

Project Title:	South Wokingham
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Junction 14 Barkham Road / Bearwood Road Transport Summary

1. Introduction

- 1.1. This Technical Note has been prepared to review the requirement for the proposed Junction 14 (Bearwood Road / Barkham Road mini-roundabout) improvement works.
- 1.2. The note considers the findings of the Transport Assessment carried out by WSP (Phase 2 of the South Wokingham SDL Transport Assessment, April 2019) and associated modelling to determine whether the forecast traffic impacts justify the implementation of highway mitigation works at the junction. Refer to Appendix A for the Transport Assessment report.

2. Summary of Transport Assessment Findings

- 2.1. The Transport Assessment identified that the forecast increase in traffic at the junction would be modest. During the 2036 PM peak hour, Bearwood Road was forecast to experience an increase of approximately 41 vehicles per hour, equivalent to one additional vehicle every 88 seconds.
- 2.2. The Transport Assessment concluded that the increase in delay associated with the forecast traffic growth would be minimal.

Paragraph 8.5.68 states:

"Delays are no more than an additional 3 seconds."

The assessment concluded that this increase in delay was not significant.

- 2.3. The Transport Assessment concluded that the forecast increase in delay was not expected to be significant.

Paragraph 8.5.72 states:

"The WSTM4 modelling indicates that the increased delay is not expected to be significant."

Paragraph 8.5.72 further concludes:

"The impacts are not likely to be severe."





- 2.4. The Transport Assessment also considered whether increasing capacity at the junction would be beneficial and concluded that it could encourage additional traffic along the corridor.

Paragraph 8.5.72 states:

"Given that works to increase capacity could encourage additional traffic along these already constrained roads, it is also considered that no mitigation works should be undertaken at this location."

3. Conclusion

- 3.1. The Transport Assessment concluded that the forecast increase in traffic at Junction 14 would result in only a limited operational impact, with delays increasing by no more than approximately three seconds during the peak period.
- 3.2. The Transport Assessment concluded that the impacts at the junction were not likely to be severe and that increasing capacity could encourage additional traffic on the surrounding highway network.
- 3.3. On this basis, the Transport Assessment concluded that mitigation works should not be undertaken at Junction 14. Accordingly, the available evidence does not demonstrate a requirement for the proposed Junction 14 improvement works.



Figure 1 Extract from WSP Transport Assessment 2019

- 8.5.68. The WSTM4 outputs indicate that an increase in traffic movements on each approach in the 2036 PM scenario with Bearwood Road seeing an increase in 41 vehicles per hour (one additional vehicle every 88 seconds), but delays are no more than an additional 3 seconds which is significantly at odds with the Junctions 9 assessment.

Figure 2 Extract from WSP Transport Assessment 2019



- 8.5.70. Furthermore, it is important to consider reasons for the significant level of traffic at this junction and implications of providing additional capacity to resolve any perceived issues. From observations and understanding of the location, it appears that Bearwood Road operates as a route connecting Finchampstead and Aborfield to Winnersh, Earley and the A329(M). Given the residential nature of Bearwood Road this is not necessarily a desirable ongoing use of Bearwood Road and a routing that should not be encouraged.
- 8.5.71. Taking all the above into account, the Bearwood Road/Barkham Road mini-roundabout sees a modest increase in traffic volume due to the introduction of the Project Development which the models predict will have an impact on the junction. However, the WSTM4 modelling indicates that the increased delay is not expected to be significant. In addition, further mitigation at this junction would likely attract more traffic onto the Barkham Road corridor potentially creating further implications within Wokingham.
- 8.5.72. On balance, it is considered that the results reported from Junctions 9 are unlikely to represent the true conditions at this location in the future years, for a variety of reasons. More reliance should be placed on the WSTM4 predictions, which indicate that the impacts are not likely to be severe. Given that works to increase capacity could encourage additional traffic along these already busy and constrained roads, it is also considered that no mitigation works should be undertaken at this location.

Refer to Appendix A for the full report.



Appendix A

Phase 2 of the South Wokingham SDL Transport Assessment, April 2019

9 Transport, Accessibility and Movement

9.1 Transport Assessment





Kier Ventures Ltd, Kingacre Estates Ltd and
Miller Homes Ltd

PHASE 2 OF THE SOUTH WOKINGHAM SDL

Transport Assessment





Kier Ventures Ltd, Kingacre Estates Ltd and Miller Homes Ltd

PHASE 2 OF THE SOUTH WOKINGHAM SDL

Transport Assessment

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1 INTRODUCTION

1.1 PREAMBLE

- 1.1.1. WSP has been appointed by Kier Ventures Ltd, Kingacre Estates Ltd and Miller Homes Ltd to provide transportation and highways advice in support of a planning application for the development of Phase 2 of the South Wokingham SDL (the Project Development). It is proposed to develop the site for mixed use development of up to 1,710 residential dwellings, primary school and local centre with ancillary facilities.
- 1.1.2. The South Wokingham area has been identified through Wokingham Borough Council (WBC) Core Strategy Policies (CP19-22) as a key Strategic Development Location (SDL) to deliver around 2,500 homes north and south of the Waterloo to Reading Railway Line (WRRL).
- 1.1.3. Phase 1 of the South Wokingham Strategic Development Location (SWSDL), now identified as Montague Park, was approved in 2013 for the development of circa 650 residential units north of the WRRL and is currently being constructed.
- 1.1.4. The land that is subject of the current application forms the second phase of the SWSDL. The site boundary is shown in **Figure 1** and **Figure 2**, illustrating the development site in the context of both wider and local areas respectively and the local highway network.
- 1.1.5. The site is formed by two parts, the smaller of which is located between the A329 Berkshire Way to the east and the WRRL to the south. The parcel, referred to as Land to the South of St Anne's Manor, is intended to accommodate Suitable Alternative Natural Green space (SANG).
- 1.1.6. The larger part of the site lies south of the WRRL and is intended to accommodate residential, education and community elements of the proposed development.
- 1.1.7. The delivery of the SWSDL requires the provision of a new South Wokingham Distributor Road (SWDR) connecting the A329 London Road in the east and Finchampstead Road in the west. The site will be subject to a number of planning applications. WBC is bringing forward the SWDR via separate planning applications and Kier Ventures Ltd, Kingacre Estates Ltd and Miller Homes Ltd are submitting three separate applications for the Project Development, which this document supports. The three applications being submitted consist of;
- i Up to 215 units on Land at Phase 2a of the SWSDL (shown in **Figure 3**)
 - i Up to 1,495 units on Land at Phase 2b of the SWSDL i.e. the remainder of the site (shown in **Figure 4**)
 - i SANG at Land to the South of St Anne's Manor
- 1.1.8. This Transport Assessment (TA) will assess the cumulative effect of all three applications above with the delivery of the proposed SWDR forming part of the development. Whilst the TA deals with Phases 2a and 2b as one site, it will comment on the individual impacts of the separate applications.
- 1.1.9. Further detail on the delivery of the SWDR by WBC is given in Section 4 of this TA.

- 1.1.10. This TA addresses the feasibility of the proposed development in terms of transportation impact, access and sustainable travel. The TA has been prepared in accordance with guidance set out in the Planning Practice Guidance (PPG) document entitled 'Travel Plans, Transport Assessments and Statements in Decision Taking' (DCLG, March 2014).
- 1.1.11. The TA sets out the matters relating to the impact of the proposed development on the local highway network, as managed by WBC, the local highway authority (LHA). WSP have been in pre-application discussions with WBC over a number of months in advance of the submission of this document with the relevant correspondence during this time contained in **Appendix A**.
- 1.1.12. In addition to supporting the planning applications, this TA informed the Environmental Statement (ES), specifically Chapter 9: Transport, Accessibility and Movement, prepared and submitted in support of the planning applications. Chapter 9 assesses the likely significant environmental effects associated with the transportation aspects of the proposed development and should be read in conjunction with this TA.

1.2 REPORT STRUCTURE

- 1.2.1. The remainder of the TA report is presented in the following sections:
- i Section 2 provides an overview of national and local policy relevant to the site and the proposed development;
 - i Section 3 details the site location and existing conditions in the vicinity of the site;
 - i Section 4 introduces the planned South Wokingham Distributor Road;
 - i Section 5 considers the accessibility of the site to local facilities;
 - i Section 6 describes the development proposals;
 - i Section 7 outlines the approach to the assessment of the development proposals;
 - i Section 8 assesses the impact of the proposed development on the local highway network
 - i Section 9 considers the impact of the proposed development on the Strategic Road Network;
 - i Section 10 provides an overview of the transportation strategy;
 - i Section 11 briefly discusses the construction traffic; and
 - i Section 12 summarises and concludes this Transport Assessment.

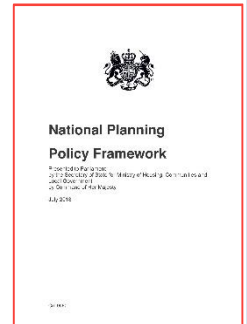
2 POLICY CONTEXT

2.1 INTRODUCTION

2.1.1. This section sets out an overview of the relevant transport policy, which has provided the context for the assessment of the transport impact of the proposed SWDL development. Relevant national and local policy and guidance have been examined and reviewed.

2.2 NATIONAL POLICY

National Planning Policy Framework, MHCLG, February 2019



Policy Content	Relevance to this Assessment
The NPPF paragraph 10 mentions that “so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development.” Specifically, from a highways and transportation perspective, Chapter 9 (paragraphs 102 to 111) of the NPPF is entitled <i>Promoting Sustainable Transport</i>. In paragraph 104 the NPPF states that “Planning Policies should: - i support an appropriate mix of uses across an area, and within larger scale sites, to minimise the number and length of journeys needed for employment, shopping, leisure, education and other activities, and; - i provide for high quality walking and cycling networks and supporting facilities such as cycle parking (drawing on Local Cycling and Walking Infrastructure Plans);” The NPPF discusses the parking requirements in paragraph 106 stating that “Maximum parking standards for residential ...development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network...” and also that the quality parking should be “...convenient, safe and secure, alongside measures to promote accessibility for pedestrian and cyclists.”	The proposed development comprises new residential dwellings that can access a number of sustainable modes. It will be an urban extension to the south of Wokingham with access to existing local facilities within Wokingham and links to existing transport infrastructure and services with opportunities to improve current and future sustainable transport patterns. As demonstrated by this Transport Assessment, the proposed development is situated in a sustainable location with connections to local facilities and public transport and thus reducing the dependency on a private car. The scale of the proposed development is appropriate for the location, and it is connected to the local walking and cycling networks. The development layout has been designed to retain and incorporate the existing PROW provision providing connections to the local destinations. The internal pedestrian and cycle networks will be designed to complement the existing routes. The layout will provide excellent permeability for residents to use sustainable modes of transport such as public transport, walking and cycling. Consideration has been given to a provision of cycle parking throughout the development where appropriate. The parking across the proposed development has been designed to be in line with the current parking standards applicable in the area. Consideration has

Paragraph 108 outlines the requirements for a development that should be considered during the assessment of the proposals stating: *"It should be ensured that:*

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) safe and suitable access to the site can be achieved for all users; and*
- c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."*

Paragraph 110 considers that applications for development should:

"a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high-quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use" and

e) be designed to enable charging of plug-in and other ultra-low emission vehicles

in safe, accessible and convenient locations.

Paragraph 111 requires that *"...All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."*

Importantly, NPPF states in paragraph 109 that *"...Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."*

also been given to the provision of electric vehicle charging points.

The site will enable access to existing public transport provision via the proposed and existing pedestrian facilities.

Other public transport services (i.e. rail) can be accessed via the local bus services as well as walking and cycling within a reasonable journey time.

Additionally, a comprehensive Public Transport Strategy has been prepared to complement the proposals. This include provision of a new bus service running through the proposed development and providing frequent and regular service connecting the site to Wokingham town centre and other local destinations.

The proposed development is part of the wider SDL forming an urban extension to the south of Wokingham. As such, it will be supported by major infrastructure that is planned to run through the SDL for which contributions to will be provided via Community Infrastructure Levy (CIL).

South Wokingham Distributor Road (SWDR) will provide access to the proposed development as well as traffic relief in the town centre. The SWDR will be delivered to a high standard and will provide all mode access throughout the SWDL.

Given the scale of the proposed development, it is acknowledged that the proposals may generate significant amounts of movement. As such and in line with NPPF, the application will include this Transport Assessment providing a detailed assessment of the potential impacts of the site and will provide contributions to WBC's own Personal Travel Plan (PTP), known as the "My Journey" programme, which will support new residents in changing their travel habits to more sustainable modes of travel.

It is considered that the traffic generated by the proposed development will not have a detrimental effect on highway safety and the impact on the road network is not severe.

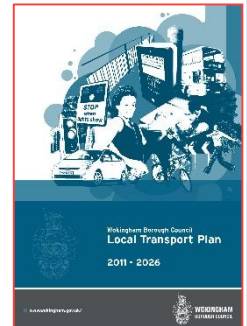
**Manual for Streets (2007) &
Manual for Streets 2 (2010)**



Policy Content	Relevance to this Assessment
Manual for Streets (MfS) was published in March 2007 (MfS1) and Manual for Streets 2 was published in September 2010 (MfS2) to provide guidance to a range of practitioners on efficient residential street design. It is not policy as such but it provides a design framework which strongly influences the layout of the planning application proposals. MfS recognises that there is a need to transform the quality of residential streets. Some of its principles may be applied to other road types where appropriate. Streets should not be designed only to accommodate the movement of motor vehicles; a prime consideration is that they meet the needs of pedestrians and cyclists. Section 1.3 of MfS emphasises the importance of joint working among practitioners. MfS2 does not supersede MfS, but it explains how the principles of MfS can be applied more widely. MfS2 explains in greater detail how and where its key principles can be applied to busier streets and non-trunk roads, thus helping to fill the perceived gap in design guidance between MfS and the Design Manual for Roads and Bridges (DMRB).	The principles of MfS and MfS2 have been instilled in the planning of the proposed development, ensuring it delivers a high-quality streetscape and supports sustainable living of future residents. The site layout has been prepared with due consideration given to the principles set out in MfS and MfS2. The proposed layout considers the user hierarchy recommended in MfS and connectivity through the site for users of all modes, including pedestrians and cyclists. Within the site, footways and cycleways will be consistent with predicted desire lines and taking consideration of factors such as perceived safety and general amenity. The development proposals are discussed in detail in Section 6 of this TA.

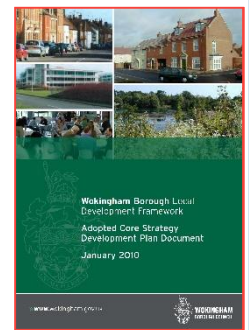
2.3 LOCAL POLICY

Wokingham Borough Council Local Transport Plan 2011 - 2026



Policy Content	Relevance to this Assessment
The Wokingham Borough Council Local Transport Plan is the county's third Local Transport Plan (LTP 3) and covers the period from 2011 to 2026. The plan sets out the long-term strategy up to 2026 which is consistent with Wokingham Borough's Local Development Framework Core Strategy. The overarching vision for the LTP3 is: <i>"To provide a cost-effective, inclusive transport network that enhances the economic, social and environmental prospects of the Borough whilst promoting the safety, health and well-being of those that use it."</i> In terms of highways, Wokingham wants to create: <i>"A resilient, safe highway network that balances capacity for all users, enhances the economic prospects of the Borough, and promotes sustainable travel."</i> Policy HW1 looks at addressing the congestion issue; the aim is to deliver engineering and highways measures that will help to address areas of congestion in the Borough. Highway measures that could be considered to minimise bottleneck congestion include: - i Developing new highways; - i Re-directing car travel; - i Traffic Regulation Orders; - i Junction improvements; - i Speed limit review; - i Intelligent Traffic Signal Solutions; and - i Carriageway alterations. Policy HW3: improving access to key corridors to improve connections from the Borough to the regional hubs such as Reading, Heathrow and London. The aim to work with neighbouring authorities and relevant partners to reduce the congestion on the access routes to the regional hubs.	The proposed development will be complemented by the SWDR providing safe and convenient access for all modes, whilst alleviating the traffic impacts in the town centre and wider area. This, in combination with high standard infrastructure, will lead to increased road safety along existing routes. New pedestrian and cyclist facilities, both on site and off site via CIL-funded improvements, will lead to enhanced safety for these vulnerable user groups as well as promote uptake of the sustainable modes of travel and subsequently increase health and well-being of its users. The SWDR will unlock the land to the south of Wokingham allowing for the proposed development and its associated facilities to provide a range of benefits to the existing and new communities. The permeable layout and extensive network of pedestrian and cyclist facilities, as well as improved public transport services, will promote sustainable methods of travel not only for the residents of the proposed development but also for the existing communities in the area. Although the SWDR is not part of this application, it is strongly related to the proposed development and its provision. In combination with the internal road network and connections to the existing routes, it will deliver on Policy HW1 in minimising bottleneck congestion in and around the town.

Wokingham Borough Local Development Framework – Adopted Core Strategy Development Plan Document (January 2010)



Policy Content	Relevance to this Assessment
The document adopted in January 2010 outlines where the development will occur within the borough up to 2026. The approach of the Core Strategy is set out on page eight of the document, and points relevant to the proposed development are as follows: - i <i>Deliver sustainable development by providing an acceptable balance of housing and employment including the provision of a full range of services accessible to people;</i> - i <i>Promote sustainable use and disposal while mitigating adapting to climate change;</i> - i <i>Deliver housing in locations that meet the needs of the community;</i> - i <i>Support a sequential approach to new mixed-use development locations based primarily on a larger scale (Strategic Development Locations) consisting of accessible, high quality, well-designed development. The Strategic Development Locations will be supported by Development Briefs to ensure delivery of the essential community facilities and infrastructure required;</i> - i <i>Promote a transport system that enables access to services by a variety of modes;</i> - i <i>Maintain and enhance all the infrastructure, including roads, railways, schools, healthcare and open space provision through new development, taking account of the health and wellbeing residents; and</i> - i <i>Support the renaissance of Wokingham and other town centres.</i> The document includes a number of policies, and those relevant to the development include: - i <i>Sustainable Development CP1: The requirement to provide sustainable development;</i> - i <i>Infrastructure Requirements CP4: Planning permission will not be granted unless appropriate arrangements or provision of infrastructure, services, community and other facilities required for the development are agreed;</i>	The proposed development will provide a substantial proportion of the housing needed in the borough. The layout and associated infrastructure have been designed to provide sustainable development with a number of ancillary facilities to cater for some of the residents' needs, thus reducing the need for travel and dependence on a private car. The proposed development forms part of the SDL and has been designed to a high standard. The internal road network and the SWDR with their associated pedestrian and cycle facilities enable the development to be accessible to a variety of modes including public transport. The proposals include a primary school, community centre and local centre alongside deliver of new SANG infrastructure. Therefore, the proposed development provides facilities and infrastructure that will enhance the health and well-being of the residents. Provision of the SWDR will aid in alleviating the congestion in Wokingham town centre in line with the Core Strategy's aim to renaissance the town centre. This TA illustrates the sustainability of the proposals and thus satisfy the Policy CP1. The proposed development supports delivery of the appropriate infrastructure (SWDR), upgrades public transport services and provides on-site community and educational facilities as required by the Policy CP4. Proposed infrastructure including enhanced facilities for pedestrians and cyclists as well as proposed public transport service allows for choice and uptake of sustainable modes of transport as required by the Policies CP6 and CP10. The proposed development forms part of the SDL, and it is complemented by the SWDR that will lead to the capacity improvements along A321 and A329. Facilities for non-car modes will also be provided as part of the SWDR. This satisfies the Policy CP21 of the Core Strategy.

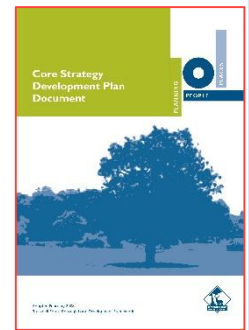
- i *Managing Travel Demand CP6: improve the existing infrastructure, including road, rail and public transport, enhance facilities for pedestrians and cyclists and provide for sustainable forms of transport to allow choice;*
- i *Improvements to the Strategic transport network CP10: improvements listed in policies CP 18-21, improvements to the quality and frequency of public transport services along any part of the network, improvements to increase the use of bicycles, including cycle paths and enhancements to footpath and cycle networks to improve access to services and facilities; and*
- i *South Wokingham Strategic Development Location CP21: Improvements to transport capacity along the A321 and A329 including the provision of south Wokingham relief road from the vicinity of the Coppid Beech roundabout to the Finchampstead Road and measures to improve accessibility by non-car transport modes along the A321 and A329 corridors.*

South Wokingham Strategic Development Location – Supplementary Planning document (October 2011)



Policy Content	Relevance to this Assessment
The South Wokingham Strategic Development Location (SDL) Supplementary Document (SPD) was adopted in October 2011. The SPD is closely related to the policies set out in the Core Strategy for the development of the Borough of Wokingham as outlined above and sets out the minimum design standards, which should be achieved to deliver the new development. The guidance is aimed at employing best practice principles for the design and development of sustainable, high-quality places. The SPD is intended to provide: - i “a spatial framework plan which should form the starting point for masterplanning the SDL; - i design principles aimed at delivering a high-quality scheme; - i requirements for addressing sustainable design; - i requirements relating to the scheme’s delivery; and - i requirements which should be met at the Outline planning application stage and beyond to ensure adequate and consistent approaches to quality and delivery.” The SPD envisages the South Wokingham SDL as a sustainable scheme with high standards of environmental performance. Essential components of the SDL include efficient energy generation, water and waste management schemes, and the development must be constructed using sustainable building techniques to deliver contemporary green building design. The development must provide a high-quality living environment with carefully selected and designed houses, open spaces and facilities. It is expected that a wide range of housing types, sizes and tenures will be available, all connected by quality streets and safe walking and cycling routes supporting and promoting healthy and active lifestyles. A mix of services and facilities will be easily and safely accessible on foot, by bicycle or by public transport. This includes a convenient and comfortable connection to Wokingham town centre and the railway station.	The masterplan and subsequent design have considered design principles outlined in the SPD and the proposed development will be a high-quality, sustainable scheme. It is envisaged that the proposed development will be delivered using sustainable building methods and best practice in order to deliver high-standard living. The sustainability and quality of living are enhanced by a comprehensive network of pedestrian and cyclist routes linking the development to the existing provision in and around Wokingham. The planned new bus service will provide convenient connections to the main destinations in the town such as the town centre and the railway station. On-site facilities including a primary school, community/local centre and SANG will minimise the need for travel and promote a healthy and active lifestyle.

Bracknell Forest Borough Core Strategy Development Plan document (February 2008)



Policy Content	Relevance to this Assessment
The Bracknell Forest Borough Core Strategy adopted in February 2008 sets out a planning framework and the Council's long-term aspirations for the borough and policies to guide and manage development in the borough until 2026. In relation to transport, the Core Strategy sets the borough's spatial vision <i>"To deliver an effective, efficient and sustainable transport system focusing on the needs of those in the local area, providing choice and reducing congestion whilst maintaining the network in an optimum condition; recognising the location of the borough in the Heart of the Thames Valley."</i> Policy CS23: Transport sets out how the council will use its planning and transport powers to: - i <i>"reduce the need to travel;</i> - i <i>increase the safety of travel;</i> - i <i>maintain and where possible improve the local road network;</i> - i <i>provide improved access to key services and facilities;</i> - i <i>promote alternative modes of travel;</i> - i <i>promote travel planning;</i> The Core Strategy also considers transport in relation to the new development and its impacts on the borough's transport infrastructure. Policy CS24: Transport and New Development state that: <i>"Development will be permitted where mitigation against the transport impacts which may arise from that development or cumulatively with other proposals is provided. This shall be achieved through the submission of a transport assessment or transport statement, and where appropriate:</i> - i <i>contributions towards local public transport and strategic transport improvements;</i> - i <i>the implementation of works to the highway;</i> - i <i>the provision of new and the improvement of existing pedestrian and cycle routes; and</i> - i <i>the provision of travel plans to promote sustainable travel patterns for work related trips.</i>	Bracknell Forest Borough Council is not the primary determining authority in this case but is a prominent consultee to these proposals. The proposed development in combination with the SWDR is expected to enhance the local area and improve the connections between the key destinations within the wider area. As part of the proposals, a primary school, community/local centre with associated facilities and SANG area to be delivered. This provision is in line with BFBC's policies for reducing the need for travel. New highways and pedestrian/cyclist facilities will be provided to a high standard providing safe, convenient and reliable all-mode routes. The new connections will provide improved access to the existing facilities in the area and other key destinations such as Wokingham railway station and public transport providing connections into Bracknell. High-quality facilities will offer a choice of mode and subsequently reduce dependency on the private car. The proposals are subject of this Transport Assessment that discusses transport implication of the proposed development. A comprehensive public transport strategy has been developed, and the proposed SWDR (without which the proposals would not be feasible) will deliver high-standard facilities for both pedestrians and cyclists. Contributions to the WBC Personal Travel Plan (PTP) will aid in promoting sustainable travel for new residents on the site.

