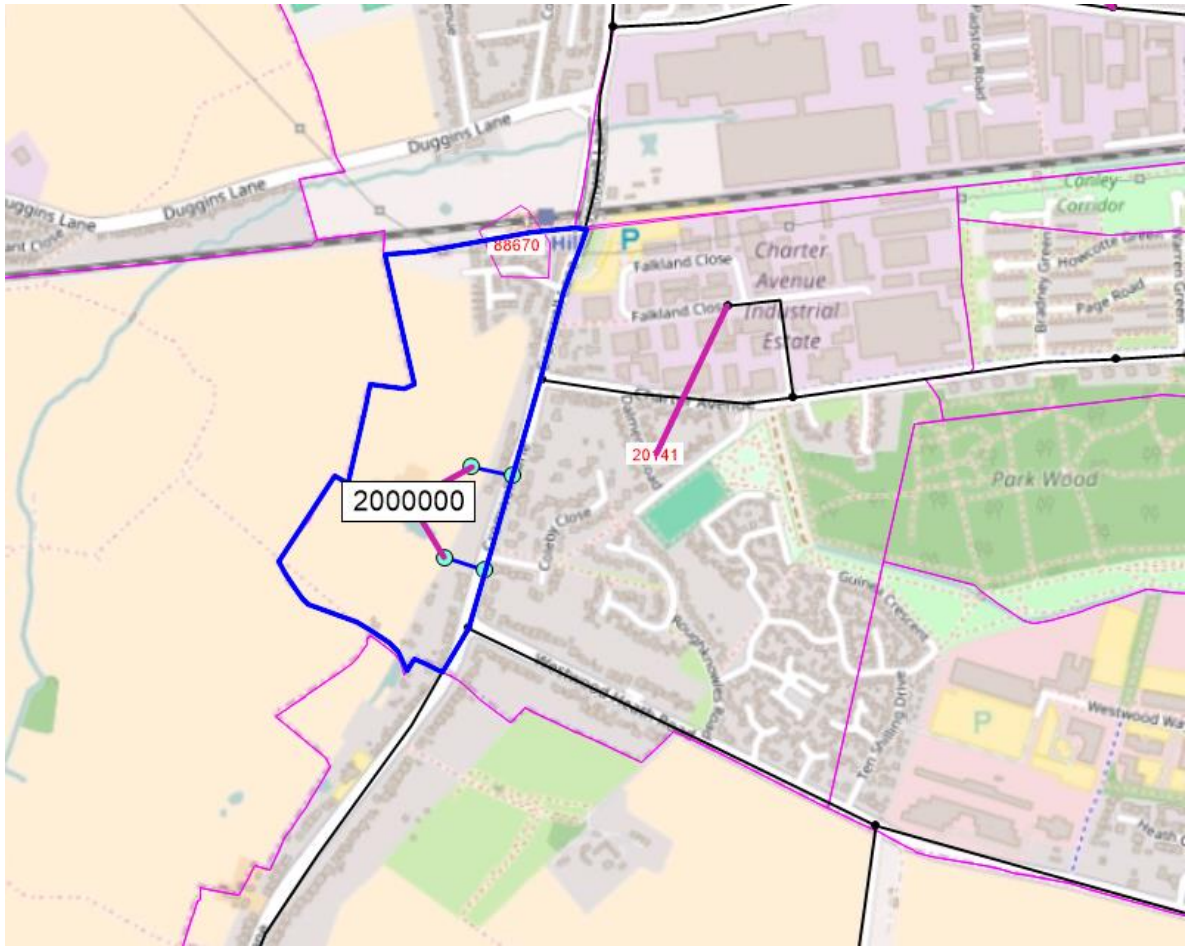


- 1.5 hectares of B1/B2/B8 floor space 3,800sq/m GI floor space
- There in 2026 and 2034
- B1 – 12m2 per FTE 85 jobs
- B2 – 36m2 per FTE 33 jobs
- B8 – 70m2 per FTE 17 jobs

WSP | PARSONS BRINCKERHOFF

C21: LAND WEST OF CROMWELL LANE

Year	Dwellings	Population
2026	240	569
2034	240	569

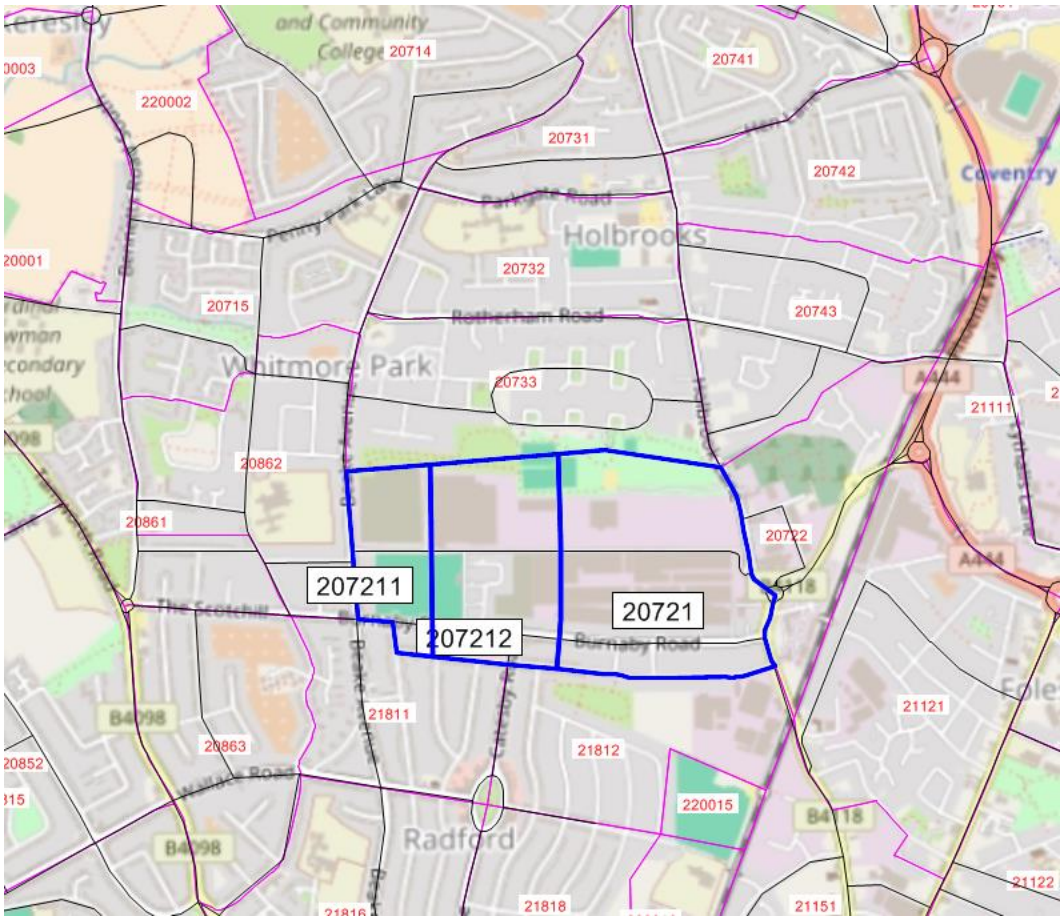


→ Zone 20141 has now been split, development now in zone # 2000000 (previously a spare zone)

WSP | PARSONS BRINCKERHOFF

C23: WHITEMORE PARK

Year	Dwellings	Population	Jobs
2026	730	1732	100
2034	730	1732	100

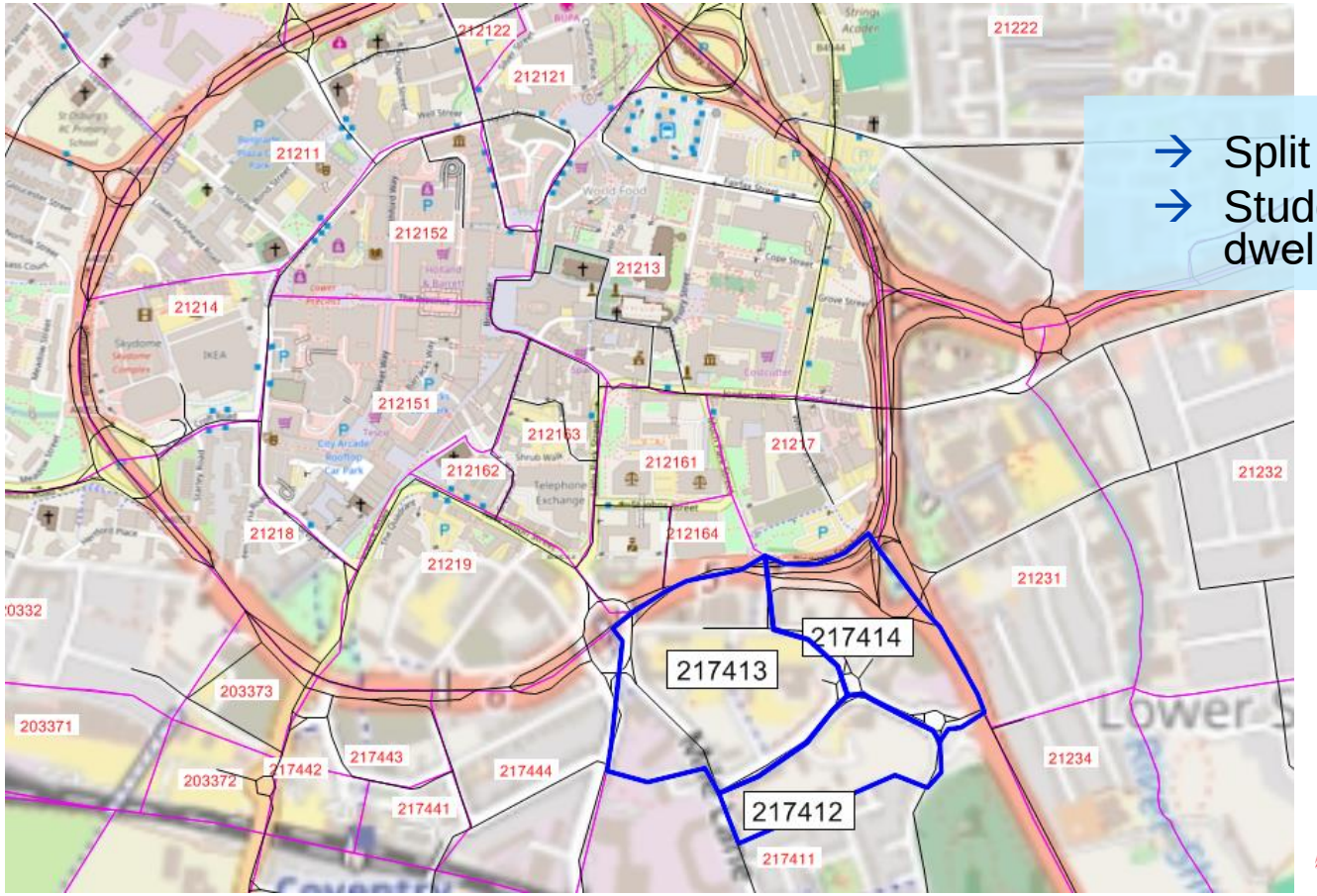


→ Split evenly across 3 zones

WSP | PARSONS BRINCKERHOFF

C24: PARKSIDE

Year	Dwellings	Population
2026	300	712
2034	300	712

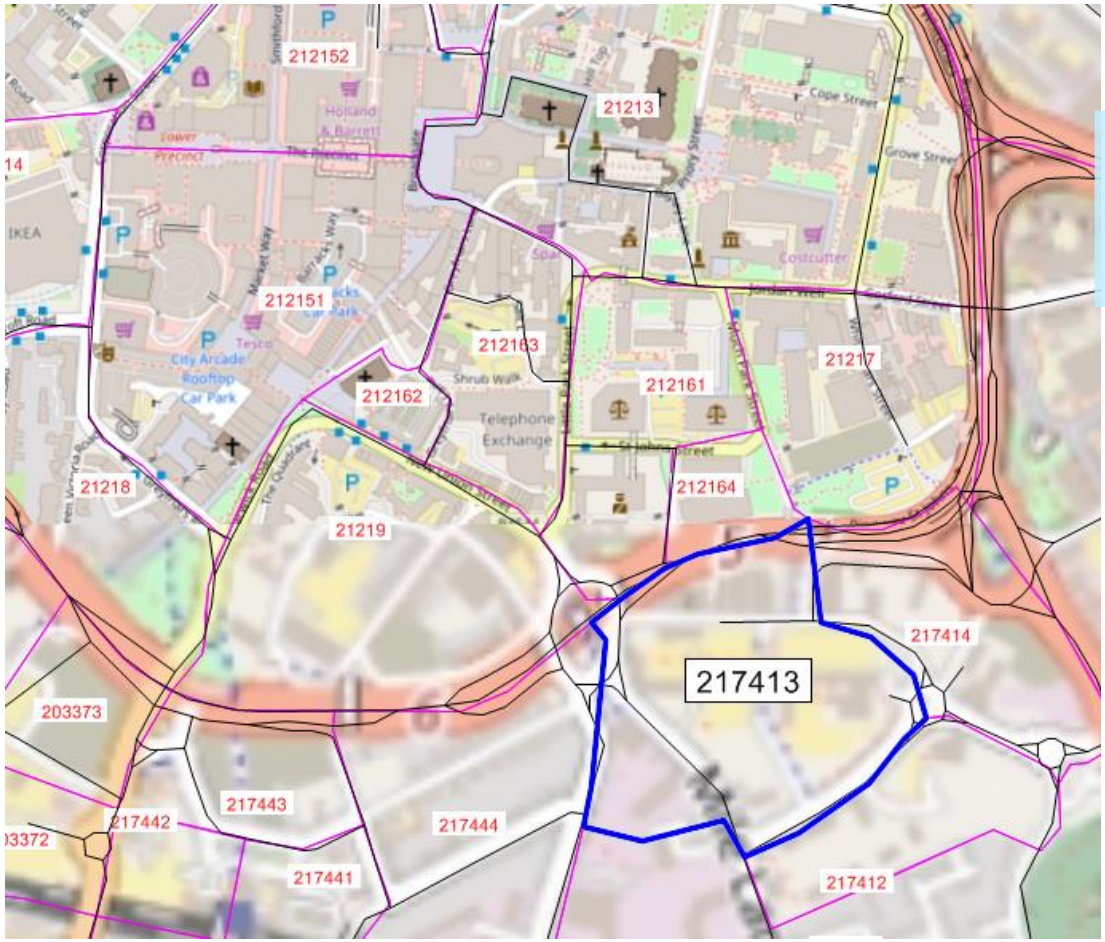


- Split evenly across 3 zones
- Student as Bishopgate – people per dwelling….

WSP | PARSONS BRINCKERHOFF

C25: FORMER FORMULA 1 HOTEL

Year	Dwellings	Population
2026	285	1082
2034	285	1082



→ Student as Bishopgate – people per dwelling….

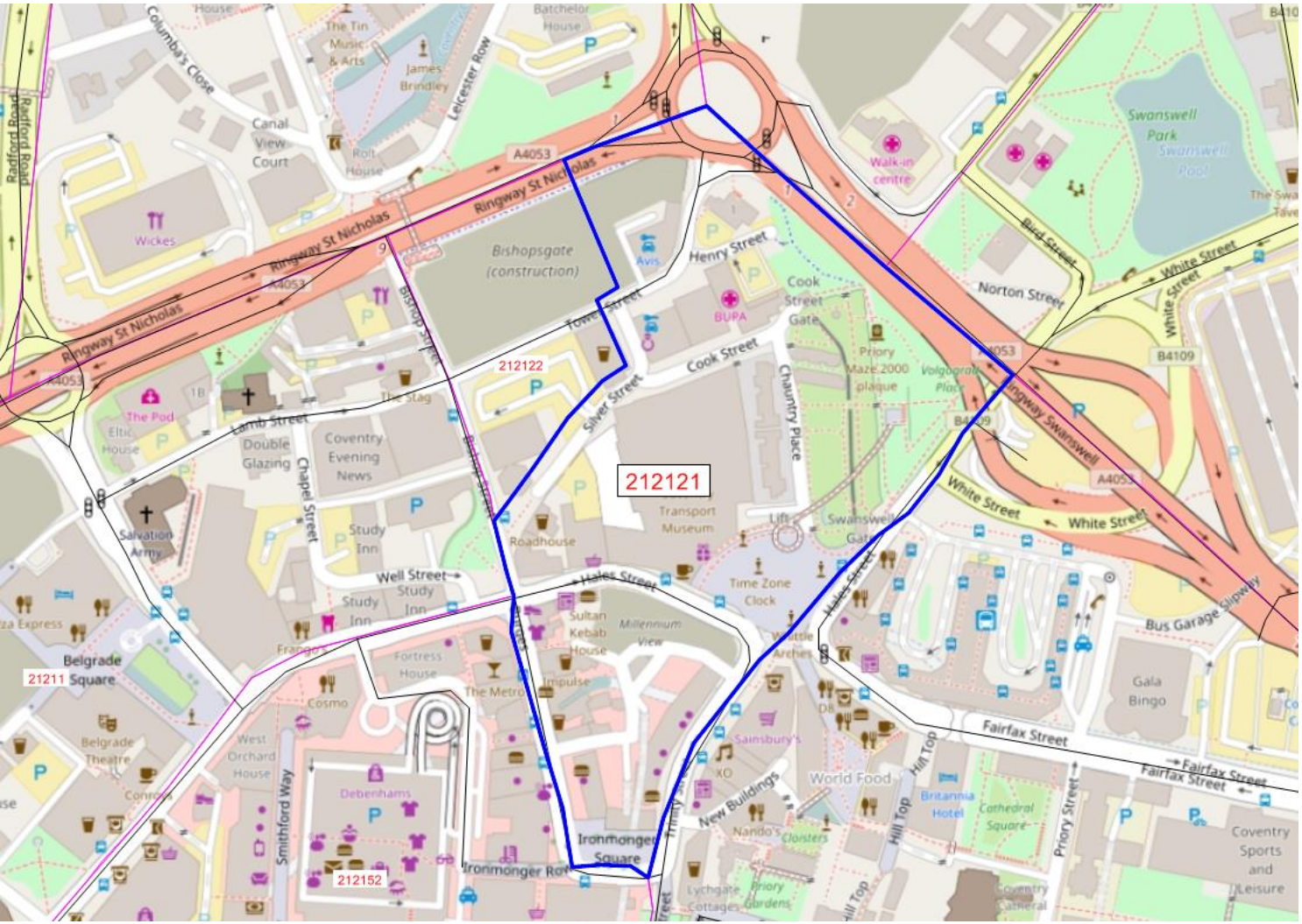
WSP | PARSONS BRINCKERHOFF

C26: TOWN CENTRE

Year	Dwellings	Population	Jobs
2026	1550	3677	859
2034	2085	4946	1191

- Cultural Quarter
- Civic Quarter
- Far Gosford St Quarter
- Health and Education Quarter
- Leisure and Entertainment Quarter
- Primary Shopping Quarter
- Technology Park Quarter
- University and Enterprise Quarter
- Fairfax St Regeneration Area
- The Warwick Row Area

