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WORTHING LOCAL PLAN

Transport Assessment

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2 CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

1.1 PURPOSE OF REPORT

WSP has been commissioned by Worthing Borough Council (WBC) to undertake a transport assessment to inform and support the development of the new Worthing Local Plan[1]. This report provides a transport evidence base which demonstrates the traffic implications of potential new land use development and identifies an associated package of transport improvements.

This is one of a number of reports that form the background evidence for the new Local Plan for Worthing. It contains a review of current policy and strategy and draws on findings from other relevant transport studies within the Worthing area. This report presents an assessment of current and forecast transport provision and movements and identifies the impacts of new land use development through a comparative assessment. The effects of the transport improvement package are then described.

1.2 BACKGROUND

In March 2012 the National Planning Policy Framework (NPPF) was published, consolidating existing policies, circulars and guidance into a concise framework. The NPPF outlines the Government's economic, environmental and social priorities for England, setting the requirements for local plan production and development management. Local planning authorities are required to prepare plans that accommodate new development; meeting objectively assessed local needs.

WBC is developing a new Local Plan for the Borough. The existing Development Plan for Worthing is the Worthing Core Strategy which was adopted in 2011 and covered the period to 2026. Since its adoption, changes to the planning system have resulted in the need to prepare a new development plan. The Worthing Local Plan will:

- Aim to meet the objectively assessed development and infrastructure needs
- Identify land where development would be appropriate / inappropriate
- Contain a clear strategy for enhancing the natural, built and historic environment.

The Plan will cover land use proposals relating to housing, business, retail, and transport and will include new land use allocations where they are needed and policies which will be used to assess planning proposals.

1.3 STUDY AREA

Figure 1-1 shows the core study area for the assessment and the boundary of Worthing Borough. The core study area extends beyond Worthing Borough to enable it to adequately assess the impacts of new land-use, resulting from the development of Local Plan sites close to the borough boundary.

The study considers the effects of the Local Plan proposals outside of the Borough boundary where this is required for a complete assessment of the impacts of the proposed new land use. This is illustrated by the 'Core Study Area' boundary to show consideration of impacts outside of the Worthing Borough boundary which includes roads and junctions adjacent to proposed Local Plan sites.

[1] https://www.adur-worthing.gov.uk/worthing-local-plan/about/

Figure 1-1: Transport assessment study area

1.4 OUTLINE METHODOLOGY

The methodology for this transport assessment is guided by Department for Communities and Local Government (DCLG) guidance 'Transport evidence bases in plan making and decision taking' (March 2015)[2]. This guidance sets out how an evidence base can be developed to assess the transport impacts of development and develop sustainable approaches to transport at a plan-making level.

To inform this transport assessment, best use is made of the existing Highways England A27 strategic model. The model has been developed for the purposes of assessing the Arundel Bypass and A27 Worthing and Lancing Road Investment Strategy (RIS) proposals. A year 2015 baseline strategic model has been developed which reflects typical morning (07:00 – 10:00) and evening (16:00 – 19:00) peak periods. The model includes all 'A' roads and many lower order roads within the Borough. The base year model has been used to develop a year 2033 forecast scenario, consistent with the horizon of the Worthing Local Plan. Further detail on how the model has been used is presented in section 5.

1.5 STRUCTURE OF REPORT

The structure of this transport assessment is as follows:

- Section 1 – Introduction
- Section 2 – Policy and strategy
- Section 3 – Current conditions
- Section 4 – Local plan sites
- Section 5 – Traffic assessment

[2] https://www.gov.uk/guidance/transport-evidence-bases-in-plan-making-and-decision-taking#transport-evidence-bases-in-plan-making-and-decision-taking

- Section 6 – Operational assessment
- Section 7 – Mitigation package
- Section 8 – Summary and conclusions

2 POLICY AND STRATEGY

2.1 INTRODUCTION

To inform the development and assessment of land use proposals, existing planning policies, strategies and other documents have been reviewed. This section outlines relevant published documents at national, regional (including county level) and local spatial planning scales. A summary of these documents is presented in Figure 2-1.

Figure 2-1: Summary of Key Policy and Strategy Documents

2.2 NATIONAL

National Planning Policy Framework (NPPF) (March 2012)

The NPPF outlines Government's planning policies for England and how they are expected to be applied. It is the framework within which residents and their councils may develop their own local and neighbourhood plans. The planning system should guide development to achieve sustainability. This means environmental, social and economic matters are considered alongside each other. In practice this means a presumption in favour of sustainable development runs through plan-making and decision-taking.

The NPPF is currently undergoing changes which will affect the planning process. The consultation ran from March – May 2018, and the final report is due to be published soon. The draft consultation NPPF does not include any major changes from the 2012 NPPF regarding transport, however, more emphasis has been put on the need for transport to be considered from the earliest stages of the planning process and on the importance of sustainable transport. Authorities are also now expected to identify additional development opportunities arising from strategic infrastructure investment, such as that detailed in the Worthing Local Plan. Parking policy has been updated to reflect the Written Ministerial Statement of 25 March 2015 on parking standards, which advised local authorities to only impose local parking standards for residential or non-residential development where there is clear justification that it is necessary to manage the local road network. The draft consultation changes policy on the assessment of the transport impacts of new developments, prioritising highway safety

and pedestrian and cycle movements, followed by access to high quality public transport. The importance of maintaining the UK's network of general aviation facilities has also been emphasised, recognising their economic value.

The NPPF describes 12 core planning principles which underpin sustainable development. Whilst the draft consultation NPPF removes the "core planning principles" section, the consultation document makes it clear that their content has been retained, and has been moved to the most appropriate parts of the revised Framework. Those considered relevant to this Local Plan are listed below:

- Actively manage patterns of growth to make optimum use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable;
- Promote the vitality of our main urban areas;
- Contribute to conserving and enhancing the natural environment and reducing pollution
- Reusing land that has been previously developed;
- Promote mixed use developments; and
- Support the transition to a low carbon future.

The Strategic Road Network and the Delivery of Sustainable Development

The Department for Transport (DfT) circular 02/2013[3] sets out that the effective and efficient operation of the Strategic Road Network (SRN) will contribute to creating 'the conditions that support the realisation of the aspirations of business and communities' and is an important factor in the delivery of national economic growth. The document sets out how Highways England will engage in the development of Local Plans to reduce the potential for adverse impact upon the SRN.

The Local Plan preparation process provides an opportunity to influence patterns of development to minimise trip generation and journey lengths, and to maximise the use of sustainable modes of transport. A key objective is to ensure that the fulfilment of the primary purposes of the SRN is not compromised.

The Circular emphasises the role of sustainable transport solutions in Local Plans and the importance of travel planning and demand management measures, for example. Transport solutions would be aligned to 'existing and proposed patterns of development in a manner that will support sustainable transport choice and retain capacity with the transport network so as to provide for further development in future Plan periods.

Highways England Road Investment Strategy

Highways England's Road Investment Strategy (RIS)[4] outlines how Highways England intends to transform the SRN and people's experiences on them, whilst at the same time addressing factors such as economic growth and climate change.

The first stage of RIS, named RIS 1 runs from 2015 to 2020 and comprises:

- A long-term vision for the SRN, outlining how smooth, smart and sustainable roads will be created
- A multi-year investment plan that will be used to improve the network and create better roads for its users
- High-level objectives

RIS 1 will see £15.2 billion invested in over 100 major schemes, bringing over 1300 additional lane miles and improving 200 sections for cyclists. It is expected that RIS 1 will help to prevent over 2500 deaths or serious injuries and benefit up to 250,000 people through noise reductions.

[3] The Strategic Road Network and the Delivery of Sustainable Development (September 2013) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf
[4] Road Investment Strategy: 2015 to 2020 https://www.gov.uk/government/collections/road-investment-strategy

Highways England have announced a series of intentions to improve the A27, although none of these schemes are yet committed. However, with one of the schemes being the A27 Worthing and Lancing improvements, the RIS is therefore considered relevant to this Local Plan. The scope of this scheme as described in the RIS is:

> *"Improvements to the capacity of the road and junctions along the stretch of single carriageway in Worthing and narrow lane dual carriageway in Lancing. The extent and scale of the improvements, including the option of full dualling are to be agreed in consultation with West Sussex County Council and the public"*

The scheme extends for approximately 6 miles, from Forest Lane (west of Worthing) to Grinstead Lane/ Manor Road junction (east of Lancing). The scheme includes the improvement of 6 junctions along the A27, with an allocated budget of £50 to £100 million. The scheme is part of the wider package of investment along the A27 corridor which also includes East of Lewes and the Arundel Bypass.

2.3 REGIONAL

Coast to Capital Local Enterprise Partnership (LEP) Strategic Economic Plan (March 2014)[5]

The LEP aims to create 5,100 jobs, 5,100 homes and 79,238 sqm of employment space within the coastal West Sussex corridor with particular focus on areas including Worthing.

Worthing has been identified as an area which offers development opportunities that could transform the area's economy and provide significant new jobs and homes. However, growth is constrained by the performance of the A27 and the A259 which are the only major east-west routes along the coast and which provide connections between a string of priority business locations.

The SEP outlines a number of local transport projects which are under development to help Worthing achieve growth. These include:

- A259 corridor capacity enhancement
- A284 Lyminster bypass
- Sustainable transport package for Worthing
- Development of National Cycle Network Route 2 strategic cycle route package – Brighton to Chichester

West Sussex County Council (WSCC) Transport Plan (February 2011)

The Plan sets out the county authority's transport vision for West Sussex and sub areas within the county. It identifies the county's transport challenges and sets out policies to tackle these challenges over a period of time (2011-2026).

West Sussex County Council has set a vision to maintain, manage and invest in transport and to meet their main objective of improving the quality of life for West Sussex residents. The vision incorporates the following:

- A more competitive and thriving economy;
- Reductions in emissions;
- Improved access to services jobs and housing, especially for those in need; and
- Improved safety, security and health.

[5] Coast to Capital Local Enterprise Partnership (LEP) Strategic Economic Plan (March 2014) http://www.coast2capital.org.uk/storage/downloads/strategic_economic_plan_2014_without_annexes_-1475571650.pdf

Strategies within the Plan cover various sub-areas such as Coastal West Sussex which covers the coastal strip of West Sussex including Worthing. The vision for Coastal West Sussex for 2026 is for a vibrant, accessible and economically buoyant area.

The following aims for Worthing have been outlined:

- Maintaining roads and public rights of way to a good standard.
- Improving street lighting
- All new development should be designed to promote 'local living', provide secure cycle parking, be within close proximity to public transport and should provide enough parking spaces to accommodate the expected number of vehicles.
- Working with Highways England and other partners to develop and deliver a package of major improvements to the A27 at Worthing and Lancing.
- Making the best use of the existing road network.
- Working with Network Rail and our rail operators to investigate ways that will reduce the delays caused by level crossings, access to stations, integration with other modes of transport, and explore opportunities to provide faster services and additional modern capacity along the West Coastway.
- Encouraging HGVs to use the advisory lorry route network while maintaining access to areas which businesses need to access.
- Continuing to manage existing AQMAs by developing and implementing AQAPs.
- Reduce emissions by providing electric vehicle recharging points.
- Encouraging sustainable travel by improving the existing cycle and pedestrian network and facilities and promoting through Safer Routes to School.
- Develop park and ride sites if suitable locations can be identified.
- Manage on-street parking to compliment off-street parking provision and reduce the impact of parking on residential areas.
- Increase public transport capacity and quality, particularly on key north-south and east-west arterial routes. Improve the comfort of public transport, and also improve its image through provision of information and marketing.

West Sussex Strategic Transport Investment Programme

The WSCC Strategic Transport Investment Programme (STIP)[6] was established to facilitate identification, prioritisation, development and implementation of strategic highways and other transport schemes which are needed to support sustainable economic growth in the County. The programme ensures priority schemes are sufficiently advanced to take advantage of funding opportunities. The STIP does not include infrastructure that is only required to mitigate the site-specific impact of a development, as this should be secured through the planning system.

Two schemes in the Worthing area currently feature on the list:

- Worthing Area Sustainable Transport Package
- National Cycle Network Route 2

WSCC Road Safety Framework

'Vision Zero' is part of the framework and represents a change from an emphasis on current problems and possible ways of reducing these to being guided by what the optimum state of the road transport system should be. To achieve this vision, WSCC's aspiration is to reduce the number of people killed or seriously injured by

[6] WSCC Strategic Transport Investment Programme
http://www2.westsussex.gov.uk/ds/edd/ht/ht14_16-17.pdf

25% indexed against the national baseline average of 2005- 2009 by 2020. Currently there are no national Killed and Seriously Injured (KSI) casualty reduction targets.

Meeting these aspirations will reduce killed and serious injury toll from the baseline of 473 to fewer than 355 people a year by 2020.

WSCC Walking and Cycling Strategy

This strategy states WSCC's aims and objectives for cycling and walking between 2016 and 2026. The strategy guides the Council's approach to maintaining, managing and investing in transport, and meeting their main objective of improving quality of life for West Sussex residents.

The strategy uses a Sustrans Geographical Information System (GIS) approach to identify and prioritise schemes, which enables WSCC to direct future investment. Worthing Cycle Network was identified; but was not prioritised within the top five to be considered for feasibility work.

The forthcoming Worthing Area Sustainable Transport Package Study (WASTP) intends to include improvements to walking and cycling including progressing key cycling routes.

Highway Infrastructure Asset Management Strategy 2016 to 2018

West Sussex Infrastructure Asset Management Plan supports the objectives of the Local Plan and provides details the approach to efficient and effective Highway Infrastructure Asset Management and sets out how the Asset Management Policy will be delivered. As well as meeting the needs of local communities and supporting the requirements of businesses, the local highway network supports the Coastal West Sussex key economic sub-areas that are part of the Coast to Capital LEP area.

2.4 LOCAL

Worthing Borough Council Local Plan Issues and Options Consultation 2016

The plan outlines strategic objectives which it hopes to achieve by 2033 in particular for transport;

- Improve accessibility to services, local centres and the town by sustainable modes of transport, reducing the need to travel by car.
- Enhance the gateway approaches and key transport corridors leading into the town centre.

Adur District Council (Adur DC) Adopted Local Plan 2017

This Local Plan addresses a number of key issues that will affect Adur up to 2032. One of the key issues for the local plan is the need to address road congestion and related pollution whilst improving the existing transport network and facilitating the development of sustainable transport measures.

Policy 28 summaries what new development should do in order to improve transport and mobility in the district. Those considered relevant to Worthing are outlined below:

- Improve public transport and access to it where opportunities arise.
- Promote a sustainable transport system along the coast to help in the regeneration of the area, ensuring that the A259 is improved.
- Provide for improvements to the road network, including the A259 and A27.
- Encourage proposals to extend the existing cycle network and secure a network of cycle, pedestrian and bridleway facilities linking urban areas, key sites, open space, countryside and coast.
- New development should minimise the need for travel, facilitates and promotes the use of sustainable alternatives to the private car.

- Ensure new development contributes to the mitigation of air pollution, particularly in Air Quality Management Areas.
- Incorporate appropriate levels of car and cycle parking having regard to WSCC guidance.
- Pursue ways of managing the impact of HGVs in Adur and implement measures as appropriate.
- Implement an area-wide behaviour change programme to encourage sustainable modes of transport and reduce demand for the private car.

Adur and Worthing Walking and Cycling Action Group Vision

The vision of this group is to 'create a place where walking and cycling becomes a safe and easy choice for moving around Adur and Worthing'.

The strategy is in its draft phase, and the proposed objectives are:

- For the Adur and Worthing Walking and Cycling Action Group to become a key local action orientated stakeholder for any infrastructure improvements in Adur and Worthing
- To enable and inform decision making, excellent design standards, scheme prioritisation, as well as promoting walking and cycling as a safe, inclusive and natural choice for the local residents and visitors
- To ensure any new or improved walking or cycling routes are physically and clearly connected, as well as ensuring all demographic, safety, economic, living environment, and air quality considerations are heard
- To ensure all walking and cycling routes are strategically connected to policies and developments across Adur and Worthing to maximise outcomes and resources
- To ensure all walking or cycling routes are fit for purpose with the necessary facilities to ensure end to end practical use for users
- Develop the Local Cycling & Walking Infrastructure Plan (LCWIP)

Arun District Council (Arun DC) Local Plan

The emerging Local Plan was submitted to the Secretary of State for Examination in Public on 30 January 2015. The Local Plan Examination in Public was formally suspended by the Planning Inspector in February 2016. The suspension was granted to enable the Council to undertake further work and produce proposed modifications to the Local Plan in response to a range of observations and concerns identified by the Planning Inspector.

Arun DC has consulted on the Main Modifications (consultation finished 23rd February 2018) with the inspector's report expected in June. For the purposes of this report we will refer to the current Local Plan from 2003 as the formal planning guidance but also mention relevant information from the Arun Local Plan 2011-2031 Consultation Version Showing Additional Main Modifications January 2018)[7].

Arun District Local Plan 2003[8]

The key themes of the Local Plan which are relevant to transport are:

- A community accessible to all;
- A safe and secure community;
- A properly planned community; and
- A healthy community

These themes are reflected more in the following paragraphs on specific policies.

[7] Arun Local Plan 2011-2031 Consultation Version Showing Additional Main Modifications January 2018 https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n11783.pdf&ver=11774
[8] Arun Local Plan 2003 http://www.arunlocalplan.net/

Policy GEN4 reconfirms the need to provide sustainable development, whereby potential travel problems arising from a new development proposal are resolved to ensure that consideration is given to minimising the need for travel and that all transport effects of a new development proposal are taken into account.

Furthermore, Policy GEN15 explains the importance of continuing to encourage and support the development of safe cycle and footpath networks.

Arun Local Plan (2011 - 2031) Publication Version Showing Modifications (March 2017)

There are a number of changes expected to the transport policies and objectives since the Local Plan was adopted in 2003. These are outlined below and included in the Arun Local Plan (2013- 2031) Submission Version[9]. These policies and objectives are not yet adopted.

Arun's Local Plan strategic objectives for transport outlined in Chapter 15 are to:

- Reduce the need to travel and promote sustainable forms of transport;
- Plan for climate change and protect the environment;
- Create safe and accessible towns and villages;
- Promote strong, well-integrated and cohesive communities, through the promotion of healthy lifestyles, accessible community facilities and a safe environment; and
- Strengthen Arun's economic base and provide local job opportunities through the provision of better access to transport amongst other factors.

[9] Arun Local Plan Submission Version - Modifications March 2017
http://arun.objective.co.uk/portal/planning/mods_2017/modifications_march_2017?pointId=4032305

3 CURRENT CONDITIONS

3.1 INTRODUCTION

This section summarises the existing population, land use and transportation infrastructure supply and demand. Travel conditions within the study area including traffic volume, journey patterns, congestion and delay are described using a variety of data sources. Provision for public transport and non-motorised users is described with data related to travel volumes where available.

3.2 EXISTING LAND USE AND DEMOGRAPHICS

Worthing is situated on the south coast of England within the County of West Sussex. The Borough comprises the urban area of Worthing and is bounded by Arun District to the west and Adur District to the east. The South Downs National Park (SDNP) Authority is situated to the north of Worthing Borough.

The urban areas of Lancing and Shoreham-by-sea are situated to the east of Worthing, with Brighton some 12 miles to the east. To the west, urban areas include Littlehampton, Arundel and Bognor Regis with the county town of Chichester 20 miles further afield.

Being a popular tourist destination, one of the major local employment areas within Worthing is the town centre, which extends from the train station to the seafront. This area comprises a variety of shops (both high street and independent), clubs, pubs, restaurants and tourist focused facilities (such as water sports).

For West Sussex as a whole, tourism generates over £500 million and Worthing is a key facilitator for this[10]. To the north east of Worthing town centre is the East Worthing Industrial Estate which is a major employment zone. This 950,000 sq. feet area provides 105 units containing companies such as GSK, Booker Wholesale and Howdens Joinery[11].

Other significant employment areas that are located outside of Worthing Borough but within commuting distance, include the Gatwick Diamond, a diamond-shaped geographical area with Gatwick Airport at its centre. This area holds over 45,000 businesses generating £24 billion Gross Domestic Product (GDP)[12]. The cities of Brighton and Hove to the east and Portsmouth to the west are also other key employment centres.

Worthing Borough has a population of 104,640 (52% females and 48% males) residing in 48,690 households, based on the 2011 Census. The age range with the largest proportion of population is 25-44 year olds at 26%, followed by 45-59 year olds at 20%, whereas the 16-19 age bracket is represented by 4% of the local population.

Overall, 76% of households have access to at least one vehicle which is less than the proportion for West Sussex as a whole, at 82%. The main means of travel to work for working age (16 – 74) residents who reside in the study area is driving a car or van at 55%. Non-motorised methods of travelling to work are well represented within the Borough, with walking the second highest mode of travel at 14%, and cycling at 5%. This is higher than the West Sussex average, with 10% of the population walking to work followed by 3% cycling.

3.3 TRANSPORT NETWORK

The A27 is part of the SRN and passes through the north of the Borough on an east – west alignment. It is a predominantly dual carriageway route which reduces to single carriageway in places, including through parts of

[10] The GB Day Visitor Statistics 2015, Visit Britain
[11] East Worthing Industrial Estate http://www.investwestsussex.co.uk/212-business-parks.html
[12] Gatwick Diamond http://www.gatwickdiamond.co.uk/the-gatwick-diamond/key-facts.aspx

the Worthing urban area. Other primary roads include the A24 which connects central Worthing with the M25 to the north and the A259 / A2032 route which passes east – west through the urban area of Worthing.

There is a range of parking provision in the centre of Worthing, with a number of pay and display off-street car parks, including Grafton car park, Montague car park and Buckingham Road car park. Charges are typically £1 per hour. There are also areas of on-street car parking, and travelling out of the centre, the large supermarkets and out of town retail parks have their own free of charge parking.

Worthing central rail station is situated in close proximity to Worthing town centre and is positioned on the West Coastway Line. There are frequent direct trains to Brighton (approximately every 15 minutes), London Victoria (every half an hour), Gatwick Airport (every half an hour), Portsmouth Harbour (every 1 hour) and Southampton Central (every 1 hour). Trains travelling to London Victoria have an average journey time of 1 hour 30 minutes.

Worthing is served by a series of local stations within the borough: Goring-by-Sea, Durrington-on-Sea, West Worthing, Worthing (central), and East Worthing.

There are a number of bus companies that operate within the Worthing area, including Stagecoach, Compass Bus, Brighton and Hove Buses and the Metrobus. These operators combined provide a wide coverage within Worthing, and travel to destinations such as Midhurst, Arundel, Brighton and Crawley. Buses to Worthing town centre run frequently from most of the surrounding area, as displayed in Figure 3-1, particularly from Lancing, Durrington and Goring which are served by the 'Pulse' bus which runs every 10 minutes from 07:00 to 18:00. Broadwater and Ferring are also served frequently by buses to the town centre, with Findon Valley served every 30 minutes and High Salvington receiving a less frequent hourly service. Other important locations within the town including Worthing Hospital and Northbrook College are served regularly by 'Pulse' and other local buses, as well as hourly services to out-of-town locations such as Shoreham, Angmering, Littlehampton and Arundel.

Figure 3-1: Bus Routes in Worthing

Cyclists have access to a traffic free cycle route located on the beachfront promenade that extends for 7 miles from West Worthing to Shoreham[13]. Once at Shoreham, cyclists can then access the Downs Link, a 37-mile route that extends up to Guildford. There is also a cycle route from Worthing railway station to Findon Valley in the north. There are also a number of cycle paths, however these are discontinuous and are only in small sections. There are sections of shared use footway cycleway along the A2032 however these do not provide a continuous and onward route toward central Worthing.

There is a pedestrian zone in the centre of Worthing as well as footpaths that extend across most of the local road network including the A27. This provides users with access on foot across the urban area and to towns and villages in the near vicinity as well as into the SDNP. Pedestrians also share the beachfront promenade with cyclists.

3.4 TRANSPORT CONDITIONS

Highway

Figure 3-2 and Figure 3-3 show the current traffic flow on roads within the core study area for the AM and PM peak periods respectively. This information is taken from the Highways England A27 traffic model which has been used to assess the RIS1 schemes.

This model represents an average hour for the periods 07:00-10:00 (AM peak) and 16:00-19:00 (PM peak). For example, the traffic flows within the model are the average of the 07:00 – 08:00, 08:00 – 09:00 and 09:00 – 10:00 time periods. The model therefore does not represent the highest individual hourly flow within these time periods, but the average. Analysis was undertaken using observed traffic data to calculate the difference between the average peak period flow, and the highest peak hour flow.

The AM peak hour (08:00-09:00) to AM peak period (07:00-10:00) factor is 2.77 whilst the PM peak hour (17:00-18:00) to PM peak period (16:00-19:00) factor is 2.76 for weekday traffic. This indicates that the traffic volumes during the highest peak hour are around 5-10% higher than the average of the three hours during the peak period. For example, if the AM peak hour flow was 500 vehicles per hour, the total peak period flow over the period 07:00 – 10:00 would be 1,385 (500*2.77). The average period flow would be 462 vehicles per hour (1,385 / 3). A flow of 462 is approximately 7.7% less than a flow of 500. Use of the peak period data provides an appropriate description of typical average weekday conditions and is the basis on which major Strategic Road Network improvements are being assessed.

The figures presented below are the actual flow from the model and are represented by bandwidths. Key locations are annotated to illustrate the range of directional flow along particular sections of a route. Larger versions of the Saturn plots contained in this report are provided in Appendix A.

[13] Worthing to Shoreham South Coast Cycle Route https://www.adur-worthing.gov.uk/streets-and-travel/cycling/

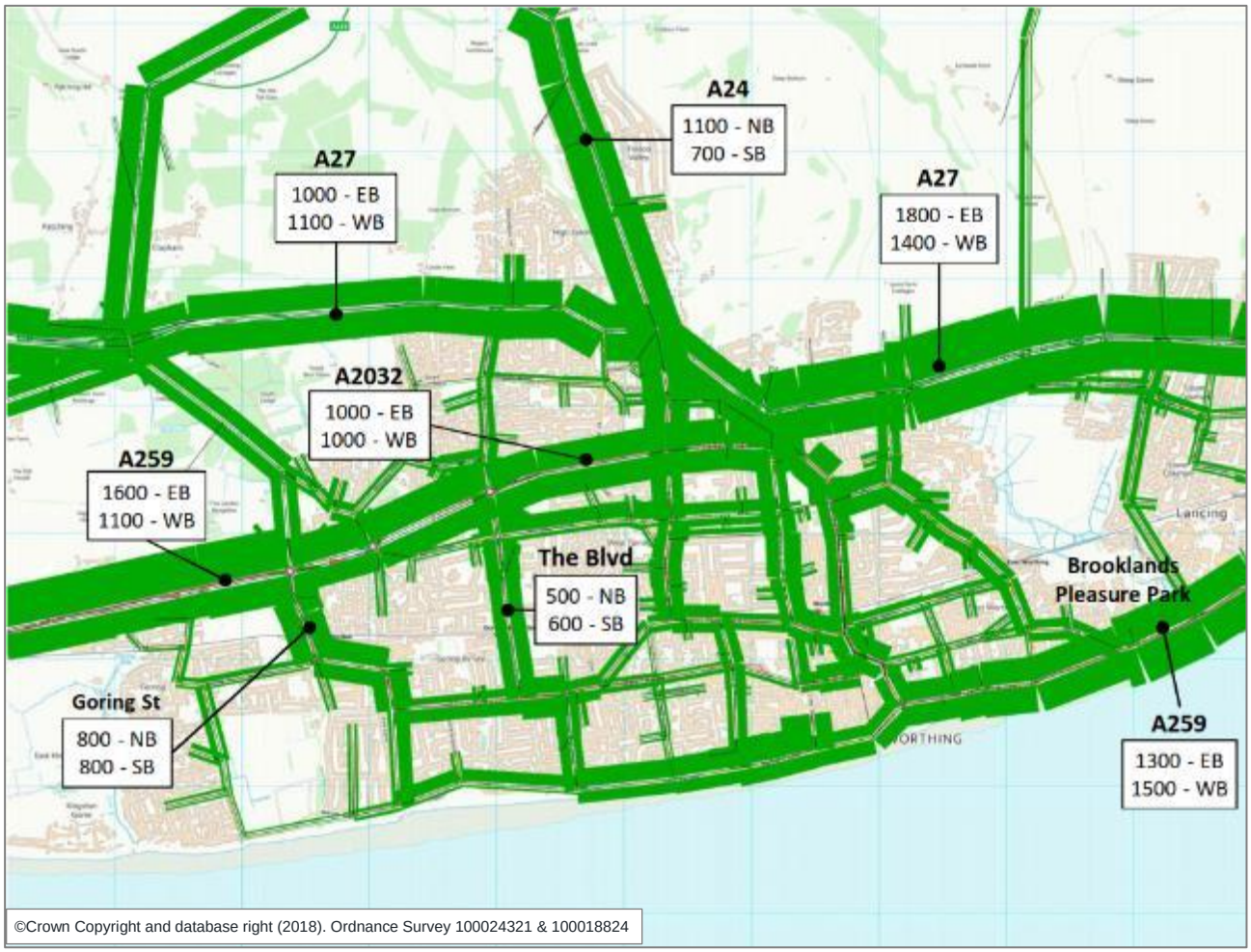

Figure 3-2: Current traffic volumes - AM Peak

The pattern of traffic volume within the study area indicates the highest flows on and in close proximity to the A27. The east – west routes are most heavily used, and this indicates the dominant pattern of movements within the Borough, comprising some local trips but a significant proportion of longer distance movements through the Borough.

During the AM peak, the highest flows are experienced on the A27 by Lyons Farm travelling in an eastbound direction, with the westbound flow showing similar high level of flow relative to other locations within the study area. On the A27 to the east of this location, flows decrease slightly, although they are still higher than the majority of other roads in the area. However, there are some locations on the A259 where flows exceed those experienced on the A27. The section to the west of Goring Street eastbound shows a high volume of traffic of up to 1,600 vehicles per hour, and the section along the coast by Brooklands Pleasure Park reaches similar levels of traffic. The A24 also experiences high flows, particularly for the northbound movement.

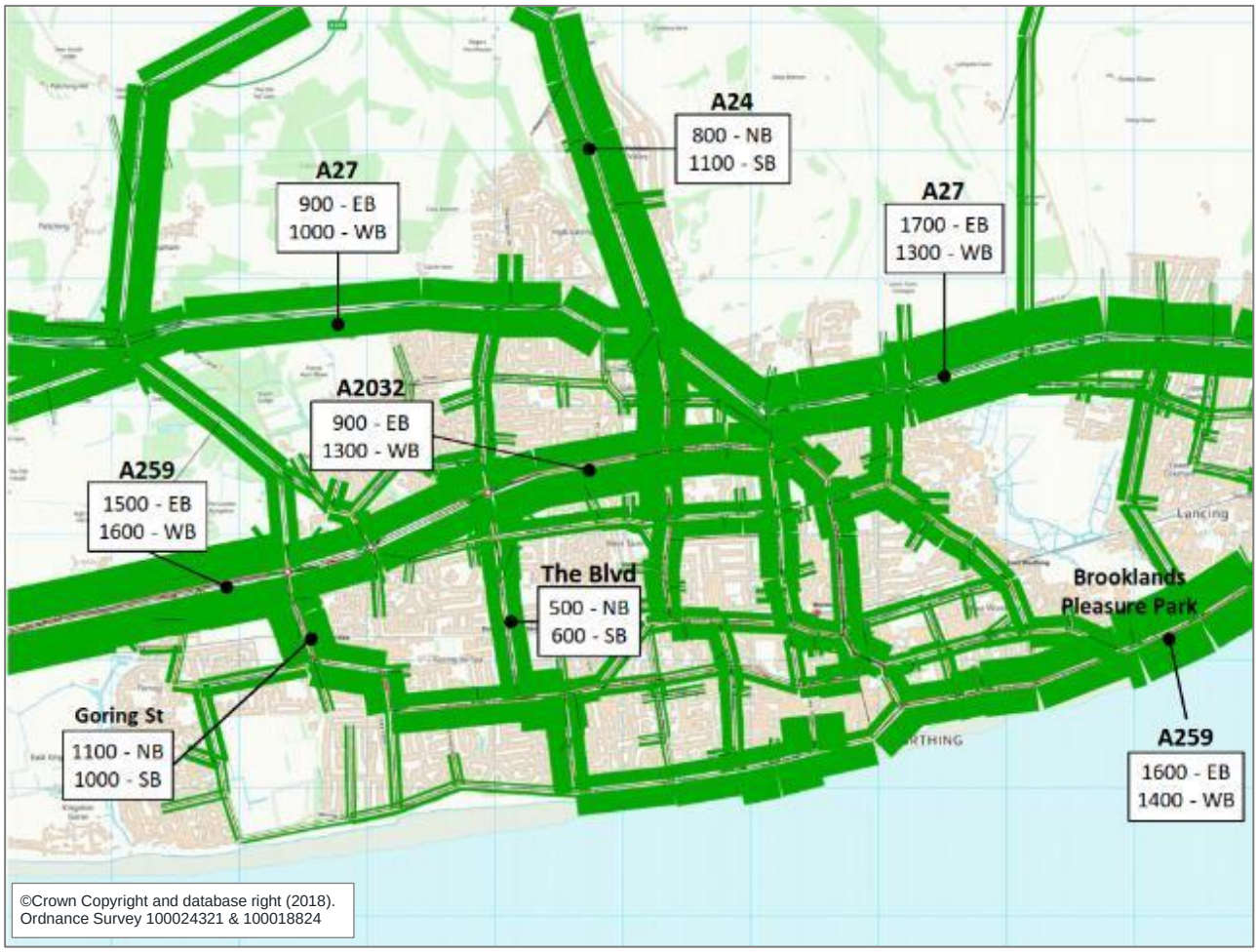

Figure 3-3: Current traffic volumes – PM Peak

The PM peak shows a similar pattern of traffic volume to the AM peak, with many of the same locations experiencing the highest flows, however these mostly occur in the opposite direction as trips use the same route to make their return journey. The highest flow is again found on the A27 by Lyons Farm travelling eastbound, although this is lower than in the AM peak. The A259 also experiences the second highest flows, with the highest volumes travelling westbound, in the opposite direction to the AM. The A24 also experiences high flow, especially for the southbound direction.

Figure 3-4 and Figure 3-5 show the modelled volume over capacity (V/C) on links within the study area for both AM and PM peak periods. For the purposes of this assessment, data has been taken from the Highways England A27 traffic model to illustrate the performance of each link within the road network. The V/C figure indicates the extent to which each location is reaching its capacity with a value of 1.0 indicating a location that has reached its capacity. Within the urban area, it is primarily junctions that govern the performance of the highway network; therefore, the capacity figure is defined as the maximum turning movement V/C at the junction downstream of each link. Those links that have high V/C and thus experience a high level of delay are coloured red, with the lowest V/C and therefore the lowest level of delay coloured green, as follows:

- Red – V/C >1.0
- Pink – V/C 0.9 – 1.0
- Orange – V/C 0.8 – 0.9
- Yellow – V/C 0.7 – 0.8
- Green – V/C <0.7

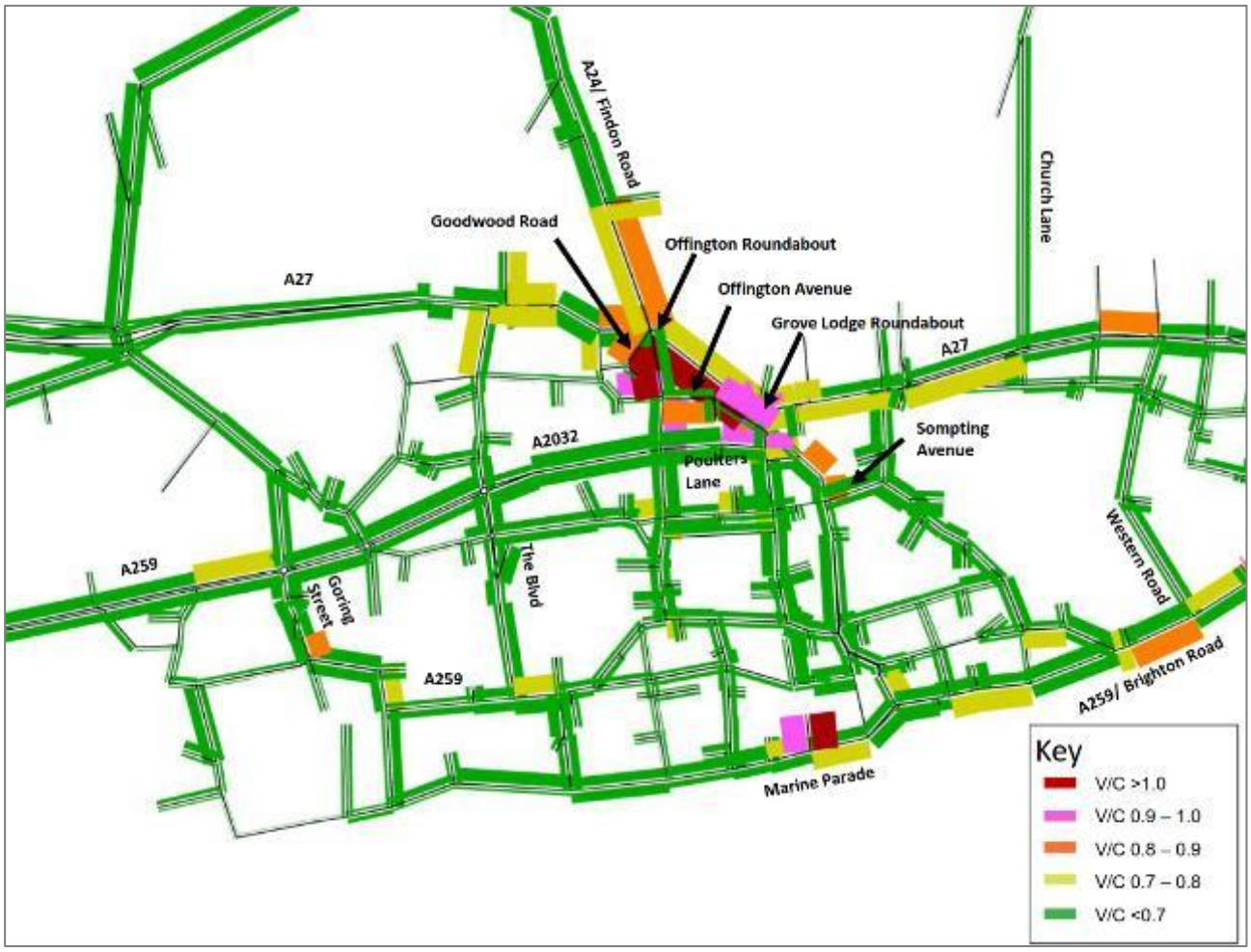

Figure 3-4: Current link V/C (AM Peak)

Figure 3-4 shows that the locations with the highest V/C's in the AM are predominantly situated around the A27 Offington roundabout. In particular, Offington Lane travelling north onto the roundabout and the A24 travelling west onto the roundabout sees the highest of all delays. A24/ Findon Road travelling south onto Offington roundabout, Goodwood Road travelling north onto the roundabout and the A27 travelling east onto the roundabout also experience high delays. The Grove Lodge roundabout also causes delays for the A24 travelling eastbound, and the A27 travelling westbound, with delays on this section extending back to the Church Lane junction.

Within Worthing there are generally modest levels of delay in comparison to those noted for the A27. Areas where V/C exceed 0.7 and therefore where delays may be experienced during peak times include the mini roundabout between Offington Avenue and Poulters Lane, and on the A24 (Broadwater Road) with the Sompting Avenue junction. There are also a number of areas of delay along Marine Parade and A259/ Brighton Road along the seafront, including the junction with Western Road. To the West of the Borough, there are some delays noted on the A259.

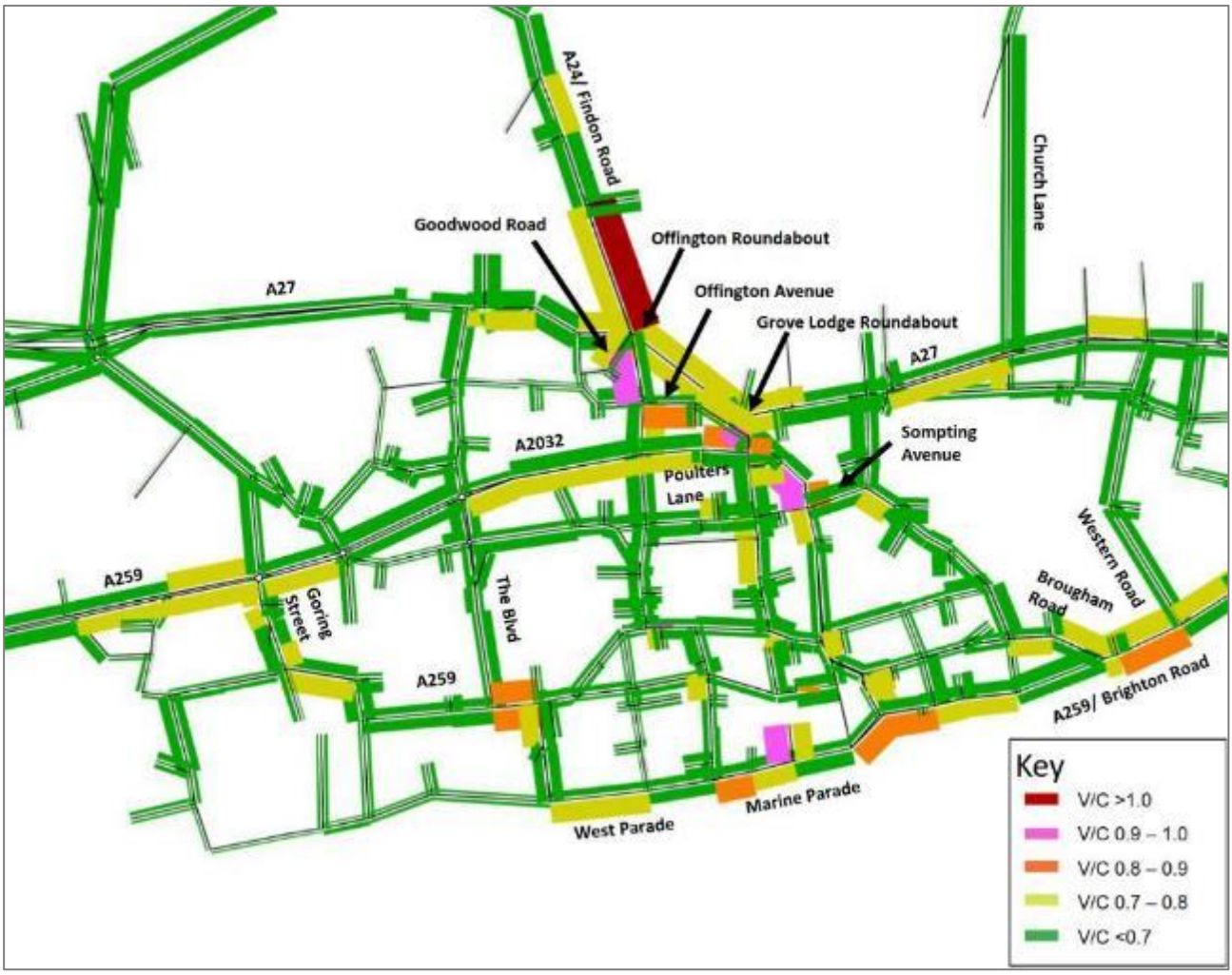

Figure 3-5: Current link V/C (PM Peak)

Figure 3-5 shows that for the PM peak there is a different pattern and distribution of delay across the road network. The A27 Offington roundabout and Grove Lodge roundabout are still the main causes of congestion in the area, although in this time period the highest delay is found on Findon Road travelling south onto the roundabout. There are still high delays on Poulters Lane travelling east onto the mini roundabout.

Traffic moving westbound along the seafront route, including Marine Parade and West Parade, experiences greater delays than in the AM period. There are also higher levels of delay on the A2032 travelling westbound than in the AM peak, as well as Brougham Road onto the A259 eastbound.

Road Safety

Collision data has been obtained from WSCC for the most recent 5-year period (November 2012 to October 2017). The number of collisions by year and severity is presented in Table 3-1

Table 3-1: Collisions by year and severity[14]

Year	Slight	Serious	Fatal	Total
2012 (Part year)	35	4	0	39
2013	186	36	2	224
2014	197	62	2	261
2015	224	36	1	261
2016	197	42	0	239
2017 (Part year)	140	43	0	183
Grand Total	**979**	**223**	**5**	**1207**

A total of 1,207 collisions occurred within the Borough resulting in 1,464 casualties and involving 2,349 vehicles over this period. There were 5 fatal casualties and 233 serious casualties and therefore the percentage of collisions that can be characterised as killed and seriously injured (KSI) is 19%. Table 3-2 sets out the collisions by road type and severity.

Table 3-2: Collisions by road type and severity

Road	Slight		Serious		Fatal		Total	
	Collisions	%	Collisions	%	Collisions	%	Collisions	%
A27	76	8%	15	7%	1	20%	92	8%
A24	97	10%	27	12%	0	0%	124	10%
A259	139	14%	35	16%	0	0%	174	14%
Other A Roads	123	13%	30	13%	0	0%	153	13%
B Roads	38	4%	5	2%	1	20%	44	4%
C / Unclassified Roads	506	52%	111	50%	3	60%	620	51%
Grand Total	979	100%	223	100%	5	100%	1207	100%

Across the five-year period, just over half (51%) occurred on C and unclassified roads. A plot showing the location of these collisions by severity is presented in Appendix B. From this information, collision clusters are noted on the following routes and junctions:

Routes:

- A27, between the A24 roundabout and the Grove Lodge signalised junction
- A24 through Findon Valley
- A24 from A2032 to Sompting Avenue
- B2223 Dominion Road between Sompting Road and Dominion Way
- The Boulevard from The Strand to Strathmore Road

Junctions:

- A27 / A24 / Offington Lane roundabout
- A259 / A2032 / Titnore Lane roundabout

[14] Data collected from November 2012 to October 2017

- A2032 / Yeoman Road / Palatine Road roundabout
- A2032 / Durrington Lane / The Boulevard roundabout
- A2032 / Offington Lane signalised junction
- A259 / Goring Way roundabout
- Tarring Road / South Street Tarring

3.5 ENVIRONMENT

A high-level desktop study of the environmental constraints within the Worthing Borough boundary was undertaken. Worthing is predominantly urban, but there are still a number of important environmental and heritage features. Key environmental constraints within the Worthing Borough boundary are presented in the constraints map in Appendix C.

The impacts on the wider environment, beyond the borough boundary, may be required at later design stages depending on the nature, scale and location of proposed developments.

Habitat Designations, Ecology and Arboriculture

There are a number of designated areas within Worthing Borough. Of particular note is the South Downs National Park, which covers a portion of the land in the north of the Borough. Other designations are summarised in Table 3-3.

Table 3-3: Designated Sites within core study area

Designation Type	No. of Sites	Comments
National Park	1	South Downs National Park covers 24%[15] of the northern part of Worthing. Has strict development guidelines.
Natural Areas	3	South Downs, South Coast Plain and Hampshire Lowland Areas
Site of Special Scientific Interest	1	Cissbury Ring. Located in the north east of the area.
Local Wildlife Sites	11	The Gallops & No Man's Land, Highdown Hill & Miller's Tomb, The Sanctuary (High Salvington), Titnore & Goring Woods Complex, Ham Farm Woods, Offington Cemetery, Worthing & Hill Barn Golf Courses, St. Michael's Graveyard, Clapham Wood, Tenants Hill & Reservoirs, and Long Furlong & Church Hill located within Worthing Borough. These Local Wildlife Sites cover a total of 10.8% of Worthing Borough[16]
Ancient Woodland	Approx. 30 sites (note some Woods comprise more than one site	Number of isolated areas of Ancient Woodland, 67.5 hectares in Worthing Borough in total[17]. There are notable areas of Ancient Woodland in the West of the study area

The Brighton and Lewes Downs Biosphere Reserve is located approximately 4.5km to the east of Worthing Borough[18]. It is also a UNESCO World Heritage Site. Some regions within the Reserve are 'core areas', which are strictly protected for nature conservation. One of these core areas is located in Shoreham by-Sea, which is

[15-17] https://www.adur-worthing.gov.uk/media/media,147231,en.pdf

[18] http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/images/map_Brighton_and_Lewes_Downs_zonation.jpg

very close to the Worthing Borough Boundary[19]. The impacts of changes within the Borough boundary on this core area will need to be considered in the future, despite falling outside Worthing Borough.

The area is also important for a number of Priority Species for Countryside Stewardship Targeting. For example, Brown Hairstreak Butterfly and Corn Bunting, are common across the borough, and Lapwing in the outer edges of the borough. There are also a number of notable recordings of important species including 95 protected species, 211 rare species, 26 bat records and 744 notable bird records[20], as well as Great Crested Newts[21].

There are several thousand trees protected by over 900 Tree Preservation Orders in Worthing, although only 8 TPOs have been made in the last 15 years[22].

Air Quality

There is one Air Quality Management Area (AQMA) in Worthing Borough (see Appendix C). It was declared after the area exceeded the annual mean objective for NO_2. There are also a number of Air Quality Monitoring Sites[23] across the area. The air quality of the borough is generally good, especially the rural outskirts of the borough, beyond the built-up area. Table 3-4 outlines the average air quality for each pollutant[24] in 2015.

Table 3-4: Pollutant levels in Worthing

Pollutant	Average Levels in Worthing Borough	UK Limit
Nitrogen Dioxide (NO2)	10-20 µgm-3 in most of the area, reducing to <10 µgm-3 in the less urban areas to the north.	Maximum 40 µgm-3 annual mean, and exceedance of 200 µgm-3 no more than 18 times a year
Nitrogen Oxide (NOx)	Areas of high levels in the centre of the town of Worthing (20-30 µgm-3). Most of area 10-20 µgm-3, and more rural areas to the north mostly <10 µgm-3	30 µgm-3 annual mean
PM^{10}	Small area of average levels in centre of Worthing town (17-20 µgm-3), with urban areas 13-17 µgm-3 and rural areas <13 µgm-3	Maximum 40 µgm-3 annual mean, and exceedance of 50 µgm-3 no more than 35 times a year
$PM^{2.5}$	Central Worthing town and area of Lancing 10-12.5 µgm-3. Levels 5-10 µgm-3 in the remainder of the area	No higher than 25 µgm-3

Furthermore, Adur and Worthing Councils operate a real-time air quality monitoring station on the A27 Upper Brighton Road, Grove Lodge which monitors NO2 and PM2.5 (small particles less than 2.5 micrometres in diameter). Non-automatic (passive) monitoring of NO2 took place at a further 34 sites. Measured concentrations of NO2 fell to below the annual mean objective at the continuous monitoring site, however levels at Grove Lodge Cottages increased and remain above 60µgm-3 meaning the Council will need to reach a conclusion on whether to add exceedance of the 1-hour mean to the existing AQMA. Levels at 20 monitoring sites fell in 2017.

[19] https://www.thelivingcoast.org.uk/admin/resources/biosphere-zonation-map-2015.pdf

[21] http://magic.defra.gov.uk/magicmap.aspx?startTopic=magicall&chosenLayers=sacIndex&sqgridref=SU820182&startscale=30000

[22] https://www.adur-worthing.gov.uk/planning-policy/conservation-and-heritage/trees/tpo-register/tpo-register-app/Home/IndexWorthing

[23] https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/air-quality-monitoring/#air-quality-monitoring

[24] https://uk-air.defra.gov.uk/data/gis-mapping

Noise and Vibration

There are a number of Noise Important Areas (NIA) within the Worthing Borough boundary. Of particular note are the large NIAs along the A24 and A27 within Worthing town (see Appendix C). According to Extrium[25], noise levels within Worthing town are fairly high along the road network but only in close proximity to the roads. To the north of the town, the A27 produces large amounts of noise and this reaches a long distance.

Water Environment

Flood risk is low across the majority of the borough, with land having a less than 1 in 1000 chance of river or sea flooding. The coastal area is within Flood Zone 3, as is the Ferring Rife to the West and the Teville Stream and Broadwater Brook network to the East, and the sea to the south. This means there is a 1 in 100 or greater chance of flooding from rivers, and a 1 in 200 or greater chance of flooding from the sea. Surrounding these areas there are small areas in Flood Zone 2, meaning they are subject to between 1 in 100 and 1 in 1000 annual probability of flooding (see Appendix C). Across Worthing there are significant areas with a high chance of flooding from surface water.

Water quality is also a significant issue for Worthing with the Teville Stream currently classified as 'Bad' under the Water Framework Directive (WFD) with transport drainage being identified as key reason for not achieving 'good' status. In addition, in the north of Worthing there are a number of Source Protection Zones and Drinking Water Safeguard Zones where abstractions for drinking water are particularly sensitive to pollution.

Landscape and Visual

The borough predominantly falls within the South Coast Plain and Hampshire Lowlands Landscape Character Area (LCA). The South Downs LCA dominates to the north. The borough is predominantly classified by WSCC in their Landscape Character Assessment as a 'built up area'. However, the rural areas are classed as 'Littlehampton and Worthing Fringes/Worthing and Adur Fringes'. The coastal strip is classified as 'South Coast Shoreline'. Each has their own characteristics, as detailed in the assessment[26].

There are also important areas of high landscape sensitivity and value[27]. These are areas where development would have significant impact on landscape character. Of particular note are the Goring-Ferring Gap and the Kingston Lower Coastal Plain, which lie within strategic development gaps. They are important due to their ecological and heritage interest, and visual importance. They both provide separation between two urban areas.

Cultural Heritage

There are 219 records of listed buildings in Worthing. There are three Grade I Listed, eleven Grade II*, and the remainder (205) are Grade II. The Grade I listed buildings are:

- Castle Goring, Arundel Road;
- The Old Palace, South Street; and
- Church of St Mary, Broadwater Road.

They are predominantly located within Worthing town but are scattered throughout the borough (Appendix C). The same is true for Conservation Areas, of which there are 26 in the area[28]. Two of these are the responsibility of the SDNP.

[25] http://extrium.co.uk/noiseviewer.html
[26] https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/landscape-character-assessment-of-west-sussex/
[27] https://www.adur-worthing.gov.uk/media/media,99241,en.pdf
[28] https://www.adur-worthing.gov.uk/media/media,99441,en.pdf

There are also 46 archaeological notification areas within the borough, which indicate the existence or probable existence of archaeological heritage assets. A detailed map is found on the West Sussex website[29].

Geology, Soils and Contamination

There are two Local Geological Sites in the borough (Cote Bottom, High Salvington; and Charmandean Quarry, Worthing), and another that is in the study area just outside the eastern border of the borough (Gaster Pit 7, Sompting)[30].

There have been 10 major or significant pollution events recorded in the area, two of which were considered 'major'[31]. Both were sewage spills which contaminated local water sources, with the former also having a minor impact on air quality.

Environmental Considerations

The following environmental designations could potentially be affected by transport developments:

- **Ecology and areas of natural importance** = There are a number of areas nationally and locally designated as being important for nature conservation within the borough boundary. The Brighton and Lewes Downs Biosphere Reserve, despite falling outside the boundary, is also important for consideration. There are also records of rare and protected species and habitats. National planning policy and legislation requires that these sites and species should be protected, and where possible, enhanced.
- **Noise** = Due to the urban nature of the area, any additional noise could create significant adverse effects.
- **Air quality** = Pollution is already fairly high in some areas, such as the AQMA, much of which is generated from traffic and the use of the road networks. Future developments relating to expanding the AQMA should be monitored.
- **Landscape** = Sensitive landscapes in the area are important and need to be considered in order to maintain the character of the area.

[29] https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/historic-environment-record/archaeological-notification-areas-1/
[30] http://www.geodiversitysussex.org.uk/riggs.php
[31] http://www.fwr.org/WQreg/Appendices/Common_incident_classification_system_04_01.pdf

4 LOCAL PLAN SITES

4.1 INTRODUCTION

This section describes the proposed local plan sites in terms of their location, quantum of development, access and parking provision. The methodology and level of person trip generation for each site is described and the scope for increased sustainable travel mode share associated with each site is set out.

4.2 DESCRIPTION OF SITES

Figure 4-1 shows the location of the developments that are being considered as part of this assessment.