3 EXISTING CONDITIONS

3.1 SITE LOCATION AND EXISTING CONDITIONS

- 3.1.1. The Project Development site is located on the south and east of Wokingham, between 1.2 – 2 Km (via local highway network and depending on the starting point) southeast of Wokingham town centre.
- 3.1.2. As shown in **Figure 2**, the development site is formed by two separate land parcels, the smaller of which is located between A329 Berkshire Way to the east and the WRRL to the south. The parcel is bounded by land to the north comprising parkland and a hotel. Buckhurst Meadows SANG borders the parcel to the west. The smaller northern parcel is partially open land with an area of woodland in its western half.
- 3.1.3. Given the location of the northern parcel, there is no direct vehicular access, access to the site being via pedestrian and cycle routes through Buckhurst Meadows SANG neighbouring the parcel to the west.
- 3.1.4. The second, larger parcel is situated to the south of the WRRL which forms its northern boundary. To the east, the parcel is bordered by the existing industrial yard off Waterloo Road also forming a section of the southern parcel boundary. The parcel is bordered to the south and west by open agricultural land with occasional farmhouses and areas of woodland. The larger parcel is also formed by predominantly open agricultural land with areas of woodland, especially in the western part of the site.
- 3.1.5. Vehicular access to the southern parcel can be presently gained via multiple field accesses situated on either Easthampstead Road or Waterloo Road, both of which cross the site. The site is accessible to pedestrians and cyclist via a number of Public Rights of Way (PROW). One of them, public footpath WOKW FP 10 bounds the southern parcel from the west. The others include footpath WOKW FP 5 running through the site between Easthampstead Road and Waterloo Road, and byway WOKW BW 30 running from Easthampstead Road to the south of the site towards Waterloo Road while following the south-eastern site boundary. The PROWs in the site locality are shown in **Figure 5**.

3.2 LOCAL HIGHWAY NETWORK

- 3.2.1. **Figure 1** shows the site in the context of the wider area with **Figure 2** illustrating the site location in relation to the local highway network. Corresponding descriptions of local roads are provided below.

EASTHAMPTSTEAD ROAD

- 3.2.2. Easthampstead Road is a single carriageway road providing a connection between Wokingham town centre to the north of the site and villages situated to the south of the site and crosses land at phase 2b of the Project Development.
- 3.2.3. Along its length from the town centre, Easthampstead Road forms a number of priority-controlled junctions with the local roads providing direct access to local residential roads and residential properties until it reaches the WRRL, where it forms a level crossing. To the south of the railway crossing, the nature of the road changes to a rural character and the road continues in a broadly south-eastern direction providing direct accesses to a number of residential dwellings and farmhouses.
- 3.2.4. The road is subject to a 30mph speed limit and benefits from a footway and street lighting on both sides of the carriageway, north of the level crossing. Closer to the town centre, there are multiple

pedestrian crossing opportunities including zebra crossings and informal crossing points consisting of dropped kerbs and tactile paving.

- 3.2.5. South of the level crossing, a footway is provided only on the northern/eastern side of the carriageway. The speed limit increases to 40mph after the crossing and continues until the priority-controlled junction with Heathlands Road, at which point the national speed limit (60mph) applies and the footway ceases. No street lights are provided along this section of Easthampstead Road.

WATERLOO ROAD

- 3.2.6. Waterloo Road forms a priority-controlled junction with Easthampstead Road to the north of the existing railway crossing and runs broadly parallel with the railway line towards the east. After approximately 800m, Waterloo Road bends to the south and forms another level crossing with the WRRL. The road then continues southeast through land at phase 2b of the Project Development and subsequently deviates to the east towards Old Wokingham Road/Peacock Lane at which point it forms the minor arm of a priority-controlled T-junction.
- 3.2.7. To the north of the railway line, Waterloo Road is a residential single carriageway road subject to a 30mph speed limit. There is a continuous footway alongside the southern carriageway edge and also a footway along the northern carriageway edge for approximately 440m from the junction with Easthampstead Road. Street lights are provided along the length of Waterloo Road and cease at the railway crossing.
- 3.2.8. The 30mph speed limit changes to the National Speed Limit (60mph) approximately 50m north of the railway crossing and Waterloo Road which then continues towards Old Wokingham Road/Peacock Lane. To the south of the railway crossing, the road becomes more rural in character running through the development's southern parcel, providing occasional accesses to the fields and individual dwellings.
- 3.2.9. It should be noted that the closure of Waterloo Road has been approved as part of the Eastern Gateway application ref. 172934. This includes removing the existing level crossing. As such, Waterloo Road will become a no-through road to the north of the railway line. This is discussed in further detail within Section 6 of this TA.

RANCES LANE

- 3.2.10. Rances Lane is a single carriageway road linking Waterloo Road in the south and A329 London Road in the north. The junctions at both ends are in the form of priority-controlled T- junctions. The junction with the A329 is provided with ghost island right turn provision.
- 3.2.11. The road is subject to a 30mph speed limit and features good quality pedestrian footways along both sides of the carriageway and street lighting along its entirety. There is residential frontage on both sides of the road. At two isolated points along this road, the carriageway narrows to allow only one-way travel, with vehicles being required to give priority to oncoming traffic.

PRIEST AVENUE

- 3.2.12. Priest Avenue is a single carriageway road, running broadly parallel with Rances Lane but further east, also connecting Waterloo Road to the south with the A329 London Road to the north. The junctions at both ends are in the form of priority-controlled T- junctions. The junction with the A329 London Road is provided with a ghost island right turn.
- 3.2.13. The road is subject to a 30mph speed limit and features good quality pedestrian footways along both sides of the carriageway and street lighting along its entirety. There is residential frontage on both sides of the road.
- 3.2.14. Traffic calming measures in the form of road humps and raised tables are present along the entirety of Priest Avenue at intervals of approximately 130m.

WILLIAM HEELAS WAY

- 3.2.15. William Heelas Way is a residential, single carriageway road running from the A329 London Road through the new Montague Park residential development towards the WRRL. The road currently terminates at the northern boundary with the WRRL. However, through the approved Eastern Gateway scheme, the road will continue south by way of a new railway overbridge and new four-arm priority-controlled roundabout with Waterloo Road, unlocking access to the land to the south of Wokingham.
- 3.2.16. William Heelas Way is subject to a 30mph speed limit and has street lighting and footways and/or shared footway/cycleways on both sides of the carriageway along its length. The road is provided with placemaking street elements, such as traffic calming features in the form of central reservations. Currently speed humps are located along the road, however these have been implemented to reduce speeds of construction vehicles and will be removed following the completion of Montague Park. There are a number of informal pedestrian/cyclist crossing points consisting of dropped kerbs and tactile paving along the road's length.
- 3.2.17. The junction of William Heelas Way with the A329 London Road is in the form of a signal-controlled junction with toucan crossings.

A329 LONDON ROAD

- 3.2.18. The A329 London Road is a single two-way carriageway local distributor link that provides access to the M4 Junction 10 via the A329 (M) to the east (via Coppid Beech signalised roundabout) and forms a primary route into Wokingham town centre to the west. The road is subject to a 40mph speed limit from Coppid Beech roundabout to the Priest Avenue junction, after which the road continues west at a 30mph speed limit. A speed camera is located for westbound traffic in the vicinity of St Crispin's School.
- 3.2.19. The road provides a footway and street lighting on both sides along its entire length. Signalised pedestrian crossing facilities are provided, some with refuge islands, close to St Crispin's School, Plough Lane, William Heelas Way and Coppid Beech Roundabout. Ghost islands are provided at a number of junctions to accommodate right turning movements from the A329 London Road.
- 3.2.20. One of the junctions on the A329 London Road is a new signal-controlled junction with the North Wokingham Distributor Road (NWDR) situated approximately 150m east of the junction with the SWDR (William Heelas Way).

- 3.2.21. The NWDR provides access to the new development to the north of Wokingham. The section of the NWDR leading to the north from its junction with the A329 London is being delivered by Bellway Homes and it is currently under construction with completion expected in during 2019.

3.3 PEDESTRIAN AND CYCLE NETWORK

- 3.3.1. As shown in **Figure 5**, the proposed site parcels are accessible to a number of Public Rights of Way (PROW) in and around Wokingham. Many of the existing PROW provide more direct routes through Wokingham than the existing footway network, while other more rural PROW are likely to be used for leisure walking.
- 3.3.2. The PROW within or in immediate vicinity of the site include public footpath WOKW FP 10 that bounds the southern parcel from the west, public footpath WOKW FP 5 running through the site between Easthampstead Road and Waterloo Road, and byway WOKW BW 30 running from Easthampstead Road to the south of the site towards Waterloo Road while following the south-eastern site boundary.
- 3.3.3. The other PROW providing connections to the wider area, either directly from the site or via other PROW and the existing pedestrian/cycle provision include public footpath WOKI FP 17 connecting the western corner of the southern parcel across the railway line to Gipsy Lane to the north. Footpaths WOKI FP 9, WOKI FP 24 and WOKI FP 25 providing connection to the areas west of the southern parcel. The connection between Waterloo Road just north of the railway crossing and the A329 London Road can be made utilising byway WOKI BW 26 and restricted byway WOKI RB 26.
- 3.3.4. There is no specific existing provision for cyclists except the facilities provided as part of the Montague Park development (to which the proposed development would connect). However, the traffic conditions in the vicinity of the site are considered to be suitable for cycling and, in combination with the local PROW network, this provides opportunities for the uptake of non-motorised trips for various journey purposes.

3.4 PUBLIC TRANSPORT

- 3.4.1. The local public transport network is depicted in **Figure 6**.

BUS NETWORK

- 3.4.2. The nearest bus stop to land at phases 2a and 2b is situated in Rances Lane near the junction with Waterloo Road. The bus stop is accessible from the site via Easthampstead Road and Waterloo Road and it is located approximately 400m (approximately five minutes at the typical walking speed of 4.8 km/h) from the northern boundary of land at phase 2b. However, the distance and walk time will vary depending on the starting point within the development site.
- 3.4.3. The bus stop on Rances Lane is located within the street lit area, it is indicated by a flag mounted on a lamp post, and it is provided with a timetable. The bus stop is served by a single service (Route 124) operating Monday to Friday twice a day. The Route 124 provides circular service to the Wokingham town centre with a typical journey time of 5 minutes.
- 3.4.4. From the town centre, a number of other regular services are available, as summarised in Table 3-1 below.

Table 3-1 - Bus Services Available from Wokingham Town Centre

Service/Route	Frequency			Earliest departure (Town Centre)	Latest Departure (Town Centre)
	Weekday	Saturday	Sunday		
3: Reading – Aborfield - Wokingham	1 per hour	1 per hour	-	05:58	20:19
4: Reading – Wokingham - Bracknell	Every 30 min	Every 30 min	1 per hour	05:40	22:25
121: Wokingham Tesco – Wokingham Broad Street	Every 30 – 45 min	4 per day	-	06:30	19:12
122/123: Wooshehill – Wokingham Broad Street	Every 30 – 60 min	2 per day	-	06:51	19:00
125: Wokingham Broad Street - Crowthorne	3 per day	2 per day	-	09:50	14:00
125 A: Wokingham Station Interchange – California Crossroads	2 per day	-		17:14	18:09
125 B: Wokingham Station Interchange - Crowthorne	2 per day	-	-	07:19	08:32
128: Wokingham Broad Street – Twyford - Reading	1 per hour	Every 2 hours	-	07:07	14:30
129: Wokingham Broad Street – Twyford - Reading	5 per day	-	-	15:30	18:10
151/151A: Bracknell – Binfield - Wokingham	Every 2 - 3 hours	Every 2 - 3 hours	-	08:37	17:23
X4: Reading - Bracknell	Every 30 min	Every 30 min	1 per hour	05:55	23:25

Source: Traveline – accessed March 2019

- 3.4.5. In addition to the regular services available from Wokingham town centre outlined above, there is a number of school services operating in and around Wokingham. These include routes 39A/B, 202 and 244. Another service, route 145, operates between Three Mile Cross and Winnersh once a day on Tuesdays only, and service 953 provides connection to the Reading football stadium and back on the match days.

RAIL NETWORK

- 3.4.6. The nearest railway station to the site is Wokingham Railway Station, between 2.2 – 2.8 km from the Project site (via local highway network and depending on the starting point within site). Wokingham railway station can be reached on foot in 28 - 35 minutes and by cycle in 9 – 11 minutes taking advantage of local pedestrian and cycle facilities (typical walking and cycling speed of 4.8 km/h and 16km/h respectively). The station is located approximately 800m west of the town centre.
- 3.4.7. Wokingham railway station is located on the WRRL and has two platforms, both with step-free access. The station benefits from 118 sheltered secured bicycle parking spaces situated in the station car park that provides a total of 531 parking spaces.

- 3.4.8. The station provides direct connections to destinations such as London Waterloo, Reading, Guildford and Gatwick Airport. A summary of direct services from Wokingham Railway Station is shown in Table 3-2 below.

Table 3-2 - Summary of Direct Rail Services Serving Wokingham Station

Destination	Frequency		First and Last Services (Mon – Fri)	Last Service Returning from Destination (Mon – Fri)	Approximate Duration
	AM Peak 08:00 – 09:00 (outbound)	PM Peak 17:00 -18:00 (return)			
Gatwick Airport	1	1	First 04:40 Last 23:43	22:00	1h 10 mins
Guildford	3	2	First 04:40 Last 23:43	22:52	34 mins
London Waterloo	2	3	First 05:56 Last 23:26	22:50	1h 14 mins
Reading	5	6	First 00:28 Last 23:57	23:52	15 mins

Source: National Rail Enquiries - accessed March 2019

3.5 PERSONAL INJURY ACCIDENT ANALYSIS

- 3.5.1. Personal Injury Accident (PIA) data was obtained from WBC for an agreed study area for the five-year period from 1 October 2013 to 30 September 2018. The data, as supplied by WBC, is included in **Appendix B** with the full extent of the agreed study area shown in **Figure 7**.

- 3.5.2. Given the relatively large extent of the study area, it was divided into five distinctive sub-areas for the purposes of this assessment. These sub-areas are illustrated in **Figure 7** in the context to the overall study area, and in detail in **Figure 8** to **Figure 12**. The five sub-areas are:

- i A329 (M);
- i A329 London Road;
- i East of Wokingham;
- i Wokingham Town Centre; and
- i South of Wokingham.

- 3.5.3. In addition to the study areas outlined above, due consideration was also given to Honey Hill to the south of the proposed development as it was raised at the public consultation as a sensitive location. The road safety along Honey Hill is discussed separately at the end of this section.

- 3.5.4. A summary of the PIAs recorded within the overall study area during the five-year study period, relative to each of the specific sub-areas listed above, is shown in Table 3-3 below.



Table 3-3 - PIA Summary

Study Sub-Area	Severity			Total
	Slight	Serious	Fatal	
A329 (M)	56	4	0	60
A329 LONDON ROAD	21	4	0	25
EAST OF WOKINGHAM	23	5	0	28
WOKINGHAM TOWN CENTRE	36	9	2	47
SOUTH OF WOKINGHAM	25	5	0	30
TOTAL	161	27	2	190

3.5.5. Table 3-3 above indicates that a total of 190 PIAs were recorded during the five-year study period within the study area. Of the 190 PIAs, 161 were of slight severity, 27 serious and two fatal.

3.5.6. An initial review of the data indicated that some of the recorded PIAs involved vulnerable road users. A summary of these PIAs is provided in Table 3-4 below.

Table 3-4 - Vulnerable Users Involvement

Study Sub-Area	Vulnerable User			Total
	Motorcyclists	Cyclists	Pedestrians	
A329 (M)	5	1	0	6
A329 LONDON ROAD	7	2	6	15
EAST OF WOKINGHAM	6	2	0	8
WOKINGHAM TOWN CENTRE	3	7	16	26
WOKINGHAM SOUTH	3	6	6	15
TOTAL	25	17	28	70

3.5.7. As shown in Table 3-4 above, 70 of all recorded PIAs involved vulnerable road users. The analysis of the data indicates that 25 of the recorded PIAs involved a motorcyclist, 17 involved a cyclist and 28 involved a pedestrian.

3.5.8. The detailed assessment of each of the identified sub-areas is presented below.

A329(M) STUDY AREA

3.5.9. The A329(M) study area includes a section of the A329 (M) between its junction with the A329 London Road (Coppid Beech Roundabout) and the Junction 10 of the M4. Both junctions are included in the analysis. The approximate extent of the area, along with a representation of the PIAs that took place during the analysed five-year period is illustrated in **Figure 8**.

3.5.10. As detailed in Tables 3-3 and 3-4, there were 56 slight and four serious collisions recorded in this area during the study period, involving six vulnerable road users of which five were motorcycles and one a pedal cyclist.

- 3.5.11. Three of the four recorded serious PIA's involved a motorcyclist. One of the recorded collisions was a result of inappropriate clothing worn by the motorcyclist, which got caught on the passing HGV causing the accident. The other two serious accidents involving motorcyclists were mainly a result of a poor manoeuvre and failing to look properly in combination with poor judgement of other vehicles' path or speed. The remaining serious PIA involved a single car and was a result of the driver falling ill and subsequent loss of control. It should be noted that all four serious PIAs took place on mainline motorways (either M4 or A329(M)) in disparate locations and under different conditions.
- 3.5.12. The last two PIAs involving motorcyclists, both classified as slight, also occurred on the mainline motorways as a result of poor manoeuvres and failing to look properly in combination with poor judgement of other vehicles' path or speed.
- 3.5.13. A single slight PIA involving a cyclist occurred within the study area during the five-year study period. The PIA took place at the eastbound approach (A329 London Road) to the Coppid Beech Roundabout where the pedal cyclist ignored the traffic signals and entered the roundabout causing a collision with the vehicle already travelling on the roundabout and attempting to turn right towards the A239(M).
- 3.5.14. The majority (44 PIAs) of the remaining 54 slight PIAs occurred on either the M4 or the A329(M) at disparate locations, varying weather conditions, different times of the day, and with various contributory factors.
- 3.5.15. The last 10 PIAs recorded as slight took place at the Coppid Beech Roundabout and apart from two slight PIAs described above did not involve vulnerable road users. However, a cluster of five slight PIAs (excluding the one involving a cyclist) was identified at the A329 London Road approach to the roundabout. Another cluster of three PIAs was identified at the southbound A329(M) off-slip approach with the remaining two PIA taking place at the B3408 approaching the roundabout from the east.
- 3.5.16. The analysis of the cluster at the A329 London Road approach indicates that four of five recorded PIAs were rear-end shunt type collisions. The occurrence of this type of accidents may be due to the existing carriageway geometry and presence of traffic lights that include a puffin crossing. As it is expected that a large proportion of the traffic generated by the proposed development will route via the junction, it may be appropriate to consider a remedial measure such as an introduction of high-friction surfacing on the approach to the roundabout.
- 3.5.17. The cluster of three slight PIAs recorded at the southbound A329(M) off-slip approach to the Coppid Beech Roundabout was also analysed to identify any potential common trend. One of the PIAs involved a motorcyclist who failed to look properly and judge the path of the vehicle travelling in front. The other PIA was a result of a chase between the police and a vehicle in the course of a crime. The last PIA involved a vehicle that failed to stop in time and collided with a taxi waiting at the traffic signals. No common contributory factors were identified for this cluster of three PIAs.
- 3.5.18. The last two PIAs at the roundabout took place at the B3408 London Road approach to the junction and were both recorded as rear-end shunt collisions. It is not considered that two similar PIAs over the five-year period represent a trend that the proposed development could potentially exacerbate.

A329 LONDON ROAD STUDY AREA

- 3.5.19. This study sub-area covers the A329 London Road between its junction with Peach Street/Wiltshire Road and the Coppid Beech Roundabout. The approximate extent of the study area and the PIAs recorded during the five-year study period are plotted by location and illustrated in **Figure 9**.

- 3.5.20. As detailed in Tables 3-3 and 3-4, there were 21 slight and four serious PIAs recorded during the study period within the A329 London Road study area. 15 of the recorded PIAs involved vulnerable road users of which seven were motorcycles, two pedal cycles and six pedestrians.
- 3.5.21. Out of four PIAs classified as serious, one involved a pedestrian and two involved motorcycles. The last serious PIA was a rear-end shunt collision caused by an intoxicated driver failing to stop at the end of the queue.
- 3.5.22. The serious PIA involving pedestrians took place at the signalised pedestrian crossing immediately east of the junction with Seaford Road. The driver of an eastbound travelling vehicle failed to stop at the traffic lights and collided with two school children crossing the road causing them serious injuries.
- 3.5.23. The first of the PIAs involving motorcyclists took place at the junction with St Annes Drive and occurred when a car turning right onto the main road failed to give way to the oncoming westbound travelling motorcyclist.
- 3.5.24. The other serious PIA involving a motorcyclist was recorded at the junction with Plough Lane and occurred when a taxi tried to turn right off the main carriageway and collided with the motorcycle overtaking stationary traffic on the offside.
- 3.5.25. Out of 21 PIAs classified as slight that were recorded in the study area, ten involved vulnerable road users. Five of the recorded PIAs involved a motorcyclist. Each of the PIA took place at different locations at the junctions with local roads and were mainly caused by vehicles not giving way or failing to look properly when turning onto the side roads and colliding with the motorcycles overtaking stationary traffic on the offside.
- 3.5.26. Two of the recorded slight PIAs involved pedal cycles. Both PIAs took place at the junction of the A329 London Road with Barret Crescent. In both cases, a vehicle turning right from Barret Crescent onto the A329 London Road failed to give way to a cyclist travelling westbound on the main carriageway.
- 3.5.27. The remaining three slight PIAs were collisions that involved a pedestrian(s). One of them occurred in front of the entrance to St Crispin's Leisure Centre and was a collision of two pedestrians crossing the entrance with a car turning right from the main road to the leisure centre.
- 3.5.28. The second PIA involving a pedestrian was recorded at the entrance/exit to a petrol station west of the junction with Seaford Road. A car leaving the petrol station onto the main carriageway collided with the pedestrian walking along the footway across the station entrance/exit.
- 3.5.29. The last slight PIA involving pedestrian was recorded near the junction with Seaford Road and was a result of the pedestrian running across the road after getting off the bus and being hit by a car overtaking the stationary PSV.
- 3.5.30. The assessment of the PIAs involving vulnerable users indicates that majority of the collisions was related to factors such as failure to give way, overlooking or ignoring the traffic lights or not paying sufficient attention to local conditions.
- 3.5.31. The remaining 11 slight PIAs recorded in this study area occurred at disparate locations and under varying conditions. However, it should be highlighted that a number of these PIAs were rear-end shunt collisions on stationary traffic, and consideration may be given to improvements to signage informing about the hazard or implementation of high-friction surfacing to reduce braking distances.