C26 A: TOWN CENTRE, CULTURAL QUARTER

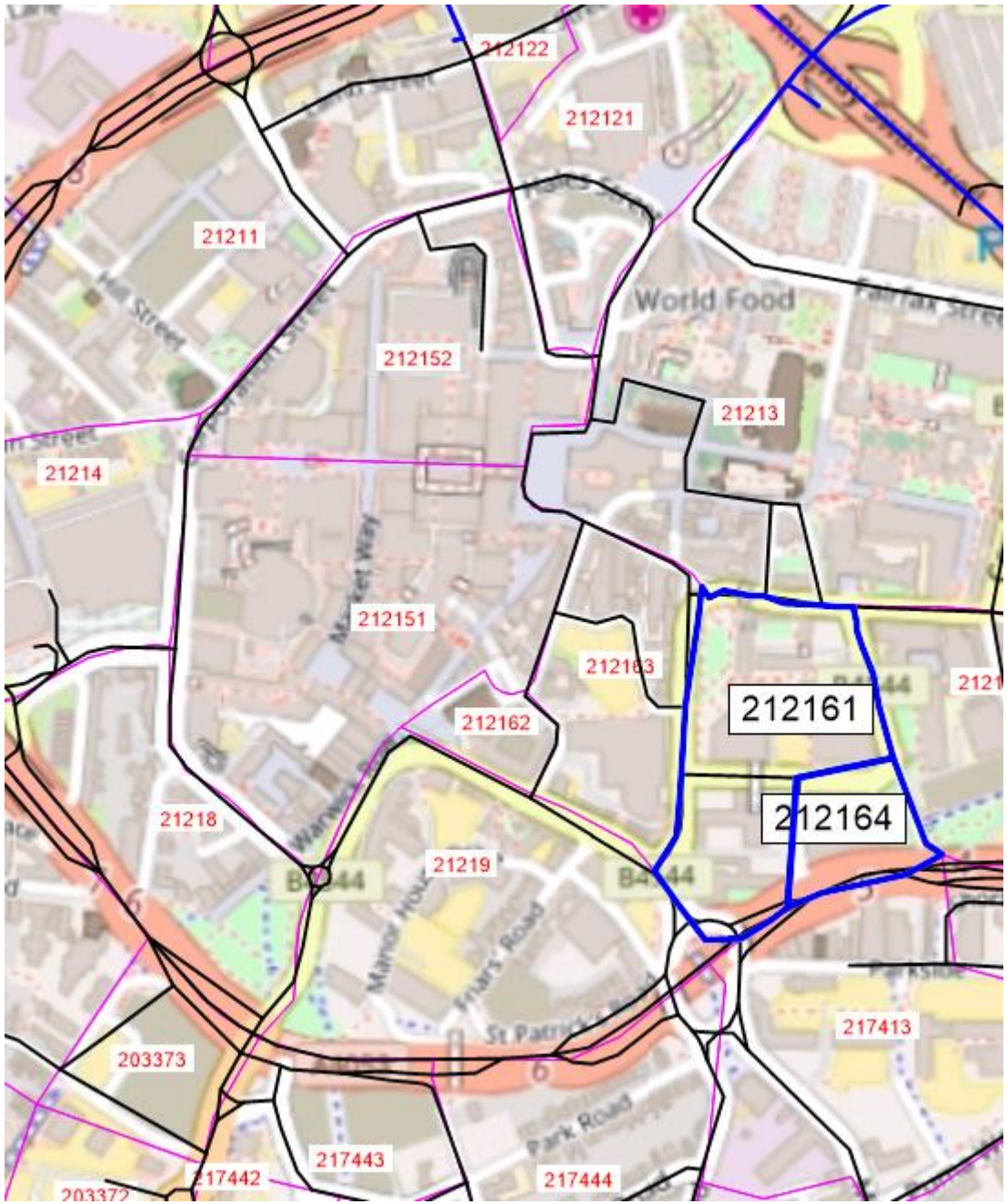


60 student resi – take higher population per dwelling

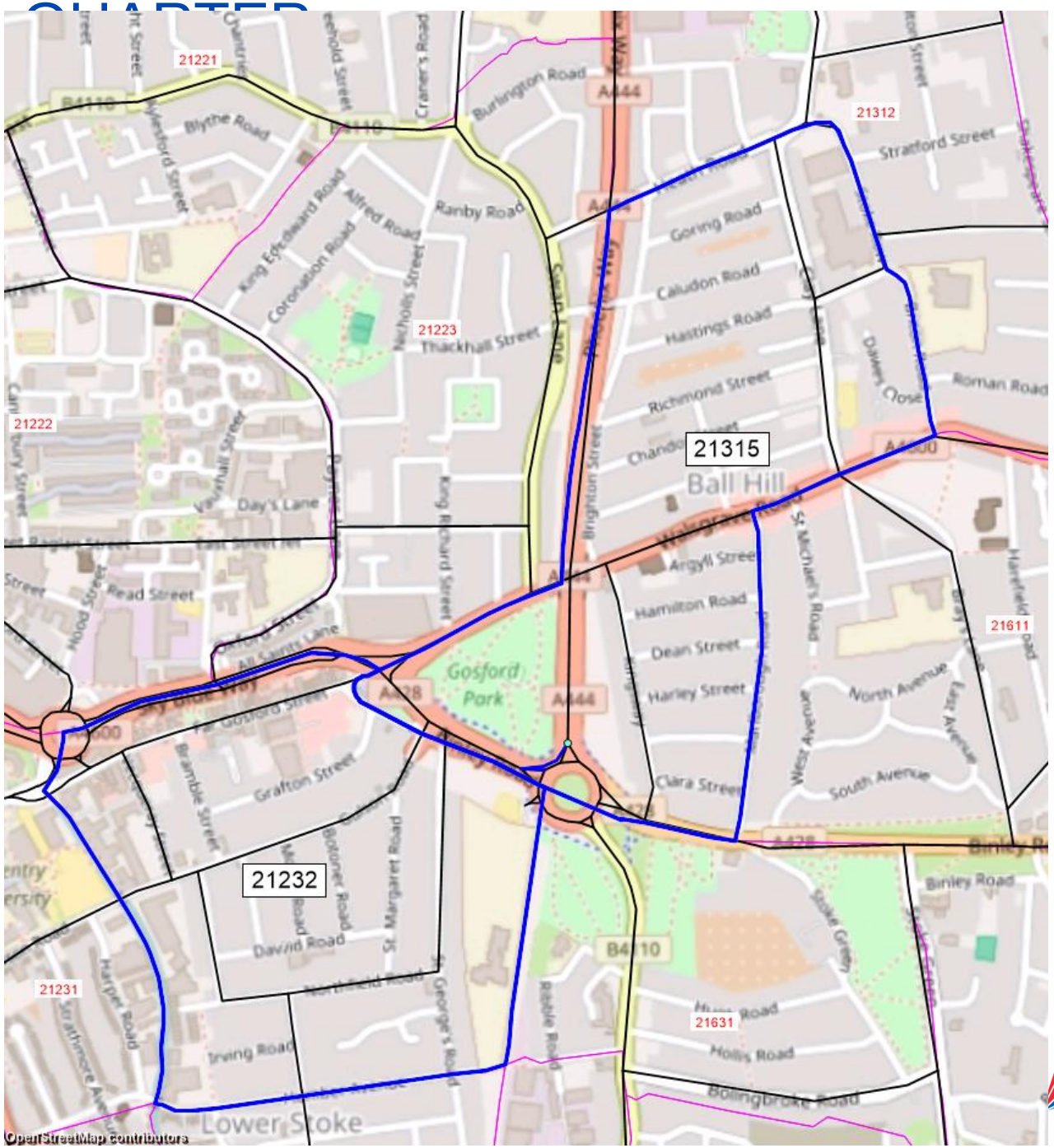
Just in 212121 in bottom triangle

WSP | PARSONS BRINCKERHOFF

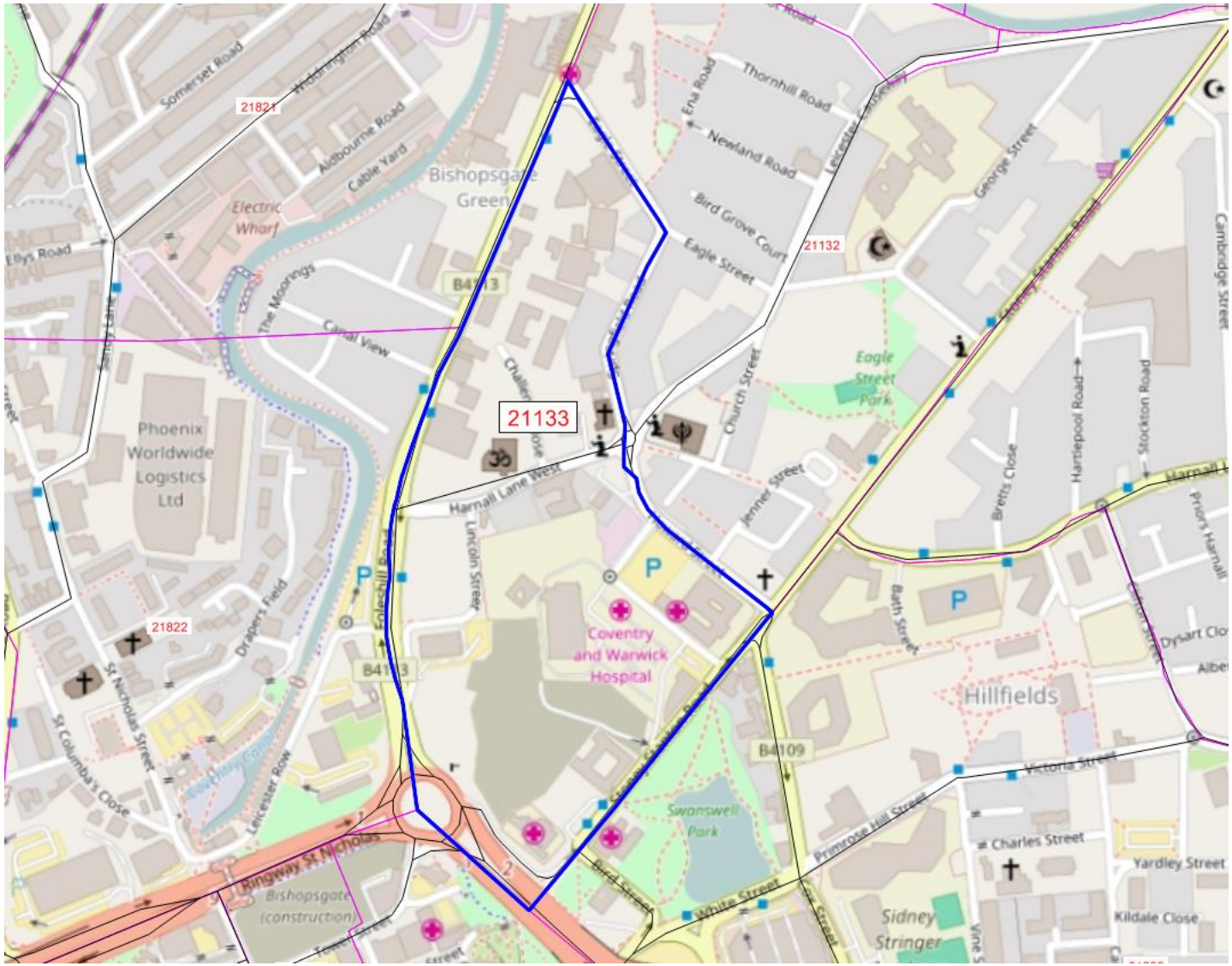
C26 B: TOWN CENTRE, CIVIC QUARTER



C26 C: TOWN CENTRE, FAR GOSFORD ST CHARTER



C26 D: TOWN CENTRE, HEALTH AND EDUCATION QUARTER

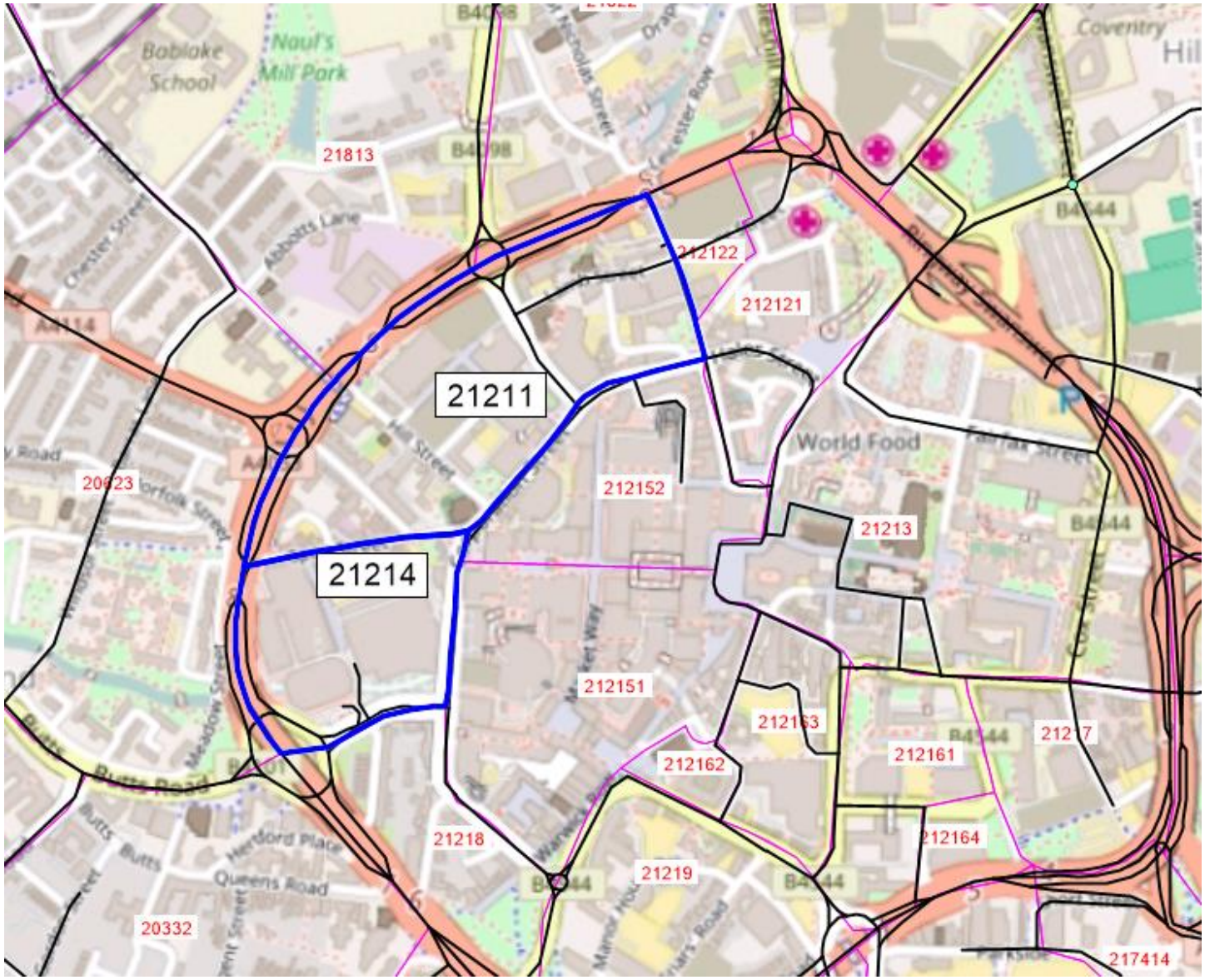


student resi – take higher population per dwelling

in 21133 zone

WSP | PARSONS BRINCKERHOFF

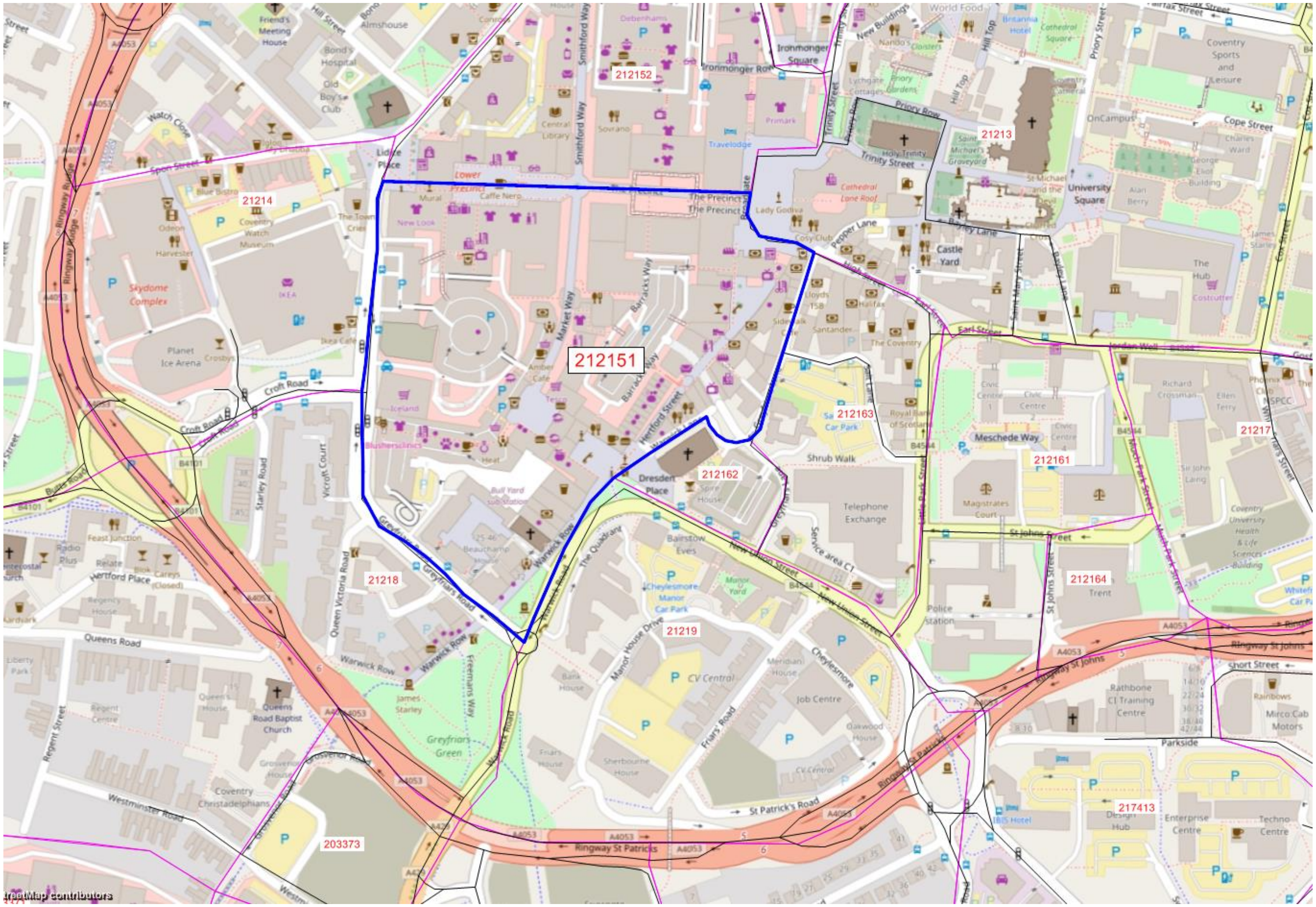
C26 E: TOWN CENTRE , LEISURE AND ENTERTAINMENT QUARTER



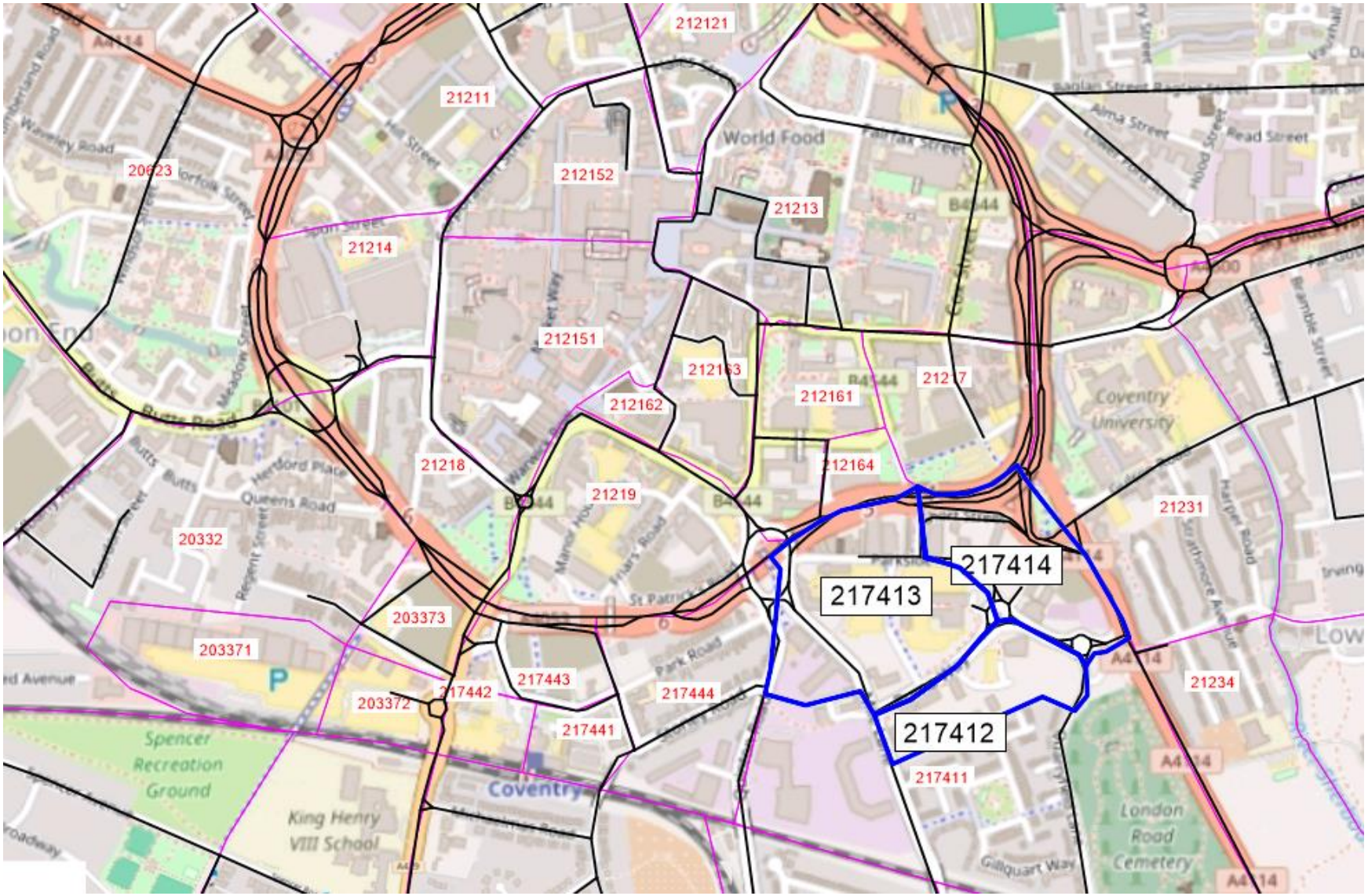
1,000 dwellings half student, half non student

WSP | PARSONS BRINCKERHOFF

C26 F: TOWN CENTRE, PRIMARY SHOPPING QUARTER



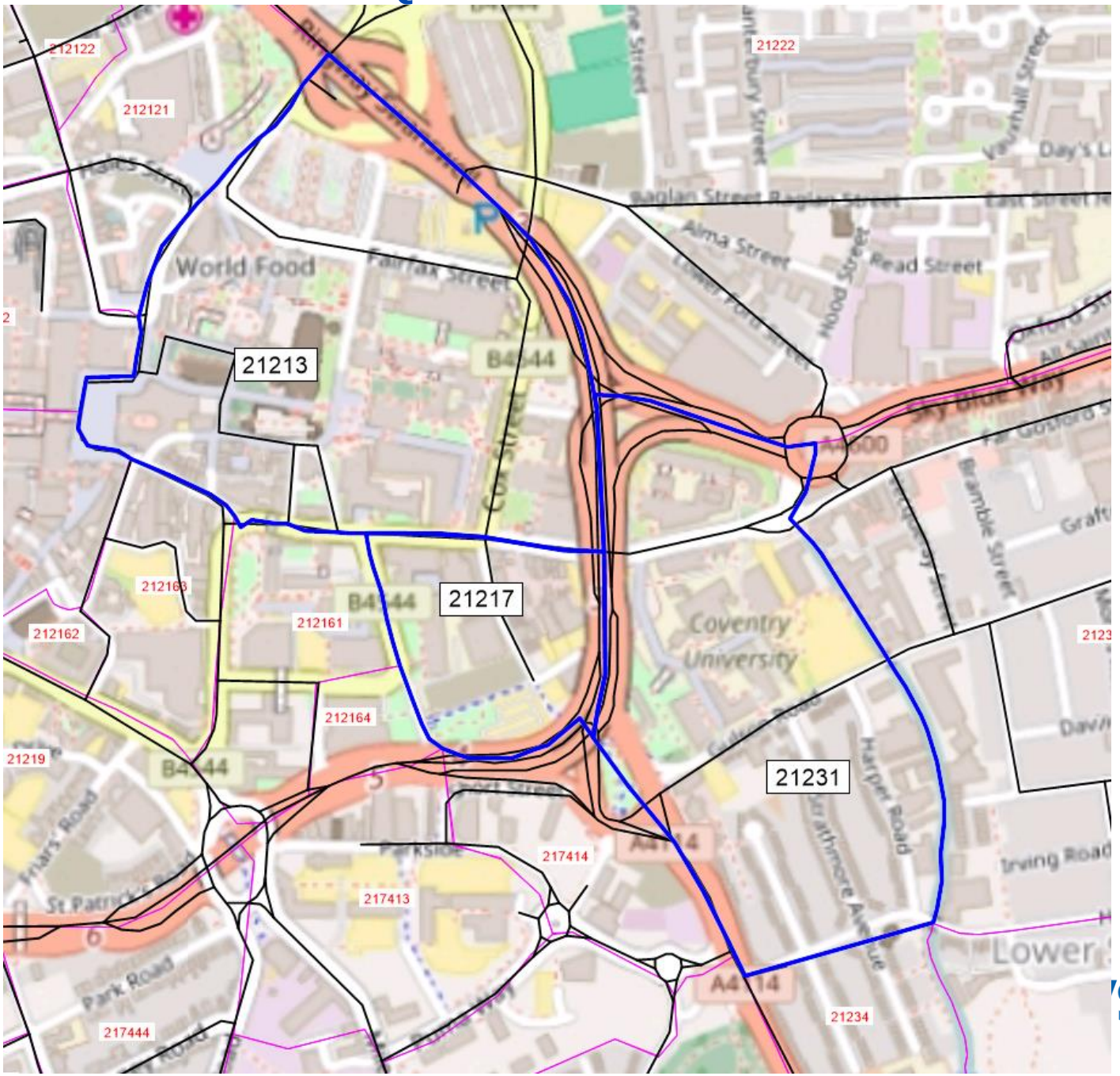
C26 G: TOWN CENTRE, TECHNOLOGY PARK QUARTER



All 285 dwellings students

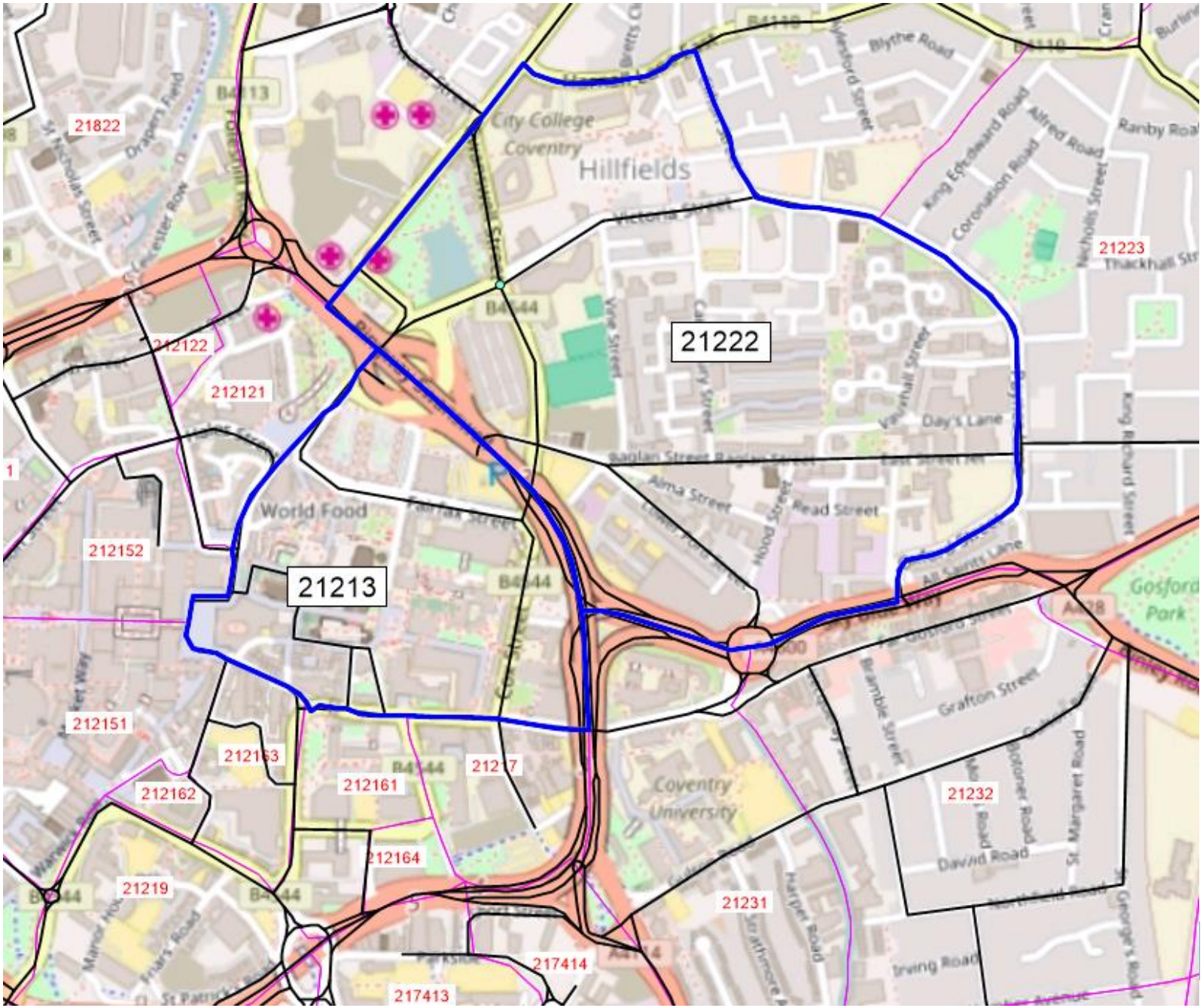
WSP | PARSONS BRINCKERHOFF

C26 H: TOWN CENTRE, UNIVERSITY AND ENTERPRISE QUARTER



VSP | PARSONS BRINCKERHOFF

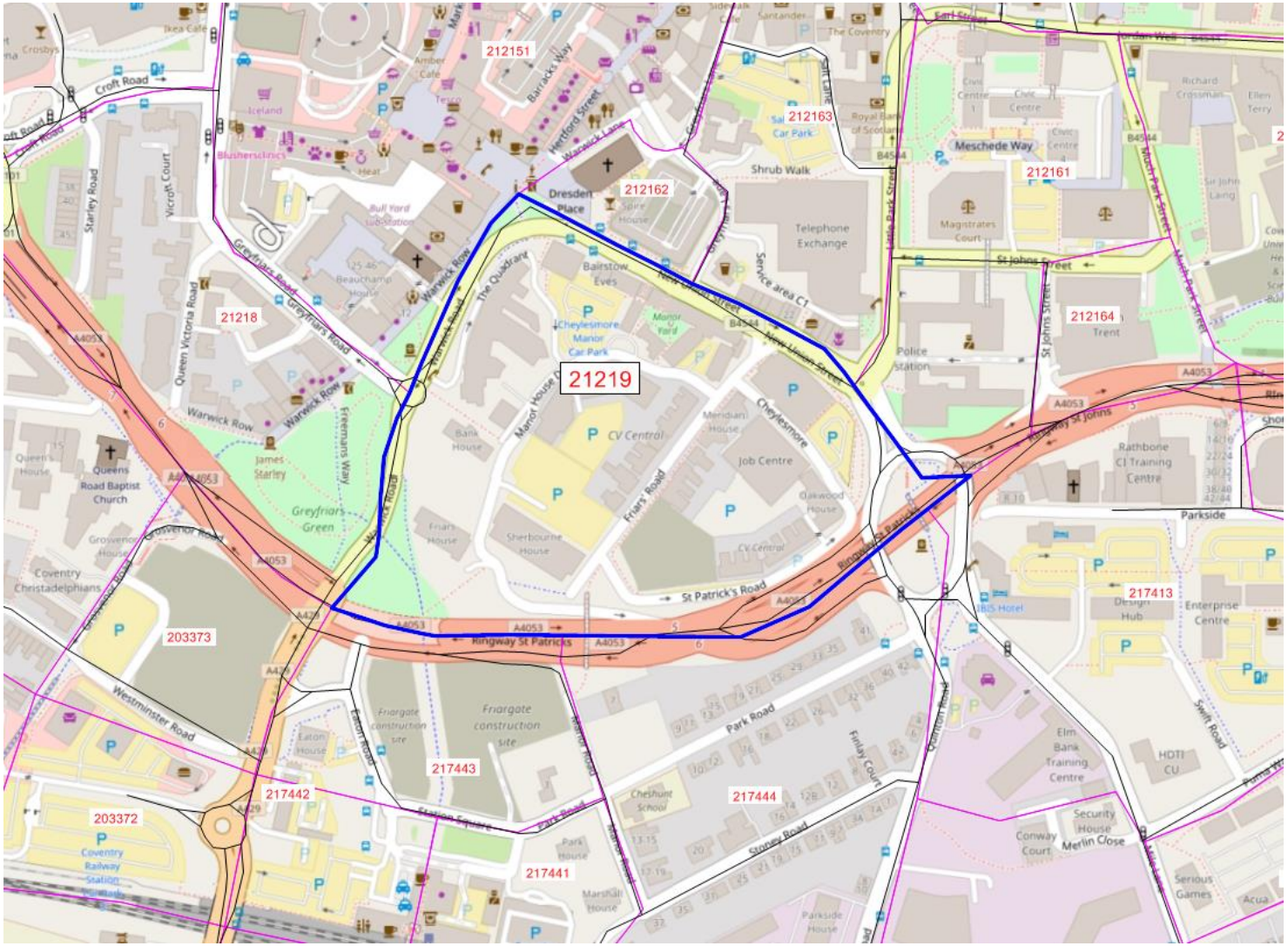
C26 I: TOWN CENTRE, FAIRFAX ST REGENERATION AREA