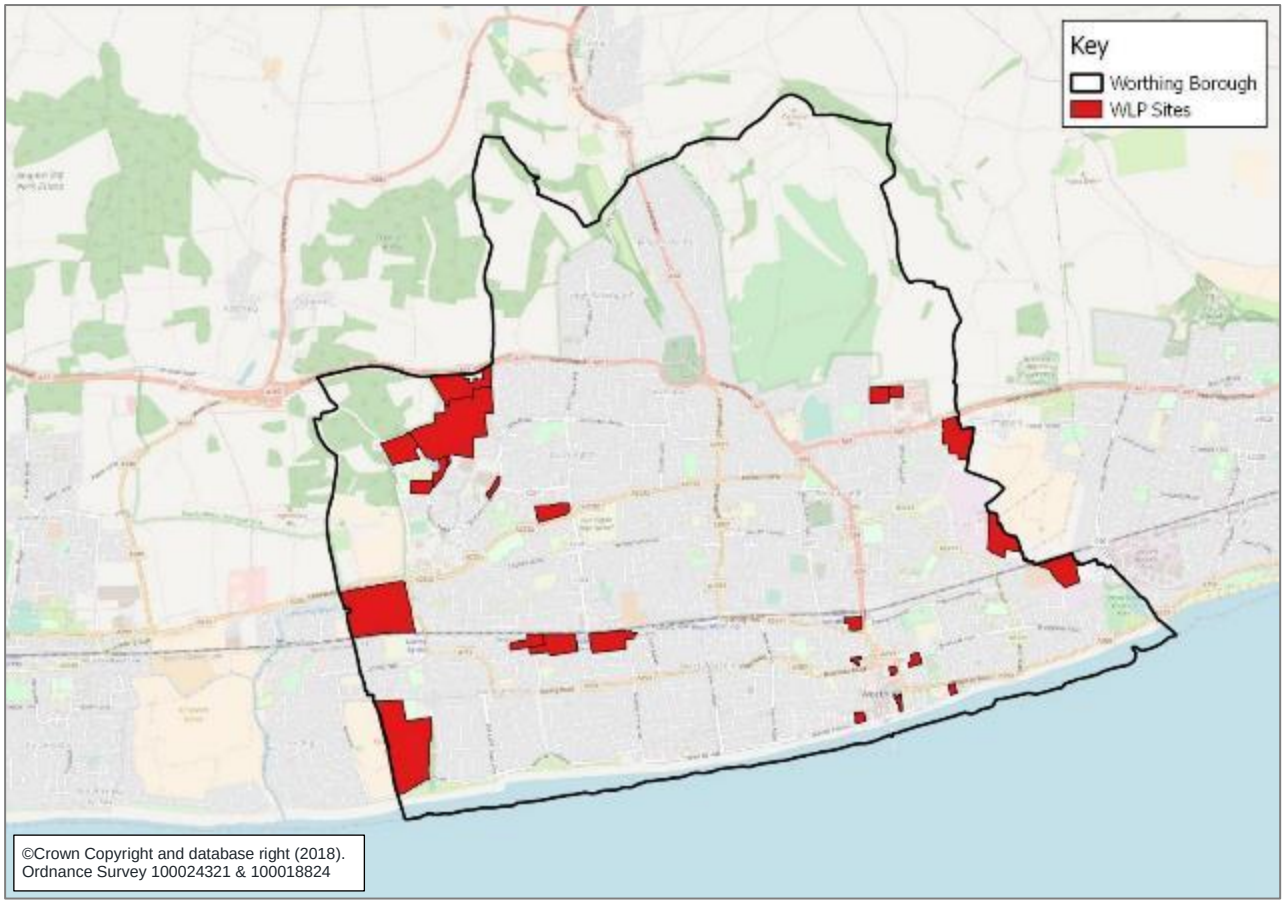

Figure 4-1: Location of local plan sites

Although the development needs of Worthing are significant the opportunities for growth in and around the Borough are limited. For this reason, all potential development opportunities are being positively tested during the preparation of the new Local Plan. In total, a list of 20 potential sites have been included as part of this study but, given the sensitive nature of some of these sites, there is no certainty that all of these will be allocated in the Plan. Despite this, it is important that this study assesses all potential opportunities to ensure that the Council has a clear understanding of potential impacts if they were to all come forward (see section 5.5, page 49 for further explanation).

The Worthing Local Plan comprises a total of 20 sites and the study consists of a mixture of land uses including;

- Housing (3,296 homes)
- Commercial (28,800m2)

- Office (35,980m2)
- Leisure (20,566) and;
- Retail (20,041m2)

The sites are distributed throughout the Worthing area and have been split into two categories according to their geographic location:

- Built up Area (BuA)
- Edge of Town (EoT)

Further detailed information for each individual site including access arrangements, car parking provision, scope for increased sustainable travel mode share and quantum has been included in Appendix D. This information illustrates the principles of a suitable access strategy which is proportionate to the level of development within each site.

The sustainable mode share table shows the percentage of trips travelling to each destination for each individual mode. The destination labelled 'Other' refers to all other areas that are not covered by the destinations listed in the table.

All the local plan sites were included in the modelling as an entirety and the results of this can be seen in later chapters. Sensitivity tests have been undertaken, excluding the Goring – Ferring Gap and Chatsmore Farm sites which have significant constraints affecting the likelihood of their allocation for development. The traffic modelling results of these sensitivity tests are presented in chapter 5.5 of this report.

4.3 TRIP GENERATION

Trip rates for the different elements of the proposed developments have been derived from the Trip Rate Information Computer System (TRICS) according to the corresponding land use category. Sites were chosen on the basis of being comparable in terms of location to the development sites. The derived trip generation for cars (vehicles) for all land uses combined are shown in Table 4-1. Trip rate generation for HGVs, public transport and walking and cycling (persons) is included in Appendix D.

Table 4-1: Car (vehicle) trip generation for local plan sites

Site	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Stagecoach, Marine Parade	5	12	10	5
Grafton	12	30	25	12
Union Place	20	51	42	21
Teville Gate	43	94	77	45
British Gas Site, Lyndhurst Rd	11	34	28	17
Martlets Way	57	32	25	50
Decoy Farm	418	103	71	336
HMRC Offices, Barrington Rd	240	240	195	240
Centenary House	13	40	33	20
South of Stoke Abbott Rd	31	25	24	24
Worthing Leisure Centre	21	64	53	33
North of Beeches Avenue	12	36	30	18
Worthing United FC	8	24	20	12
Upper Brighton Rd	16	49	41	25
Goring-Ferring gap	47	141	118	72
Chatsmore Farm	46	137	115	70
Caravan Club, Titnore Way	10	30	25	15
West of Fulbeck Avenue	5	16	13	8
North of West Durrington	32	96	80	49
Land East of Titnore Lane	17	50	42	26
Total	**1064**	**1304**	**1067**	**1098**

The trip generation methodology for this assessment reflects that retail and leisure trips are often part of another journey, and that new retail developments in particular do not generate entirely new trips. Furthermore, much of the retail development proposed as part of the local plan sites is contained within a mixed-use development, and as such many trips would likely be retained within the site, rather than generating new trips from outside of the immediate vicinity of the proposed site. Accordingly, for the purposes of the developing forecast scenarios using the Highways England A27 strategic model, the trip generation associated with leisure and retail trips are excluded from the additional trip generation for each local plan site.

Sustainable Mode Shares

With a number of WLP sites being located in the town centre, there are ample opportunities to travel to and from these sites using sustainable methods. The DfT's Strategic Road Network and Sustainable Development document supports this notion by stating that Local Plans provide an opportunity to identify and support

development that minimises trip generation at the source and encourages sustainable modes of transport, minimises journey lengths and promotes accessibility for all[32].

Local Plan sites that are not located in the town centre are well served by public transport, with many within easy reach of at least one of the area's train stations including Goring-by-Sea, Durrington-on-Sea, West Worthing, Worthing, and East Worthing. This provides ready access for people to travel between the sites and locations further afield, including Brighton, Chichester and London. The sites are also generally located on or close to existing bus routes. These include the Stagecoach 1, 5, 7, 9 and Pulse service, as well as the Compass Travel 8/8A, 16, and 85 service. All of these routes travel through the town centre of Worthing, and can extend as far as Chichester, Littlehampton and Shoreham.

The use of public transport to travel to and from these sites promotes a sustainable way of travel, as well as giving accessibility for all by covering both the local area and further afield. The sustainable location of these sites offers further potential for the reduction in trip making by use of private car.

4.4 TRIP DISTRIBUTION

Trip distribution for the local plan sites has been derived by using the existing distribution for nearby zones in the modelled network, where land use characteristics and location are similar to the proposed site.

[32] Department for Transport: The Strategic Road Network and the Delivery of Sustainable Development https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf

5 TRAFFIC ASSESSMENT

5.1 INTRODUCTION

This section describes the land use scenarios that are assessed as part of this report. The approach to developing a set of forecasts is described, and the traffic impacts of the local plan sites are presented.

5.2 MODELLING METHODOLOGY

For the assessment of the traffic impacts of land use proposals a set of forecast scenarios have been developed to assess the impact on the road network. Forecasting requires an understanding of the future levels of demand wishing to use the transport network. This can be influenced by global and national factors, such as the cost of fuel, demographic change, technological change and regional and local factors, such as the quantum of proposed development land in the locality for jobs and housing.

To assess the impact of the Worthing Local Plan, scenarios have been developed for the forecast year to represent a 'Do Minimum' scenario and a 'Do Something' scenario. A single forecast year, 2033, has been developed for assessment purposes. This year is consistent with the horizon for the new Local Plan.

The Do Minimum forecast scenario reflects the 'committed' level of development and highway infrastructure within the Worthing area in 2033 which is detailed in an Uncertainty Log (see Appendix E). TEMPro factors have been used to calculate the background growth for regions within the external area for each modelled time period and applied to the base year matrices. For Worthing, Arun and Adur, the number of households and jobs set out in the Uncertainty Log has been used to create a set of revised planning assumptions, from which the level of traffic growth for these Districts has been established.

Using the Do Minimum scenario as a reference, the land use proposals associated with the local plan for Worthing have been assessed as the Do Something scenario.

It should be noted that infrastructure schemes associated with Highways England's Road Investment Strategy (RIS) programme have not been included within the forecast models described above. A sensitivity test has been carried out to include both the A27 Arundel Bypass and A27 Worthing and Lancing schemes. For A27 Arundel Bypass, this scheme coding within the modelling is consistent with the scheme described in the May 2018 Preferred Route Announcement. For A27 Worthing and Lancing, the sensitivity test includes the latest iteration of the scheme modelling available at the start of July 2018 which is a further iteration of the scheme presented at public consultation in 2017. The models to use as input to this study were confirmed with the Highways England RIS project team. The results of the sensitivity test are presented in section 5.5.

COMMITTED DEVELOPMENTS

The Uncertainty Log contains information on local planning data for employment and housing developments, and their uncertainty, and has been used to calculate forecast traffic growth associated with the future developments in the study area. Developments categorised as 'near certain' or 'more than likely' are included in the model. The uncertainty log also contains details for any proposed infrastructure schemes.

The following thresholds have been assumed for explicitly modelling new developments:

- Housing developments of 80 dwellings or above
- B1 office and B8 warehousing developments of above 2,000m² Gross Floor Area
- B2 industrial estate developments of above 1,500m² Gross Floor Area

The traffic generation associated with these developments has been calculated using the trip rates that have previously been established for the purposes of the Highways England A27 strategic models, and is based on information from TRICS.

The assumptions associated with households and jobs in TEMPro Version 7.2 significantly exceed the level of development in the Uncertainty Log, as illustrated below in Table 5.1. The figures for year 2033 assume that all sites within the Uncertainty Log will be built out in full.

Table 5-1: Forecast Growth Comparison

	2015 – 2033 (TEMPro)				2033 (Uncertainty Log)			
	Adur	**Arun**	**Worthing**	**Total**	**Adur**	**Arun**	**Worthing**	**Total**
Households	3,463	12,847	5,117	21,427	1,120	5,727	841	7,688
Jobs	1,763	4,158	4,087	10,008	366	2,724	0	3,089

The 2031 Do Minimum and 2031 Do Something scenario both contain the committed developments and infrastructure included in the uncertainty log.

5.3 DO MINIMUM SCENARIO

As described in section 5.2 of this report, the Do Minimum scenario represents the scenario that does not include the development associated with the Worthing Local Plan and comprises the following:

- Traffic growth associated with developments & infrastructure schemes included within the uncertainty log
- Background growth calculated using TEMPro software

The volume of trips within the Highways England A27 strategic model for the base year (2015), and 2033 Do Minimum and Do Something (local plan) scenarios is presented in Table 5-2.

Table 5-2: Traffic Model Volumes and Growth

	Base	Do Minimum		Do Something	
	2015	**2033**	**% Increase**	**2033**	**% Increase**
AM	42,428	49,740	17%	52,113	23%
PM	48,267	58,166	21%	60,336	25%

Figure 5-1 and Figure 5-2 present the modelled flow on links within the core study area for the AM and PM peak periods respectively (actual traffic volumes with bandwidths set to 200 units / mm).

Figure 5-1: Do Minimum scenario traffic volumes (AM Peak)

Figure 5-2: Do Minimum scenario traffic volumes (PM Peak)

Figure 5-1 and Figure 5-2 show that the forecast traffic volume on the local road network for the 2031 Do Minimum scenario shows a similar pattern to that seen for the corresponding base year scenarios. The roads experiencing the highest flows are the A27, A24**,** A259 and A2032**.**

Figure 5-3 and Figure 5-4 show the modelled flow difference on links comparing the Do Minimum scenario against the year 2015 base for the AM and PM peak periods respectively. The green bars indicate an increase in traffic flow and the blue bars a decrease.

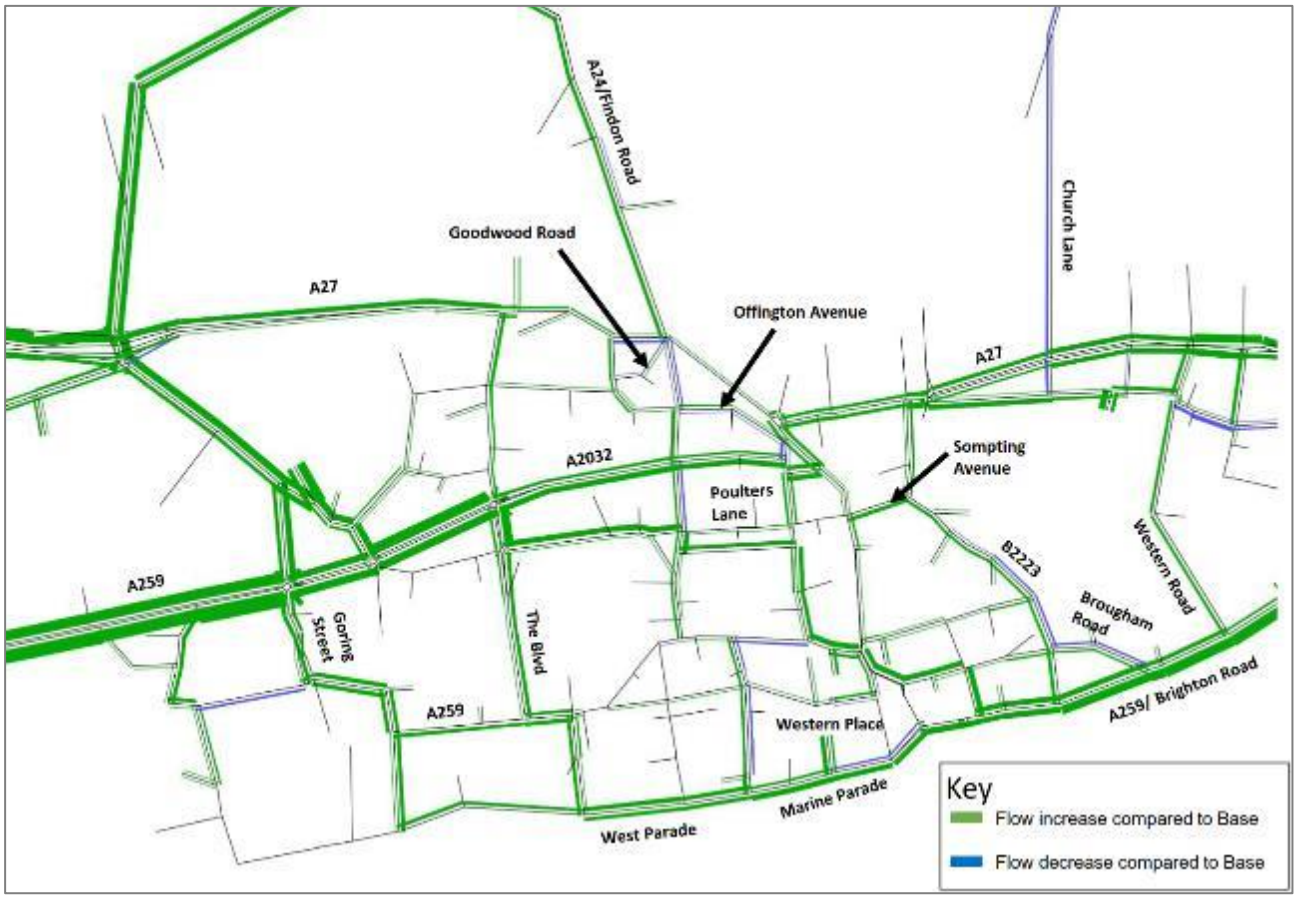

Figure 5-3: Flow Difference - Do Minimum to Base (AM Peak)

Figure 5-3.3 shows that compared to the base year, in the Do Minimum scenario there are flow increases on the majority of links in the network, with a few exceptions. The largest increase in flow is on the A259 to the west of Goring Street, with the westbound direction experiencing the highest increase. The adjoining A2032 also sees a corresponding increase in flow.

The A259 on the seafront by Brooklands Pleasure Park is another route where flows increase in comparison to the base year, particularly in the westbound direction. The A27 sees a mixture of increases and decreases in flows, with the largest increases occurring east of Busticle Lane, particularly travelling eastbound. There are also flow increases on the A27 to the west of Worthing, with the highest increases occurring for the eastbound direction.

Decreases in flows are forecast on the A27 for the westbound movement travelling from Offington roundabout. There are also flow decreases on other links at this junction, including Findon Road southbound and Offington Lane for both directions. This is considered to occur due to the capacity of the existing route constraining the increase in traffic at this location, with consequential diversions of traffic to other local routes.

Other decreases in traffic volume are on Church Lane (both directions), Dominion Road merging into Brougham Road southbound, and Heene Road northbound.

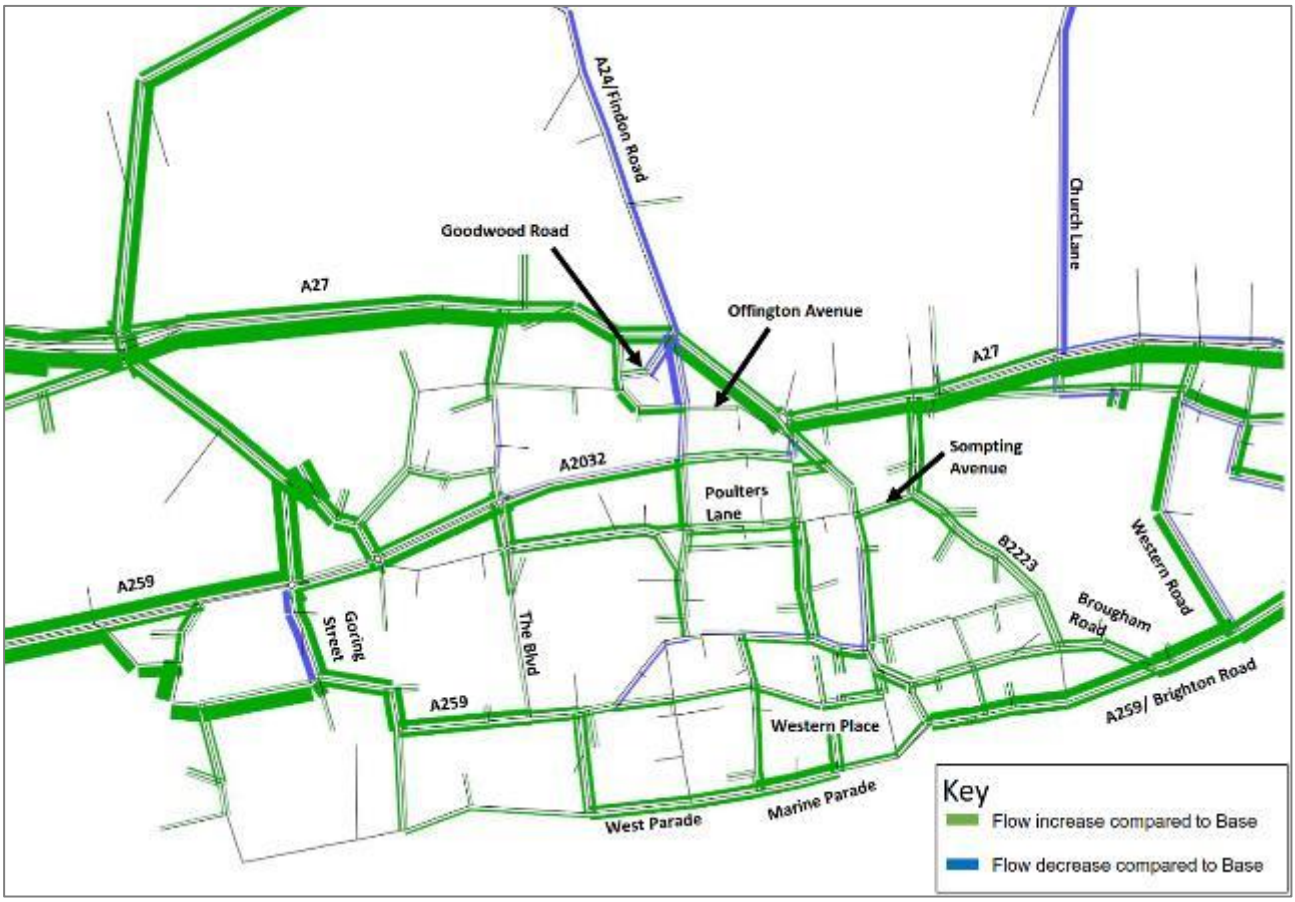

Figure 5-4: Flow Difference - Do Minimum to Base (PM Peak)

Figure 5-4 shows that in the PM peak, there are generally higher flow increases, when comparing against the base year scenario, than those seen for the AM peak. During this time period, the highest flow increases are on the A27, travelling westbound. These flow increases are forecast in particular on the section to the east of Lyons Farm and to the west of Durrington. The A259 to the west of Goring Street also sees high flow increases, similar to the AM peak, however only in the eastbound direction, with the westbound flow only increasing to the west of Langbury Lane. Langbury Lane itself travelling westbound sees considerably high increases in flows compared to the AM time period. Other significant increases are again on the A259 on the seafront by Brooklands, but with the highest increase in this time period in the eastbound direction.

Decreases in flows are found on similar routes to those seen in the AM peak, including the southbound direction on Findon Road, Offington Lane, both northbound and southbound, and Church Lane. Routes that see flow decreases include the A2032 to the west of Poulters Lane travelling eastbound, A24 travelling northbound towards Broadwater, Tarring Road travelling eastbound, Goring Street travelling northbound, and on the A27 to the east of Church Lane travelling eastbound.

Figure 5-5 and Figure 5-6 show the modelled V/C on links within the study area for both AM and PM peak periods.

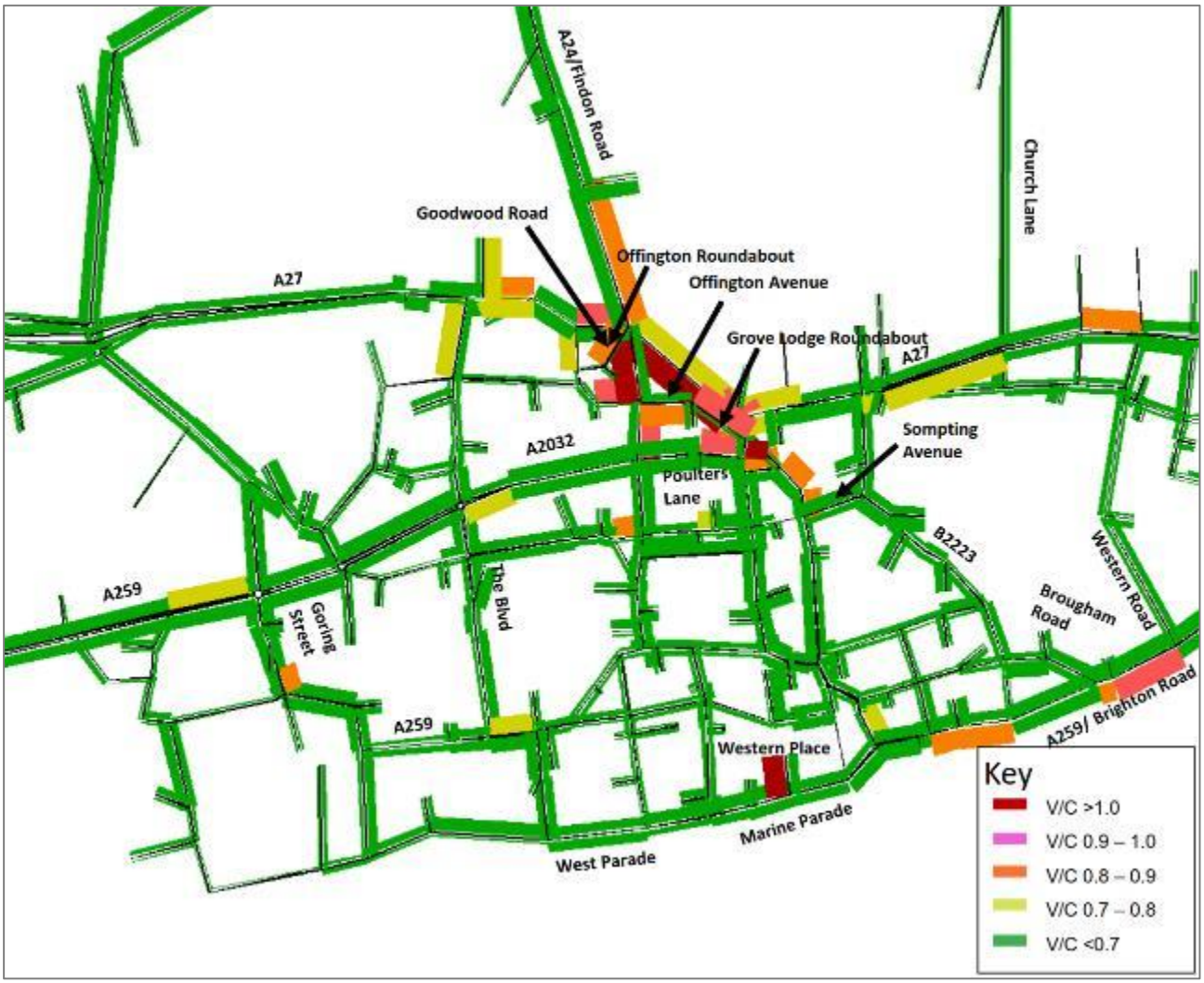

Figure 5-5: Do Minimum scenario link V/C (AM Peak)

The AM Do Minimum forecast shows a similar pattern of delays as seen in the base year. The highest level of delays (high V/Cs) are found on links surrounding Offington roundabout and Grove Lodge roundabout, including the A24 travelling west and eastbound, as well as Findon Road southbound, Offington Lane northbound, Goodwood Road northbound and the A27 eastbound. Other links that experience a high level of delays include Poulters Lane travelling eastbound to the mini roundabout, A24 southbound to Broadwater, the A259/ Brighton Road by Brooklands Pleasure Park travelling westbound, Western Place northbound, A259 west of B2223 westbound and the A259 west of Goring Street travelling eastbound.

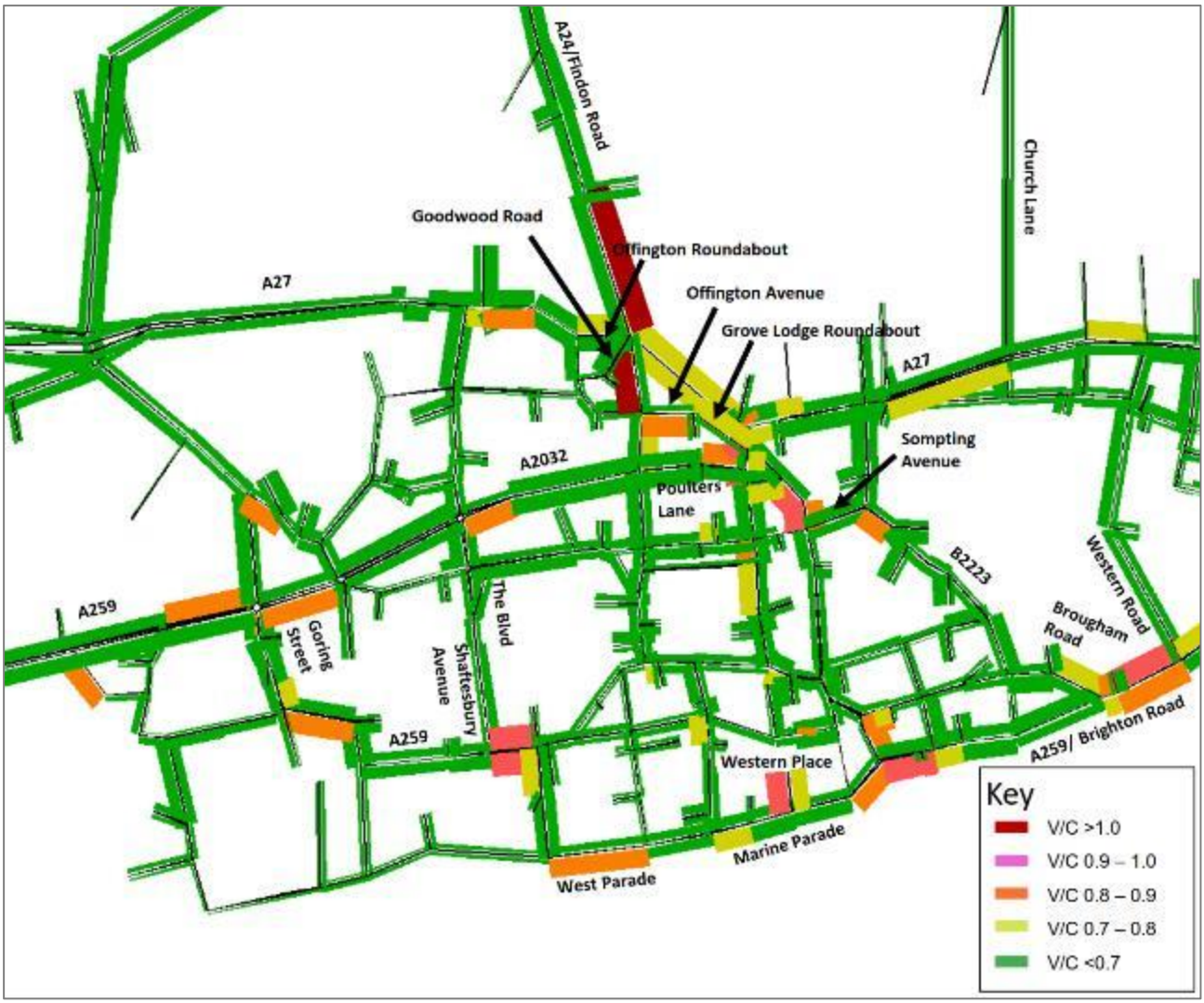

Figure 5-6: Do Minimum scenario link V/C (PM Peak)

In the PM peak, Offington roundabout experiences the highest V/C's and delay in particular on Findon Road travelling southbound and Offington Lane travelling northbound. Delays are also found along sections of West Parade, Marine Parade and the A259 in the westbound direction. The roundabout by Goring Street and the A259 causes delays for the A259 eastbound and the A2032 westbound. High levels of delays are also found on the A259 to the east of Shaftesbury Avenue both east and westbound, as well as the A24 northbound to Grove Lodge roundabout.

5.4 LOCAL PLAN SITES ASSESSMENT

TRAFFIC ASSESSMENT

The Do Something scenario represents the forecast that contains the Worthing Local Plan developments and includes the following:

- All developments and growth included in the Do Minimum scenario
- Potential developments that have been identified as part of the Worthing Local Plan

The approach to calculating trip generation for these sites is described in section 4.3 of this report.

The total level of traffic growth within this scenario has not been capped to TEMPro levels and there have been no adjustments made to the traffic generation taking into consideration any extant use within the boundaries of the local plan sites. The traffic assessment considers the full set of land use development sites holistically in order to ascertain the cumulative impact.

The Do Something network includes all the committed infrastructure developments that are present in the Do Minimum network.

Figure 5-7 and Figure 5-8 show the modelled flow on links within the core study area for the AM and PM peak periods respectively. A green line in the figures represents non-local plan traffic flow where a red line shows local plan traffic flow.

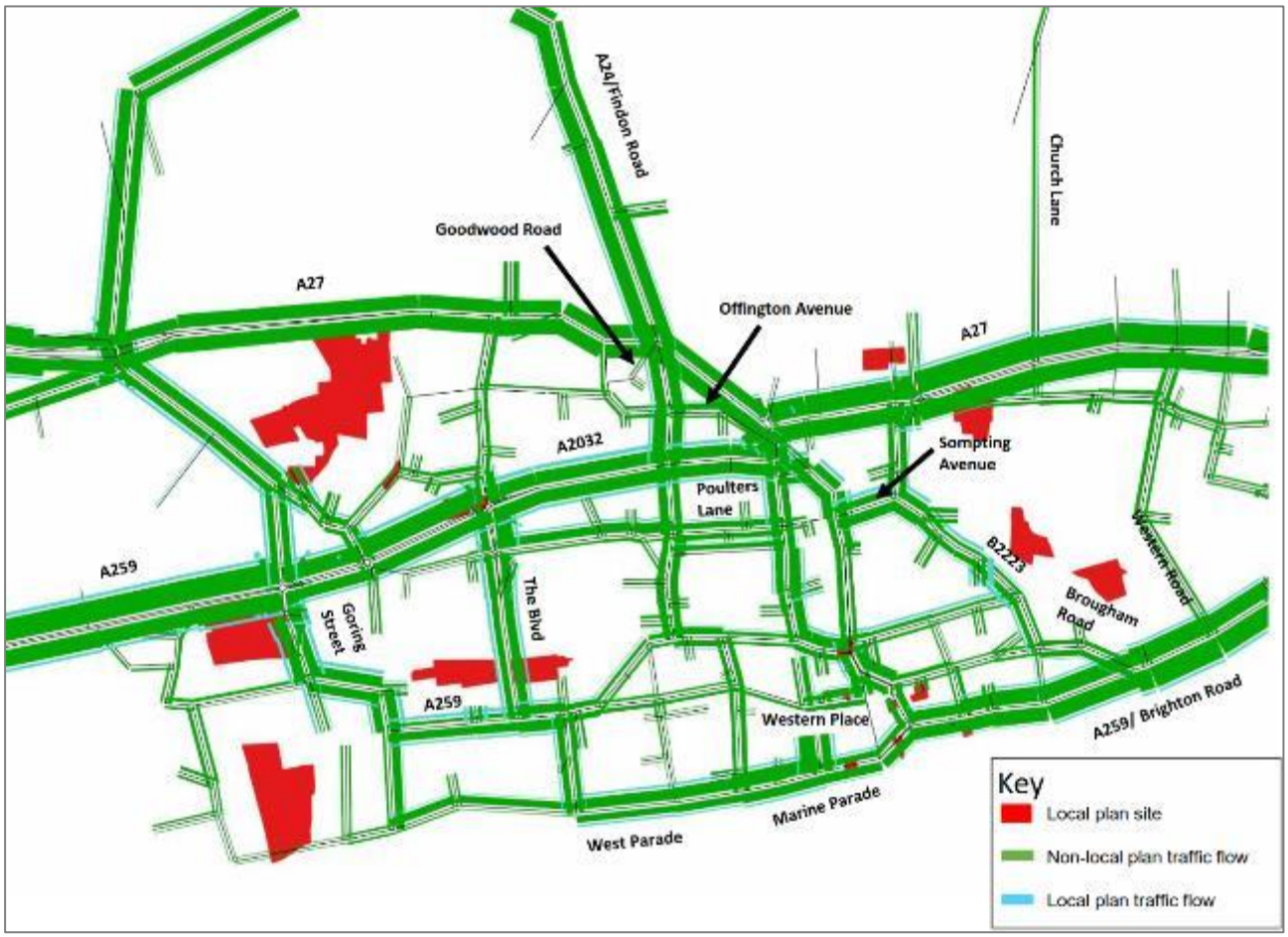

Figure 5-7: Local plan scenario traffic volumes (AM Peak)

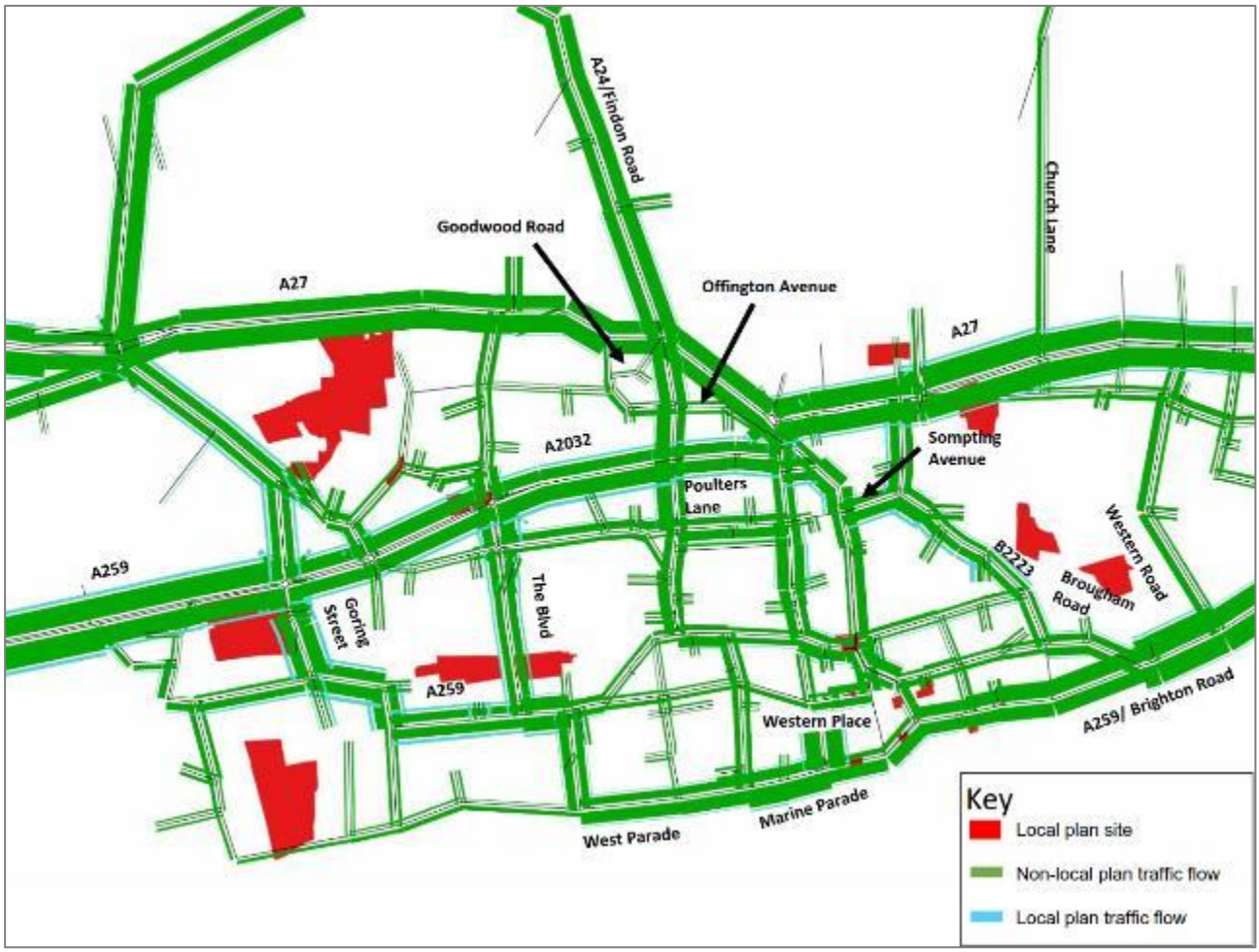

Figure 5-8: Local plan scenario traffic volumes (PM Peak)

Figure 5-9 and Figure 5-10 show the forecast traffic flow on links for the local plan site traffic only, within the core study area, for the AM and PM peak periods respectively.

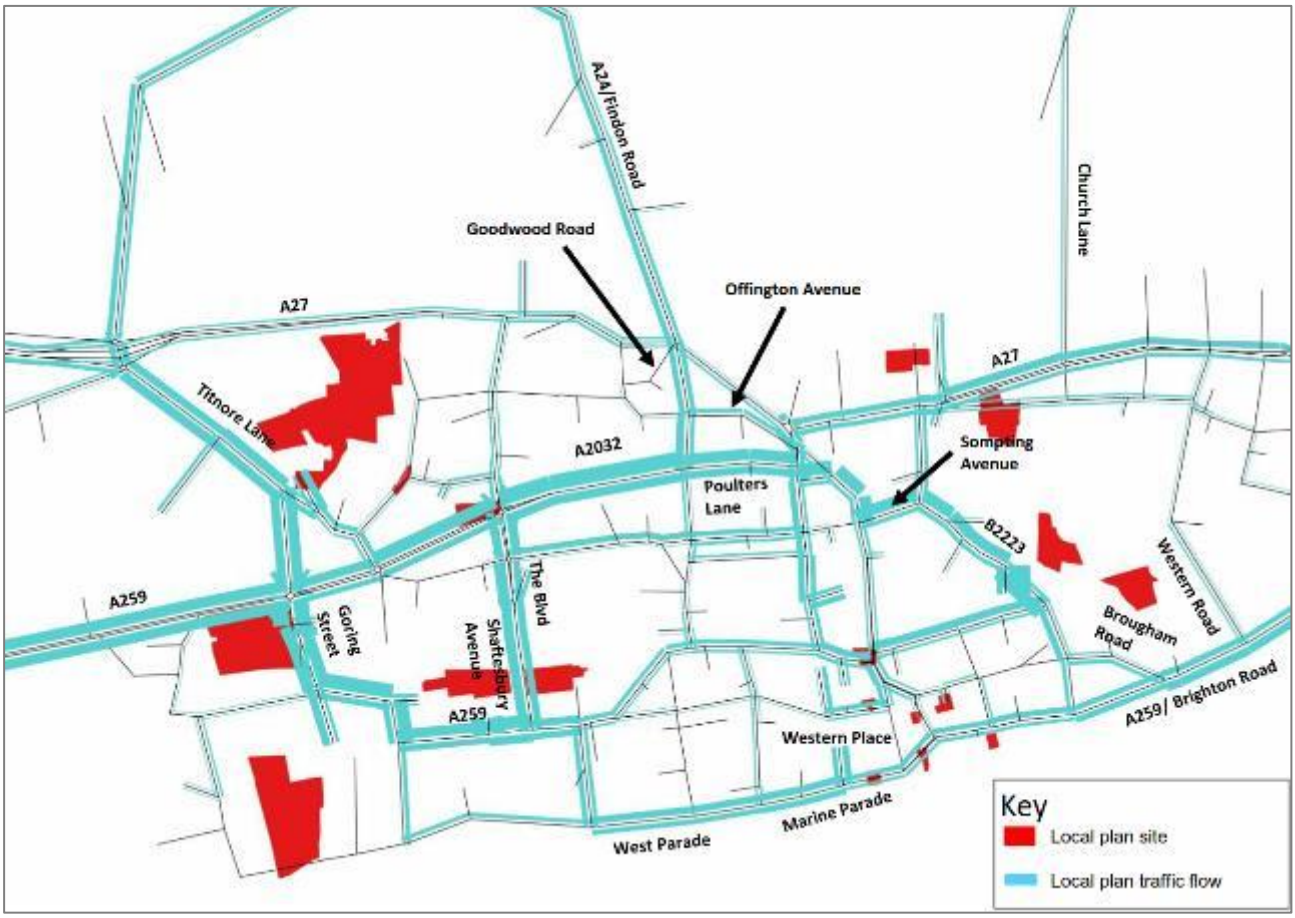

Figure 5-9: Local plan sites traffic volumes (AM Peak)

In the AM peak, the local plan flows are highest on the route that extends from the A259 in the west, through A2032 and finishing at Poulters Lane in the east, with the eastbound direction seeing higher flows. There are also high flows on Goring Street extending through to A259 in both directions, with the higher flows experienced for the eastbound direction. These high flows continue onto Shaftesbury Avenue / The Boulevard. Other routes with high flows include B2223 eastbound and Titnore Lane in both directions.

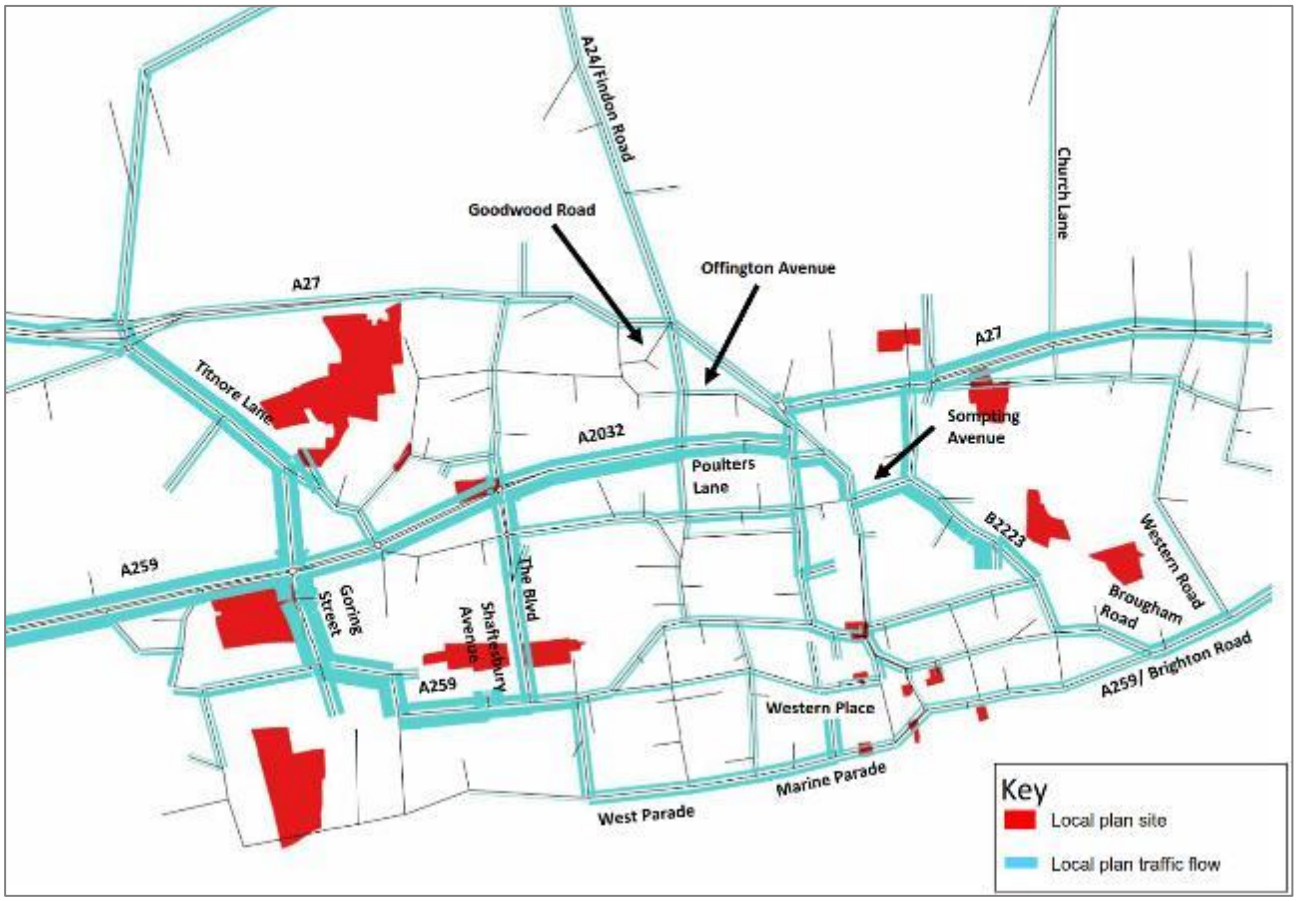

Figure 5-10: Local plan sites traffic volumes (PM Peak)

The PM peak shows a similar pattern to the AM peak, with the same routes experiencing the highest flows, however the highest flows travelling in the opposite direction. For example, the A259 / A2032 / Poulters Lane junction now experiences the highest flows in the westbound direction, as well as B2223.

Figure 5-11 and Figure 5-12 show the modelled flow difference on links comparing the Do Something against the Do Minimum for the AM and PM peak periods respectively. Actual flows are presented and bandwidths set to 100 units / mm, with green indicating an increase in traffic flow and blue a decrease.

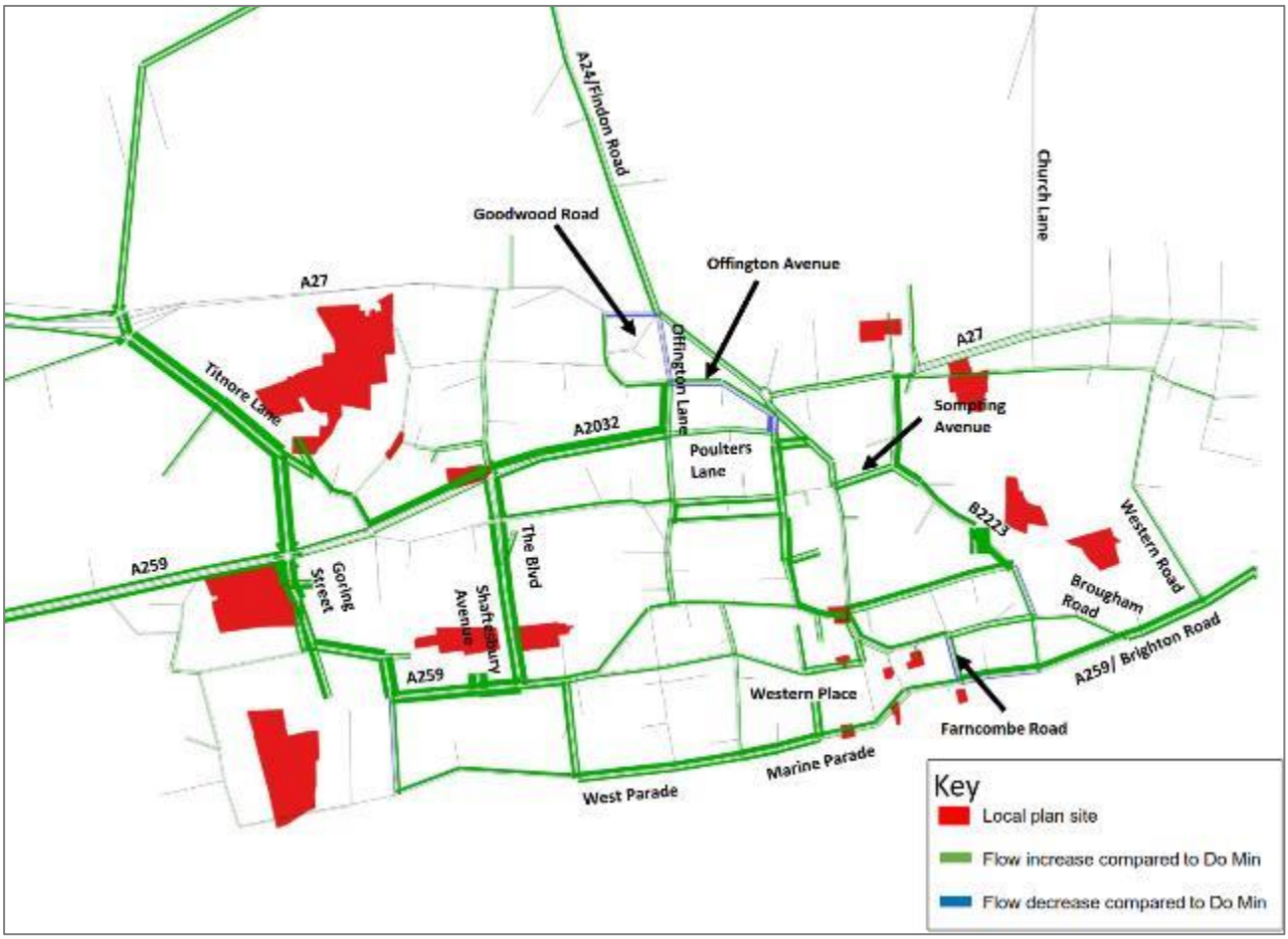

Figure 5-11: Flow Difference – Local Plan to Do Minimum – AM

The AM Do Something scenario shows increases in flow on the majority of links when compared against the Do Minimum. The flow increases are highest on Titnore Lane in both directions, the A2032 eastbound, Goring Street northbound and Shaftesbury Avenue / The Boulevard both north and southbound.

Due to the re-routing of traffic within the network as a response to the introduction of the local plan sites, there are some locations where traffic volumes decrease relative to the Do Minimum forecast scenario. Routes that see the largest decreases in flow include the A27 to the west of Offington roundabout in both directions, Offington Lane in both directions, Offington Avenue westbound, the A259 to the west of the B223 in the westbound direction, and Farncombe Road northbound. The traffic flow on the A27 does not materially change because this section of road is already congested and has limited capacity for additional traffic.

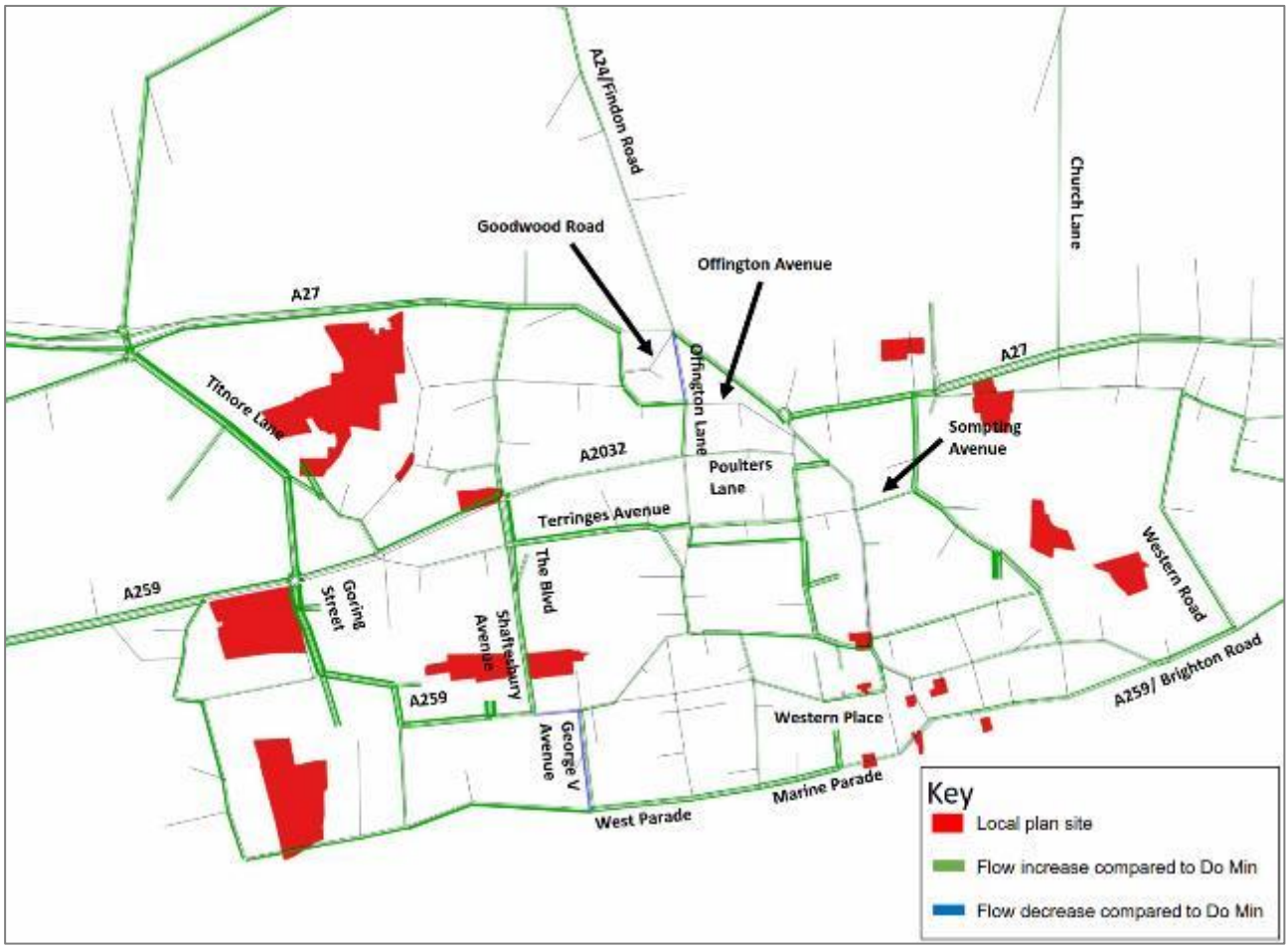

Figure 5-12: Flow Difference – Local Plan to Do Minimum - PM

The highest flow increases in the PM peak when compared against Do Minimum are on Titnore Lane, with the higher increases mainly occurring for the southbound direction, as well as Goring Street in both directions and The Boulevard, to the north of Terringes Avenue, travelling southbound. The A27 to the west of Offington roundabout experiences increases in flows, compared to decreases in the AM. Decreases in flows, similar to the AM peak, are found on Offington Lane. The roads in the PM period that experience decreases include George V Avenue northbound and the A24 northbound to the junction with Sompting Avenue.