EAST OF WOKINGHAM STUDY AREA

- 3.5.32. The East of Wokingham study area covers a section of Waterloo Road and its junction with Peacock Lane/Old Wokingham Road, a section of Old Wokingham Road, a section of Peacock Lane up to the priority-controlled roundabout with Vigar Way, and Vigar Way including the Jennett's Park Roundabout. The approximate extent of this study sub-area, including a representation of the PIAs that took place during the analysed five-year period, can be seen in **Figure 10**.
- 3.5.33. As detailed in Tables 3-3 and 3-4, there were 23 slight and five serious collisions during the study period within this area. Eight of the recorded PIAs involved vulnerable road users, six of which were motorcyclists and two pedal cyclists.
- 3.5.34. All recorded serious PIAs involved a vulnerable user. Four of them involved a motorcycle and one a pedal cycle. The PIA involving the cyclist was recorded at Peacock Lane/Sparrowhawk Way priority-controlled roundabout. A car entering the roundabout from Sparrowhawk Way failed to give way to a cyclist travelling on the roundabout. The car collided with the cyclist causing him serious injuries.
- 3.5.35. Two of the PIAs involving a motorcyclist were the result of the rider losing control at a bend. One of the PIAs took place at Old Wokingham Road, while the other occurred at the Vigar Way approach to the Jennett's Roundabout.
- 3.5.36. One of the serious PIA took place at the Jennett's Roundabout when a vehicle travelling on the roundabout changed lanes, which forced the motorcyclist to take avoiding action resulting in a rider losing control and falling.
- 3.5.37. The last serious PIA was recorded on Waterloo Road and was a result of a car turning right off the main carriageway failing to look properly/judge the path of an eastbound travelling motorcyclist.
- 3.5.38. Of the 23 slight PIAs recorded within the study area, two PIAs involved a motorcycle and one a pedal cycle. The PIA involving the pedal cyclist took place at Waterloo Road/Old Wokingham Road/Peacock Lane priority-controlled T-junction. A vehicle turning right onto the main carriageway failed to give way to the cyclist turning right onto Waterloo Road.
- 3.5.39. A PIA involving a motorcycle was recorded on Vigar Way. It was a collision between a vehicle swerving across traffic lanes for an unknown reason and a northbound motorcycle.
- 3.5.40. The last PIA involving a motorcycle occurred on Peacock Lane when a car performing a U-turn failed to look properly and collided with the motorcycle overtaking stationary traffic from the offside.
- 3.5.41. The analysis indicates that all PIAs involving vulnerable users took place at disparate locations, under different conditions and without any common factors.
- 3.5.42. A cluster of three PIAs was identified at the priority-controlled T-junction of Waterloo Road/Old Wokingham Road/Peacock Lane. However, the analysis did not identify any trend as the contributory factors included failing to give way, loss of control and driving under the influence.
- 3.5.43. Another two clusters of PIAs was identified at the Jennett's Park Roundabout. Four PIAs were recorded on the roundabout's circulatory carriageway and were the result of poor lane-changing behaviour and/or loss of control. The second cluster of four PIAs was identified at Berkshire Way (W/B) approach to the roundabout. One of the recorded PIAs was a result of a loss of control, while the other three PIAs were rear-end shunt collisions. Consideration may be given to a remedial measure such as an introduction of the high-friction surface on the approach to the roundabout.

- 3.5.44. All remaining PIAs took place at disparate locations, under varying conditions and at different times of a day. The main contributory factors include a loss of control, failing to look properly and judge the path of other vehicles.

WOKINGHAM TOWN CENTRE STUDY AREA

- 3.5.45. This study sub-area includes Wokingham Town Centre as well as the north-eastern section of the B3349 Barkham Road and the south-eastern section of the A329 Reading Road. The approximate extent of this study area, including a representation of the PIAs that took place during the analysed five-year period, can be seen in **Figure 11**.
- 3.5.46. As detailed in Tables 3-3 and 3-4, there were 36 slight, nine serious and two fatal PIAs recorded during the study period in this area. 26 PIAs involved vulnerable road users of which three involved a motorcycle, seven pedal cycle and 16 involved pedestrians.
- 3.5.47. It should be noted that given the urban nature of the study area and relatively high levels of pedestrian and cyclist activity in the area, many of the recorded PIAs involve vulnerable road users. However, Wokingham town centre has and continues to undergo significant public realm improvements, and many of the locations where PIAs were recorded have been or are currently being upgraded. As a result, any potential patterns or areas with clusters of accidents may not reflect the future character of the area as this may change significantly.
- 3.5.48. One of the two fatal PIAs recorded within the study area took place at the junction of the A329 Reading Road and Station approach and involved two vehicles, one of which failed to give way to the northbound main carriageway traffic when turning right onto Station Approach.
- 3.5.49. The second fatal collision involved a pedestrian and was recorded at the signal-controlled junction of Station Road/A321 Wellington Road/B3349 Barkham Road/Station Approach. The fatality was a result of a collision between an HGV leaving the junction following a green light and a pedestrian who was crossing the road. The PIA took place in daylight and wet weather conditions.
- 3.5.50. Six out of nine PIAs classified as serious involved vulnerable road users. One of the serious PIAs involved a cyclist travelling on the Station Road/Shute End mini-roundabout and being struck by a HGV attempting to turn right. It should be noted that the potentially unsafe junction layout was reconfigured with a new alignment restricting Station Road to southwest bound traffic only and now forms part of the town centre's one-way system.
- 3.5.51. All of the remaining PIAs classified as serious involved pedestrians. Each of the five remaining serious PIAs took place at different parts of the study area. One of them was recorded at a zebra crossing adjacent to the Station Road/Shute End mini-roundabout and involved a car hitting a pedestrian on the crossing and driving off. Another serious PIA took place in the vicinity of the mini-roundabout and involved a car colliding with a pedestrian crossing the road outside the pedestrian crossing.
- 3.5.52. The other PIA recorded as serious involved a car colliding with a pedestrian while reversing from the parking bay on the A329 Broad Street. The PIA took place in daylight and dry weather conditions.
- 3.5.53. The fourth PIA classified as serious was recorded on the A329 Reading Road and was related to roadworks and their associated temporary traffic lights at the time of the accident. The PIA involved a vehicle ignoring the temporary traffic lights and colliding with a pedestrian crossing the road. The PIA took place in a lit area and dry weather conditions.

- 3.5.54. The last serious PIA involved an intoxicated pedestrian and a car on the A329 Reading Road. The police report does not provide a detailed description of the PIA, but it took place in dry weather conditions and a lit area.
- 3.5.55. A total of 19 PIAs classified as slight was recorded within the study area during the five-year study period. Ten of the recorded PIAs involved a pedestrian, six involved a cyclist, and three involved a motorcycle. The PIAs involving motorcyclists took place at different locations and in two cases were collisions of a motorcycle and a car whose driver failed to look properly and/or judge the speed or path of the motorcycle. The third PIA involved a motorcyclist losing control of the bike after entering a roundabout and attempting to turn right.
- 3.5.56. Six of the recorded PIAs involved a cyclist and their nature and disparate locations do not indicate any common trends. Although the description of the PIAs in the police report is limited, the causation factors include failure to give way, overlooking or ignoring the traffic lights, not paying sufficient attention to local conditions, or failed to look properly and judge the path and speed of others.
- 3.5.57. Ten PIAs involved pedestrians, and the main contributory factors include failing to look properly, failing to stop/give way and judge the path and actions of others. Factors also include vehicles travelling at excessive speed and driving with a phone. On one occasion debris projecting from the passing HGV caused an injury. The slight PIAs recorded as involving pedestrians occurred at disparate locations within the study area, with some PIAs taking place at the locations that were subsequently upgraded. It is therefore not considered necessary to provide a detailed description of each PIA.
- 3.5.58. As outlined above, the town centre public realm improvement scheme is underway. In addition to this, the proposed development and associated infrastructure (SWDR) are forecast to reduce the volume of vehicular traffic within the town centre area and on the adjacent highway network. It is therefore considered, that no specific mitigation measures are required from the SWDL.

SOUTH OF WOKINGHAM STUDY AREA

- 3.5.59. The extent of this study sub-area covers the southern parts of Wokingham, including the key roads in the vicinity of the proposed development site. The study area includes Denmark Street and the A321 Finchampstead Road that provides a connection between the town centre and the southern areas of Wokingham and other settlements to the south of the town. Easthampstead Road that runs from the town centre to the southeast through the site also forms part of the study sub-area. A number of local roads in the vicinity of the site were included in the analysis.
- 3.5.60. The approximate extent of this study sub-area and a representation of the PIAs that took place during the analysed five-year period are shown in **Figure 12**.
- 3.5.61. As detailed in Tables 3-3 and 3-4, there were 25 slight and five serious PIAs recorded during the study period in this study sub-area. 15 of the recorded PIAs involved vulnerable road users, three of which were motorcycles, six pedal cycles and six pedestrians.
- 3.5.62. Three of five PIAs classified as serious involved vulnerable road users, one of which involved a motorcycle, one cyclist and one pedestrian.
- 3.5.63. A serious PIA involving a pedestrian was recorded at the Denmark Street/Finchampstead Road/Wellington Road priority-controlled roundabout and was a result of a car colliding with a pedestrian crossing Denmark Street.

- 3.5.64. Another serious PIA was recorded on Murdoch Road near a junction with Sturges Road. The PIA involved a cyclist travelling in the eastbound direction colliding with a parked vehicle. The police report does not provide a detailed description of the PIA indicating the reasons for collision.
- 3.5.65. The third PIA classified as serious took place at the junction of Murdoch Road and Easthampstead Road and involved a motorcyclist travelling northwest along Easthampstead Road and a van turning right into Murdoch Road. The police report does not provide a more detailed description of the PIA. The PIA took place in daylight and dry weather conditions.
- 3.5.66. Another serious PIA involving a motorcyclist took place on Easthampstead Road. The PIA did not involve any other vehicles and was a result of the motorcyclist losing control and colliding with a lamp post. The PIA occurred in darkness and dry weather conditions.
- 3.5.67. The last PIA recorded as serious also took place on Easthampstead Road and involved a car overtaking another vehicle and a cyclist travelling in the opposite direction. The PIA was a head-on collision causing the cyclist serious injuries as a result.
- 3.5.68. Of the 25 slight PIAs recorded within the study area, one PIA involved a motorcycle, four involved a pedal cycle, and five PIAs involved a pedestrian. The police report provides only limited information about the recorded PIAs.
- 3.5.69. The PIA involving a motorcyclist was a collision between the vehicle entering the Denmark Street/A321 Finchampstead Road/A321 Wellington Road roundabout and a motorcycle travelling on the roundabout.
- 3.5.70. Each of the four PIAs involving cyclists occurred at a different location within the study area. The PIAs were mainly a result of drivers failing to look properly and misjudging the path of others.
- 3.5.71. All of the PIAs involving pedestrians were recorded along the A321 Finchampstead Road. The common factor of all recorded PIAs involving pedestrians was that drivers failed to look properly. However, no pattern was identified as the PIAs took place at disparate locations and under varying weather and light conditions.
- 3.5.72. Based on the information available, it can be concluded that there are no evident clusters of accidents within the study area (refer to **Figure 12**). In addition, all recorded PIAs took place at disparate locations, varying weather conditions, different times of the day, and with various contributory factors. It is therefore concluded that there are no existing safety issues within the South of Wokingham study area that could be exacerbated by the additional traffic generated by the proposed development

HONEY HILL

- 3.5.73. Honey Hill is a predominantly rural road serving a number of residential and commercial properties and runs from Heathlands Road in the north to Nine Mile Ride in the south. As outlined above, Honey Hill was identified by residents during public consultation events as being a potentially sensitive area. The review of the accident data available indicates that only one PIA classified as slight took place along the length of Honey Hill within the five-year study period.
- 3.5.74. The PIA involved a single vehicle colliding with a wall after the driver lost control while travelling along a right-hand bend in wet weather conditions.

- 3.5.75. It is considered that a single accident in five years is not an indication of a safety issue. It is also not expected that any potential increase in a traffic volume associated with the proposals would lead to an increase in the number of accidents in the area. The traffic flow data from the WSTM4 indicate that the proposed development would contribute to an increase in the two-way traffic flow of six vehicles in the AM peak hour and 20 two-way vehicle trips in the PM peak hour. This modest increase represents one vehicle every ten minutes and one vehicle every three minutes respectively during the peak hours.
- 3.5.76. Based on the above analysis it is concluded that the impacts of the proposed development on the safety and amenity of road users on Honey Hill will be *de-minimis*.

ENVIRONMENTAL ASSESSMENT OF ROAD SAFETY

- 3.5.77. The Project Environmental Statement (ES) contains a rigorous assessment of road safety based on the changes in traffic flows brought about with the development. This can be found at Chapter 9 of the Project ES.
- 3.5.78. That assessment utilises the DfT COBALT analysis tool to generate accident risk from predicted traffic flows. This is then compared with the typical accident rates that might be expected on the roads assessed.
- 3.5.79. The findings of the exercise were that the increases in accidents generated by COBALT are related to the forecast increase in traffic associated with the new development being from a relatively low level of existing traffic flow. Therefore, there is unlikely to be any real change in the number of accidents occurring on the links analysed. Additionally, the forecast increase in traffic has already been mitigated by the new high-quality infrastructure previously delivered or proposed as part of the development.

3.6 SUMMARY

- 3.6.1. This section has examined the existing conditions in the vicinity of the site. The residential development in land at phases 2a and 2b is located in the southern outskirts of Wokingham to the south of the WRRL, while the smaller, northern parcel being promoted for use as SANG is situated to the north of the railway line and southeast of Wokingham.
- 3.6.2. There is a number of PROW in and around Wokingham, including public footpaths and byways within or in the immediate vicinity of the site. The traffic conditions in the vicinity of the site are considered to be suitable for cycling and, in combination with the local PROW network and suggested routes; this provides opportunities for the uptake of non-motorised trips for different journey purposes.
- 3.6.3. The nearest bus stops are located approximately 400m from the residential development's northern boundary. The service from the bus stop is infrequent with only a limited number of stops and destinations. There is a wide range of services available from Wokingham town centre which is located approximately 1.2 – 2 Km to the northwest of the site. These services provide regular and frequent connections in and around the town (including Wokingham railway station) as well as the wider area.

- 3.6.4. The PIA analysis reviewed the key sections of the local highway network that could be potentially affected by the changes in the traffic volumes associated with the proposed development. While some of the areas are likely to experience a significant increase of the traffic volumes as a result of the proposals, other areas (e.g. Wokingham town centre) would benefit from the new infrastructure delivered as part of the SWSDL. At the locations where a pattern or trend was identified, potential mitigation measures were considered but these are not considered to be required to specifically mitigate the impacts of the SWDL.
- 3.6.5. The road accident analysis carried out in Chapter 9 of the Project ES confirms that there will not be a significant detrimental effect on road safety arising from the development.

4 SOUTH WOKINGHAM DISTRIBUTOR ROAD

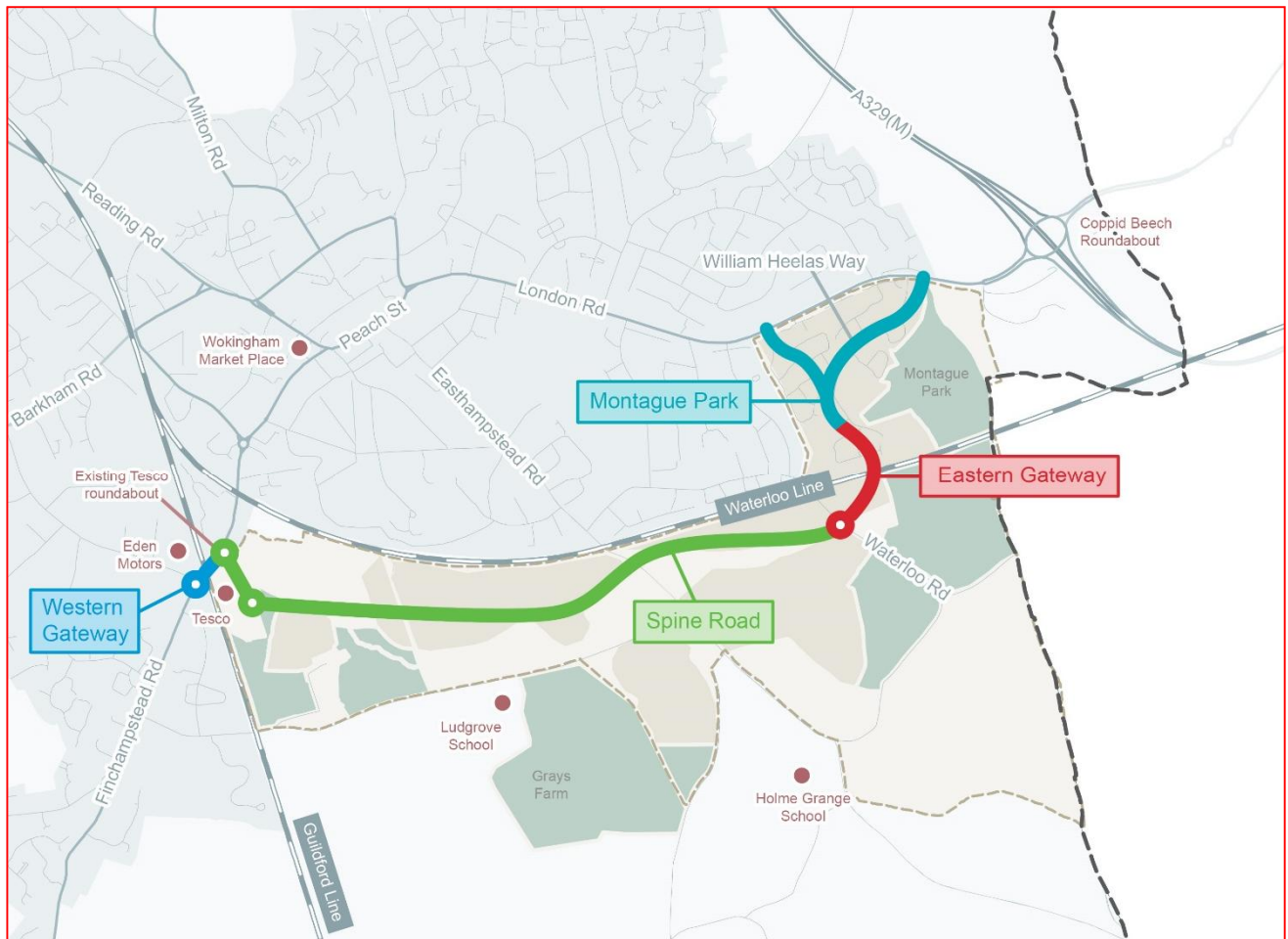
4.1 BACKGROUND

- 4.1.1. South Wokingham SDL area is intended to be an urban extension of Wokingham and it is expected to accommodate approximately 2,500 dwellings once fully completed. WBC expectations in terms of delivery of these dwellings and supporting infrastructure are set out in South Wokingham Strategic Development Location SPD and the Infrastructure Delivery and Contributions SPD.
- 4.1.2. A key element of the required supporting infrastructure is the South Wokingham Distributor Road (SWDR). The SWDR is a continuous route running through the SDL to the south of the existing settlement providing a connection between the A329 London Road and the A321 Finchampstead Road. The new road is intended to unlock the land to the south of Wokingham as well as provide congestion relief to the local roads and historic centre of Wokingham by providing alternative routes for many journeys through this part of the town.
- 4.1.3. The SWDR is one a number of new road schemes and infrastructure improvements aimed at enabling the growth potential of the Borough, namely:
- i North Wokingham Distributor Road
 - i Winnersh Relief Road Phase 1
 - i Winnersh Relief Road Phase 2
 - i Lower Earley Way Dualling Improvement
 - i Shinfield Eastern Relief Road
 - i Arborfield Cross Relief Road
 - i Barkham Bridge
 - i Nine Mile Ride Extension North
 - i Nine Mile Ride Extension South
 - i California Crossroads

4.2 SCHEME DESCRIPTION

- 4.2.1. The SWDR is to be delivered in 4 sections. These sections are indicatively illustrated in Diagram 4-1 below.

Diagram 4-1 - Indicative SWDR Route



Source: www.wokingham.gov.uk - South Wokingham Distributor Road (WBC, n.d.)

PHASE 1

- 4.2.2. The first section of the SWDR has already been delivered as part of the first phase of the SDL in 2015. The first phase of the SDL, called Montague Park, is a development of 636 dwellings and a primary school on land to the south of the A329 London Road and the north of the WRRL. The first section of the SWDR, called William Heelas Way, extends from the A329 London Road through the Montague Park towards the railway line where it currently terminates.

PHASE 2

- 4.2.3. The second section of the SWDR, known as the Eastern Gateway, has been promoted and developed by WBC and includes the extension (c.420m) of the William Heelas Way over the railway line leading to Waterloo Road where it will terminate with a four-arm roundabout. The southern arm of the roundabout will tie into the existing Waterloo Road carriageway, the western arm will temporarily terminate with a stub but will in time provide the starting point of Phase 3 of the SWDR linking through to the A321 Finchampstead Road to the west. The northern arm will provide access to the internal network of the proposed development. It is also intended, as part of this stage, to close the level crossing on Waterloo Road to all users upon completion of this section of SWDR.
- 4.2.4. The Eastern Gateway received planning approval in February 2018 and construction is due to commence in mid-2019. The approved plans for the Eastern Gateway are contained in **Appendix C**.

PHASE 3 & 4

- 4.2.5. The third and fourth phases, also known as Spine Road and Western Gateway respectively, are planned to complete the SWDR between the Eastern Gateway (Phase 2) and the A321 Finchampstead Road at the existing Tesco roundabout. Western Gateway is planned to provide enhancements to the A321 Finchampstead Road between the Tesco roundabout and the junction of Finchampstead Road and Molly Millars Lane.
- 4.2.6. Phase 3 of the SWDR (Spine Road) is currently in the preliminary design stage, with an application expected during summer 2019. The current alignment being sought by WBC has been shared and has been utilised in the masterplanning of the site. The alignment and junction locations along the Spine Road are shown in more detail on the overall site masterplan included in **Appendix D**.
- 4.2.7. The proposals for the Western Gateway (Phase 4) are still to be determined by WBC with potential options being released to the public later in 2019. WBC will deliver the Western Gateway improvements to complete the SWDR.

4.3 BENEFITS OF SWDR

- 4.3.1. When completed, the SWDR will provide a high-quality all modes transport corridor. It is expected to reduce congestion on routes into and around the town centre, which currently acts as a constraint on growth within Wokingham.
- 4.3.2. The SWDR will enable sustainable travel between residential development areas, the town centre and beyond by improving conditions for pedestrians and cyclists, and also by creating a more reliable route for public transport services.
- 4.3.3. The SWDR will contribute to mitigating the impact of new housing in Wokingham (in combination with North Wokingham Distributor Road already in place/under construction) and will improve journey times to existing and new employment opportunities. This will lead to the growth of the local economy.
- 4.3.4. The users of SWDR will benefit from the journey time savings and reliability as well as from potential reduction of road accidents. The reduction of traffic in the town centre will lead to a reduction in pedestrian severance in the commercial and retail areas in the centre of Wokingham where movement by vulnerable road users is highest. The proposed scheme will provide extensive pedestrian and cycling facilities maximising opportunities to walk, cycle and improving the accessibility to the local public transport services. Relief for town centre roads provides the opportunity to enhance sustainable travel options in general.

5 ACCESSIBILITY TO FACILITIES AND KEY SERVICES

5.1 INTRODUCTION

- 5.1.1. As detailed in Section 3, the site is located with good connections to the local pedestrian and cycle networks which, in combination with the local highway network, provides good pedestrian and cycle access to local facilities. This section and **Figure 13** consider the location of the site in the context of key local facilities.

5.2 WALKING AND CYCLING ACCESSIBILITY TO LOCAL FACILITIES

WALKING

- 5.2.1. The Design Manual for Roads and Bridges (DMRB) TA 91/05 Provision for Non-Motorised Users states that a distance of two miles could easily be walked by the majority of people. Paragraphs 2.2 and 2.3 state the following:



“2.2 Walking is a means of travel in its own right, but is an essential part of many other journeys, including those by car and public transport. However, there has been a decline in both the number and distance of journeys on foot since the mid-1980s. Nearly half of all journeys are less than 2 miles, a distance that could easily be walked by the majority of people.”

2.3 Walking is used to access a wide variety of destinations including educational facilities, shops, and places of work, normally within a range of up to 2 miles. Walking and rambling can also be undertaken as a leisure activity, often over longer distances.”

CYCLING

- 5.2.2. DMRB TA 91/05 also refers to cycling distances, stating that trips of up to five miles (8km) “...could easily be cycled by the majority of people”, and also that “...cycling is used for accessing a variety of different destinations, including educational facilities, shops and places of work, up to a range of around 5 miles.”

- 5.2.3. The National Travel Survey (2017 data) highlights that the average cycle trip is currently 3.4 miles (5.5 km). Local Transport Note 1/04 highlights the average distance travelled by Non-Motorised Users (NMUs) at that time and suggests that “...journeys up to three times [the average distance] are not uncommon for regular commuters” accepting that “...fitness and physical ability, journey purpose...and conditions” are relevant factors. It should also be noted that this distance is an average distance, and consequently, people are willing to cycle further than this distance regularly.



5.3 ACCESSIBLE FACILITIES AND SERVICES

- 5.3.1. **Figure 13** shows the relationship between the site and the nearby facilities. It can be seen from **Figure 13** that facilities required on a day to day basis are located within a 1.2 mile (c.2 Km, measured from the approximate centre of the larger site parcel) radius of the site, under the 2 mile (3.2 Km) threshold set out in DMRB.