half student, half non student

PARSONS BRINCKERHOFF

C26J: TOWN CENTRE, THE WARWICK ROW AREA



65 homes student accommodation higher dwelling rate

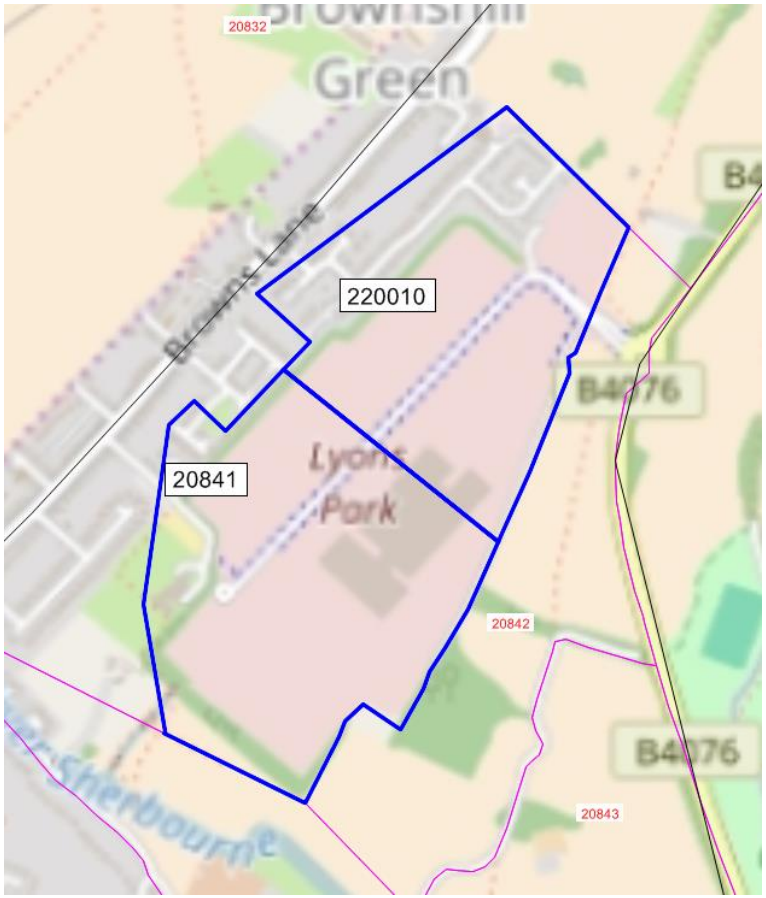
WSP | PARSONS BRINCKERHOFF

ADDITIONAL DEVELOPMENTS FROM CCC

WSP | PARSONS BRINCKERHOFF

A1: LYONS PARK

Year	JOBS
2026	2,000
2034	2,000

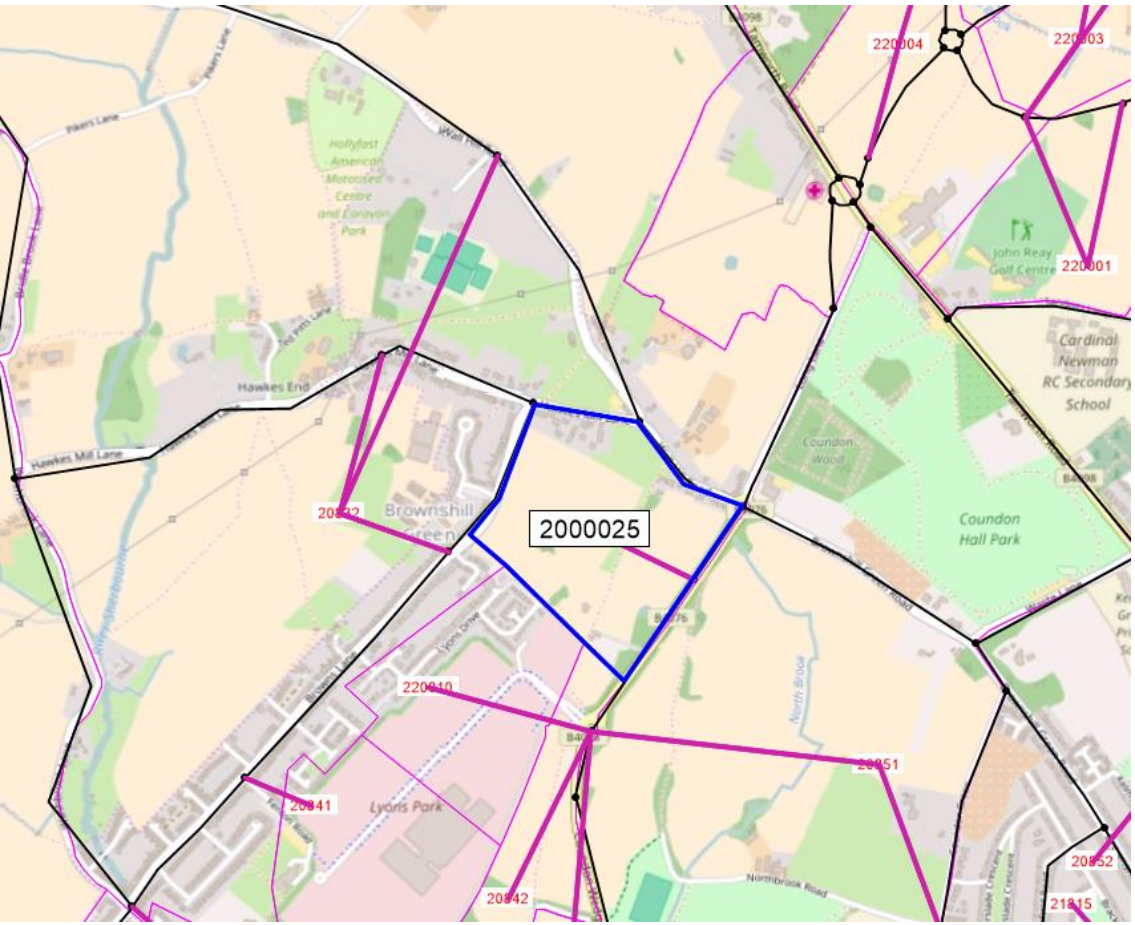


- HGV movements associated with employment
- B8
- FUL2016 2397 transport statement total trip data CCC data

WSP | PARSONS BRINCKERHOFF

A2: BROWNS LANE

Year	Dwellings	Population
2026	500	1186
2034	500	1186

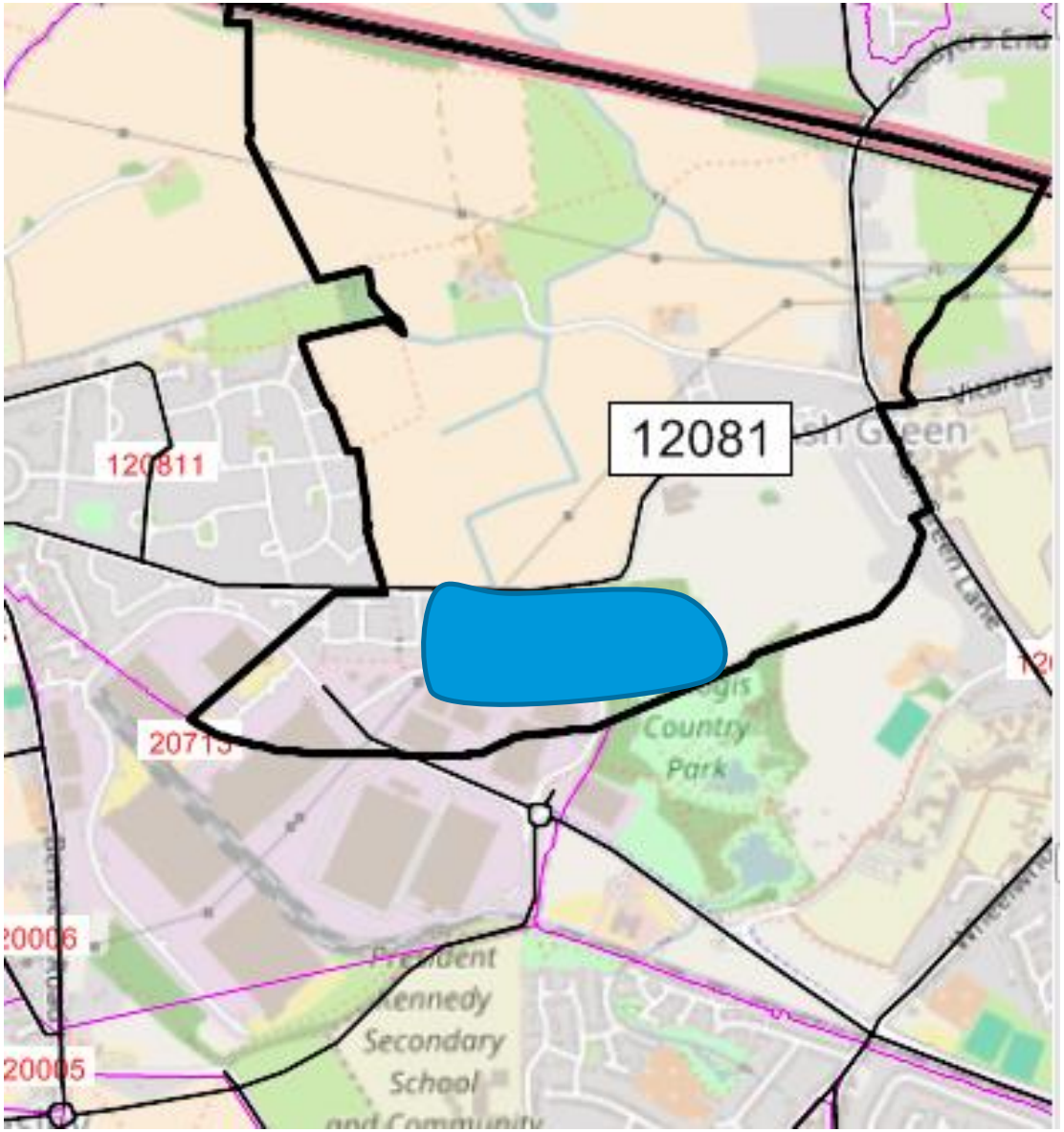


New zone – most access Counden Wedge Drive

→ Zone 20832 has now been split, development now in zone # 2000025 (previously a spare zone), with access onto Counden Wedge drive

WSP | PARSONS BRINCKERHOFF

A3: KERESLEY PROLOGIS EXPANSION



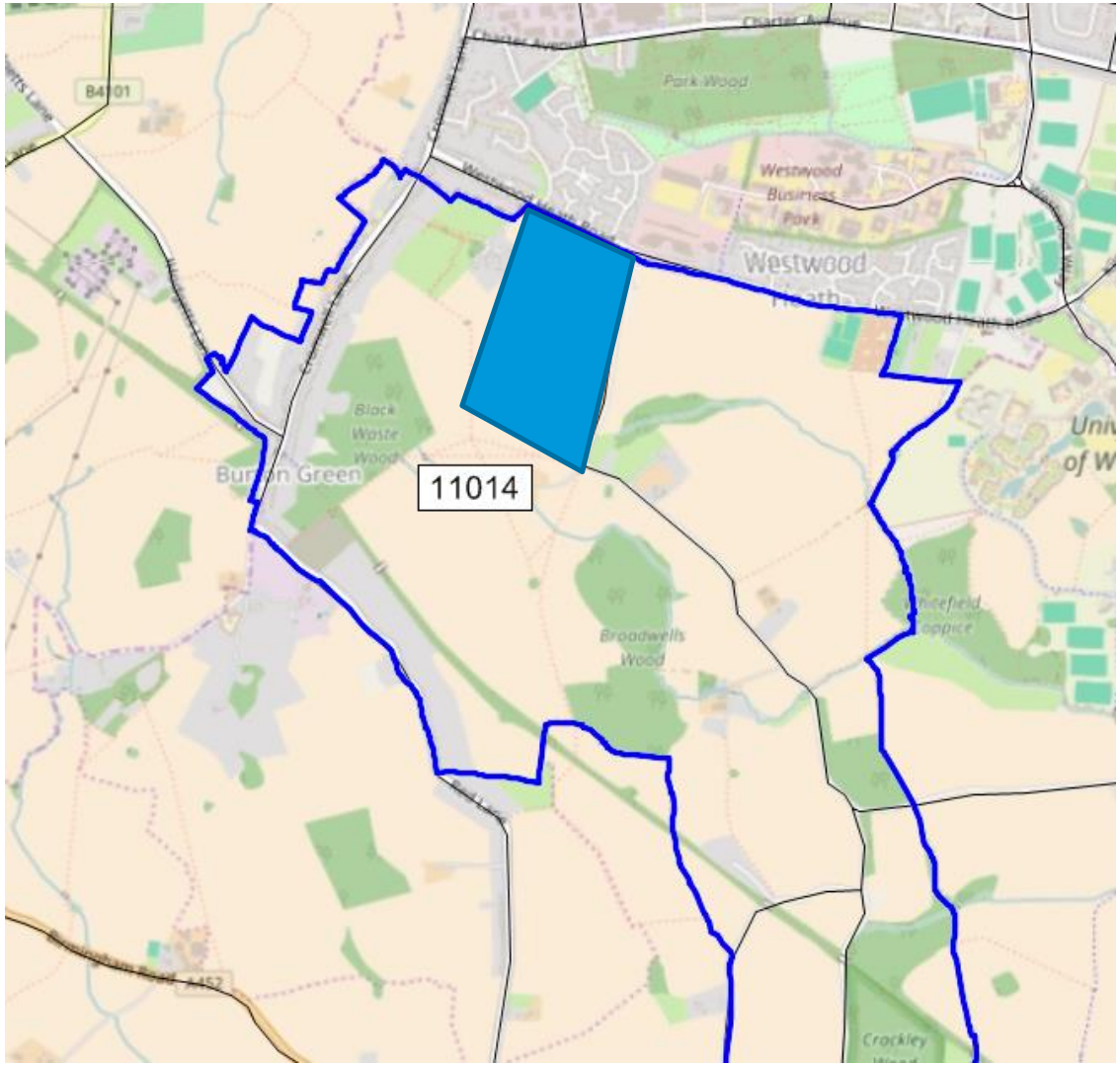
Year	Jobs
2026	400
2034	400

Nuneaton Uncertainty

WSP | PARSONS BRINCKERHOFF

A4: WESTWOOD HEATH

Year	Dwellings	Population
2026	450	1018
2034	450	1018

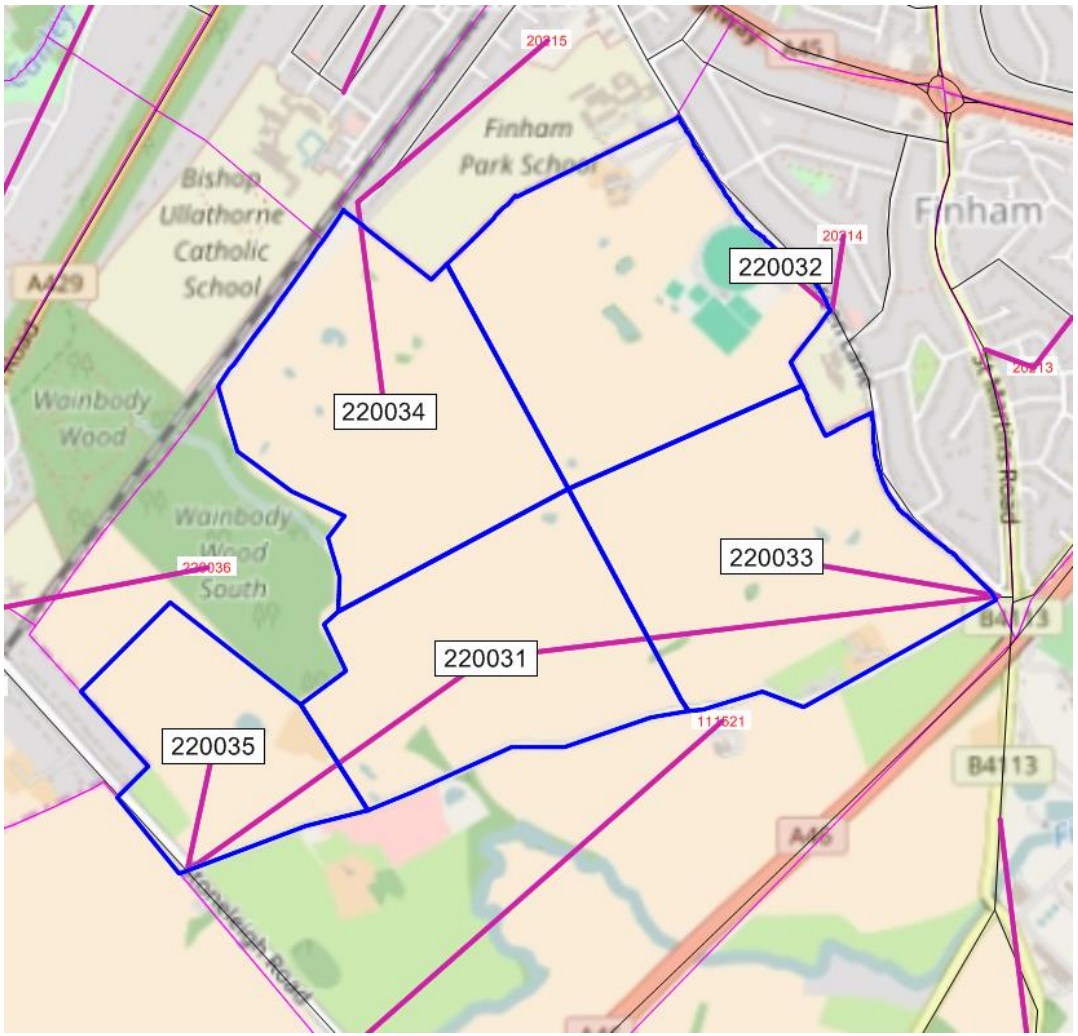


Warwick allocation

WSP | PARSONS BRINCKERHOFF

A5: KINGS HILL

Year	Dwellings	Population
2026	1800	4071
2034	1800	4071



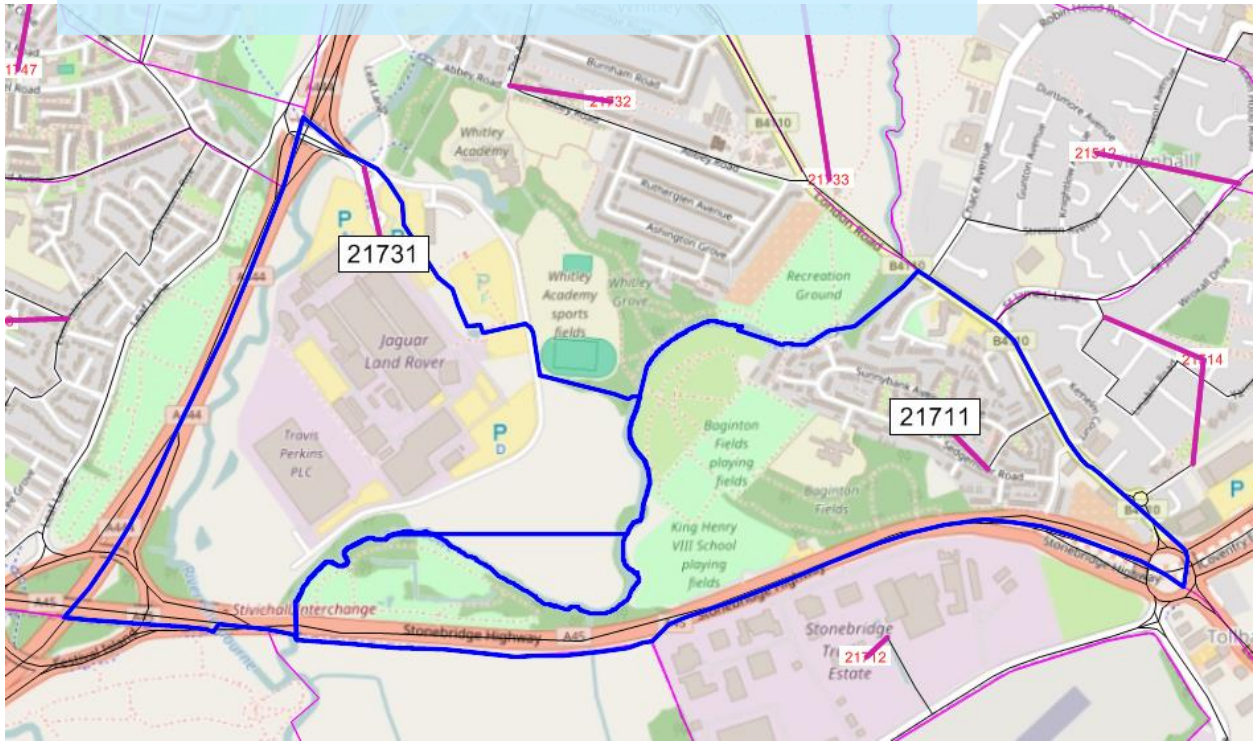
- → Split evenly across 5 zones
- → 2 form entry primary school
- → Warwick

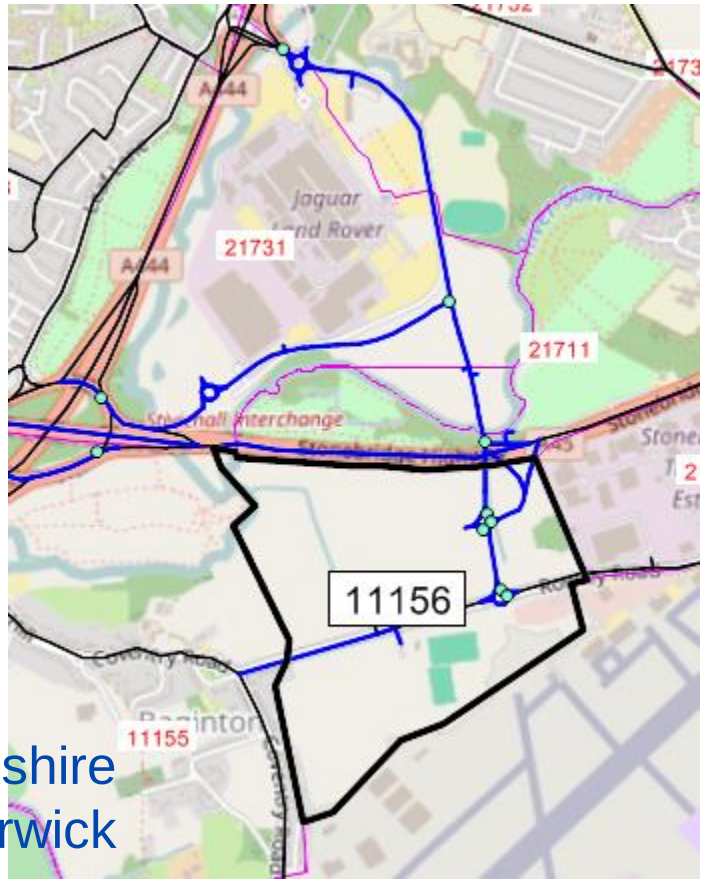
WSP | PARSONS BRINCKERHOFF

A6: WHITLEY SOUTH – CCC ALLOCATION

→ Split evenly across 2 zones

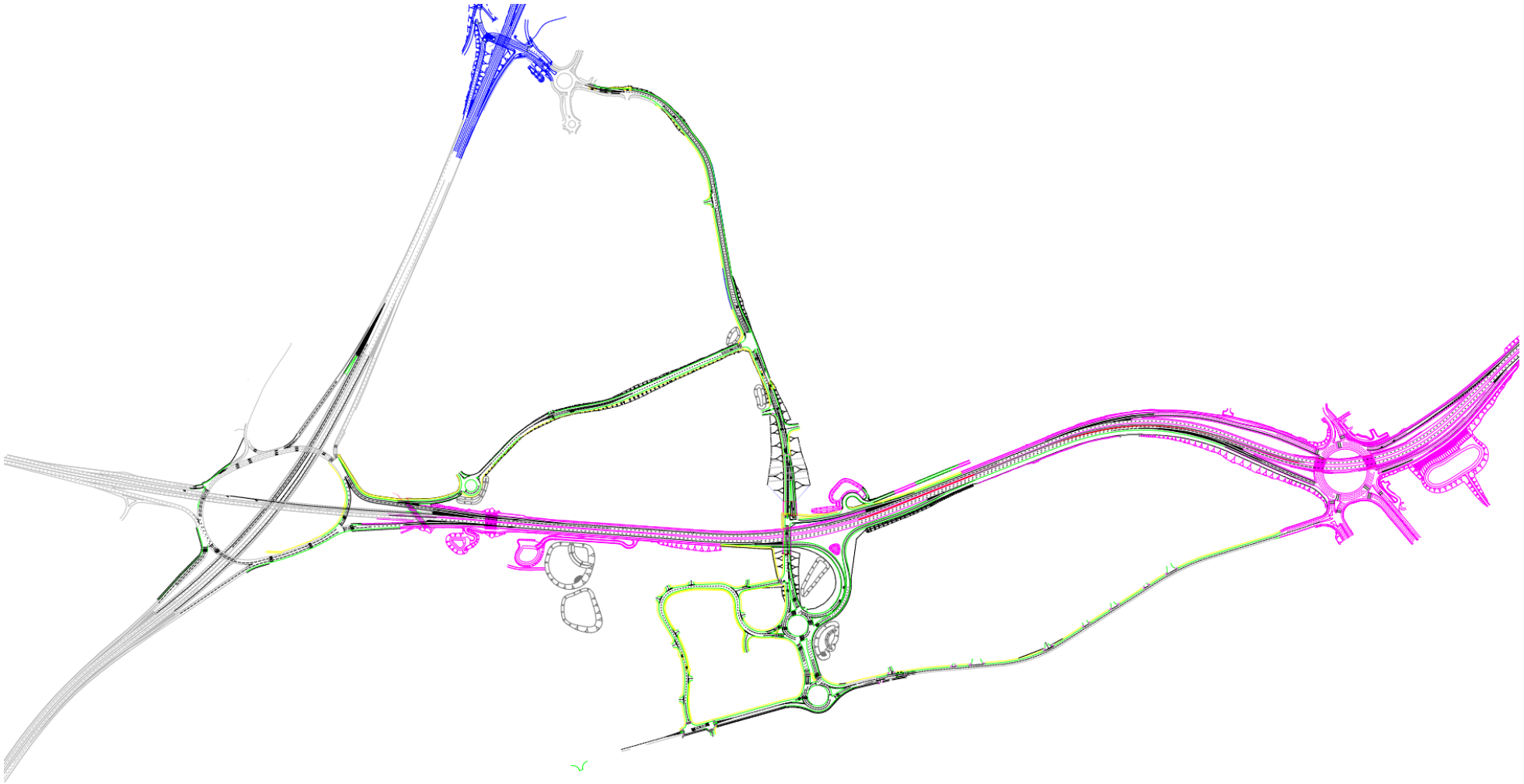
Year	Jobs
2026	5000
2034	5000





7,000 jobs in Warwickshire location – change Warwick uncertainty

WHITELEY SOUTH NETWORK



WSP | PARSONS BRINCKERHOFF

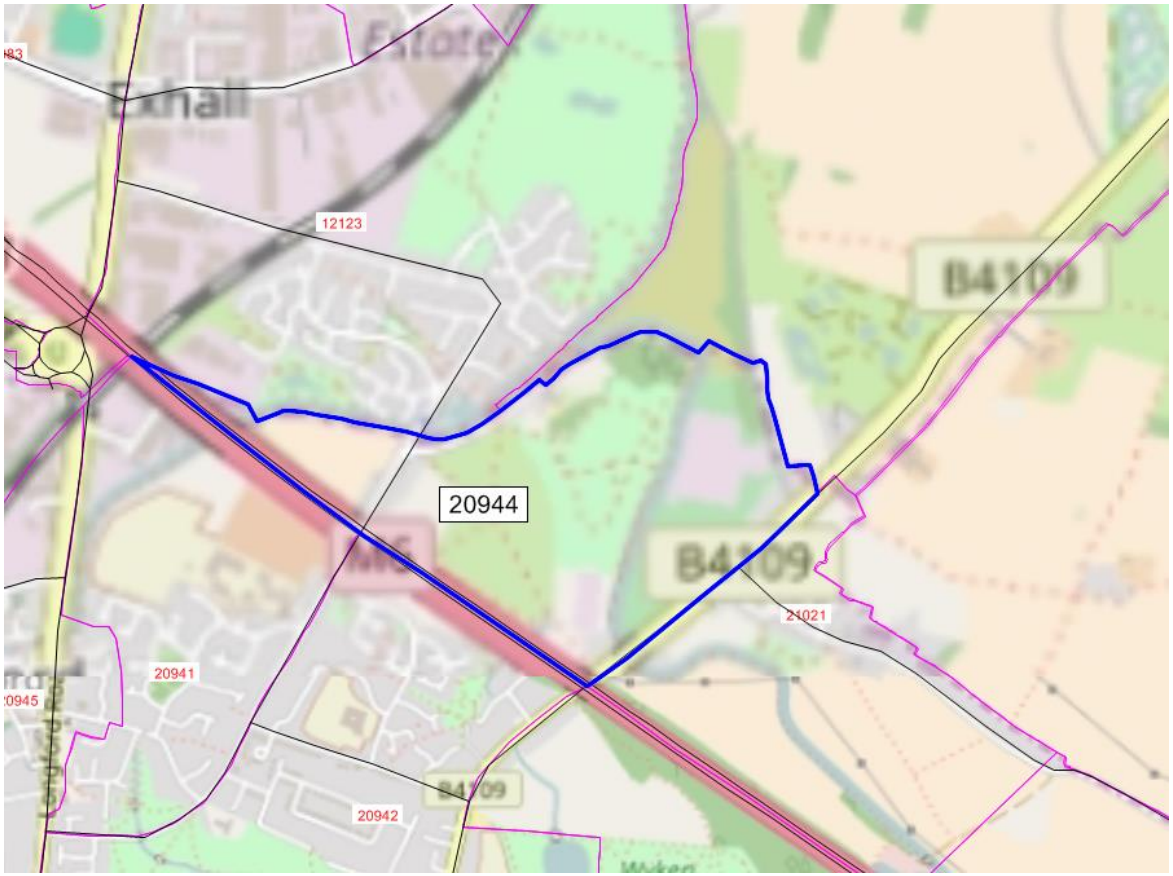
DEVELOPMENTS FROM SHAPEFILE/ DOCUMENTS PROVIDED BY CCC