JOURNEY TIME ANALYSIS

Journey time analysis was undertaken on 4 bi-directional journey time routes which have been defined within the model. The journey time routes that have been used are shown in Figure 5-13.

Figure 5-13: Journey Time Routes

Table 5-3 and Table 5-4 outline the journey times for the identified routes in the Base Year, 2033 Do Minimum and 2033 Worthing Local Plan scenario for the AM and PM peak respectively.

Table 5-3: Journey time summary (AM peak)

Route No.	Direction	Base Year (mm:ss)	Do Minimum (mm:ss)	WLP Sites (mm:ss)	Difference to Do Minimum (mm:ss)
1	Eastbound	12:49	13:12	14:08	00:56
	Westbound	12:41	12:21	12:23	00:02
2	Southbound	13:51	14:10	15:19	01:09
	Northbound	10:50	10:26	10:38	00:12
3	Eastbound	07:11	07:23	07:38	00:15
	Westbound	05:29	05:37	06:05	00:28
4	Eastbound	17:49	17:57	19:00	01:03
	Westbound	16:09	16:38	17:37	00:59

With the implementation of the Worthing Local Plan sites, journey times for the AM increase slightly for all routes. The largest of these increases is route 2 southbound, which increases by 1 minute, 9 seconds compared to the Do Minimum scenario.

Table 5-4: Journey time summary (PM peak)

Route No.	Direction	Base Year (mm:ss)	Do Minimum (mm:ss)	WLP Sites (mm:ss)	Difference to Do Minimum (mm:ss)
1	Eastbound	11:08	11:26	11:42	00:16
	Westbound	09:45	10:14	10:37	00:23
2	Southbound	12:19	12:39	13:32	00:53
	Northbound	11:35	12:08	12:49	00:41
3	Eastbound	06:38	06:47	07:03	00:16
	Westbound	05:58	06:11	07:00	00:49
4	Eastbound	16:28	17:01	18:23	01:22
	Westbound	17:15	18:03	18:56	00:53

For the PM peak the largest increase in journey time when compared against the Do Minimum scenario is for route 4 eastbound which increases by 1 minute, 22 seconds.

For both peaks the implementation of the Worthing Local Plan sites result in an increase in journey times for each route due to the generation of further traffic on the road network. However, the changes in journey time are modest, and less than 1 minute for most routes.

LOCAL PLAN SITES AREA OF INFLUENCE

In order to establish areas that require further more detailed investigation, an area of influence has been established using information from the Highways England A27 strategic model. Figure 5-14 and Figure 5-15 show the modelled flow difference on a set of links comparing the Do Something against the Do Minimum scenario for the AM and PM peak periods respectively. The selected links have been identified by applying the following criteria;

- Changes in traffic volume >30 vehicles per hour and;
- Changes in traffic volume >10% of existing traffic volumes on a link

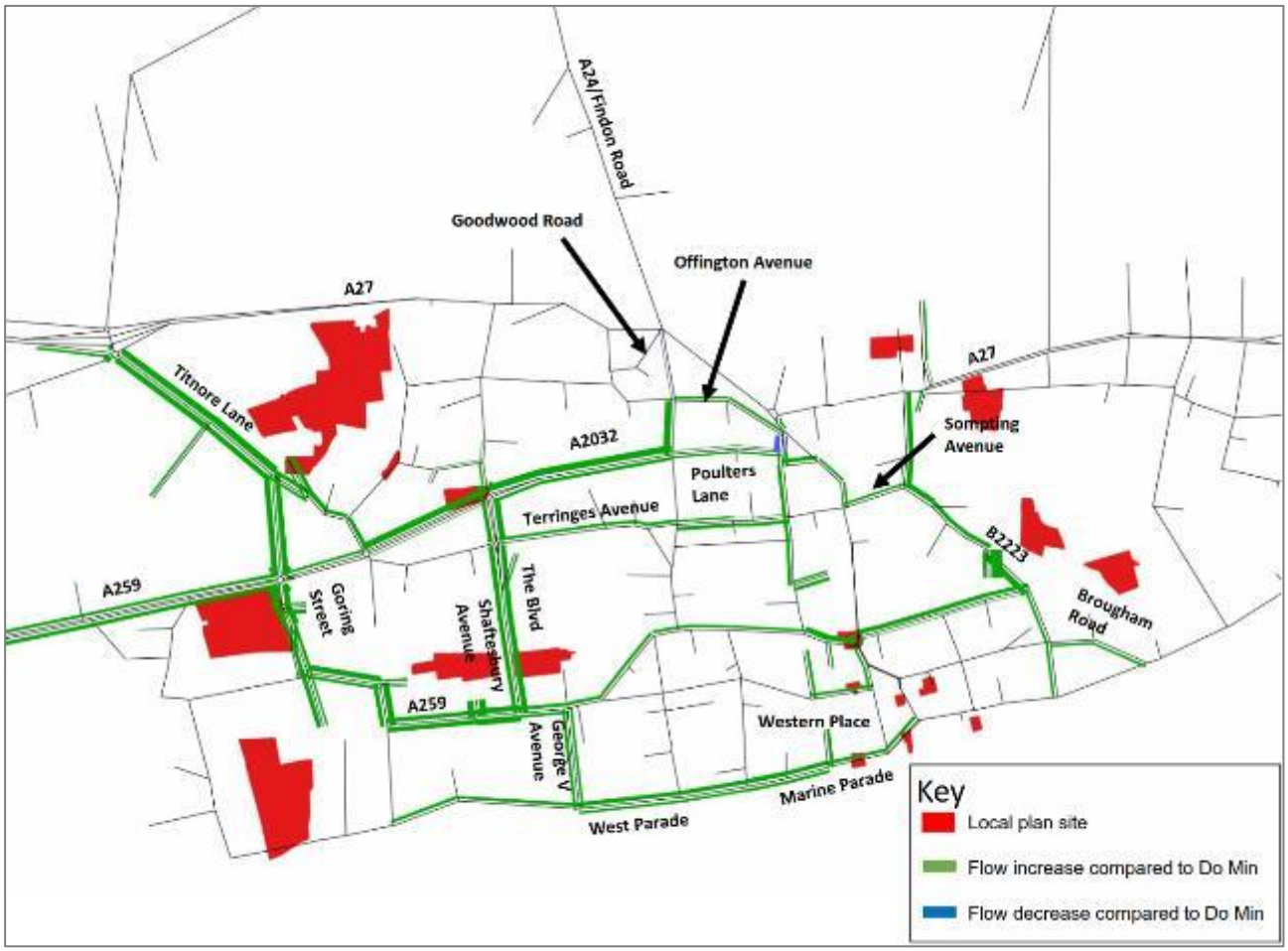

Figure 5-14: Local plan sites area of influence (AM Peak)

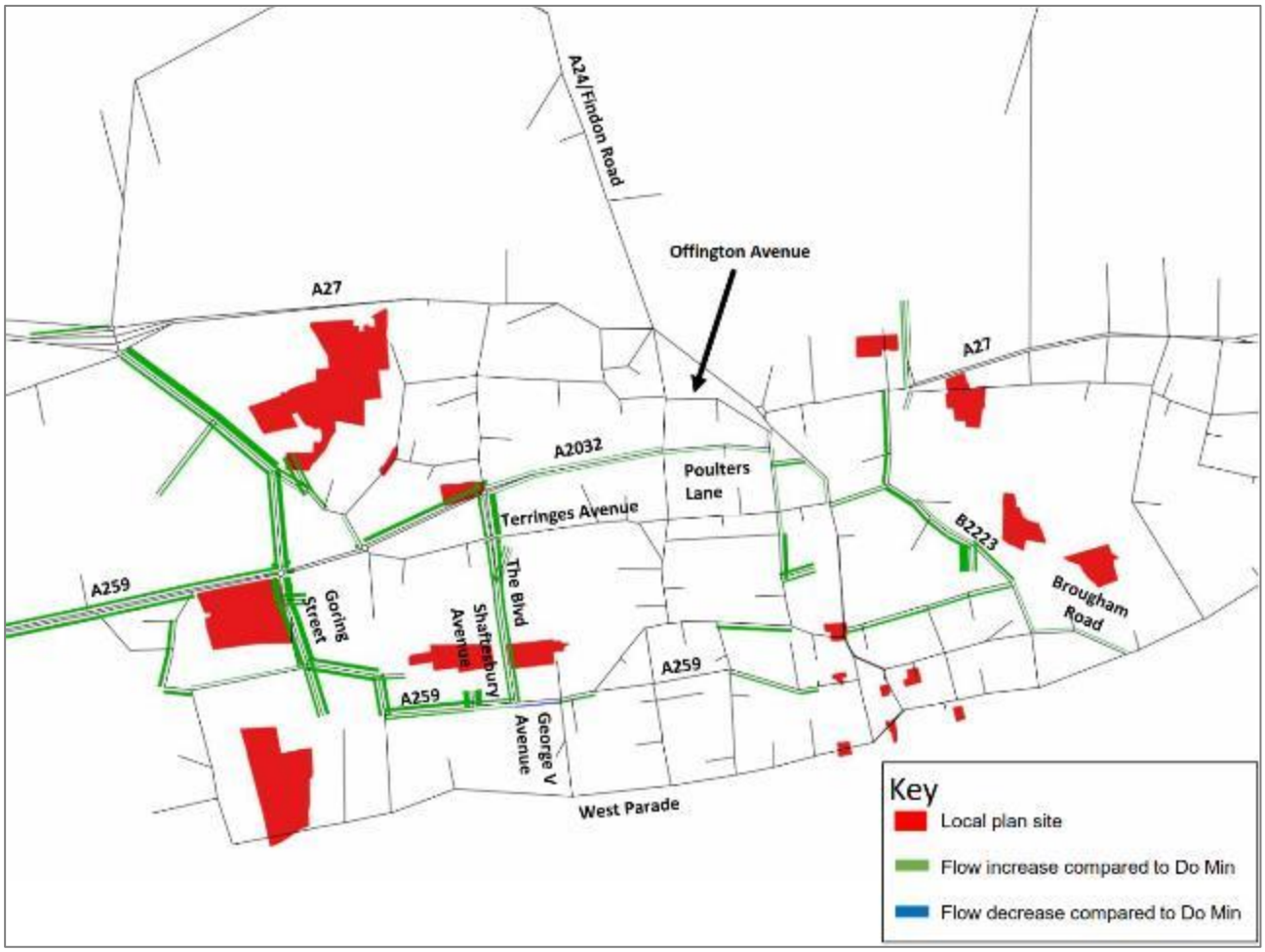

Figure 5-15: Local plan sites area of influence (PM Peak)

Figure 5-14 and Figure 5-15 show that the links falling within the area of influence criteria are predominantly located around the A259, A2032 and A2700 corridors. The area of influence shows consistency between AM and PM peak scenarios. The A27 has not been identified in this test because, as previously mentioned, the A27 already experiences congestion in the AM peak and has limited capacity to carry additional traffic.

From these figures, and the wider assessment in this and in preceding chapters, the red dashed line illustrates the area that will be considered further, including operational assessment, to identify mitigation measures that may be appropriate to support the proposed local plan sites. 12 junctions have been identified for further operational assessment. These junctions are:

- 1 - Beeches Avenue / A27
- 2 - Poulters Lane / Offington Lane
- 3 - A259 / A2032 / Goring St roundabout
- 4 - Dominion Rd / Dominion Way
- 5 - Barrington Road / Shaftesbury Avenue
- 6 - A27 / A280 / Titnore Lane
- 7 - A259 / Goring Way / Aldsworth Avenue
- 8 - Durrington Lane / A2032 / The Blvd
- 9 - Poulters Lane / A2032
- 10 - Ardsheal Road / A24
- 11 - Lyons Way / Upper Brighton Road / A27

- 12 - Teville Road / A24

Figure 5-16 and Figure 5-17 identify these junctions against the area of influence plots for both the AM and PM peak respectively.

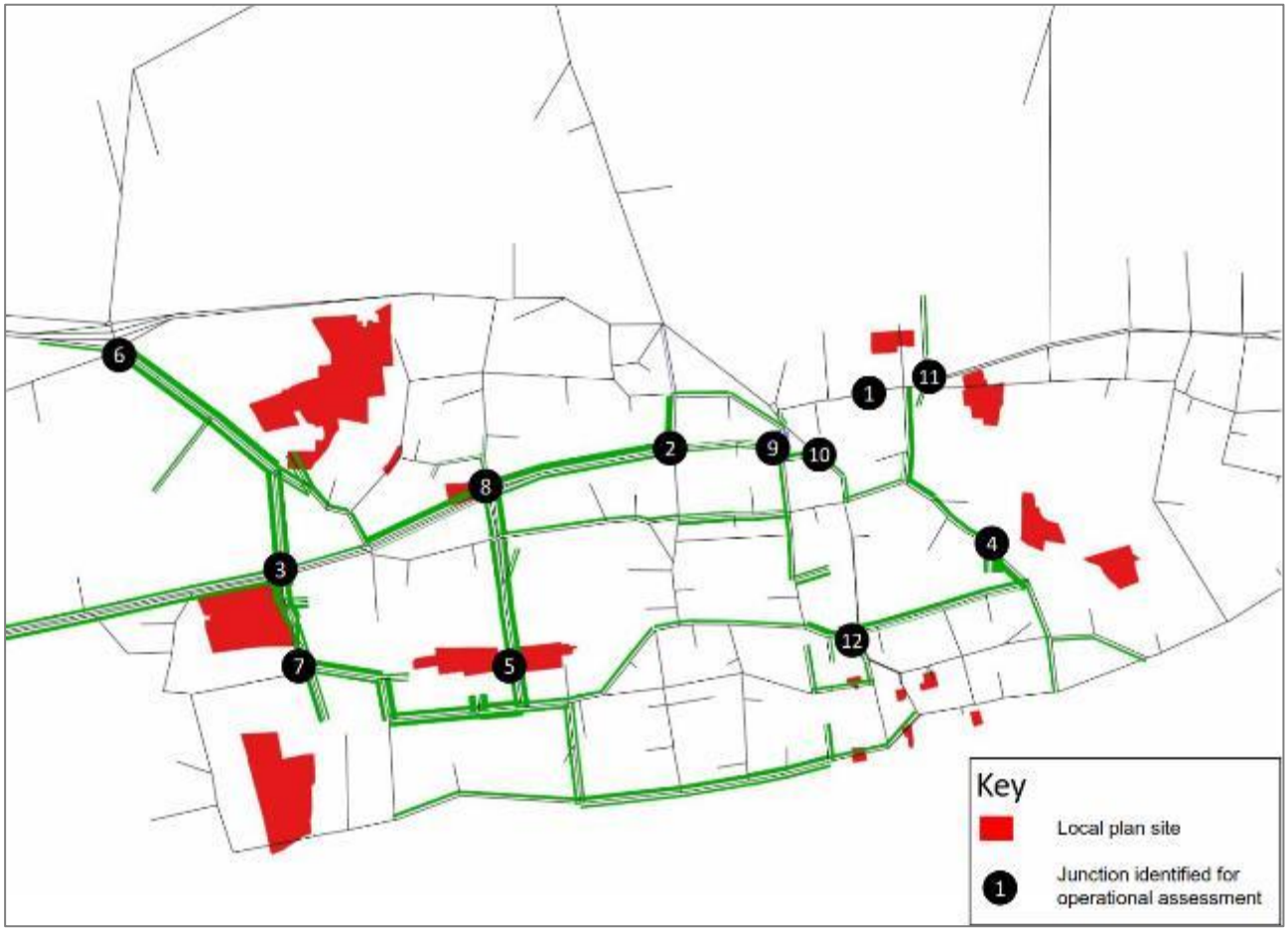

Figure 5-16: Junction locations with Local Plan sites area of influence (AM Peak)

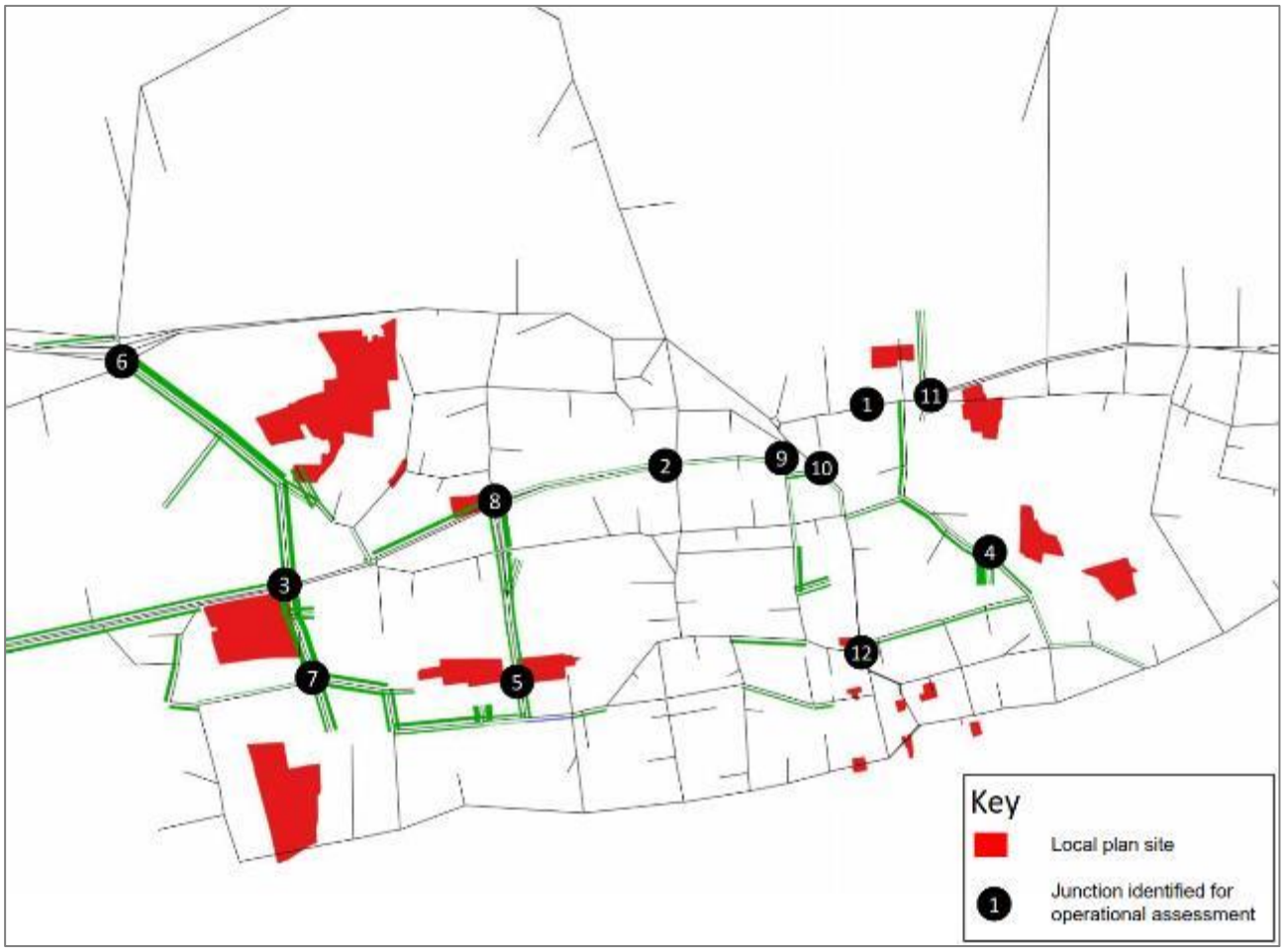

Figure 5-17: Junction locations with Local Plan sites area of influence (PM Peak)

ROAD SAFETY IMPACTS

The developments identified in the Worthing Local Plan are forecast to increase traffic flow in several locations within the core study area. There are notable clusters of collisions at the following sites which are all forecast to experience traffic flow increases:

- A259 / A2032 / Titnore Lane roundabout
- A2032 / Yeoman Road / Palatine Road roundabout
- A2032 / Durrington Lane / The Boulevard roundabout
- A2032 / Offington Lane signalised junction
- A259 / Goring Way roundabout
- B2223 Dominion Road between Sompting Road and Dominion Way

Table 5-5 shows the number of collisions, the percentage of collisions categorised as Killed or Seriously Injured (KSI) and the average increase in forecast flow between the WLP Sites and Do Minimum scenarios, for each of the sites listed above. The forecast flow increase presented is the total change for the AM and PM peaks combined and the percentage change from Do Minimum in brackets.

Table 5-5: Collisions and forecast increases

Site	Collisions	Forecast flow increase
A259 / A2032 / Titnore Lane roundabout	9 (22% KSI)	1063 (+13%)
A2032 / Yeoman Road / Palatine Road roundabout	15 (13% KSI)	371 (+7%)
A2032 / Durrington Lane / The Boulevard roundabout	19 (11% KSI)	806 (+11%)
A2032 / Offington Lane signalised junction	9 (22% KSI)	489 (+7%)
A259 / Goring Way roundabout	10 (10% KSI)	801 (+18%)
B2223 Dominion Road between Sompting Road and Dominion Way	31 (10% KSI)	402 (+14%)

A description of mitigation measures to address the potential road safety impacts at these locations is described in Section 7.2.

There are several mitigation measures which could be implemented that would reduce the likelihood of further accidents at these sites.

ENVIRONMENTAL IMPACTS

The environmental impact of Local Plan development is considered through a process of strategic environmental assessment and sustainability appraisal[33]. The process is an 'opportunity to consider ways by which the plan can contribute to improvements in environmental, social and economic conditions, as well as a means of identifying and mitigating any potential adverse effects that the plan might otherwise have.'

The Worthing Local Plan Sustainability Appraisal Scoping Report (March 2015) [34] summarises the issues associated with transport and accessibility that influence environmental conditions within Worthing. The report also summarises the sustainable priorities set out in national and local policy in relation to transport and concludes with a set of 14 objectives which are used to assess the Local Plan.

This transport assessment has described these policies in further detail and these provide the framework within which the Worthing Local Plan is being developed. Overall, a sustainable approach to transport provision is encouraged and this is reflected within the broad mitigation package set out in Section 7 of this transport assessment. This package builds upon the opportunities provided by the existing sustainable transport provision within Worthing and identifies further enhancements that would contribute to improving conditions in support of the delivery of the Local Plan sites.

The environmental context described in Section 3.5 sets out the main environmental considerations. The protection of ecology and sensitive landscape is being considered by WBC in particular in relation to site selection. This transport assessment presents a number of sensitivity tests so that the transport effects of these scenarios can be understood.

The key potential effects of development in relation to transport are changes in noise and air quality. The overall approach to plan development, consistent with the policies described above, is to guide development to deliver

[33] https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal
[34] https://www.adur-worthing.gov.uk/worthing-local-plan/sustainability-appraisal/

an appropriate level of sustainable transport provision to reduce the level of single occupancy private car journeys. This can reduce the potential for significant noise and air quality effects. A key constraint in relation to environmental effects is the presence of the AQMA. This transport assessment has demonstrated the changes in peak hour traffic volume that result from the Local Plan sites and this shows the existing AQMA does not form part of the area of influence of these sites.

5.5 SENSITIVITY TESTS

As mentioned in section 4.2 and 5.2 of this report, a number of sensitivity tests have been undertaken. Sensitivity test 1 excludes the Goring – Ferring Gap development sites from the Local Plan and sensitivity test 2 excludes the Goring – Ferring Gap and Chatsmore Farm development sites from the Local Plan. Sensitivity test 3 includes the effect of the Highways England A27 Arundel Bypass and A27 Worthing and Lancing RIS schemes. For the purposes of these sensitivity tests all other model inputs have remained consistent with those used for the 'full' local plan model runs. The results of the sensitivity tests are detailed in this section of the report.

TEST 1 – NO GORING-FERRING GAP

Traffic Modelling

Figure 5-18 and Figure 5-19 show the modelled flow difference on links comparing the sensitivity test against the 'full' local plan model runs for the AM and PM peak periods respectively. Actual flows are presented with a green line indicating an increase in traffic flow and blue line a decrease.

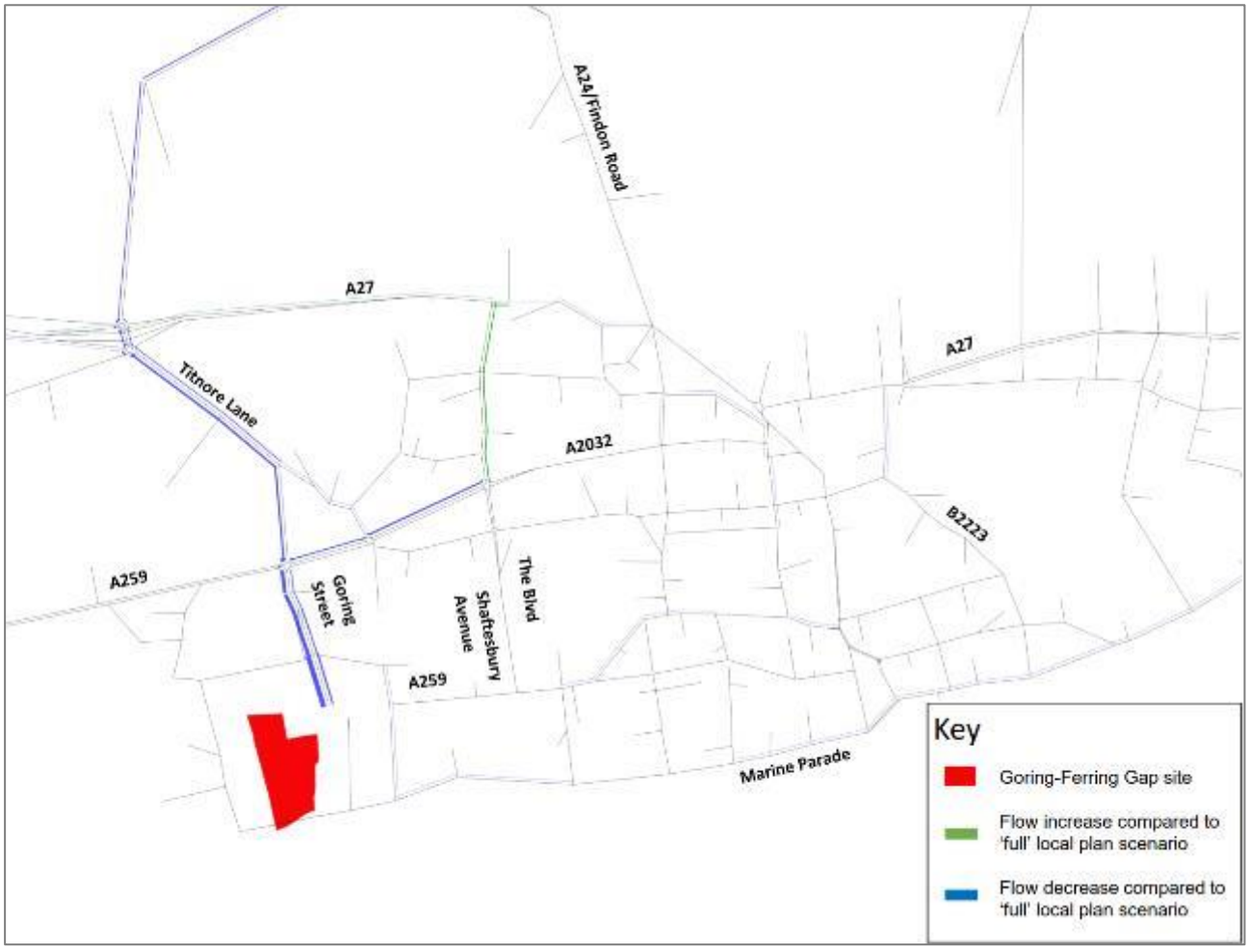

Figure 5-18: Flow Difference – Sensitivity Test 1 to 'full' Local Plan (AM Peak)

As expected, links located in the local area to the Goring and Ferring development sites show the largest flow changes. The largest flow changes occur on Aldsworth Avenue / Goring Street and Titnore Lane which show a decrease in flow for both the northbound and southbound direction. There is an increase in flow travelling southbound on Durrington Lane which is a result of the decrease in flow travelling eastbound on A2032 allowing the egress from Durrington Lane more capacity as there is reduced traffic opposing this movement. For the wider area there are shown to be insignificant changes in vehicle flow on links.

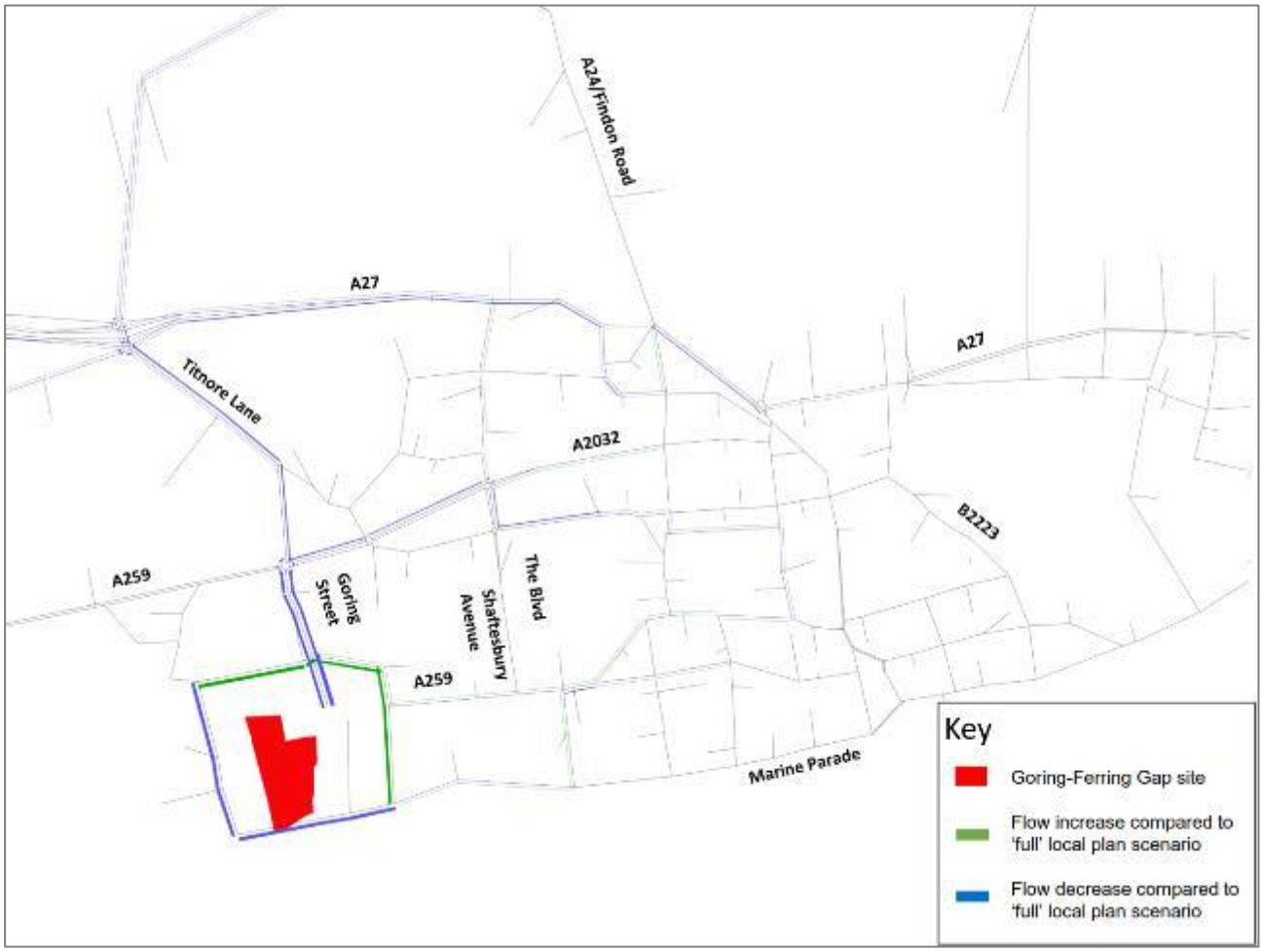

Figure 5-19: Flow Difference – Sensitivity Test 1 to 'full' Local Plan (PM Peak)

The PM peak shows a similar pattern to the AM with the largest flow changes occurring on Aldsworth Avenue / Goring Street and Titnore Lane for both the northbound and southbound direction which all experience flow decrease. There is vehicle reassignment for vehicles that were previously travelling on Sea Lane / Marine Drive now reassigning to use A259 / Goring Way. This is a result of increased available capacity on this route due to the reduced flow travelling to / from the Goring-Ferring site.

Journey Time Analysis

Journey time analysis was undertaken for sensitivity test 1 using the journey time routes detailed in Figure 5-13. Table 5-6 and Table 5-7 provide a summary of the journey time results including comparison against the 'full' Worthing Local Plan scenario.

Table 5-6: Sensitivity test 1 journey time summary (AM Peak)

Route No.	Direction	DM (mm:ss)	'Full' WLP Sites (mm:ss)	Sensitivity Test 1 (mm:ss)	Difference to WLP Sites (mm:ss)
1	Eastbound	13:12	14:08	14:00	-00:08
	Westbound	12:21	12:23	12:19	-00:04
2	Southbound	14:10	15:19	15:13	-00:06
	Northbound	10:26	10:38	10:32	-00:06
3	Eastbound	07:23	07:38	07:39	00:01
	Westbound	05:37	06:05	05:56	-00:09
4	Eastbound	17:57	19:00	18:48	-00:12
	Westbound	16:38	17:37	17:34	-00:03

Table 5-7: Sensitivity test 1 journey time summary (PM Peak)

Route No.	Direction	DM (mm:ss)	'Full' WLP Sites (mm:ss)	Sensitivity Test 1 (mm:ss)	Difference to WLP Sites (mm:ss)
1	Eastbound	11:26	11:42	11:42	-00:00
	Westbound	10:14	10:37	10:32	-00:05
2	Southbound	12:39	13:32	13:28	-00:04
	Northbound	12:08	12:49	12:44	-00:05
3	Eastbound	06:47	07:03	06:58	-00:05
	Westbound	06:11	07:00	06:44	-00:16
4	Eastbound	17:01	18:23	18:21	-00:02
	Westbound	18:03	18:56	18:51	-00:05

Table 5-6 and Table 5-7 show that with the exclusion of the Goring-Ferring site from the local plan there are reductions in journey time for all routes, except for route 3 eastbound in the AM peak and route 1 eastbound in the PM peak. For the AM peak the largest decreases occur on route 4 eastbound and route 3 westbound which show a decrease in journey time of 12 seconds and 9 seconds respectively. For the PM peak the largest decrease in journey time occurs on route 3 westbound (16 seconds).

TEST 2 – NO GORING-FERRING GAP / CHATSMORE FARM

Traffic Modelling

Figure 5.20 and Figure 5.21 show the modelled flow difference on links comparing the sensitivity test against the 'full' local plan model runs for the AM and PM peak periods respectively. Actual flows are presented with a green line indicating an increase in traffic flow and blue line a decrease.

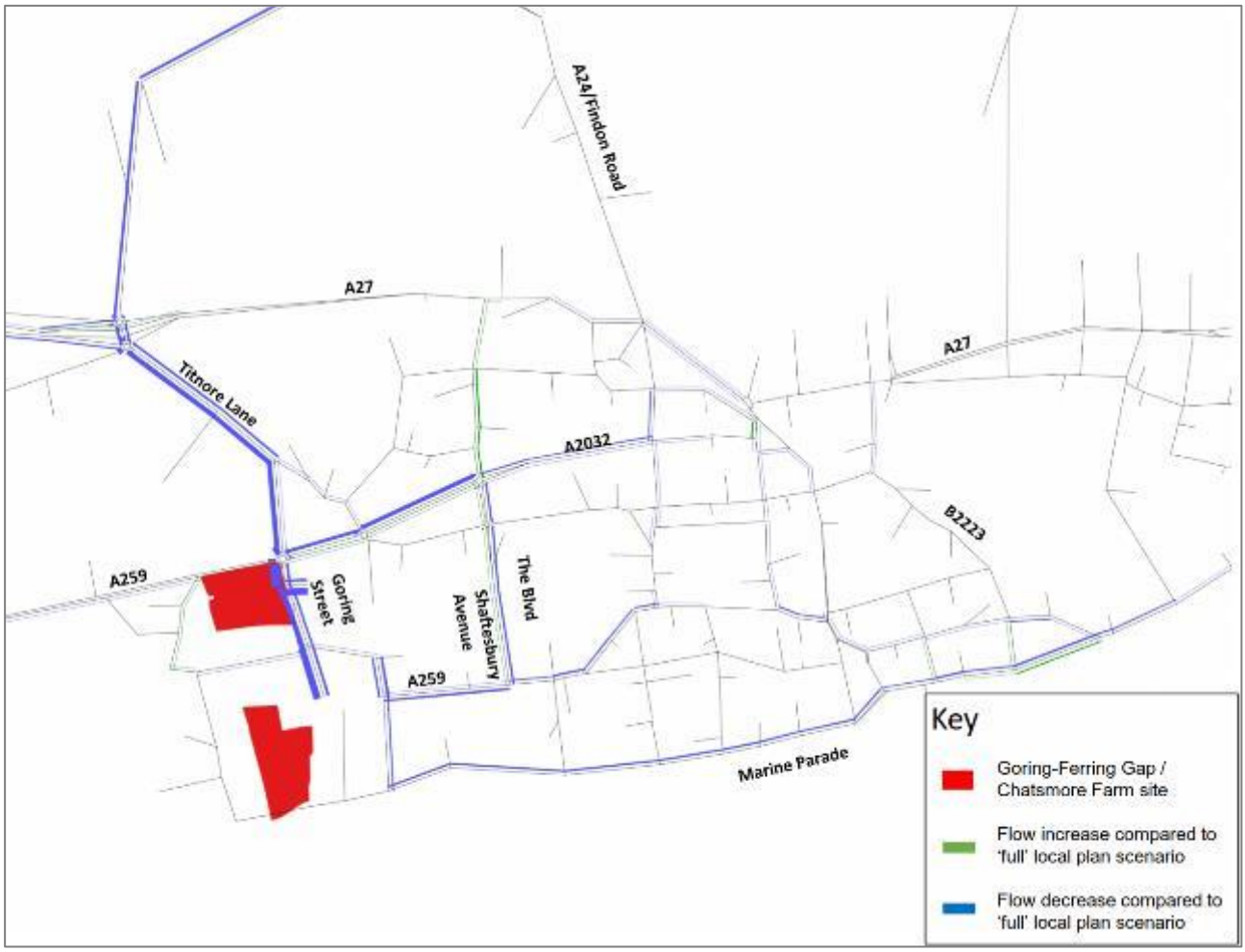

Figure 5-20: Flow Difference – Sensitivity Test 2 to 'full' Local Plan (AM Peak)

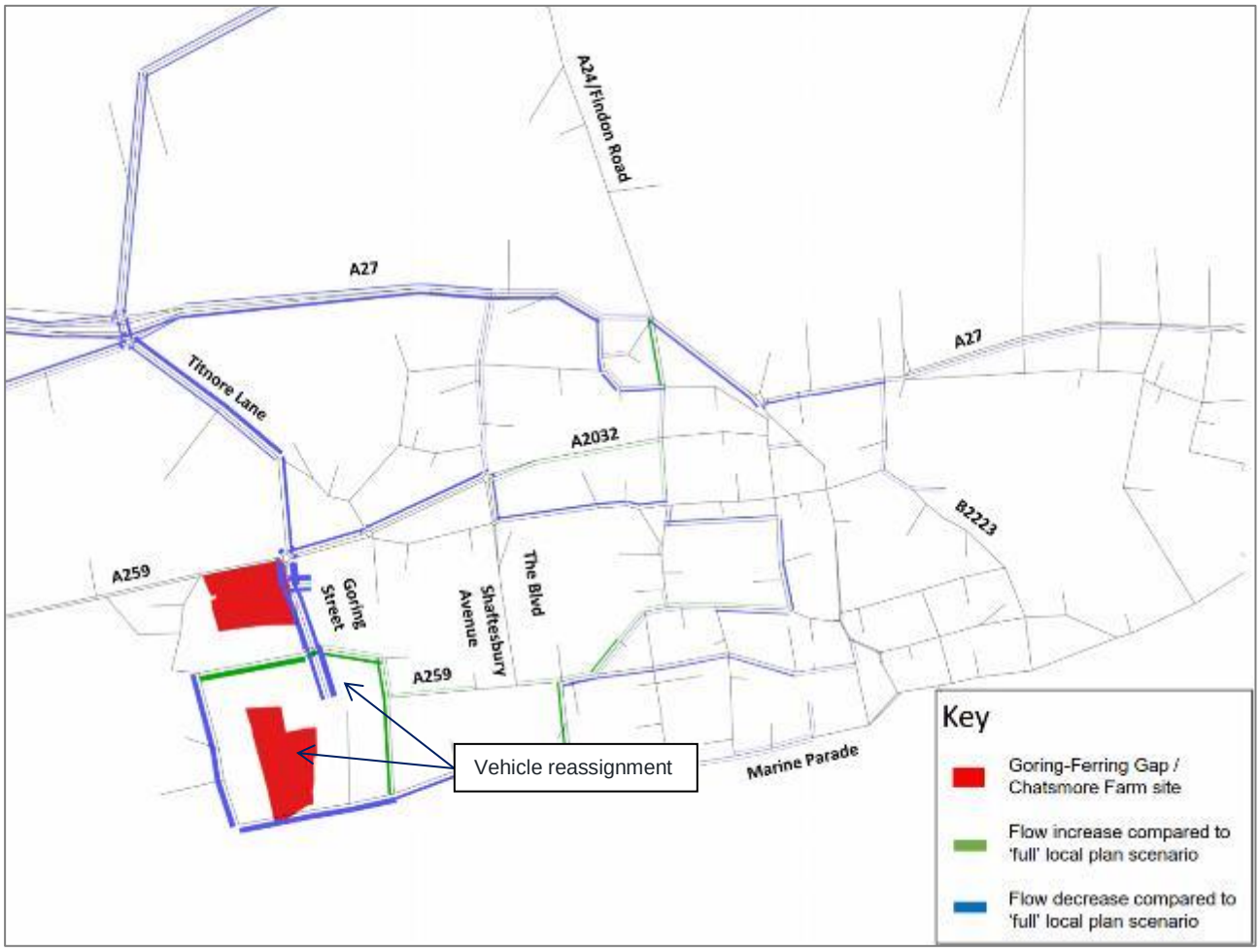

Figure 5-21: Flow Difference – Sensitivity Test 2 to 'full' Local Plan (PM Peak)

Figure 5-20 and Figure 5-21 show that the AM and PM peak flow differences show a similar pattern to when comparing sensitivity test 1 against the 'full local plan' scenario with the exception that the flow differences are greater. The biggest decreases in flow occur on Titnore Lane, Goring Street and A2032 eastbound (between Titnore lane and Durrington Lane). There is an increase in flow travelling southbound on Durrington Lane which is a result of the decrease in flow travelling eastbound on A2032 allowing the egress from Durrington Lane more capacity as there is reduced traffic opposing this movement.

Journey Time Analysis

Journey time analysis was undertaken for sensitivity test 2 using the journey time routes detailed in Figure 5-13. Table 5-8 and Table 5-9 provide a summary of the journey time results including comparison against the 'full' Worthing Local Plan scenario.

Table 5-8: Sensitivity test 2 journey time summary (AM Peak)

Route No.	Direction	DM (mm:ss)	'Full' WLP Sites (mm:ss)	Sensitivity Test 2 (mm:ss)	Difference to WLP Sites (mm:ss)
1	Eastbound	13:12	14:08	13:55	-00:13
	Westbound	12:21	12:23	12:21	-00:02
2	Southbound	14:10	15:19	15:06	-00:13
	Northbound	10:26	10:38	10:32	-00:06
3	Eastbound	07:23	07:38	07:38	00:00
	Westbound	05:37	06:05	05:52	-00:13
4	Eastbound	17:57	19:00	18:42	-00:18
	Westbound	16:38	17:37	17:31	-00:06

Table 5-9: Sensitivity test 2 journey time summary (PM Peak)

Route No.	Direction	DM (mm:ss)	'Full' WLP Sites (mm:ss)	Sensitivity Test 2 (mm:ss)	Difference to WLP Sites (mm:ss)
1	Eastbound	11:26	11:42	11:40	-00:02
	Westbound	10:14	10:37	10:28	-00:09
2	Southbound	12:39	13:32	13:28	-00:04
	Northbound	12:08	12:49	12:40	-00:09
3	Eastbound	06:47	07:03	06:56	-00:07
	Westbound	06:11	07:00	06:31	-00:29
4	Eastbound	17:01	18:23	18:18	-00:05
	Westbound	18:03	18:56	18:41	-00:15

The results show that there are increases for all journey time routes except for route 3 eastbound in the AM peak where there is no change. The largest differences occur for route 4 eastbound in the AM peak and route 3 westbound in the PM peak, which show a decrease in journey time of 18 seconds and 29 seconds respectively. This is expected as these routes are closest to the Goring-Ferring Gap and Chatsmore Farm sites.

As well as the noted reduction in journey times, for the main routes, there are also benefits for traffic flow travelling on links adjoining the A2032. The reduction in flow on links in the near vicinity to the sites (A2032, Titnore Lane & Goring Street) means that egress from side roads is easier as there is reduced traffic opposing these movements. An example of this is shown by the increase in flow travelling southbound on Durrington Lane, due to reassigning traffic, as a result of the reduction in delay with the junction of A2032.

TEST 3 – WITH A27 RIS SCHEMES

Traffic Modelling

The A27 Arundel Bypass and A27 Worthing and Lancing schemes have been included within the traffic model. The scheme coding is taken from the latest traffic models developed by Highways England. The purpose of Test 3 is to identify whether there is any notable difference in the forecast traffic volumes when comparing the full Local Plan sites scenario with a Do Minimum scenario. Using this information, the area of influence of the Local Plan sites (shown in Figure 5-16 and Figure 5-17 have been reviewed.

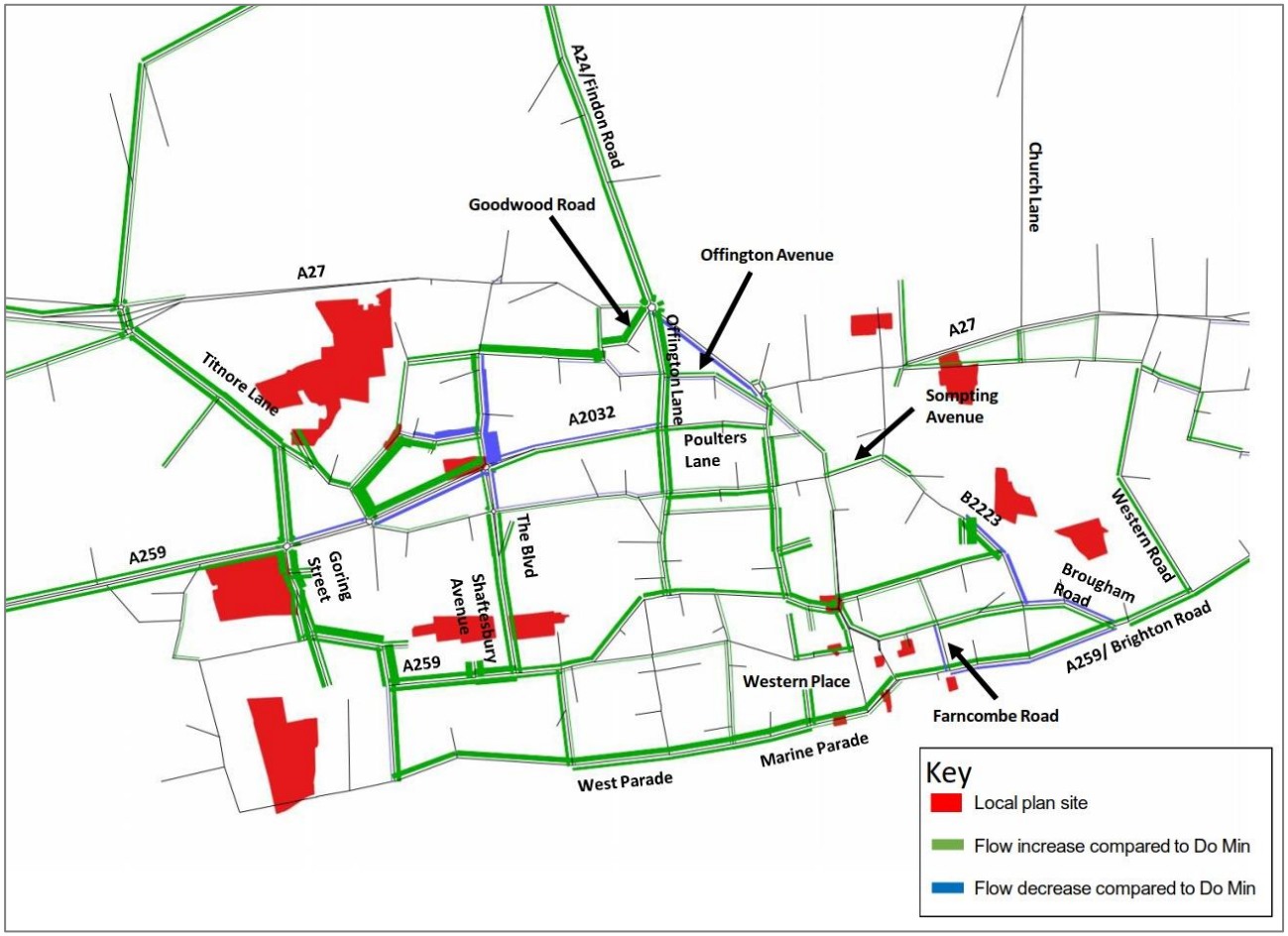

Figure 5-22: Flow Difference – Full WLP Sites compared with Do Minimum (with RIS schemes) - AM

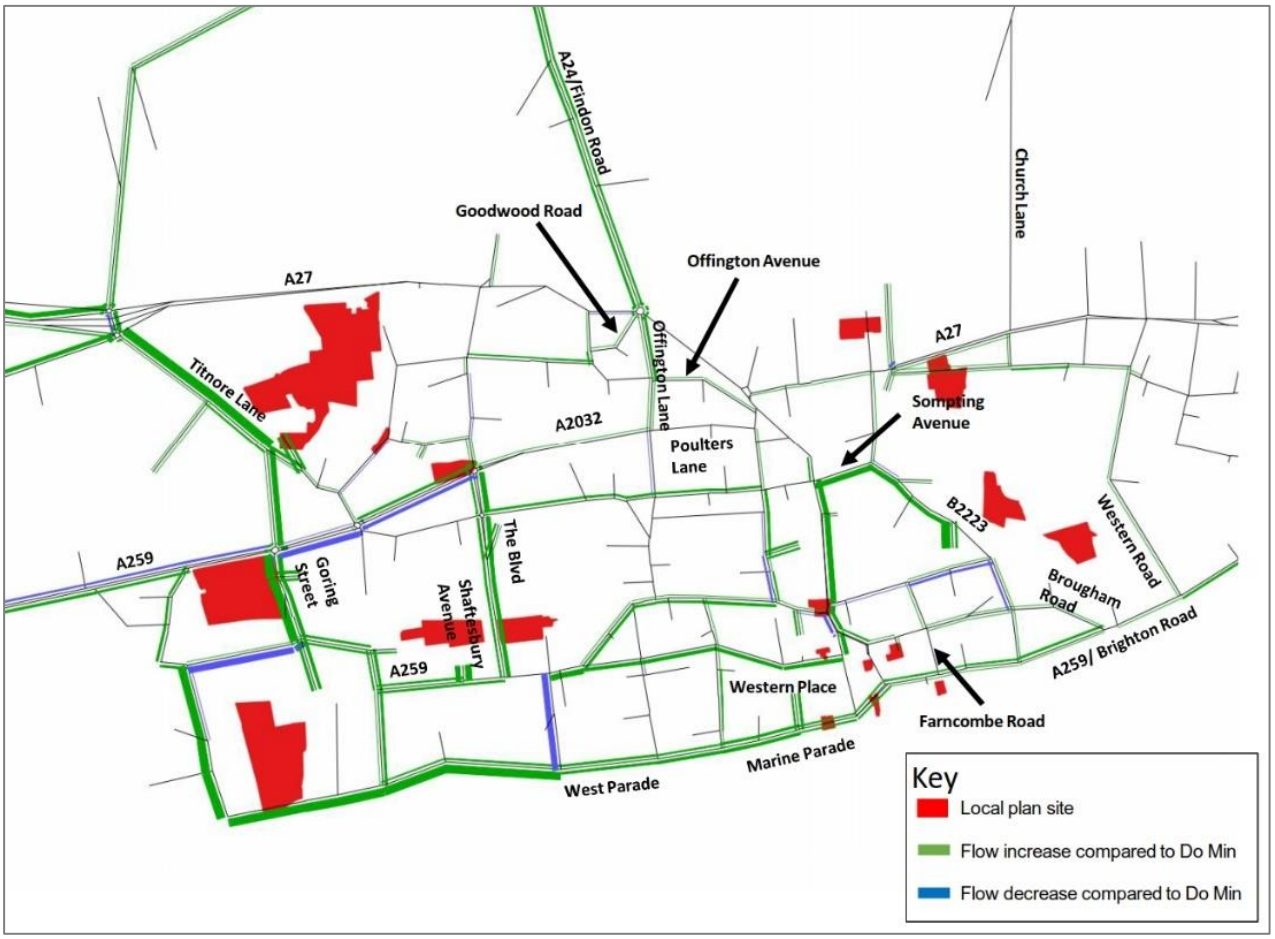

Figure 5-23: Flow Difference – Full WLP Sites compared with Do Minimum (with RIS schemes) - PM

Figures 5-22 and 5-23 show a similar pattern of traffic flow increase as a result of the full WLP sites. In particular, the plots illustrate negligible traffic flow changes on the A27 which is consistent with the results presented earlier in this chapter.

The notable differences compared to the earlier analysis are in the AM peak a rat running issue is shown on Goodwood Road. It is considered that the potential for rat running would be mitigated as part of the Highways England RIS scheme in terms of how the design of the A27 / A24 Offington Lane junction evolves. In the PM peak, a higher level of traffic volume is illustrated on Marine Drive and Sea Lane as a result of a traffic routing difference. This study has not identified any existing network capacity issues within this area of road network. In addition, both peak periods illustrate junction capacity issues which remain on the A2032, illustrated by a lack of increase in traffic volume on the A2032 junctions, and decreases on some arms due to re-routing. No further junctions have been identified for operational assessment.

6 OPERATIONAL ASSESSMENT

6.1 INTRODUCTION

This section of the report presents the results for the junctions that have been identified for junction assessment as set out in chapter 5.

The operational assessment of these junctions was undertaken for the 2033 Do Minimum and 2033 Worthing Local Plan scenarios for both the AM and PM periods.

The following definitions are commonly used when analysing the outputs for operational assessment:

- Ratio of Flow to Capacity (RFC) - used for priority junctions and roundabouts
  - A ratio of flow to capacity on each approach to the junction. When the RFC is 100% it means that the traffic flow has reached 100% of the design capacity of the link/junction
- Degree of Saturation (DoS %) – used for signalised junctions
  - A ratio of demand to capacity on each approach to the junction. A value of 100% means that demand and capacity are equal and no further traffic is able to pass through
- Mean Max Queue (MMQ)
  - The mean number of vehicles (or PCUs) which have added onto the back of the traffic queue up to the time when the queue finally clears.
- Passenger Car Units (PCUs)
  - A measure of the impact that a mode of transport has on traffic variables compared to a single standard passenger car

6.2 ASSESSMENT RESULTS

The results of the operational assessment are set out in the remainder of this section. These include a figure to illustrate the location of the junction with each arm labelled for ease of identification. For signalised junctions individual lanes for each approach have been included in the analysis. ‘Lane 1’ represents the lane nearest the kerb.