- 5.3.2. Table 5-1 below presents the nearest examples of various types of facilities within 2 Km of the site, a distance which can be covered in approximately 25 minutes on foot or eight minutes by cycle. The distances shown in Table 5-1 below have been measured from the approximate centre of the site located on Easthampstead Road via the pedestrian and highway network to the destination. It should, therefore, be noted that the distances below may alter depending on the start point within site.

Table 5-1 - Accessibility to Local Facilities

Facility Name	Location	Facility Type	Distance from centre of the site
St Teresa's Catholic Primary School	Easthampstead Road	Primary School	850m
King George V Playing Field	Easthampstead Road	Playing Area	900m
Wokingham Dental Clinic	Easthampstead Road	Dentist	1,000m
Wokingham Day Nursery	Wescott Road	Nursery	1,200m
St Crispin's School	London Road	Secondary School	1,300m
Leightons Opticians & Hearing Care	Peach Street	Optician	1,300m
McColl's	Peach Street	Convenience Store	1,300m
Wokingham Library	Denmark Street	Library	1,400m
Wokingham Medical Centre	Rose Street	Medical Centre/GP	1,500m
Rose Street Pharmacy	Rose Street	Pharmacy	1,500m
Post Office	Broad Street	Post Office	1,500m
Waitrose & Partners	Rectory Road	Supermarket	1,600m

- 5.3.3. In addition to the facilities outlined above, the site is within 1.6 km of Wokingham town centre (measured from the approximate centre of the land at phase 2b). The heart of the town has a retail offering comprising national chain stores and local independent shops. The town centre also benefits from a number of restaurants and cafes, collectively providing leisure and employment opportunities.
- 5.3.4. **Figure 14** illustrates pedestrian accessibility relative to the proposed development site based on the typical walking speed of 4.8 Km/h. It is evident that the site is situated within a reasonable walking distance from the key destinations and facilities outlined above.

- 5.3.5. The site accessibility for cyclists based on the typical cycling speed of 16 Km/h is shown in **Figure 15**. It can be seen that the site is accessible to cyclists from within a wider area that covers the whole of Wokingham as well as a number of other towns and villages (and their facilities) in the locality such as Bracknell, Crowthorne or Winnersh.
- 5.3.6. The proposed residential development will also provide land for a primary school, and ancillary community uses. The proposed school and other facilities will ensure that some needs of the residents are catered for by on-site facilities, maximising opportunities for pedestrian/cycle journeys and reducing the need to travel by car to off-site destinations and thus enhancing the sustainability of the proposed residential development.

5.4 SUMMARY

- 5.4.1. The analysis in this section has shown that the site benefits from good accessibility to key facilities on foot and by cycle, within distances that DMRB states could “*easily*” be walked or cycled by a majority of people. In the context of the pedestrian and cycle networks as detailed in Section 3, it is considered that the site offers excellent opportunities to establish sustainable travel behaviours from residents of the proposed development. In order to support the accessibility of the site to local facilities, Section 10 of this TA looks at the existing walking/cycling routes and identifies where, if needed, enhancements can be developed to support walking and cycling from the proposed site further.

6 DEVELOPMENT PROPOSALS

6.1 PROPOSED PROJECT DEVELOPMENT

- 6.1.1. It is proposed to develop the Project Site for up to 1,710 residential dwellings, a primary school and a local centre with ancillary facilities. The smaller parcel, referred to as Land to the South of St Anne's Manor, is intended to accommodate SANG. The overall application will consist of three separate applications, as follows:
- i Land at phase 2a of the South Wokingham SDL (up to 215 dwellings) – shown in **Figure 3**;
 - i Land at phase 2b of the South Wokingham SDL (up to 1,495 dwellings) - shown in **Figure 4**; and
 - i Land to the South of St Anne's Manor (SANG).
- 6.1.2. In addition to the SANG proposed on Land to the South of St Anne's Manor, a further SANG is proposed within the large site parcel as part of land at phase 2b of the Project Development.
- 6.1.3. This TA will assess the cumulative effect of the three applications. The indicative Project site layout (masterplan) is included in **Appendix D**.

6.2 APPROACH

- 6.2.1. In line with the South Wokingham SPD, the approach to the layout of the site has consistently focused on providing a permeable network of streets aimed at encouraging low vehicle speeds for the benefit of pedestrians and cyclists. Highway safety is an important factor in the design approach to the masterplan. The streets within the site will have pedestrian/cyclist crossing points and will include footways connecting the key areas within the site.
- 6.2.2. The site has been designed to promote movement via sustainable modes. The site layout has been designed in accordance with Manual for Streets 1 and 2 as well as current WBC design standards (*Borough Design Guide – Supplementary Planning Document, June 2012*). More on the design approach is contained in the Design and Access Statement (DAS) accompanying the planning applications.
- 6.2.3. The development proposals seek to create a high value, a high-quality development that will deliver a strong sense of place. In line with the guidance contained in Manual for Streets, the masterplan focuses on the needs of people capturing opportunities to produce a streetscape that will help manage vehicle speeds and achieve an environment for sustainable modes of transport.
- 6.2.4. The proposed primary school and local centre will be located centrally within the development site, adjacent to the spine road (SWDR). These facilities will help support new residents with a sense of place and community whilst helping establish sustainable travel patterns.
- 6.2.5. The development street network will provide some off-road footway/cycleways but, in line with the aim to achieve a permeable neighbourhood, a number of pedestrian/cycle routes will connect quiet streets to exploit the potential for walking and cycling.
- 6.2.6. The proposed street network has been designed with residential frontage development to provide natural surveillance; together the development will deliver a network of streets and places that where it is safe to walk, cycle and even play.

- 6.2.7. The layout has been developed to support and increase the attractiveness of walking, cycling and use of public transport. It offers a permeable street network connected to a number of existing PROWs and cycle routes providing the connections to the local public transport services and facilities.

6.3 MOBILITY IMPAIRED

- 6.3.1. As well as ensuring a good coverage of footway and cycle access across the development, the topography of the site will, as far as reasonably practicable, provide shallow gradients of up to 1 in 20 to promote inclusive access for all users including disabled and the elderly.
- 6.3.2. Disabled car parking will be provided in accordance with the relevant DfT guidance Inclusive Mobility (2005). This will entail larger parking bays to allow easier access, as well as any additional circulation zones that may be required.

6.4 ACCESS STRATEGY

SOUTH WOKINGHAM DISTRIBUTOR ROAD (SWDR)

- 6.4.1. The vehicular access arrangements for land phase 2 of the SWSDL will be via the new SWDR being promoted and delivered by WBC. The detailed description of the SWDR outlining the phasing is provided in Section 4 of this TA.
- 6.4.2. The SWDR is envisaged to provide a high-quality all-mode route with carriageway widths appropriate to its importance and setting. Non-motorised users' (NMU) needs will be catered for by the provision of shared footway/cycleway on both sides separated from the carriageway by verges. A number of formal and informal crossing points will be provided along the length of the SWDR linking the existing and proposed pedestrian/cyclist facilities and increasing the permeability and accessibility of the proposed development. Some of these will be controlled by traffic signals and others will make use of median islands and refuges to enable easier and safer movement for pedestrians.
- 6.4.3. The indicative routing of the SWDR through the proposed development is included in **Appendix E** attached to this TA.

VEHICULAR ACCESS

- 6.4.4. The proposed development will be accessible to vehicular traffic via several access points with the majority of these associated with the new SWDR. The parameter plan illustrating the accessibility to the application site is included in **Appendix F**. They are described in more detail below.

Eastern Gateway / Waterloo Road Access

- 6.4.5. The north-eastern access will be provided from the A329 London Road via the recently constructed signalised junction with William Heelas Way (Montague Park) and the new Eastern Gateway roundabout junction. This new priority controlled four-arm roundabout with Waterloo Road will provide access to residential parcels via its northern arm, access onto the new SWDR to the west and residential parcels via Waterloo Road to the southeast.
- 6.4.6. In order to improve connections to the development via Waterloo Road, the proposed development will see a section of Waterloo Road south of the new roundabout realigned to pass through the development site thereby forming an access to the site, with the bypassed section of the existing road being closed to vehicular traffic. It is anticipated that this will also offer a safety improvement by removing what is currently a narrow rural section of road for a new section of road designed to current standards.

6.4.7. The proposed re-alignment of Waterloo Road is shown in the masterplan contained in **Appendix D**, with the new junction arrangements to allow for the re-alignment shown in WSP drawing 70001684-SK-037 rev.B. It should be noted that the application for land at phase 2a is in outline only and therefore the internal alignment of Waterloo Road will be subject to further review and will be defined in any reserved matters application.

6.4.8. As part of the Eastern Gateway scheme, the existing Waterloo Road level crossing will be closed for vehicular and NMU traffic and Waterloo Road stopped up immediately north of the WRRL, thus severing connection to the proposed development. The roundabout's northern arm will, therefore, serve only as a link with the internal highway network. WBC are progressing the legal means of stopping up Waterloo Road.

Proposed Heathlands Road / Easthampstead Road Signal controlled Access

6.4.9. The central and western parts of the proposed site will be accessed via the SWDR, which runs west from the Eastern Gateway roundabout towards the A321 Finchampstead Road. A new link road is proposed connecting the proposed SWDR in the vicinity of Brittons Farm with Easthampstead Road to the south of the site. The new link will connect with Easthampstead Road at the location of the existing priority-controlled T-junction of Easthampstead Road and Heathlands Road. A new four-arm signal-controlled junction is proposed at this location which is shown in WSP drawing 70001684-SK-038 rev.B.

Proposed Easthampstead Road Signal Junction Access

6.4.10. In order to provide appropriate connections onto the wider highway network, a new signalised junction with Easthampstead Road is proposed on the new SWDR, located just south of the WRRL. At this point, Easthampstead Road is proposed to be stopped up to the south of the new junction, with access to the existing residential units being via the new four-arm signal junction with Heathlands Road. Any traffic travelling southeast along Easthampstead Road will be required to route along the new link to Heathlands Road described above.

6.4.11. The existing level crossing on Easthampstead Road is to be retained and it is subject to improvements by Network Road consisting of re-signaling and introduction of obstacle detector. The relevant document is contained in **Appendix G**. More on this aspect is given in Section 10.

6.4.12. The proposals are shown in WSP drawing 70001684-SK-039 rev.B.

Finchampstead Road Access

6.4.13. The remainder of the SWDR to the west of the Easthampstead Road within the site boundary will form a number of junctions with the development's internal highway network providing access to the western parts of the proposed development. The route will then continue further west beyond the site and ultimately connect with the A321 Finchampstead Road in the vicinity of the existing Tesco superstore. The exact route of the section of the SWDR to the west of the proposed development site and its connection to the existing highway network on Finchampstead Road (the Western Gateway) is a subject to a separate application and has not yet been confirmed. The potential alignment of the SWDR is illustrated in plans included in **Appendix E**.

Local Centre / School / Sports Hub Access

- 6.4.14. The proposed local centre and primary school are planned to be accessed from the SWDR. Access to the SANG in the southern part of the site will be via an extension of this access route. Furthermore, a safeguarded route to the new sports hub near Ludgrove School (promoted by WBC) will be via the SWDR in close proximity to the Local Centre/School access. The land for the access road to the Sports Hub will be provided to WBC as part of the development masterplan. To inform the masterplan, an indicative road layout for the sports hub access route is shown in WSP drawing 70001684-D-102 rev.P02.

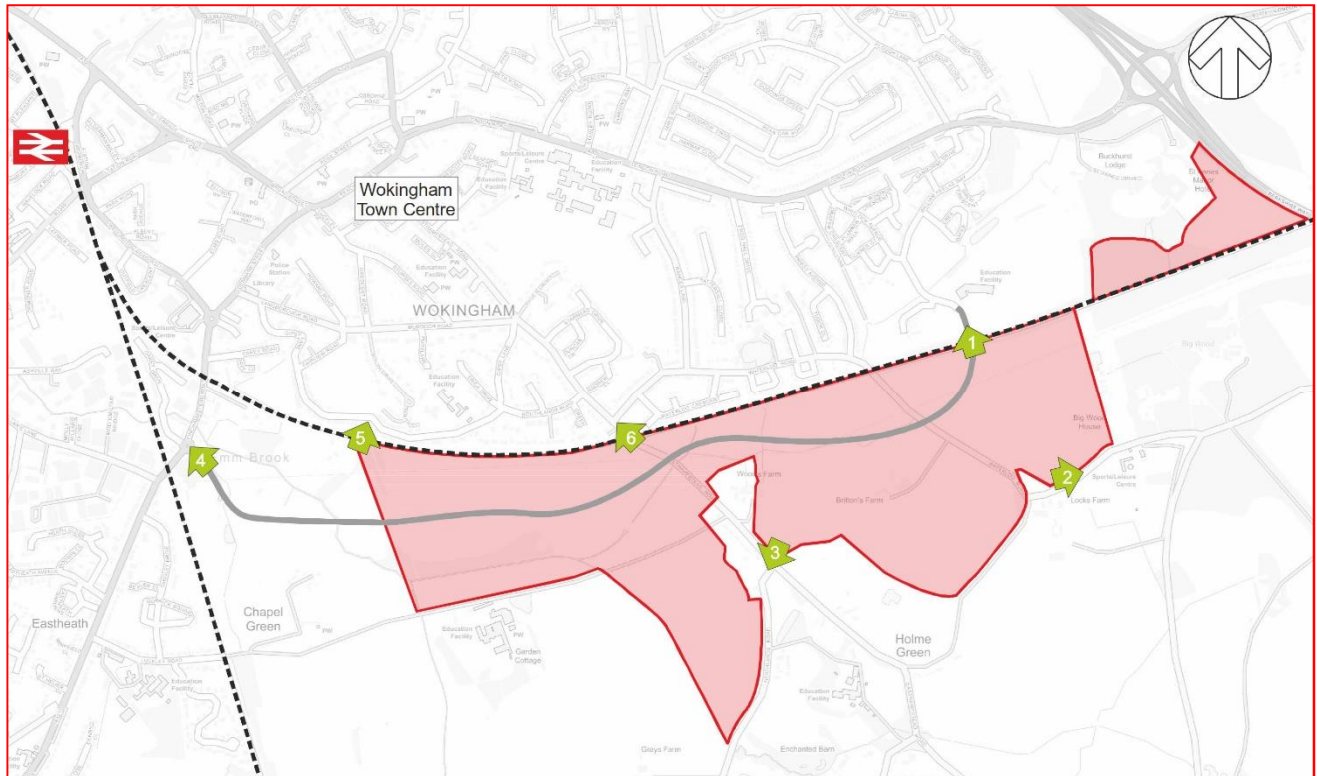
Access to Brittons Farm

- 6.4.15. To deliver the approved Eastern Gateway four-arm roundabout, a new access into Brittons Farm has been identified by WBC and approved. However, the location of the revised Brittons Farm access will conflict with the proposed drainage strategy for the SWSDL and therefore will require relocation.
- 6.4.16. At the time of writing this TA, discussions are being held with the land owner to agree a new access route to Brittons Farm, the preferred location for the new access being shown on the masterplan included in **Appendix D**. This comes off the western access road to development parcel R11. The final location will be identified within the resulting reserved matters applications.

PEDESTRIAN AND CYCLE ACCESS

- 6.4.17. The proposed development is to be accessible to pedestrians and cyclists by multiple accesses. As outlined in the previous sections, the SWDR will include, *inter alia*, a high-quality pedestrian and cyclist infrastructure along its length providing connections to the existing provision in the vicinity of the site.
- 6.4.18. The new high-quality facilities along the SWDR will provide connections to/from the northeast via Eastern Gateway, part of which is a new bridge over the WRRL, and William Heelas Way, to the north via the new junction with Easthampstead Road and to the west via the future sections of the SWDR and Western Gateway. The facilities will be complemented by a comprehensive network of pedestrian and cycle routes within the proposed development. The existing PROW traversing the site including the existing footbridge over the WRRL will be incorporated into the layout.
- 6.4.19. The NMU access points are indicatively shown in Diagram 6-1 with corresponding description of each provided below.

Diagram 6-1 - NMU Access Points



- 6.4.20. A high-quality pedestrian and cyclist connection (1) will be provided to/from the northeast via Eastern Gateway, part of which is formed by a new bridge over the WRRL. The new facilities will tie in to the existing facilities along William Heelas Way and those within the recently completed Montague Park development.
- 6.4.21. Provision for pedestrian and cyclists to the east is currently limited, however through the development proposals, it is envisaged that Waterloo Road to the east of the site will be upgraded including a provision of a new footway connecting to the existing shared facility in the vicinity of the junction of Waterloo Road, Old Wokingham Road and Peacock Lane. This connection is considered to significantly improve the site's NMU accessibility to/from the east (2). The proposed improvements along Waterloo Road are set out in greater detail in Section 10 of this TA.
- 6.4.22. Pedestrian and cyclists access to the site from the south (3) will be achieved via the proposed new junction with Easthampstead Road/Heathlands Road and the new link road with associated pedestrian/cyclist provision.
- 6.4.23. Another high-quality pedestrian/cyclist connection, similar to that provided as part of the Eastern Gateway, will be provided to/from the west (4) via the Western Gateway.
- 6.4.24. For the access to/from the north (5), the existing pedestrian connection utilising the existing footbridge over the WRRL and public footpath WOK1 FP 171 (leading to Gypsy Lane) situated in the western tip of the large development parcel will be retained and incorporated within the development layout.
- 6.4.25. As outlined previously, the existing WRRL level crossing with Easthampstead Road will be retained and the existing NMU provision will be tied in to the facilities provided as part of the proposed development and the SWDR. This connection will also provide pedestrian/cyclist access to/from the north (6).

- 6.4.26. The NMU routes outlined above will be complemented by a number of pedestrian crossings at key locations. These crossings include both informal and formal crossing points.

SANG/SPORTS HUB ACCESS

Land to the South of St Anne's Manor (SANG)

- 6.4.27. Land to the South of St Anne's Manor accommodating the proposed SANG is planned to be accessible only via pedestrian and cycle routes within the Buckhurst Meadows SANG neighbouring the land parcel to the west.
- 6.4.28. It is not proposed to provide a direct vehicular access/parking for the visitors given the location of the proposed SANG in proximity to the residential element of the proposed development. The high-quality network of pedestrian and cyclist facilities provided as part of the proposals, the SWDR bridge over the WRRL and facilities in Montague Park are considered to provide excellent accessibility to the SANG on foot or by cycle rather than a private car.
- 6.4.29. The existing Buckhurst Meadows car park is situated directly off William Heelas Way in the northern part of the nature reserve and provides nine standard parking spaces and one disabled parking bay.

Sports Hub/SANG Access

- 6.4.30. As outlined above, it is proposed that another area of SANG is provided within the land at phase 2b. This SANG is to be located in the southern part of the development site to the west of Easthampstead Road and Heathlands Road.
- 6.4.31. The land adjacent to the SANG and Ludgrove School is proposed as a future sports hub. It is understood that access to both the SANG and sports hub needs to be considered and included in the proposed development layout so that it can be achieved when needed in the future.
- 6.4.32. The land required for delivery of the access is to be reserved within the masterplan. The parking for the SANG will be provided as part of the parking provision associated with the community centre, while the parking provision for the Sports Hub will be considered when/if it progresses further.
- 6.4.33. The comprehensive network of pedestrian and cycle routes provided as part of the proposed development will provide sufficient access to both areas for non-motorised users.

6.5 CAR AND CYCLE PARKING PROVISION

- 6.5.1. The parking standards are set out in *Appendix 2* of the Wokingham Borough's *Managing Development Delivery Local Plan* (MDD) adopted 21 February 2014 and are based on the evidence and research presented in the *Parking Standards Study Report 2011*. The parking standards contained within the MDD "...should be regarded only as a starting point in any discussions with the Borough Council as it should be recognised that each development site will need to be assessed on its own merits, within the wider context of the area in which the development sits."
- 6.5.2. The document suggests both vehicular and cycle parking standards for new developments within Wokingham borough depending on their use class. The proposed development consists predominantly of residential dwellings (Use Class C3) and will also provide land for a primary school (Use Class D1) and a community centre (Use Class D2). There is also a potential for a small retail (Use Class A1/A3/A5) to be incorporated into the local centre

CLASS C3: DWELLING HOUSES

Vehicular Parking

- 6.5.3. The MDD considers the parking allocation for the residential properties based on accessibility and the character of the area in which they are situated. From the map included in MDD and the Parking Standards Study Report 2011 illustrating various areas it is understood that the proposed development is situated in the 'Urban' category.
- 6.5.4. It should also be noted that the MDD distinguishes between parking provision for privately owned homes and rented (including community/affordable) housing. As the exact housing mix has not yet been determined, the parking standards applied to the proposed development for the purposes of this assessment are those for privately owned houses to ensure robustness.
- 6.5.5. The recommended parking standards for the privately-owned houses within the 'Urban' category are outlined in Table 6-1 below.

Table 6-1 – Vehicular Parking Standards: Houses Privately Owned (Urban)

No. of Habitable Rooms	No. of Allocated Spaces	0	1	2
	No of Bedrooms	Unallocated Demand – Urban Category		
3 or less	1-2	1.1	0.3	
4	2	1.2	0.4	0
5	2-3	1.4	0.5	0.1
6	3	1.6	0.7	0.1
7	3-4	1.8	0.9	0.2
8 or more	4	2.1	1.1	0.3

Source: Managing Development Delivery Local Plan (February 2014)

- 6.5.6. The standards contained in the MDD suggest that garages (of sufficient size) are being underused, and as such, they should be only counted as 0.5 of an allocated space rather than one space.
- 6.5.7. In addition to the above requirement, visitor parking should also be provided throughout the development on the basis of 0.2 per dwelling.

Cycle parking

- 6.5.8. Cycle parking allocation is also specified in the MDD, and it is outlined in Table 6-2 below.

Table 6-2 - Recommended Cycle Parking Standards: Houses

No. of Habitable Rooms	Cycle Parking Allocation
1 - 2	1 per dwelling
3	1 per dwelling
4 - 5	2 per dwelling
6+	3 per dwelling

Source: Managing Development Delivery Local Plan (February 2014)

CLASS D1: NON-RESIDENTIAL INSTITUTIONS (PRIMARY SCHOOL)

- 6.5.9. It is recommended that one allocated car parking space per full-time employee is provided. One secure and covered cycle parking space per three pupils is required as well as one space per five staff.

CLASS D2: ASSEMBLY AND LEISURE

- 6.5.10. It is recommended that one allocated car parking space per 20m² of public space is provided. One secure and covered cycle parking space per 15 visitors is required as well as one space per five staff.

CLASS A1: SHOPS (FOOD)

- 6.5.11. It is recommended that one allocated car parking space per 20m² of retail space provided. One secure and covered cycle parking space per 125m² is required. 20% of the total provision is to be provided as long-term parking, while 80% of the spaces is to be short-time parking.

CLASS A3: RESTAURANTS AND CAFE

- 6.5.12. It is recommended that one allocated car parking space per 5m² of restaurant space. One secure and covered cycle parking space per 125m² is required. 20% of the total provision is to be provided as long-term parking, while 80% of the spaces is to be short-time parking.

CLASS A5: HOT FOOD TAKEAWAYS

- 6.5.13. It is recommended that one allocated car parking space per 3m² of public space is provided. One secure and covered cycle parking space per 125m² is required. 20% of the total provision is to be provided as long-term parking, while 80% of the spaces is to be short-time parking.

LOCAL CENTRE

- 6.5.14. The user classes above will form part of the proposed local centre within the Project Development, however the final quantum will be determined at reserved matters applications, with up to figures contained within this Transport Assessment. It is proposed that the car parking for the local centre will be designed so that spaces can be shared across the different land uses in order to maximise the use of the space for the local centre. At the reserved matters stage, an assessment will be undertaken to account of the different visitor profiles across the day and the accumulation of these different profiles resulting in a car parking provision.
- 6.5.15. The local centre car park will also look to accommodate primary school drop offs and access to the new SANG which will all be considered within the parking accumulation calculation.

ELECTRIC VEHICLE CHARGING/PARKING

- 6.5.16. WBC does not currently provide a specific recommendation on a number of vehicle parking spaces to be equipped with electric supply. However, the MDD states that “...*consideration should be given to the need to provide sufficient vehicle charging facilities for electric vehicles or provide for the easy adaptation of parking provision to enable charging points to be rolled out as and when demand rises.*”
- 6.5.17. In the absence of specific WBC standards, consideration has been given to the electric vehicle (EV) charging provision, and this will be provided throughout the layout where appropriate. Following the discussions with WBC regarding the approach to the EV charging within residential developments, it is understood that a guidance is currently being developed by WBC. Therefore, the EV charging strategy for the proposed development will consider the emerging guidance and will aim to find a balanced solution in terms of energy requirements and associated infrastructure.