- **References from GIS Layer**
- **MixedUse**
  - F44 – Durbar
- **Residential:**
  - BW38 Land at – London road
  - 55 – Abbots lane
  - He8b South – Elms Farms

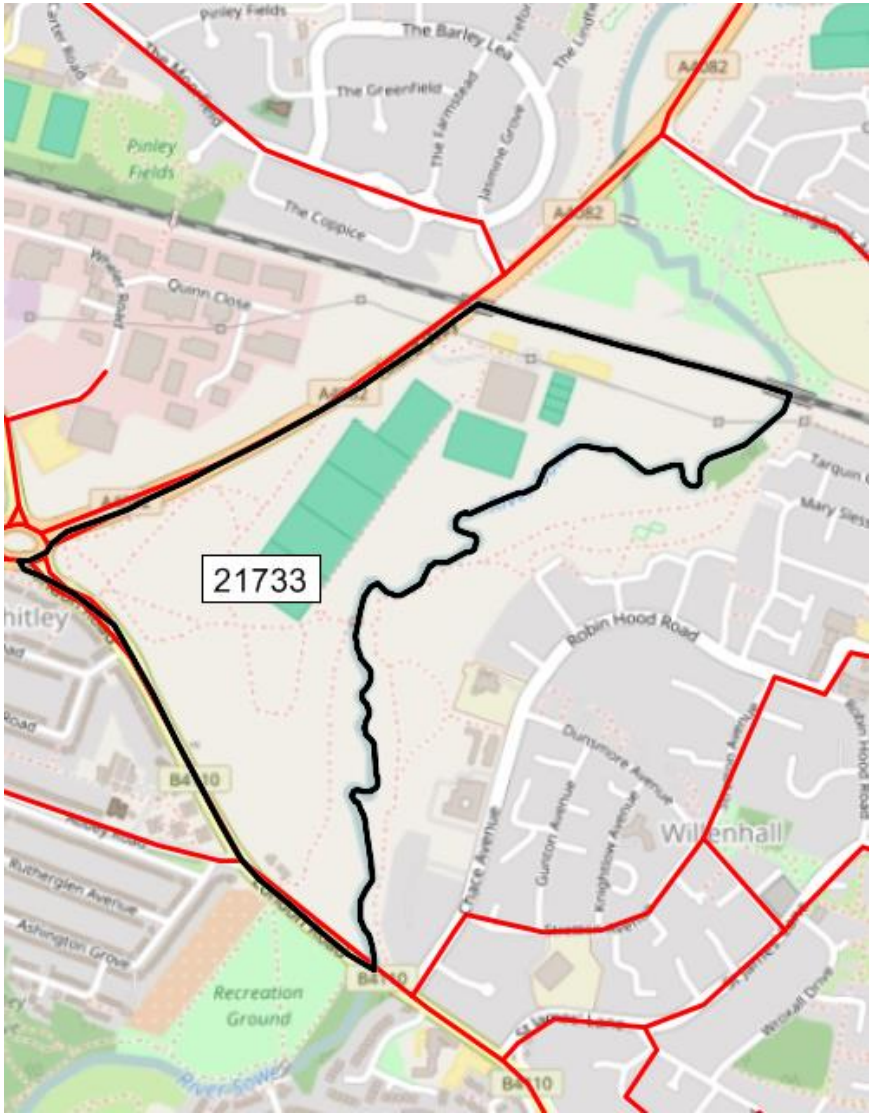
WSP | PARSONS BRINCKERHOFF

LP1: LAND AT GRANGE HILL FARM

Year	Dwellings	Population
2026	105	249
2034	105	249



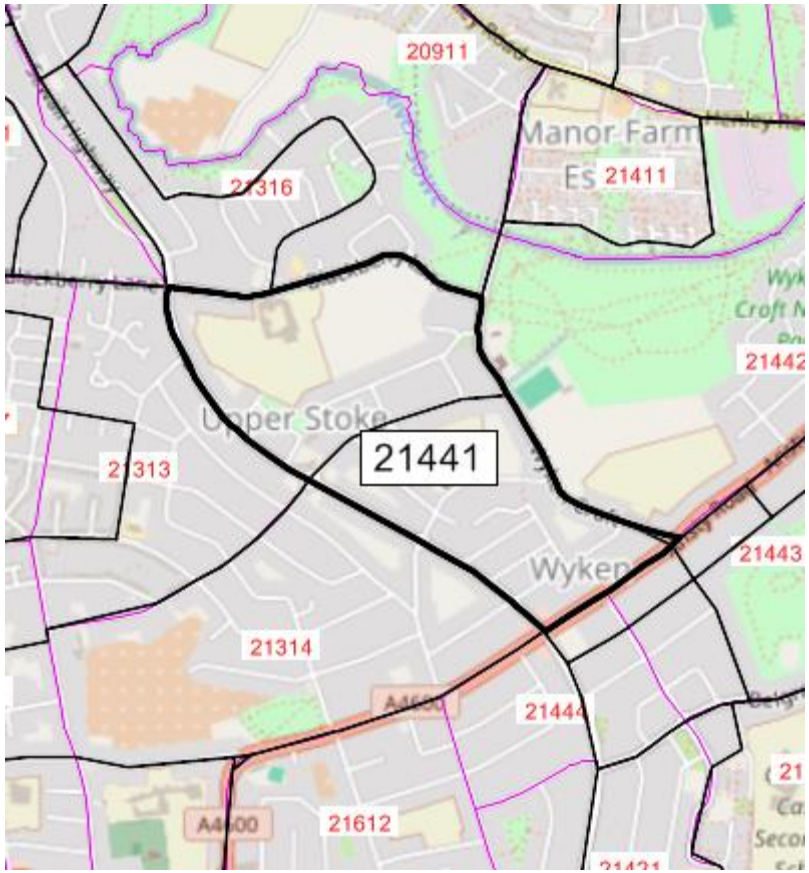
LP2: LONDON ROAD/ ALLARD WAY



Year	Dwellings	Population
2026	150	356
2034	150	356

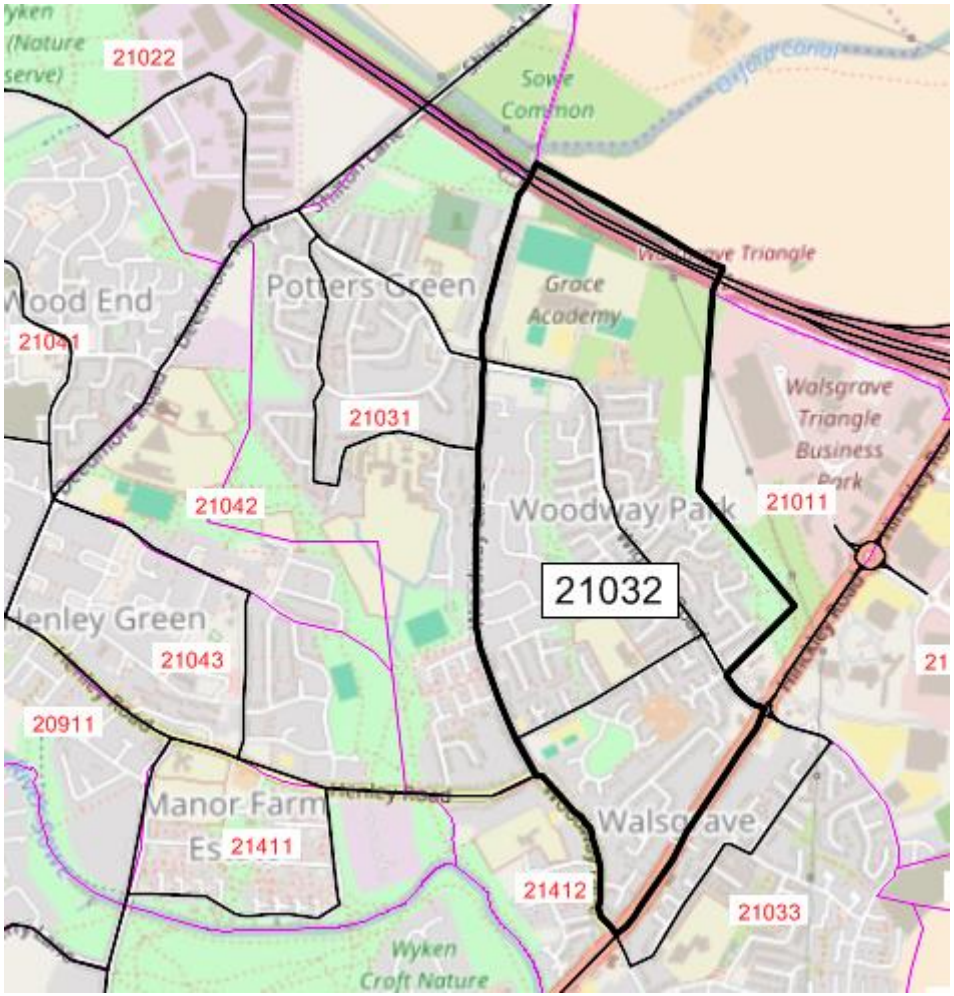
LP3: FORMER LYNG HALL PLAYING FIELDS

Year	Dwellings	Population
2026	185	439
2034	185	439



WSP | PARSONS BRINCKERHOFF

LP4: ELMS FARM

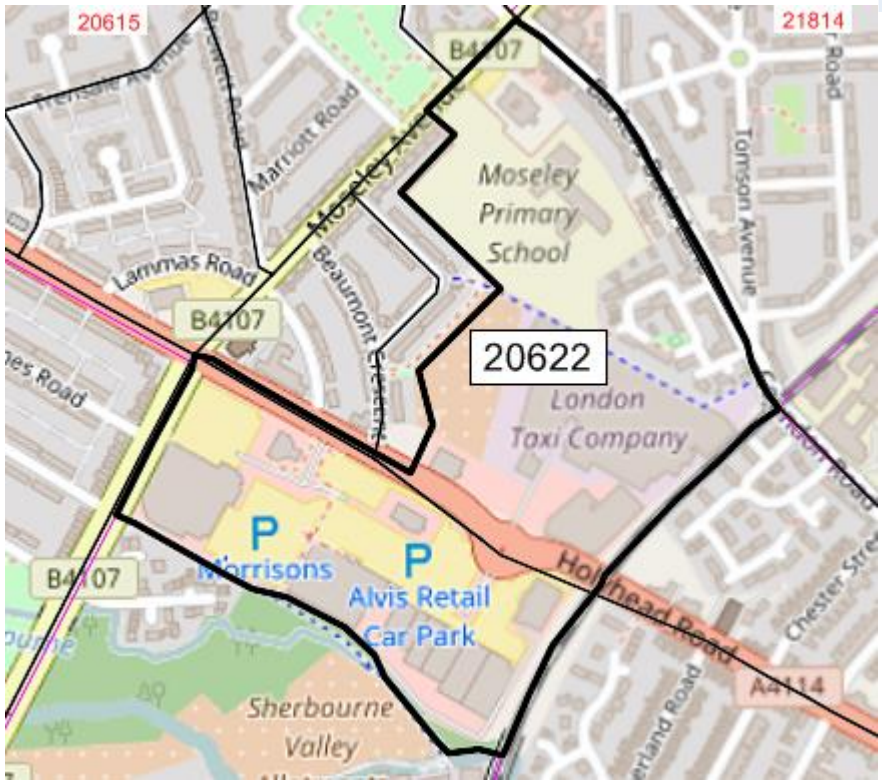


Year	Dwellings	Population
2026	150	356
2034	150	356

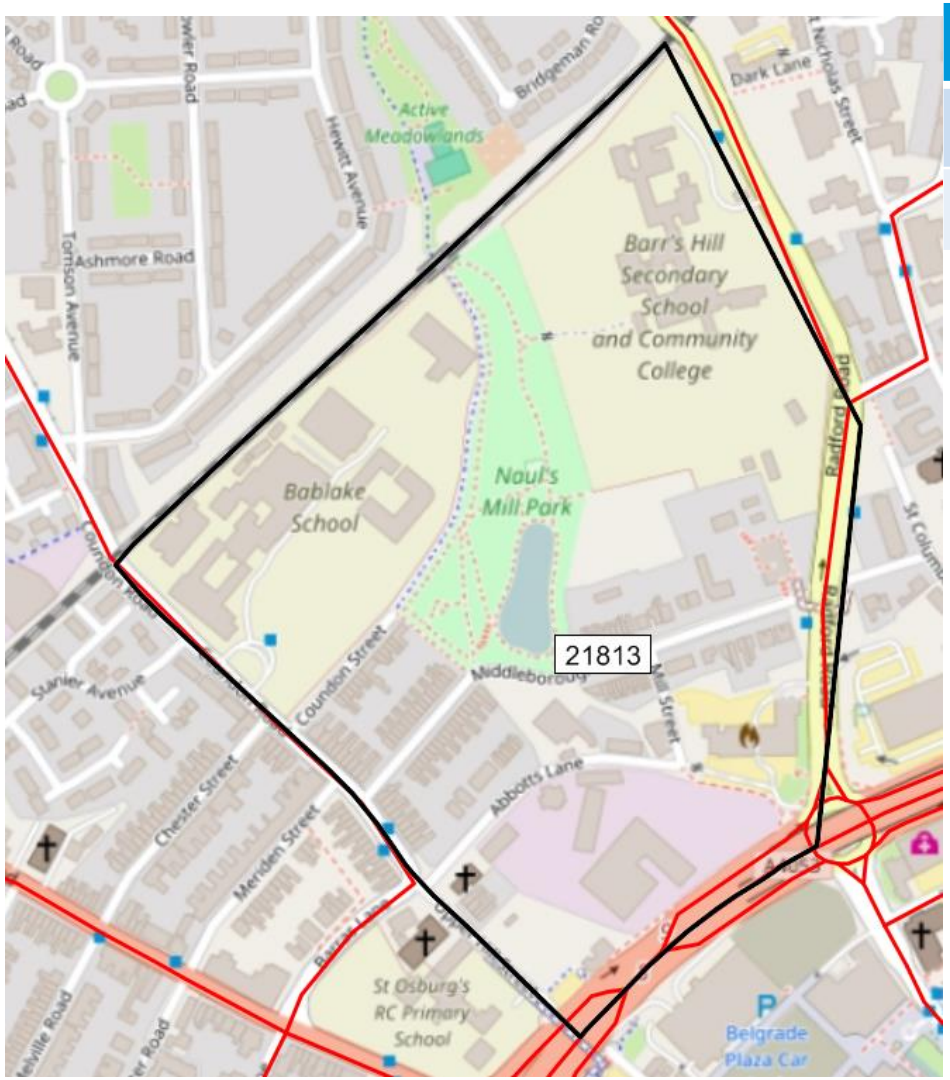
WSP | PARSONS BRINCKERHOFF

LP5: SITE OF LTI FACTORY, HOLYHEAD ROAD

Year	Dwellings	Population
2026	110	261
2034	110	261



LP6: FORMER TRANSCO SITE, ABBOTS LANE



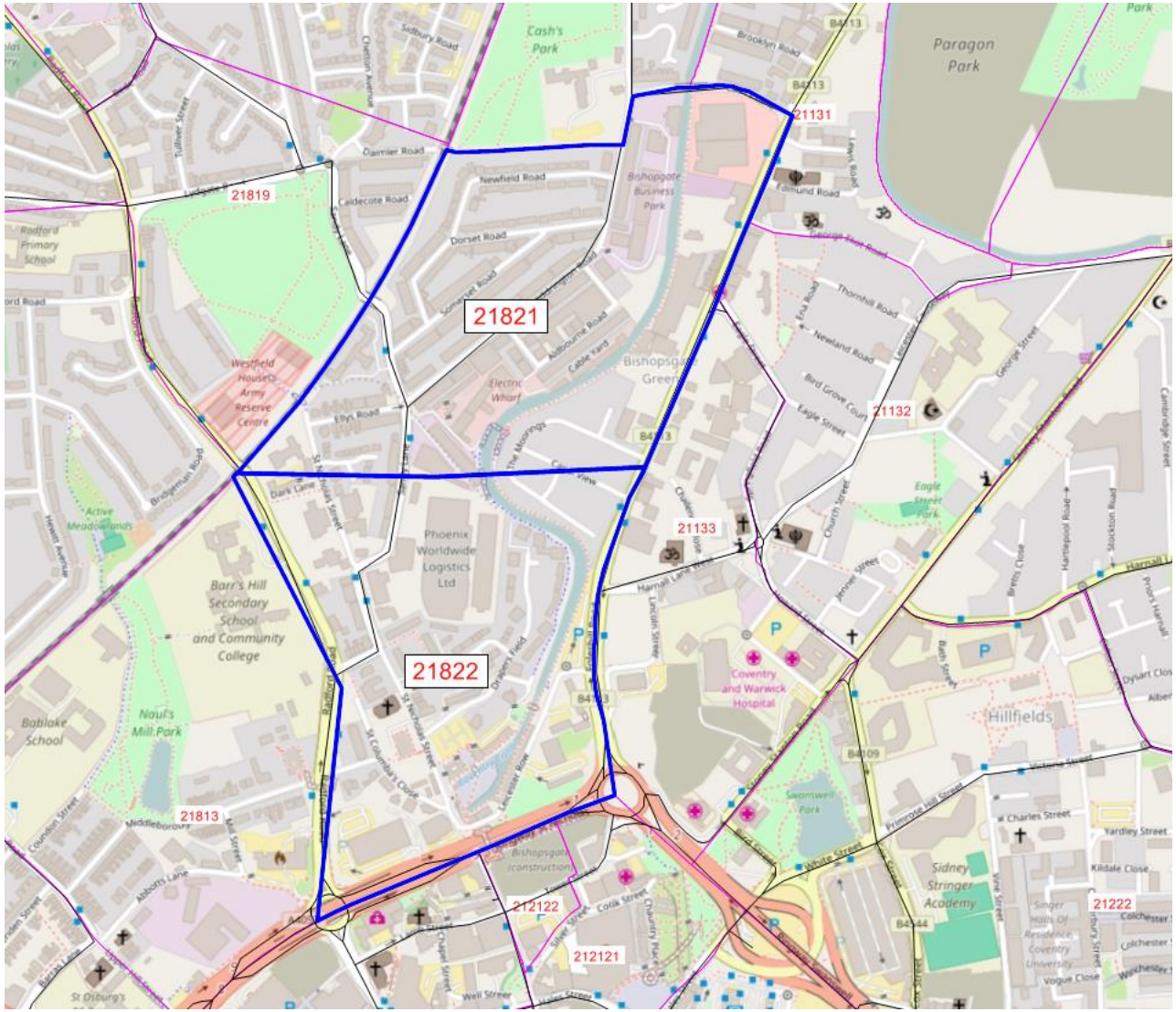
Year	Dwellings	Population
2026	100	237
2034	100	237

WSP | PARSONS BRINCKERHOFF

DEVELOPMENTS FROM LOCAL PLAN (2031 HAM) NOT CAPTURED BY UNCERTAINTY LOG

- **Residential Developments**
- **Employment Developments**

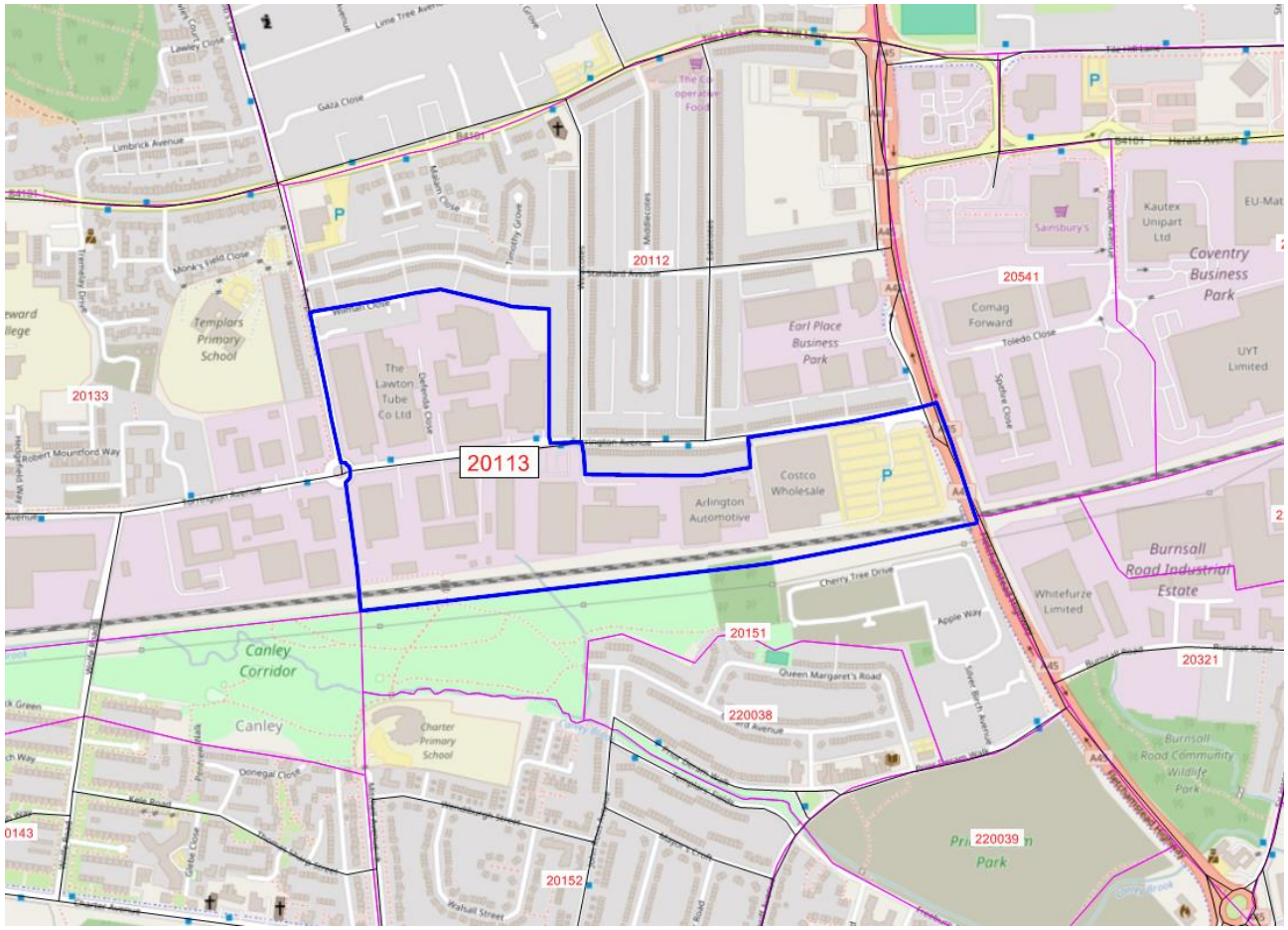
LP7: CENTRAL DEPOT, FOLESHILL ROAD



Zone	Dwellings
21821	72
21822	72

WSP | PARSONS BRINCKERHOFF

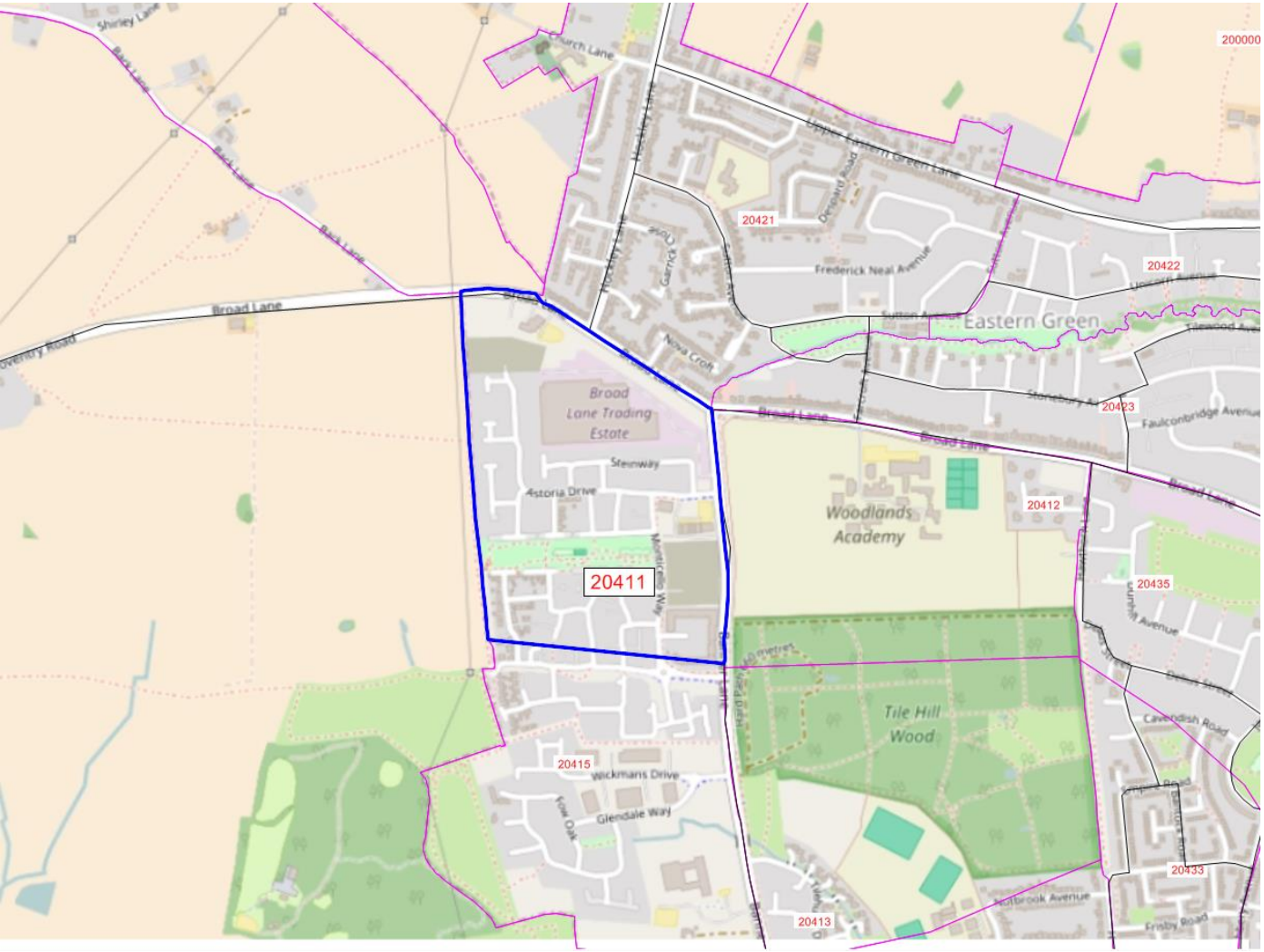
LP8: FORMER CITY COLLEGE, TILE HILL LANE – PHASE 1, PHASE 2