BEECHES AVENUE / A27

Table 6-1: Beeches Avenue / A27 operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A27 west	n/a	n/a	n/a	n/a	n/a	n/a
B - Beeches Avenue	9999	10	1560	9999	57	9999
C - A27 east	0.04	0	15.5	0.11	0	30

Table 6-2: Beeches Avenue / A27 operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A27 west	n/a	n/a	n/a	n/a	n/a	n/a
B - Beeches Avenue	9999	4	1530	9999	28	9999
C - A27 east	0.05	0	14.5	0	0	22.8

Table 6-1 and Table 6-2 show that for both the AM and PM peak periods the turning movement from Beeches Avenue on to the A27 (both directions) is operating over capacity and causing delay for vehicles making this movement. This is a result of the high vehicle flow travelling on the A27 in both directions. There is no give way on the A27 west arm and therefore the results are marked as 'n/a'.

POULTERS LANE / OFFINGTON LANE

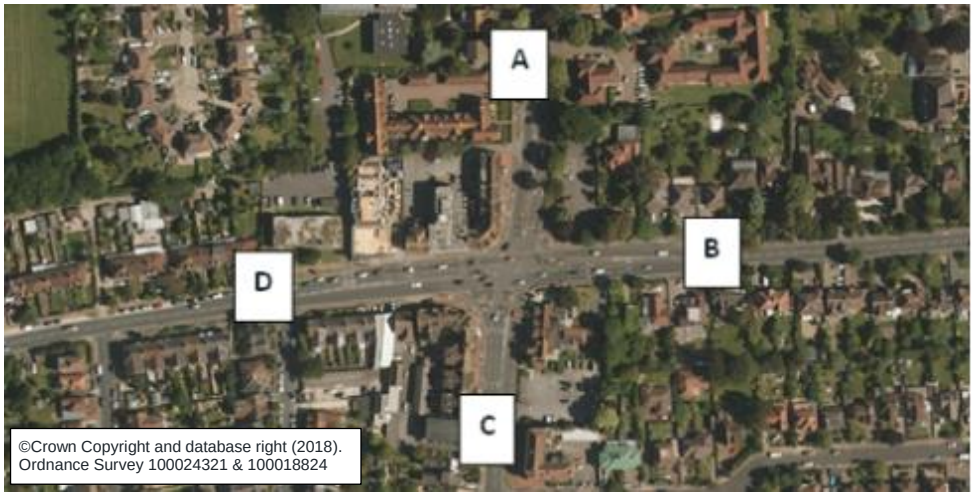

Table 6-3: Poulters Lane / Offington Lane operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	DoS	MMQ (pcu)	Delay (s)	DoS	MMQ (pcu)	Delay (s)
A - Offington Lane	141%	146	642	171%	225	897
B - Poulters Lane east (lane 1)	92%	21	79	125%	151	450
B - Poulters Lane east (lane 2)	11%	1	63	12%	1	65
C - A2031 Rectory Road south (lane 1)	136%	110	580	169%	201	870
C - A2031 Rectory Road south (lane 2)	0%	0	42	1%	0	42
D - A2032 Littlehampton Rd west (lane 1)	141%	143	631	173%	347	888
D - A2032 Littlehampton Rd west (lane 2)	0%	0	0	45%	3	75

Table 6-4: Poulters Lane / Offington Lane operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	DoS	MMQ (pcu)	Delay (s)	DoS	MMQ (pcu)	Delay (s)
A - Offington Lane	128%	92	508	159%	170	816
B - Poulters Lane east (lane 1)	96%	25	95	150%	226	719
B - Poulters Lane east (lane 2)	42%	2	71	52%	3	78
C - A2031 Rectory Road south (lane 1)	132%	128	528	167%	322	855
C - A2031 Rectory Road south (lane 2)	6%	1	35	1%	0	31
D - A2032 Littlehampton Rd west (lane 1)	46%	6	526	164%	240	836
D - A2032 Littlehampton Rd west (lane 2)	131%	114	0	0%	0	0

Table 6-3 and Table 6-4 show that all approach arms to this junction are operating over capacity for both the AM and PM peak periods in the WLP Sites scenario.

A259 / A2032 / GORING ST ROUNDABOUT

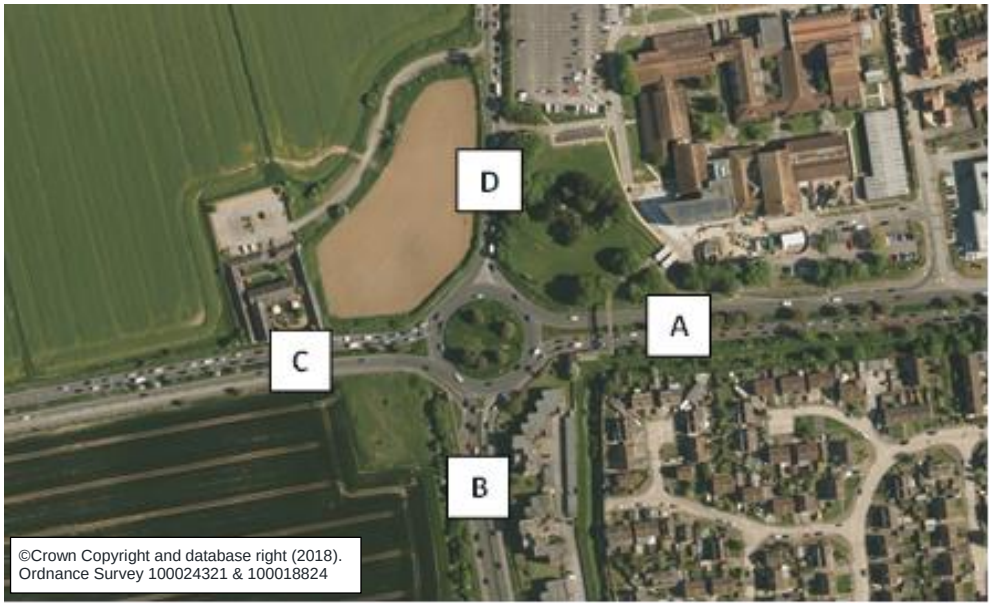

Table 6-5: A259 / A2032 / Goring Street roundabout operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 Littlehampton Road east	0.58	1.5	5	0.65	2	6
B - Goring Street south	0.80	4	15	1.18	116	282
C - A259 Littlehampton Road west	1.03	49	82	1.24	254	501
D - Titnore Lane	1.65	133	1024	2.23	458	3952

Table 6-6: A259 / A2032 / Goring Street roundabout operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 Littlehampton Road east	0.78	4	11	0.81	4	12
B - Goring Street south	0.95	14	47	1.20	126	317
C - A259 Littlehampton Road west	0.98	22	44	1.09	96	156
D - Titnore Lane	1.34	81	455	1.93	320	2109

Table 6-5 and Table 6-6 show that the approaches from Goring Street, A259 and Titnore Lane are operating over capacity for both the Do Minimum and WLP sites scenarios in both AM and PM peak periods. The impact of the WLP sites traffic is to increase the demand on the junction which increases the level of queueing on the over-capacity arms of the junction.

DOMINION ROAD / DOMINION WAY

Table 6-7: Dominion Road / Dominion Way operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	DoS	MMQ (pcu)	(Delay (s)	DoS	MMQ (pcu)	Delay (s)
A - Dominion Way	22%	1	9	43%	2	37
B - B2223 Dominion Road south	35%	3	18	54%	4	9
C - B2223 Dominion Road west	26%	2	13	53%	4	24

Table 6-8: Dominion Road / Dominion Way operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	DoS	MMQ (pcu)	(Delay (s)	DoS	MMQ (pcu)	Delay (s)
A - Dominion Way	33%	2	17	63%	6	27
B - B2223 Dominion Road south	38%	4	23	57%	7	14
C - B2223 Dominion Road west	33%	3	16	63%	6	24

Table 6-7and Table 6-8 show that the junction of Dominion Road / Dominion Way is operating within capacity for both the AM and PM peak periods.

BARRINGTON ROAD / SHAFTESBURY AVENUE

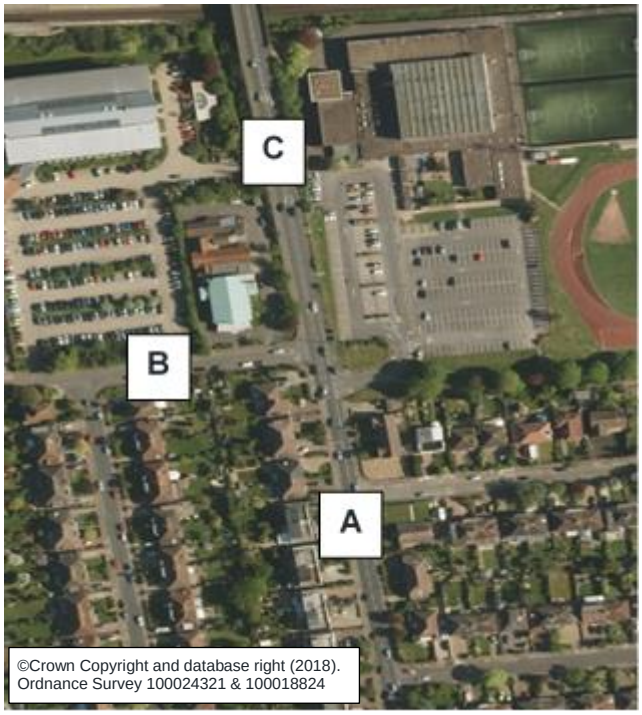

Table 6-9: Barrington Road / Shaftesbury Avenue operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Shaftesbury Avenue south	0.30	1	3	0.35	1	3
B - Barrington Road	0.12	1	13	0.68	2	28
C - Shaftesbury Avenue north	0.04	0	8	0.40	1	11

Table 6-10: Barrington Road / Shaftesbury Avenue operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Shaftesbury Avenue south	0.39	1	4	0.31	1	3
B - Barrington Road	0.15	1	16	0.53	1	16
C - Shaftesbury Avenue north	0.04	0	7	0.31	0	9

Table 6-9 and Table 6-10 show that the junction of Barrington Road / Shaftesbury Avenue is operating within capacity for both the AM and PM peak periods.

A27 / A280 / TITNORE LANE

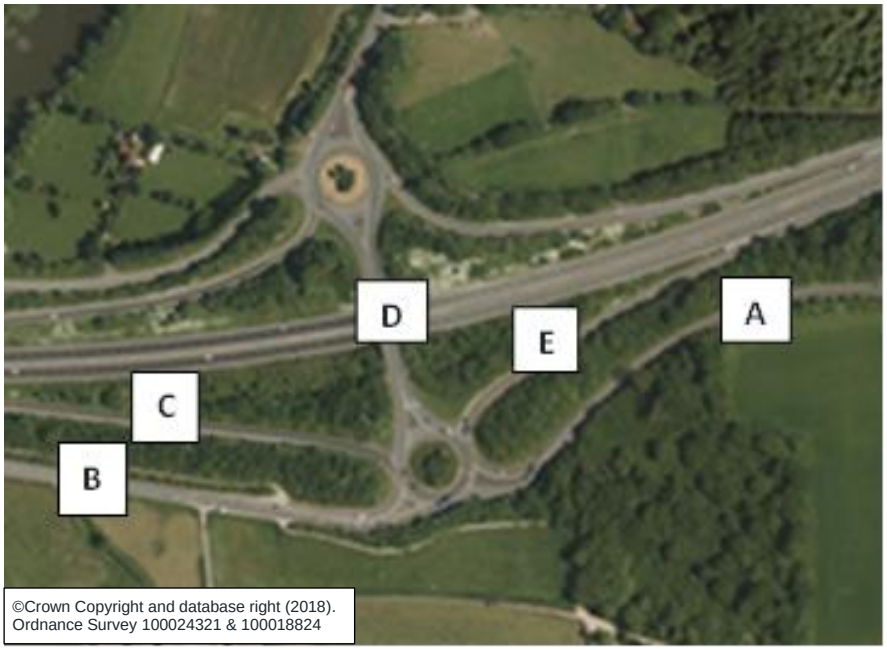

Table 6-11: A27 / A280 / Titnore Lane operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Titnore Lane	0.39	1	4	0.52	1	5
B - A280 West	0.71	3	12	0.83	5	21
C – A27 On-Slip	n/a	n/a	n/a	n/a	n/a	n/a
D - A280 North	0.64	2	6	0.74	3	8
E - A27 Off-Slip	0.19	0	4	0.22	0	5

Table 6-12: A27 / A280 / Titnore Lane operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Titnore Lane	0.54	1	7	0.63	2	8
B - A280 West	0.66	2	11	0.81	4	21
C – A27 On-Slip	n/a	n/a	n/a	n/a	n/a	n/a
D - A280 North	0.84	5	12	0.97	18	38
E - A27 Off-Slip	0.30	0	6	0.40	1	8

Table 6-11 and Table 6-12 show that all approach arms are operating within capacity for this junction, which is just outside the Worthing Borough Boundary. The approach from A280 west is close to operational capacity in the PM peak and exceeds an RFC of 0.85, however any queueing would not present a material impact upon the overall performance of the junction, with the delay remaining less than a minute for all approaches.

A259 / GORING WAY / ALDSWORTH AVENUE

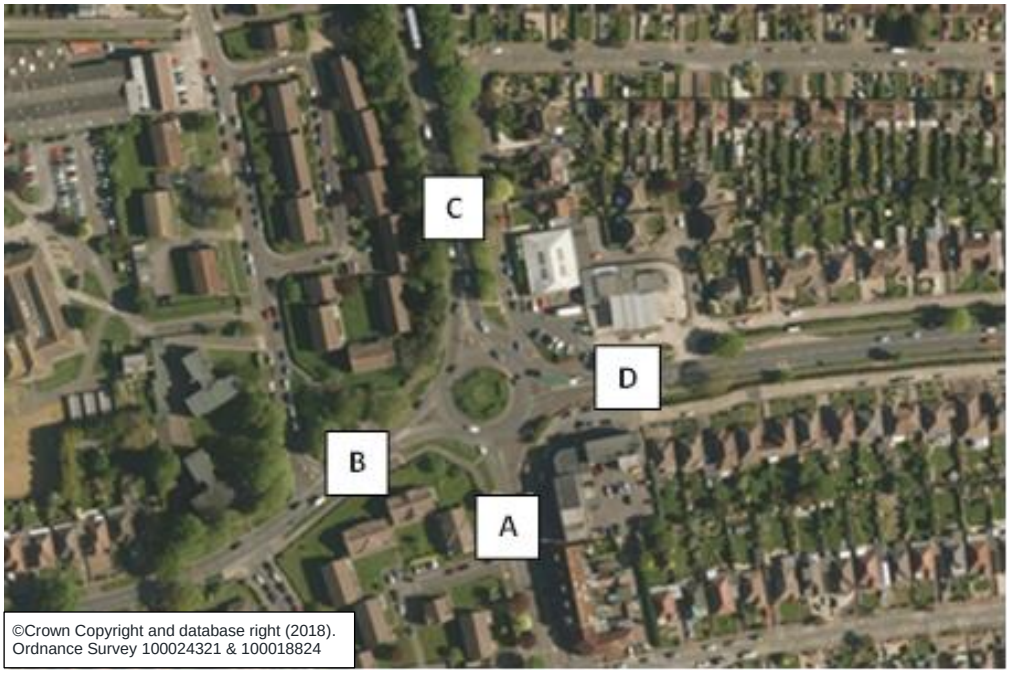

Table 6-13: A259 / Goring Way / Aldsworth Avenue operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Aldsworth Avenue	0.08	0	3	0.21	0	4
B - Goring Way	0.27	0	4	0.36	1	5
C - A259 North	0.57	1	6	0.68	2	8
D - A259 East	0.45	1	4	0.52	1	5

Table 6-14: A259 / Goring Way / Aldsworth Avenue operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Aldsworth Avenue	0.18	0	5	0.30	0	7
B - Goring Way	0.17	0	4	0.22	0	4
C - A259 North	0.74	3	9	0.88	7	18
D - A259 East	0.75	3	10	0.89	7	22

Table 6-13and Table 6-14 show that all approach arms are operating within capacity for this junction for both the AM and PM peak periods. The A259 North and East arms exceed 0.85 in the PM peak however this does not result in a significant level of queueing or delay on the approaches to the junction.

DURRINGTON LANE / A2032 / THE BOULEVARD

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Table 6-15: Durrington Lane / A2032 / The Boulevard operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard	0.49	1	5	0.60	2	7
B - Littlehampton Road	0.73	3	7	0.88	7	16
C - Durrington Lane	1.01	20	98	1.42	119	545
D - A2032	0.76	3	11	0.84	5	15

Table 6-16: Durrington Lane / A2032 / The Boulevard operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard	0.71	2	10	0.78	3	13
B - Littlehampton Road	0.66	2	6	0.76	3	8
C - Durrington Lane	0.81	4	22	1.00	19	90
D - A2032	0.95	14	35	1.07	61	124

Table 6-15 and Table 6-16 show that the Durrington Lane North approach is operating over capacity in the Do Minimum AM peak scenario and exceeds capacity for both the AM and PM peak periods in the WLP Sites scenario. The approach from A2032 east is also operating over capacity in the PM peak.

POULTERS LANE / A2032

Table 6-17: Poulters Lane / A2032 operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 South	0.88	7	41	0.94	10	58
B - Poulters Lane	1.42	240	1015	1.42	249	1050
C - A2032 North	1.07	42	162	1.09	46	193

Table 6-18: Poulters Lane / A2032 operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 South	1.31	123	577	1.31	126	585
B - Poulters Lane	1.25	118	569	1.25	121	568
C - A2032 North	0.88	7	33	0.88	7	34

Table 6-16 and Table 6-17 show that all approach arms are experiencing capacity issues for either the AM or PM peak in both Do Minimum and WLP Sites scenarios. However, the additional traffic generated by the WLP sites does not materially worsen performance at the junction above Do Minimum conditions.

ARDSHEAL ROAD / A24

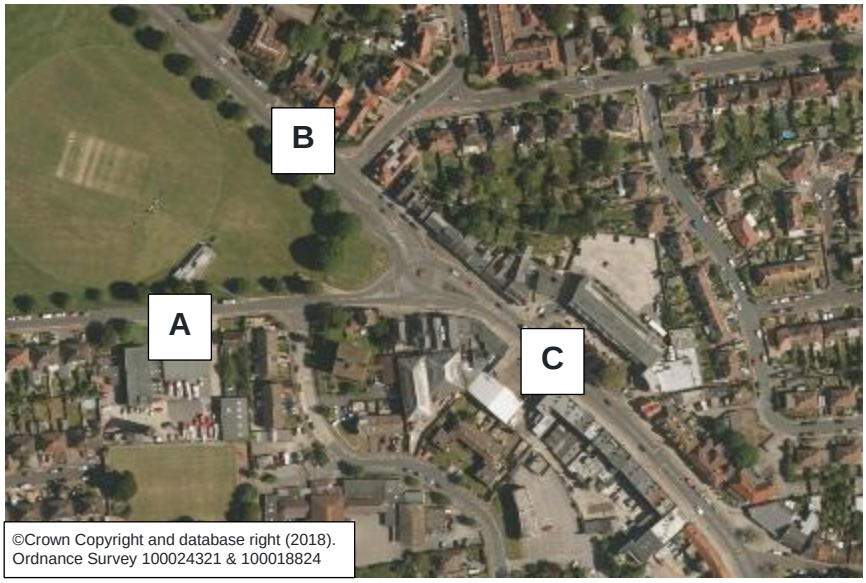

Table 6-19: Ardsheal Road / A24 operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Ardsheal Road	0.89	8	26	1.02	32	91
B - A24 North	0.08	0	3	0.13	0	3
C - A24 South	0.40	1	3	0.45	1	4

Table 6-20: Ardsheal Road / A24 operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - Ardsheal Road	0.43	1	5	0.51	1	6
B - A24 North	0.28	0	3	0.29	0	3
C - A24 South	0.47	1	3	0.49	1	4

Table 6-19 and Table 6-20 show the junction is approaching capacity in the AM peak Do Minimum scenario on the Ardsheal Road West arm of the junction. This approach exceeds capacity with the WLP sites scenario. This is a result of an increase in traffic travelling from South Farm Road on to Ardsheal Road to continue their journey on the A24. All other arms of the junction operate within capacity.

LYONS WAY / UPPER BRIGHTON ROAD / A27

Table 6-21: Lyons Way / Upper Brighton Road / A27 operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	DoS	MMQ (pcu)	Delay (s)	DoS	MMQ (pcu)	Delay (s)
A - Upper Brighton Road (lane1)	34.4	6	13	46.7	8	19
A - Upper Brighton Road lane 2)	24.5	1	71	32.8	2	74
B - A27 west (lane 1)	69.3	20	17	69.4	20	17
B - A27 west (lane 2)	69.3	20	17	69.4	20	17
B - A27 west (lane 3)	68.4	20	17	68.4	20	17
B - A27 west (lane 4)	64.6	4	81	61.3	4	75
C - Lyons Way (lane 1)	0	0	0	17.3	0	4
C - Lyons Way (lane 2)	1.5	0	67	2.3	0	67
C - Lyons Way (lane 3)	28.7	1	63	39.6	2	66
C - Lyons Way (lane 4)	28.3	1	63	39.9	2	66
D - A27 east (lane 1)	66.1	18	13	67.2	18	14
D - A27 east (lane 2)	36.3	8	14	38.4	9	15
D - A27 east (lane 3)	23.1	1	73	28.3	1	75

Table 6-22: Lyons Way / Upper Brighton Road / A27 operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	DoS	MMQ (pcu)	Delay (s)	DoS	MMQ (pcu)	Delay (s)
A - Upper Brighton Road (lane1)	12.7	2	5	14.4	2	6
A - Upper Brighton Road lane 2)	22.2	1	72	34.5	2	75
B - A27 west (lane 1)	69.7	19	16	72.6	20	17
B - A27 west (lane 2)	69.7	19	16	72.6	20	17
B - A27 west (lane 3)	66.3	19	16	69.0	21	17
B - A27 west (lane 4)	66.8	6	73	68.5	6	75
C - Lyons Way (lane 1)	0	0	0	13.8	0	4
C - Lyons Way (lane 2)	25.7	1	73	33.5	2	75
C - Lyons Way (lane 3)	26.6	1	64	29.7	1	64
C - Lyons Way (lane 4)	26.0	1	64	29.3	1	64
D - A27 east (lane 1)	65.3	18	22	68.5	19	23
D - A27 east (lane 2)	66.2	19	22	69.3	21	23
D - A27 east (lane 3)	44.9	2	82	55.3	3	89

Table 6-21 and Table 6-22 show that the junction of Lyons Way / Upper Brighton Road / A27 operates within capacity for both the AM and PM peaks in both Do Minimum and WLP Sites scenarios. There is negligible difference in the performance of the junction between each scenario.

TEVILLE ROAD / A24

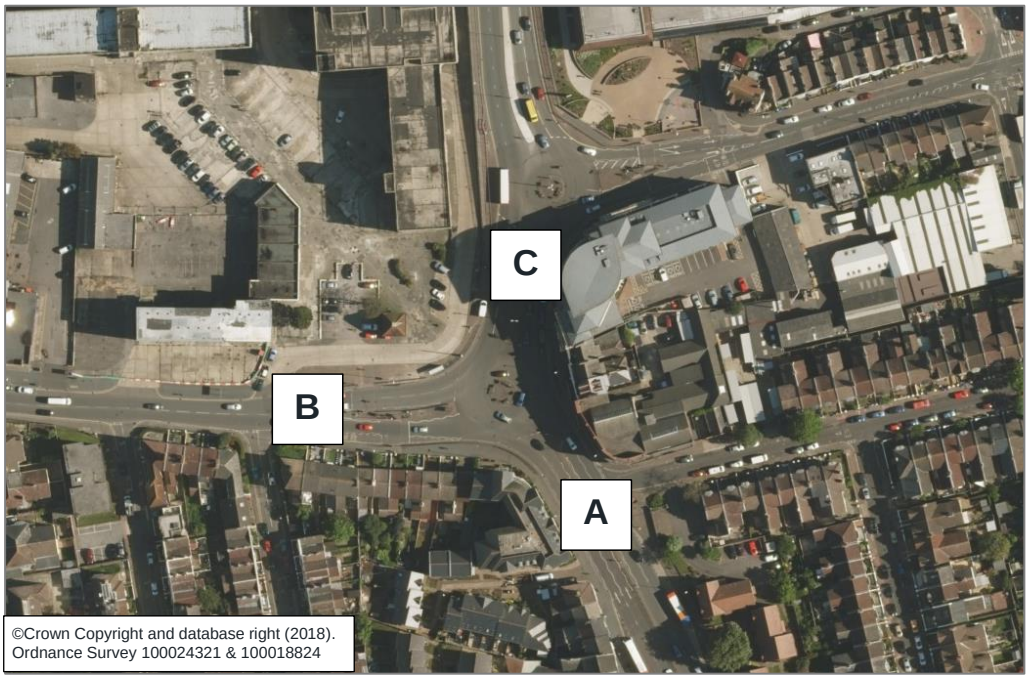

Table 6-23: Teville Road / A24 operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A24 South	0.30	1	2	0.34	1	2
B - Teville Road	0.38	1	3	0.50	1	4
C - A24 North	0.20	0	2	0.19	0	2

Table 6-24: Teville Road / A24 operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A24 South	0.26	0	2	0.29	0	3
B - Teville Road	0.22	0	2	0.24	0	2
C - A24 North	0.39	1	2	0.45	1	3

Table 6-23 and Table 6-24 show that all approach arms are operating within capacity for the AM and PM peak periods at this junction in both Do Minimum and WLP sites scenarios.

6.3 SENSITIVITY TEST

Additional operational assessments were undertaken for junctions that experience flow reduction with the exclusion of the Goring-Ferring and Chatsmore Farm sites (Sensitivity Test 2) from the local plan. The forecast flows from Sensitivity test 2 are provided only in order to illustrate the operational impacts of reducing the level of land use. The junctions identified for operational assessment are the A2032 junctions with Durrington Lane and with the A259 / Goring Street which have been identified as experiencing capacity issues in the full local plan scenario.

DURRINGTON LANE / A2032 / THE BOULEVARD

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Table 6-25: Durrington Lane / A2032 / The Boulevard operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites			Sensitivity 2		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard	0.49	1	5	0.60	2	7	0.62	2	7
B - Littlehampton Road	0.73	3	7	0.88	7	16	0.85	6	12
C - Durrington Lane	1.01	20	98	1.42	119	545	1.40	121	532
D - A2032	0.76	3	11	0.84	5	15	0.82	5	14

Table 6-26: Durrington Lane / A2032 / The Boulevard operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites			Sensitivity 2		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard	0.71	2	10	0.78	3	13	0.78	4	13
B - Littlehampton Road	0.66	2	6	0.76	3	8	0.74	3	8
C - Durrington Lane	0.81	4	22	1.00	19	90	0.95	12	61
D - A2032	0.95	14	35	1.07	61	124	1.06	60	121

Table 6-25 and Table 6-26 show that for the Durrington Lane / A2032 junction there has been an overall reduction in vehicle delay in both the AM and PM peak periods. In the PM peak the approach from Durrington Lane reduces from an RFC of 1.00 in the 'full WLP sites' scenario to 0.95 in the sensitivity test scenario. This compares to an RFC in the Do Minimum scenario of 0.81. The approaches from Durrington Lane in the AM peak and A2032 East in the PM peak are still operating over capacity in the sensitivity test scenario.

A259 / A2032 / GORING ST ROUNDABOUT

Table 6-27: A259 / A2032/ Goring Street roundabout operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites			Sensitivity 2		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard	0.58	1.5	5	0.65	2	6	0.63	2	6
B - Littlehampton Road	0.80	4	15	1.18	116	282	0.90	8	28
C - Durrington Lane	1.03	49	82	1.24	254	501	1.12	123	185
D - A2032	1.65	133	1024	2.23	458	3952	2.07	330	2400

Table 6-28: A259 / A2032/ Goring Street roundabout operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites			Sensitivity 2		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard	0.78	4	11	0.81	4	12	0.78	4	11
B - Littlehampton Road	0.95	14	47	1.20	126	317	1.06	46	124
C - Durrington Lane	0.98	22	44	1.09	96	156	1.06	69	112
D - A2032	1.34	81	455	1.93	320	2109	1.63	196	1228

Table 6-27 and Table 6-28 show that for the Goring Street roundabout there has been an overall reduction in vehicle delay for both the AM and PM peak periods relative to the 'full WLP sites'. In the AM peak, the approach from Goring Street south reduces from an RFC of 1.18 in the 'full WLP sites' scenario to 0.90 in the sensitivity test scenario as a result of the reduction in opposing flow. This compares to an RFC of 0.80 in the Do Minimum.

The approaches from Littlehampton Road and Titnore Lane in the AM peak, and A2032 East, in the PM peak, are still operating over capacity in the sensitivity test scenario although the delays have decreased.

7 MITIGATION PACKAGE

7.1 INTRODUCTION

This section of the report details the potential measures proposed to mitigate the impact of the Worthing Local Plan development sites. Where measures are related to specific developments, these would be developed and taken forward through a development management and planning application process. Wider funding opportunities are described later in this section.

7.2 PROPOSED SCHEMES

A259 / A2032 ROUNDABOUT

The evidence base provided in this report has identified that the junction of A259 / A2032 would be operating over capacity in the forecast year scenario with the inclusion of the Worthing Local Plan developments. A re-design of the roundabout is proposed to accommodate the additional flow provided by the Worthing Local Plan developments.

Figure 7-1 illustrates the proposed scheme which includes providing additional capacity for the junction by widening the approach lanes from Littlehampton Road and Goring Street from 2 to 3 lanes and the approach from Titnore Lane from 1 lane to 2 lanes. The southern side of the roundabout will also be widened from 2 to 3 lanes. Design drawings of the scheme have been included in Appendix F. This drawing serves to illustrate the broad level of intervention only rather than a final design.

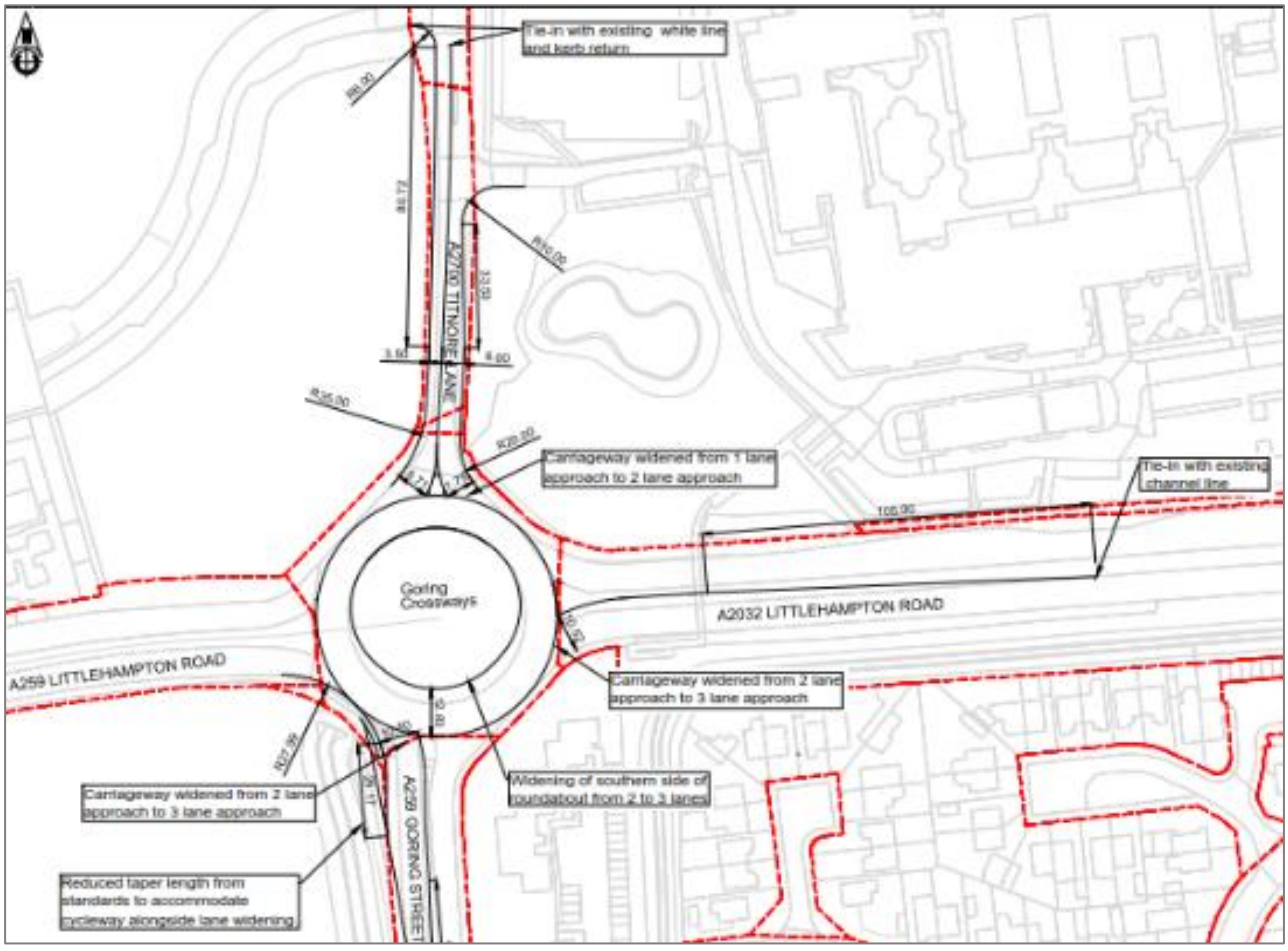


Figure 7-1: A259 / A2032 roundabout improvements

The illustrative scheme preserves the potential to improve the footway provision on the south-east corner of the junction as a means to provide improved connections between Goring Street and the grade separated crossing over A2032 Littlehampton Road to the east of the junction.

Operational assessment was undertaken for this scheme using the same vehicle flow data used for the Worthing Local Plan junction assessment for this location. Table 7-1and Table 7-2 below detail the outputs of the junction modelling for the AM and PM peak respectively.

Table 7-1: A259 / A2032 / Goring Street roundabout mitigation results (AM Peak)

Approach Arm	Do Minimum			WLP Sites (with mitigation)		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 Littlehampton Road east	0.58	1.5	5	0.51	1	4
B - Goring Street	0.80	4	15	0.67	2	6
C - A259 Littlehampton Road west	1.03	49	82	1.20	190	336
D - Titnore Lane	1.65	133	1024	0.86	6	27

Table 7-2: A259 / A2032 / Goring Street roundabout mitigation results (PM Peak)

Approach Arm	Do Minimum			WLP Sites (with mitigation)		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 Littlehampton Road east	0.78	4	11	0.64	2	5
B - Goring Street	0.95	14	47	0.71	2	6
C - A259 Littlehampton Road west	0.98	22	44	1.12	113	181
D - Titnore Lane	1.34	81	455	0.81	4	19

The highway mitigation for this junction illustrates that the performance of the junction is returned to a level that is overall similar to the Do Minimum scenario. A residual capacity issue is indicated on the A259 Littlehampton Rd W arm as no specific capacity improvement has been assumed on that arm. The conditions on the other three arms that are subject to mitigation show an improvement in performance over Do Minimum conditions. Another means of comparison is the maximum value of average delay (in seconds) per arriving vehicle at the junction. For the Do Minimum scenario this value is 171 and 89 seconds for the AM and PM peaks respectively. For the WLP sites with mitigation scenario this reduces to 87 and 57seconds for the AM and PM respectively.

The sensitivity tests indicate that this junction is the primary access junction to the wider primary road network for the Goring – Ferring gap site. Therefore, a further test has been undertaken to consider the performance of the junction based on Sensitivity Test 2. The results of this tests are presented in Table 7-3 and Table 7-4. The results show with the highway mitigation at this junction all the approaches are operating within capacity with the exception of A259 Littlehampton Road for both the AM and PM peaks.

The exclusion of these sites from the Local Plan proposals provide a junction that operates closer to operational capacity conditions, with a residual issue on the A259 Littlehampton Rd West that could be mitigated through a modest revision to the approach from this arm, or through the effect of sustainable travel measures.

Table 7-3: A259 / A2032 / Goring Street roundabout operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites (mitigation)			Sensitivity 2 (mitigation)		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 Littlehampton Road E	0.58	1.5	5	0.51	1	4	0.52	1	4
B - Goring Street	0.80	4	15	0.67	2	6	0.57	1	5
C - A259 Littlehampton Road W	1.03	49	82	1.20	190	336	1.12	127	191
D - Titnore Lane	1.65	133	1024	0.86	6	27	0.85	5	26

Table 7-4: A259 / A2032 / Goring Street roundabout operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites (mitigation)			Sensitivity 2 (mitigation)		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - A2032 Littlehampton Road E	0.78	4	11	0.64	2	5	0.62	2	5
B - Goring Street	0.95	14	47	0.71	2	6	0.65	2	5
C - A259 Littlehampton Road W	0.98	22	44	1.12	113	181	1.08	85	137
D - Titnore Lane	1.34	81	455	0.81	4	19	0.73	3	13

Road Safety

Safety considerations in relation to the existing junction and the concept scheme are described in this section. The scheme remains illustrative at this stage; however the following safety review will help inform the further evolution of any mitigation schemes that may come forward in this location.

A key consideration for further design development relates to the loss of deflection at the roundabout, particularly for westbound vehicles. The speed limit is currently 50mph. During off-peak periods, the combination of lower traffic volumes than peak periods, the wider approach and smaller roundabout could lead to increased speeds. This may increase the likelihood of collisions due to poor observations and excessive speed. Measures to limit the potential for increasing speed will need to be considered.

Aside from the matter of deflection, the widening of the westbound approach is unlikely to be a safety issue. The lane widths are appropriate for an urban setting. Large vehicles would need to straddle lanes and command the road space which is typical in urban environments.

Widening the northbound approach creates a three-lane uncontrolled crossing. During peak flows, there may be a combination of flowing and queueing lanes, encouraging pedestrians to pass between stationary vehicles and then being faced with a clear lane with limited visibility. Road users in the clear lane may not be anticipating pedestrians crossing, and would have limited visibility due to the parked vehicles. The provision for a controlled crossing may be appropriate, particularly when considering increased movements as a result of development at Chatsmore Farm.

A2032 / THE BOULEVARD / DURRINGTON LANE ROUNDABOUT

The operational assessment has illustrated an emerging capacity issue at a further junction along the A2032. An illustrative improvement to this roundabout is proposed to resolve the forecast queueing and delay identified earlier in this report and this is presented in Figure 7-2.

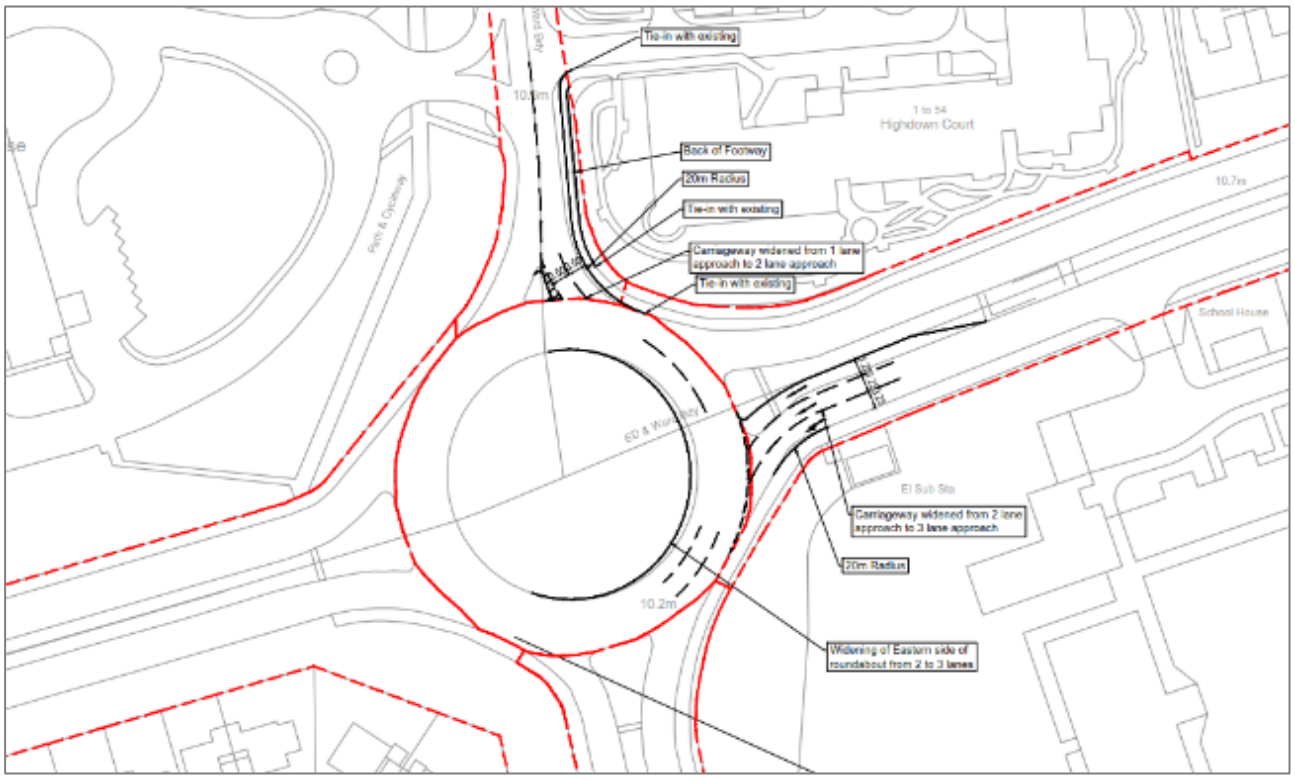


Figure 7-2: A2032 / The Boulevard roundabout improvements

The junction performance with this improvement is presented in Table 7-5 and Table 7-6. The results show a similar level of performance overall between the Do Minimum and WLP sites with mitigation scenarios.

Table 7-5: A2032/The Boulevard roundabout operational assessment results (AM Peak)

Approach Arm	Do Minimum			WLP Sites (with mitigation)		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard south	0.49	1	5	0.60	2	7
B - Littlehampton Road west	0.73	3	7	0.88	7	16
C - Durrington Lane north	1.01	20	98	1.02	23	103
D - A2032 east	0.76	3	11	0.61	2	5

Table 7-6: A2032/The Boulevard roundabout operational assessment results (PM Peak)

Approach Arm	Do Minimum			WLP Sites (with mitigation)		
	RFC	MMQ (pcu)	Delay (s)	RFC	MMQ (pcu)	Delay (s)
A - The Boulevard South	0.71	2	10	0.81	4	16
B - Littlehampton Road West	0.66	2	6	0.77	3	9
C - Durrington Lane North	0.81	4	22	0.76	3	15
D - A2032 East	0.95	14	35	0.74	3	7

The benefits provided by the improvement to the A2032 / The Boulevard roundabout have not been considered against the sensitivity test scenario (excluding Goring Ferring Gap and Chatsmore Farm). The reduction in flows at this junction are modest in this scenario, and the junction has been demonstrated to function at or within capacity, with minimal levels of queuing. Further performance improvements would be achieved with the further reduction in private car trips that would result from investment in sustainable travel measures.

Road Safety

Safety considerations in relation to the existing junction and the concept scheme are described in this section for the illustrative scheme.

Widening the westbound approach creates a three-lane uncontrolled crossing, although formal provision is located a short distance further east on this arm. A review of the usage of this uncontrolled crossing will help to determine whether there is a desire line given the proximity to the controlled crossing.

The width of the southbound approach to the junction along Durrington Lane will need to be considered further. As scoped, there are parts of the approach to the give way line that are circa 5m wide and this would encourage the offside queueing vehicle to overhang the centre line. This could be addressed through further design development.

The speed limit along the route changes immediately to the west of the roundabout, the position of which could be reviewed.

OTHER JUNCTIONS

Road Safety

A number of notable existing collision cluster locations were identified and described in Section 5.4. The A259 / A2032 / Titnore Lane roundabout, A2032 / Yeoman Road / Palatine Road roundabout and A2032 / Durrington Lane / The Boulevard roundabout all have approach arms with 50 mph speed limits. Reducing speed should be the priority at these locations, and there are several mitigation measures on the approach to the roundabouts that may be appropriate for this. Rumble strips would be most effective, however, they can only be used in locations without residential properties nearby, for example, the A259 approach arm. In other locations, Vehicle Activated Signs (VAS) warning drivers of their speed would be most appropriate. To reduce the likelihood of accidents involving pedestrians, warning signs alerting drivers to look out for pedestrians on the approach arms without signalised pedestrian crossings may be appropriate. There are currently no safety measures for cyclists at these roundabouts, and the provision of road markings or a cycle lane on the pavement may be appropriate, particularly on the roundabout with The Boulevard, which has two schools in close proximity.

At the A2032 / Offington Lane signalised junction, a series of accidents on the eastbound and westbound A2032 approaches could be made less likely by using improved road markings indicating the road number and destination of each lane. This would prevent confusion during the sudden change from one lane to three lanes.

The A259 / Goring Way roundabout and its immediate vicinity have a potentially confusing layout, with several minor service roads leading to shops, a filling station and other businesses. Clearer signage and road markings would be useful for drivers and pedestrians while trying to navigate the roundabout.

The B2223 between Sompting Road and Dominion Way is a congested road with eight junctions over a short distance as well as multiple driveways and parked vehicles along most of the road. Traffic calming measures such as speed cushions or speed tables would slow down traffic and reduce risk of accidents, with the latter making it easier for pedestrians to cross the road, a particularly important consideration given the two primary schools situated down this stretch of road. A pelican crossing may be more appropriate if pedestrians are crossing the road frequently.

SUMMARY OF MITIGATION LOCATIONS

Figure 7-3 illustrates the locations where highway capacity and road safety mitigation has been considered and described in this report. The figure also illustrates the location of the local plan sites, and provided the traffic flow differences between the full Worthing Local Plan sites scenario and the Do Minimum scenario (as per Figure 5-14). Further areas of potential walking and cycling intervention are described later in this chapter.

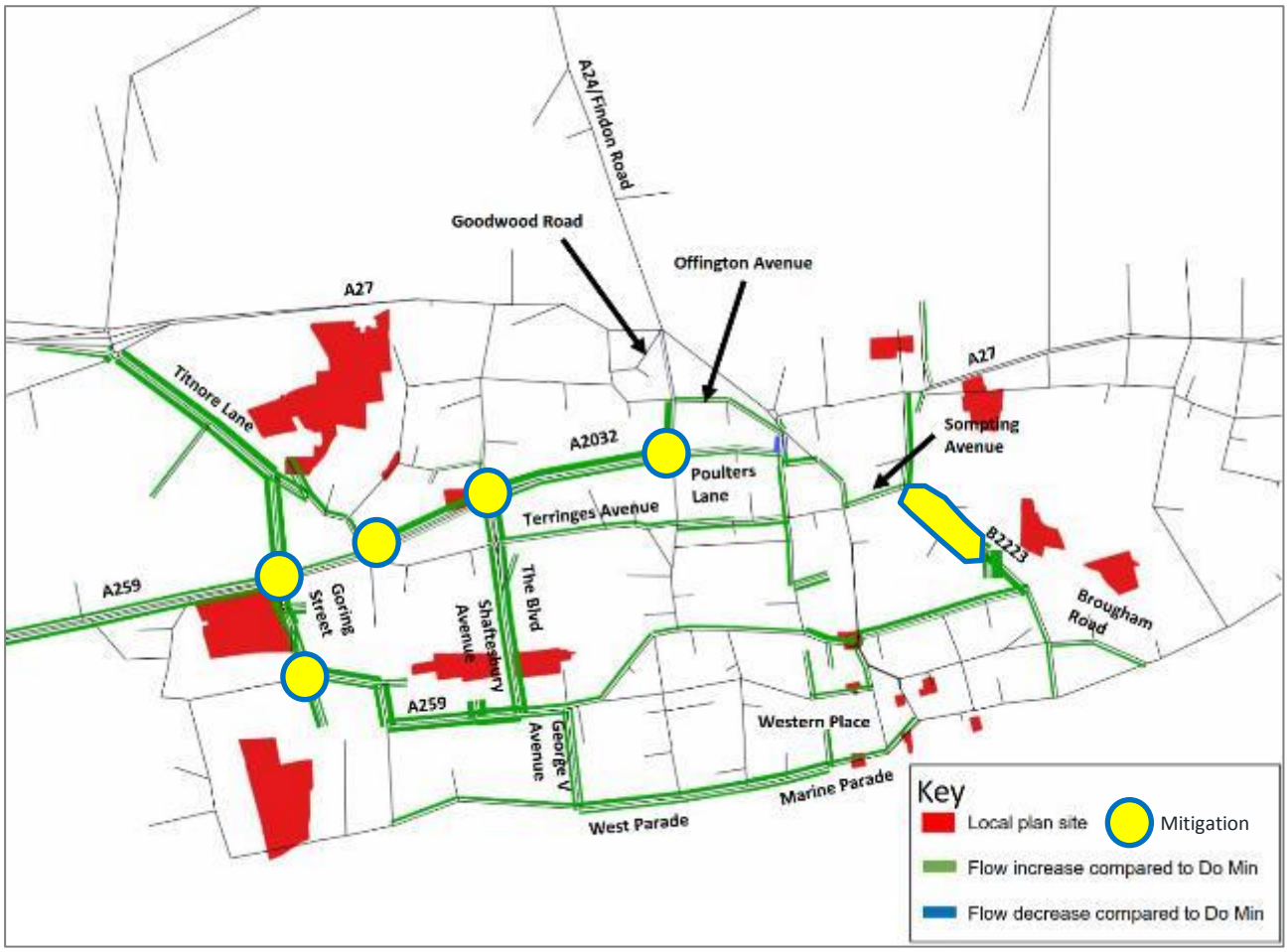


Figure 7-3: Illustration of mitigation locations

STRATEGIC ROAD NETWORK IMPROVEMENTS

Highways England are developing the A27 Worthing and Lancing RIS scheme and have consulted on an option which would improve the existing route that runs through the north of Worthing. The scheme is being developed and promoted separately from the Worthing Local Plan transport assessment, however the RIS scheme's forecasting methodology and design accounts for growth in Worthing and through to a forecast year of 2041, well beyond the 2033 horizon for the Worthing Local Plan.

The effect of the RIS scheme is to improve conditions on the existing A27 and remove some of the capacity issues that would otherwise in future result in an increasing volume of traffic utilising the local road network to avoid significant congestion and delay on the SRN. This is evident in the forecast traffic growth presented in this transport assessment, which shows growth focused on the A2032 corridor, and limited or no traffic growth on the A27 due to capacity constraints. As such, the implementation of the RIS scheme has been forecast to help to manage the potential future level of traffic volume on the A2032, and on other routes, and therefore mitigate potential future operational issues on the local road network. The further development of any highway measures on the A2032 should be undertaken in the context of potential future reductions in forecast traffic volumes resulting from the RIS scheme.

SUSTAINABLE TRANSPORT MEASURES

Promotion and delivery of sustainable transport measures provides a means to manage the level of vehicular trip generation from new developments. These measures should respond to the problems and opportunities within a particular area, and draw on best practice in sustainable transport scheme delivery nation-wide, for example through taking on board the outcomes of the Local Sustainable Transport Fund (LSTF) [35].

A set of measures that can be considered applicable to the Worthing Local Plan development sites are described within this section. In addition, WSCC and WBC are undertaking a study to develop WASTP, a sustainable transport package for Worthing area. This study will propose a range of transport improvement schemes which may support or mitigate the impacts Worthing Local Plan development.

Travel Plan Networking

Travel plan networks can help employers promote sustainable commuting and business travel, and reduce parking pressures at their sites. Such networks can also provide a forum to share best practice and explore opportunities for joint working. Subscription networks that employers can join are operated by ‘easit’. Member benefits include:

- 15% discount on Southern Rail network
- discounted bus tickets
- bike loans, including for folding and electric bikes
- travel planning

Through collaborative working, travel plan networks can also help secure travel discounts and other employee benefits. At present, there are no travel plan networks operating in the Worthing area.

TRAVEL INFORMATION PACKS

Residential

Upon occupation, residents could receive a Travel Information Welcome Pack. Through the information provided, residents would be in a better position to make informed choices about how they choose to travel to and from the development. The pack could include:

[35] https://www.gov.uk/government/publications/local-sustainable-transport-fund-what-works

- The benefits that having a travel plan brings to individuals, the wider community and to the environment;
- The incentives and offers available to residents to encourage sustainable travel;
- Up-to-date public transport timetables and information about the free public transport journey planner apps that are available, such as UK Bus Checker and National Rail Enquiries
- Information on websites such as Travel West Sussex and Traveline that provide timetable and real-time information for public transport, the location of planned roadworks on the road network, real-time car park capacity information and cycle journey planner
- Pedestrian and cycle route maps from the development to and from the surrounding area, including access to the nearest local facilities (such as schools, doctors and dentist surgeries, the post office etc.), bus stops and rail stations;
- Details of local retail outlets that provide home delivery services;
- Brief summary note about the status of local School Travel Plans, including any noteworthy initiatives that have been or are planned to be implemented; and
- Information on which broadband providers are available from the exchange serving the site and their residential unit.

Retail

A version of the aforementioned Travel Information Welcome Pack could be prepared and provided to all retail occupiers for distribution to their staff.

The contents of the pack can be updated as necessary and delivered to each new employee (by their employer) prior to their first day of employment. This will help to ensure that all employees are able to consider the sustainable transport options available to them prior to commencing work, before they form travel habits, and that the promotion of sustainable travel forms an active part of their employment induction process.

CAR SHARE AND CAR CLUB MEMBERSHIP

To ensure the most efficient use of cars that do travel to and from the site, residents will be encouraged to car share wherever possible. Furthermore, WSCC promote existing car clubs in West Sussex and their further use is being encouraged. This will help to reduce the overall number of car journeys being made in the first instance, whilst encouraging a pattern of more efficient car use amongst residents.

The West Sussex Carshare scheme has been set up by WSCC to enable people who live or work in the county to car share for commuting and other journeys. It is free to join and matches drivers with passengers to share journeys to and from work. The scheme can be used by individuals and employers, who are encouraged to set up private car share groups for their employees.

In addition to the information on these schemes, contained in the Travel Information Welcome Pack, residents could also be presented with the opportunity for free membership to one of these schemes.

WSCC and WBC encourage car clubs.

PERSONALISED JOURNEY PLANNING

Personalised travel planning is a service that local authorities can provide if it is financially viable for them to appoint a Travel Plan Coordinator (TPC). TPCs use the information provided by a resident to prepare a ‘Personal Travel Plan’ for that resident free of charge. Personal Travel Plans are based on individual lifestyles and the available transport options for their everyday journeys.

WALKING AND CYCLING

New Infrastructure

There are existing cycling routes and infrastructure within Worthing as described in section 3.3 of this transport assessment. Worthing is a compact urban area with a generally flat topography that offers potential for a higher proportion of cycling and walking trips. However, it could be considered that the existing network has some areas of limited provision and is missing links to and between Railway stations, schools, parks and green space and Worthing town centre, for example. The introduction of new development brings an opportunity to consider the further development of the walking and cycling network to improve wider sustainable transport provision to serve the new development and existing residents alike.

Provision along existing routes could benefit from additional advisory or mandatory cycle lanes, further provision of shared use footway / cycleways, improved signage, reduced roadside clutter, consideration of current parking provision and general urban realm and environmental improvement.

Some of the larger proposed Local Plan sites are situated toward the edge of the Worthing urban area and further sustainable travel links will support the sustainable travel potential of these sites. The WSCC Walking and Cycling Strategy identifies, at a high level, a number of potential priority routes and schemes. These include:

- New links and arterial connections, including Loose Lane Link which will provide an east-west link north of East Worthing railway station to industrial estates and schools as well as Worthing and Lancing Route improvements to improve Worthing Central Station access
- Quiet routes including locations in East Worthing to connect businesses and schools
- Leisure routes including A24 cycle route north of Worthing
- 'Dutch Grid' style of infrastructure - where primary cycle paths are not more than 750m apart

There are particular opportunities that could be brought forward and should be prioritised. These include links that connect with Worthing Central Station and the town centre, including a potential route along Tarring Road to connect with intermediate stations continuing via The Boulevard and onward to the north-west of Worthing, making use of existing infrastructure with some new provision and links. This could form part of a wider east – west route with connections to East Worthing and employment, health and education sites within the area. However, footfall for Worthing Central station decreased from 2.578 million in 15/16 to 2.104 million in 16/17 with service performance of Southern Rail being a likely factor. The assumption could be made that commuters are seeking reliable alternative transport, for example, travelling by car.