7 ASSESSMENT APPROACH

7.1 INTRODUCTION

- 7.1.1. This section sets out the methodology for the assessment of the local highway network. The pre-application correspondence included in **Appendix A** provides confirmation of the methodologies agreed with WBC.

MODEL

- 7.1.2. To inform the potential impacts of the strategic developments being delivered within Wokingham Borough, WBC commissioned and delivered a strategic model which has to date been used on all the key applications. In 2018, WBC updated the model to a VISUM-based platform called the 'Wokingham Strategic Transport Model 4' (WSTM 4). The model has been validated and approved by WBC for use and requested it be used for this assessment.
- 7.1.3. The parameters used within the model relating to the Project Development such as trip generation and distribution have been defined by WBC based on the Project Development masterplan to undertake a number of agreed scenario tests. Furthermore, WBC issued the resultant turning flows from the model which have been used within the relevant junction assessments contained within Section 8 of the TA. The turning movements were adjusted by WBC to take account of existing base flows at each junction.
- 7.1.4. The WSTM 4 assigned the distribution of traffic based on the forecast travel demand and the distribution of traffic to local and regional destinations, which are determined by the model based on an array of travel purposes and land uses in the region.
- 7.1.5. The distribution and assignment of the Project Development traffic, as calculated by the WSTM 4, is graphically represented for both peak hours and origins/destinations in **Figure 16** to **Figure 19**. It should be noted that the outputs shown in these figures are for 2026 Do-Something scenario only. However, it is not expected that these changed significantly in the 2036 scenario and as such are considered representative of the forecast distribution in both future years.

7.2 COMMITTED DEVELOPMENT

- 7.2.1. Committed developments in the Wokingham area considered as part of this assessment include all the developments and infrastructure improvements included in the WSTM 4. The included developments are listed below with their indicative location shown in Cumulative Site Plan contained in **Appendix H**:

- i Site 1 – West of South Wokingham Strategic Location – 140 dwellings
- i Site 2 – Buckhurst Park (Montague Park) – 650 dwellings
- i Site 3 – Guide Dogs for the Blind Association – 100 dwellings
- i Site 4 – Kentwood Farm – 274 dwellings
- i Site 5 – Land at Matthewsgreen Farm – 100 dwellings
- i Site 6 – Land North of Nine Mile Ride – 118 dwellings
- i Site 7 – Bell Farm – 128 dwellings
- i Site 8 – Keephatch Gardens – 300 dwellings
- i Site 9 – Land at Market Place, Peach Street and Rose street – 26 dwellings
- i Site 10 – 74-80 Peach street – 39 dwellings

- i Site 11 -Crowthorne House – 1,000 dwellings
- i Site 12 – Land North of Peacock Lane – 128 dwellings
- i Site 13 - Land north of Amen Corner – 380 dwellings
- i Site 14 – Land at Amen Corner – 380 dwellings
- i Site 15 – Land South of Amen Corner – 550 dwellings
- i Site 16 – Elm Field – leisure centre, cinema, hotel, 126 dwellings
- i Site 17 – Carnival Pool – leisure centre, library, restaurant, 55 dwellings

7.3 ASSESSMENT SCENARIOS

7.3.1. Assessment has been undertaken using 2026 and 2036 future year scenarios as agreed with WBC. 2026 represents the final year in the WBC Local Plan as adopted in January 2010. As development on land at phase 2b will continue beyond the end of the Local Plan period, an additional assessment year of 2036 has been selected. 2036 represents the likely year of the full occupation of the Project Development scheme.

7.3.2. The assessed scenarios are as follows:

- i 2026 Forecast Without SWSDL / Without SWDR (2026 Do-minimum)
- i 2026 Forecast With Full SWSDL / With SWDR (2026 Do-something)
- i 2036 Forecast Without SWSDL / Without SWDR (2036 Do-minimum)
- i 2036 Forecast With Full SWSDL / With SWDR (2036 Do-something)

7.4 SUMMARY

7.4.1. The traffic impact of the Project Development has been evaluated using data extracted from the WSTM 4.

7.4.2. Trip generation was determined based on the residential trip rates used for new development in the WSTM 4, with committed developments included in the model also providing a base for the assessment.

7.4.3. Forecast years and their associated scenarios were agreed with WBC.

8 LOCAL HIGHWAY NETWORK IMPACT

8.1 INTRODUCTION

- 8.1.1. This section of the TA sets out the effects of the Project Development on the local highway network, examining key junctions on the local highway network in line with pre-application scoping discussions with WBC.
- 8.1.2. It is also relevant to note here that the environmental effects of the Project Development have been assessed in transport terms in Chapter 9 of the Environmental Statement.

8.2 OVERALL TRAFFIC IMPACT

- 8.2.1. As outlined in Section 7 of this TA, the WBC's WSTM4 (VISUM based traffic model) has been utilised to assess the impacts of the Project Development scheme. To inform the strategic effects of the Project Development alongside the new SWDR, model outputs illustrating the flow difference between the 2036 Do-minimum and Do-something scenarios for both AM and PM hours are included in **Appendix I** along with the WSTM 4 change in delays as a result of the changes in the traffic volume.
- 8.2.2. A key piece of infrastructure being delivered by WBC and funded by CIL is the new SWDR, which will offer not only access to the site but also offer significant mitigation to the town of Wokingham.
- 8.2.3. It is forecast that the Project Development and SWDR will provide significant benefit to the local highway network in and around the town centre to the north of the development site. It is evident that some traffic is redistributed away from the centre of Wokingham (i.e. a reduction in traffic volume) and along the new SWDR. As a result, the delay for some vehicular journeys is also forecast to reduce within the area.
- 8.2.4. The one-way system in the town centre is forecast to see a reduction in traffic volumes of approximately 60 to 65 vehicles per hour with an associated decrease in delay of approximately 1–2 seconds.
- 8.2.5. The changes in the traffic volume and delay are summarised for each of the peak hours on the key links in Table 8-1 below.

Table 8-1 – Key Links: Traffic Volume and Delay Changes (2036 Do-minimum - Do-something)

Link	Avg. Traffic Volume Change (PCU)		Avg. Delay Change (seconds)	
	AM	PM	AM	PM
A329 London Road (between William Heelas Way and the A329(M))	+208	+108	-2	-2
A329 London Road (from William Heelas Way towards town centre)	-39	-65	-1	-1
A329 (M)	+74	+79	+2	-1
B3048 London Road	+23	+24	+1	+1
A321 Finchampstead Road	+61	+43	+4	+5
Molly Millars Lane	+130	+95	+2	+3
B3349 Barkham Road	+61	+65	+1	+1
Peacock Lane/Waterloo Road	+121	+164	+6	+9
Old Wokingham Road	-118	-83	-2	-5
Heathlands Road	-50	-38	-1	-5
Nine Mile Ride	-10	-21	-4	-3

Source: WSTM 4

- 8.2.6. Traffic volume increases in both AM and PM peak hours are evident along the existing section of the SWDR (William Heelas Way) and also along the section of the A329 London Road approaching the A329(M). It should, however, be noted that William Heelas Way/A329 London Road has been designed and approved by WBC to accommodate the traffic associated with the full SWSDL. As such, a small decrease (c. two seconds) in delay is forecast along the A329 London Road running east towards the A329(M) despite the increases of traffic volume in both peak hours.
- 8.2.7. As stated previously, the SWDR is forecast to be beneficial to the highway network adjacent or within the town centre. This benefit is evident also along the A329 London Road leading towards the town centre from its junction with the SWDR (William Heelas Way), where the average decrease in traffic volume is forecast to be approximately 39 and 65 vehicle movements in the AM and PM peak hour respectively. Associated with the reduction of the traffic volume is also a reduction in delay that is forecast to be circa one second per vehicle in both peak hours.
- 8.2.8. While significant levels of traffic are predicted to utilise the A329(M) to travel to/from the north, the estimated changes in delay along this corridor are negligible in both AM and PM hours. It is forecast that the average traffic volume would increase by approximately 74 and 79 in the AM and PM hour respectively. This increase in the traffic volume leads to an increase of two seconds in the AM peak hour and a decrease of one second in the PM peak hour.
- 8.2.9. The changes in traffic volume along the B3048 London Road to the east of the A329(M) are negligible with the AM peak hour increase of 23 PCU and the PM peak hour increase of 24 PCU. The delay is forecast to increase by one second in both peak hours.

- 8.2.10. To the west of the site, the increase in traffic volume along the A321 Finchampstead Road is forecast to be an average of approximately 61 vehicles in the AM peak hour and 43 vehicles in the PM peak hour. However, the delay increases are only minimal with the values of approximately 4–5 seconds per vehicle. The delay increases are most significant along the section of the A321 Finchampstead Road between the Tesco Roundabout and Molly Millars Lane. The impacts of this is discussed in greater detail within Section 8.5.
- 8.2.11. An increased volume of traffic is also forecast along Molly Millars Lane and the B3349 Barkham Road with a slight increase in delay. Despite a relatively large increase in the traffic volume of 190 and 95 vehicles in the AM and PM peak hours respectively, the associated increase in delay is only approximately two to three seconds per vehicle in both peak hours.
- 8.2.12. B3349 Barkham Road to the southwest of the town centre is also forecast to experience a slight increase in the traffic volume. The increase of approximately 61 and 65 vehicle movements in the AM and PM peak hour respectively is expected to marginally increase the delay by approximately one second per vehicle in both peak hours.
- 8.2.13. The routes to the south of the proposed development that include Heathlands Road and a section of Old Wokingham Road leading to the B3430 Nine Mile Ride are forecast to benefit from the proposals with a significant reduction of traffic volumes of up to approximately 118 vehicles in the AM peak hour and up to 83 vehicles in the PM peak hour. The subsequent reduction of delay estimated for the AM peak hour is approximately two seconds per vehicle, while a decrease of five seconds per vehicle is forecast for the PM peak hour.
- 8.2.14. The B3430 Nine Mile Ride corridor is also forecast to experience a reduction of approximately 10 and 21 vehicles in the AM and PM peak hour respectively with an associated reduction in delay of three to four seconds per vehicle.
- 8.2.15. The WSTM 4 forecasts an increase in traffic volume along Waterloo Road and Peacock Lane towards Bracknell. This is evident in both AM and PM peak hours with approximately 121 vehicles in the AM peak hour and approximately 164 vehicles in the PM peak hour made up of both development traffic and rediverted traffic. The associated increase in delay apparent at the junction of Waterloo Road, Peacock Lane and Old Wokingham Road is estimated to be approximately six and nine seconds per vehicle in the AM and PM peak hours respectively.

SUMMARY

- 8.2.16. In summary, the proposed development alongside the delivery of the new SWDR will see significant benefits to the town centre from the redistribution of journeys around the new highway network, which is one of the primary reasons for the delivery of the SWDR. The modelling indicates a benefit to the south of the site on Heathlands Road and Old Wokingham Road and along the B3430 Nine Mile Road corridor partly due to the new alternative routes for drivers to access the A329(M) without needing to route through the villages.
- 8.2.17. The introduction of the development will see traffic volume increases at both ends of the new road, notably at the A329 London Road and the A321 Finchampstead Road, although the delay plots indicate that these do not have a significant impact upon driver delay. However, in line with the NPPF, these increases are now assessed in more detail to determine whether they have a severe impact and, if so, to identify suitable mitigation.

8.3 IDENTIFICATION OF JUNCTIONS FOR ASSESSMENT

- 8.3.1. Based on pre-application negotiations, it was agreed with WBC that WSP would examine traffic flow changes in the study area and consider the effects at a series of junctions in and around Wokingham. The study area excludes Reading and Spencers Wood areas but includes Bracknell.
- 8.3.2. The Level of Service (LoS) extracted from the WSTM 4 formed a base of the review and consideration was given to every junction/link where the forecast LoS was D, E or F. The LoS category at the junction is determined by the maximum turn delay experienced on any of the arms. The LoS for the junction approach can be used to determine which arm is responsible. The corresponding delay associated with the LoS categories is given in the Table 8-2 below.

Table 8-2 – Level of Service Categories

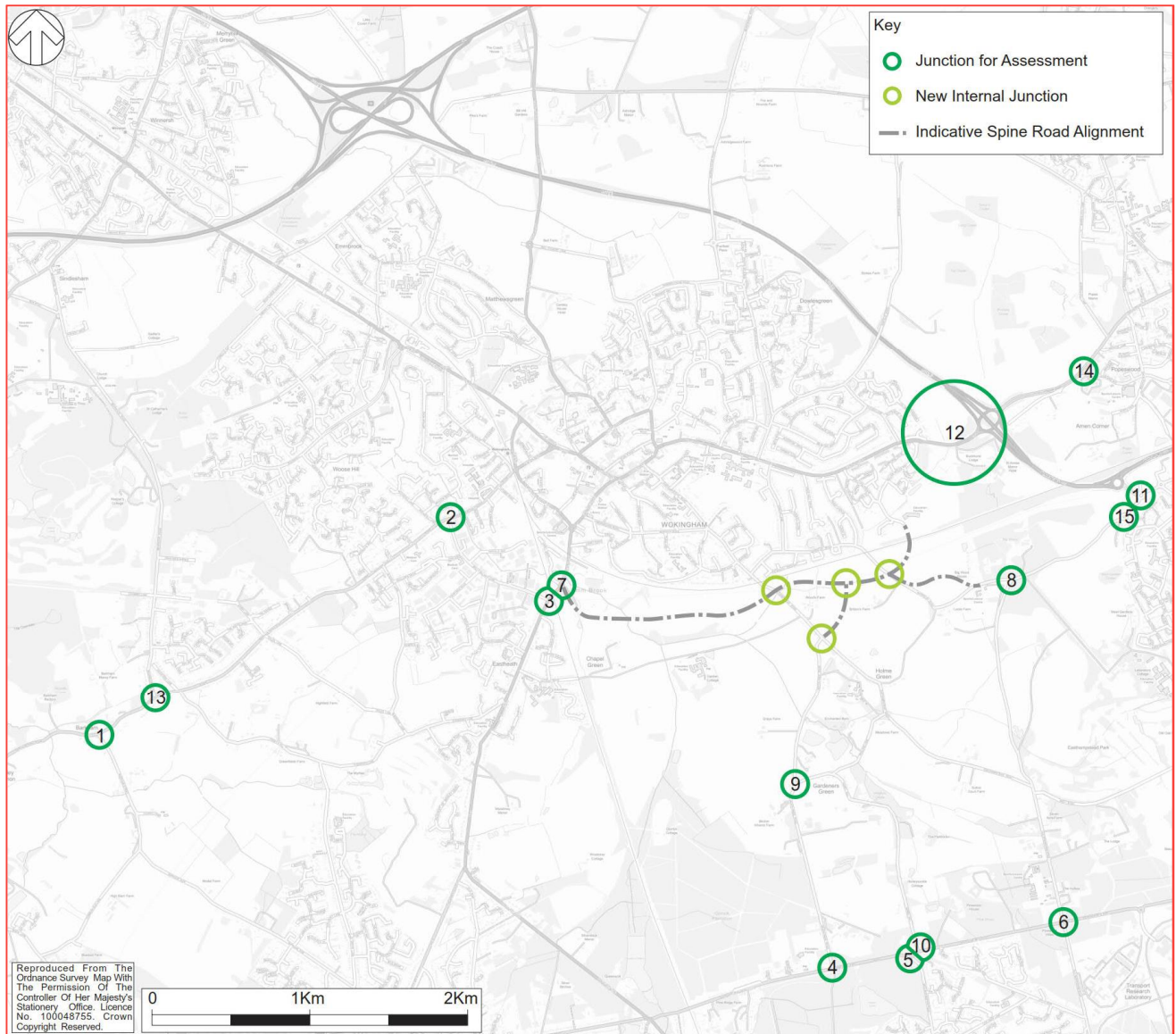
LoS	Mean Delay / Vehicle	
	Un-signalised Junction	Signalised Junction
A	0 – 10 sec	0 – 10 sec
B	10 – 15 sec	10 – 20 sec
C	15 – 25 sec	20 – 35 sec
D	25 – 35 sec	35 – 55 sec
E	35 – 50 sec	55 – 80 sec
F	50+ sec	80+ sec

- 8.3.3. The study area highlighting all of the considered junctions is shown in **Figure 20**.
- 8.3.4. The junctions within the study area were subject to a detailed review based on the traffic flow and delay changes generated by the WSTM 4 as well as review of the current traffic conditions using Google Traffic feature of Google Maps. As a result of this analysis, a number of junctions were set out by WBC as requiring a detailed assessment. Many of the junctions are not adversely impacted by the development. For example, junctions on Nine Mile Ride were included because of the feedback at Public Consultations events that highlighted residents' concerns about conditions with the development.
- 8.3.5. The identified junctions are listed below with supporting information on decision criteria included in **Appendix J** their location is shown indicatively in Diagram 8-1 below:

- i 1 B3349 Barkham Road / Barkham Street
- i 2 B3349 Barkham Road / Molly Millars Lane
- i 3 Finchampstead Road / Molly Millars Lane
- i 4 B3430 Nine Mile Ride / Heathlands Road
- i 5 B3430 Nine Mile Ride / New Wokingham Road
- i 6 B3430 Nine Mile Ride / Old Wokingham Road
- i 7 A321 Finchampstead Road / Landen Crescent / Tesco Access
- i 8 Waterloo Road / Peacock Lane / Old Wokingham Road
- i 9 Honey Hill / Heathlands Road
- i 10 Honey Hill / B3430 Nine Mile Ride
- i 11 Jennett's Park Roundabout (Berkshire Way / Vigar Way / Peacock Lane)

- i 12 A329 London Road / A329(M) / Berkshire Way
- i 13 Bearwood Road / B3349 Barkham Road
- i 14 A329 London Road / William Heelas Way
- i 15 B3408 London Road / John Nike Way
- i 16 Peacock Lane / Sparrowhawk Way

Diagram 8-1 - Junctions Evaluated



8.3.6. Traffic flows used for the junction analysis discussed in this section were extracted from WSTM 4 for all junctions and are included in **Appendix K**.

8.4 ASSESSMENT METHODOLOGY

PRIORITY CONTROLLED JUNCTION ASSESSMENTS

- 8.4.1. Priority-controlled junctions on the local highway network have been assessed using the industry standard Junctions 9 software package, using a Demand Data profile for one hour. When reviewing Junctions 9 outputs, it is important to note that the likely performance of any given junction under a future year traffic loading is indicated by the Ratio of Flow to Capacity (RFC). A junction may be considered to be within its theoretical capacity when the calculated RFC is smaller than 1.0 (i.e. 100%, with 0.85 being the target capacity for new junctions. An entry RFC of 1.0 indicates that the junction operates at its theoretical capacity, while RFC values exceeding 1.0 indicate lack of capacity and potential operational issues including queuing and delays. The maximum queue is displayed in PCUs and is rounded up from the Junctions 9 output to the nearest one PCU¹.
- 8.4.2. Priority-controlled junction assessment outputs from Junctions 9 are included in **Appendix L**.

SIGNAL CONTROLLED JUNCTION ASSESSMENTS

- 8.4.3. Signal controlled junctions have been assessed using the industry standard LinSig signal junction assessment software. The LinSig modelling work provides forecasts of queue lengths, the Degree of Saturation (DoS) and the Practical Reserve Capacity (PRC) of the junction. The DoS is a percentage calculated from demand to capacity on each approach to the junction, with a value of 100% meaning that demand and capacity are equal and no further traffic is able to progress through the junction. The design capacity of a junction is typically a DoS of 90%. Above 90%, characteristics indicating delay may be seen.
- 8.4.4. The overall junction performance is considered in terms of the Practical Reserve Capacity (PRC). Similar to DMRB TA23 a positive PRC has been adopted to indicate that a junction has spare capacity and queues will normally be avoided. A negative PRC indicates that queues and delays are more likely and opportunities for improvement should be considered.
- 8.4.5. Signal controlled junction assessment outputs from LinSig are included in **Appendix M**.

8.5 OFF-SITE JUNCTION ASSESSMENTS

JUNCTION 1 – B3349 BARKHAM ROAD / BARKHAM STREET MINI-ROUNDBABOUT

- 8.5.1. The existing junction is a 3-arm mini-roundabout located to the southwest of the site. The operation of the B3349 Barkham Road/Barkham Street mini-roundabout has been assessed for both 2026 and 2036 forecast scenarios. A summary of the AM and PM peak hours is set out in Table 8-3 and Table 8-4 respectively.

¹ PCU – Passenger Car Unit - a standardised unit of traffic volume used in modelling. One HGV = 2 pcus

Table 8-3 - Junction – B3349 Barkham Road/Barkham Street – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Barkham Road (E)	1.09	48	1.11	59	1.11	57	1.16	77
Barkham Street	1.55	240	1.55	246	1.54	243	1.52	233
Barkham Road (W)	1.18	77	1.17	74	1.20	86	1.19	83

Source: Junctions 9 Output

Table 8-4 - Junction – B3349 Barkham Road/Barkham Street – PM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Barkham Road (E)	1.44	238	1.47	270	1.49	275	1.50	294
Barkham Street	0.94	11	0.94	10	1.00	18	0.98	14
Barkham Road (W)	0.83	5	0.94	11	0.89	7	1.00	19

Source: Junctions 9 Output

- 8.5.2. The Junctions 9 assessment forecasts that the junction will operate over capacity to varying degrees on each arm in both the AM and PM peaks, in all scenarios and is likely to be a constraint on the network that WBC need to consider in the future with or even without the Project Development.
- 8.5.3. In contrast, the WSTM 4 model output, provided as **Appendix I** shows an addition of 34 vehicles in the AM peak and 23 vehicles in the PM peak, arriving at the Barkham Road East approach. This is not considered to be a significant increase in vehicles given the modest increase in delay of one second in the AM peak and one second in the PM peak.
- 8.5.4. Barkham Road West has an increase of 90 vehicles arriving in the PM peak as a result of the development and SWDR, according to the WSTM 4 output, with an additional delay of only two seconds.
- 8.5.5. The development is shown to reduce traffic arriving at the junction from Barkham Street which improves the operation of this approach in both peak hours and reduces delay.
- 8.5.6. It is therefore considered that the predicted queues on Barkham Road East are not likely to be as high as the Junctions 9 software reports for a few reasons. Firstly, the software does not consider the local network as a whole and how likely drivers are to adapt their journey and secondly, it is generally accepted that the modelling software can underestimate capacity at mini-roundabouts with difficulty in determining appropriate gap acceptance at small junctions. Junctions with an RFC of over 1.00 can report queues which grow exponentially and are not an accurate representation of the likely future scenario.

- 8.5.7. The likely impact of the development at this junction is considered to be small given the small increase in flow and the junction is already forecast operating over capacity in the Do minimum scenarios. The impact is not considered to be severe, given the predicted conditions in the future years. Therefore, no mitigation at the junction is considered to be justified.

JUNCTION 2 – B3349 BARKHAM ROAD / MOLLY MILLARS LANE MINI-ROUNDAABOUT

- 8.5.8. The operation of the B3349 Barkham Road / Molly Millars Lane mini-roundabout was assessed in all scenarios. Summaries of the AM and PM peak hour results are set out in Table 8-5 and Table 8-6 respectively.

Table 8-5 - Junction 2 – B3349 Barkham Road/Molly Millars Lane – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Barkham Road (E)	1.06	27	1.17	51	1.13	42	1.22	69
Molly Millars Lane	0.73	3	0.75	3	0.72	3	0.77	4
Barkham Road (W)	0.94	11	1.07	42	0.97	16	1.12	63

Source: Junctions 9 Output

Table 8-6 - Junction 2 – B3349 Barkham Road/Molly Millars Lane – PM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Barkham Road (E)	0.81	4	0.94	10	0.88	7	1.00	18
Molly Millars Lane	1.14	55	1.12	52	1.18	70	1.22	90
Barkham Road (W)	0.58	2	0.63	2	0.61	2	0.66	2

Source: Junctions 9 Output

- 8.5.9. The Junctions 9 assessment shows that the Barkham Road east and west arms are over capacity during the AM peak whilst Molly Millars Lane is over capacity in the PM peak, along with Barkham Road east.
- 8.5.10. As with Junction 1, the delay at the junction is not expected to be as apparent as the Junctions 9 assessment is reporting due to the inaccuracies of the software when analysing T shaped mini-roundabouts. The guidance within Junctions 9, under section 13.2.1 states: *‘Some mini-roundabouts have a T-shape with unbalanced flows and may behave more like priority junctions than roundabouts, and as a result are difficult to evaluate accurately with any traffic model. The results associated with such mini-roundabouts should be treated with caution.’*

- 8.5.11. In addition, traffic heading to this junction from the north is likely to be in platoons, given its close proximity to the existing railway level crossing 500m to the north. As such, there will be times through the peak hours that will see limited traffic approaching from the north, allowing traffic from Molly Millars Lane to enter the junction and reducing the likelihood of the level of queues set out in Table 8-4 and 8-5.
- 8.5.12. Taking the above into account, and the potential negative implications on surrounding junctions by providing additional capacity at this junction, it is considered that improvements at this location are not justified.