Zone	Dwellings
20113	115

WSP | PARSONS BRINCKERHOFF

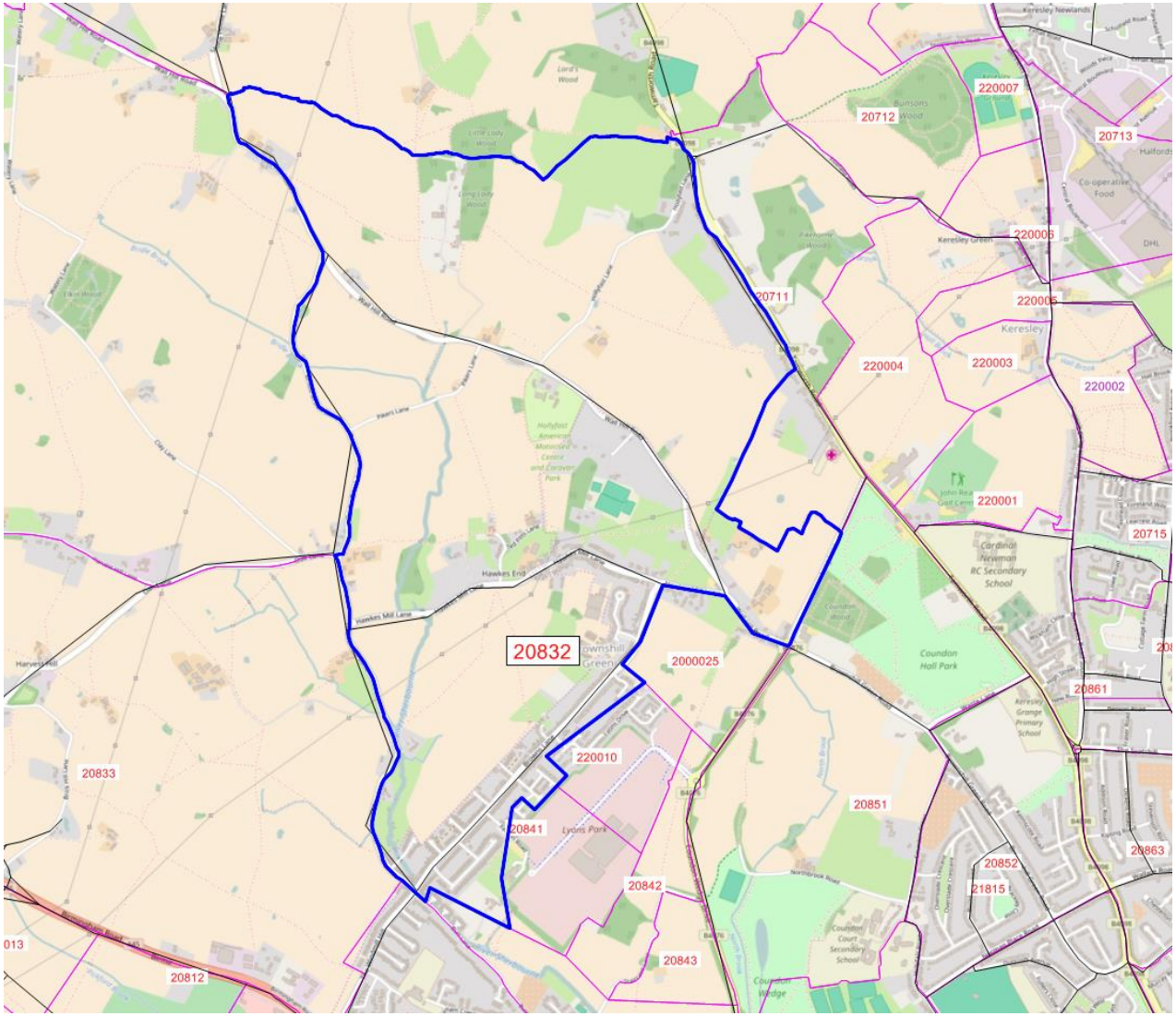
LP9: LAND WEST OF BANNER LANE AND SOUTH OF BROAD LANE



Zone	Dwellings
20411	258

WSP | PARSONS BRINCKERHOFF

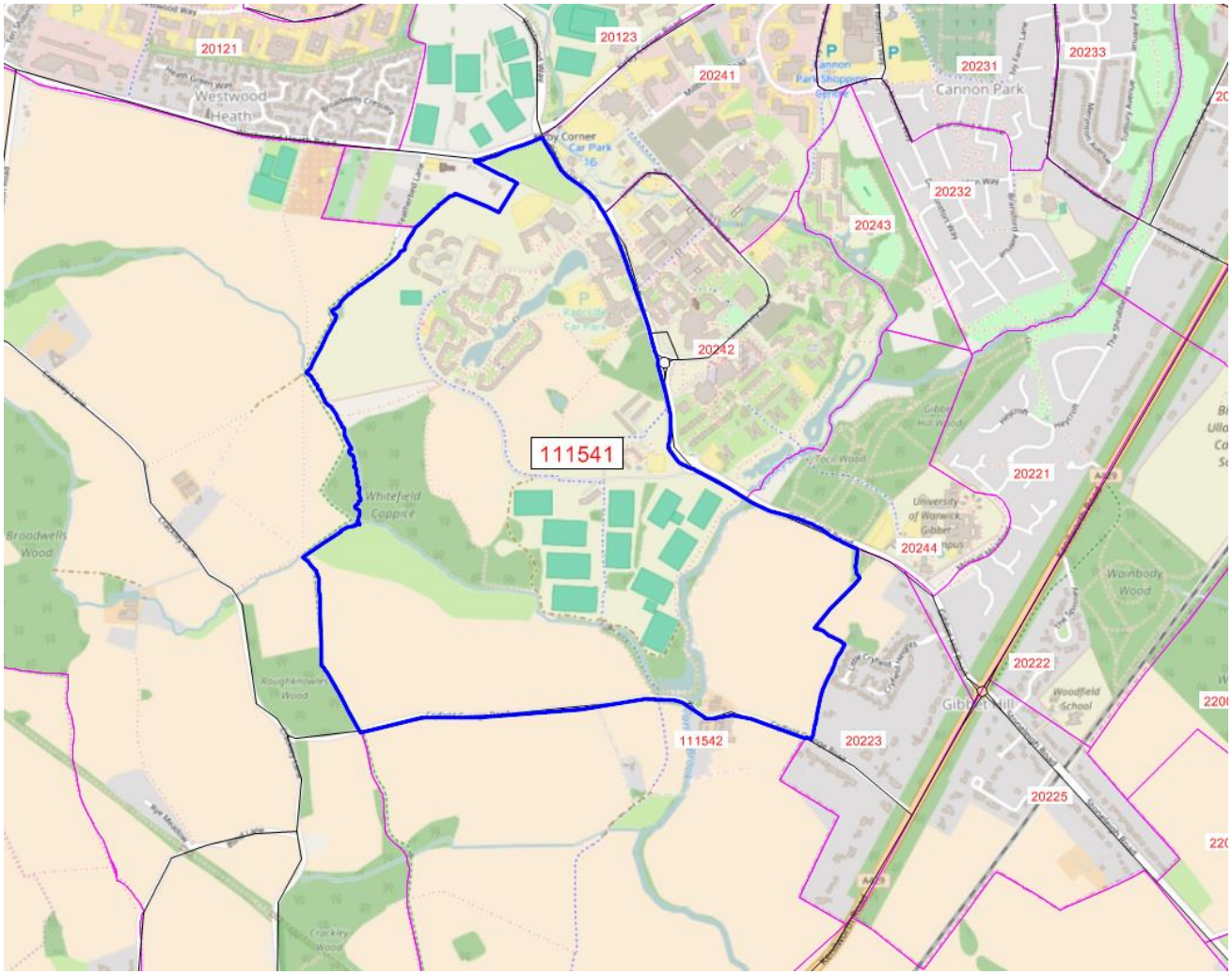
LP10: FORMER JAGUAR EXPANSION LAND, EAST OF BROWNS LANE



Zone	Dwellings
20832	125

WSP | PARSONS BRINCKERHOFF

LP11: WARWICK UNIVERSITY EXPANSION



Zone	Job
111541	500

WSP | PARSONS BRINCKERHOFF

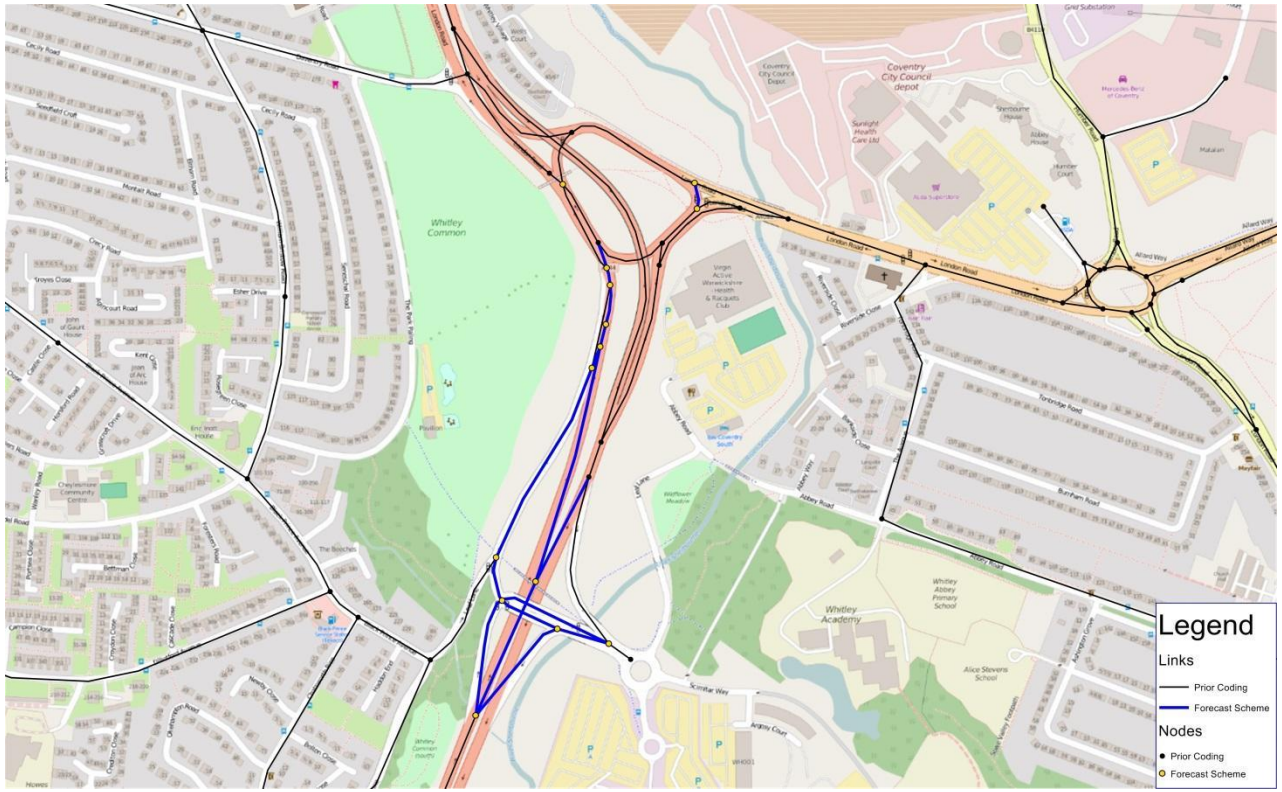
Appendix B

LOCAL PLAN HIGHWAY ASSUMPTIONS

APPENDIX B-1

LOCAL PLAN HIGHWAY ASSUMPTIONS

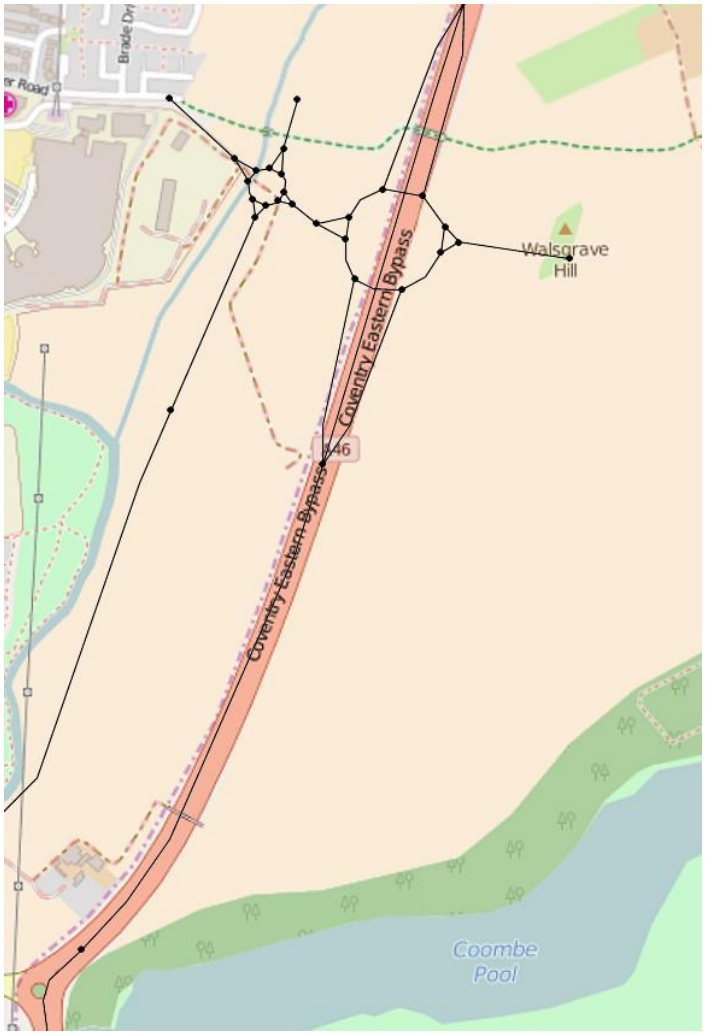
A444 WHITLEY INTERCHANGE / LEAF LANE



Forecast Year:	**2019**
Location:	Coventry
Scheme ID:	1
Scheme Name:	A444 Whitley Interchange / Leaf Lane
Arbitrary Node in Vicinity:	Node # 2500053
Comments:	**Coded in as per scheme drawing (Creation of a new bridge over the A444 with direct access by a new slip road from the A444 towards Whitley). Within area of simulation, so signalisation incorporated.**

WSP | PARSONS BRINCKERHOFF

A46/A428 & SOW VALLEY LINK ROAD GRADE SEPARATIONS



Forecast Year:	**2026**
Authority :	Coventry
Scheme ID:	N/A
Scheme Name:	
Arbitrary Node in Vicinity:	Node # 2100112949

Comments:

While working on Coventry's Local Plan for Coventry City Council, indicative scheme plans were given to WSP I PB for two highway schemes to be coded into the 2026 HAM (the Eastern Green SUE grade-separated r/b and the A46 Access]

This scheme involved the creation of a Grade-separated roundabout on the A46 to the East of Coventry, with an associated connecting roundabout; this scheme sees the removal of the A46/B4082 Walsgrave roundabout and the realignment of the A46.

(see following page for scheme issued to WSP I PB by CCC]

WSP | PARSONS BRINCKERHOFF

A46/A428 & SOW VALLEY LINK ROAD GRADE SEPARATIONS

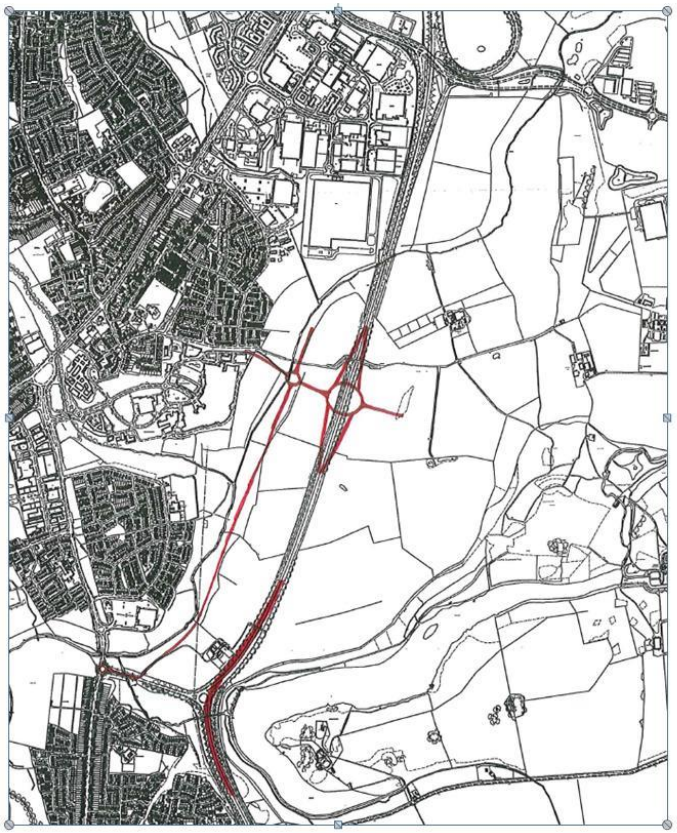
This junction has been based on a simple roundabout layout with two bridges over the A46.

However the amount of land which the junction utilises is minimal in comparison of Concept Junction 2.

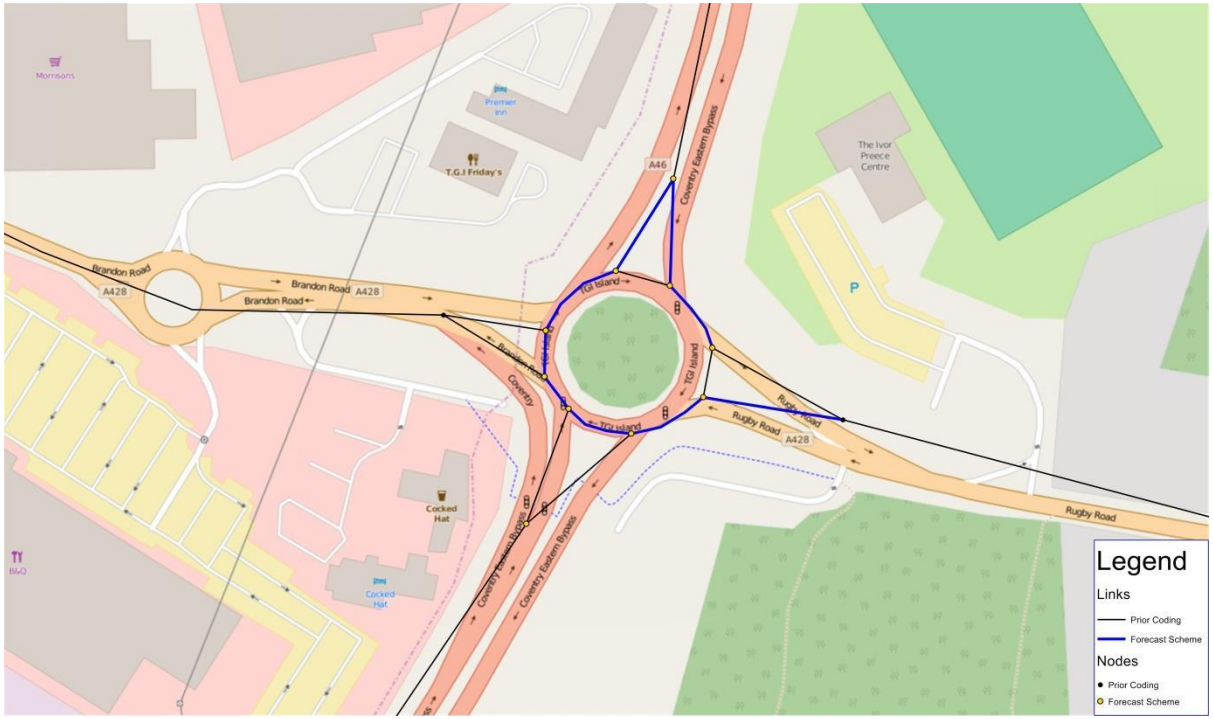
The junction would support linkages to the hospital and the development of Walsgrave Hill Farm.

In addition the junction would support linkages to the east and potential development of land to the east of the A46 if Rugby was minded to allocate it for such use.

This junction would allow the removal of the Walsgrave Junction and realignment of the A46.



A46/A428 JUNCTION SIGNALISATION



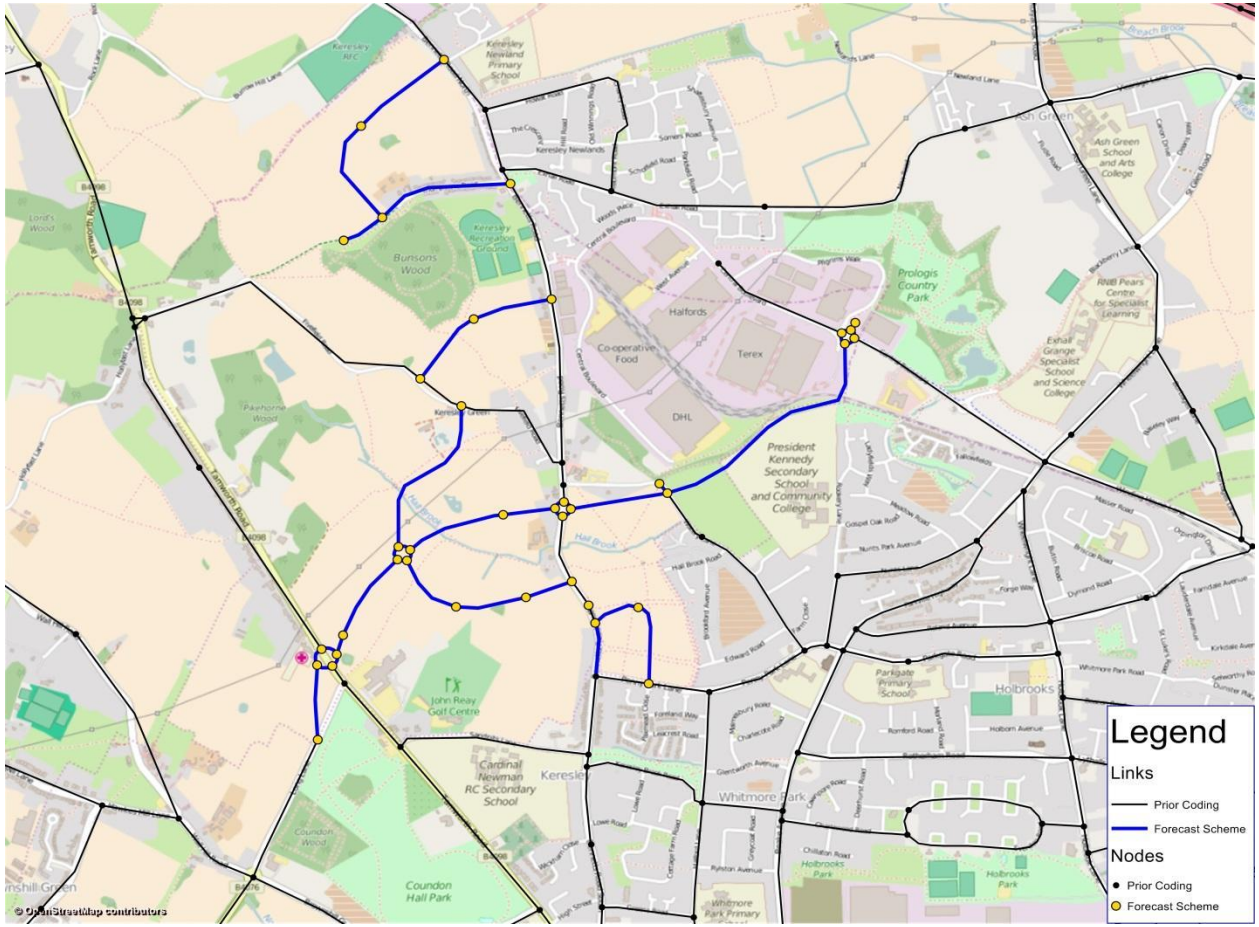
Forecast Year:	**2019**
Location:	Coventry
Scheme ID:	3
Scheme Name:	A46/A428 Junction Signalisation
Arbitrary Node in Vicinity:	Node # 2100112148

Comments:

This signalisation had already been incorporated into the 2013 Base Model that the forecast models were based upon.

WSP | PARSONS BRINCKERHOFF

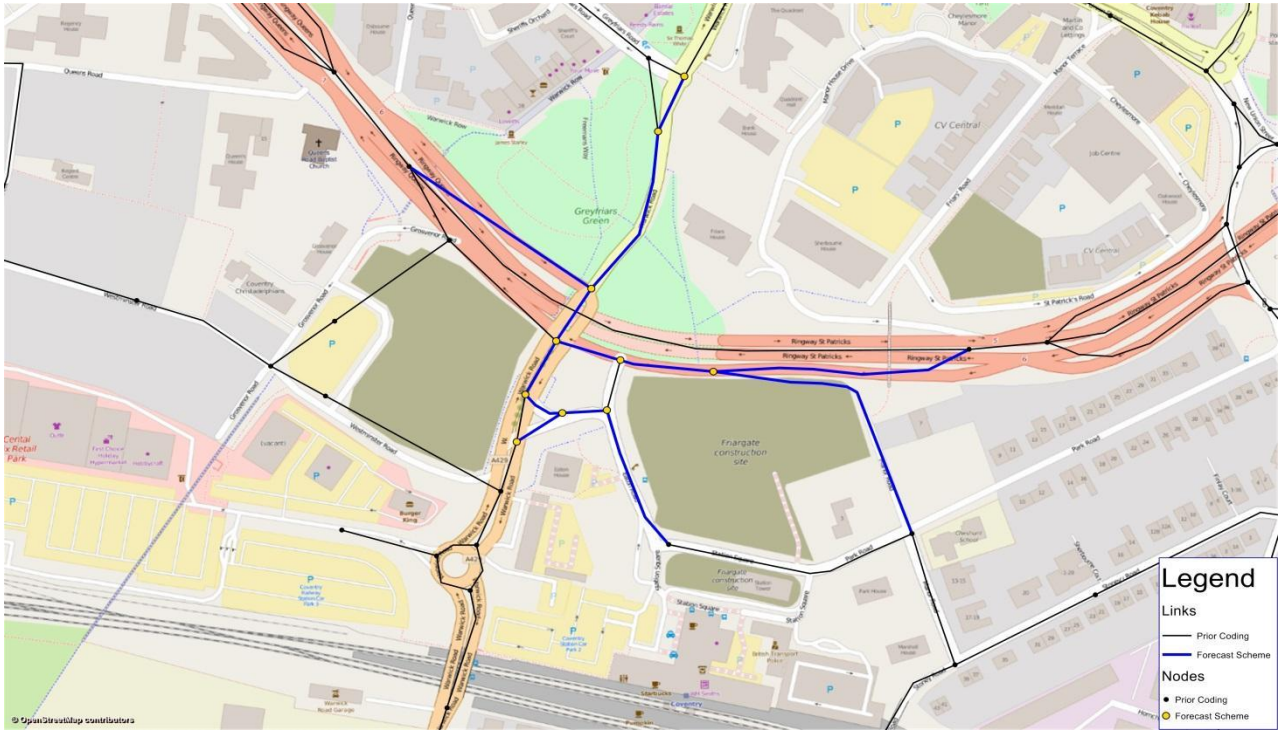
NORTH-WEST LINK ROAD



Forecast Year:	**2026**
Location:	Coventry
Scheme ID:	5
Scheme Name:	North-West Link Road
Arbitrary Node in Vicinity:	Node # 2100112860
Comments:	**Coded as per previous WSP I PB highway modelling work undertaken for Kerseley.**

WSP | PARSONS BRINCKERHOFF

FRIARGATE



Forecast Year:	**2019**
Location:	Coventry
Scheme ID:	7
Scheme Name:	Friargate IRR
Arbitrary Node in Vicinity:	Node # 2500024

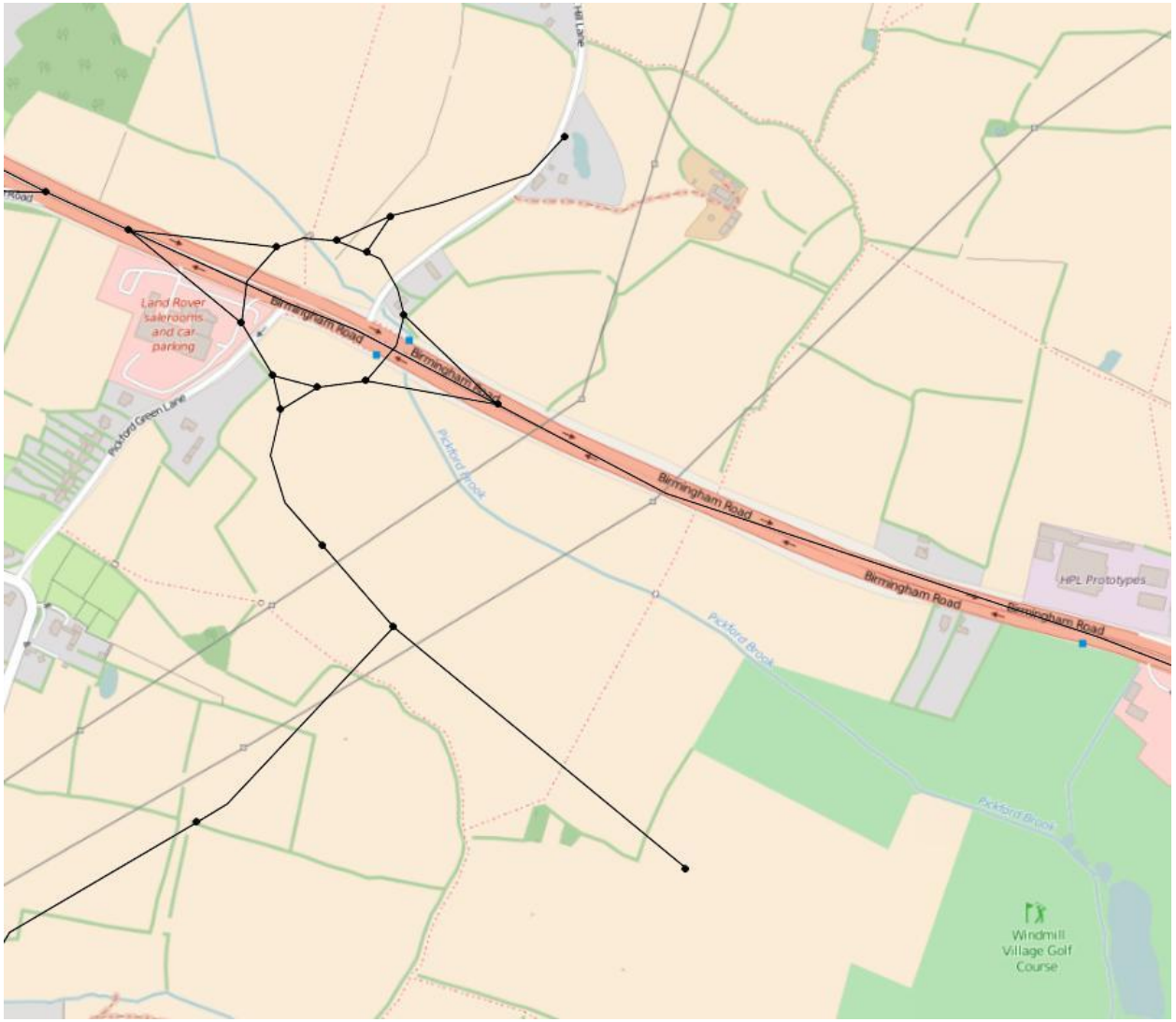
Comments:

Coded as per plan sent to WSP I PB by CCC and public domain sources, no scheme drawing provided by AECOM.