Planning for and the development of these routes will need to be consistent with other current initiatives in Worthing, including plans being developed by WBC and WSCC to improve the urban realm and pedestrianise some areas within the town centre area[36]. The areas under consideration include Station Approach, Portland Road and South Street. These improvements are intended to help connect key WLP redevelopment sites in the town centre which include Teville Gate, Union Place, Grafton, Stagecoach, Aquarena and Civic sites.

The Seafront Investment Plan 2018 is a key redevelopment scheme which aims to improve pedestrian comfort levels by introducing a new promenade and revitalising the pier while creating the Worthing Lagoon to enhance the growing water sports industry[37]. Worthing has been identified by WSCC as a priority area to be subjected to a Road Space Audit to inform the wider Worthing Area Sustainable Transport Package to be developed by WSCC.

[36] https://www.westsussex.gov.uk/news/options-for-worthing-town-centre-improvements-unveiled/
[37] https://www.adur-worthing.gov.uk/media/media,147633,en.pdf

As the network develops, communicating a set of priority routes to the public through the use of branded route maps will help support further uptake in walking and cycling. To support sustainable travel choices upon occupation of new development, infrastructure should be in place from day one.

Cycle to Work Scheme

The Cycle to Work Scheme allows employees to use up to £1,000 of their annual salary in exchange for hiring a bike and equipment.

To take part in the Cycle to Work Scheme employers usually need to enter into a contract with one or more scheme providers. These include the following:

- Cyclescheme[38]
- Cycle Solutions[39]
- Evans Cycles[40]
- Halfords Cycle 2 Work[41]

For employers who operate a staff travel plan to promote sustainable travel, or for residents who live on a residential development where a residential travel plan is in place, discounts can be obtained at various cycle retailers around the county.

Secure cycle storage areas could be constructed at residential developments & places of work to support private cycle ownership and usage.

Environment and Green Infrastructure

Alongside the provision of improved infrastructure for sustainable travel modes, there are opportunities to consider how such measures may contribute to green infrastructure objectives. There are a number of established walking and cycling corridors within Worthing that link with wider strategically important corridors such as Monarch's Way and the South Downs Way. Established walking and cycling corridors will help to support sustainable travel objectives for some development locations. New or extended routes that serve development could also help to link existing open spaces, improve journey quality for walking and cycling and may contribute positively to improve general environmental conditions.

There is an opportunity to support improved environmental conditions related to air quality through the introduction of electric vehicle charging infrastructure. There are limited charging points within Worthing and new development brings the potential to improve this position as the trend for use of electric vehicles is on a significant increase. In seeking to deliver high standards of sustainable design, the use of electric vehicles is an important measure in reducing emissions and managing or improving air quality. Shared charging infrastructure can be introduced within new residential or employment development with designated parking bays for electric vehicle use. Standard provision could be supplemented by the infrastructure to roll out further installation to match future demand.

The Government's 25-year environment plan[42] states 'Green infrastructure brings wider benefits, including sequestering carbon, absorbing noise, cleansing pollutants, absorbing surface water and reducing high temperatures' (page 79). Whilst it is beyond the scope of this report to provide detailed Green Infrastructure advice, WBC could usefully incorporate a Green Infrastructure policy into its Local Plan which requires the

[38] https://www.cyclescheme.co.uk/
[39] https://www.cyclesolutions.co.uk/
[40] https://www.evanscycles.com/
[41] https://www.cycle2work.info/
[42] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

relationship between development (including transport infrastructure) and environmental conditions to be properly considered.

SUSTAINABLE TRAVEL TARGETS

Targets for sustainable travel mode shares for the Local Plan sites should be consistent with WSCC travel plan policy. The emphasis of travel plan guidance is to reduce the reliance on single occupancy car journeys by influencing travel behaviour and providing appropriately for journeys by sustainable travel modes. The travel planning approach is tailored to the scale and type of development, and the evidence for the approach and targets will be set out within a site-specific Transport Assessment or Statement which describes a scenario with and without the benefits of a travel plan. WSCC targets in relation to travel plans can be summarised as follows:

- To reduce the number of vehicle trips over a 12-hour period (weekday 7am to 7pm) by the site by a minimum of 15% in urban areas

The % reduction in vehicle trip making is consistent with national guidance[43] which cites that 'targets being used at present tend to be reductions on what would be expected without a travel plan of 10 – 20%.'

Whilst these initial targets may help to scope out the measures required to achieve them, in practice a process of monitoring, review and improvements will help to ensure that the targets and measures to achieve them remain relevant for each site.

To achieve more substantial mode share reductions over a wider population, a significant level of investment is needed, as illustrated by the Sustainable Travel Towns programme[44] which invested £15m across three towns. The return from this investment delivered a 9% reduction in car driver trips by residents, with car driver distance reducing by 5-7%. Increases in bus trips of between 10 – 22%, up to 30% growth in the number of cycle trips per head and 10 – 13% increase in the number of walking trips per head were all achieved with this level of investment.

SYSTRA undertakes an annual Local Authority Smarter Choices survey that provides some insight, over the last 10 years, for Smarter Choices which are defined as '[measures that] *seek to give better information and opportunities, aimed at helping people to choose to reduce their car use while enhancing the attractiveness of alternatives'*[45].The outcomes of the survey found that whilst many Local Authorities cite that the level of funding is an issue, the key issue relates to short-term funding programmes that lead to difficulties in building long-term campaigns and losing staff when funding rounds finish.

7.3 FUNDING AND DELIVERY

The package of measures associated with the Worthing Local Plan sites has been developed to reflect the scale and nature of the expected impacts of the sites. As such, the package sets out measures that are commensurate with and proportionate to the individual and collective scale of proposed development. The costing for the concept highway schemes described earlier in this section will be informed by the continued development of the schemes to preliminary and detailed designed, and the further refinement of the concepts through that process. To illustrate the broad potential scheme cost, schemes of a similar nature to those proposed may attract an outturn cost of between £200,000 and £800,000. This is broad range for the individual highway intervention only to provide an illustration of the order of magnitude of scheme cost.

[43] Good Practice Guidelines: Delivering Travel Plans through the Planning Process, DCLG, DfT (April 2009)
[44] The Effects of Smarter Choice Programmes in the Sustainable Travel Towns: Summary Report' Report to the DfT (February 2010)
[45] DfT (2005), Smarter Choices – Changing the Way We Travel'

Strategy and policy guides scheme development to focus upon the benefits that can be gained from sustainable transport measures rather than providing further major highway capacity enhancement that can itself encourage further vehicular trip making.

Private Sector Funding

The primary source of funding for the transportation improvements set out within this transport assessment is expected to be through private-sector contribution. Landowners and developers are expected to bear the costs of providing infrastructure needed specifically for new development[46]. This process is guided by Infrastructure Delivery Plans (IDP's) [47] which seek to:

- direct the right level of growth and housing development to the right place
- target resources to areas of need
- bid for funding from other infrastructure agencies
- achieve efficiencies in service delivery and development planning

The need for this infrastructure will be confirmed through the production of site specific Transport Assessments, Transport Statements and Travel Plans which through consultation with WSCC as highway authority will inform the specific measures necessary for each site. These measures may then be secured through planning conditions. If impacts can be attributed to individual developments, funding can be secured through section 106 agreements.

The access measures, as set out in Appendix D, are related to specific sites and include the introduction of new access points and connections for highway and non-motorised users. These could be delivered under Section 278 of the Highways Act 1980 for proposed modifications to the existing road network. Where proposed improvements are modest in scale, and the value of works is less than £25,000, a 'minor works' Section 278 agreement may be appropriate[48].

For measures which are considered necessary as a result of the effects of more than one specific site, WBC has introduced a Community Infrastructure Levy (CIL) to allow funds to be raised from developers to pay for infrastructure that is needed as a result of development[49]. The Council adopted a Charging Schedule for CIL in February 2015 and this is now the dominant means for securing financial contributions from development. The locations identified for highway improvement including the Goring Crossways junction are examples of infrastructure where CIL contributions may, in part or in full, fund the mitigation necessary to accommodate the impacts of new development.

Section 7.2 sets out a suite of sustainable transport measures that could be used to manage the level of vehicular trip generation from new developments by encouraging sustainable travel behaviour from day one of occupation of new dwellings. Travel plan measures could be secured as planning obligations in Section 106 agreements and the delivery of such measures would be subject to the relevant local planning enforcement policies and procedures that apply.

Public Sector Funding

In terms of the potential use of public sector funds, there is scope to consider the further development and enhancement of the measures described in this transport assessment to meet wider strategic policies and strategies. This includes, for example, the roll-out of more substantial walking and cycling improvements which support the implementation of new local plan sites but also contribute to wider sustainable travel benefits across

[46] https://www.westsussex.gov.uk/media/1787/spginfrastructure.pdf
[47] https://www.adur-worthing.gov.uk/planning-policy/infrastructure/
[48] https://www.westsussex.gov.uk/roads-and-travel/information-for-developers/road-agreements/
[49] https://www.adur-worthing.gov.uk/planning-policy/infrastructure/

the Borough. These measures are being considered and developed further as part of WASTP. Consideration would also be given in scheme development to the objectives and proposals set out in studies such as the Worthing Public Realm Options Study (October 2017) [50] and Seafront Investment Plan 2018[51]. Funding sources such as LEP Local Growth Funding could be considered as part of a broader package of funding to support investment in transport.

This transport assessment has shown that there is no material impact of the proposed Worthing Local Plan sites upon the performance of the SRN. Major enhancements to the A27 are being developed through the RIS, and these may be accompanied by DfT 'Designated Funds' which are available during the RIS1 spending period, through to 2021. These funds are aligned to helping Highways England maximise opportunities to deliver additional improvements as part of new road schemes and cover themes including environment, cycling, safety and integration, and growth and housing. Highways England will engage with local authorities to understand the potential scope for the Designated Funds, and this in principle aligns well with supporting schemes to facilitate the delivery of new housing growth and economic development whilst continuing to support the effectiveness of the SRN.

[50] https://www.adur-worthing.gov.uk/regeneration/public-realm/
[51] https://www.adur-worthing.gov.uk/regeneration/seafront-investment-plan/

8 SUMMARY AND CONCLUSIONS

8.1 SUMMARY

This transport assessment has set out the transport impacts of the options for development being tested as part of the Worthing Local Plan. To create an evidence base for plan making purposes, the existing and future conditions without the Plan have been described as a reference against which the relative impacts of the proposals are assessed. A sensitivity test has been undertaken to describe the effects of development should the Goring – Ferring gap and Chatsmore Farm sites not be taken forward as part of the plan. Further tests have been carried out to demonstrate the effects of the plan with and without the Highways England RIS 1 A27 Worthing and Lancing improvements.

This assessment proposes a broad package of measures that could be appropriate to provide an appropriate level of accessibility for each site, and further measures that address the cumulative impacts of the new development. The assessment identified residual impacts including at the following junctions:

- A27 / Beeches Avenue
- A250 / A2032 Goring St roundabout
- Poulters Lane / Offington Lane
- Durrington Lane / A2032 / The Boulevard

A mitigation strategy with outline package has been proposed to ensure that the sites can be delivered without significant detrimental impact upon the performance of the transport network. This comprises some potential improvements to the highway network, sustainable transport measures, and expected benefits of the implementation of the A27 Worthing and Lancing improvements.

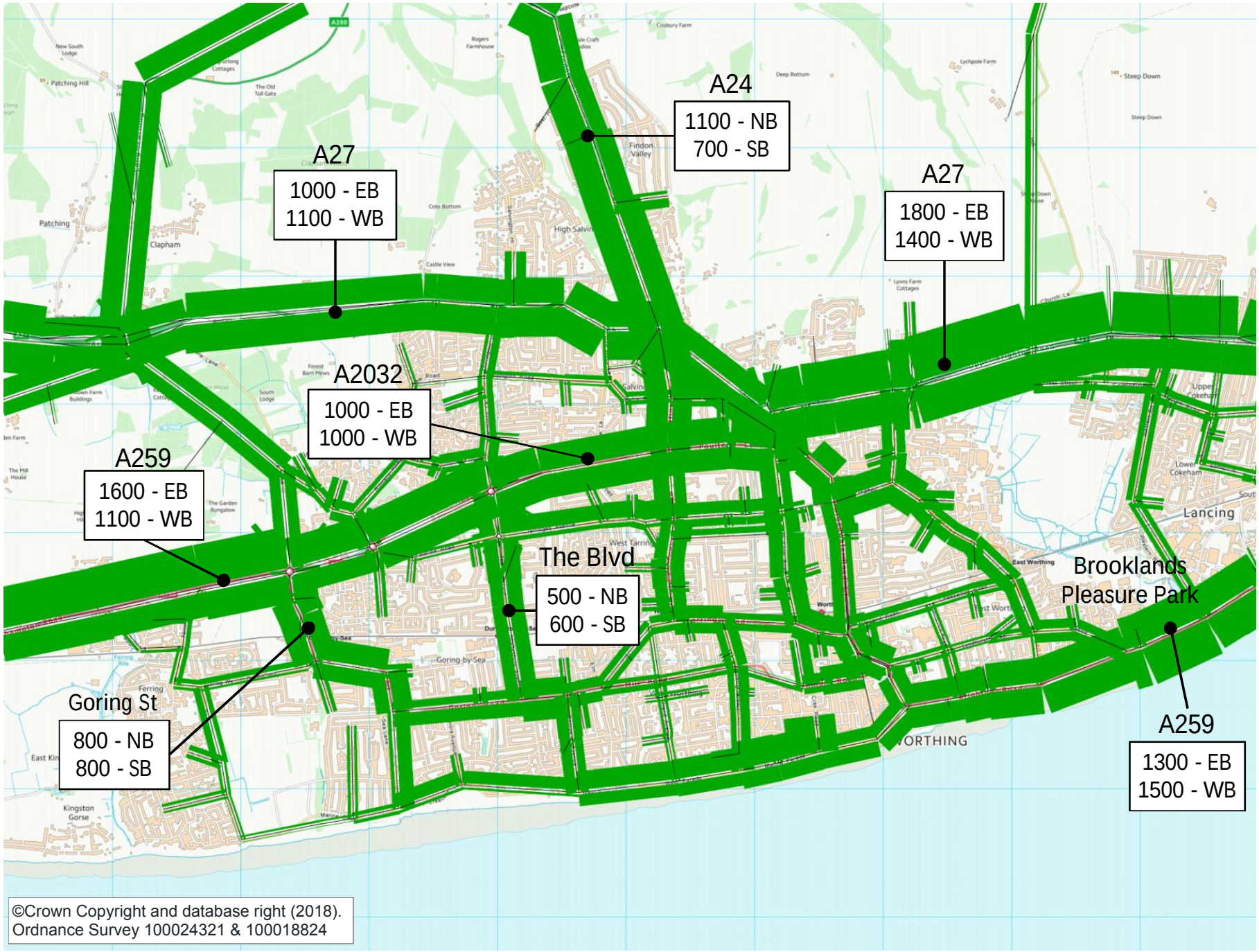
8.2 CONCLUSIONS

This transport assessment has demonstrated that the proposed Worthing Local Plan sites would not have any significant impact on the performance of the SRN. The land use development proposed as part of the Worthing Local Plan is, overall, relatively modest due to constraints relating to the extent of the Borough, the existing urban area and environmental constraints in the north of the Borough. A mitigation package and strategy has been proposed that is considered to provide a sufficient and proportionate framework for addressing any individual and cumulative impacts of development on the transport network.

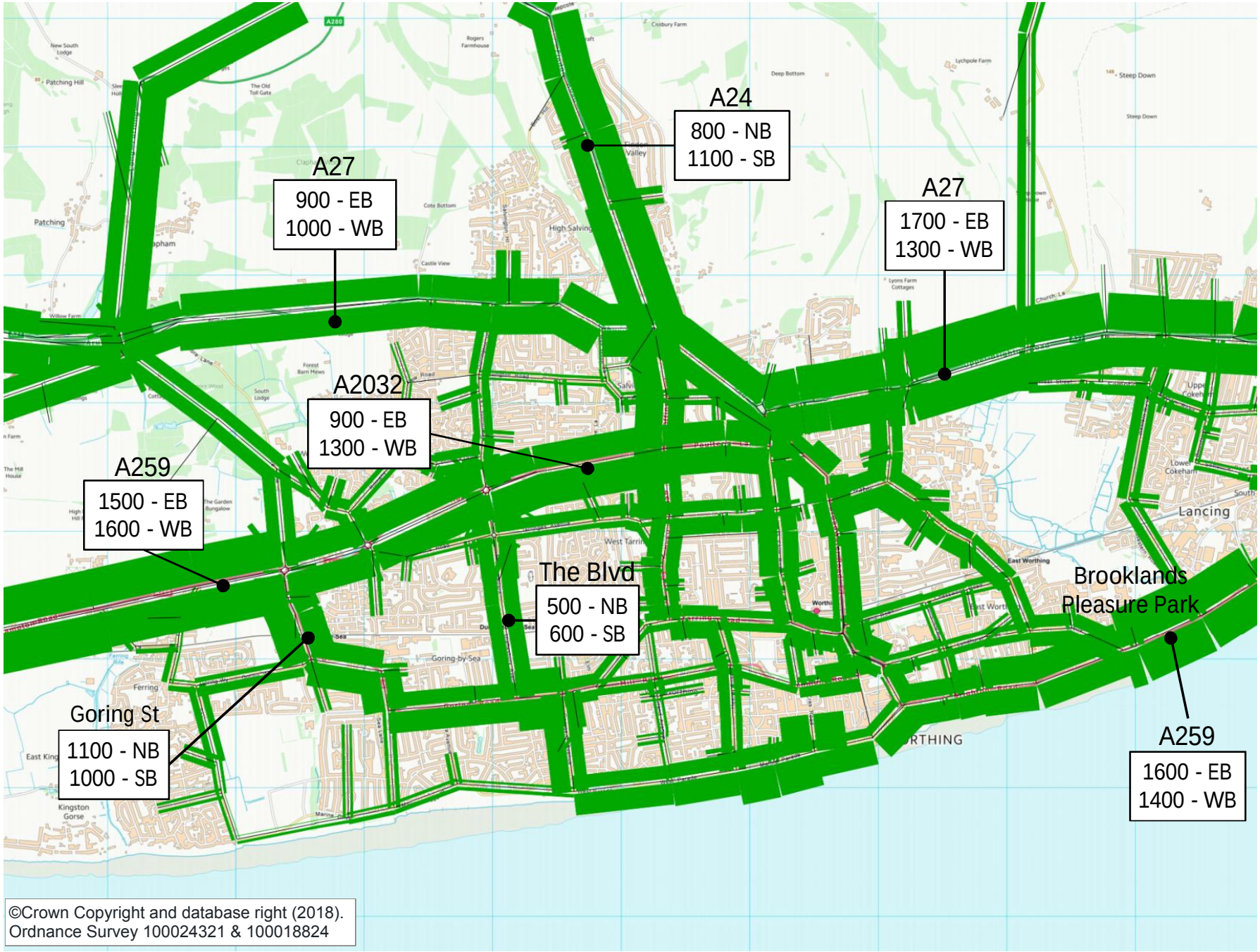
The specific scope of the mitigation will be confirmed through site specific transport assessment studies that will be reviewed as part of individual planning processes. Ongoing study and policy development work including in relation to transport, urban realm and green infrastructure will develop further these mitigation strategies with specific proposals that will help to mitigate existing issues and the impacts in relation to planned development sites.

Appendix A

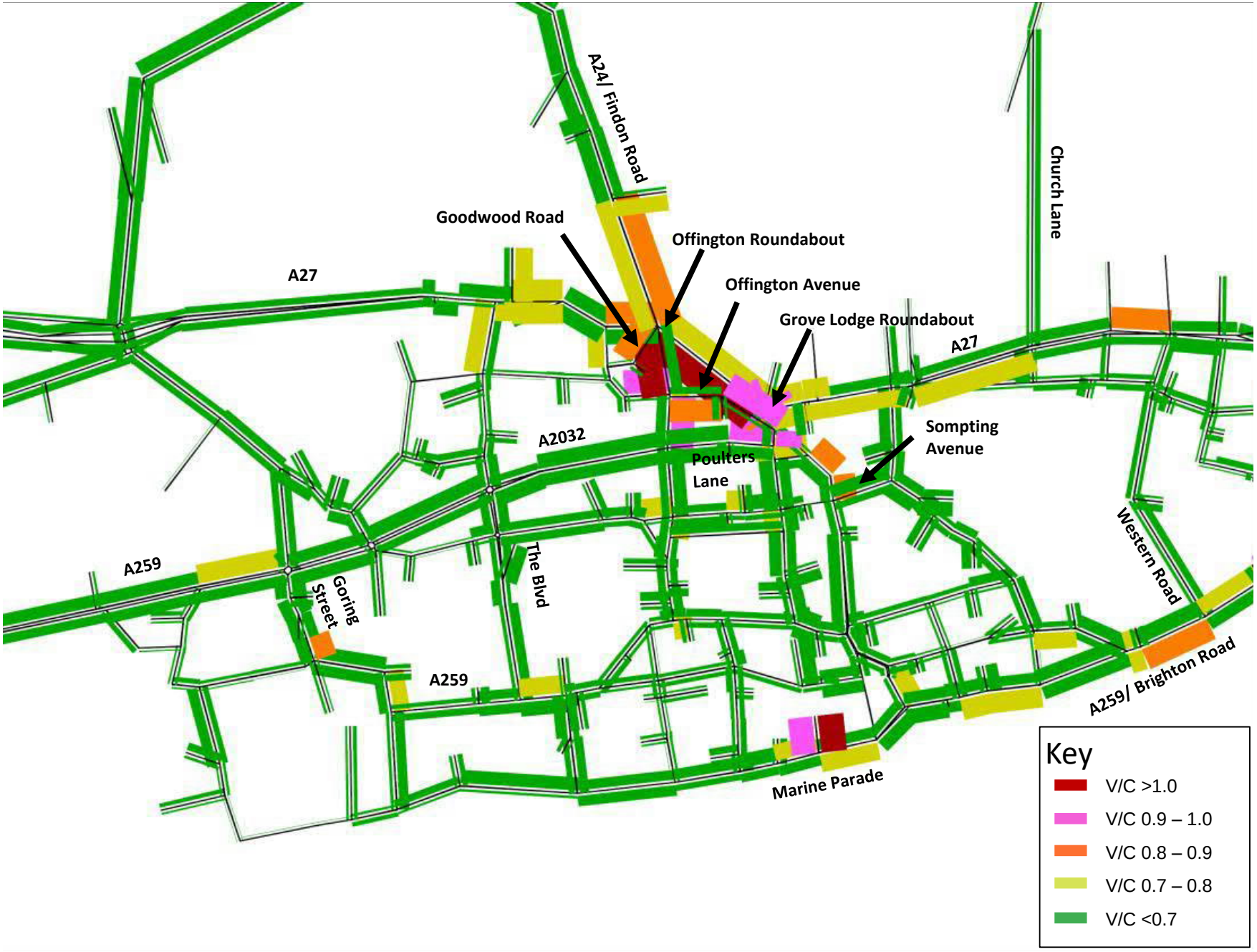
SATURN MODEL OUTPUTS



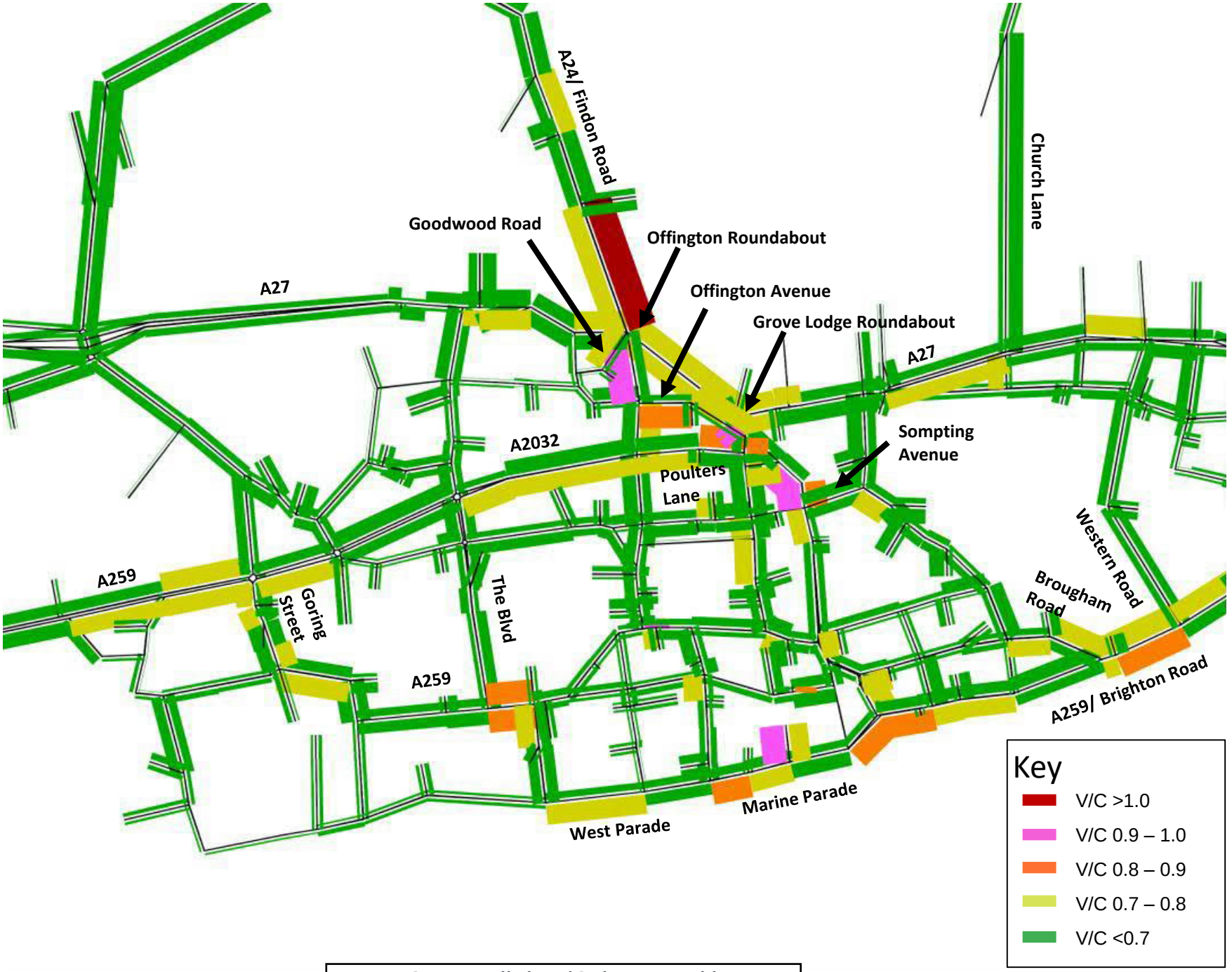
Current traffic volumes - AM Peak



Current traffic volumes - PM Peak



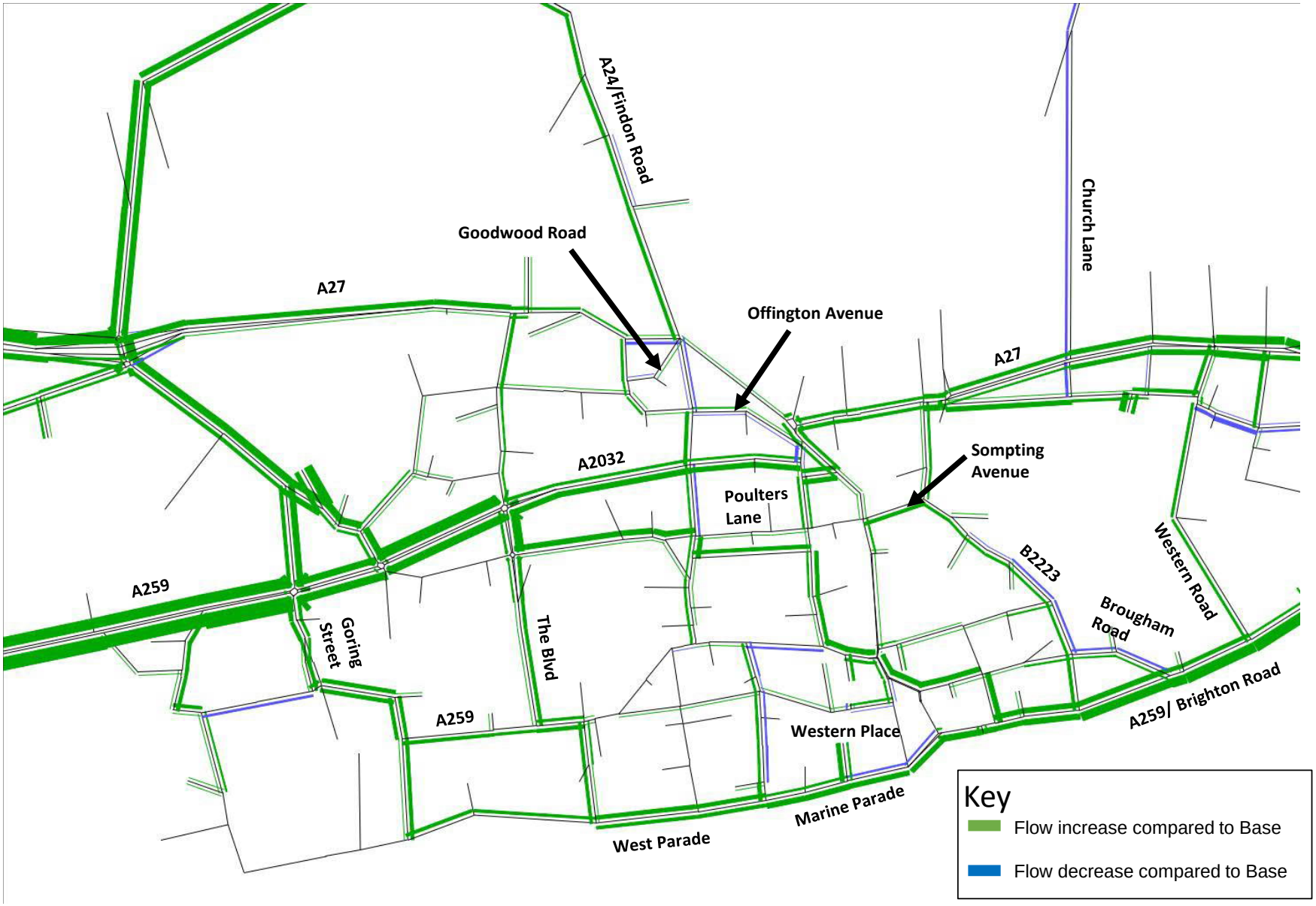
Current link V/C (AM Peak)



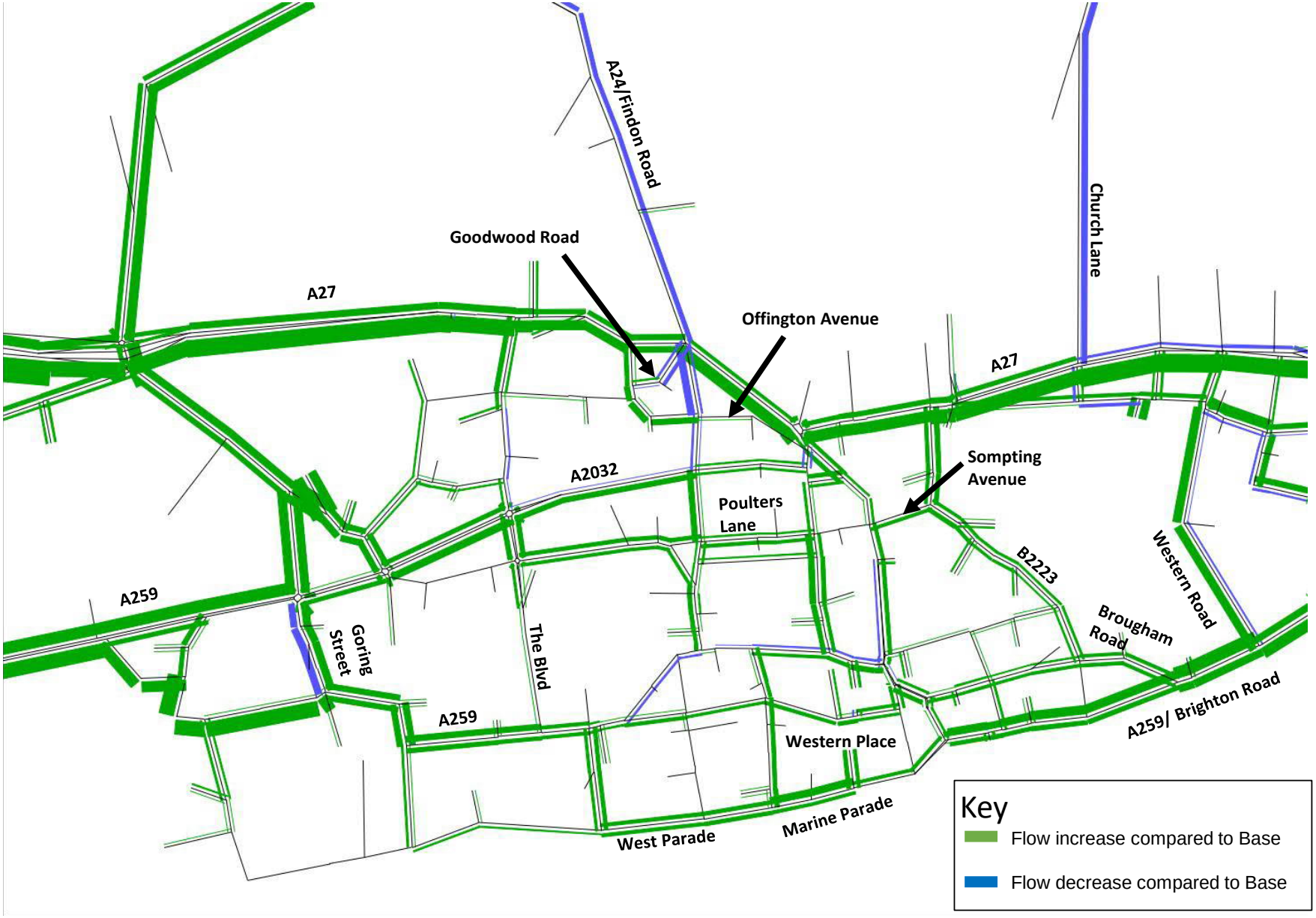
Current link V/C (PM Peak)

Do Minimum scenario traffic volumes (AM Peak)

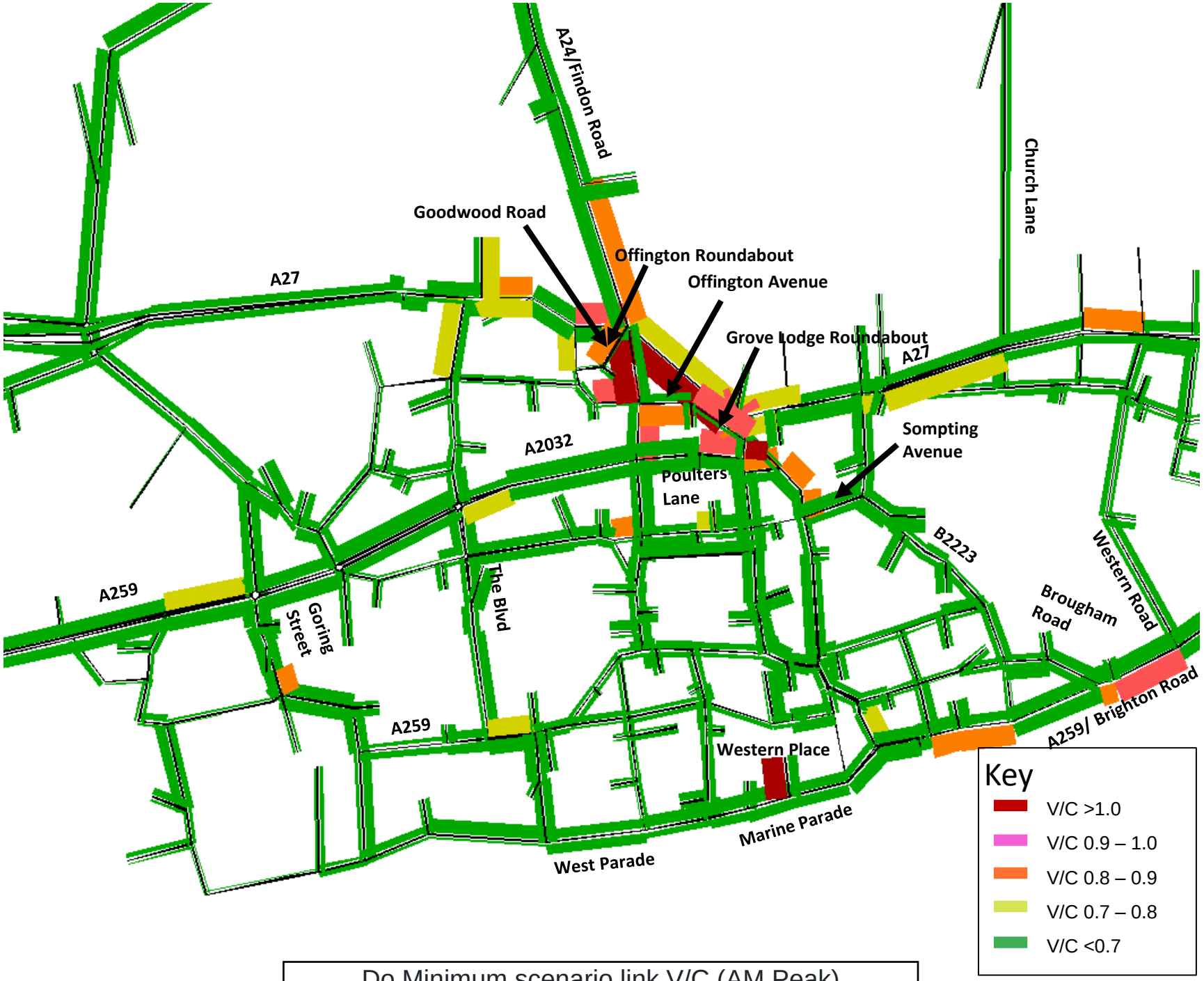
Do Minimum scenario traffic volumes (PM Peak)



Flow Difference - Do Minimum to Base (AM Peak)

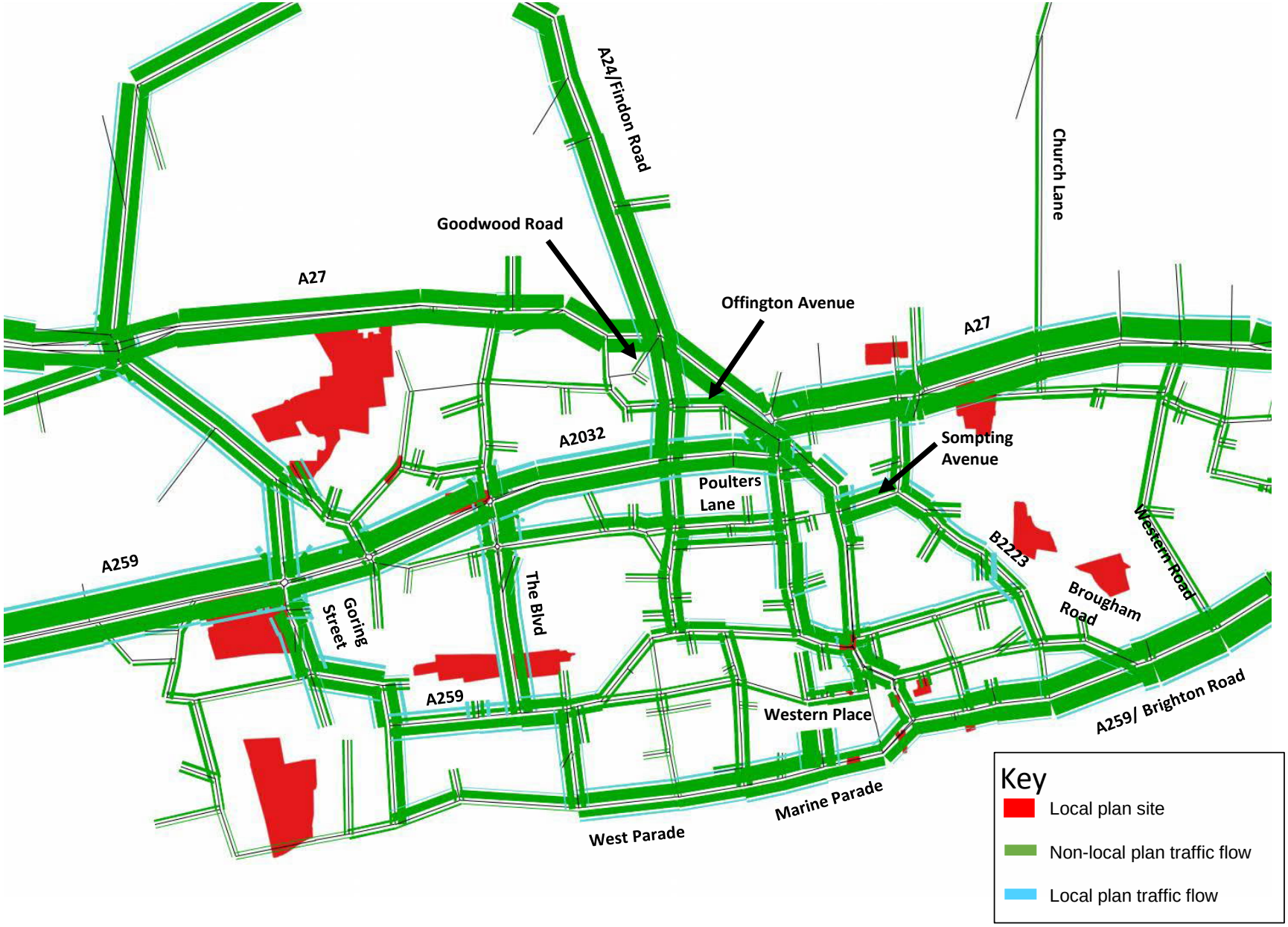


Flow Difference - Do Minimum to Base (PM Peak)

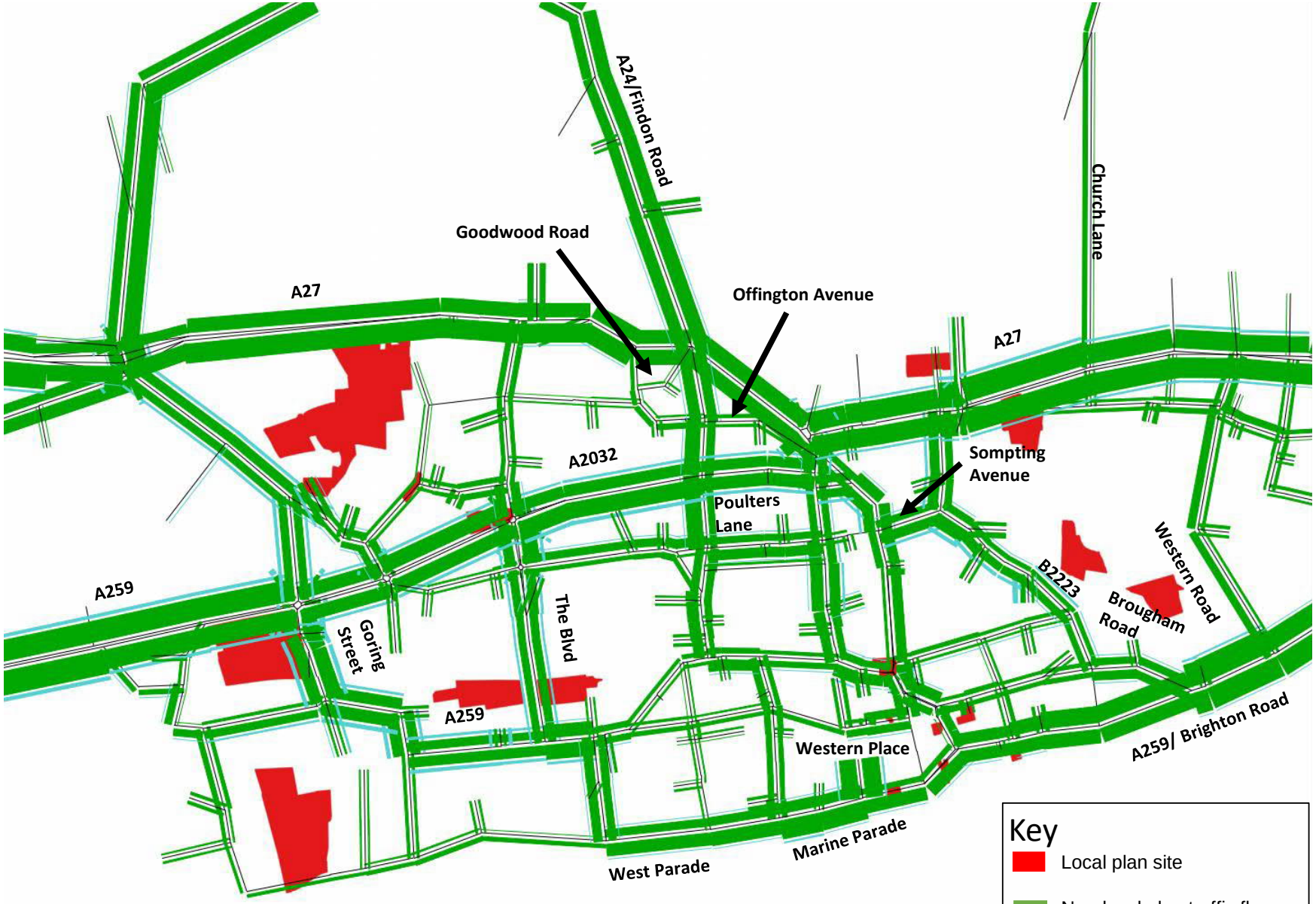


Do Minimum scenario link V/C (AM Peak)

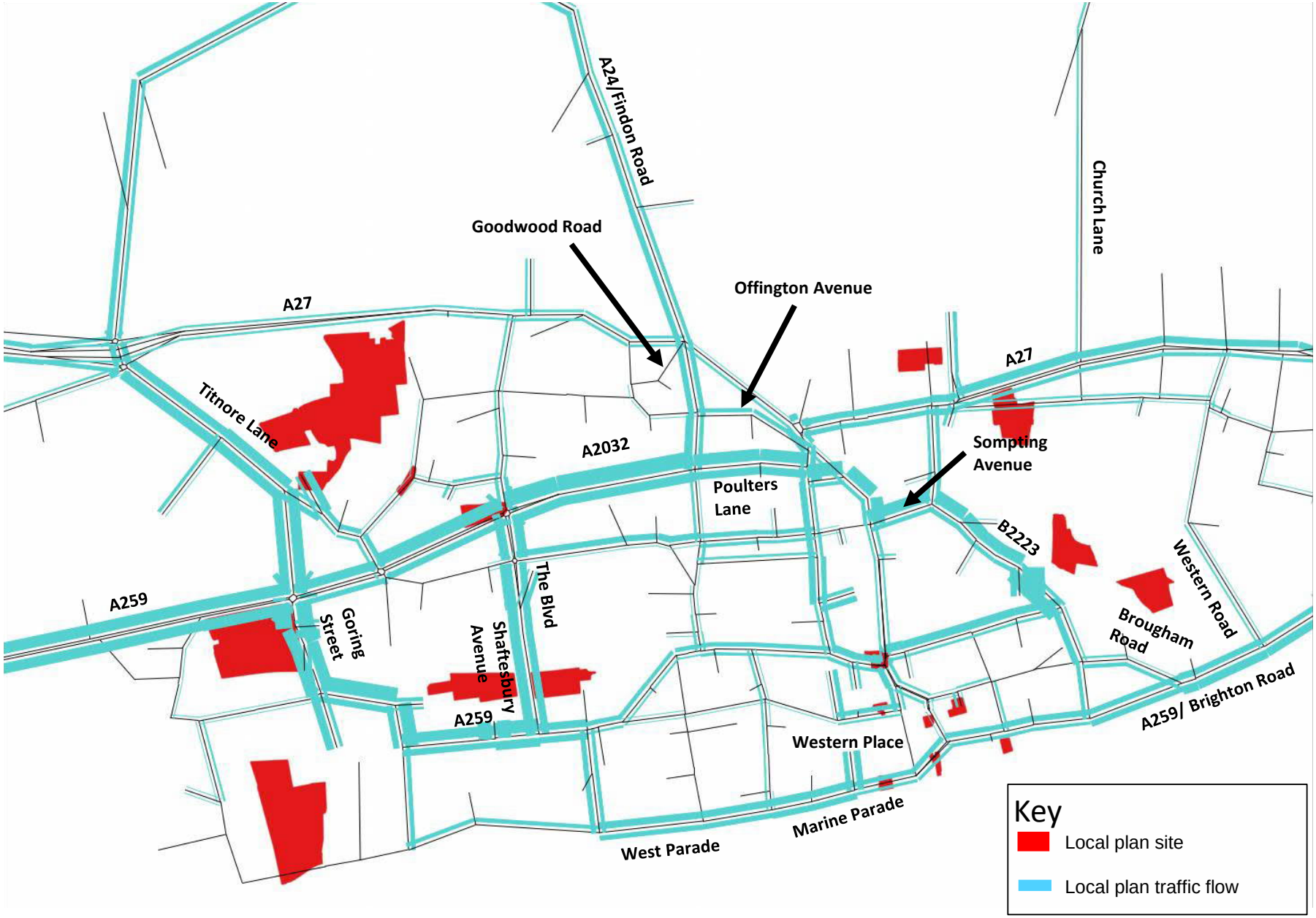
Do Minimum scenario link V/C (PM Peak)



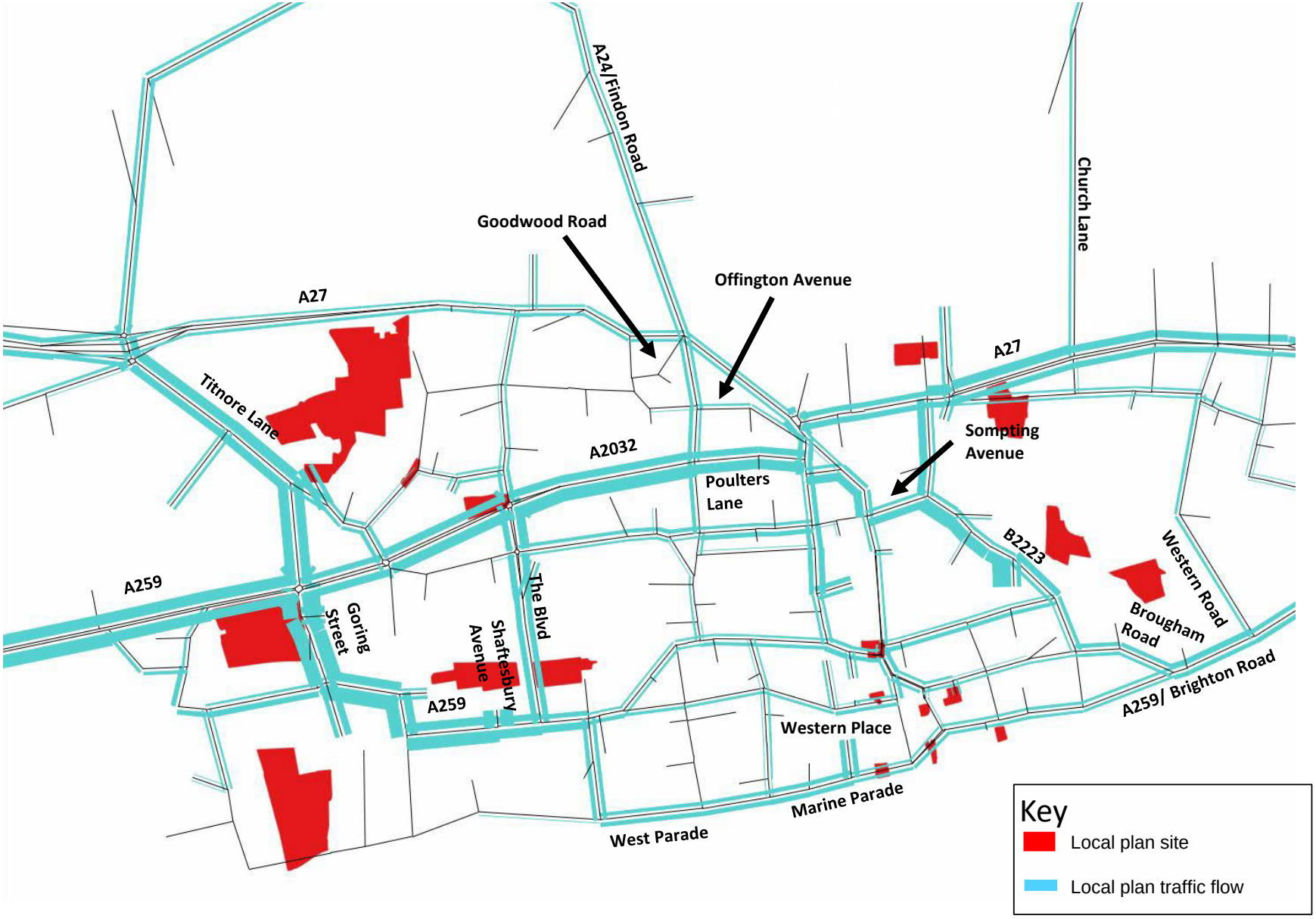
Local plan scenario traffic volumes (AM Peak)



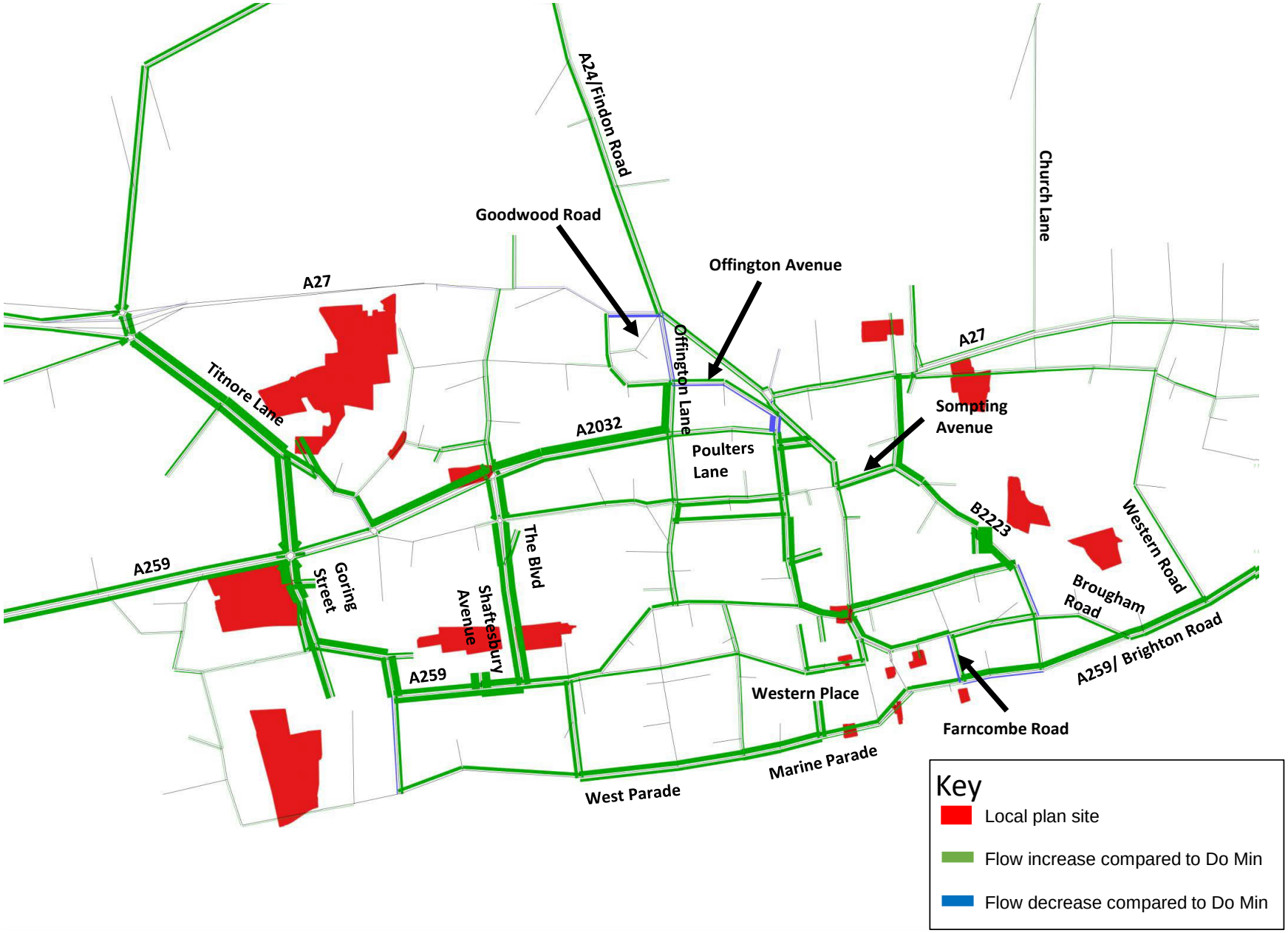
Local plan scenario traffic volumes (PM Peak)