JUNCTION 3 – A321 FINCHAMPSTEAD ROAD / MOLLY MILLARS LANE MINI-ROUNDBOUT

- 8.5.13. Junction 3 is located along the A321 Finchampstead Road and is one of the key strategic junctions in being able to deliver the new SWDR. WBC, through their own assessments as part of the Eastern Gateway application, identified this junction as requiring improvements as part of the Western Gateway study being developed by WBC in support of the SWDR. WBC are currently progressing options for improving the Western Gateway and developing a business case. At the time of preparing this Transport Assessment, no decision has been made on the nature of the interventions to be made along Finchampstead Road in this location.
- 8.5.14. It has been agreed with WBC that this TA will assess the impacts of the Project Development scheme, however any junction mitigation will be identified and delivered through the separate WBC study and planning application by WBC later in 2019. The Project Development will contribute funding to any improvements identified by way of CIL contributions. It is therefore important to note that the results presented below do not take into account the mitigation WBC will deliver and at this time have little relevance given the prospect of that mitigation being delivered.
- 8.5.15. The operation of the Finchampstead Road/Molly Millars Lane mini-roundabout was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-7 and Table 8-8 respectively.

Table 8-7 - Junction 3 – A321 Finchampstead Road/Molly Millars Lane – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Finchampstead Road (N)	0.83	5	1.08	72	0.85	6	1.09	78
Finchampstead Road (S)	1.31	141	1.47	246	1.33	152	1.49	267
Molly Millars Lane	0.91	8	1.03	26	0.96	13	1.05	32

Source: Junctions 9 Output

Table 8-8 - Junction 3 – A321 Finchampstead Road/Molly Millars Lane – PM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Finchampstead Road (N)	0.75	3	0.77	4	0.77	4	0.77	4
Finchampstead Road (S)	0.99	20	1.02	83	1.02	26	1.12	63
Molly Millars Lane	1.71	293	1.79	578	1.79	341	2.08	569

Source: Junctions 9 Output

- 8.5.16. The results in Table 8-7 and Table 8-8 show that the existing junction will exceed its theoretical capacity in both forecast years, with or without the Project Development with queues exceeding 250 vehicles in the morning peak hour along Finchampstead Road (S) and 550 vehicles on Molly Millars Lane in the evening peak hour. It should be noted again that RFC results greater than 1.00 are unlikely to yield reliable queues and delays from Junctions 9.
- 8.5.17. It is anticipated that discussions will continue with WBC post submission of this TA to determine the most appropriate mitigation strategy.

JUNCTION 4 - B3430 NINE MILE RIDE / HEATHLANDS ROAD SIGNAL JUNCTION

- 8.5.18. The operation of the B3430 Nine Mile Ride/Heathlands Road existing signal junction was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-9 and Table 8-10 respectively.

Table 8-9 - Junction 4: B3430 Nine Mile Ride/Heathlands Road – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q
Heathlands Road	138.1%	102	129.0%	40	148.5%	79	132.9%	49
B3430 Nine Mile Ride E	143.2%	107	131.0%	85	144.8%	116	139.2%	103
Ravenswood Access	3.9%	1	3.2%	1	3.9%	1	3.2%	1
B3430 Nine Mile Ride W	139.6%	152	131.3%	129	151.1%	178	137.7%	146

Source: LINSIG Output

Table 8-10 - Junction 4: B3430 Nine Mile Ride/Heathlands Road – PM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Deg Sat	Max Q	Deg Sat
Heathlands Road	139.5%	102	133.0%	87	147.5%	126	140.7%	104
B3430 Nine Mile Ride E	138.4%	112	139.1%	118	144.1%	121	139.7%	120
Ravenswood Access	25.4%	2	25.4%	2	26.7%	2	25.4%	2
B3430 Nine Mile Ride W	140.6%	101	136.7%	88	149.0%	119	142.2%	99

Source: LINSIG Output

- 8.5.19. The LINSIG assessment shows that Heathlands Road, the B3430 Nine Mile Ride E and the B3430 Nine Mile Ride West are over capacity in all scenarios.
- 8.5.20. The introduction of the SWDR reduces the overall flow of vehicles entering the junction even taking account of the SWSDL development traffic, which reduces the degree of saturation and queueing.
- 8.5.21. The total vehicles using the junction in 2026 Do Minimum scenario is 1,732 in the AM peak and 1,779 in the PM peak. This is reduced in the 2026 Do Something scenario with 1,569 using the junction in the AM peak and 1,669 in the PM peak. Similar reductions occur in the 2036 scenarios. 1,827 vehicles are forecast to use the junction in the Do Minimum AM peak whilst 1,868 vehicles use the junction in the Do Minimum PM peak, which reduces to 1,703 in the AM peak and 1,801 in the PM peak, in the Do Something scenario.
- 8.5.22. The impact of the lower traffic volume is particularly apparent in the 2036 scenarios where reductions in queue lengths on Heathlands Road and Nine Mile Ride West approaches are predicted to occur within the do something scenarios.
- 8.5.23. Whilst the junction is forecast to operate over capacity in the forecast scenarios, the reduction in traffic due to the development will benefit users of the junction. Furthermore, it is understood that WBC may look to introduce MOVA² at this existing junction which would provide a further benefit to users as it can improve the capacity of a junction by up to 15%. Therefore given the improvement in conditions and the planned improvement to signal operation, no mitigation is considered to be necessary at this junction.

² MOVA – Microprocessor Optimised Vehicle Actuation – a method of adjusting signal timings in response to changes in flows at the junction that is part of the local traffic signal controller.

JUNCTION 5 – NINE MILE RIDE / NEW WOKINGHAM ROAD ROUNDABOUT

8.5.24. The operation of the Nine Mile Ride/New Wokingham Road Roundabout was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-11 and Table 8-12 respectively.

Table 8-11 - Junction 5 – Nine Mile Ride/New Wokingham Road – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
B3430 Nine Mile Ride E	0.57	2	0.59	2	0.60	2	0.60	2
New Wokingham Rd	0.38	1	0.37	1	0.42	1	0.39	1
B3430 Nine Mile Ride W	0.50	1	0.50	1	0.51	1	0.51	1

Source: Junctions 9 Output

Table 8-12 - Junction 5 – Nine Mile Ride/New Wokingham Road – PM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
B3430 Nine Mile Ride E	0.79	4	0.79	4	0.82	5	0.83	5
New Wokingham Rd	0.28	1	0.31	5	0.32	1	0.35	1
B3430 Nine Mile Ride W	0.38	1	0.38	4	0.39	1	0.38	1

Source: Junctions 9 Output

8.5.25. The Junctions 9 assessment demonstrates that the junction operates within capacity on all arms, in all scenarios with queues never exceeding 5 vehicles.

8.5.26. No improvements to the junction are required for the modelled scenarios.

JUNCTION 6 – NINE MILE RIDE / OLD WOKINGHAM ROAD ROUNDABOUT

- 8.5.27. The operation of the Nine Mile Ride/Old Wokingham Road Roundabout was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-13 and Table 8-14 respectively.

Table 8-13 - Junction 6 – Nine Mile Ride/Old Wokingham Road – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Old Wokingham Road N	0.49	1	0.45	1	0.51	1	0.46	1
Nine Mile Ride E	0.61	2	0.60	2	0.55	2	0.55	2
Old Wokingham Road S	0.96	13	0.97	15	1.00	19	0.96	14
Nine Mile Ride W	0.83	4	0.83	5	0.86	6	0.84	5

Source: Junctions 9 Output

Table 8-14 - Junction – Nine Mile Ride/Old Wokingham Road – PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Old Wokingham Road N	0.58	2	0.58	2	0.60	2	0.60	2
Nine Mile Ride E	0.70	3	0.73	3	0.74	3	0.75	3
Old Wokingham Road S	0.62	2	0.60	2	0.73	3	0.70	3
Nine Mile Ride W	0.79	4	0.73	3	0.89	8	0.82	5

Source: Junctions 9 Output

- 8.5.28. Old Wokingham Road South is reported to be at capacity in the 2036 AM peak. However, due to the reduction in traffic predicted across the junction following the delivery of the Project Development and SWDR, the predicted queues is reduced and the junction remains within capacity.
- 8.5.29. The remaining arms of the junction remain within capacity in the modelled scenarios and its operation improves with the introduction of the development and SWDR, so no improvements are required at this junction.

JUNCTION 7 – A321 FINCHAMPSTEAD ROAD / LANDEN CRESCENT / TESCO ACCESS ROUNDABOUT

- 8.5.30. This junction will form the western access of the proposed SWDR and, along with Junction 3, will form part of the Western Gateway. As set out earlier in this section, improvements are to be defined and delivered by WBC and as such, only the existing junction arrangement has been assessed at this time.
- 8.5.31. The operation of the Finchampstead Road/Landen Crescent/Tesco Access roundabout was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-15 and Table 8-16 respectively. It is again important to note that the results presented below do not take into account the mitigation WBC will deliver and at this time have little relevance given the prospect of that mitigation being delivered.

Table 8-15 - Junction 7 – A321 Finchampstead Road/Landen Crescent/Tesco Access – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Tesco Access /SWDR Access	0.63	2	1.93	297	0.65	2	1.96	310
Finchampstead Road S	0.87	7	1.02	37	0.89	8	1.04	50
Landen Crescent	0.18	1	0.30	1	0.19	1	0.31	1
Finchampstead Road N	0.73	3	0.79	4	0.74	3	0.80	4

Source: Junctions 9 Output

Table 8-16 - Junction 7 – A321 Finchampstead Road/Landen Crescent/Tesco Access – PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Tesco Access / SWDR Access	0.90	7	1.30	101	0.99	14	1.38	124
Finchampstead Road S	0.89	8	1.16	141	0.93	11	1.17	148
Landen Crescent	0.09	1	0.13	1	0.10	1	0.14	1
Finchampstead Road N	0.70	3	0.81	5	0.72	3	0.84	6

Source: Junctions 9 Output

- 8.5.32. The junction assessments shown above in Tables 8-14 and 8-15 show that without the Project Development the junction will be operating close to its theoretical capacity. However, once the new SWDR and development are included the junction operates significantly over capacity. This is primarily due to the increase in vehicles bypassing the town centre via the SWDR.
- 8.5.33. It is noted that the existing junction currently suffers from queueing, however on-site observations noted that this is primarily due to queueing back from the existing Finchampstead Road / Molly Millars Lane junction. This is supported by the results above for the Do Minimum scenario.
- 8.5.34. The Western Gateway is currently under review by WBC and will be subject to a separate planning application. Discussions with WBC will continue regarding options being developed around the Western Gateway.

JUNCTION 8 – WATERLOO ROAD / PEACOCK LANE / OLD WOKINGHAM PRIORITY T-JUNCTION

- 8.5.35. The existing Waterloo Road/Peacock Lane/Old Wokingham Road priority T-junction is located to the east of the site and is a key access for the proposed development. The existing junction has been assessed for all forecast scenarios. A summary of the AM and PM peak hours is set out in Table 8-17 and Table 8-18 respectively.

Table 8-17 - Junction 8 – Waterloo Road/Peacock Lane/Old Wokingham – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Waterloo Road	2.27	76	3.06	198	4.40	135	74.12	262
Peacock Lane	0.28	1	0.67	5	0.37	2	0.97	33

Source: Junctions 9 Output

Table 8-18 - Junction 8 – Waterloo Road/Peacock Lane/Old Wokingham – PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Waterloo Road	0.98	7	4.29	134	1.53	29	n/a	272
Peacock Lane	0.21	1	1.08	79	0.30	1	1.27	186

Source: Junctions 9 Output

- 8.5.36. The results above show the existing junction is forecast to operate significantly over capacity in both the 2026 and 2036 baseline scenario and will require improvements without the development coming forward.

- 8.5.37. It is understood that WBC are aware of the capacity constraints at this junction having identified a need for mitigation here by way of a condition on the approved Eastern Gateway scheme being delivered later in 2019.
- 8.5.38. That being said, the assessments with the Project Development and SWDR show that the junction is predicted to operate over capacity with queues exceeding 262 on Waterloo Road in the 2036 AM scenario and 272 in the 2036 PM scenario.
- 8.5.39. Given the location of this existing junction and impact the proposed development will have upon the junction, potential ways forward in mitigating the increase in delay are considered further in Section 10 of this TA.

JUNCTION 9 - HEATHLANDS ROAD / HONEY HILL PRIORITY T-JUNCTION

- 8.5.40. During the public consultations held early in 2019, the impact of the Project Development upon Honey Hill was identified as a key concern for local residents. As such, the existing junctions along Honey Hill have been assessed.
- 8.5.41. The operation of the Heathlands Road/Honey Hill priority junction was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-19 and Table 8-20 respectively.

Table 8-19 - Junction 9: Heathlands Road/Honey Hill - AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Honey Hill	0.25	1	0.23	1	0.26	1	0.24	1
Heathlands Road S	0.03	0	0.03	0	0.03	0	0.03	0

Source: Junctions 9 Output

Table 8-20 - Junction 9: Heathlands Road/Honey Hill - PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Honey Hill	0.13	1	0.12	0	0.15	0	0.13	0
Heathlands Road S	0.05	1	0.05	1	0.05	1	0.05	1

Source: Junctions 9 Output

- 8.5.42. The Junctions 9 assessment demonstrates that the junction will operate well within its theoretical capacity in the forecast scenarios and therefore requires no further mitigation.

JUNCTION 10 - NINE MILE RIDE / HONEY HILL PRIORITY T-JUNCTION

8.5.43. The operation of the Nine Mile Ride/Honey Hill priority junction was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-21 and

8.5.44. Table 8-22 respectively.

Table 8-21 - Junction 10: Nine Mile Ride/Honey Hill - AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Honey Hill	0.47	1	0.50	1	0.52	1	0.55	2
B3430 Nine Mile Ride N	0.13	1	0.15	1	0.11	1	0.16	1

Source: Junctions 9 Output

Table 8-22 - Junction 10: Nine Mile Ride/Honey Hill - PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Honey Hill	1.38	48	0.99	10	1.68	83	1.39	46
B3430 Nine Mile Ride N	0.07	1	0.09	1	0.09	1	0.11	1

Source: Junctions 9 Output

8.5.45. The Junctions 9 assessment demonstrates that the junction will operate within capacity during the AM peak hour. In the PM peak hour, the Honey Hill approach operates over capacity in both Do Minimum forecast scenarios with queues on Honey Hill exceeding 48 and 83 in 2026 and 2036 respectively. However, through the introduction of the Project Development and SWDR, these queues reduce to 10 and 46 vehicles in the 2026 and 2036 Do Something PM peak hours.

8.5.46. It is evident therefore that the introduction of the proposed development will see an improvement at the existing Nine Mile Ride / Honey Hill Junction. Therefore, no mitigation is considered to be required at this junction.

Honey Hill Link Impact assessment

8.5.47. The Visum model (WSTM 4) outputs, provided within **Appendix I** demonstrate a reduction or small increase in the use of the link in the future scenarios. Honey Hill is not highly trafficked currently with any small increase in traffic having a negligible impact.

8.5.48. The traffic flow data from the WSTM4 indicate that the proposed development would contribute to an increase in the two-way traffic flow of six vehicles in the AM peak hour and 20 two-way vehicle trips in the PM peak hour. This modest increase represents one vehicle every ten minutes and one vehicle every three minutes respectively during the peak hours.

8.5.49. Based on the above analysis it is concluded that the impacts of the proposed development on the operation of Honey Hill will be *de-minimis*.

JUNCTION 11 – JENNETTS PARK ROUNDABOUT (VIGAR WAY / PEACOCK LANE)

8.5.50. The operation of the Vigar Way/Peacock Lane Roundabout was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-23 and Table 8-24 respectively.

Table 8-23 – Junction 11: Jennett’s Park Roundabout - AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Peacock Lane E	0.53	2	0.52	2	0.65	2	0.58	2
Peacock Lane W	0.85	6	0.88	7	0.95	14	0.95	15
Vigar Way	0.53	2	0.57	2	0.62	2	0.64	2

Source: Junctions 9 Output

Table 8-24 - Junction 11: Jennett’s Park Roundabout - PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Peacock Lane E	0.48	1	0.54	2	0.52	2	0.59	2
Peacock Lane W	0.46	1	0.54	2	0.54	2	0.63	2
Vigar Way	0.66	2	0.75	3	0.70	3	0.77	4

Source: Junctions 9 Output

8.5.51. The Junctions 9 assessment shows that the junction is operating within capacity in all scenarios, on all arms.

8.5.52. In the AM scenarios, Peacock Lane West begins to approach capacity with an RFC of 0.95 and queues of 15 vehicles. The introduction of the proposed development and SWDR has negligible impact upon the operation of the junction with no real change in queues.

8.5.53. Whilst the model shows that the development increases the volume of traffic entering the junction from Peacock Lane West in the future scenarios, it also demonstrates that there will be a reduction in traffic entering the junction from Peacock Lane East.

8.5.54. The junction operates within capacity and the Project Development has negligible impact, therefore no improvements are proposed.

JUNCTION 12 – A329 LONDON ROAD CORRIDOR

- 8.5.55. The operation of the A329 London Road Corridor which includes the B3430 London Road, A329 (M), access to Hilton Hotel, SWDR and North Wokingham Distributor Road (NWDR) was assessed in all scenarios. The B3430 London Road and A329 (M) are connected via Coppid Beech Roundabout.
- 8.5.56. The junctions are signalised and therefore LINSIG has been used to assess the corridor. A summary of the AM and PM peak hour results is set out in Table 8-25 and Table 8-26 respectively.

Table 8-25 – Junction 12 A329 London Road Corridor – AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q
Coppid Beach Roundabout								
A329(M) N	67.2%	13	75.2%	14	79.2%	16	66.2%	13
B3430 London Road E	58.6%	9	60.0%	9	59.4%	9	66.6%	10
A329(M) S	32.6%	5	32.7%	5	27.1%	4	33.2%	5
A329 London Road W	60.0%	11	64.2%	14	60.7%	12	72.9%	15
Gyratory EB	63.6%	12	61.9%	13	60.7%	11	77.2%	13
Gyratory SB	52.3%	7	52.4%	7	54.1%	6	55.9%	11
Gyratory WB	69.7%	10	80.1%	11	80.8%	10	86.1%	10
Gyratory NB	44.5%	5	50.8%	4	52.3%	5	50.1%	5
Hilton Hotel Access								
A329 London Road E	48.5%	2	53.4%	2	49.9%	5	54.7%	4
Hilton Hotel Access	17.1%	1	17.1%	1	18.4%	1	18.4%	1
A329 London Road W	54.7%	8	58.5%	12	56.5%	8	64.9%	14
SWDR Access								
A329 London Road E	62.8%	3	80.9%	6	85.8%	11	68.4%	5
SWDR	29.8%	3	46.6%	7	21.4%	3	72.0%	10
A329 London Road W	55.7%	10	85.8%	18	66.7%	14	56.6%	11

NWDR								
A329 London Road W	59.7%	8	56.5%	10	49.4%	7	64.4%	11
NWDR	51.6%	9	68.7%	11	80.6%	15	66.0%	12
A329 London Road E	52.6%	6	85.6%	11	90.0%	13	64.9%	11

Source: LINSIG Output

Table 8-26 - Junction 12 A329 London Road Corridor – PM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q
Coppid Beach Roundabout								
A329(M) N	65.4%	12	75.8%	15	71.6%	14	92.6%	20
B3430 London Road E	83.9%	19	82.9%	19	83.9%	20	77.4%	18
A329(M) S	25.3%	4	18.1%	3	24.6%	4	17.4%	2
A329 London Road W	37.3%	3	40.2%	4	38.7%	1	59.6%	2
Gyratory EB	38.1%	1	38.1%	1	37.1%	1	28.8%	0
Gyratory SB	62.9%	7	72.8%	12	68.9%	9	88.4%	14
Gyratory WB	78.3%	17	89.8%	17	82.6%	18	70.7%	17
Gyratory NB	74.0%	1	74.2%	1	76.7%	1	55.7%	1
Hilton Hotel Access								
A329 London Road E	70.7%	8	76.8%	16	74.8%	13	66.0%	9
Hilton Hotel Access	4.8%	1	5.3%	1	5.3%	1	6.0%	1
A329 London Road W	44.2%	6	45.8%	6	43.8%	6	52.9%	11
SWDR Access								
A329 London Road E	80.0%	16	71.6%	18	88.8%	27	68.4%	5
SWDR	12.9%	2	38.4%	4	11.9%	2	60.1%	6

A329 London Road W	38.7%	5	69.1%	4	45.5%	6	79.1%	3
NWDR								
A329 London Road W	27.0%	4	33.3%	4	29.3%	3	35.2%	2
NWDR	32.0%	5	31.8%	5	34.1%	6	42.8%	6
A329 London Road E	67.8%	11	59.9%	17	71.2%	14	64.9%	5

Source: LINSIG Output

- 8.5.57. The LINSIG assessment undertaken shows that all arms and internal movements are forecast to operate within capacity, in all scenarios.
- 8.5.58. All movements throughout the corridor are within theoretical capacity of 90% degree of saturation except for the A329(M) N in the 2036 Do Something PM scenario which is still forecast to operate below 100%. This is not deemed to have a significant impact on the operation of the junction and link.
- 8.5.59. The junction network can accommodate the Project Development traffic and it is therefore unnecessary to propose any improvements.

JUNCTION 13 - BARKHAM ROAD / BEARWOOD ROAD MINI-ROUNDBOUT

- 8.5.60. The operation of the Barkham Road/Bearwood Road mini-roundabout has been assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-27 and Table 8-28 respectively.

Table 8-27 - Junction 13: Barkham Road/Bearwood Road - AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Barkham Road E	0.86	6	0.92	10	0.87	6	0.94	12
Barkham Road W	1.37	249	1.42	287	1.39	264	1.42	289
Bearwood Road	1.24	89	1.31	119	1.30	115	1.37	148

Source: Junctions 9 Output

Table 8-28 - Junction 13: Barkham Road/Bearwood Road - PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Barkham Road E	0.87	6	0.86	6	0.89	7	0.88	7
Barkham Road W	0.72	3	0.82	5	0.76	4	0.87	7
Bearwood Road	1.21	85	1.40	161	1.25	102	1.49	200

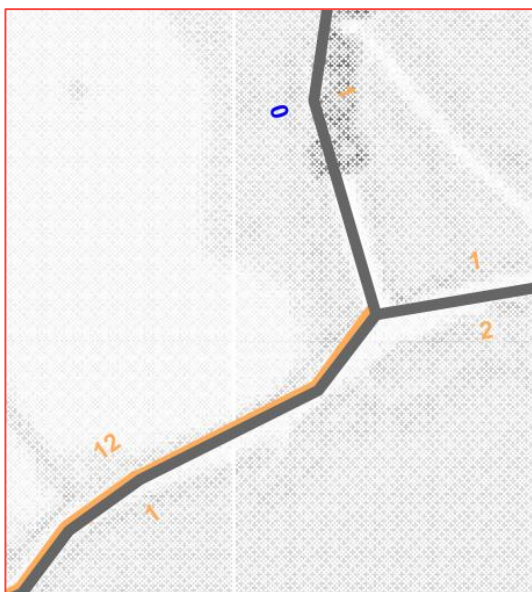
Source: Junctions 9 Output

- 8.5.61. The Junctions 9 assessments of the existing junction reveals that the junction is forecast to operate over capacity in both the forecast Do Minimum and Do Something scenarios.
- 8.5.62. As highlighted earlier in this section, guidance within Junctions 9, under section 13.2.1 states: *'Some mini-roundabouts have a T-shape with unbalanced flows and may behave more like priority junctions than roundabouts, and as a result are difficult to evaluate accurately with any traffic model. The results associated with such mini-roundabouts should be treated with caution.'* This mini-roundabout fits the description, so the results may not accurately represent the future operation of the junction.
- 8.5.63. The guidance continues to highlight that the capacity on approaches can be underestimated by the model.
- 8.5.64. In order to determine the potential impact associated with the proposed development and SWDR, and to determine whether the Junctions 9 modelling software is assessing the impacts correctly, the WSTM4 Visum model outputs have been reviewed. The difference between vehicles using the junction in the 2036 Do Minimum scenario, compared to the 2036 Do Something scenario is provided as **Appendix I**. The corresponding change in delay is also provided in **Appendix I**.
- 8.5.65. Diagram 8-2 below shows the change in flow in the AM peak hour, with Diagram 8-3 showing the impact upon delay.