Scheme involves the construction of a bridge deck to improve links between Friargate and the city centre by removing the raised roundabout and building a bridge across the ring road, creating a new road layout. The new junction on the new bridge deck to provided access on and off the Ring Road via three new roads. The only movement that will not be provided for is a right turn from Warwick Road onto the Ring Road towards Quinton Road. Following comments from Jacobs, link # 2000037 is closed to traffic in borth directions, as part of the scheme.

WSP | PARSONS BRINCKERHOFF

EASTERN GREEN JUNCTION



Forecast Year:	**2026**
Authority :	Coventry
Scheme ID:	N/A
Scheme Name:	Eastern Green SUE Grade-Separated Roundabout
Arbitrary Node in Vicinity:	Node # 2100112820

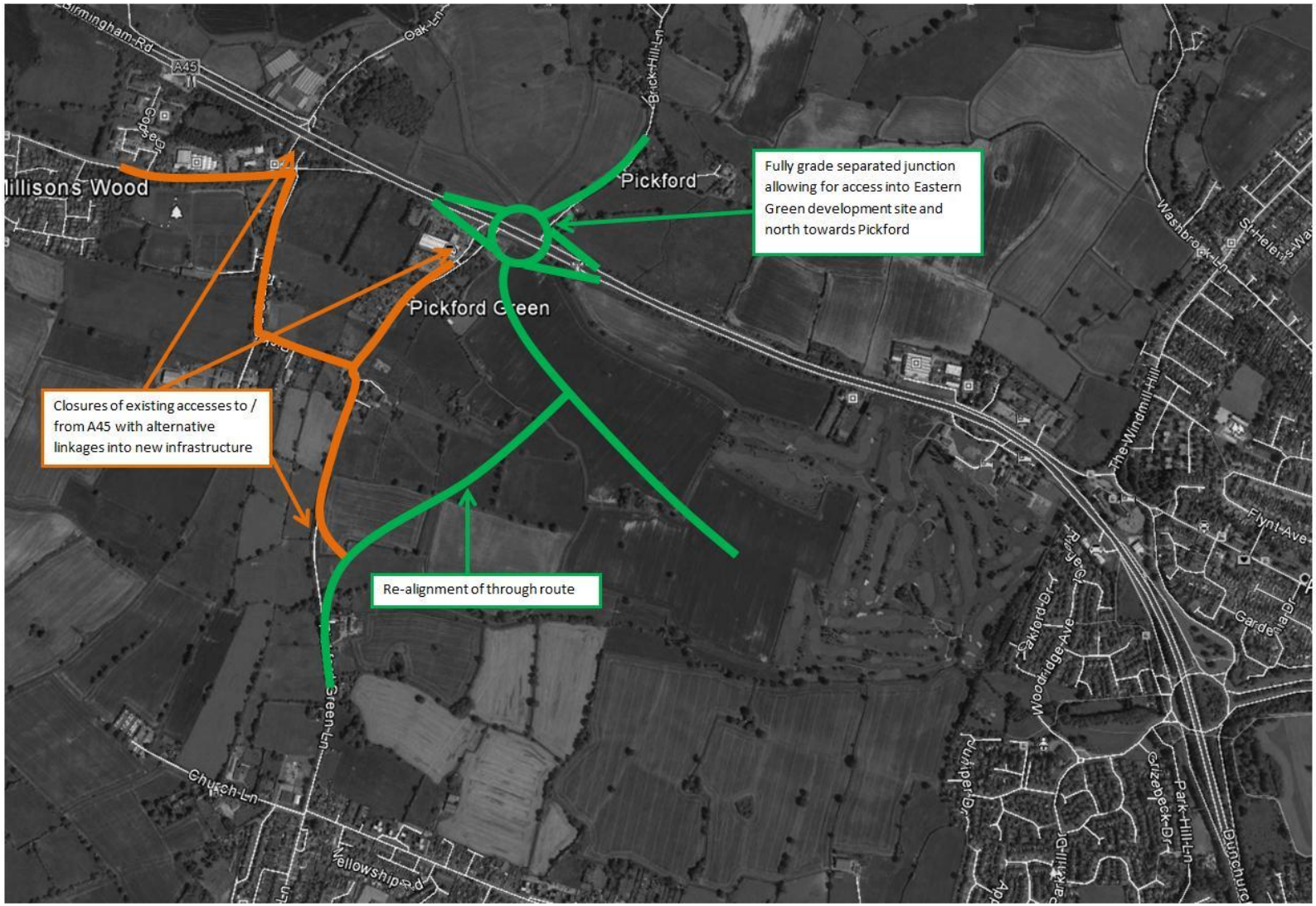
Comments:

While working on Coventry's Local Plan for Coventry City Council, indicative scheme plans were given to WSP I PB for two highway schemes to be coded into the 2026 HAM (the Eastern Green SUE grade-separated r/b and the A46 Access]

This scheme involved the creation of a Grade-Separated roundabout on the A45 as part of the associated highway infrastructure to the Eastern Green SUE site, as well as closures to current access points to A45 (see following page for scheme issued to WSP I PB by CCC)

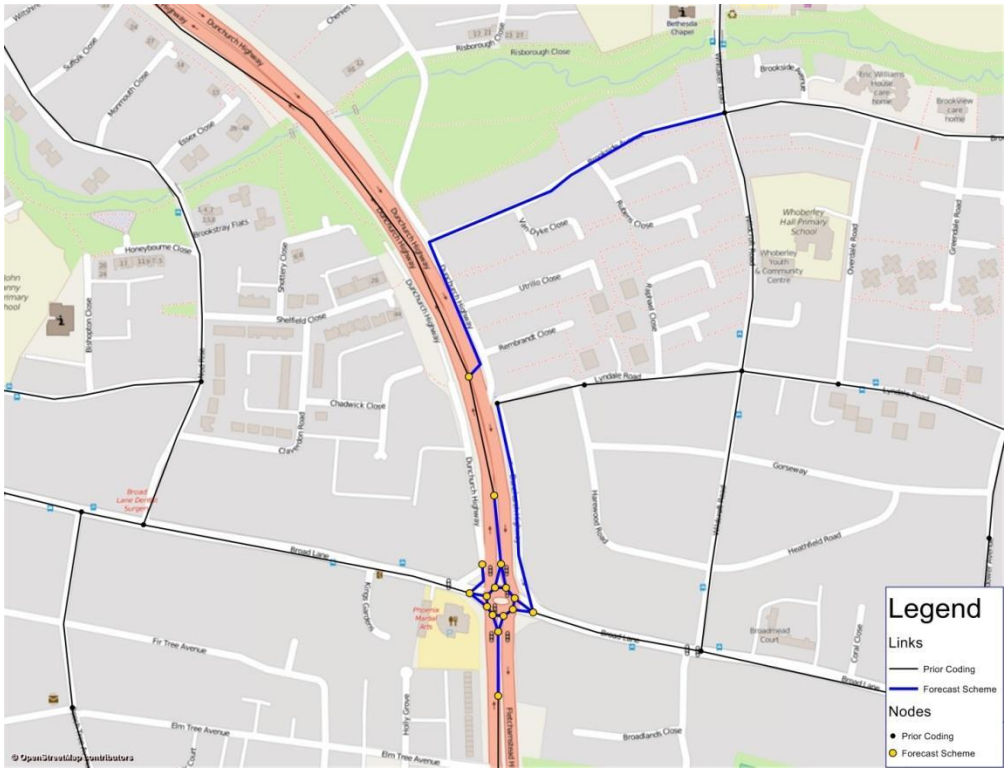
EASTERN GREEN JUNCTION

A45 / Eastern Green New Grade Separated Junction Indicative



WSP | PARSONS BRINCKERHOFF

BROAD LANE / TILE HILL JUNCTIONS



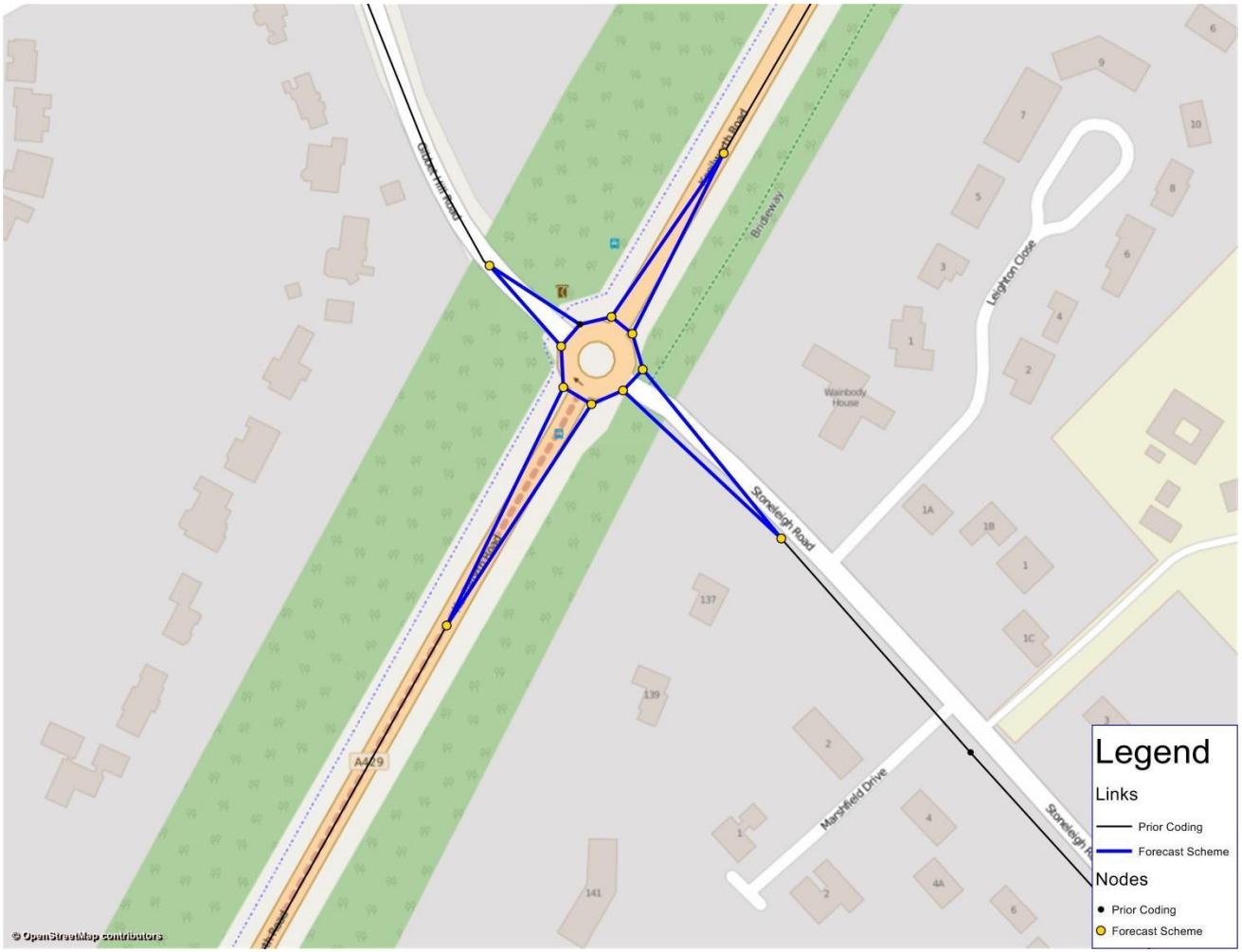
Forecast Year:	**2019**
Location:	Coventry
Scheme ID:	9
Scheme Name:	Broad Lane / Tile Hill Junctions
Arbitrary Node in Vicinity:	Node # 2100112847

Comments:

No scheme drawing provided by AECOM, but coded as per public domain sources (http://www.coventry.gov.uk/info/113/regeneration/2072/your_city/12). As per information from Coventry City Council, this scheme is currently under construction, and as such has been coded in the 2019 forecast scenario and beyond.

WSP | PARSONS BRINCKERHOFF

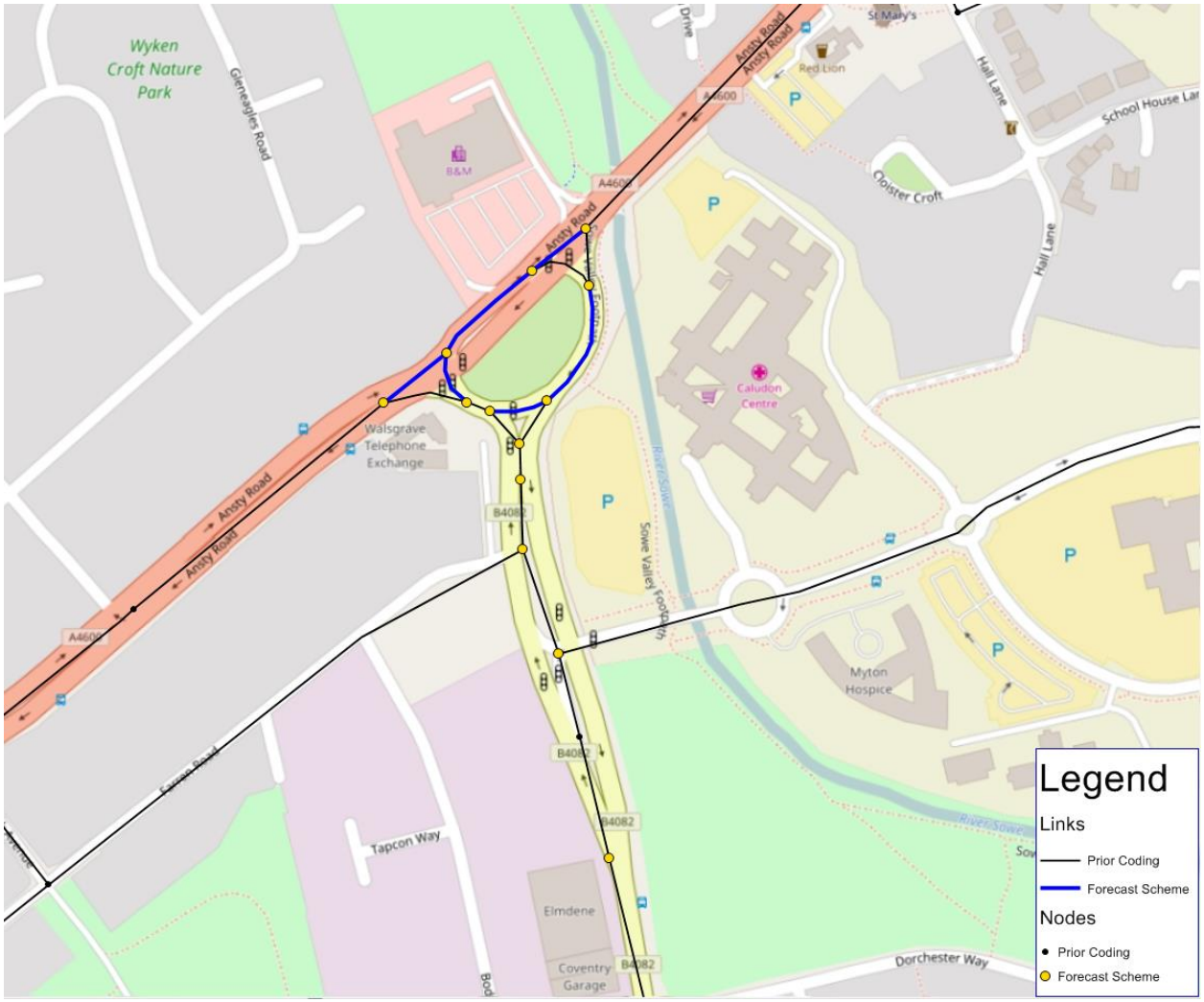
STONELEIGH ROAD/KENILWORTH ROAD



Forecast Year:	**2019**
Location:	Coventry
Scheme ID:	10
Scheme Name:	Stoneleigh Road/Kenilworth Road
Arbitrary Node in Vicinity:	Node # 2100112724
Comments: **As per information from Coventry City Council, this scheme is currently under construction, and as such has been coded in the 2019 forecast scenario and beyond. Coded as per scheme drawing.**	

WSP | PARSONS BRINCKERHOFF

A4600 HOSPITAL



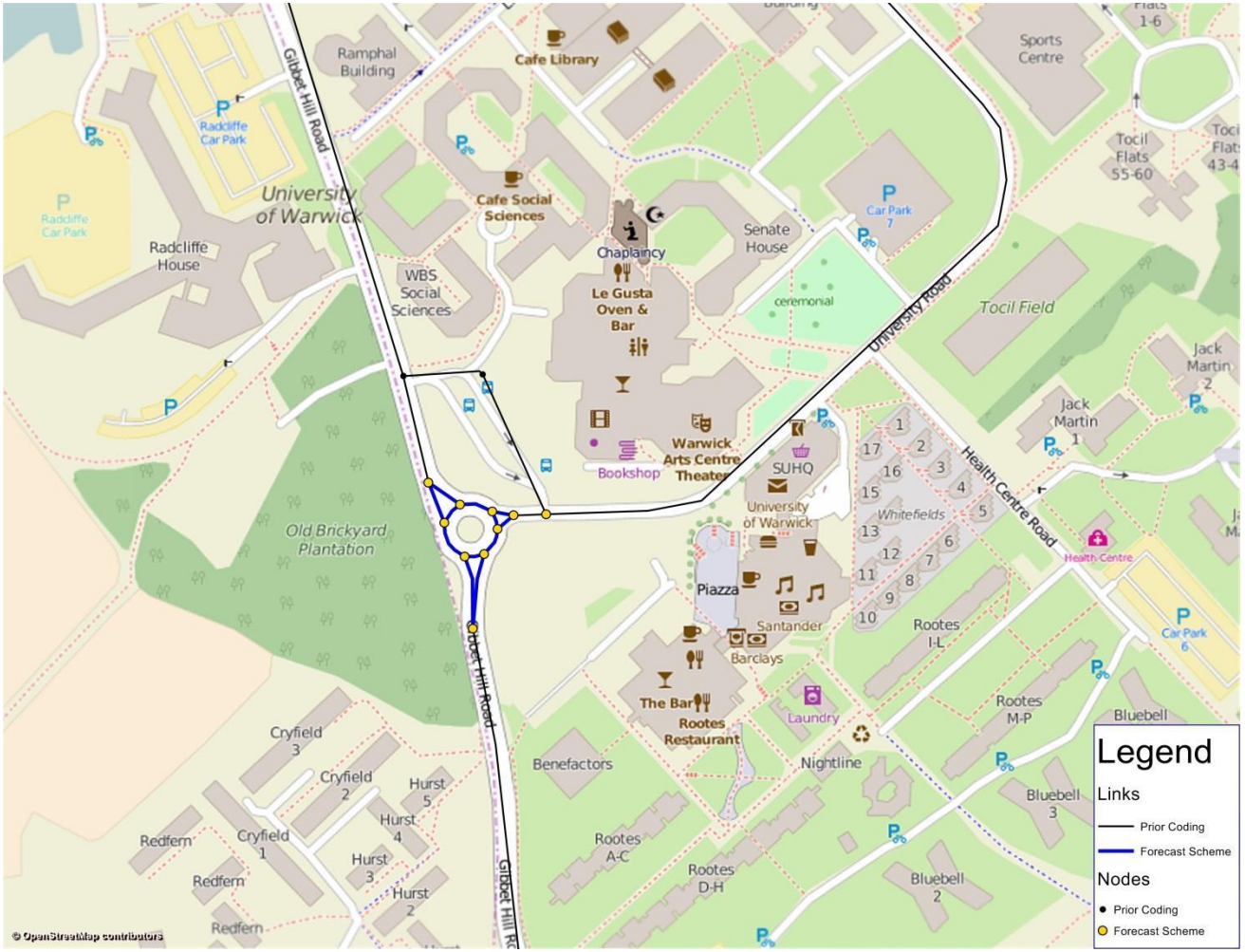
Forecast Year:	**2019**
Location:	Coventry
Scheme ID:	11
Scheme Name:	A4600 Hospital
Arbitrary Node in Vicinity:	Node # 2500273

Comments:

As per information from Coventry City Council, this scheme is currently under construction, and as such has been coded in the 2019 forecast scenario and beyond. Simulated junction, so signalisation incorporated.

WSP | PARSONS BRINCKERHOFF

COVENTRY SOUTH WEST IMPROVEMENTS (WARWICK UNIVERSITY AREA)



Forecast Year:	**2026**
Authority:	Coventry
Scheme ID:	12
Scheme Name:	Coventry SW
Arbitrary Node in Vicinity:	Node # 2100112949
Comments:	**Coded in Gibbet Hill Road roundabout as per scheme drawing. Scarman Road not present in Base Model so associated junction not coded in.**

HIGHWAY SCHEMES

- **Schemes within Uncertainty Log have been reviewed with CCC**
- **This presentation also outlines the aspirational highway schemes that were included within the 2031 Local Plan HAM**

UNCERTAINTY LOG

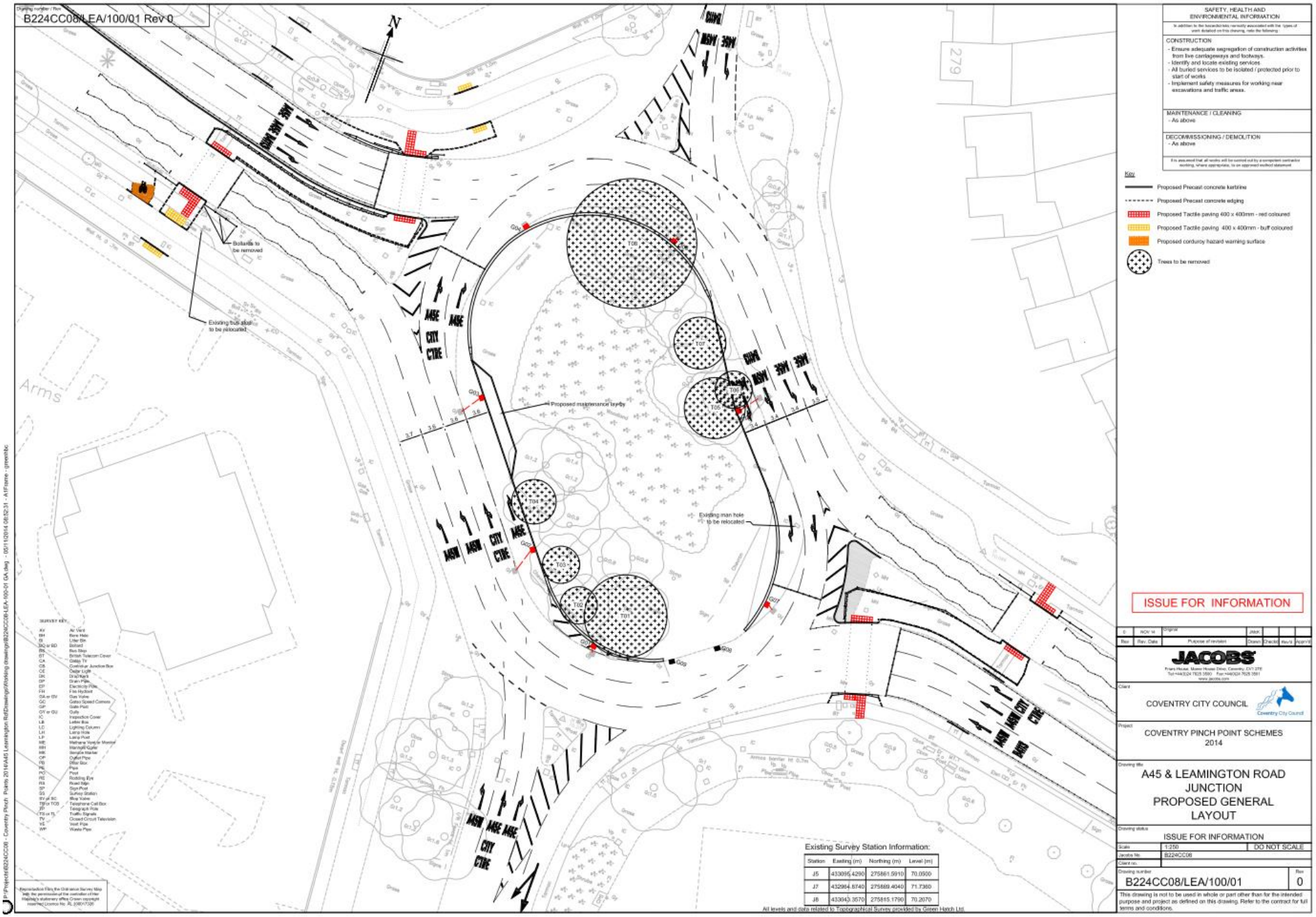
Ref	Scheme	Certainty	Open by	Comments
1	A444 Whitley Interchange / Leaf Lane	NC	2019	
2	A46/A428 & Sow Valley Link Road Grade Separations	MTL	2026	
3	A46/A428 Junction Signalisation	NC	2019	
5	North-West Link Road	MTL	2026	
6	Binley Rd / Walsgrave Corridor Capacity Enhancement	MTL	2026	
7	Friargate IRR	NC	2019	
8	**Ring Road Junction 1 & 9**	**MTL**	**2026**	**To be coded, also Junctions 4 and 5 (2026) to be coded also [scheme plans received for J1, 4 & 5] J5 has no associated highway network changes**
9	Broad Lane / Tile Hill Junctions	MTL	2026	
10	Stoneleigh Road/Kenilworth Road	MTL	2019	
11	A4600 Hospital	MTL	2019	
12	Coventry SW	MTL	2026	
14	**Coventry Ring Road Junction 2**	**MTL**	**2019**	**To be coded, scheme plan received**
15	**A46 / A45 South-west Link**	**MTL**	**2034**	**Stoneleigh Phase One to be coded only (not entire link road)**