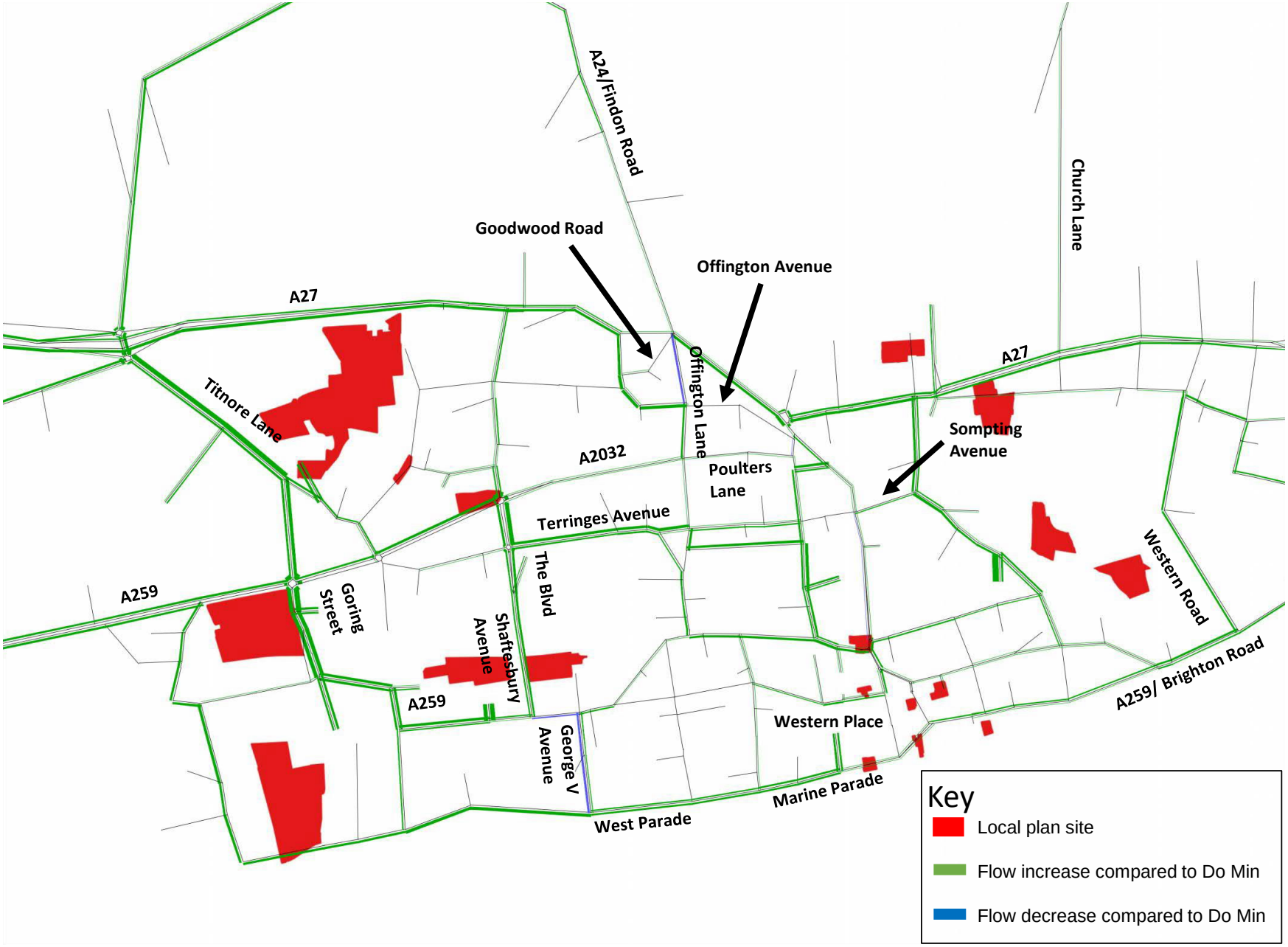
Local plan sites traffic volumes (AM Peak)



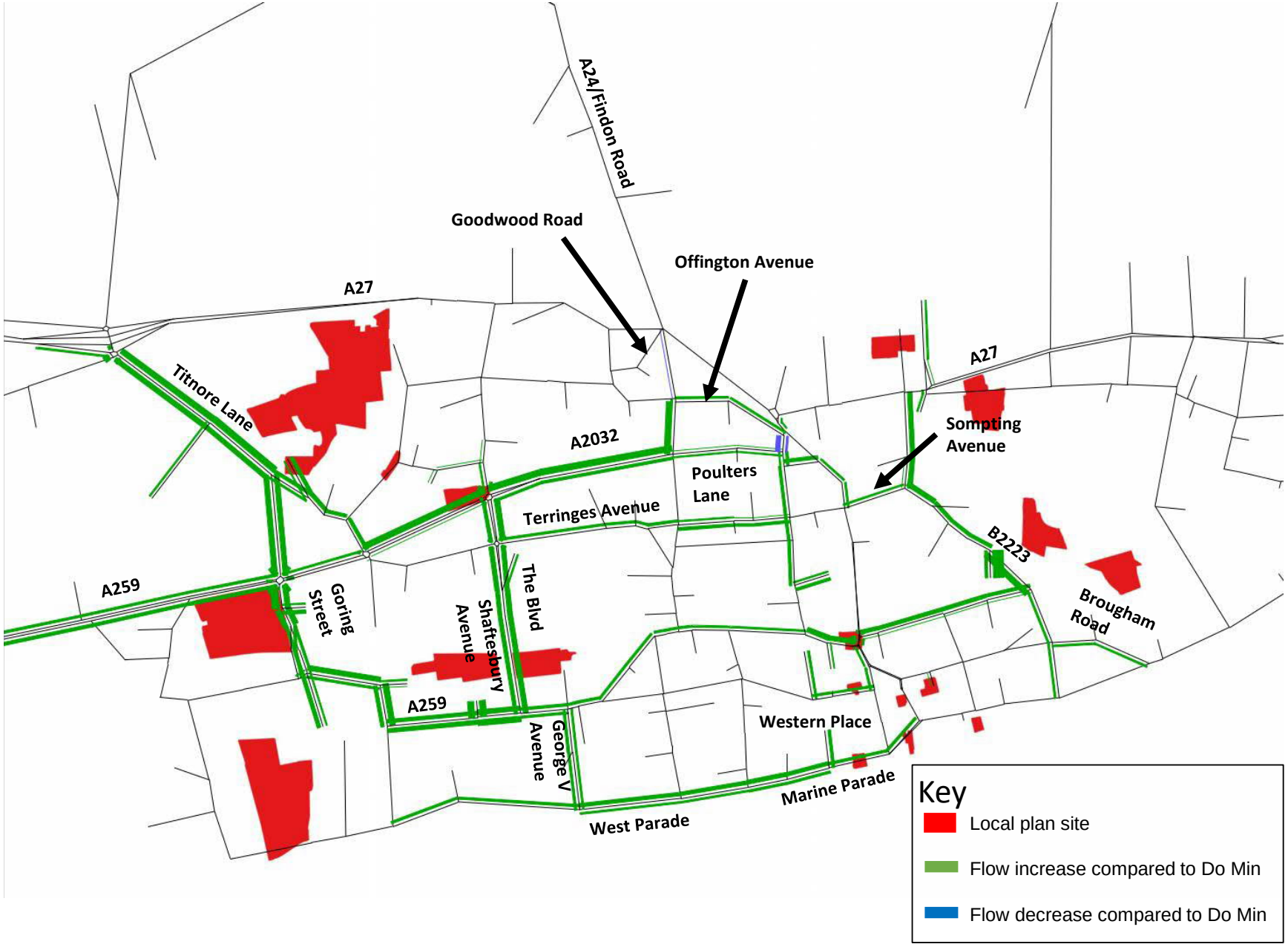
Local plan sites traffic volumes (PM Peak)



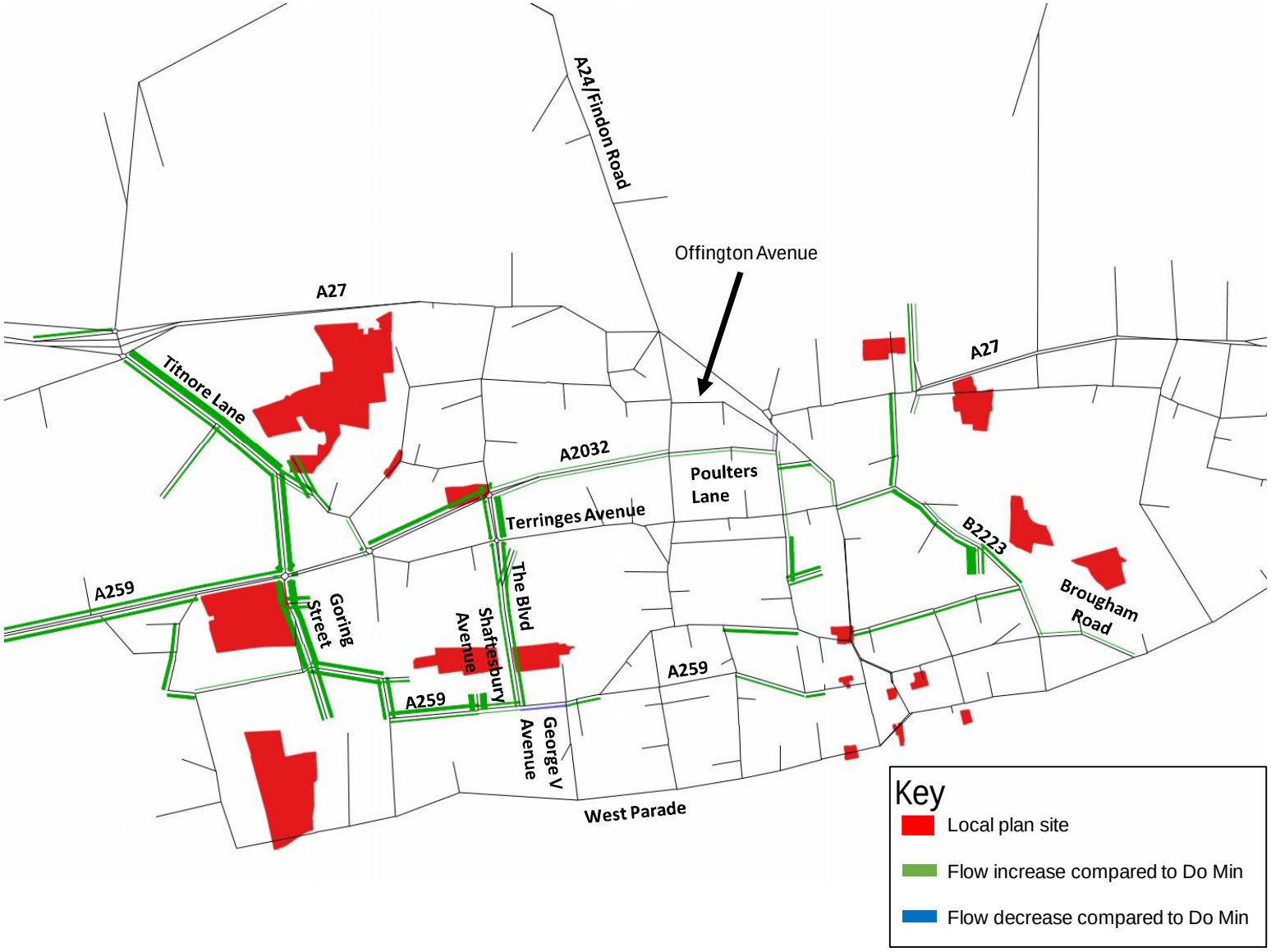
Flow Difference – Local Plan to Do Minimum – AM



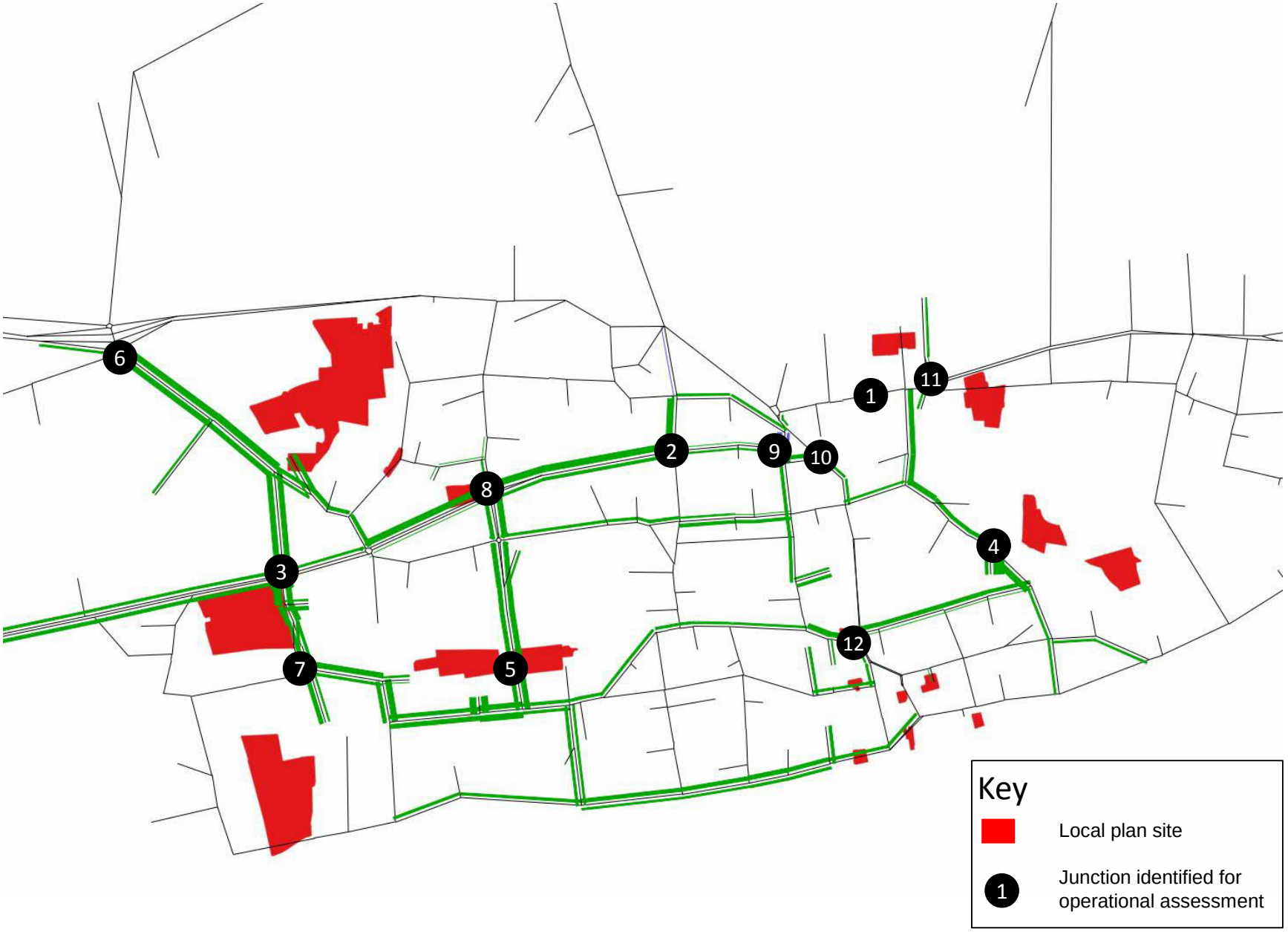
Flow Difference – Local Plan to Do Minimum – PM



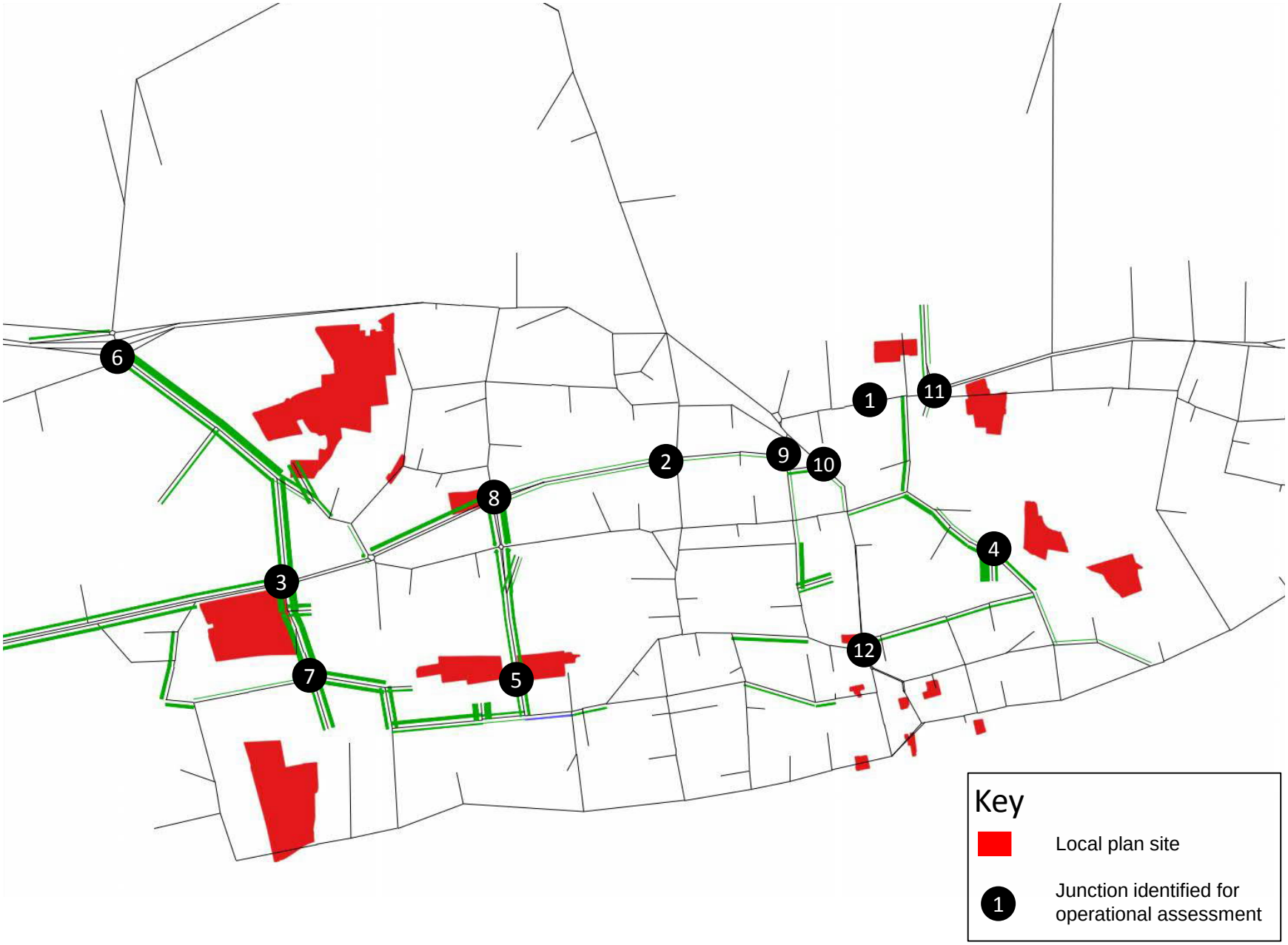
Local plan sites area of influence (AM Peak)



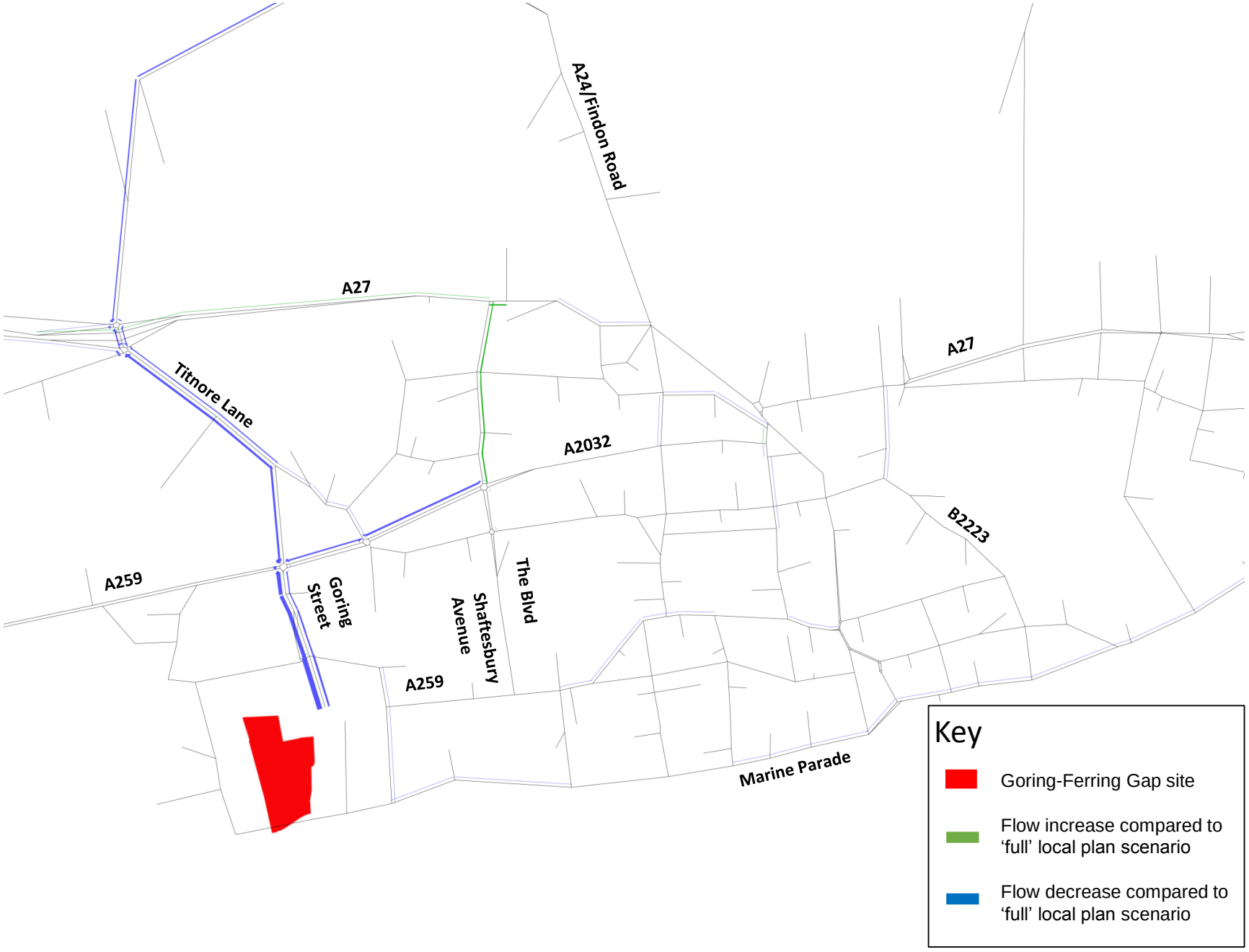
Local plan sites area of influence (PM Peak)



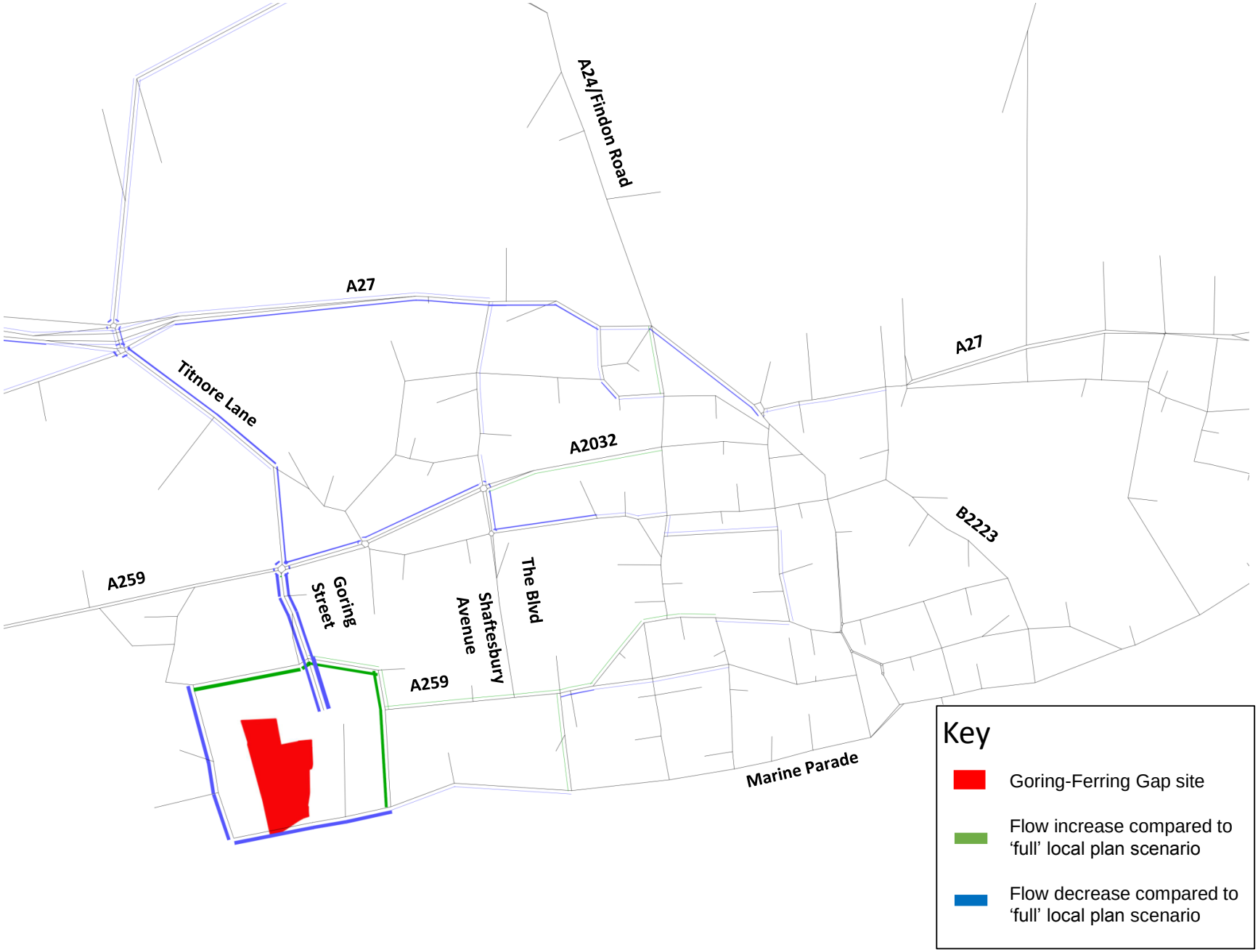
Junction locations with Local Plan sites area of influence (AM Peak)



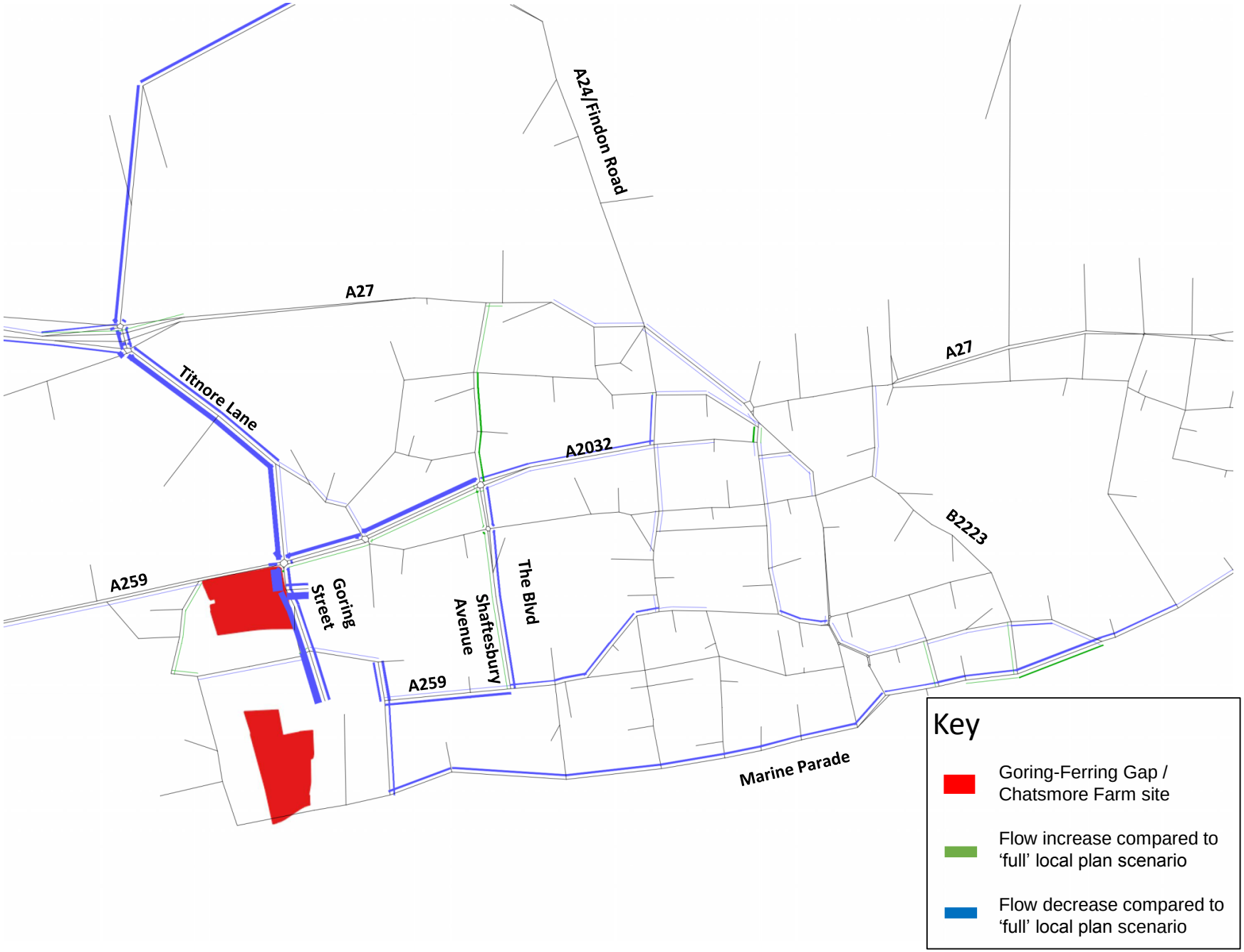
Junction locations with Local Plan sites area of influence (PM Peak)



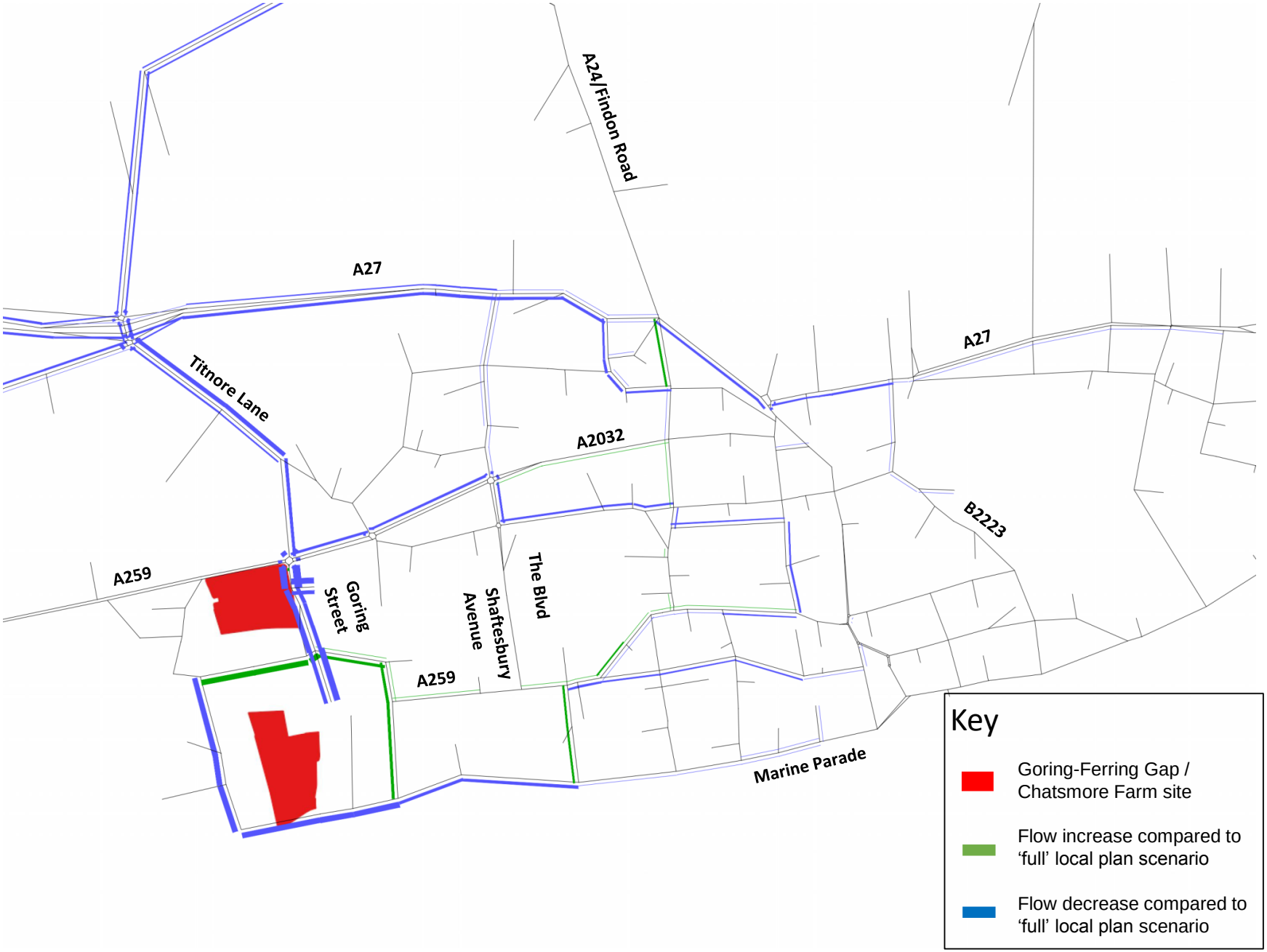
Flow Difference – Sensitivity Test 1 to 'full' Local Plan (AM Peak)



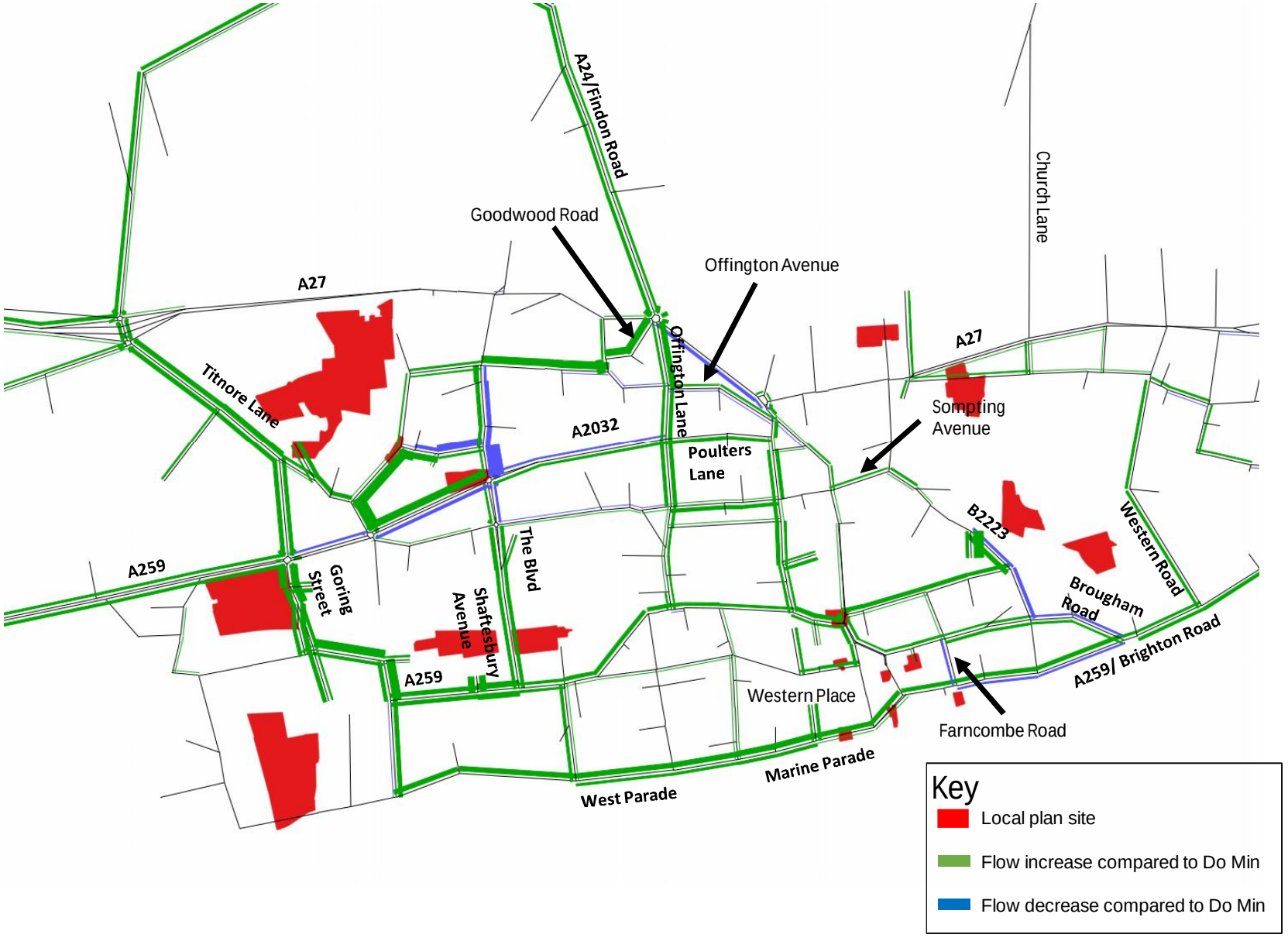
Flow Difference – Sensitivity Test 1 to 'full' Local Plan (PM Peak)



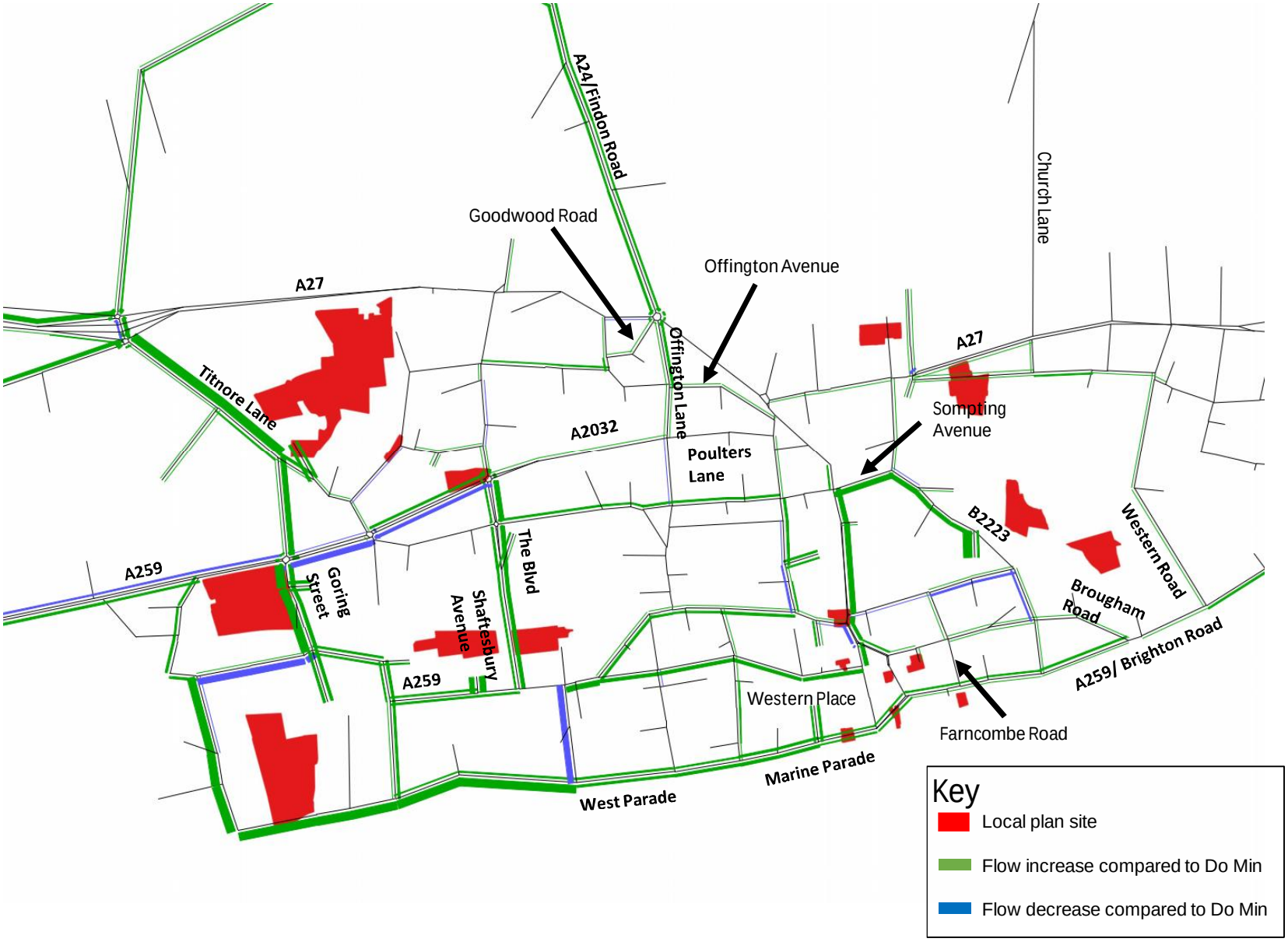
Flow Difference – Sensitivity Test 2 to 'full' Local Plan (AM Peak)



Flow Difference – Sensitivity Test 2 to 'full' Local Plan (PM Peak)



Flow Difference – Local Plan (with HE A27 WL & Arundel schemes) to Do Minimum (with HE A27 WL & Arundel schemes) – AM



Flow Difference – Local Plan (with HE A27 WL & Arundel schemes) to Do Minimum (with HE A27 WL & Arundel schemes) – PM

Appendix B

COLLISION PLOT

Drawn By:

DO NOT SCALE

Collision Severity

- Fatal
- Serious
- Slight
- Worthing Borough Council Boundary

DRAWING STATUS:
FOR INFORMATION ONLY

wsp

2 London Square, Cross Lanes
Guildford, GU1 1UN

Tel: +44 (0) 1483 528 400
Website: www.wsp.com

CLIENT:
WORTHING BOROUGH COUNCIL

ARCHITECT:

PROJECT:
WORTHING LOCAL PLAN
TRANSPORT STUDY

TITLE:
APPENDIX B: ROAD TRAFFIC COLLISIONS
WORTHING BOROUGH

NOVEMBER 2012 - OCTOBER 2017

SCALE @ A	CHECKED:	APPROVED:
NTS	RS	RS
CAD FILE:	DESIGN-DRAWN:	DATE:
	EH	27/07/2018
PROJECT No:	DRAWING No:	REV:
70033198	70033198-TP-001	

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Contains Ordnance Survey data © Crown copyright and database right 2018. Ordnance Survey 100024321 & 100018824

0 0.1 0.2 0.4 0.6 0.8 Kilometres

File:

Appendix C

KEY ENVIRONMENTAL CONSTRAINTS

Date Modified: 07/09/2018

Drawn By: AZ

File: \\uk.wspgroup.com\central data\Projects\700331xx\70033198 - Worthing Local Plan\02 WIP\TP Transport Planning\Mapping\GIS\Mxd\70033198_001_Biodiversity.mxd

N

SOUTH
DOWNS
NATIONAL PARK

Cissbury Ring

Lancing Ring

Widewater
Lagoon

Findon
Patching
Clapham
Ferring
Goring
by Sea
Worthing
Sompting
Lancing
Coombes

0 500 1,000 1,500 2,000 m

LEGEND:

- Worthing District Boundary
- Local Nature Reserve
- Site of Special Scientific Interest
- Ancient Woodland Inventory
- National Park
- Local Wildlife Site

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

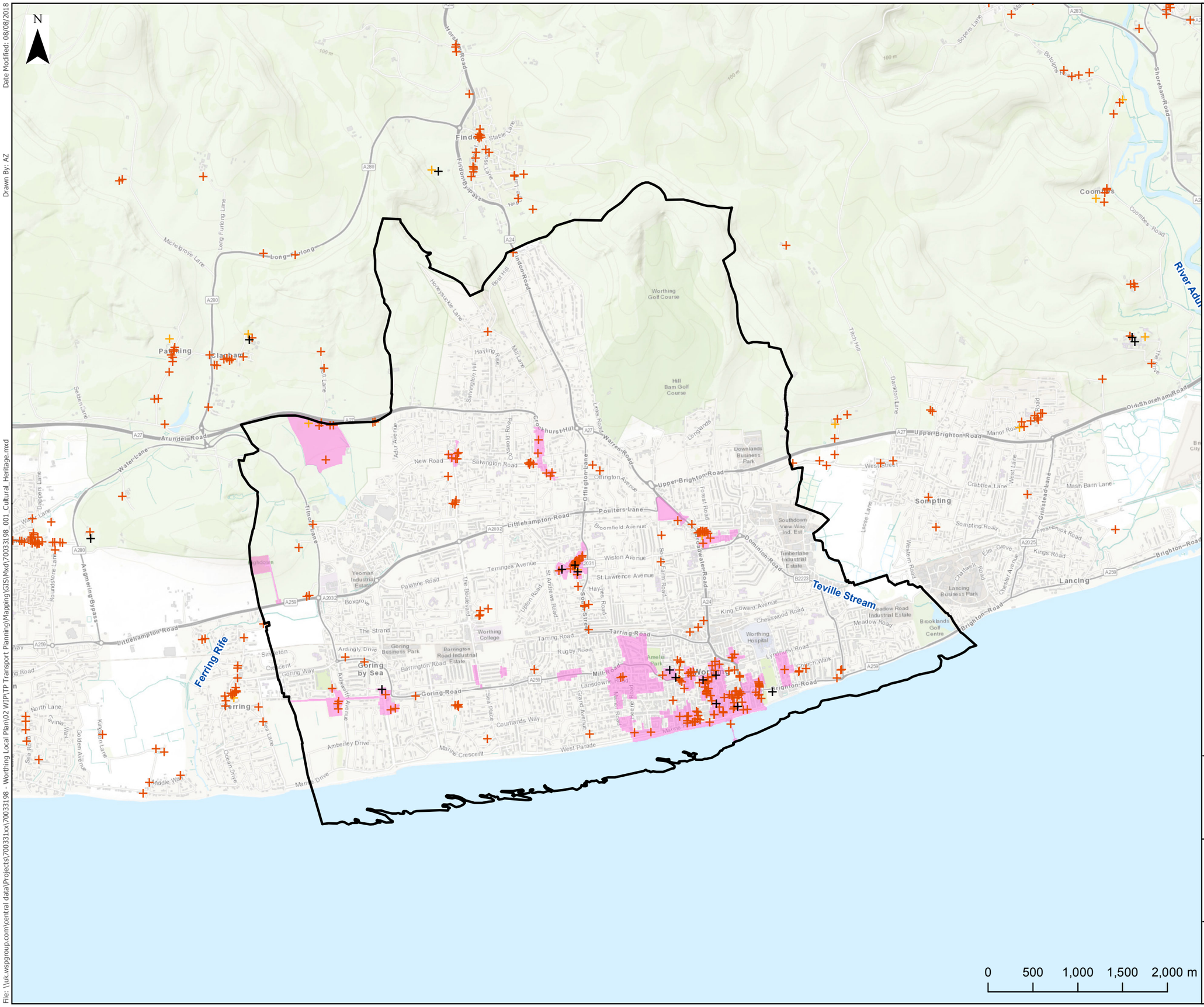
wsp

TITLE:

**APPENDIX C -
WORTHING LOCAL PLAN
BIODIVERSITY**

FIGURE No:

70033198_001



LEGEND:

- Worthing District Boundary
- Conservation Area

Listed Building

- Grade I
- Grade II
- Grade II*

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

TITLE:

APPENDIX C - WORTHING LOCAL PLAN CULTURAL HERITAGE

FIGURE No:

70033198_001

Date Modified: 08/08/2018

Drawn By: AZ

File: \\uk.wspgroup.com\central data\Projects\700331xx\70033198 - Worthing Local Plan\02 WIP\TP Transport Planning\Mapping\GIS\Mxd\70033198_001_Cultural_Heritage.mxd

Date Modified: 17/08/2018

Drawn By: AZ

File: \\uk.wspgroup.com\central data\Projects\700331xx\70033198 - Worthing Local Plan\02 WIP\TP Transport Planning\Mapping\GIS\Mxd\70033198_001_Noise_AirQuality_Geology_Soils.mxd

N

LEGEND:

- Worthing District Boundary
- Noise Action Planning Important Areas (NIA)
- Historic Landfill Sites
- Air Quality Management Area

Groundwater Source Protection Zone

- Zone 1
- Zone 1c

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

0 500 1,000 1,500 2,000 m

wsp

TITLE:

APPENDIX C - WORTHING LOCAL PLAN NOISE, AIR QUALITY, AND GEOLOGY AND SOILS

FIGURE No:

70033198_001

Date Modified: 06/08/2018

Drawn By: AZ

File: \\uk.wspgroup.com\central data\Projects\70033xx\70033198 - Worthing Local Plan\02 WIP\TP Transport Planning\Mapping\GIS\Mxd\70033198_001_WaterEnvironment_Flood_Risk.mxd

N

LEGEND:

- Worthing District Boundary
- Flood Zone 2
- Flood Zone 3
- Statutory Main River

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

0 500 1,000 1,500 2,000 m

TITLE:

APPENDIX C - WORTHING LOCAL PLAN WATER ENVIRONMENT AND FLOOD RISK

FIGURE No:

70033198_001

Appendix D

SITE INFORMATION AND ACCESS STRATEGIES

APPENDIX D
STAGECOACH, MARINE PARADE

SITE DESCRIPTION

The site is located at the existing Stagecoach Depot, located within Worthing Town Centre. The site is bound by Marine Parade to the south; The Steyne to the east; Bedford Road to the west; and commercial properties to the north. This prominent site offers potential to deliver a residential development on the land, subject to the relocation of the current use. Nearby destinations include Worthing Town Centre less than 100m from the site and Worthing Rail Station located approximately from the site 1.4km.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with crossing provision on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	60

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	5	12
Walk / Cycle	2	5
Bus	0	2
Rail	0	4

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	10	5
Walk / Cycle	4	2
Bus	1	0
Rail	1	0

SITE PHOTOS


Marine Parade / Library Place

SITE ACCESS

The site is currently accessible for vehicles from Marine Parade via an access road called Library Place. The nearest bus stops to the site are located on Marine Parade at the junction between Library Place and Marine Road. The westbound bus stop on Marine Parade is accessible via a signalised pedestrian crossing. These bus stops are served by a range of regular bus services including:

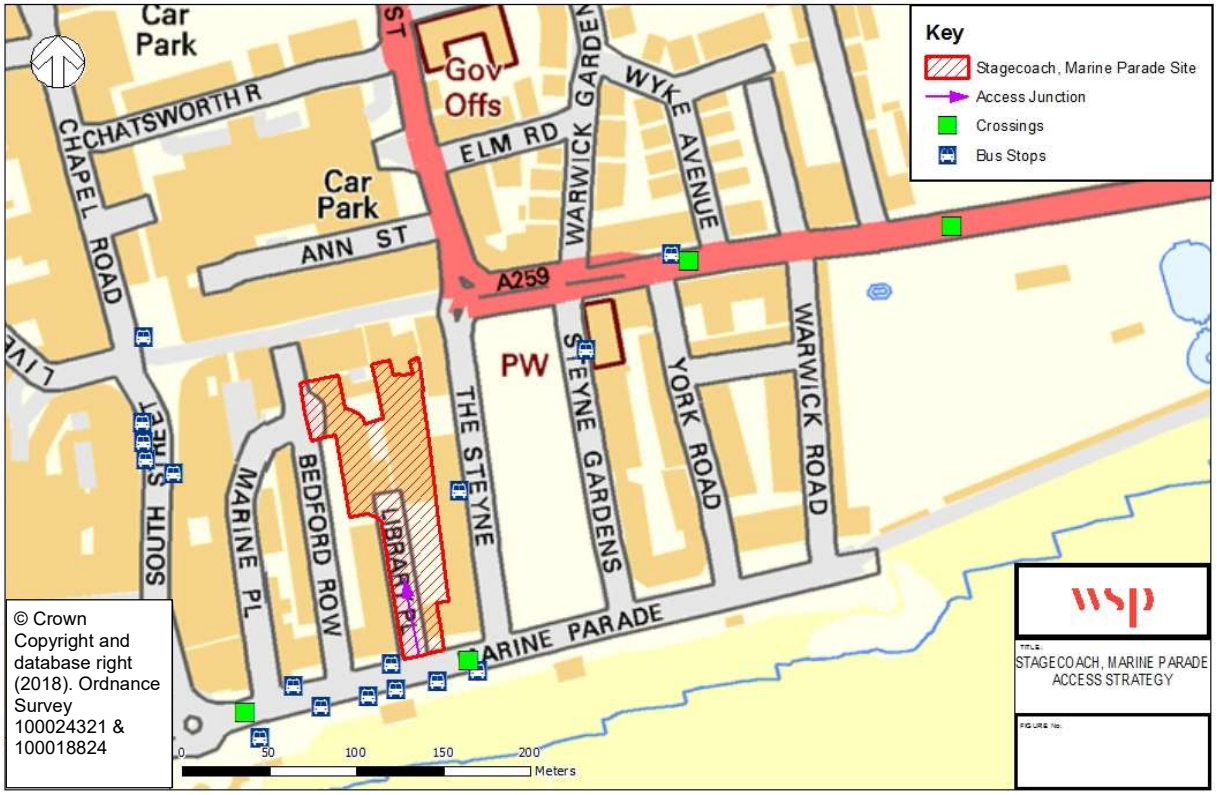
- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods (approximately 07:00 – 19:15) Monday to Saturday with services available every 20 mins on a Sunday;
- Service 700 Coastliner (Littlehampton - Worthing - Shoreham - Brighton), operating six services per hour Monday to Saturday, 3 services per hour on Sundays.

National Express services to London and Eastbourne are also available from these stops.

The primary vehicle routes are via the A259 Brighton Road and Marine Parade.

STAGECOACH, MARINE PARADE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (39.0%), Arun (11.7%), Brighton and Hove (11.0%).
Train	Brighton and Hove (34.5%), Greater London (28.2%), Worthing (10.0%).
Bus	Worthing (40.4%), Brighton and Hove (23.9%), Adur (18.0%).
Bicycle	Worthing (72.3%), Adur (15.9%), Arun (5.5%).

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
GRAFTON

SITE DESCRIPTION

The site is located at the existing Grafton Car Park, located within Worthing Town Centre. The site is bound by Marine Parade to the south; Augusta Place to the west; Knightsbridge House / retail premises to the east and Montague Street to the north. This prominent site, located between the town centre and the shorefront, offers potential to create a new mixed-use development and improve the public realm and enhance access to the seafront.