Diagram 8-2 - WSTM4 2036 DS-DM AM Flow (Total Vehicles)



Diagram 8-3 - WSTM4 2036 DS-DM AM Delay (seconds)



- 8.5.66. WSTM4 outputs show there is a reduction of 23 vehicles in the AM peak approach from Barkham Road West in the 2036 scenario, however an increase in delay of 12 seconds. This is in part due to the increased movements within the junction which conflict with the vehicles entering the junction from the west.
- 8.5.67. Diagram 8-4 below shows the change in flow in the PM peak hour, with Diagram 8-5 showing the impact upon delay.

Diagram 8-4 - WSTM4 2036 DS-DM PM Flow (Total Vehicles)

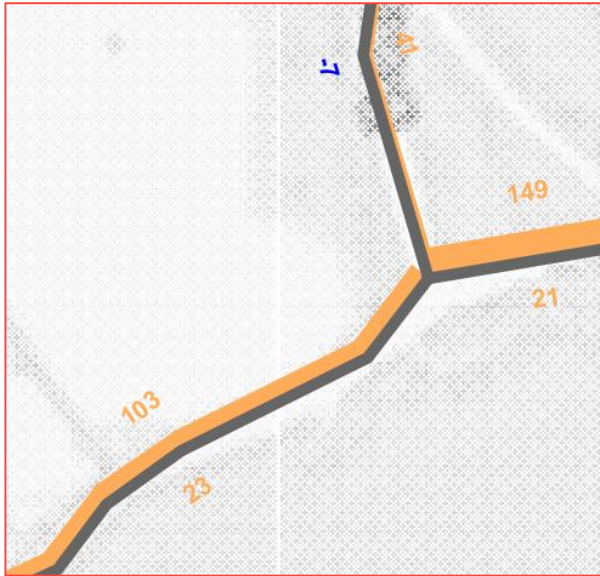


Diagram 8-5 - WSTM4 2036 DS-DM PM Delay (seconds)



- 8.5.68. The WSTM4 outputs indicate that an increase in traffic movements on each approach in the 2036 PM scenario with Bearwood Road seeing an increase in 41 vehicles per hour (one additional vehicle every 88 seconds), but delays are no more than an additional 3 seconds which is significantly at odds with the Junctions 9 assessment.
- 8.5.69. Both AM and PM peaks from WSTM 4 indicate significantly less impacts from the Project Development than the Junctions 9 assessment. Junctions 9 has known faults in assessing small mini-roundabouts. Indeed, were the WSTM4 results to reflect the Junctions 9 results, it is considered highly likely that a significant reassignment of traffic away from this location would take place and invalidate the modelling carried out in this TA. As explained earlier the WSTM4 model has been validated and accepted by WBC.

- 8.5.70. Furthermore, it is important to consider reasons for the significant level of traffic at this junction and implications of providing additional capacity to resolve any perceived issues. From observations and understanding of the location, it appears that Bearwood Road operates as a route connecting Finchampstead and Aborfield to Winnersh, Earley and the A329(M). Given the residential nature of Bearwood Road this is not necessarily a desirable ongoing use of Bearwood Road and a routing that should not be encouraged.
- 8.5.71. Taking all the above into account, the Bearwood Road/Barkham Road mini-roundabout sees a modest increase in traffic volume due to the introduction of the Project Development which the models predict will have an impact on the junction. However, the WSTM4 modelling indicates that the increased delay is not expected to be significant. In addition, further mitigation at this junction would likely attract more traffic onto the Barkham Road corridor potentially creating further implications within Wokingham.
- 8.5.72. On balance, it is considered that the results reported from Junctions 9 are unlikely to represent the true conditions at this location in the future years, for a variety of reasons. More reliance should be placed on the WSTM4 predictions, which indicate that the impacts are not likely to be severe. Given that works to increase capacity could encourage additional traffic along these already busy and constrained roads, it is also considered that no mitigation works should be undertaken at this location.

JUNCTION 14 - LONDON ROAD / JOHN NIKE WAY SIGNAL JUNCTION

- 8.5.73. The operation of the London Road/John Nike Way signal junction was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-29 and Table 8-30 respectively.

Table 8-29 - Junction 14: London Road/John Nike Way - AM Peak Hour

Arm	2026: Do Minimum AM		2026: Do Something AM		2036: Do Minimum AM		2036: Do Something AM	
	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q
London Road E	78.3%	16	77.8%	15	85.4%	17	86.0%	17
John Nike Way	20.9%	3	22.2%	3	22.6%	3	24.4%	3
London Road W	93.7%	41	93.7%	41	96.4%	46	96.2%	46

Source: LINSIG Output

Table 8-30 - Junction 14: London Road/John Nike Way - PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q	Deg Sat	Max Q
London Road E	73.0%	19	73.3%	19	73.3%	19	75.9%	20
John Nike Way	64.9%	14	66.9%	14	66.9%	14	67.7%	15
London Road W	73.2%	15	74.3%	15	74.3%	15	73.8%	16

Source: LINSIG Output

- 8.5.74. The LINSIG assessment shows that the junction operates within capacity in all scenarios.
- 8.5.75. London Road West is operating close to its theoretical capacity in the AM scenarios but remains within capacity. The construction of the development has limited impact on the operation of the junction and therefore not considered further.

JUNCTION 15 - PEACOCK LANE / SPARROWHAWK WAY ROUNDABOUT

- 8.5.76. The operation of the Peacock Lane/Sparrowhawk Way roundabout was assessed in all scenarios. A summary of the AM and PM peak hours is set out in Table 8-31 and Table 8-32 respectively.

Table 8-31 - Junction 15 - Peacock Lane/Sparrowhawk Way - AM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	RFC	Max Q	RFC
Peacock Lane E	0.50	1	0.55	2	0.60	2	0.66	2
Sparrowhawk Way	0.30	1	0.30	1	0.35	1	0.35	1
Peacock Lane W	0.63	2	0.68	3	0.68	3	0.77	4

Source: Junctions 9 Output

Table 8-32 - Junction 15 – Peacock Lane/Sparrowhawk Way - PM Peak Hour

Arm	2026: Do Minimum PM		2026: Do Something PM		2036: Do Minimum PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q	RFC	RFC	Max Q	RFC
Peacock Lane E	0.54	2	0.65	2	0.60	2	0.69	3
Sparrowhawk Way	0.23	1	0.25	1	0.28	1	0.31	1
Peacock Lane W	0.42	1	0.49	1	0.50	1	0.58	2

Source: Junctions 9 Output

- 8.5.77. The Junctions 9 assessment demonstrates that the roundabout will continue to operate within its theoretical capacity on all arms, in all scenarios and therefore no improvements to the junction are required.

8.6 SWDR / SWSDL JUNCTIONS

- 8.6.1. As set out within Section 6 of this TA, a number of new junctions are being designed to deliver the new SWDR. WBC have developed a VISSIM microsimulation model to assist with the design of these junctions. This covers the following junctions:
- ❑ The new Eastern Gateway Roundabout (N1);
 - ❑ Easthampstead Road / SWDR (N2);
 - ❑ Link Road / SWDR (N3)
 - ❑ SWDR / Easthampstead Road / Heathlands Road (N4).
- 8.6.2. VISSIM is a dynamic modelling tool which allows traffic engineers to review the performance of junctions in simulated real time according to the flow of traffic from one junction to another. In this case, where the flows are heavily influenced by the operation of the Easthampstead Road level crossing, it is the ideal tool to assess the requirements of the junctions for dealing with queues.
- 8.6.3. LINSIG, also referred to below, does not assess the dynamic flow of traffic through a network of junctions to be modelled and so only deals with an average constant demand of traffic, rather than responding to variable flows. It is therefore not reflective of actual conditions at the junction.
- 8.6.4. The full outputs of the VISSIM modelling are contained within **Appendix N**, however a summary of the findings is set out in Table 8-33 (AM) and Table 8-34 (PM) below.

Table 8-33 – 2026 and 2036 Average and Maximum Queues AM Peak Hour

Link/Arm	2026 Average Queue (vehicles)	2036 Average Queue (vehicles)	2026 Maximum Queue (vehicles)	2036 Maximum Queue (vehicles)
Eastern Gateway Roundabout				
SWDR N	7	8	17	16
Waterloo Road W	2	2	3	3
SWDR S	5	7	10	20
Waterloo Road E	4	4	7	9
Easthampstead Road / SWDR				
SWDR E	10	10	16	19
Easthampstead Road	5	6	12	15
SWDR W	16	16	22	22
Link / SWDR				
SWDR E	14	15	22	21
Link Road	9	9	13	12
SWDR W	14	14	18	17
SWDR / Easthampstead Road / Heathlands Road				
Easthampstead Road S	12	10	15	14
Heathlands Road	10	11	13	14
Easthampstead Road N	2	2	3	3
Link Road	11	12	13	16

Source: WBC - WSTM4

Note: queues in vehicles are derived from WSTM4 queue lengths in metres assuming 1 vehicle = 6 metres

Table 8-34 - 2026 and 2036 Average and Maximum Queues PM Peak Hour

Link/Arm	2026 Average Queue (vehicles)	2036 Average Queue (vehicles)	2026 Maximum Queue (vehicles)	2036 Maximum Queue (vehicles)
Eastern Gateway Roundabout				
SWDR N	8	15	12	27
Waterloo Road W	1	1	1	2
SWDR S	2	3	3	4
Waterloo Road E	6	14	9	20
Easthampstead Road / SWDR				
SWDR E	6	6	9	8
Easthampstead Road	6	5	12	11
SWDR W	12	13	15	18
Link / SWDR				
SWDR E	10	12	13	13
Link Road	5	5	6	6
SWDR W	11	11	15	14
SWDR / Easthampstead Road / Heathlands Road				
Easthampstead Road S	9	7	12	10
Heathlands Road	6	6	8	9
Easthampstead Road N	1	1	2	1
Link Road	17	21	22	27

Source: WBC - WSTM4

Note: queues in vehicles are derived from WSTM4 queue lengths in metres assuming 1 vehicle = 6 metres

- 8.6.5. The results in Table 8-33 and Table 8-34 provide a clear indication on the level of queuing expected to be experienced along the new SWDR at the key junctions. The design of the SWDR has been developed using the VISSIM modelling and therefore all queues identified within the tables can be accommodated within the layout.
- 8.6.6. The longest queues predominantly occur along the SWDR approaches in the morning peak hour with a maximum queue of 22 vehicles at the SWDR / Easthampstead Road junction. In the evening peak hour, the largest queues identified are at the new Eastern Gateway Junction southbound approach and the new link road connecting the SWDR with Heathlands Road, both reaching a maximum of 27 vehicle queues.

8.6.7. At the requested of WBC, WSP have also reviewed the junctions separately using Linsig to determine the Degree of Saturation (DoS) at each approach. The Eastern Gateway Roundabout has been reviewed using Junctions 9 to determine the Ratio of Flow against Capacity (RFC). This gives an indication of the residual capacity of the junctions that is not available from VISSIM. These are set out below in Table 8-35. However, as already explained above, LINSIG does not give an accurate representation of predicted queues and delays so the VISSIM output should therefore take precedence.

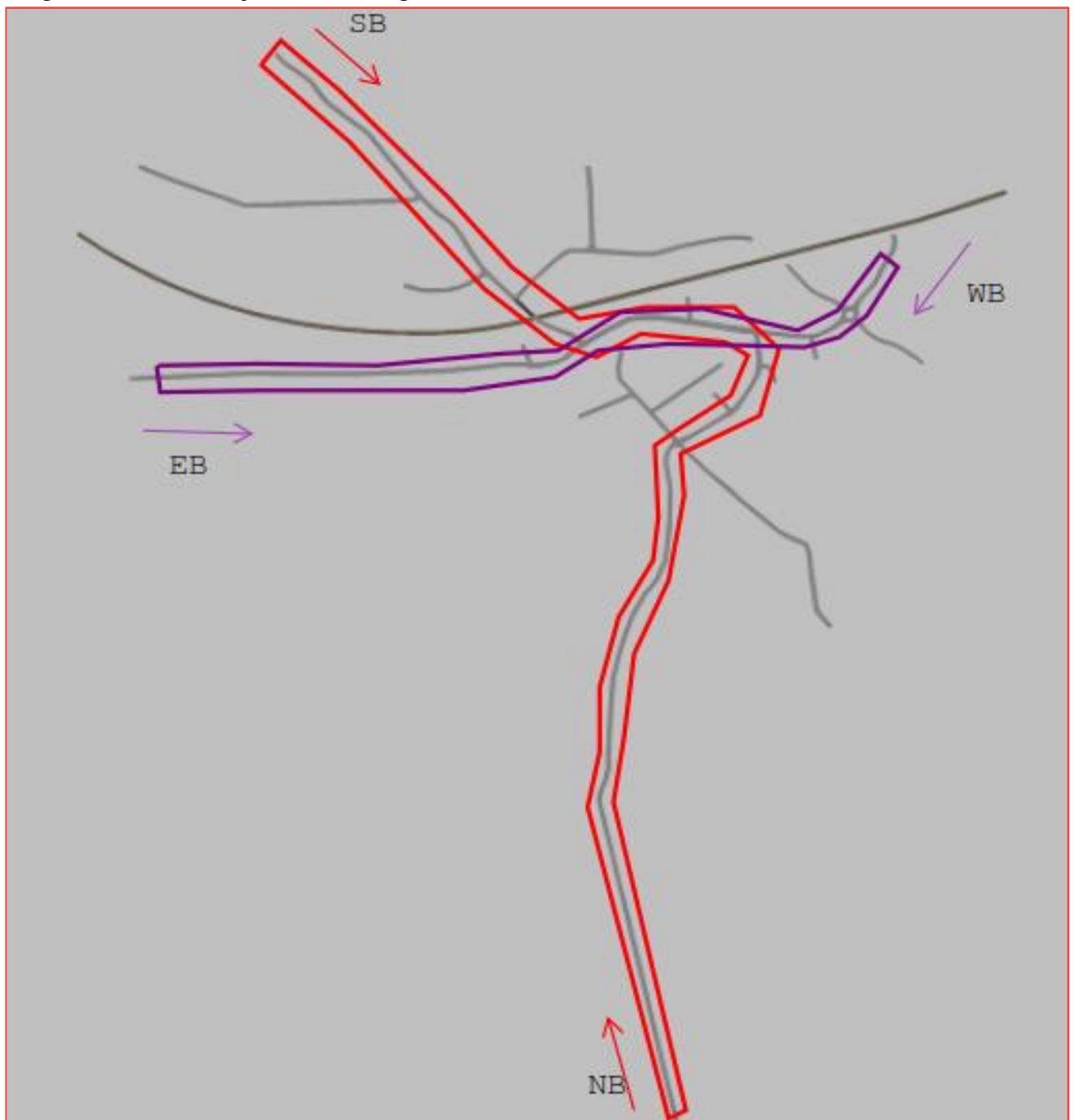
Table 8-35 – SWDR Internal Junctions LINSIG DoS / RFC

Link/Arm	2026 AM Peak Hour	2026 PM Peak Hour	2036 AM Peak Hour	2036 PM Peak Hour
Eastern Gateway Roundabout (RFC)				
SWDR N	0.61	0.61	0.63	0.72
Waterloo Road W	0.41	0.48	0.5	0.66
SWDR S	0.67	0.69	0.48	0.55
Waterloo Road E	0.14	0.15	0.04	0.05
Easthampstead Road / SWDR (DoS)				
SWDR E	74.0%	57.3%	75.2%	57.4%
Easthampstead Road	39.4%	38.9%	99.0%	39.9%
SWDR W	95.8%	91.5%	41.8%	94.2%
Relief / SWDR (DoS)				
SWDR E	79.7%	80.2%	75.2%	82.7%
Relief Road	79.7%	31.7%	99.0%	31.9%
SWDR W	80.6%	80.4%	41.8%	81.4%
SWDR / Easthampstead Road / Heathlands Road (DoS)				
Easthampstead Road S	79%	91.7%	83.6%	93.0%
Heathlands Road	63.6%	69.1%	63.8%	71.3%
Easthampstead Road N	24.7%	8.9%	25.2%	8.8%
Link Road	77.5%	91.5%	81.6%	98.8%

8.6.8. The results from the Linsig modelling is contained in **Appendix M** of this TA. The results in Table 8-35 above show that all approaches at the new junctions will operate during the peak hours within their theoretical capacity.

- 8.6.9. That being said, two approaches exceed the 90% threshold normally set for new junctions, the western approach at the Easthampstead Road / SWDR junction and the Link Road approach to the new four arm signal junction with Heathlands Road, however both still fall below the 100% capacity threshold. Whilst these two approaches are reaching their theoretical capacity, it should be noted that Linsig is based on a 1-hour flat profile whereas these new junctions will be controlled together via MOVA which reduces lost green time and improves capacity.
- 8.6.10. In order to provide an understanding of how these results affect users, the VISSIM modelling provides relevant journey time outputs. Diagram 8-6 below shows the routes through the SWDR that have been assessed for journey times.

Diagram 8-6 - Journey Routes along the SWDR

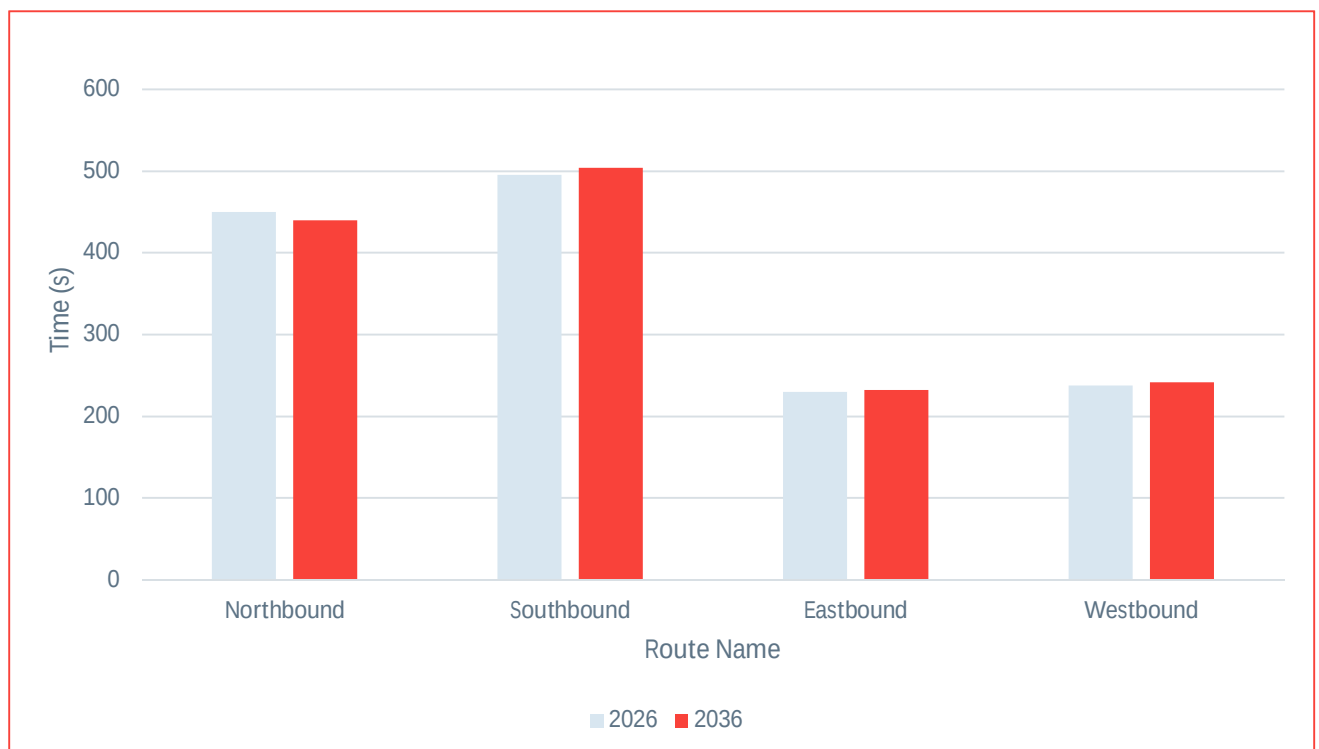


8.6.11. The resulting journey times are contained within Chart 8-7 and Chart 8-8 below.

Chart 8-7 - Journey Time Summary – AM Peak Hour



Chart 8-8 - Journey Time Summary - PM Peak Hour



- 8.6.12. The journey time results show that there is very minimal difference in journey times between the two forecast years of 2026 and 2036 which is born out of the traffic flows. The journey time information shows that in both the morning and evening peak hours, northbound journeys from Nine Mile Ride to the town centre via Heathlands Road would be in the region of 7.5 minutes and southbound in the region of 8 minutes. The new eastbound movement being introduced by the SWDR from the new bridge over the railway in the east towards Finchampstead road in the west would take in the region of 3-4 minutes in both directions. This is likely to be an improvement over making the journey through the town centre.
- 8.6.13. It is evident from the information set out above that the delivery of the new SWDR by WBC will provide a link road that can accommodate the proposed level of development/re-diverted traffic. Furthermore, it will provide improved east /west journey times to that of the existing town centre route whilst maintaining the north/south routes for existing users.

Internal Accesses

- 8.6.14. In order to provide access to the proposed new development parcels, the proposed development site will require additional junctions over and above that being developed by WBC. Through extensive pre-application discussions, the locations of these have been agreed with WBC who will include these additional access points within their SWDR application. The majority of these junctions will be priority-controlled T-Junctions, except for a new compact roundabout located to the west of the new SWDR road.
- 8.6.15. In order to determine the likely impacts, a T-Junction model has been prepared to assess the impacts of what can be considered the worst-case access location accommodating the highest flow. A review of the traffic flows indicates that this would be the proposed access into parcels S5 and S11 combined (refer to agreed model note contained in **Appendix A.**)
- 8.6.16. In addition, the proposed compact roundabout (access to parcels R4 and R5) has also been assessed to support the current design rationale. The T-Junction model outputs are contained within Table 8-36 and

- 8.6.17. Table 8-37, and fort the compact roundabout within Table 8-38 and Table 8-39.
- 8.6.18. The geometries of the Priority-controlled T-Junction have been adapted to demonstrate the functionality of the junction in a worst-case scenario. In order to do this, the right turn provision on the SWDR has not been included in the assessment.

Table 8-36 – Example Priority-Controlled T-Junction: AM Peak Hour

Arm	2026: Do Something AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q
Access N5	0.65	2	0.68	2
SWDR W	0.38	2	0.39	2

Source: Junctions 9 Output

Table 8-37 - Example Priority-Controlled T-Junction: PM Peak Hour

Arm	2026: Do Something PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q
Access N5	0.26	1	0.27	1
NWDR W	0.55	3	0.57	3

Source: Junctions 9 Output

- 8.6.19. The Junctions 9 assessment shows that a simple priority junction will operate within capacity in all forecast scenarios. The functionality of the junction with reduced geometries further demonstrates the capability of the junction to accommodate the demand at the most highly trafficked junction within the development.

Table 8-38 - Example Compact Roundabout: AM Peak Hour

Arm	2026: Do Something AM		2036: Do Something AM	
	RFC	Max Q	RFC	Max Q
SWDR E	0.68	3	0.70	3
Access SK	0.12	1	0.12	1
SWDR W	0.59	2	0.61	2
Access SL	0.14	1	0.14	1

Source: Junctions 9 Output

Table 8-39 - Example Compact Roundabout: PM Peak Hour

Arm	2026: Do Something PM		2036: Do Something PM	
	RFC	Max Q	RFC	Max Q
SWDR E	0.51	1	0.51	1
Access SK	0.04	0	0.04	0
SWDR W	0.76	3	0.78	4
Access SL	0.06	1	0.06	1

Source: Junctions 9 Output

- 8.6.20. The Junctions 9 assessment demonstrates that the roundabout operates within capacity in all scenarios.

8.7 SUMMARY

- 8.7.1. The selected junctions within the network surrounding the development and wider area within Wokingham town, as well as the proposed internal junctions, have been assessed in detail using LINSIG, Junctions 9, VISSIM and Visum software.