WSP | PARSONS BRINCKERHOFF

HIGHWAY SCHEMES WITHIN THE 2031 LOCAL PLAN HAM BUT THAT ARE NOT IN THE 2034 HE FORECAST HAM

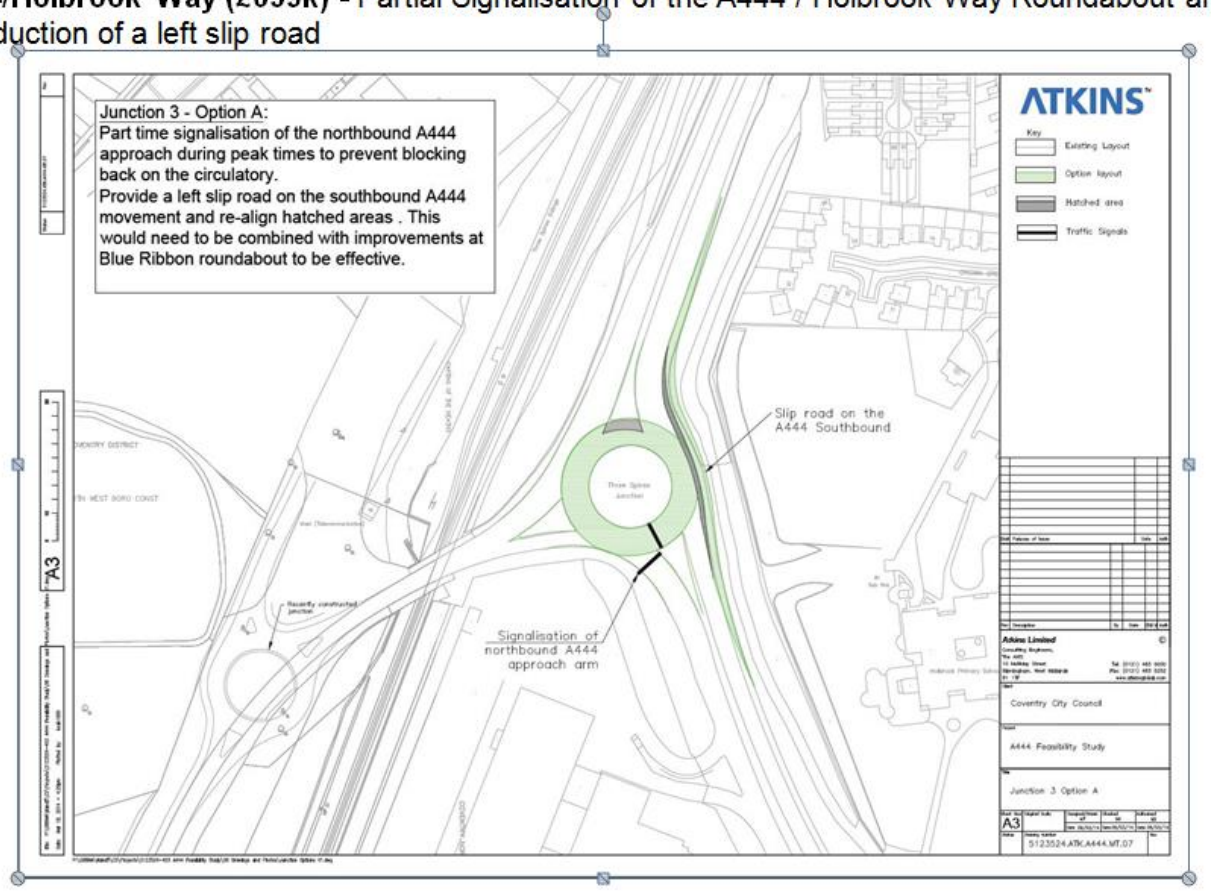
- A45 / Leamington Rd
- A444 / Holbrook Way
- A444 / Foleshill Rd
- A444 / Bell Green Rd
- A444 / Binley Rd
- Paragon Park Accesses
- Whitley South Access

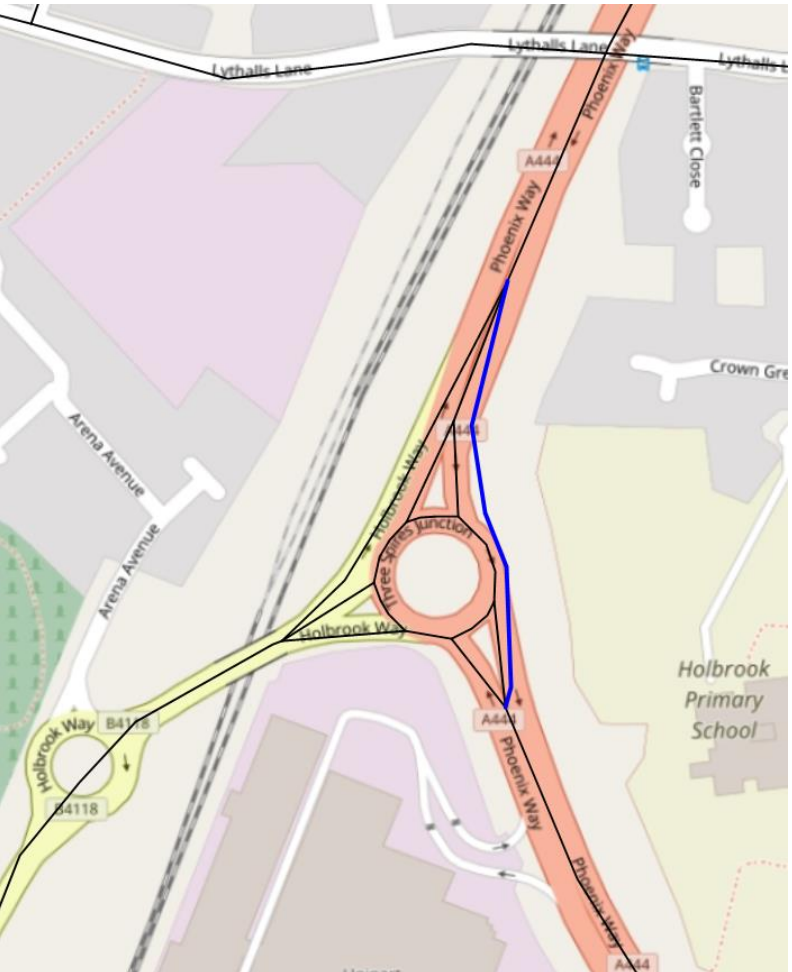
A45/LEAMINGTON RD



A444 / HOLBROOK WAY

A444/Holbrook Way (£659k) - Partial Signalisation of the A444 / Holbrook Way Roundabout ar introduction of a left slip road

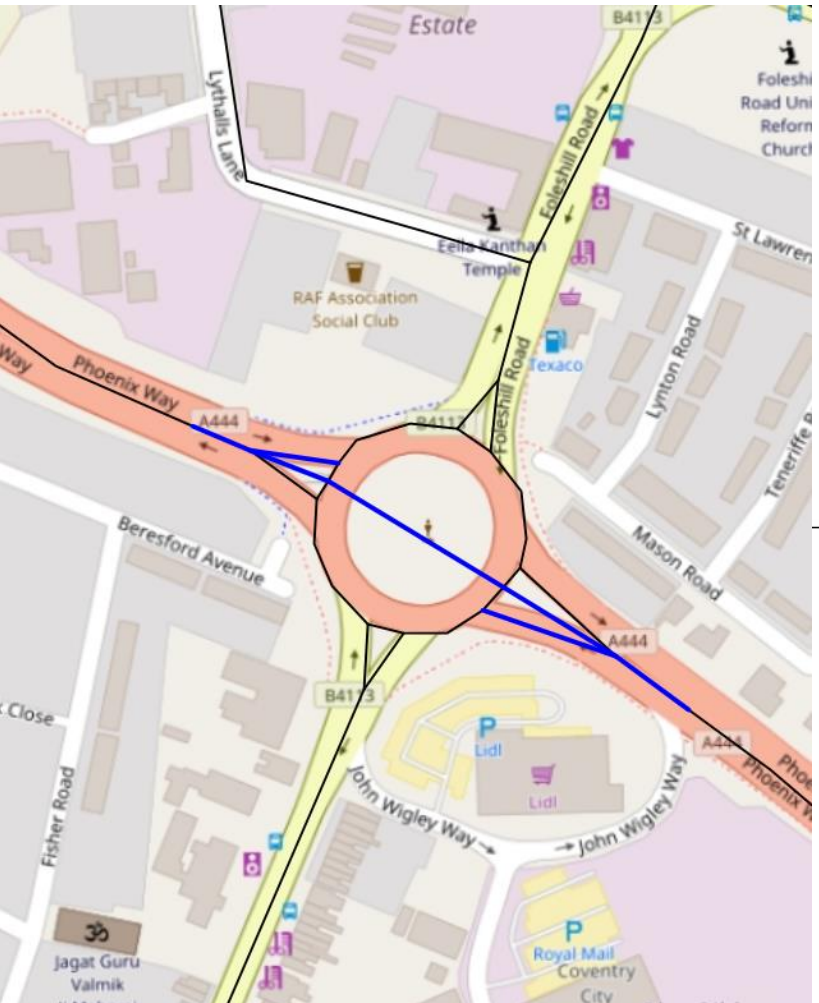


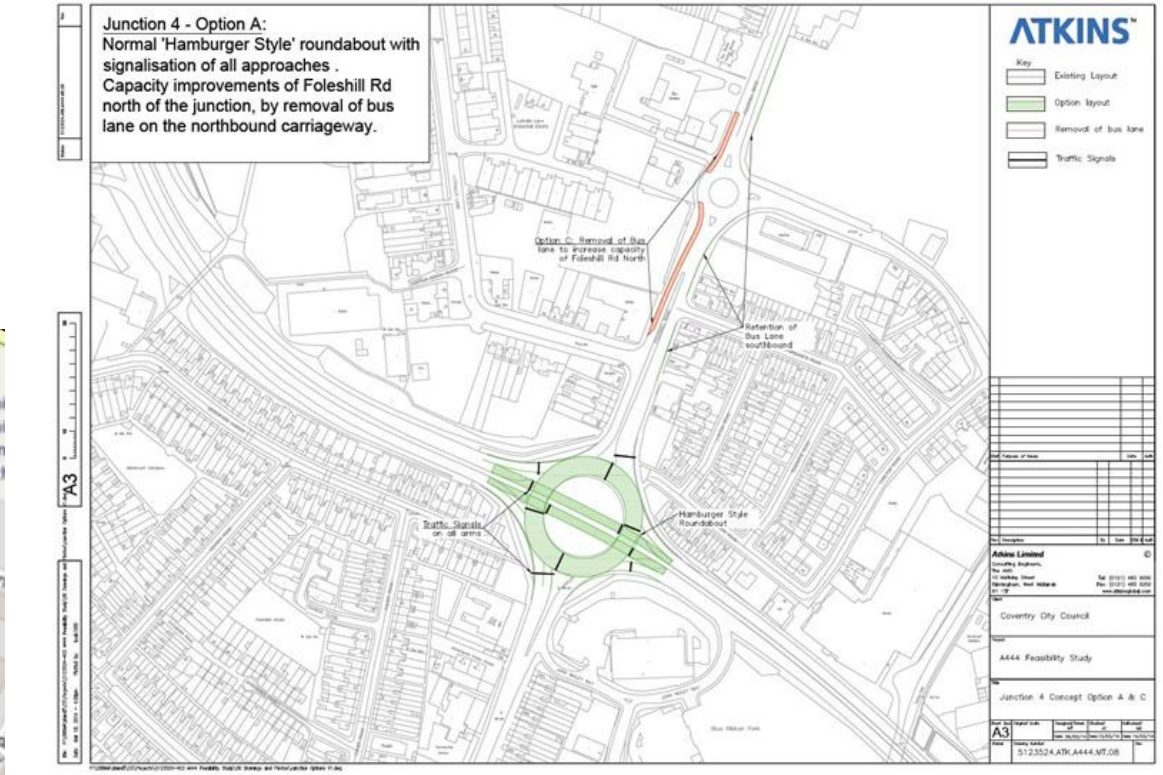


WSP | PARSONS BRINCKERHOFF

A444 / FOLESHILL RD

A444/Foleshill Road (£3.98M) - Signalisation of existing roundabout and conversion to a "hamburger" junction. Remove or amend existing bus lane and downstream roundabout on Foleshill road.

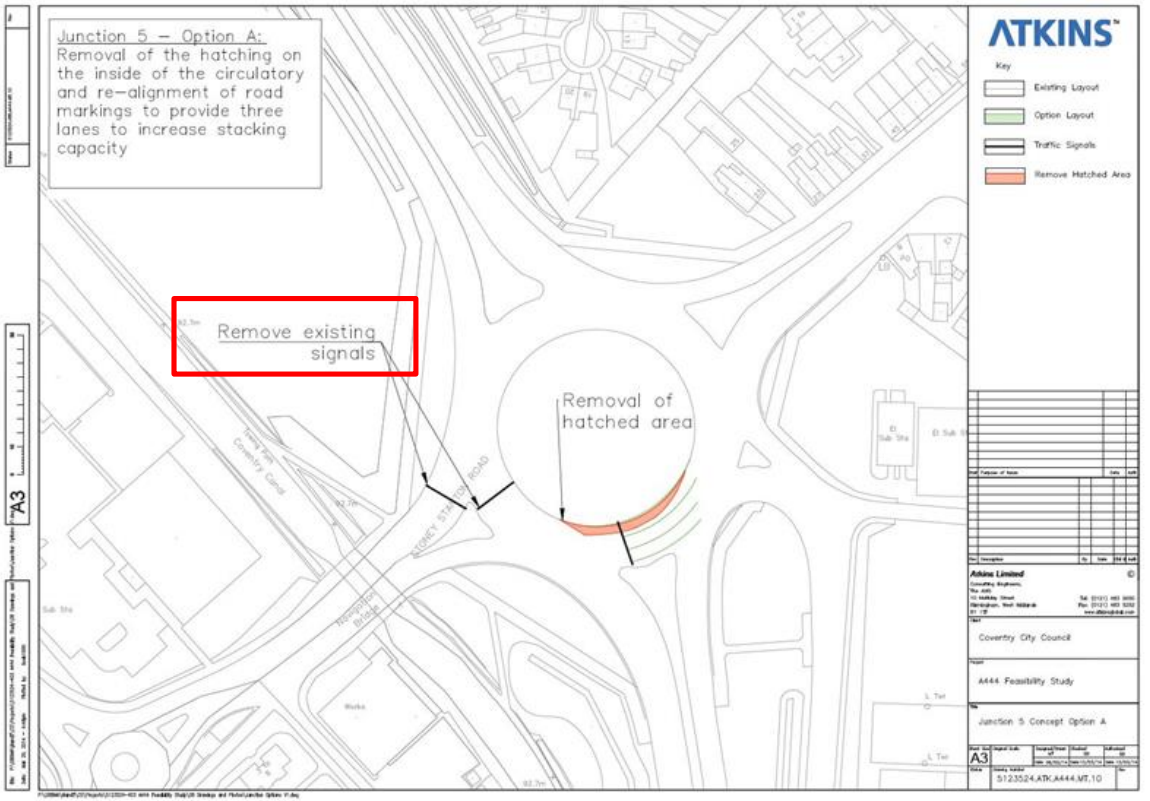




WSP | PARSONS BRINCKERHOFF

A444 / BELL GREEN RD

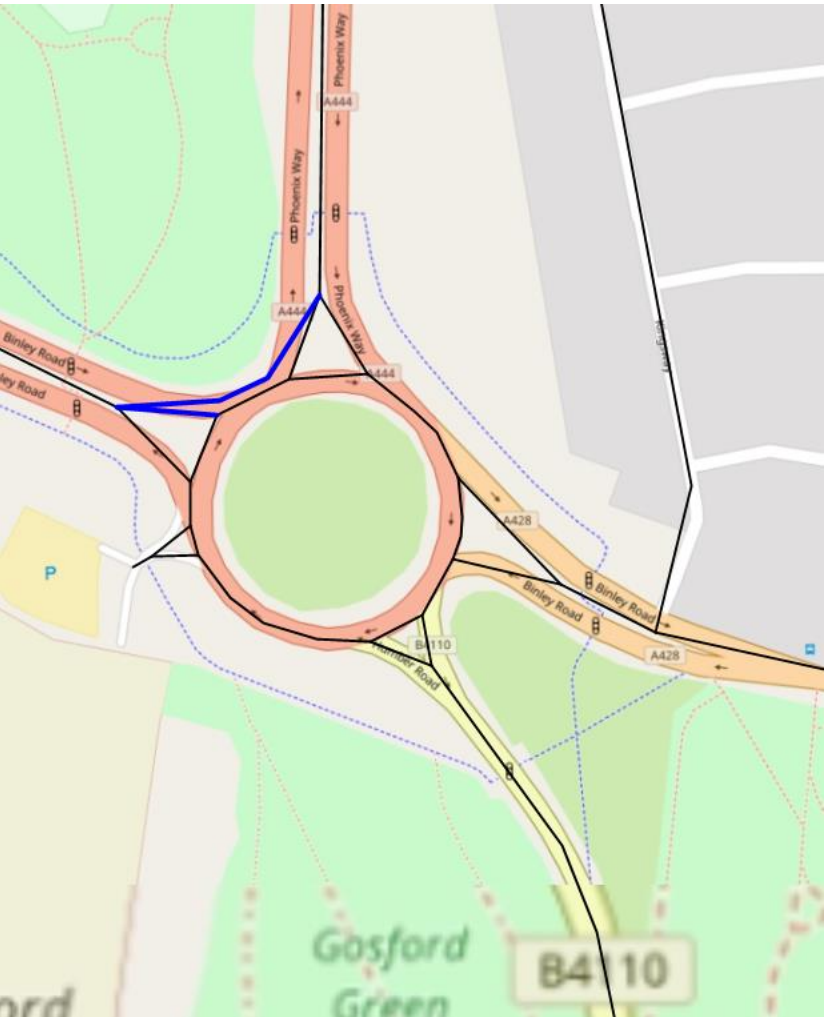
A444/Bell Green Road (£68k)- Remarking to widen the carriageway increase circulatory capacity

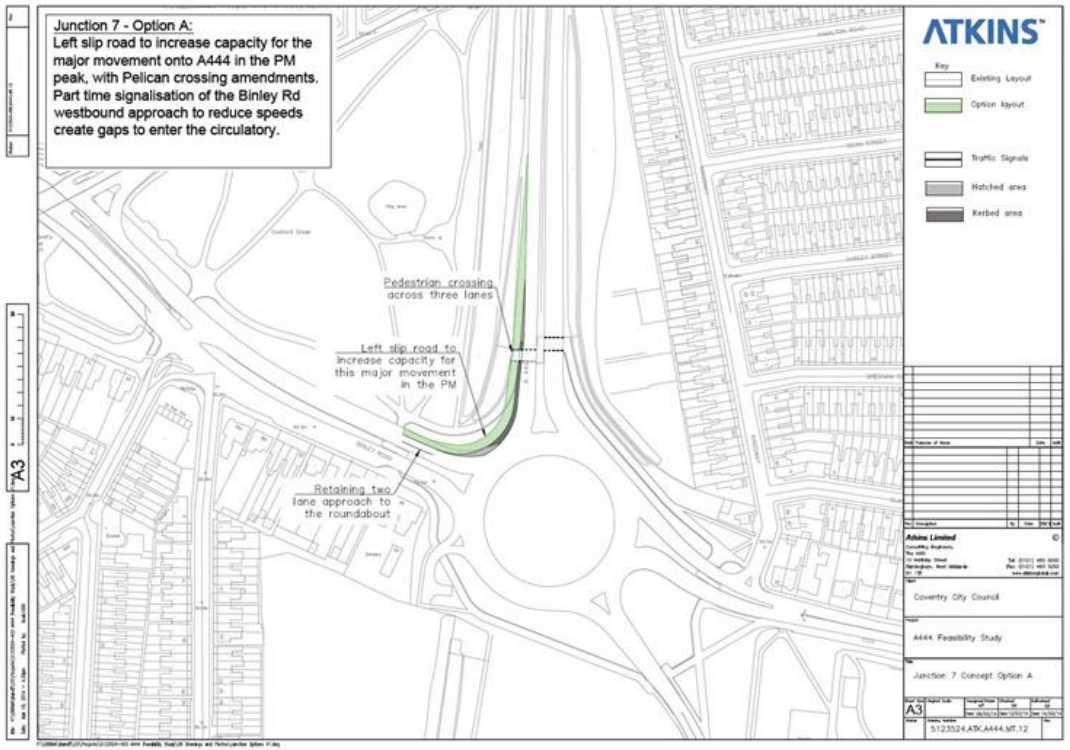


WSP | PARSONS BRINCKERHOFF

A444 / BINLEY RD

A444/Binley Road (£1.64M) - Partial Signalisation and left slip road from SkyBlue Way on the A444 northbound and realignment of the Humber Road and Binley Road arms to create additional stacking space on the main traffic island.

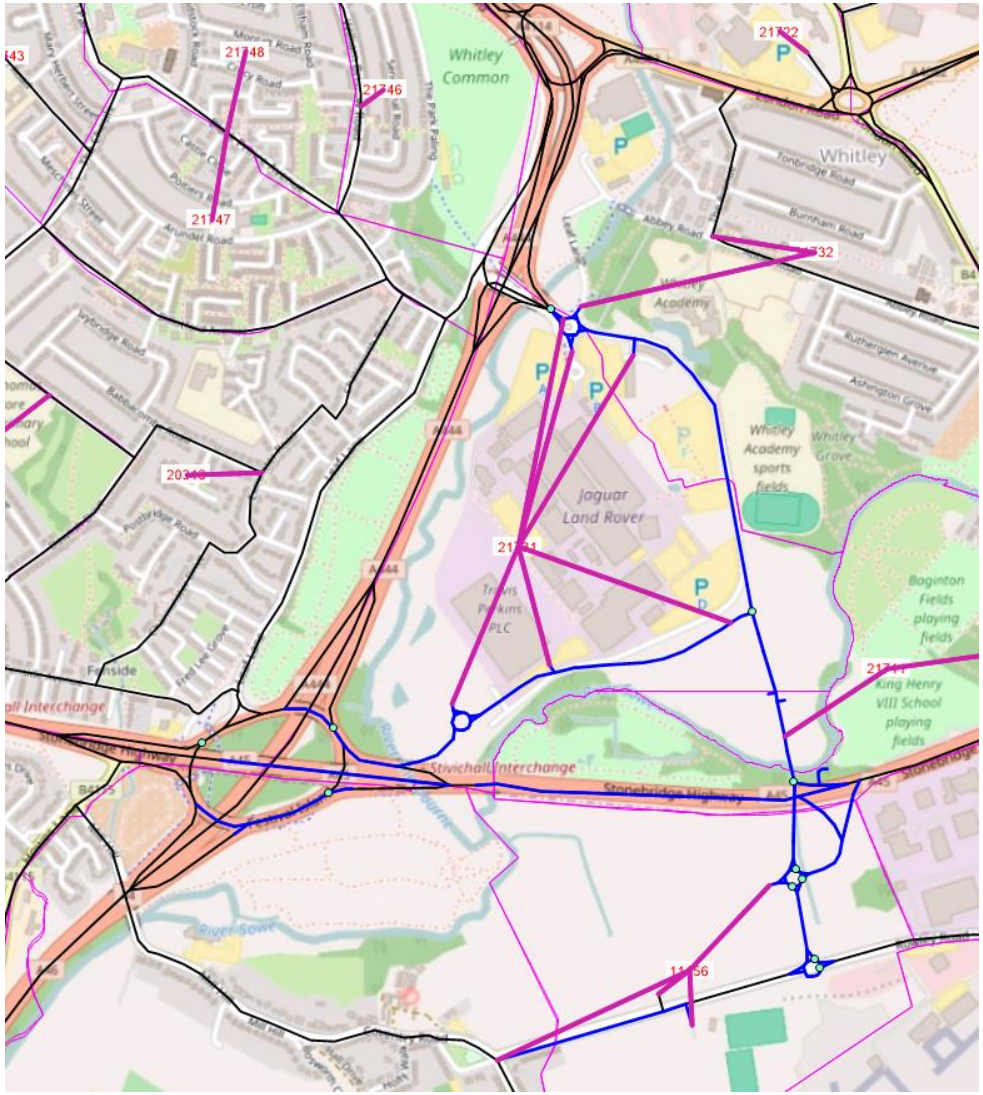




WSP | PARSONS BRINCKERHOFF

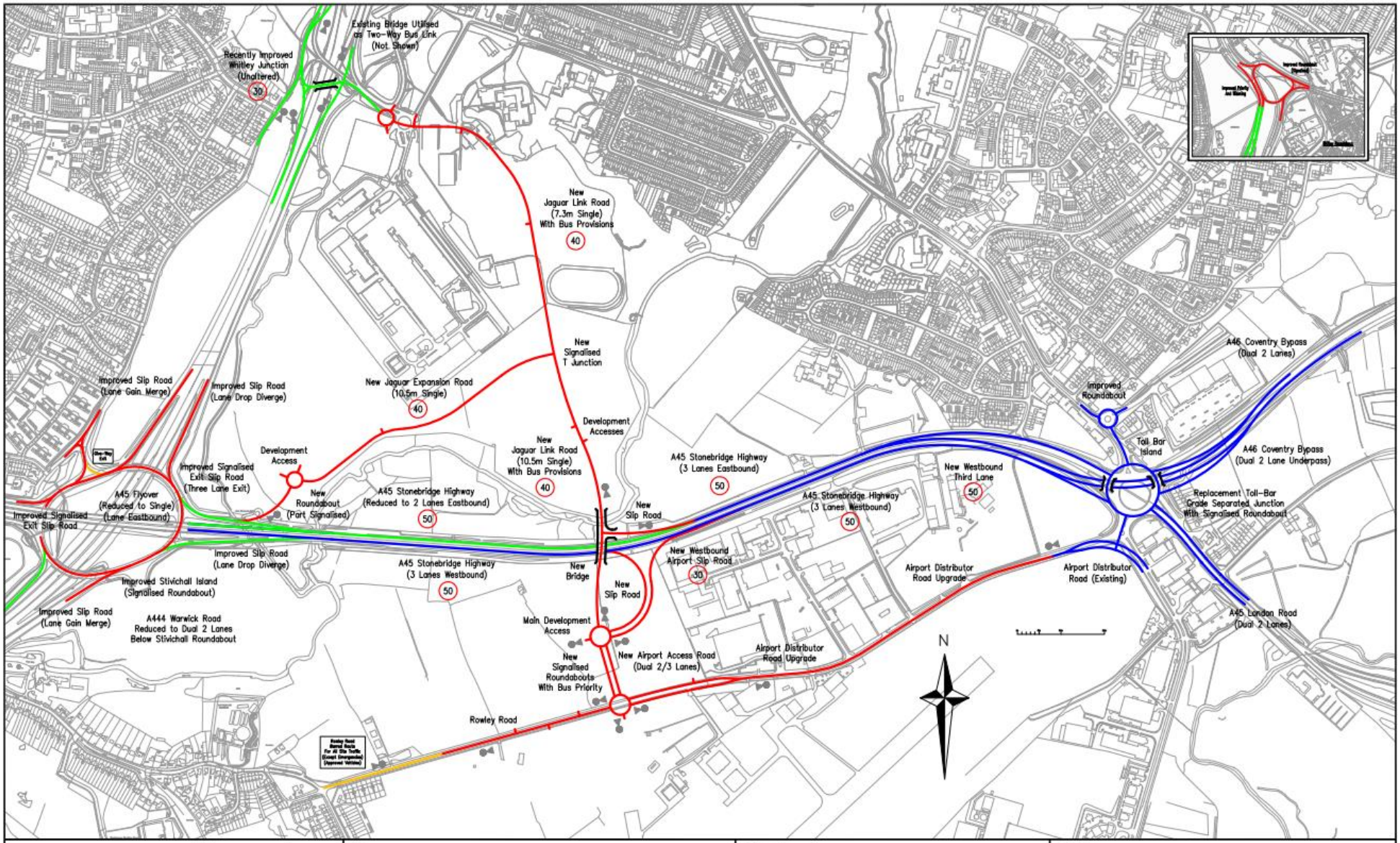
PARAGON PARK (NEW ACCESS)