Nearby destinations include Worthing Town Centre, located less than 100m from the site and Worthing Rail Station located approximately 1.2km from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with crossing provision on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	150 homes
Retail	A1	2,979m2

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	16 (12)	30 (30)
Walk / Cycle	6 (4)	11 (11)
Bus	0 (0)	5 (5)
Rail	0 (0)	10 (10)

Note: all trips (new trips)

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	54 (25)	45 (12)
Walk / Cycle	20 (9)	17 (5)
Bus	2 (2)	0 (0)
Rail	3 (3)	0 (0)

Note: all trips (new trips)

SITE PHOTOS

Marine Parade / Augusta Place

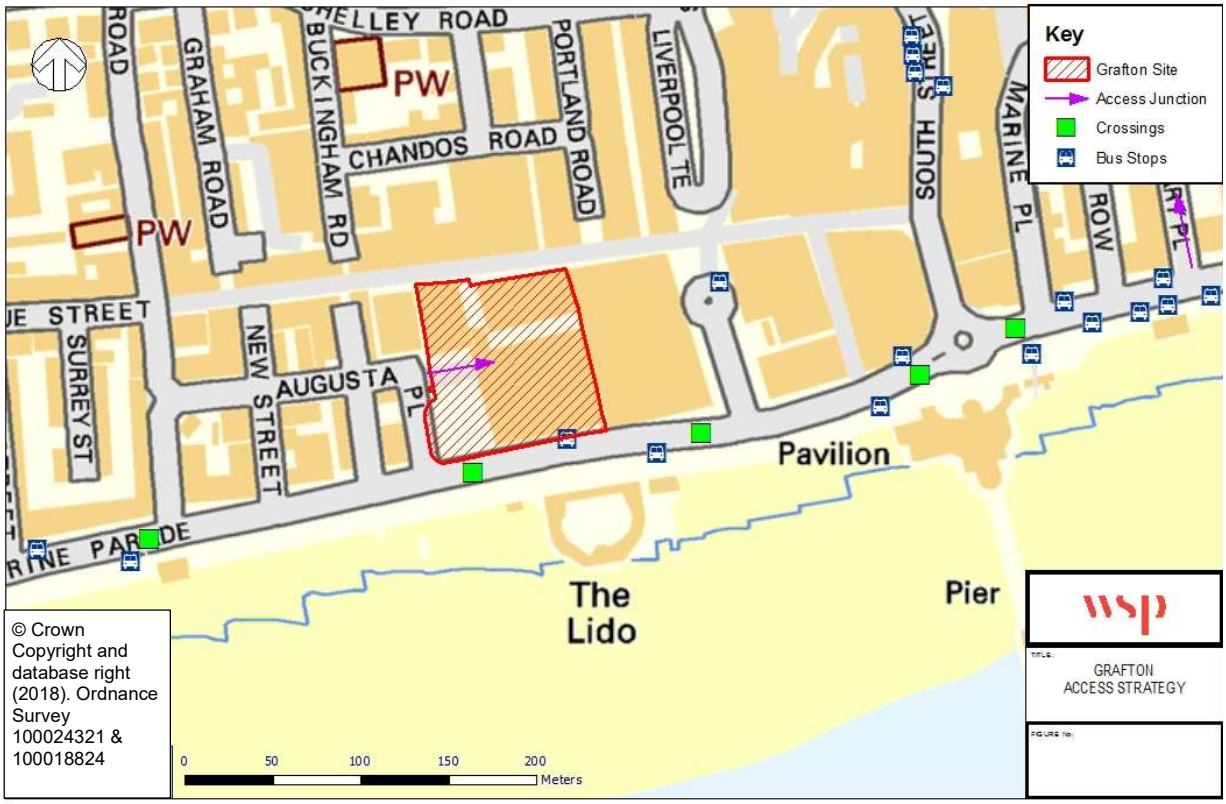
SITE ACCESS

The site is currently accessible for vehicles from Augusta Place which is a one-way street. Augusta Place is accessed from West Buildings to the west of the site and provides access onto Marine Parade through an existing priority junction. Marine Parade provides two bus stops located within 50m from the site, which provide access to a number of services. Access to the westbound bus stop is achievable by way of a signalised pedestrian crossing facility, located adjacent to the site. These bus stops are served by a range of bus services including:

- Service 7 (Salvington – Worthing – Lancing) operates on an hourly basis between AM and PM peak periods (approximately 07:30 – 18:30) Monday to Saturday;
- Service 8 (Worthing – Goring by Sea – South Ferring) operates on an hourly basis between AM and PM peak periods (approximately 08:00 – 18:00) Monday to Saturday;
- Service 700 Coastliner (Wick - Littlehampton - Worthing - Shoreham - Brighton), operating six services per hour Monday to Saturday, 3 services per hour on Sundays.

The primary vehicle routes are along the A259 Brighton Road and Marina Parade.

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (39.0%), Arun (11.7%), Brighton and Hove (11.0%).
Train	Brighton and Hove (34.5%), Greater London (28.2%), Worthing (10.0%).
Bus	Worthing (40.4%), Brighton and Hove (23.9%), Adur (18.0%).
Bicycle	Worthing (72.3%), Adur (15.9%), Arun (5.5%).

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
UNION PLACE

SITE DESCRIPTION

The site is located on a now vacant site immediately south of Union Place, located within Worthing Town Centre. The site is bound by existing buildings / Chatsworth Road to the south, the NCP Car Park to the west, Union Street to the north and the High Street Surface Car Park / the A259 High Street to the east. This site has the potential to deliver a comprehensive mixed use scheme that will improve connections with the town centre and improve leisure / retail circuits.

The site is within Worthing Town Centre and Worthing Rail Station is located approximately 900m from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	250 homes
Retail	A1	2,322m2
Leisure	D2	6,000m2

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	38 (20)	64 (51)
Walk / Cycle	14 (7)	19 (19)
Bus	1 (0)	9 (8)
Rail	1 (1)	17 (16)

Note: all trips (new trips)

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	162 (42)	131 (21)
Walk / Cycle	61 (16)	49 (8)
Bus	4 (3)	1 (0)
Rail	8 (5)	1 (0)

Note: all trips (new trips)

SITE PHOTOS

SITE ACCESS

The site was previously accessible for vehicles from Union Place via two priority junctions which are located approximately 25m apart. Union Place provides access to the wider network via the roundabout with the A259 High Street / Waitrose Car Park Access which is located immediately to the north east of the site. The site is also accessible via a gated access from Chatsworth Road.

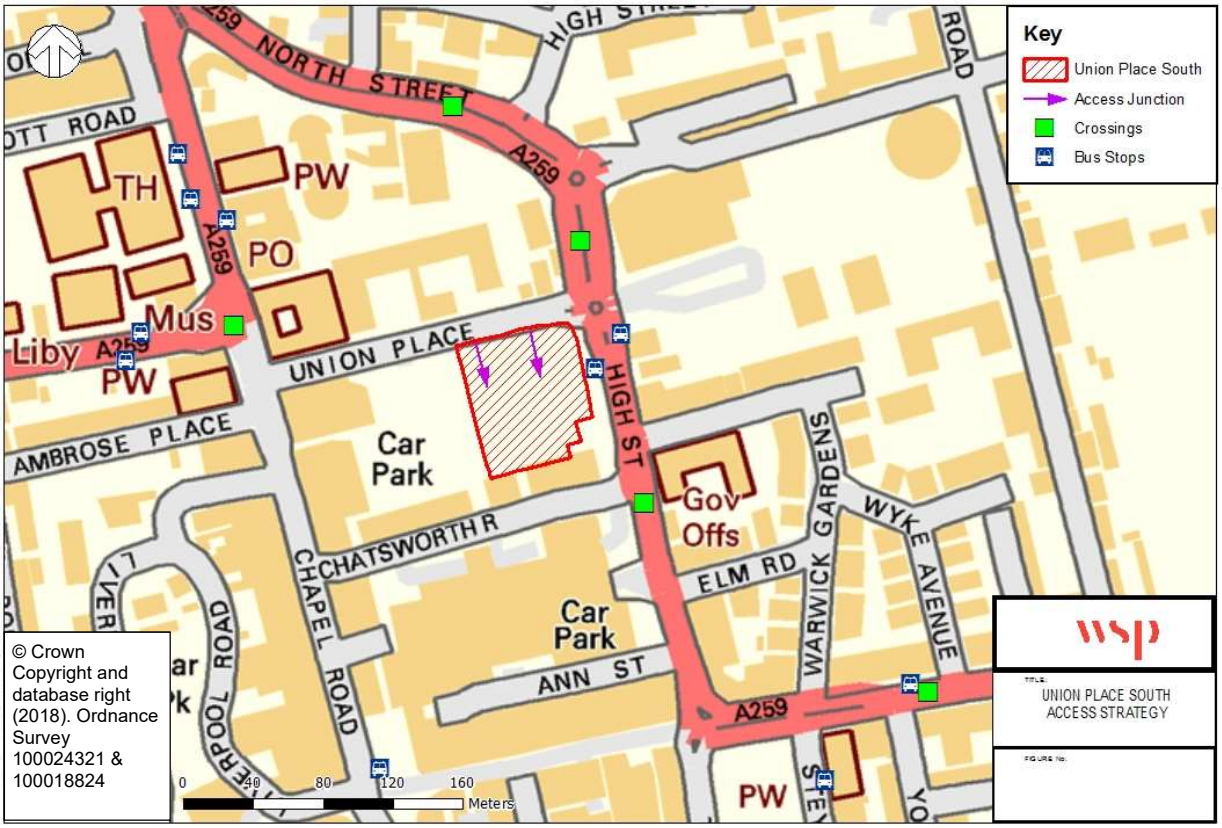
The A259 High Street provides two bus stops, located immediately adjacent to the site, which provide access to a number of services. Access to the southbound bus stop is achievable by way of a signalised pedestrian crossing facility, which is located approximately 30m south of the site. These bus stops are served by a range of bus services including:

- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods (approximately 07:00 – 19:15) Monday to Saturday with services available every 20 mins on a Sunday.

The primary vehicle route is along the A259 High Street.

UNION PLACE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (39.0%), Arun (11.7%), Brighton and Hove (11.0%).
Train	Brighton and Hove (34.5%), Greater London (28.2%), Worthing (10.0%).
Bus	Worthing (40.4%), Brighton and Hove (23.9%), Adur (18.0%).
Bicycle	Worthing (72.3%), Adur (15.9%), Arun (5.5%).

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
TEVILLE GATE

SITE DESCRIPTION

The Teville Gate site is located to the west of the A24, to the north of Teville Road and to the south of Railway Approach linking Worthing's Central railway station with the town centre and is one of the most high-profile sites in Worthing. The site comprises a former shopping centre (now partly demolished), multi-storey car park (demolition started early May) and other derelict buildings. The site offers potential for a mixed-use neighbourhood comprising residential, retail, leisure and other commercial uses, and a new public space.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The site is also located within 1km of Worthing town centre, 12 minutes' walk via continuous footways. Worthing railway station, which is located approximately 150m from the centre of the site.

TYPE	CLASS	QUANTUM
Residential	C3	450 homes
Office	B1	2,780m2
Retail	A1	12,000m2
Leisure	D2	11,000m2

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	89 (43)	119 (94)
Walk / Cycle	34 (16)	45 (36)
Bus	1 (1)	15 (15)
Rail	2 (2)	30 (29)

Note: all trips (new trips)

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	374 (77)	332 (45)
Walk / Cycle	141 (29)	125 (17)
Bus	7 (5)	1 (0)
Rail	14 (9)	3 (0)

Note: all trips (new trips)

SITE PHOTOS


A24 / Teville Road

SITE ACCESS

The site is accessible from the south via existing priority junctions onto Teville Road; and from the north via existing priority junctions onto Railway Approach. The access to the north provides a direct route to Worthing railway station, which is located approximately 150m from the centre of the site.

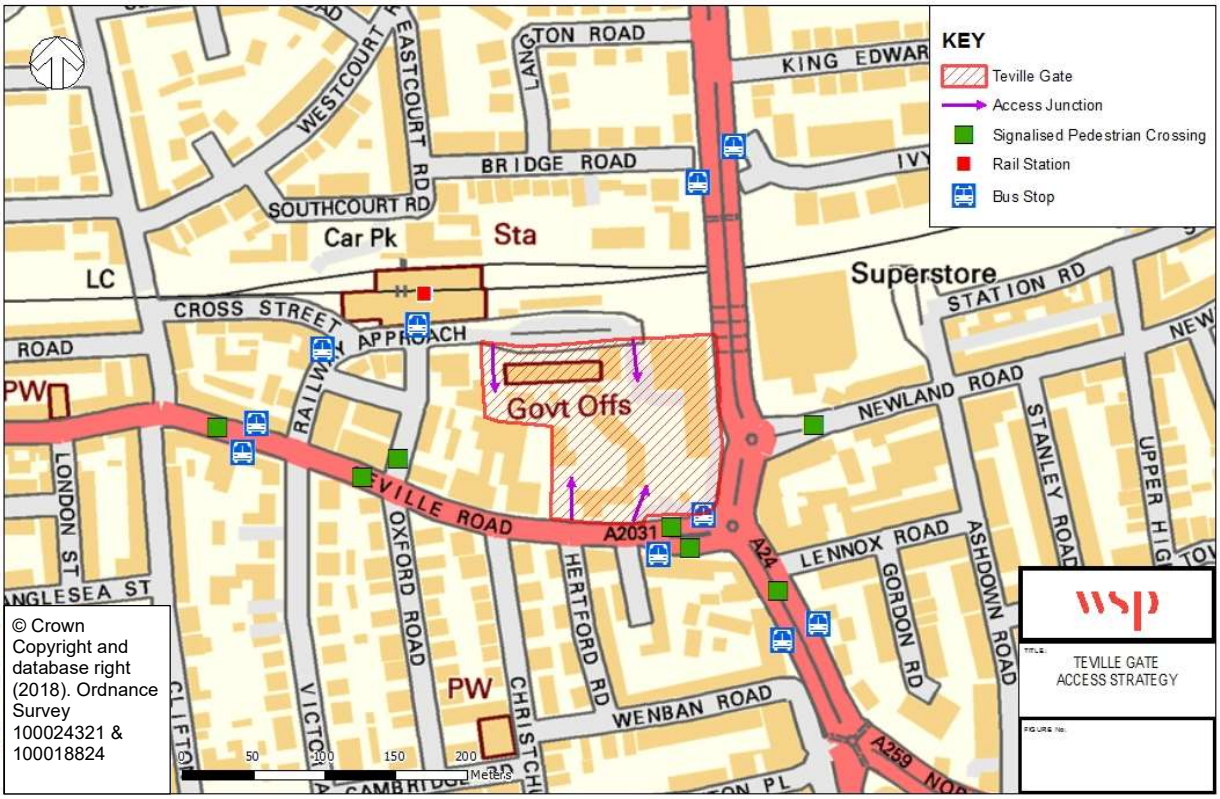
The site accesses directly onto the existing footway network, which provides access to local facilities and public transport services. The footways in the vicinity of the site provide for pedestrian use only.

The closest bus stops to the site are located on Teville Road, approximately 90m from the centre of the site. The westbound bus stop on Teville Road is accessible by way of a two-stage puffin crossing on Teville Road located adjacent to the bus stop. These bus stops are served by Stagecoach Service 5, providing half-hourly service to Durrington; and also the Connect 7 service operated by Compass Travel which provides an hourly service to Lancing and High Salvington.

The site is bounded on its east side by A24 Broadwater Road which is elevated above the ground level of the site to the north of the A24 / Newland Road roundabout to cross the West Coastway rail line. The primary vehicle access routes are the A24 and A27 corridors, which provide the strategic routes to surrounding settlements including Brighton, Crawley and Chichester.

TEVILLE GATE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (44.0%), Brighton and Hove (11.2%), Arun (9.4%)
Train	Brighton and Hove (31.3%), Greater London (27.9%), Worthing (9.4%)
Bus	Worthing (54.9%), Brighton and Hove (18.3%), Adur (12.0%)
Bicycle	Worthing (78.8%), Adur (11.1%), Brighton and Hove (4.5%), Arun (4.5%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
BRITISH GAS SITE, LYNDHURST ROAD

SITE DESCRIPTION

The site comprises British Gas infrastructure, two buildings and associated car parking, located to the north east of Worthing Town Centre. The site is bounded by residential properties to the south, a supermarket to the west, Lyndhurst Road to the north and Park Road to the east. This site has the potential to deliver a residential led development on this centrally located site which is currently occupied by redundant gas holder and depot buildings.

Nearby is Worthing Town Centre, located less than 500m from the site and Worthing Rail Station located approximately 1km from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The site is also located in close proximity to Worthing Hospital, which is a major employer in the area.

TYPE	CLASS	QUANTUM
Residential	C3	85 homes

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	11	34
Walk / Cycle	4	13
Bus	0	2
Rail	0	3

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	28	17
Walk / Cycle	11	7
Bus	1	0
Rail	2	1

SITE ACCESS

The site currently has one point of vehicular access which is onto Park Road. Park Road, in the vicinity of the site, is a one-way street which runs in a south to north direction, connecting the A259 Brighton Road in the south with Lyndhurst Road in the north. Access to the wider network from the site is achievable from Lyndhurst Road and the A259.

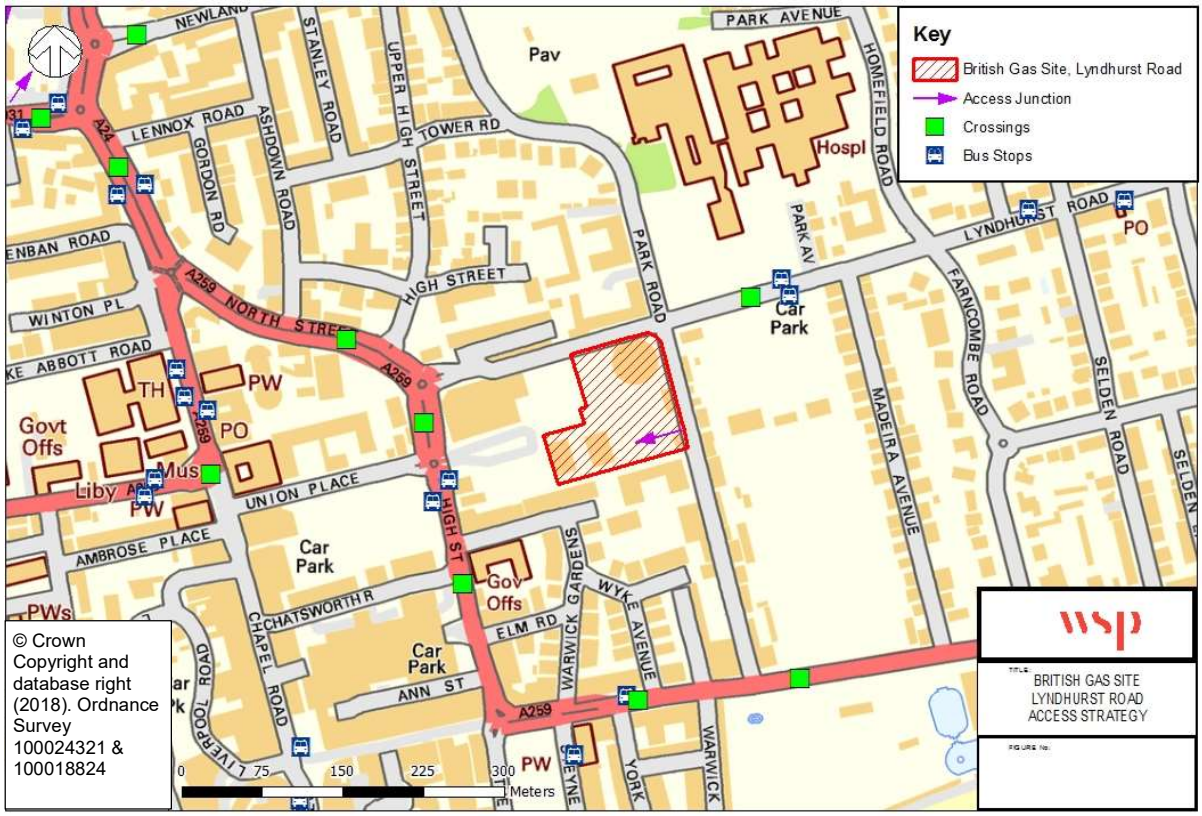
The nearest bus stops to the site are located on Lyndhurst Road, approximately 220m to the north east of the centre of the site. Access to the eastbound bus stop on Lyndhurst Road is achievable via a signalised pedestrian crossing facility which is located immediately prior to the bus stops on Lyndhurst Road. The bus stops are served by services including:

- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods (approximately 07:00 – 19:15) Monday to Saturday with services available every 20 mins on a Sunday.

The primary vehicle route is via the A24.

BRITISH GAS SITE, LYNDHURST ROAD

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (39.0%), Arun (11.7%), Brighton and Hove (11.0%)
Train	Brighton and Hove (34.5%), Greater London (28.2%), Worthing (10.0%)
Bus	Worthing (40.4%), Brighton and Hove (23.9%), Adur (18.0%)
Bicycle	Worthing (72.3%), Adur (15.9%), Arun (5.5%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
MARTLETS WAY

SITE DESCRIPTION

The site is currently vacant land which is located between the Holm Oak and Goring Business Parks within the Goring-by-Sea area of Worthing. The site is bounded by residential properties to the south, Goring Business Park to the west, the West Coastway Railway Line to the north and Holm Oak Business Park to the east. There is potential at the site to redevelop the parcels of land, with the key focus on employment uses and an extension to the existing business park.

Nearby destinations include Durrington-on-Sea Rail Station located less than 450m from the site; as well as Goring-by-Sea Neighbourhood Centre, located less than 750m from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	50 homes
Office	B1	2,700m2
Industrial	B2, B8	2,700m2

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	57	32
Walk / Cycle	21	11
Bus	1	1
Rail	1	2

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	25	50
Walk / Cycle	9	19
Bus	0	0
Rail	1	1

SITE ACCESS

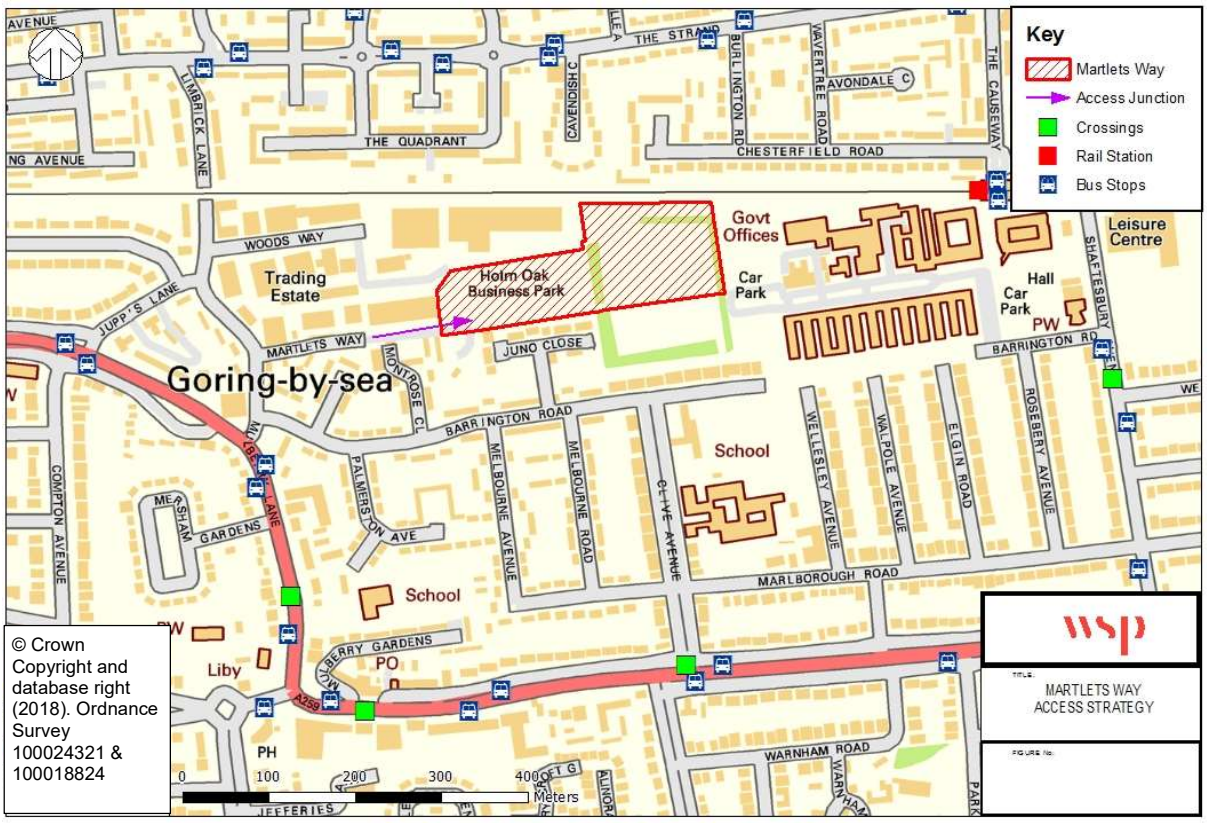
The site currently has one formal point of vehicular access which is onto Martlets Way, which is located within Goring Business Park. Martlets Way provides onward connectivity to Mulberry Lane which then links with the A259 Goring Way. The A259 Goring Way provides links to the wider network. The nearest bus stops to the site are located Mulberry Lane, 350m south west of the western boundary of the site. Areas of the site are therefore located outwith 400m walking distance of a bus stop. The closest signalised pedestrian crossing which would facilitate access to the northbound bus stop is located approximately 100m south of the aforementioned bus stops. These bus stops are served by the following Stagecoach and Compass Travel services:

- Service 8 (Worthing – Goring by Sea – South Ferring) operates on an hourly basis between AM and PM peak periods (approximately 08:00 – 18:00) Monday to Saturday
- Service 700 Coastliner (Wick - Littlehampton - Worthing - Shoreham - Brighton), operating six services per hour Monday to Saturday, 3 services per hour on Sundays.

The primary vehicle route is along the A259.

MARTLETS WAY

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (54.7%), Arun (13.5 %), Adur (5.5%)
Train	Greater London (32.5%), Brighton and Hove (20.9 %), Worthing (15.3%)
Bus	Worthing (80.0%), (Arun 9.3%), (Adur 4.0%)
Bicycle	Worthing (80.8%), Arun (7.9%), Adur (5.3%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
DECOY FARM

SITE DESCRIPTION

The site currently comprises vacant land and an industrial site on the edge of Hazelwood Trading Estate in the east of Worthing. The site is bound by Willowbrook Avenue and Dominion Way to the south, industrial developments to the west, agricultural land to the north and agricultural land and a recycling centre to the east.

This site represents a significant opportunity in Worthing to bring forward new employment floorspace (open storage, B1, B2, B8 uses). It is anticipated that the scale of development at the site will be limited by the capacity of the road network and access arrangements rather than the size of the site.

The closest Rail Station is East Worthing, located less than 450m from the site.

TYPE	CLASS	QUANTUM
Office	B1	21,200m2
Commercial	B2, B8	28,800m2

MODE	NO. OF TRIPS AM PEAK ORIGIN	DESTINATION
Private Car	418	103
Walk / Cycle	157	39
Bus	5	1
Rail	10	2

MODE	NO. OF TRIPS PM PEAK ORIGIN	DESTINATION
Private Car	71	336
Walk / Cycle	27	126
Bus	0	2
Rail	0	4

SITE PHOTOS

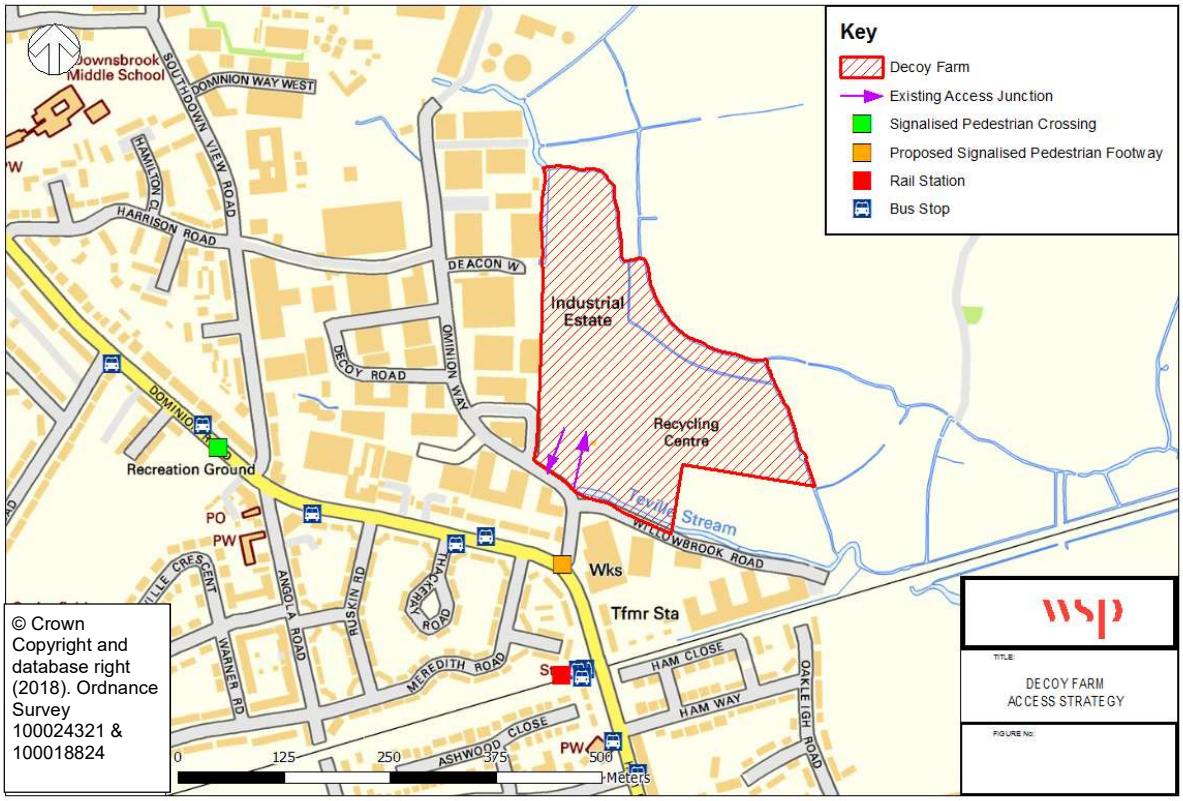
SITE ACCESS

The current access points into the site are for the industrial land use which operates a one way system, with separate entrance and exit points onto Dominion Way. Future access to the site may also be available via Deacon Way, on the western boundary of the site, which currently has a gated access to the site. Dominion Way provides access to the B2223 Dominion Road to the south of the site which provides links to the A259 in the south and the A24 in the north-west. These roads provide links to the wider network. The nearest bus stops to the site are located on the B2223 Dominion Road, approximately 190m south of the boundary of the site. There are no signalised pedestrian crossings on either Dominion Way or the B2223 Dominion Road in the vicinity of the site or the bus stops. These bus stops are served by the following service:

- Service 16 (Lancing – Worthing – West Tarring) operates on an hourly basis between the AM and PM peak periods (approximately 06:30 – 19:30) Monday to Saturday with no Sunday service.

The primary vehicle routes are via the B2223 and along the A259 and the A24.

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (46.0%), Adur (11.3%), Brighton and Hove (10.5%)
Train	Brighton and Hove (33.5%), Greater London (26.0%), Worthing (12.0%)
Bus	Worthing (58.3%), Brighton and Hove (16.5%), Adur (15.1%)
Bicycle	Worthing (79.3%), Adur (14.0%), Brighton and Hove (4.1%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
HMRC OFFICES, BARRINGTON ROAD

SITE DESCRIPTION

The site comprises the existing Holm Oak Business Park, which has a variety of buildings and associated parking, located within the Goring-by-Sea area of Worthing. The site is bound by residential properties to the south, residential properties / vacant land to the west, Durrington-on-Sea Railway Station to the north and an office building and associated car parking to the east. There is potential at the site for mixed use redevelopment of parts of the site.

Nearby there is Durrington-on-Sea Rail Station located less than 100m from the site and Durrington Neighbourhood Centre located less than 500m from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	500 homes
Office	B1	9,300m2
Industrial	B2, B8	9,300m2

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	240	240
Walk / Cycle	90	90
Bus	3	9
Rail	6	19

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	195	240
Walk / Cycle	73	90
Bus	5	3
Rail	10	6

SITE PHOTOS

Barrington Rd / Shaftesbury Ave

SITE ACCESS

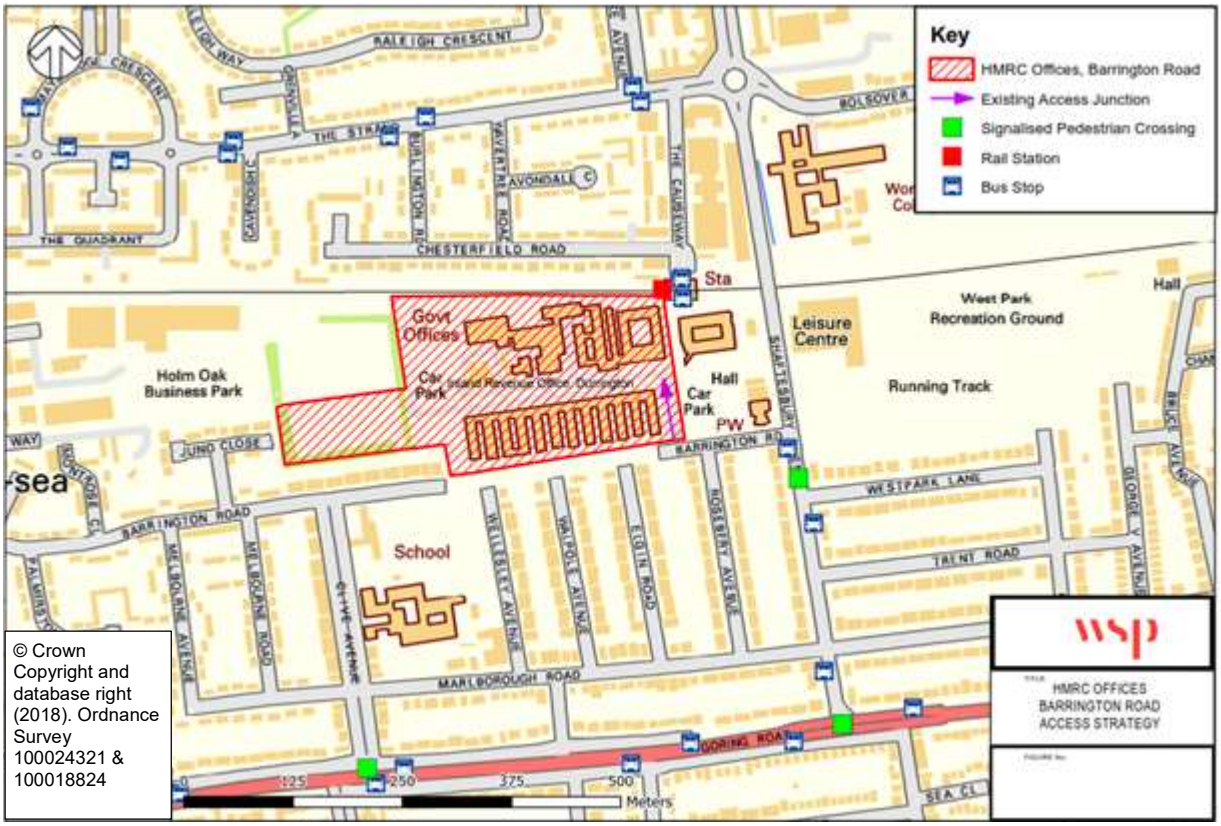
The site currently has one point of vehicular access which is onto Barrington Road. Barrington Road is a short stretch of road which links the site access with Shaftesbury Avenue to the east of the site. Shaftesbury Avenue provides a link to the Durrington Neighbourhood Centre in the north as well as to the A259 Goring Road to the south which facilitates access to the wider network. The nearest bus stops to the site are located on Shaftesbury Avenue, approximately 250m to the south east of the eastern boundary of the site. It is anticipated that the majority of the site will be located within 400m of a bus stop. Access to the southbound bus stop on Shaftesbury Avenue is achievable via a signalised pedestrian crossing facility which is located between the northbound and southbound stops. These bus stops are served by a range of services including:

- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods Monday to Saturday with services every 20 mins on a Sunday

The primary vehicle route is via the A259.

HMRC OFFICES, BARRINGTON ROAD

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (54.7%), Arun (13.5 %), Adur (5.5%)
Train	Greater London (32.5%), Brighton and Hove (20.9 %), Worthing (15.3%)
Bus	Worthing (80.0%), (Arun 9.3%), (Adur 4.0%)
Bicycle	Worthing (80.8%), Arun (7.9%), Adur (5.3%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
CENTENARY HOUSE

SITE DESCRIPTION

The site is located at the existing Centenary House which contains departments of the West Sussex County Council and Sussex Police in the West Durrington Area of Worthing. The site is bound by the A2032 to the south, residential properties to the west and north and Durrington Lane to the east. There is potential to redevelop parts of the site to provide a mix of uses.

Nearby destinations include Durrington Neighbourhood Centre located approximately 900m from the site and Durrington-on-Sea Rail Station located approximately 1.3km from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	100 homes
Food Retail	A1	2,740m2

MODE	NO. OF TRIPS AM PEAK ARRIVALS	DEPARTURES
Private Car	141 (13)	126 (40)
Walk / Cycle	53 (5)	47 (15)
Bus	10 (0)	4 (2)
Rail	20 (0)	9 (4)

Note: all trips (new trips)

MODE	NO. OF TRIPS PM PEAK ARRIVALS	DEPARTURES
Private Car	223 (33)	217 (20)
Walk / Cycle	84 (13)	82 (8)
Bus	12 (1)	11 (0)
Rail	23 (2)	21 (1)

Note: all trips (new trips)

SITE PHOTOS

Centenary House (Durrington Lane)

SITE ACCESS

The site is currently accessed from Durrington Lane via a priority junction which has a 'left only' restriction on vehicles leaving the site. Durrington Lane meets the A2032 at a roundabout with The Boulevard immediately to the south east of the site. The A2032 provides links to the wider network. There is a shared pedestrian / cycleway running along the north side of the A2032.

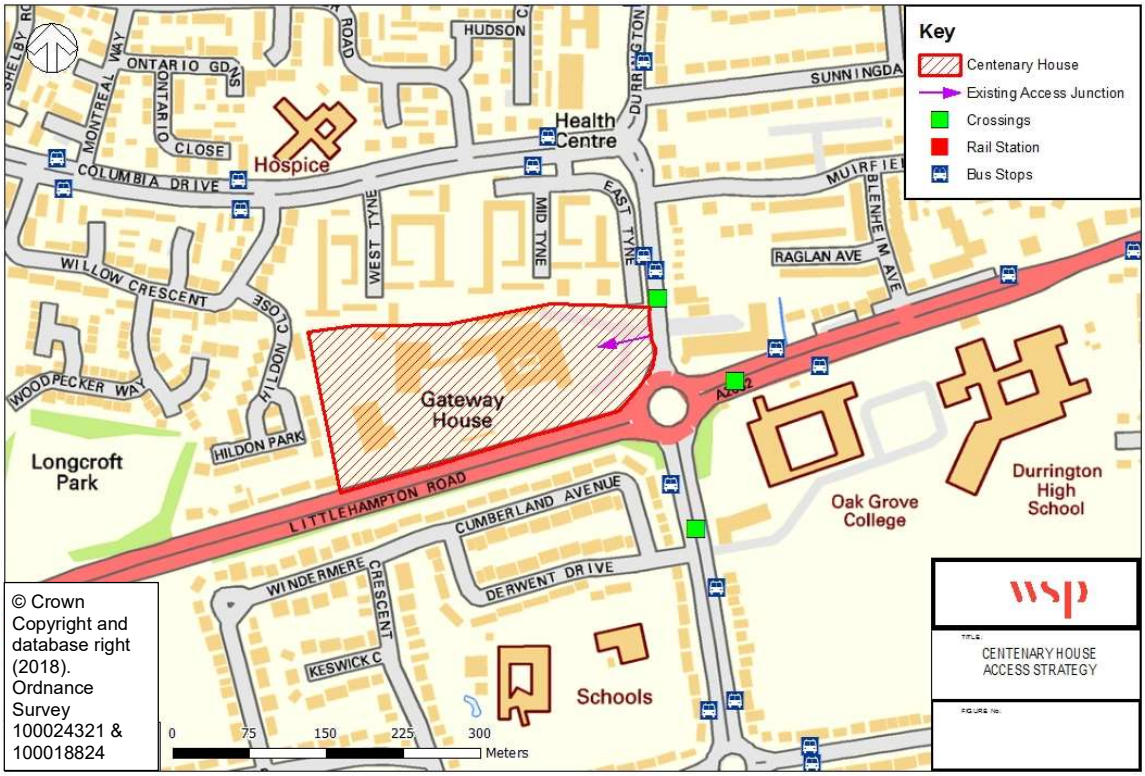
The nearest bus stops to the site are located on Durrington Lane, 80m north east of the boundary of the site. It is anticipated that the entirety of the site will be located within 400m walking distance of these bus stops. There is a signalised pedestrian crossing facility located on Durrington Road between the site and the bus stops. These bus stops are served by a range of services including:

- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods (approximately 07:00 – 19:15) Monday to Saturday with services available every 20 mins on a Sunday

The primary vehicle route is along the A2032.

CENTENARY HOUSE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (53.9%), Arun (11.3%), Adur (7.1%)
Train	Greater London (27.7%), Brighton and Hove (26.7%), Worthing (14.9%)
Bus	Worthing (83.3%), Adur (5.1%), Brighton and Hove (4.5%)
Bicycle	Worthing (78.4%), Arun (6.9%), Adur (5.4%), Brighton and Hove (5.4%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
LAND SOUTH OF STOKE ABBOTT RD

SITE DESCRIPTION

The site is currently occupied by the Sussex Community NHS Trust Central Clinic and the Civic Centre car park and is located south of Stoke Abbott Road. The site is bound by Worthing County Court and Worthing Registration Office to the south, Christchurch Road to the west, Stoke Abbott Road to the north and Worthing Assembly Hall and Worthing Library to the East.

Nearby attractions include Worthing Town Centre, located 450m south of the site, and Worthing Railway Station, which is located approximately 600m north of the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	64 homes
GP Surgery	D1	720m2

Note: GP Surgery size taken from TRICS Average

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	31	25
Walk / Cycle	12	9
Bus	0	2
Rail	0	4

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	24	24
Walk / Cycle	9	9
Bus	1	0
Rail	2	0

SITE ACCESS

The site currently has one point of vehicular access which is onto Stoke Abbott Road to the north of the site which links with the A259 Chapel Road to the east of the site. The A259 provides link to the town centre to the south and the wider network via the A24 to the north.

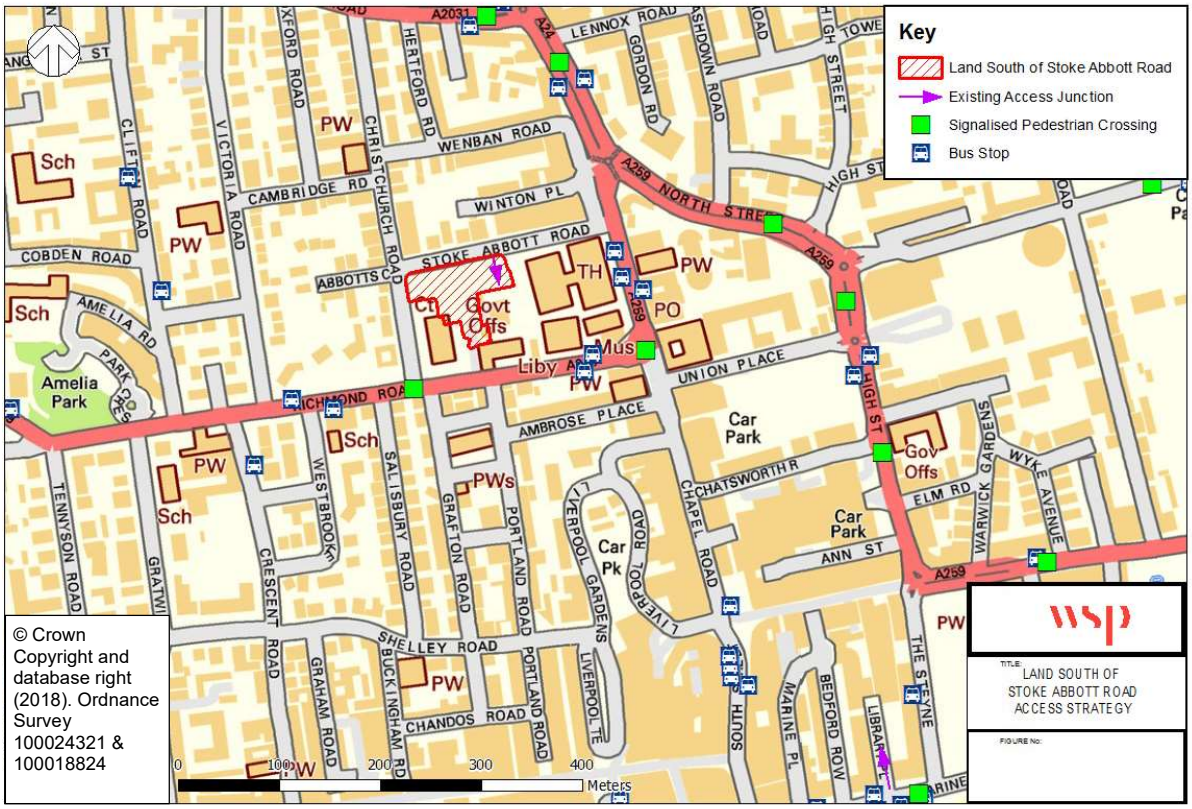
The nearest bus stops to the site are located on the A259 Chapel Road approximately 175m to the east of the site. A further service is accessible from the A259 Richmond Road to the south of the site. It is anticipated that the entire site will be located within 400m of a bus stop. Access to the southbound bus stop on the A259 Chapel Road is achievable via a signalised pedestrian crossing facility which is located on the corner of Chapel Road and Richmond Road, which is to the south of the bus stops. These bus stops are served by a range of services including:

- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods Monday to Saturday with services every 20 mins on a Sunday

The primary vehicle route is via the A259.

LAND SOUTH OF STOKE ABBOTT RD

SITE TRANSPORT PROVISION



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TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (39.0%), Arun (11.7%), Brighton and Hove (11.0%).
Train	Brighton and Hove (34.5%), Greater London (28.2%), Worthing (10.0%).
Bus	Worthing (40.4%), Brighton and Hove (23.9%), Adur (18.0%).
Bicycle	Worthing (72.3%), Adur (15.9%), Arun (5.5%).

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
WORTHING LEISURE CENTRE

SITE DESCRIPTION

The site is located at the existing Worthing Leisure Centre which currently offers various activities and sports including football and athletics and is located in the Goring-by-Sea area of Worthing. The site is bound by residential properties and allotments to the south, Shaftesbury Avenue to the west, the railway line to the north and residential properties and a scout hall to the east.

Nearby there is Durrington-on-Sea Rail Station located less than 300m from the site and Durrington Neighbourhood Centre located less than 500m from the site. Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads.

TYPE	CLASS	QUANTUM
Residential	C3	160 homes
Leisure Centre	D2	3,566m2

Note: Leisure Centre size taken from TRICS Average

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	40 (21)	80 (64)
Walk / Cycle	15 (8)	30 (24)
Bus	0 (0)	3 (3)
Rail	1 (1)	6 (6)

Note: all trips (new trips)

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	93 (53)	75 (33)
Walk / Cycle	35 (20)	28 (12)
Bus	2 (2)	1 (1)
Rail	3 (3)	1 (1)

Note: all trips (new trips)

SITE PHOTOS

Worthing Leisure Centre

SITE ACCESS

The site currently has one point of vehicular access which is onto Shaftesbury Avenue to the west of the site. Shaftesbury Avenue provides a link to the Durrington Neighbourhood Centre in the north as well as to the A259 Goring Road to the south which facilitates access to the wider network. There is also the opportunity to provide connections into the site on Robson Road and Bruce Avenue.

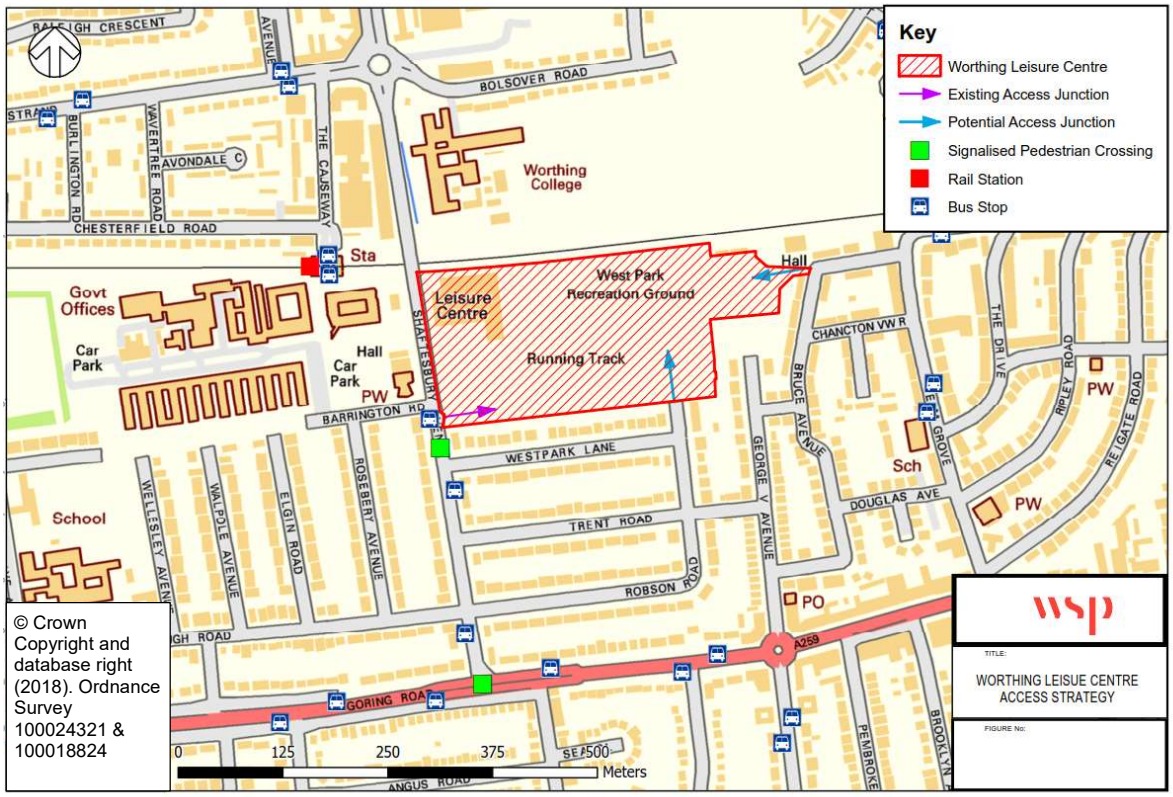
The nearest bus stops to the site are located on Shaftesbury Avenue, approximately 85m to the south west of the western boundary of the site. A further service is accessible from Tarring Road. It is anticipated that the majority of the site will be located within 400m of a bus stop. Access to the northbound bus stop on Shaftesbury Avenue is achievable via a signalised pedestrian crossing facility which is located between the northbound and southbound stops. These bus stops are served by a range of services including:

- Service Pulse (Lancing - Worthing – Durrington) operates 6 service per hour between the AM and PM peak periods Monday to Saturday with services every 20 mins on a Sunday

The primary vehicle route is via the A259.

WORTHING LEISURE CENTRE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (54.7%), Arun (13.5 %), Adur (5.5%)
Train	Greater London (32.5%), Brighton and Hove (20.9 %), Worthing (15.3%)
Bus	Worthing (80.0%), (Arun 9.3%), (Adur 4.0%)
Bicycle	Worthing (80.8%), Arun (7.9%), Adur (5.3%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
NORTH OF BEECHES AVENUE

SITE DESCRIPTION

The site is located on existing agricultural land in the northeast of the Borough, currently comprising a paddock, grazing land and a car repair business. The site is bounded by Beeches Avenue to the south; Charmandean Lane to the west; Worthing United Football Club to the east; and South Downs National Park (SDNP) to the north. The site offers potential for a residential development due to its generally lower landscape, visual and ecology sensitivity or value.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings across major roads. The nearest schools are Bramber Primary School and Downsbrook Primary School, located 1.1km and 1.3km from the site, respectively.

Nearby destinations include a supermarket and retail park, located 800m from the site.
East Worthing Rail Station is located approximately 2.5km from the site and Worthing Town Centre can be accessed within 3.1km.

TYPE	CLASS	QUANTUM
Residential	C3	90 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	12	36
Walk / Cycle	5	13
Bus	0	2
Rail	0	3

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	30	18
Walk / Cycle	11	7
Bus	1	0
Rail	2	1

SITE PHOTOS

SITE ACCESS

The current access to the site is from the south via a field at the northern end of Beeches Avenue. The access to the A27 is provided via an existing priority junction. This junction has been assessed and the results show that the existing junction cannot accommodate additional traffic volumes from Beeches Avenue. Furthermore, there does not appear to be scope to make improvements to this junction that would allow for a suitable access to serve this potential development site. Alternative vehicular means of access will be required, to be delivered alongside the proposals for the Worthing United FC site due to existing capacity issues at the Beeches Avenue / A27 priority junction. This would provide a primary connection to the A27 via the Lyons Way junction. Development at Beeches Avenue would therefore be dependent on access being gained through the football club land to the east. It is understood that no such access arrangement has yet been agreed.

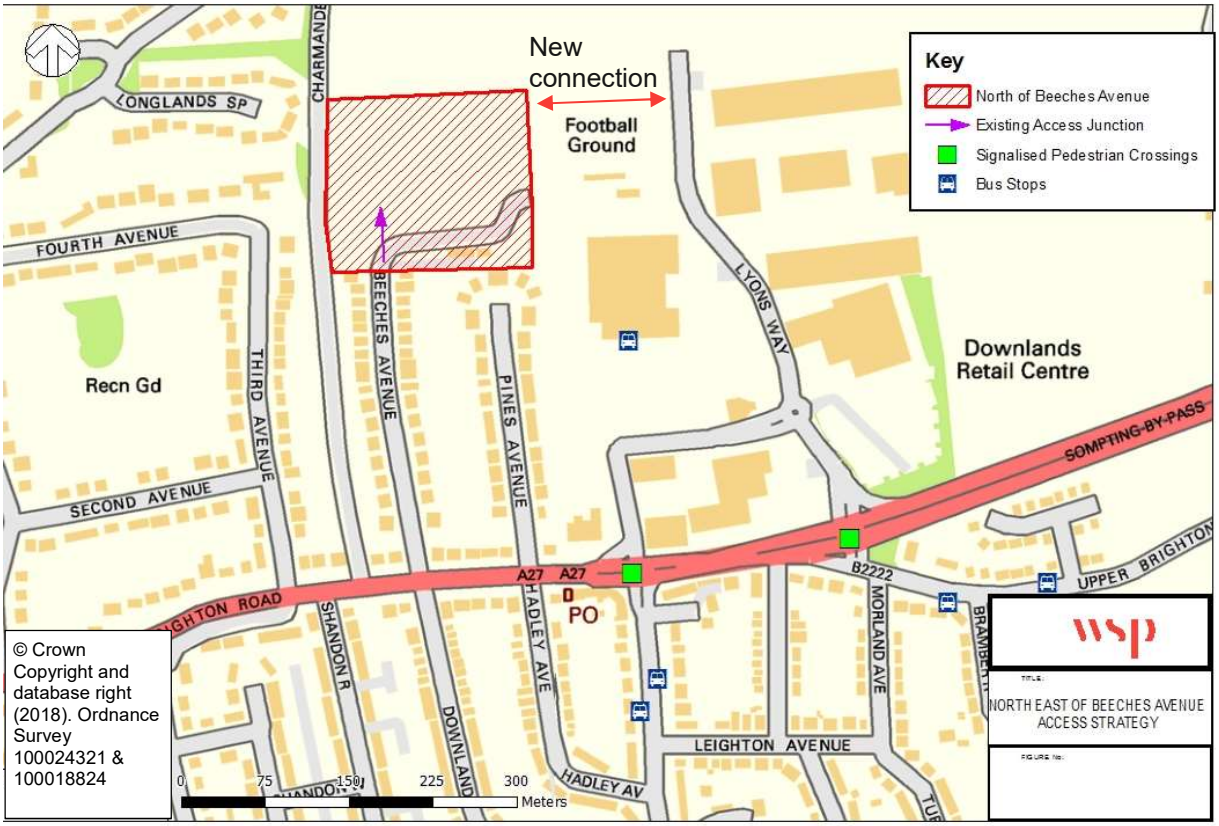
The nearest bus stop to the site is located on Sompting Road, approximately 700m from the site access. Access to the northbound and southbound bus stops on Sompting Road is provided by way of signalised pedestrian crossing facilities provided at the Sompting Road / A27 junction. These bus stops are served by the following Compass Travel services:

- Service 16 (Lancing - Worthing - West Tarring), operating hourly; and
- Service 7 (Lancing - Sompting - Worthing - Durrington - Salvington), operating hourly.

The primary vehicle route will be via the A27 corridor. The suitability of the A27 / Beeches Avenue priority junction has been considered as part of this transport assessment and alternative means of access for vehicular traffic is proposed, as described above.

NORTH OF BEECHES AVENUE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.8%), Adur (8.8%), Arun (8.1%)
Train	Greater London (45.5%), Brighton and Hove (27.3%), Worthing (7.6%)
Bus	Worthing (66.7%), Adur (11.1%), Arun (8.3%)
Bicycle	Worthing (85.0%), Adur (6.6%), Arun (3.6%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
WORTHING UNITED FC

SITE DESCRIPTION

The site is located on existing land to the northeast of the Borough, currently being used as a football ground. The site is bounded by Lyons Way to the east; agricultural land to the west; Sainsbury's superstore and Downlands Business Park to the south; and South Downs National Park (SDNP) to the north. The site offers potential for a residential development due to its generally lower landscape, visual and ecology sensitivity or value.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The nearest schools are Bramber Primary School and Downsbrook Primary School, located 800m and 1.4km from the site, respectively.

Nearby destinations include a supermarket and retail park, located 300m from the site.
East Worthing Rail Station is located approximately 2.4km from the site and Worthing Town Centre can be accessed within 3.2km.

TYPE	CLASS	QUANTUM
Residential	C3	60 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	8	24
Walk / Cycle	3	9
Bus	0	1
Rail	0	2

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	20	12
Walk / Cycle	8	5
Bus	1	0
Rail	1	0

SITE PHOTOS

SITE ACCESS

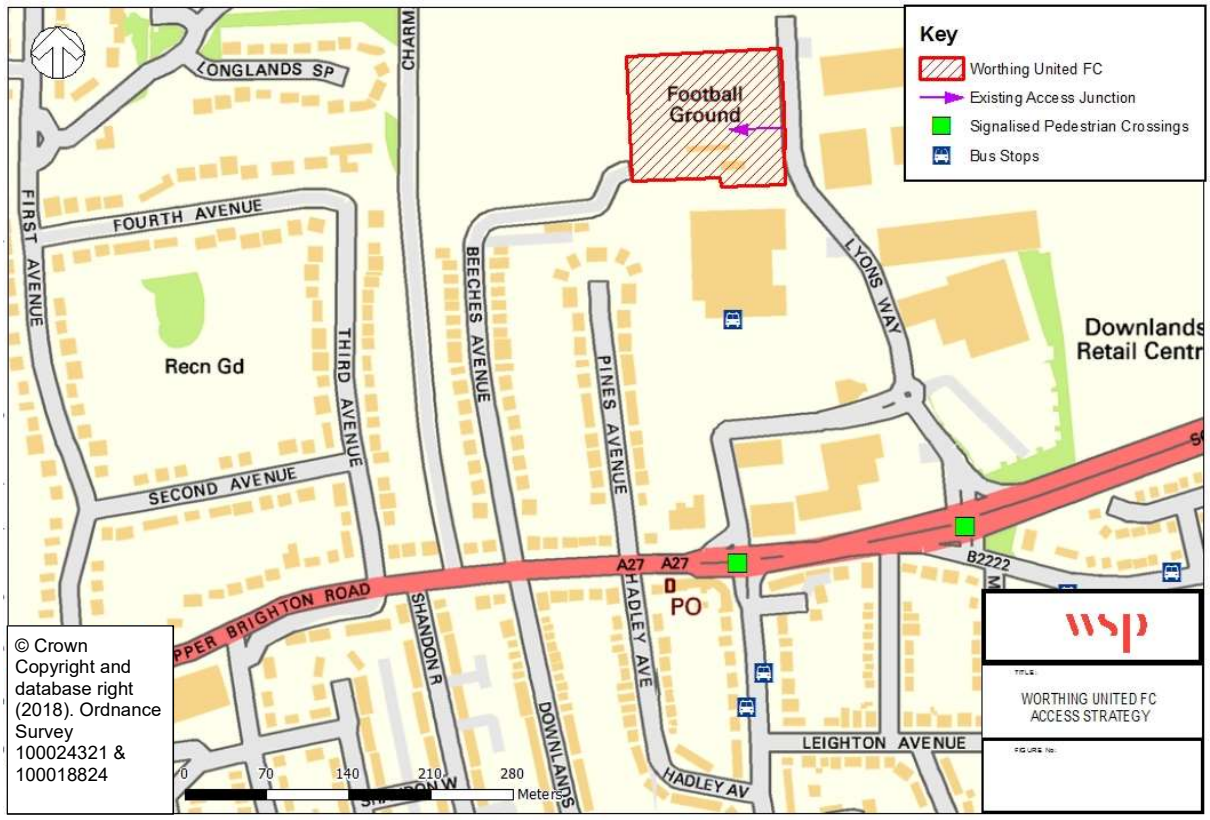
The site is accessible from the east via an existing access onto Lyons Way, which currently serves the football ground. The access on Lyons Way provides a direct route to the A27 via an existing signalised junction. It is proposed that a connection to the Beeches Avenue site would form part of the configuration of the transport provision within this site (see North of Beeches Avenue). The capacity of the Lyons Way junction has been assessed and is capable of accommodating the traffic generated by the Worthing FC and North of Beeches Avenue traffic combined.

The nearest bus stop to the site is on Sompting Road, outside Sainsbury's superstore, approximately 300m from the site access. This bus stop is served by Compass Travel's Service 16 (Lancing - Worthing - West Tarring), operating hourly.

The primary vehicle routes are via the A27 corridor, at the Grove Lodge junction and Sompting Road / A27 signalised junction.

WORTHING UNITED FC

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.8%), Adur (8.8%), Arun (8.1%),
Train	Greater London (45.5%),Brighton and Hove(27.3%), Worthing(7.6%
Bus	Worthing (66.7%), Adur (11.1%), Arun (8.3%),
Bicycle	Worthing (85.0%), Adur (6.6%), Arun (3.6%),

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
UPPER BRIGHTON ROAD

SITE DESCRIPTION

The site located on an area of open green space between Worthing and Sompting, in the northeast of the Borough. The northern section of the site adjoining the A27 is currently in equestrian use. The site is divided into two sections by the B2222 Upper Brighton Road. The northern site is bound by the A27 to the north; Lambley's Lane to the east; Upper Brighton Road to the south; and a residential zone to the west. The southern site is bound by Upper Brighton Road to the north; residential development and Bramber Primary School to the west and south; and agricultural land to the east.

Local catchment area primary and secondary schools would be accessible by foot using continuous footways following the introduction of a footway facility on or to connect with Upper Brighton Road. The nearest schools are Bramber Primary School and Downsbrook Primary School, located within 100m and 1.3km from the site, respectively. Nearby destinations include a supermarket and retail park, located 600m from the site. It should also be noted that traffic calming is present on Upper Brighton Road along the boundary of the site.

East Worthing Rail Station is located approximately 2km from the site and Worthing Town Centre can be accessed within 2.6km.

TYPE	CLASS	QUANTUM
Residential	C3	123 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	16	49
Walk / Cycle	6	18
Bus	0	2
Rail	1	4

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	41	25
Walk / Cycle	15	9
Bus	1	0
Rail	2	1

SITE PHOTOS

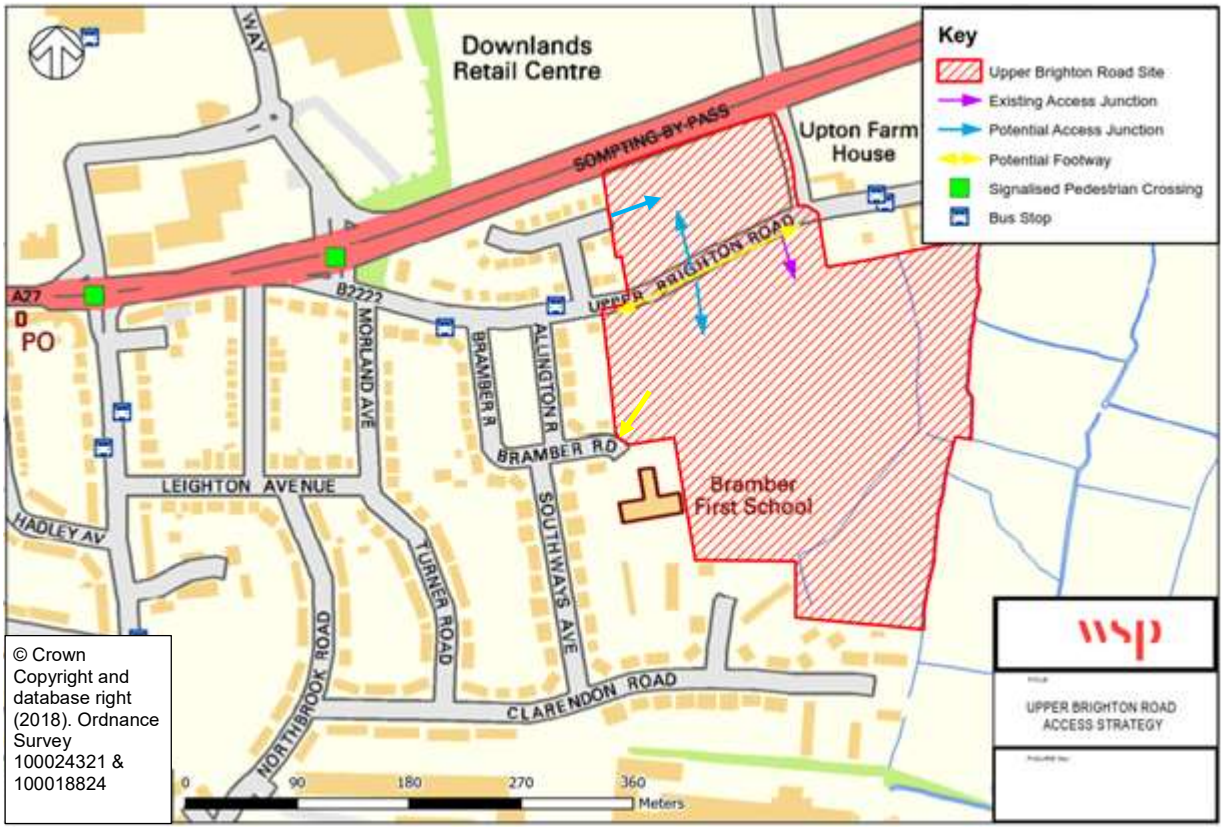
SITE ACCESS

With regards to access into the northern portion of the site, there is potential to create a mini roundabout, similar to the access to The Templars estate to the west, which would provide access into site from Upper Brighton Road directly. Alternatively direct access via The Templars could be achieved. An existing access into the southern portion of the site is located on Upper Brighton Road, in the north east corner of the plot. This access could also be in the form of a mini roundabout or priority T-junction. A non-motorised user access could be achieved from the southern portion of the site onto Bramber Road and improved non-motorised user facilities to improve Upper Brighton Road.

The nearest bus stop to the site is located on Upper Brighton Road, less than 100m from the existing site accesses to the east. These bus stops are served by Compass Travel's Service 16 (Lancing - Worthing - West Tarring), operating hourly. The primary vehicle routes are predicted to be along Upper Brighton Road and the A27(T) corridor, between Worthing and Sompting.

UPPER BRIGHTON ROAD

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (46.1%), Adur (12.2%), Brighton and Hove (10.1%).
Train	Brighton and Hove (36.8%), Greater London (22.9%), Worthing (13.4%)
Bus	Worthing (66.7%), Brighton and Hove (15.8%), Adur (12.3%)
Bicycle	Worthing (84.1%), Adur (8.2%), Arun (4.3%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
GORING-FERRING GAP

SITE DESCRIPTION

The site is located on existing agricultural land to the south west of the Borough. The site currently comprises playing fields in the north east quadrant. The site is bounded by Marine Drive to the south; Sea Lane (W) to the west; Midhurst Drive to the north; and BMI Goring Hall Hospital and Aldsworth Avenue to the east.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The nearest schools are Ferring Church of England Primary School and Chatsmore Catholic High School, located 100m and 1.3km from the site, respectively.

Nearby destinations include Goring Hall Hospital, located 600m from the site. Goring-by-Sea Rail Station is located approximately 1.1km from the site and Worthing Town Centre can be accessed within 2.6km.

TYPE	CLASS	QUANTUM
Residential	C3	354 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	47	141
Walk / Cycle	18	53
Bus	1	6
Rail	2	12

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	118	72
Walk / Cycle	45	27
Bus	3	1
Rail	7	3

SITE PHOTOS


View from Marine Drive

Amberley Drive

SITE ACCESS

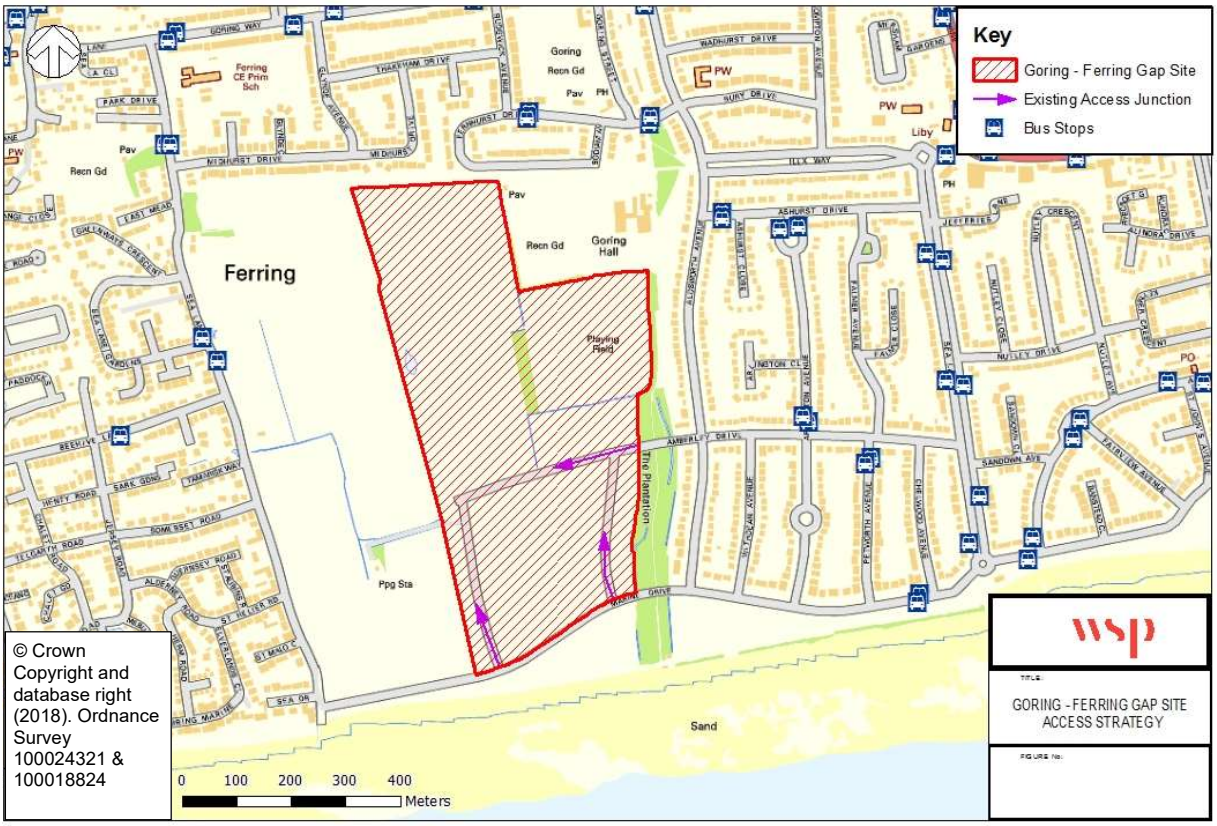
Access is available from the east via Amberley Drive, which bisects the site. This access point has a height restriction in place. Amberley Drive provides access to the A259 Mulberry Lane via Sea Lane (E). There is currently no footway along Marine Drive adjacent to the southern boundary of the site and this could be provided through extension of the existing provision.

The nearest bus stops to the site access are located on Arlington Avenue, located 200m to the east. These bus stops are served by Compass Travel's Service 8 (Lancing - Worthing - West Tarring), operating hourly and there is potential to extend services into the site.

The primary vehicle routes for traffic associated with the site are along the A259 with onward access to the A27 via Goring Street.

GORING-FERRING GAP

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (54.7%), Arun(13.5%), Adur(5.5%)
Train	Greater London (32.5%), Brighton and Hove (20.9%), Worthing (15.3%)
Bus	Worthing (80.0%), Arun (9.3%), Adur (4.0%)
Bicycle	Worthing (80.0%), Arun (7.9%), Adur (5.3%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
CHATSMORE FARM

SITE DESCRIPTION

The site is located on existing agricultural land in the south west of the Borough. The site is bounded by a rail line to the south; Goring Street to the west; the A259 to the north; and Ferring Lane to the east.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The nearest schools are Chatsmore Catholic High School and Ferring Church of England Primary School, located 500m and 1.5km from the site, respectively. Northbrook College is located 450m from the site, accessible via a footbridge over the A2032.

Goring-by-Sea Rail Station is located in close proximity, approximately 400m from the site, and Worthing Town Centre can be accessed within 5.7km.

TYPE	CLASS	QUANTUM
Residential	C3	345 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	46	137
Walk / Cycle	17	52
Bus	1	6
Rail	2	12

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	115	70
Walk / Cycle	43	26
Bus	3	1
Rail	7	3

SITE PHOTOS

View along Goring St

SITE ACCESS

The Ferring Rife River bisects the site into a northern and southern section. Access / egress from both parcels of land currently exist on the A259 Goring Street; east of the site, via field access points. There is potential to consolidate these into a single access point which could be located to the south of the dual carriageway section, avoiding the need to u-turn at Goring Crossways.

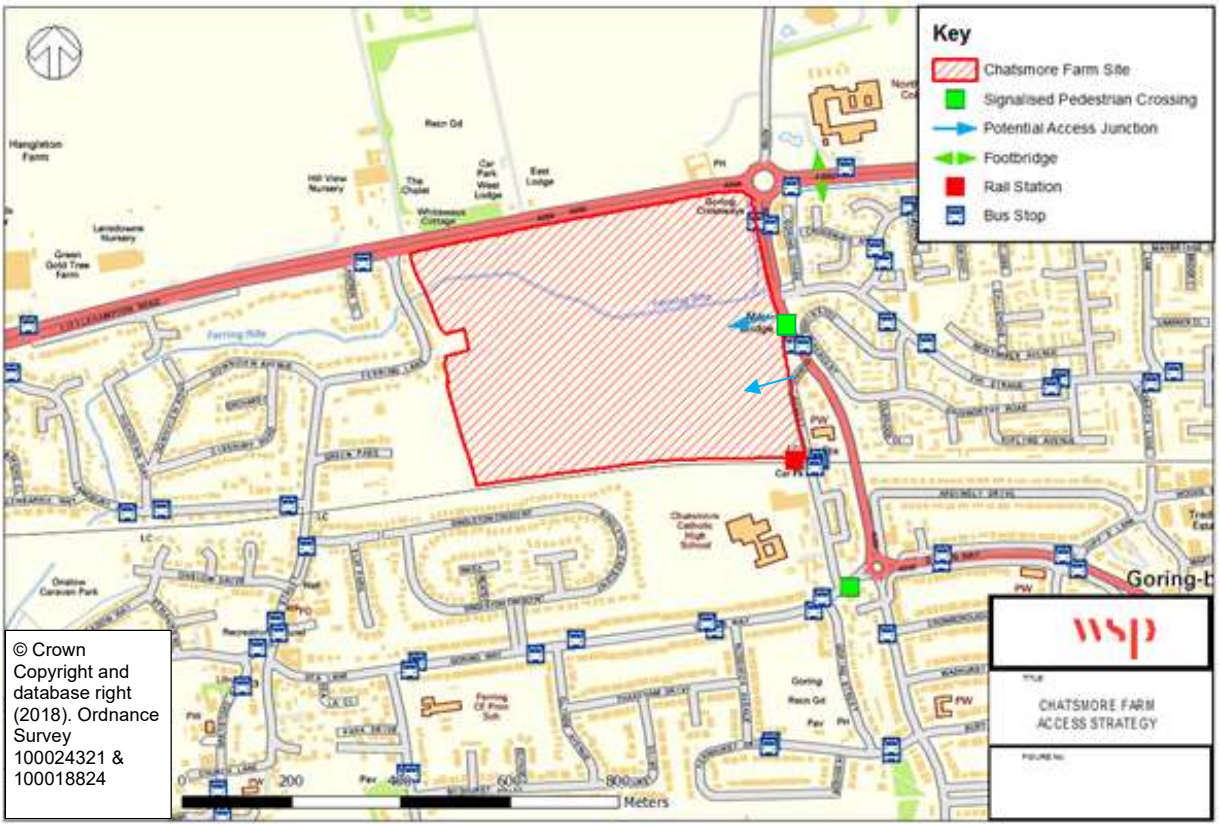
Cycle routes are provided along the eastern and northern boundaries of the site. With an increase in pedestrian and cyclist demand, this may result in the need to improve crossing provision on the southern arm at Goring Crossways and improve the route to Northbrook College.

There is potential for access to the site via the minor Goring St access to Goring-by Sea station, if combined with provision within the site to formalise parking for the station.

The nearest bus stops to the site access are located on the A259 Goring Street and The Strand (at Boxgrove Parade), located 400m to the east, and the A2302 Littlehampton Road (outside Northbrook College), and also located 400m east of the site accesses.

CHATSMORE FARM

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.3%), Arun (13.1%), Horsham (7.5%)
Train	Worthing (26.6%), Brighton and Hove (18.6%), Greater London (16.5%).
Bus	Worthing (81.7%), Arun (7.8%), Adur (5.2%).
Bicycle	Worthing (80.9%), Arun (12.1%), Adur (3.8%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
CARAVAN CLUB, TITNORE WAY

SITE DESCRIPTION

The site is located on existing ground currently leased by the Caravan Club in the north west of the Borough. The grounds currently comprise 79 pitching bays, with ancillary facilities. The site is bound by Titnore Way to the south; West Worthing Tennis and Squash Club to the west; agricultural land to the north; and scrubland to the east.

The nearest school is The Laurels First Primary School, located 600m from the site. Northbrook College, located 850m from the site.

Goring-by-Sea Rail Station is located approximately 1.5km from the site and Worthing Town Centre can be accessed within 6.1km.

TYPE	CLASS	QUANTUM
Residential	C3	75 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	10	30
Walk / Cycle	4	11
Bus	0	1
Rail	0	3

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	25	15
Walk / Cycle	9	6
Bus	1	0
Rail	1	1

SITE PHOTOS

View along Titnore Way (to East)

SITE ACCESS

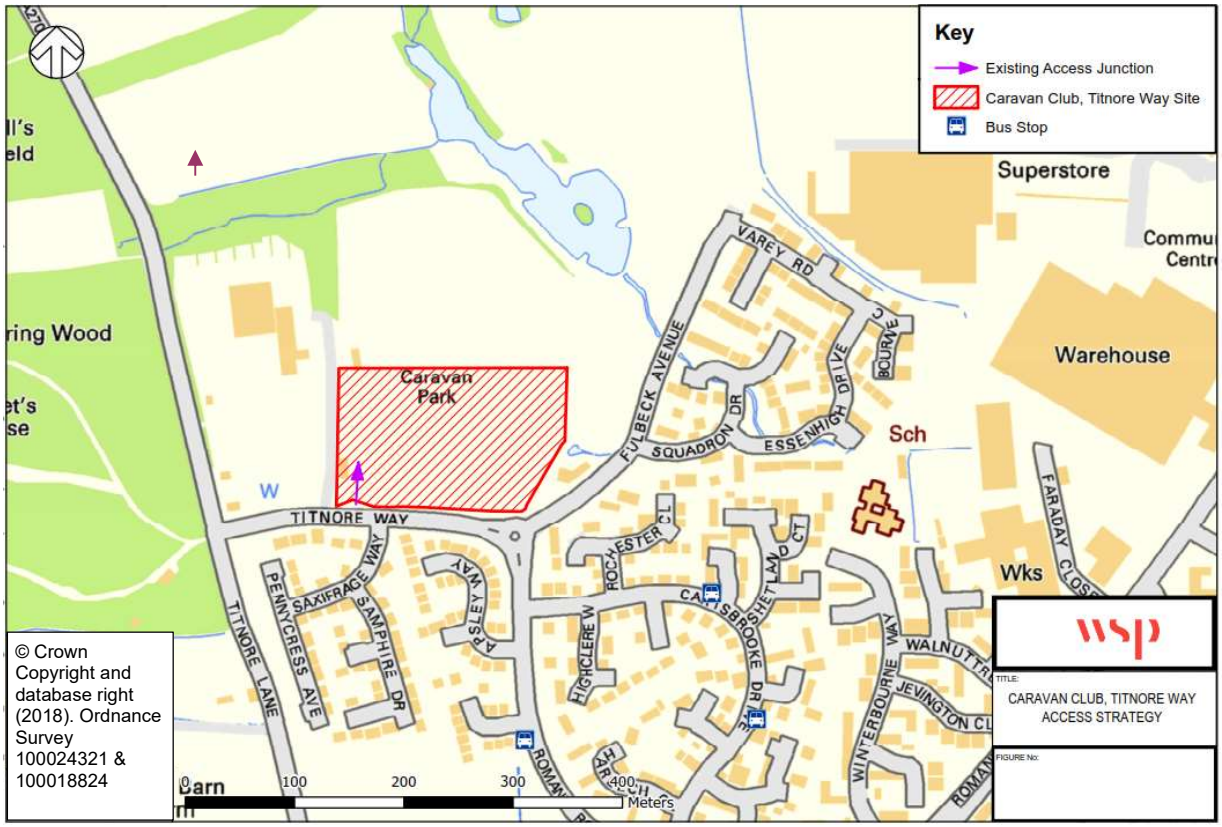
Access is available in the west of the site onto Titnore Way, utilising the existing Caravan Club priority junction access. Titnore Way provides access to the A259 and the A2032 via Titnore Lane and Romany Road, respectively. There is currently no footway adjacent to the southern boundary of the site on Titnore Way and there is opportunity to provide this. There are existing footways along this route, provided on the southern side of the road for onward travel via Romany Road and Yeoman Road, although the footways / cycleways would benefit from improved width in places.

The nearest bus stop to the site access is located on Carisbrooke Drive, located 400m to the south east. This bus stop is served by Stagecoach's Pulse Service (Lancing West - Durrington), operating six services per hour during weekdays and three per hour at the weekend.

The primary vehicle routes are along the A259 Corridor, utilising the A259 / A2032 roundabout south west of the site, and the A2032 corridor via the A2032 / Yeoman Road / Palatine Road to the south east.

CARAVAN CLUB, TITNORE WAY

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.3%), Arun (13.1%), Horsham (7.5%)
Train	Worthing (26.6%), Brighton and Hove (18.6%), Greater London (16.5%).
Bus	Worthing (81.7%), Arun (7.8%), Adur (5.2%).
Bicycle	Worthing (80.9%), Arun (12.1%), Adur (3.8%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
WEST OF FULBECK AVENUE

SITE DESCRIPTION

The site is located on existing unmanaged scrubland in the north west of the Borough. However, the site is situated within the built up area boundary. The site is bound by Fulbeck Avenue to the east; a caravan site and lake to the west; residential development to the north; and a small residential property to the south.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The nearest school is The Laurels First Primary School, located 450m from the site.

Nearby destinations include Northbrook College, located 1.5km from the site.
Goring-by-Sea Rail Station is located approximately 2.1km from the site and Worthing Town Centre can be accessed within 6km.

TYPE	CLASS	QUANTUM
Residential	C3	40 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	5	16
Walk / Cycle	2	6
Bus	0	1
Rail	0	1

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	13	8
Walk / Cycle	5	3
Bus	0	0
Rail	1	0

SITE PHOTOS

Fulbeck Avenue / Cornfield Way

SITE ACCESS

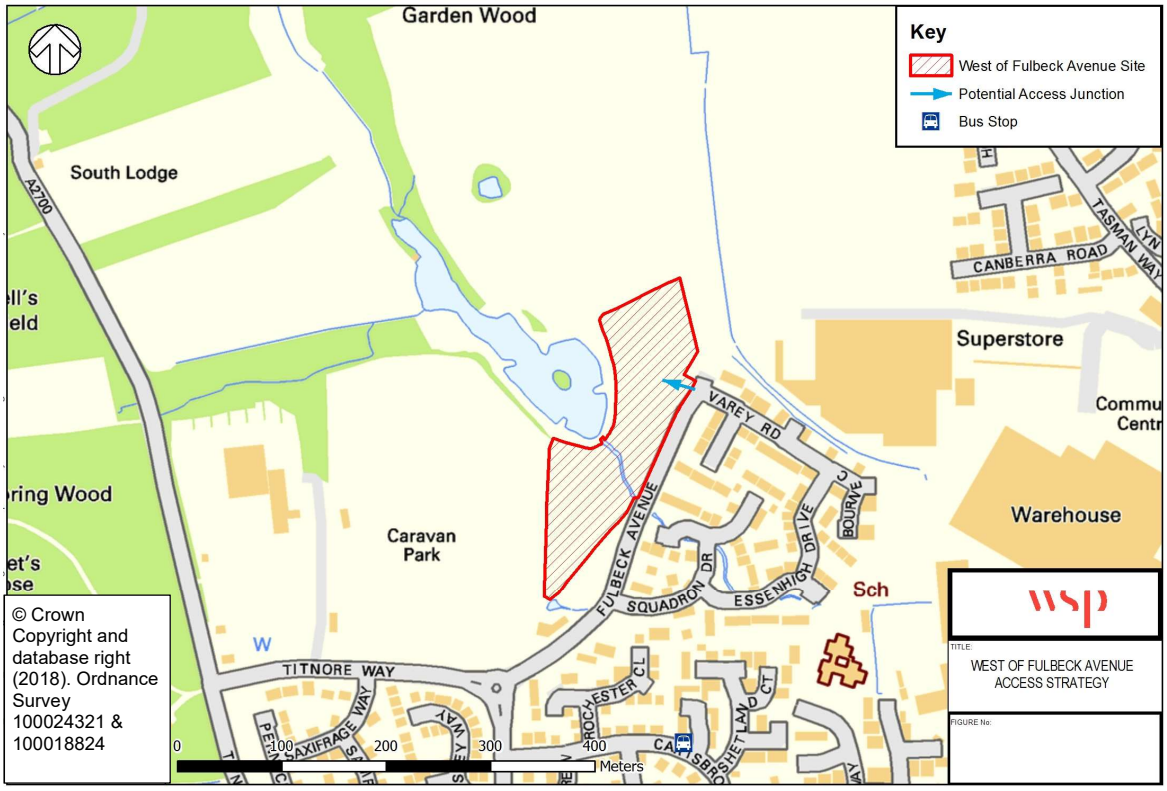
Access to the site could be obtained via a new access taken from Fulbeck Avenue.

The nearest bus stop to the site access is located on Carisbrooke Drive, located approximately 400m to the south. This bus stop is served by Stagecoach's Pulse Service (Lancing West - Durrington), operating six services per hour during weekdays and three per hour at the weekend.

The primary vehicle routes are along the A259 Corridor, utilising the A259 / A2032 roundabout south west of the site, and the A2032 corridor via the A2032 / Yeoman Road / Palatine Road to the south east. In addition, traffic may utilise Romany Road to the east for access into Durrington and onward travel to the A27.

WEST OF FULBECK AVENUE

SITE TRANSPORT PROVISION



Note: Road network has been amended since base mapping was published.

TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.3%), Arun (13.1%), Adur (6.7%)
Train	Worthing (26.6%), Brighton and Hove (18.6%), Greater London (16.5%)
Bus	Worthing (81.7%), Arun (7.8%), Adur (5.2%)
Bicycle	Worthing (80.9%), Arun (12.1%), Adur (3.8%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
NORTH OF WEST DURRINGTON

SITE DESCRIPTION

The site is located on existing agricultural land in the north west of the Borough. The site is bound by residential development off Adur Avenue to the east; the A27 and a public house to the north; Forest Lane to the west; and the proposed West Durrington residential development to the south which is under construction.

Local catchment area primary and secondary schools are accessible by foot using continuous footways with signalised crossings on major roads. The nearest schools are the Laurels First Primary School and Durrington Junior School, both located 1.7km from the site.

Durrington-on-Sea Rail Station is located approximately 3.6km from the site and Worthing Town Centre can be accessed within 6.2km.

TYPE	CLASS	QUANTUM
Residential	C3	240 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	32	96
Walk / Cycle	12	36
Bus	1	4
Rail	1	8

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	80	49
Walk / Cycle	30	18
Bus	2	1
Rail	5	2

SITE LOCATION

SITE ACCESS

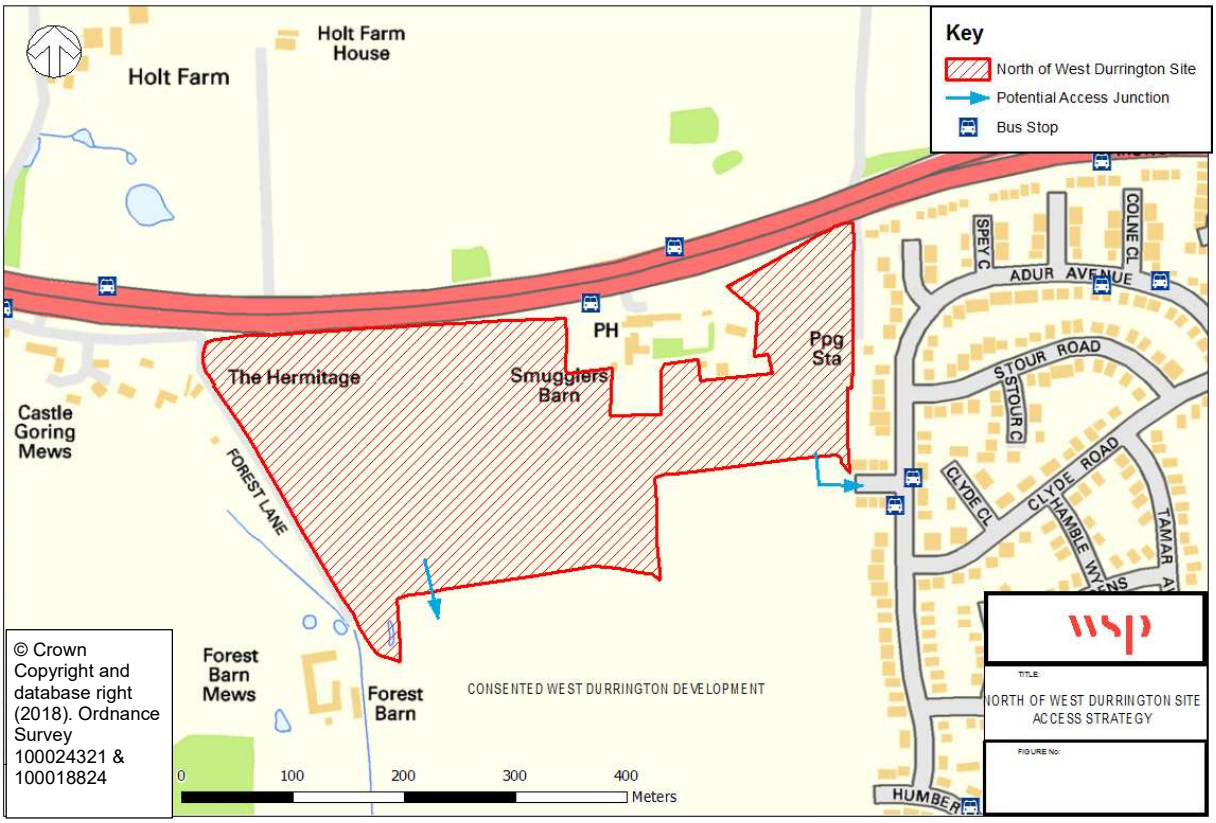
As this site is essentially an extension to the consented West Durrington development, which bounds the site to the south, the primary access points will be through the existing site.

The nearest bus stop to the site is located outside the Coach and Horses Public House, located on the northern edge of the site. This bus stop is served by Compass Travel's Service 96 (Alfold - Pulborough - Worthing), 1 service in the AM and PM on Tuesdays and Thursdays only. There is no existing crossing provision for pedestrians on the A27 to access the eastbound bus stop. Alternative bus stops exist on Adur Avenue, approximately 600m from the expected site access. Stagecoach Service 5 serves this stop every 20 minutes Monday to Saturday, with an hourly service on Sundays. It is expected that pedestrians will access facilities in Durrington by accessing an existing pedestrian footpath between the Public House in the north east corner of the site and Adur Avenue; via London Close.

The primary vehicle routes are predicted to be along the A27 Corridor, utilising the A27 / A280 interchange west of the site, and the A27 / A24 roundabout to the east.

NORTH OF WEST DURRINGTON

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.3%), Arun (13.1%), Adur(6.7%)
Train	Worthing (26.6%), Brighton and Hove (18.6%), Greater London (16.5%)
Bus	Worthing (81.7%), Arun (7.8%), Adur(5.2%)
Bicycle	Worthing (80.9%), Arun (12.1%), Adur (3.8%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

APPENDIX D
LAND EAST OF TITNORE LANE

SITE DESCRIPTION

The site currently comprises agricultural / forestry land located to the east of Titnore Lane in the north west of Worthing. The site is bound by Northbrook Farm Caravan Club and West Worthing Tennis and Squash Club to the south, Titnore Lane to the west, forestry land to the north and the consented West Durrington development to the east.

The nearest school is The Laurels First Primary School, located 1.1km from the site. Northbrook College, located 1.3km from the site.

Goring-by-Sea Rail Station is located approximately 1.8km from the site and Worthing Town Centre can be accessed within 6.1km.

TYPE	CLASS	QUANTUM
Residential	C3	126 Houses

MODE	NO. OF TRIPS ARRIVALS	AM PEAK DEPARTURES
Private Car	17	50
Walk / Cycle	6	19
Bus	0	2
Rail	1	4

MODE	NO. OF TRIPS ARRIVALS	PM PEAK DEPARTURES
Private Car	42	26
Walk / Cycle	16	10
Bus	1	1
Rail	2	1

SITE ACCESS

Access to the site is currently available from the west of the site onto Titnore Lane, via two field accesses. It is anticipated that, given the development potential of the site, a single access would be able to support the development. Titnore Lane provides links to the A27 and A280 in the north and the A259 and A2032 in the south.

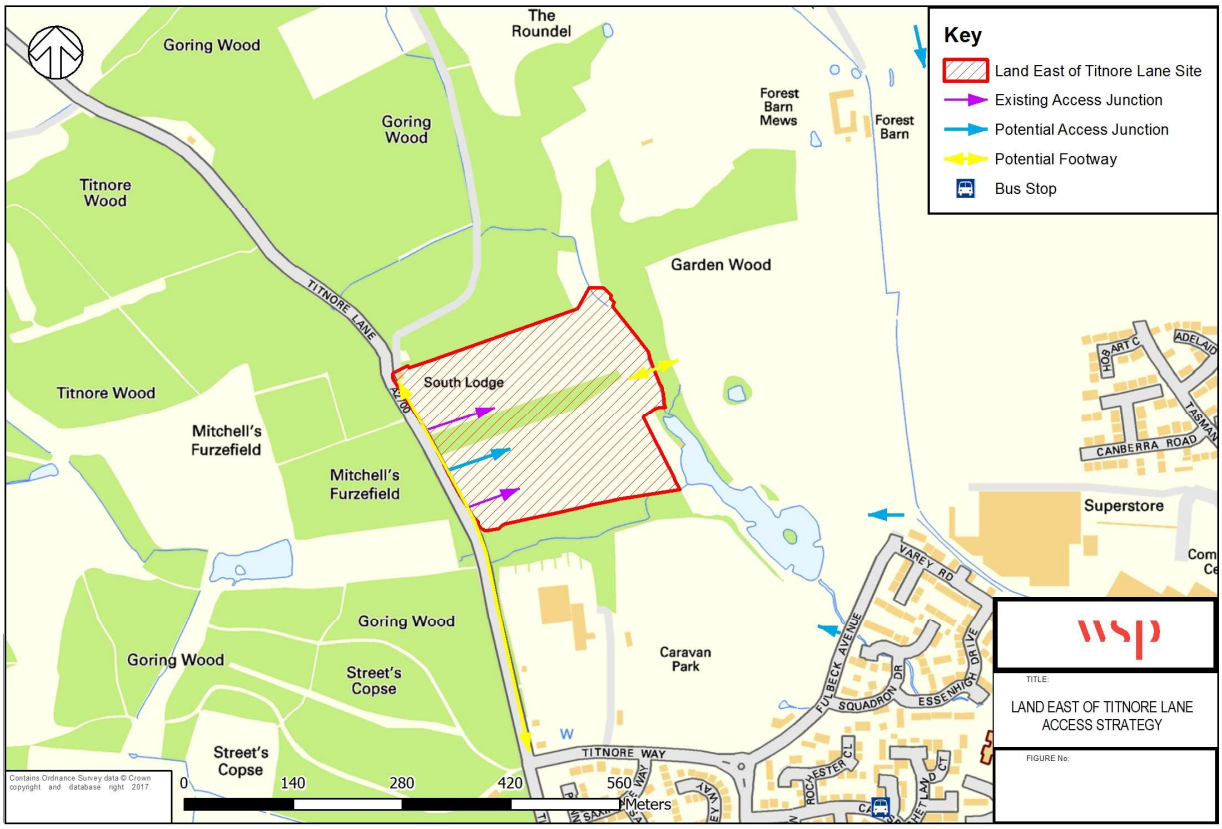
It is considered that the principle of safe access from this site is possible with the introduction of a 40mph speed limit on Titnore Lane. The design for the site access junction would have appropriate visibility for a 40mph speed limit on the major road. It is considered that the junction of Titnore Way will also require signalisation, and appropriate junction designs will need to be agreed with the local highway authority.

There is currently no footway linkage to the site, with the nearest footway located on Titnore Way, approximately 300m to the south of the site boundary. Footway provision on Titnore Lane should be provided. There may be an opportunity to provide a footpath link into the consented West Durrington development which bounds the site to the east. This would allow for the facilitation of southbound journeys on foot. The nearest bus stop to the site access is located on Carisbrooke Drive, located 850m to the south east. This bus stop is served by Stagecoach's Pulse Service (Lancing West - Durrington), operating six services per hour during weekdays and three per hour at the weekend.

The primary vehicle routes are along the A259 Corridor, utilising the A259 / A2032 roundabout south of the site, and the A27 corridor to the north via the A27 / A280 / Titnore Lane to the north west.

LAND EAST OF TITNORE LANE

SITE TRANSPORT PROVISION



TRIP DISTRIBUTION

MODE	TOP 3 DESTINATIONS
Car	Worthing (51.3%), Arun (13.1%), Adur (6.7%)
Train	Worthing (26.6%), Brighton and Hove (18.6%), Greater London (16.5%)
Bus	Worthing (81.7%), Arun (7.8%), Adur(5.2%)
Bicycle	Worthing (80.9%), Arun (12.1%), Adur (3.8%)

Note: The top 3 destinations are defined as those with the highest number of trips, as a percentage of the total trips by that mode. This is presented for each particular mode of travel. 'Other' destinations account for the remaining % of trips. Trips by foot not shown due to the large majority of these trips being local to Worthing.

Appendix E

UNCERTAINTY LOG

Appendix E - Uncertainty Log

Authority	Input	Development	Description of Model Central Assumption	Size	Landuse	For TEMPRO	Jobs / Dwellings	Comments	Link to application
Adur	New Monks Farm	600 dwellings 32900sqm non-food retail (IKEA)	600 dwellings 32900sqm non-food retail (IKEA)	600	dwellings	HHs	600	Hybrid planning application - AWDM/0961/17	https://planning.adur-worthing.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=ORUFT5CB04U00
		32,900	32,900 sq. metres of A1	32,900	A1	Jobs	366		
Adur	West Sompting	520 (predominantly houses)	520 dwellings	520	dwellings	HHs	520	Local Plan	https://planning.adur-worthing.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=OPZR5YCB02X00
Worthing	Aquarena	141 dwellings	141 dwellings	141	dwellings	HHs	143	Detailed planning application AWDM/1633/16, approved 10/02/2017	https://planning.adur-worthing.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=OFNH4ZCB02X00
Worthing	West Durrington	700 dwellings	700 dwellings	700	dwellings	HHs	700	Outline planning Application - 11/0275/OUT with other references being AWDM/0603/14, AWDM/0569/14, AWDM/0661/14. 226 units completed with 474 to be completed by 2021.	https://planning.adur-worthing.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=N5AWXNCB02X00 https://planning.adur-worthing.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=N4Y6FOCB03G00 https://planning.adur-worthing.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=N5TH9ECB03G00
Arun	Oldlands Farm Phase II	2018 - 2024	20,453 sq m of B2 General Industrial Floorspace together with B8 warehousing & distribution floorspace.	10,226	B2	Jobs	284	Outline planning application with all matters reserved for the development of the site to provide up to 20,453m2 of B2 General Industrial Floorspace together with B8 warehousing & distribution floorspace.	https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n7603.pdf&ver=7339
	Oldlands Farm Phase II	2018 - 2024	20,453 sq m of B2 General Industrial Floorspace together with B8 warehousing & distribution floorspace.	10,227	B8	Jobs	127	Outline planning application with all matters reserved for the development of the site to provide up to 20,453m2 of B2 General Industrial Floorspace together with B8 warehousing & distribution floorspace.	https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n7603.pdf&ver=7339
Arun	Oldlands Farm	2014-2019 (part built out)	Hybrid - 33116 sqm of mixed commercial and industrial uses	33,116	Mixed Use	Jobs	430	Access and road and flood compensation area and outline application for 33116 sqm of mixed commercial and industrial uses. This is often referred to as the 'hybrid' application.	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=AL/58/15/OUT&from=planningSearch
Arun	Land south of A259 and West of Mill Lane, Rustington. New access from A259	Within next 5 years	Up to 3365 sqm A1 retail use (including parking) and full planning for 3947 sqm and Sui Generis vehicular floorspace	3,365	A1	Jobs	192	Planning Ref - A/125/13 for up to 3365 sqm A1 retail use (including parking) and full planning for 3947 sqm and Sui Generis vehicular floorspace (including ancillary facilities, landscaping and parking) including workshops, MOT facility, car valeting & car storage.	http://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=A/125/13/&from=ArunSiteSearch
Arun	Land south of A259 and West of Mill Lane, Rustington. New access from A259	Within next 5 years	Up to 3365 sqm A1 retail use (including parking) and full planning for 3947 sqm and Sui Generis vehicular floorspace	3,947	B8 / Sui Generis	Jobs	11	Planning Ref - A/125/13 for up to 3365 sqm A1 retail use (including parking) and full planning for 3947 sqm and Sui Generis vehicular floorspace (including ancillary facilities, landscaping and parking) including workshops, MOT facility, car valeting & car storage.	http://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=A/125/13/&from=ArunSiteSearch
Arun	Land south of New Road (A259) and East of Brook Lane, Angmering	Within next 5 years	Hybrid - retail unit (Class A1) comprising 1,487sqm (1022sqm ground floor and 465sqm mezzanine) with associated access, car parking, servicing, landscaping & associated works.	1,487	A1	Jobs	17	Hybrid application - A/11/17/OUT. Full Planning Permission for a retail unit (Class A1) comprising 1,487sqm (1022sqm ground floor and 465sqm mezzanine) with associated access, car parking, servicing, landscaping & associated works. Outline Planning Permission for a public house (Class A4) comprising 581sqm at ground floor level - This is a Departure from the Development Plan	http://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=A%2F11%2F17%2FOUT
Arun	Land south of New Road (A259) and East of Brook Lane, Angmering	Within next 5 years	Hybrid - retail unit (Class A1) comprising 1,487sqm (1022sqm ground floor and 465sqm mezzanine) with associated access, car parking, servicing, landscaping & associated works.	581	A4	Jobs	29	Hybrid application -A/11/17/OUT. Full Planning Permission for a retail unit (Class A1) comprising 1,487sqm (1022sqm ground floor and 465sqm mezzanine) with associated access, car parking, servicing, landscaping & associated works. Outline Planning Permission for a public house (Class A4) comprising 581sqm at ground floor level - This is a Departure from the Development Plan	http://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=A%2F11%2F17%2FOUT
Arun	Courtwick	Within next 5 years	1 ha; 4,000 sq.m (B1a and B1b)	2,000	B1a	Jobs	172	Planning consent (ref. LU/355/10)	www.arun.gov.uk/download.cfm?doc=docm93jijm4n3683.pdf (Pg 14)
Arun	Courtwick	Within next 5 years	1 ha; 4,000 sq.m (B1a and B1b)	2,000	B1b	Jobs	40	Planning consent (ref. LU/355/10)	www.arun.gov.uk/download.cfm?doc=docm93jijm4n3683.pdf (Pg 14)
Arun	North Littlehampton	Within next 5 years	2 ha; 13,000 sq.m (B1) and 3,000 sq.m (enterprise centre)	13,000	B1	Jobs	1121	Planning permission (ref. LU/47/11) awaiting permission subject to S.106	http://www1.arun.gov.uk/PublicViewer/Authenticated/Main.aspx?user_key_1=LU/47/11/
Arun	North Littlehampton	Within next 5 years	2 ha; 13,000 sq.m (B1) and 3,000 sq.m (enterprise centre)	3,000	B1	Jobs	259	Planning permission (ref. LU/47/11) awaiting permission subject to S.106	http://www1.arun.gov.uk/PublicViewer/Authenticated/Main.aspx?user_key_1=LU/47/11/
Arun	North Littlehampton	2020 (327 units), 2030 (629 units) and 2035 (366 units)	1,322 dwellings	1,322	dwellings	HHs	1322	Link shows potential location of housing on map in North Littlehampton, see key for committed strategic housing allocations	http://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3699.pdf&ver=3367
Arun	Littlehampton	2020 (433 units), 2030 (32 units)	465 dwellings	465	dwellings	HHs	465		
Arun	Bersted	2020 (253 units)	253 dwellings	253	dwellings	HHs	253	Link to Bersted Neighbourhood Plan, map of locations on page 42. Locations called Land at Former Rising Sun PH and Land at Bartons Primary School.	https://www.google.com/url?q=http://www.arun.gov.uk/download.cfm%3Fdoc%3Ddocm93jijm4n3667.pdf%26ver%3D3335&sa=U&ved=0ahUKEwiUga7V0J7QAhWJuRoKHb0PAmwQFggEMAA&client=internal-uds-cse&usg=AFQjCNEhRXdxYyHBhyQN04DbE62Dp7lWhg
Arun	Flansham	2020 (242 units)	242 dwellings	242	dwellings	HHs	242		
Arun	Littlehampton	2020 (91 units)	91 dwellings	91	dwellings	HHs	91		
Arun	Barnham	2020 (75 units), 2030 (32 units)	107 dwellings	107	dwellings	HHs	107	Link shows potential location of housing in Barnham/Eastergate/Westergate on Map 1	http://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3711.pdf&ver=3379
	Barnham	2020 (86 units)	86 dwellings	86	dwellings	HHs	86	Link shows potential location of housing in Barnham/Eastergate/Westergate on Map 1	http://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3711.pdf&ver=3379
Arun	Yapton	2020 (134 units)	134 dwellings	134	dwellings	HHs	134		
Arun	Westergate / Eastergate	2020 (245 units), 2030 (23 units)	268 dwellings	268	dwellings	HHs	268	Link shows potential location of housing in Barnham/Eastergate/Westergate on Map 1	http://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3711.pdf&ver=3379
Arun	Angmering	2020 (137 units)	137 dwellings	137	dwellings	HHs	137	Link 1 shows potential location of housing in Angmering on Map 2. Link 2 shows potential location, see key for Angmering as yellow number 2.	http://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3714.pdf&ver=3382
Arun	Angmering	2020 (150 units), 2030 (45 units)	195 dwellings	195	dwellings	HHs	195		http://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3714.pdf&ver=3382
Arun	Land West of Pagham Road	Up to 400 dwellings	396 dwellings	396	dwellings	HHs	396	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=P/140/16/OUT&from=planningSearch

Appendix E - Uncertainty Log

Authority	Input	Development	Description of Model Central Assumption	Size	Landuse	For TEMPRO	Jobs / Dwellings	Comments	Link to application
Arun	Land to the West of Church Lane, South of Horsemere Green Lane & North of Crookthorn Lane (A259)	302 dwellings	302 dwellings	302	dwellings	HHs	302	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=CM/1/17/OUT&from=planningSearch
Arun	Land to the West of Church Lane, South of Horsemere Green Lane & North of Crookthorn Lane (A259)	875 square metres net D1	875 sq. metres of D1	875	D1, non-resi	Jobs	12	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=CM/1/17/OUT&from=planningSearch
Arun	Land to the West of Church Lane, South of Horsemere Green Lane & North of Crookthorn Lane (A259)	530 sq. metres net, A1 shops	530 sq. metres of A1	530	A1	jobs	30	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=CM/1/17/OUT&from=planningSearch
Arun	Land North of Sefter Road	Up to 300 dwellings and mixed use	278 dwellings	278	dwellings	HHs	278	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=P/134/16/OUT&from=planningSearch
Arun	Land West of Hook Lane	Up to 400 dwellings	364 dwellings	364	dwellings	HHs	364	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=P/134/16/OUT&from=planningSearch
Arun	Land off New Barn Lane/at Morells Farm/ at Chalcraft Nurseries (Bognor Regis ECO Quarter)	up to 2410 dwellings	90 dwellings	90	dwellings	HHs	90	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=BE/77/16/OUT&from=planningSearch
Arun	Land off New Barn Lane	90 dwellings	90 dwellings	90	dwellings	HHs	90	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=BE/142/15/OUT&from=planningSearch
Arun	Land East of Westergate Street	362 dwellings	362 dwellings	362	dwellings	HHs	362	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=AL/111/16/OUT&from=planningSearch https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=AL/15/17/PL&from=planningSearch
Arun	Land to the east of Fontwell Racecourse	Up to 400 dwellings	370 dwellings	370	dwellings	HHs	370	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=WA/22/15/OUT&from=planningSearch
Arun	Land South of Water Lane	175 dwellings	175 dwellings	175	dwellings	HHs	175	Outline planning application	https://www1.arun.gov.uk/aplanning/OcellaWeb/planningDetails?reference=A/99/17/OUT&from=planningSearch

Appendix F

CONCEPT SCHEME DRAWINGS

DO NOT SCALE

NOTES:
1. ALL DIMENTIONS ARE IN METERS UNLESS NOTED OTHERWISE.

KEYPLAN:

KEY:

- HIGHWAY BOUNDARY
- EXISTING CHANNEL LINES
- DESIGN
- ROAD RESTRAINT / VRS

6m Radius Kerb

Tie-in with existing road marking and kerb return

10m Radius Kerb

Carriageway widening to be carried out on the western side

A2700 TITNORE LANE

80.72

4.13

3.87

33.53

3.37

35m Radius Kerb

20m Radius Kerb

Carriageway widened from 1 lane approach to 2 lane approach

5.45

3.15

3.15

Tie-in with existing channel line and road marking

A2032 LITTLEHAMPTON ROAD

145.61

3.50

3.50

3.50

GORING CROSSWAYS

A259 LITTLEHAMPTON ROAD

Carriageway widened from 2 lane approach to 3 lane approach

Road Restraint System to be realigned

28m Radius Kerb

Carriageway widened from 2 lane approach to 3 lane approach

Widening of southern side of roundabout from 2 to 3 lanes

3.50

3.50

3.50

A259 GORING STREET

Tie-in with existing road marking

Tie-in with existing channel line

6.33

P03	31/07/2018	BM	THIRD ISSUE	RS	RS
P02	16/03/2018	NG	SECOND ISSUE	DR	DB
P01	27/02/2018	NG	FIRST ISSUE	RG	DR
R	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS:
WORK IN PROGRESS

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WORTHING BOROUGH COUNCIL

SITE/PROJECT:
WORTHING LOCAL PLAN
TRANSPORT STUDY

TITLE:
APPENDIX F- CONCEPT SCHEME DRAWING
A259/ A2032 GORING CROSSWAYS

SCALE @ A1:	CHECKED:		APPROVED:
1:200	RG		DR
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70033198	NK	NK	31 July 2018

DRAWING No: 70033198-WSP-HGN-WLP-SK-0001 REV: P03

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NOTES:
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KEYPLAN:

KEY:

- HIGHWAY BOUNDARY
- EXISTING CHANNEL LINES
- DESIGN

P02	31/07/2018	BM	SECOND ISSUE	RS	RS
P01	21/03/2018	VP	FIRST ISSUE	RG	DR
R	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: WORK IN PROGRESS

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CLIENT: WORTHING BOROUGH COUNCIL

SITE/PROJECT: WORTHING LOCAL PLAN TRANSPORT STUDY

TITLE: APPENDIX F- CONCEPT SCHEME DRAWING A2032/ DURRINGTON LANE

SCALE @ A1:	CHECKED:		APPROVED:
1:200	RG		DR
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70033198	RG	VP	31 July 2018

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