WHITLEY SOUTH (WITH SIGNALISATION AT STONELEIGH JUNCTION)



WSP | PARSONS BRINCKERHOFF

WHITLEY SOUTH



Lawrence Walker Ltd
Church Farm
Leamington Hastings
Warks CV23 8DZ

Key
- Development Primary Infrastructure & Improvements
- Highways England [HE] Works (Commenced April 2013)
- Current HE & CCC Works with Alterations as Noted
- Restricted Highway with Restrictions as Noted
- (50) Proposed New Speed Limit
- Proposed ANPR Camera Location (Two-Way)

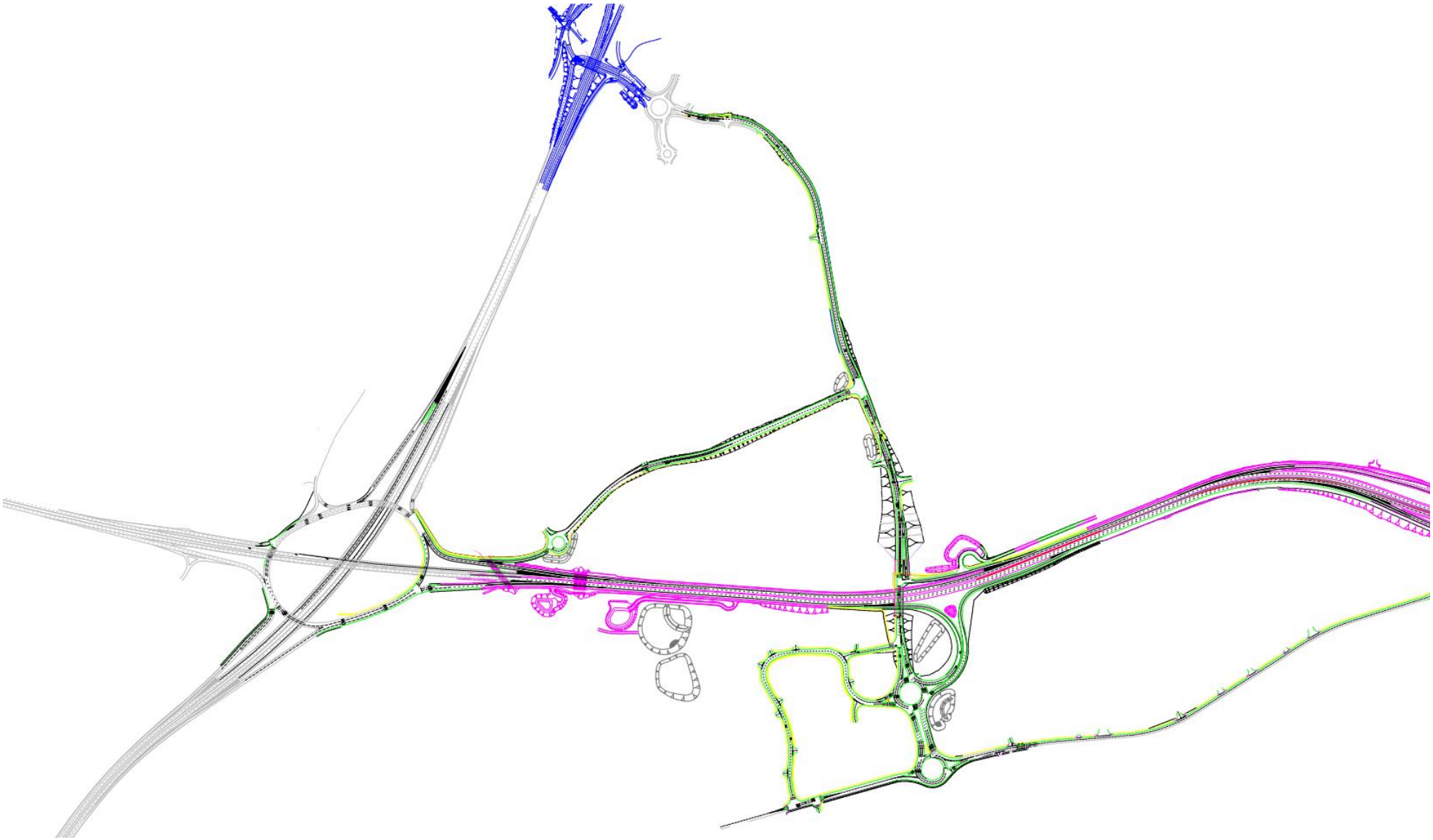
Project
Whitley South
Coventry City Council
Jaguar Land Rover

Drn. SPJ	Chkd.	App.	Date 01/10/15
Scales As Noted			

Title
Site Access
Proposed Improvements
Junction Schematic

Drg. No.	CAD Ref	Plot	Rev
Figure 1			**P26**

WHITLEY SOUTH

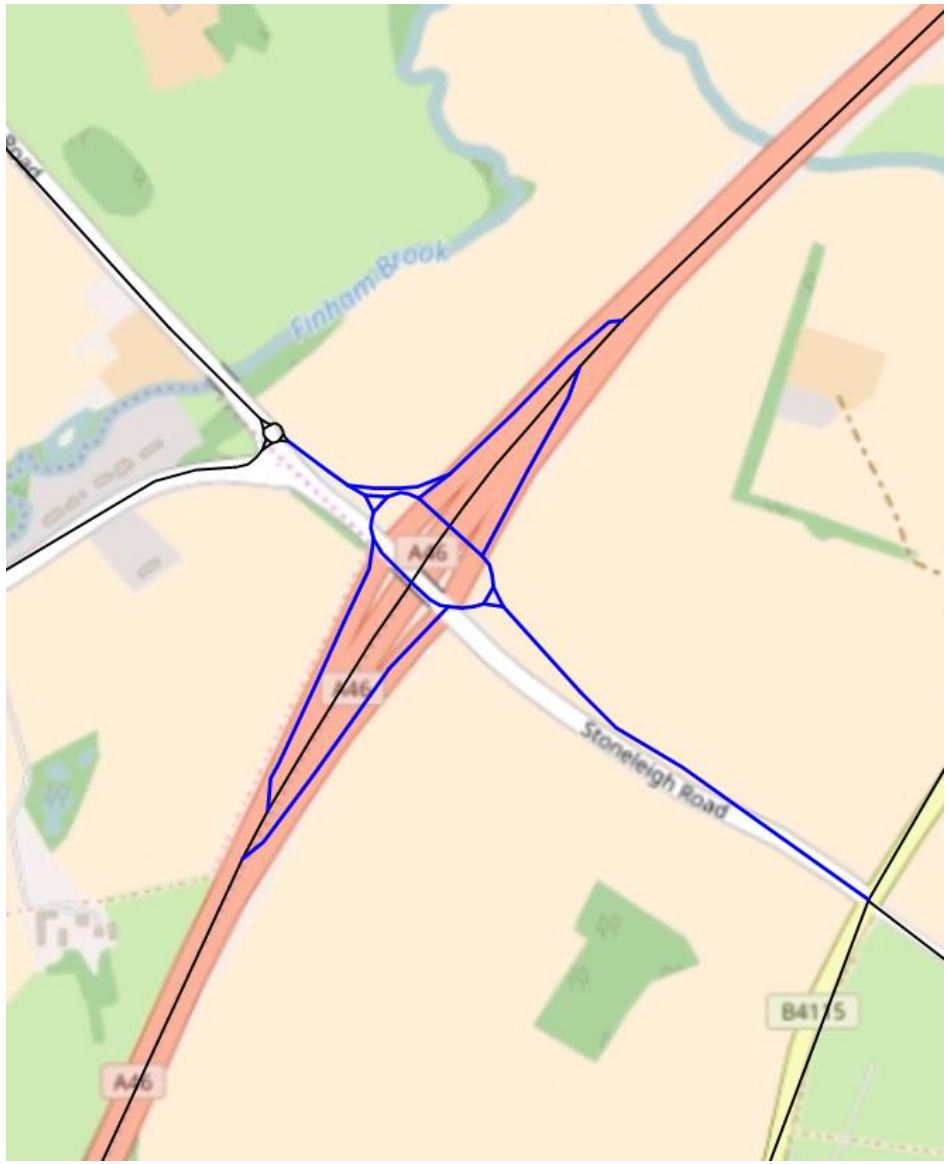


WSP | PARSONS BRINCKERHOFF

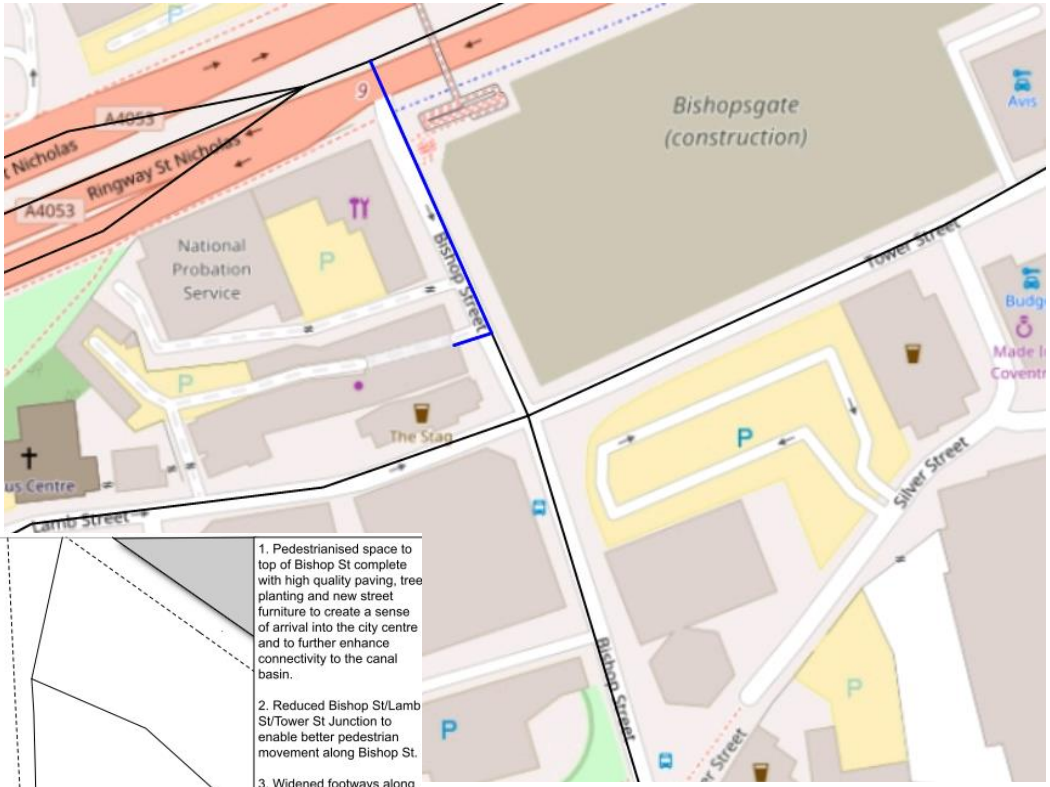
HIGHWAY SCHEMES INDICATED TO BE INCLUDED BY CCC

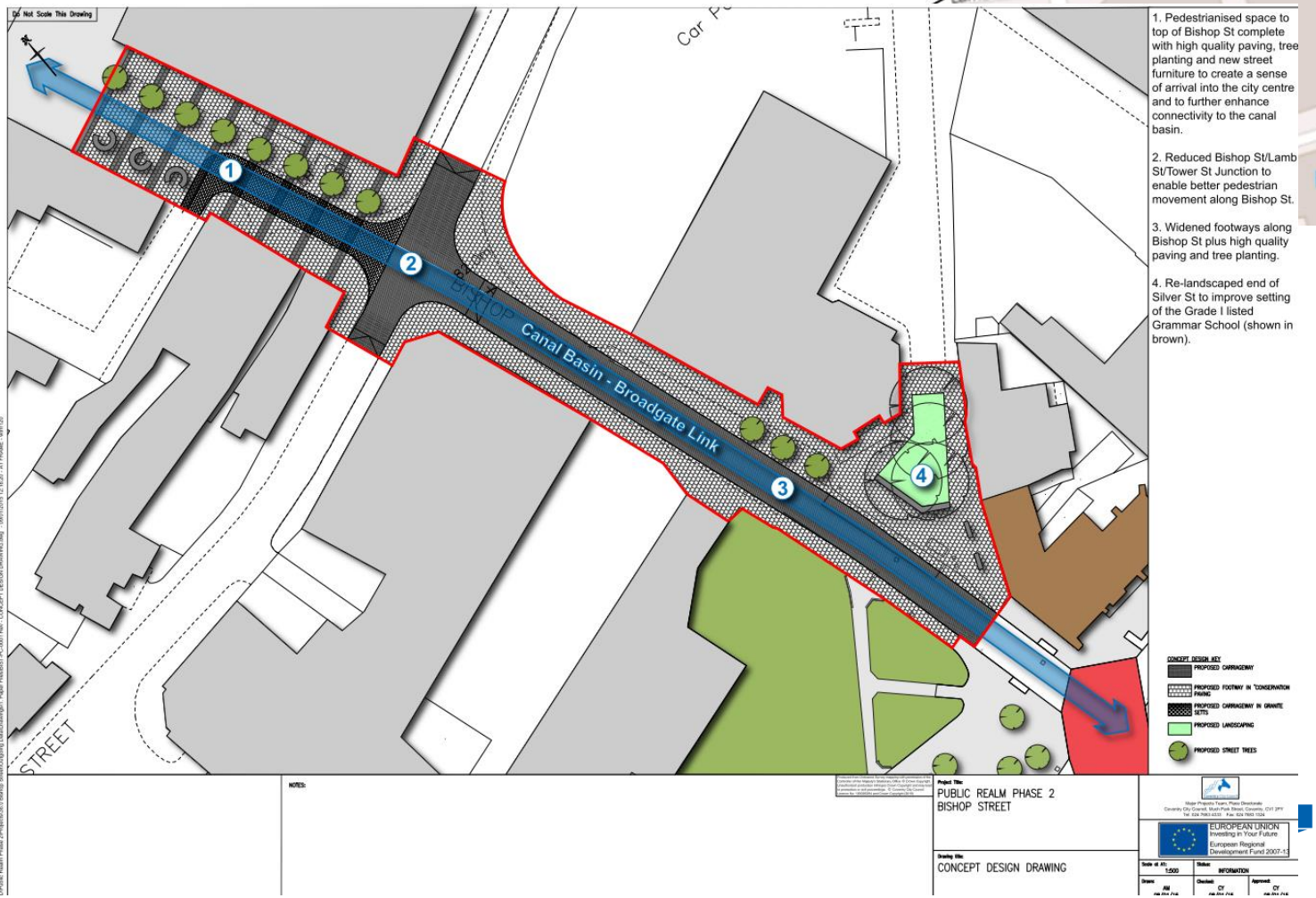
- A46 Link Road: Stoneleigh Junction Phase One
- IRR Junction 1
- IRR Junction 2
- IRR Junction 4

A46 LINK ROAD: STONELEIGH JUNCTION PHASE ONE



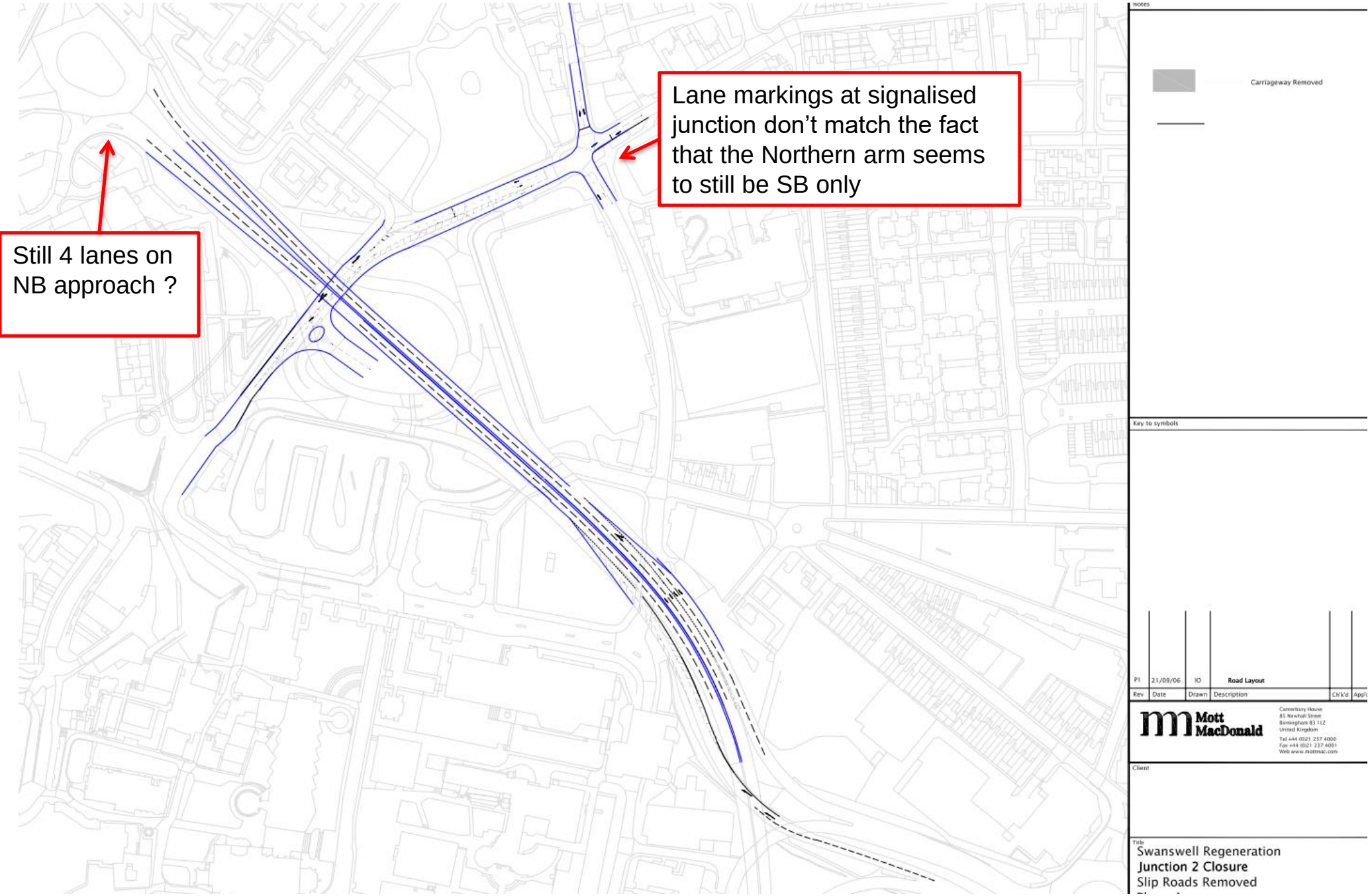
IRR JUNCTION 1



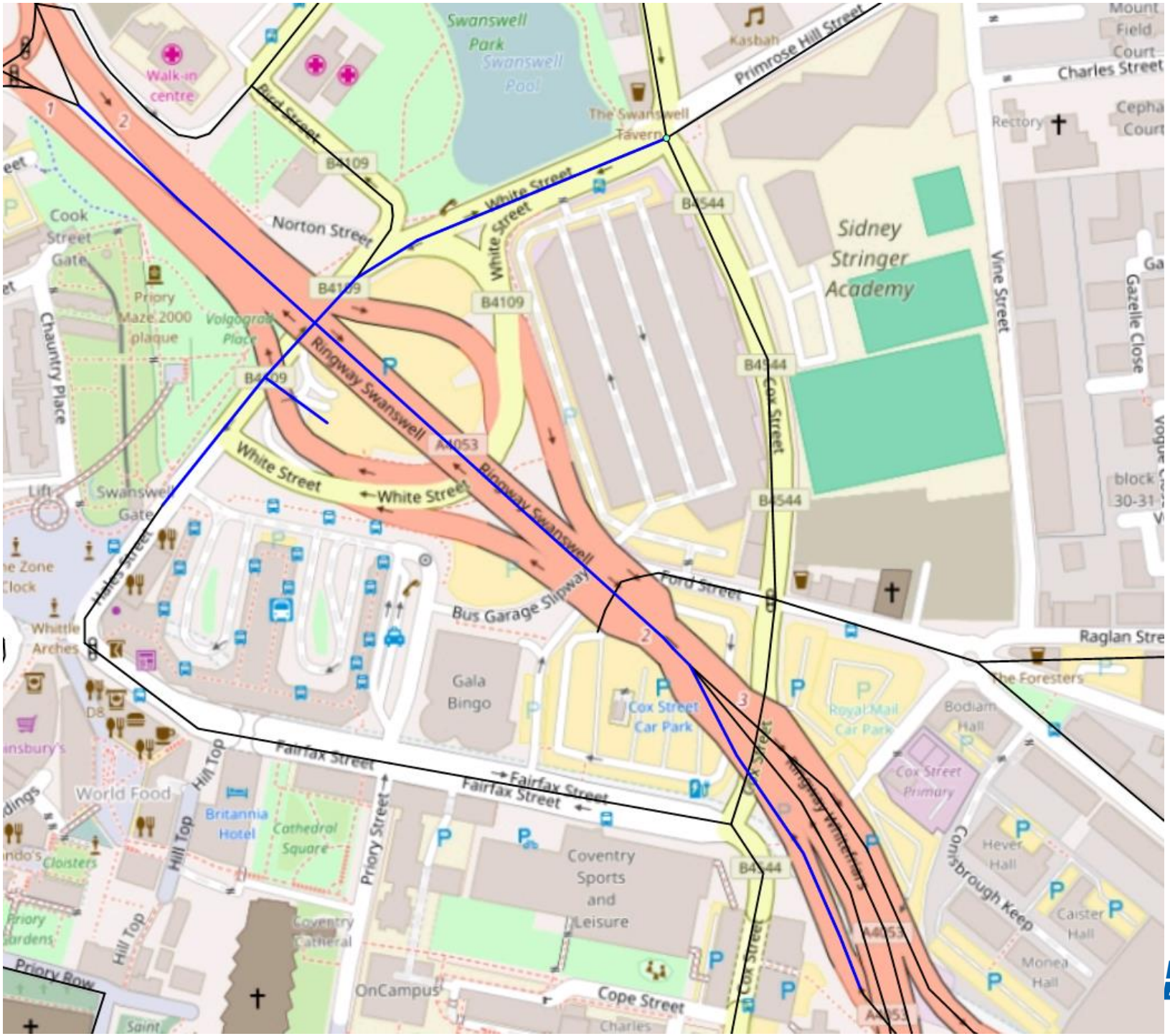


WSP | PARSONS BRINCKERHOFF

IRR JUNCTION 2

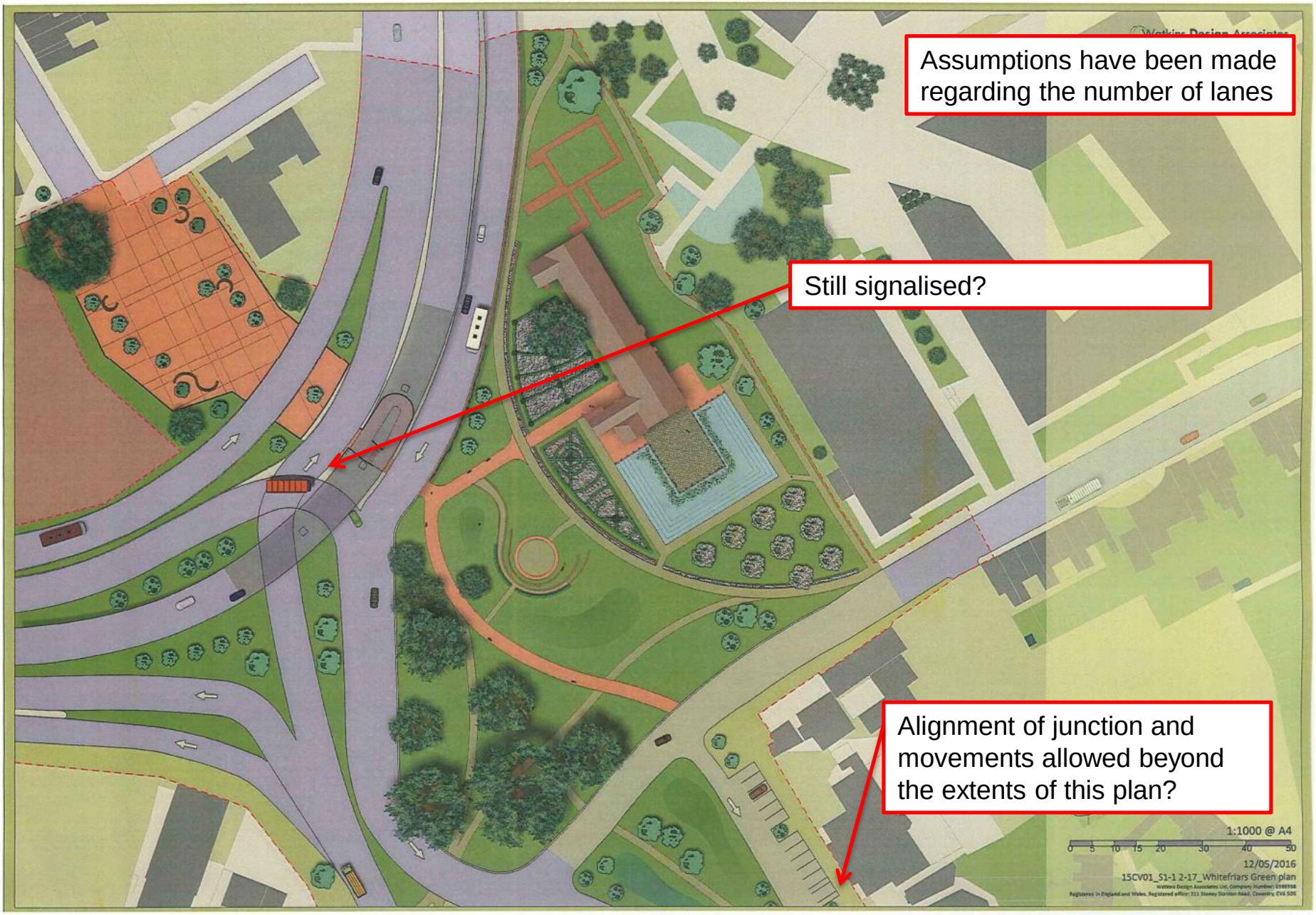


IRR JUNCTION 2



PARSONS BRINCKERHOFF

IRR JUNCTION 4



WSP | PARSONS BRINCKERHOFF

IRR JUNCTION 4