- 8.7.2. The SWDR will primarily ease congestion in the town centre of Wokingham which has been identified as suffering from queueing throughout the day. The impact of the SWDR will improve the flow of vehicles through Wokingham by providing a more attractive, alternative route to drivers which will improve the environment for non-motorised users in the centre and reduce journey times for vehicle users.
- 8.7.3. The proposed internal junctions operate within capacity and enable both development traffic and the displaced through traffic, using the SWDR as an alternative to the town centre, to move through the link with little delay. This is likely to have a significant benefit to the local community in terms of economy and the wellbeing of residents in the local and wider area.
- 8.7.4. The external junction assessments identified impacts at a number of junctions including;
- i Barkham Road / Bearwood Road
 - i Barkham Road / Molly Millars Lane
 - i Barkham Road / Barckham Street
- 8.7.5. However, all three of these junctions are mini roundabout and when reviewing the results from the WSTM4, the level of delay is relatively minor and therefore no further improvements are proposed.
- 8.7.6. Waterloo Road / Peacock Lane / Old Wokingham Road priority junction as a link which will become more frequently used following the construction of the Project Development and SWDR. With the known impacts of scheme upon the junction, mitigation options are considered in detail within Section 10 of this report.
- 8.7.7. Overall, the impact of the development on the surrounding local network is likely to be contained to a small number of junctions. Any additional delay that is caused by the development will be mitigated by the positive impact of the construction of the SWDR on the surrounding network.

9 STRATEGIC ROAD NETWORK IMPACT

9.1 INTRODUCTION

- 9.1.1. The development site is situated south of the M4. The M4 forms part of the Strategic Road Network (SRN). Through the Environmental Statement (ES) Scoping opinion, Highways England identified the impacts upon the strategic road network required assessment.
- 9.1.2. This section examines the effects of the proposed development on the Strategic Road Network (SRN).

9.2 BACKGROUND

- 9.2.1. The M4 is accessible from the site via the A329(M) and its junction with the M4 (Junction 10) situated approximately 6 km to the north of the site.
- 9.2.2. The A329(M) is a road of a motorway standard, but it is managed by WBC rather than Highways England.
- 9.2.3. The M4 is part of the Strategic Road Network (SRN), with three lanes in each direction, it is subject to the standard Motorway Regulations. It is a main strategic route between London, the West of England and Wales and carries on average 130,000 vehicles per day (source: Highways England).
- 9.2.4. Highways England are currently upgrading the section of the M4 between Junction 3 and Junction 12 to a smart motorway, which will increase the motorway's capacity by converting the existing hard shoulder to a 4th running lane.
- 9.2.5. The improvement works are currently underway between the Junctions 8/9 and Junction 10 (westbound). The works are estimated to take place until May 2020 with the eastbound (Junction 11 to Junction 10) works planned to commence in May 2020 and completion in December 2020.
- 9.2.6. An assessment of the impact of the proposed development on Junction 10 of the M4 is set out below.

9.3 ASSESSMENT

- 9.3.1. The assessment of the impact of the proposals on the operation of Junction 10 was undertaken for both AM and PM peak hours in both future years of 2026 and 2036 with and without the proposed development/SWDR. The assessed scenarios are as follows:
 - ┆ 2026 Forecast Without SWSDL / Without SWDR (2026 Do-minimum)
 - ┆ 2026 Forecast With Full SWSDL / With SWDR (2026 Do-something)
 - ┆ 2036 Forecast Without SWSDL / Without SWDR (2036 Do-minimum)
 - ┆ 2036 Forecast With Full SWSDL / With SWDR (2036 Do-something)
- 9.3.2. The directional traffic flow volumes extracted from the WSTM 4 were used to determine the percentage impact of the proposed development on the operation of Junction 10. The extracted data is included within **Appendix O**.
- 9.3.3. The schematic diagram of the junction layout is shown in Diagram 9-1 below for ease of reference and the extracted two-way flows for the AM peak hour in both future years and both Do-Minimum and Do-Something scenarios with percentage impact comparison for each are provided in Table 9-1 below.

Diagram 9-1 - M4 Junction 10 Indicative Layout

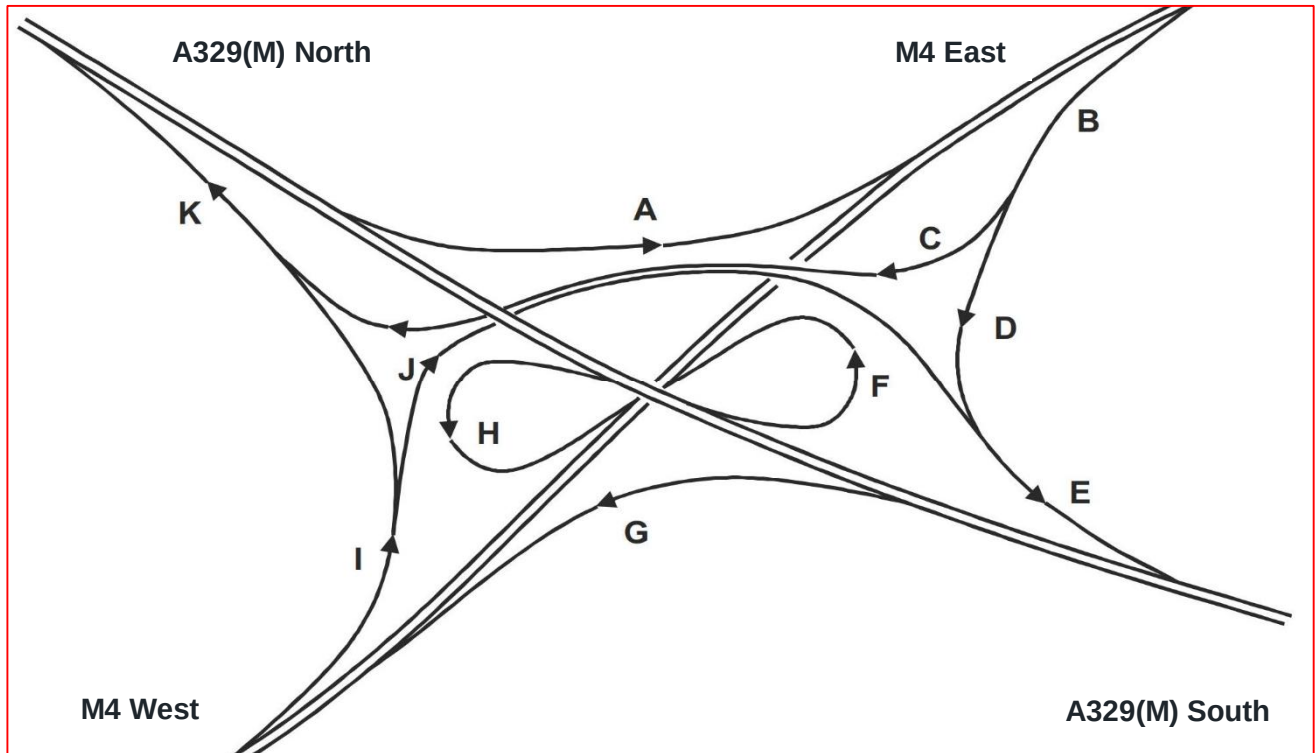


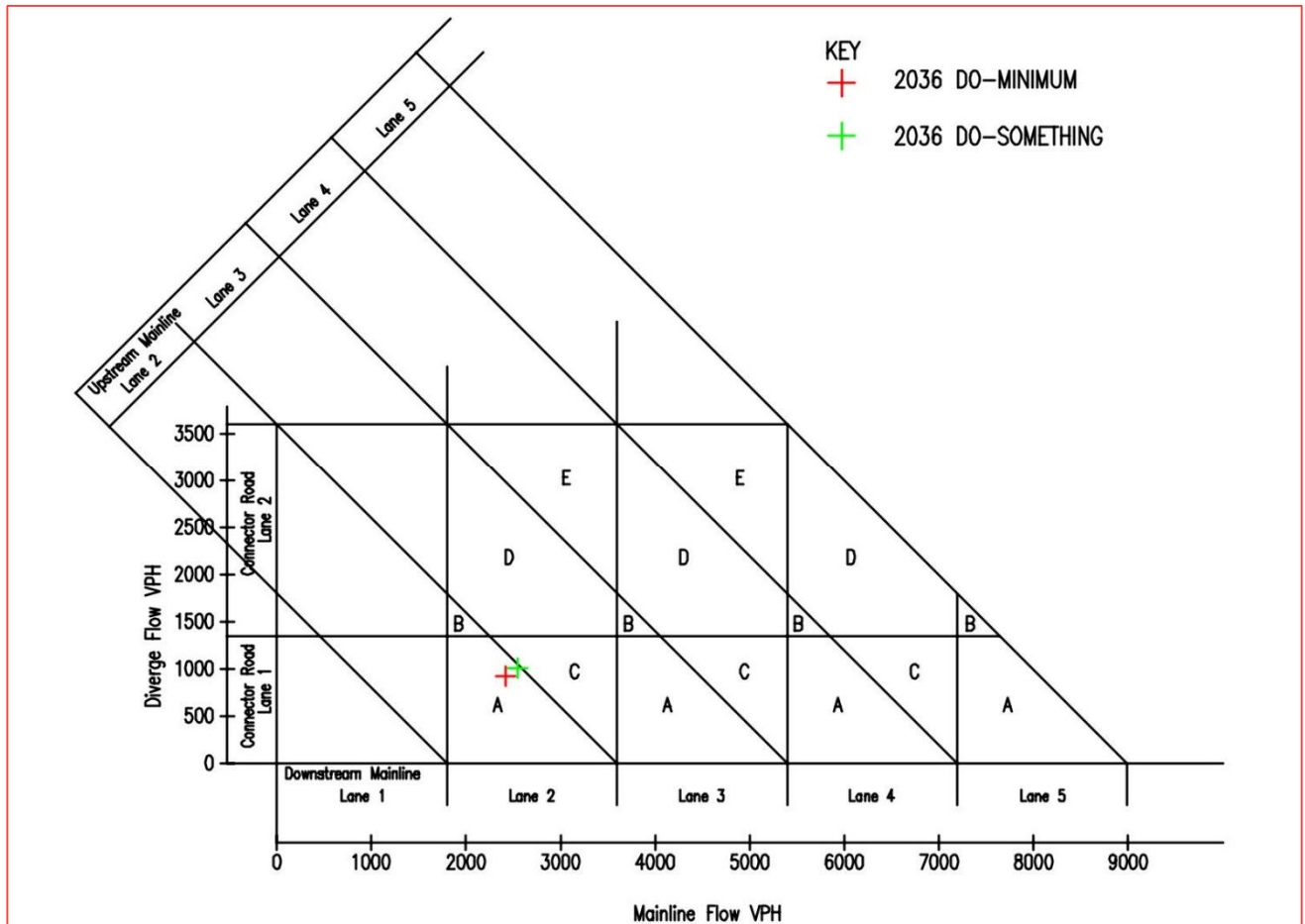
Table 9-1 – M4 Junction 10: Development impact comparison – AM Peak Hour

Link/Arm	2026 Do-minimum Flow (PCU)	2026 Do-something Flow (PCU)	% Change	2036 Do-minimum Flow (PCU)	2026 Do-something Flow (PCU)	% Change
A329(M) SB to M4 EB Off-Slip (A)	1111	1108	-0.3%	1164	1163	-0.1%
M4 WB Off-Slip (B)	2314	2341	+1.2%	2527	2560	+1.3%
M4 WB to A329(M) NB Off-Slip (C)	1180	1178	-0.2%	1256	1268	+1.0%
M4 WB to A329(M) SB Off-Slip (D)	1134	1163	+2.6%	1271	1292	+1.7%
M4 to A329(M) SB On-Slip (E)	2032	2084	+2.6%	2267	2285	+0.8%
A329(M) SB to M4 WB Off-Slip (F)	708	716	+1.1%	811	792	-2.3%
A329(M) NB to M4 WB Off-Slip (G)	1944	1963	+1.0%	2093	2102	+0.4%
A329(M) NB to M4 EB Off-Slip (H)	891	971	+9.0%	925	1008	+9.0%
M4 EB Off-Slip (I)	2224	2238	+0.6%	2480	2474	-0.2%
M4 EB to A329(M) SB Off-Slip (J)	898	921	+2.6%	996	993	-0.3%
M4 to A329(M) NB On-Slip (K)	2506	2495	-0.4%	2739	2748	+0.3%
OVERALL IMPACT	16942	17178	+1.4%	18529	18685	+0.8%

Source: WSTM4 and WSP calculation

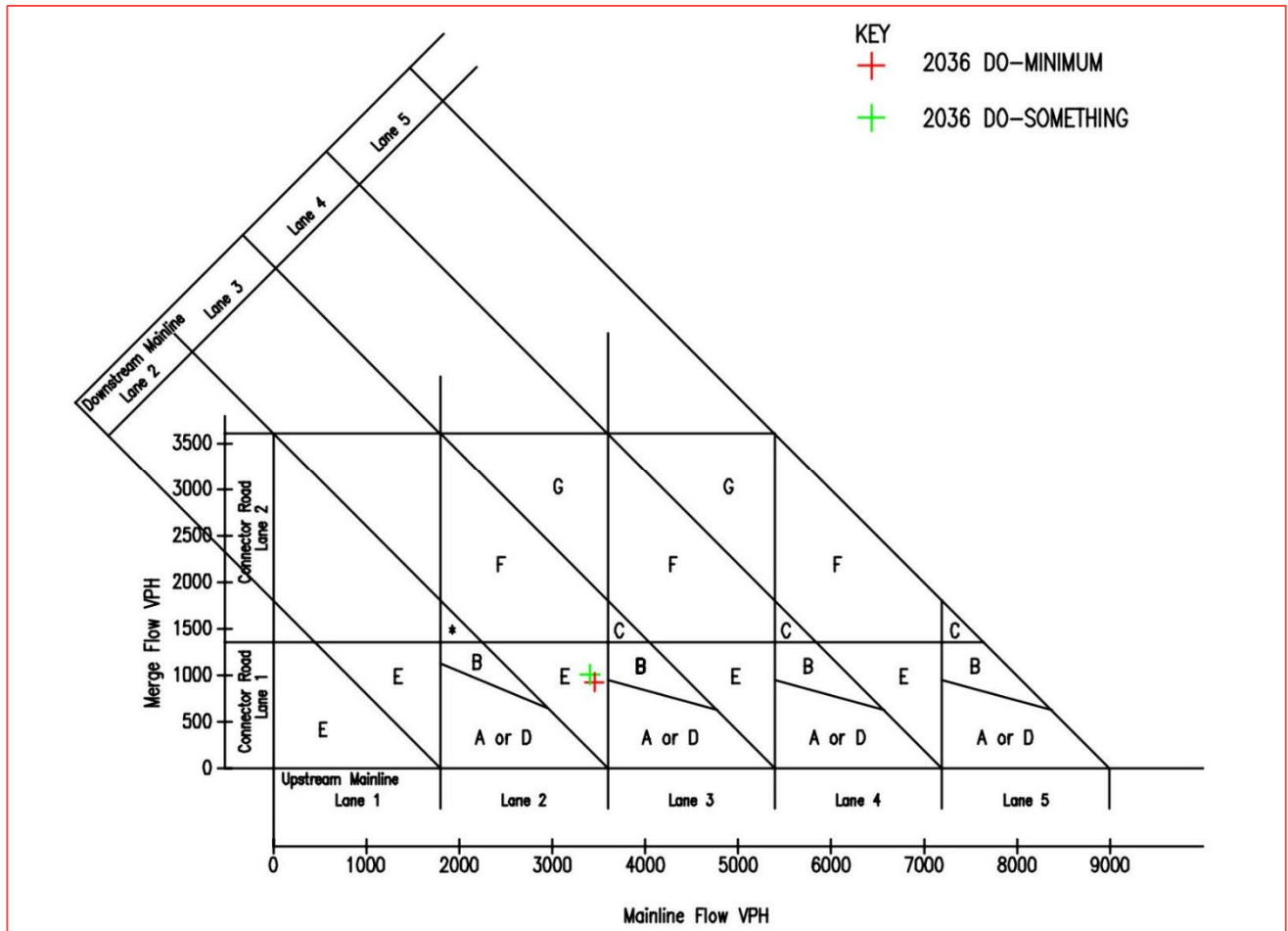
- 9.3.4. It can be seen from Table 9-1 above that the proposed development may contribute to an increase of traffic volume in the AM peak hour on some of the slip roads while a reduction is forecast by the WSTM 4 on others.
- 9.3.5. The most significant increase of 9.0% is forecast on the M329(M) NB to M4 EB Off -Slip (H) in both 2026 and 2036 future years. However, the forecast changes of the traffic volume on other parts of the M4 Junction 10 are only minimal, and the overall impact of the proposed development on the junction's operation of +1.4% and +0.8% in the 2026 and 2036 Do-something scenarios respectively is not considered to be material.
- 9.3.6. Although the overall impact on the junction's operation is not considered to be material, the increase in traffic volume of 9% (in both 2026 and 2036 future years) on the M329(M) NB to M4 EB Off -Slip (H) has been given further consideration to ensure that the existing slip road has the capability to accommodate the forecast increase.
- 9.3.7. The existing slip road serves as the M329(M) off-slip and at the same time as the M4 on-slip. The slip road is formed by a single lane with a simple taper diverge and parallel merge (DMRB TD22/06 Layout A (diverge) and Layout B (merge)). The effect of traffic flows on slip road (on/off) have been considered relative to Figure 2/3 & 2/5 of TD22.
- 9.3.8. Based on the DMRB guidance, the existing slip road capacity can be considered as in region of 1,400vph. Given that the traffic volume forecast in 2036 Do-something scenario (worst case) is forecast to be just above 1000 vehicles per hour it is deemed that the existing slip road has enough spare capacity to accommodate the calculated 9% increase in the traffic volume.
- 9.3.9. Consideration has also been given to the suitability of the existing diverge and merge layouts. The mainline and slip road traffic volumes have been plotted into the motorway diverging/merging diagrams (Figure 2/5 MW and Figure 2/3 MW respectively) provided as part of the TD22 guidance. The diverging diagram with plotted 2036 Do-minimum and Do-something values is shown in Diagram 9-2, while merging diagram is illustrated in Diagram 9-3 below.

Diagram 9-2 - Diverging Diagram - 2036 Do-minimum vs. Do-something



9.3.10. The diverging diagram above indicates that DMRB TD 22 Layout A (i.e. simple taper diverge) is appropriate layout for the forecast traffic volume in both 2036 scenarios.

Diagram 9-3 - Merging Diagram - 2036 Do-minimum vs. Do-something



- 9.3.11. Diagram 9-3 above indicate that the layout appropriate for both 2036 scenarios is to be Layout E - Lane Gain (i.e. increase from two lanes to three lanes). However, the upstream mainline flow would suggest that the mainline has only two lanes, which contradicts with the existing provision of three lanes along this section of the M4. It is therefore considered that the existing merge layout (Layout B – Parallel Merge) is sufficient and the M4 mainline has spare capacity to accommodate the future year traffic volume including the traffic associated with the proposed development.

Table 9-2 below summarises the forecast PM peak hour flows and their percentage difference.

Table 9-2 - M4 Junction 10: Development impact comparison – PM Peak Hour

Link/Arm	2026 Do-minimum Flow (PCU)	2026 Do-something Flow (PCU)	% Change	2036 Do-minimum Flow (PCU)	2026 Do-something Flow (PCU)	% Change
A329(M) SB to M4 EB Off-Slip (A)	1024	977	-4.6%	1136	1125	-1.0%
M4 WB Off-Slip (B)	2365	2420	+2.3%	2471	2520	+2.0%
M4 WB to A329(M) NB Off-Slip (C)	1258	1274	+1.3%	1301	1306	+0.4%
M4 WB to A329(M) SB Off-Slip (D)	1107	1146	+3.5%	1169	1214	+3.8%
M4 to A329(M) SB On-Slip (E)	2130	2198	+3.2%	2222	2289	+3.0%
A329(M) SB to M4 WB Off-Slip (F)	1114	1118	+0.4%	1204	1200	-0.3%
A329(M) NB to M4 WB Off-Slip (G)	1693	1686	-0.4%	1889	1886	-0.2%
A329(M) NB to M4 EB Off-Slip (H)	1070	1060	-0.9%	1130	1134	+0.4%
M4 EB Off-Slip (I)	1657	1702	+2.7%	1724	1759	+2.0%
M4 EB to A329(M) SB Off-Slip (J)	1022	1052	+2.9%	1053	1074	+2.0%
M4 to A329(M) NB On-Slip (K)	1893	1924	+1.6%	1973	1991	+0.9%
OVERALL IMPACT	16333	16557	+1.4%	17272	17498	+1.3%

Source: WSTM4 and WSP calculation

As shown in

Table 9-2 above and similar to the AM peak hour, the change of traffic volume forecast by the WSTM 4 varies across the junction.

- 9.3.12. It can be seen that the impact of the proposals on the operation of the M4 Junction 10 during the PM peak hour is not material with the overall increase of traffic volume of 1.4% and 1.3% in the 2026 and 2036 Do-something scenarios respectively.

M4 AND A329(M) MAINLINE IMPACT

- 9.3.13. It was established that the impact of the traffic generated by the proposed development on the M4 Junction 10 is not material. However, it is considered appropriate to discuss impacts also on the M4, and the A329(M) mainline for completeness.

The same methodology as that used for the Junction 10 assessment above was employed to assess the motorway mainlines. The percentage impact comparison for each scenario in the AM peak hour is provided in Table 9-3 below.

Table 9-3 - M4 and A329(M): Development impact comparison – AM Peak Hour

Link/Arm	2026 Do-minimum Flow (PCU)	2026 Do-something Flow (PCU)	% Change	2036 Do-minimum Flow (PCU)	2036 Do-something Flow (PCU)	% Change
M4						
M4 East - EB	5160	5237	+1.5%	5542	5577	+0.6%
M4 East - WB	5897	5915	+0.3%	6508	6565	+0.9%
M4 West - EB	5383	5397	+0.3%	5933	5879	-0.9%
M4 West - WB	6236	6254	+0.3%	6885	6900	+0.2%
A329(M)						
A329(M) North - NB	3973	4028	+1.4%	4234	4287	+1.3%
A329(M) North - SB	3668	3691	+0.6%	3913	3919	+0.2%
A329(M) South - NB	4302	4468	+3.9%	4513	4649	+3.0%
A329(M) South - SB	3881	3952	+1.8%	4206	4249	+1.0%

Source: WSTM4 and WSP calculation

The results of the motorway mainline assessment summarised in Table 9-3 above illustrate that the traffic generated by the proposed development will have an only modest impact on both motorway mainlines with traffic volume changes ranging between +0.3% and +3.9% in the 2026 scenario, and between -0.9% and +3.0% in the 2036 scenario. It is considered that these changes are within the limits of the typical daily fluctuations of the traffic and the traffic impact of the proposals is not material.

9.3.14. Table 9-4 below summarises the forecast PM peak hour flows and their percentage difference.

Table 9-4 - M4 and A329(M): Development impact comparison – PM Peak Hour

Link/Arm	2026 Do-minimum Flow (PCU)	2026 Do-something Flow (PCU)	% Change	2036 Do-minimum Flow (PCU)	2036 Do-something Flow (PCU)	% Change
M4						
M4 East - EB	6462	6392	-1.1%	7033	7017	-0.2%
M4 East - WB	6413	6449	+0.6%	7179	7227	+0.7%
M4 West - EB	6025	6057	+0.5%	6492	6517	+0.4%
M4 West - WB	6854	6834	-0.3%	7802	7793	-0.1%
A329(M)						
A329(M) North - NB	3155	3191	+1.1%	3261	3282	+0.6%
A329(M) North - SB	3661	3672	+0.3%	3870	3903	+0.9%
A329(M) South - NB	4024	4013	-0.3%	4308	4312	+0.1%
A329(M) South - SB	3653	3775	+3.3%	3753	3866	+3.0%

- 9.3.15. As shown in Table 9-4 above and similar to the AM peak hour, the change in traffic volume forecast by the WSTM 4 ranges between -1.1% and 3.3% in the 2026 scenario, and between -0.2% and 3.0% in the 2036 scenario. It is considered that these changes are within the limits of the typical daily fluctuations of the traffic and the traffic impact of the proposals is not material.

10 TRANSPORTATION STRATEGY

10.1 INTRODUCTION

- 10.1.1. This section sets out the proposed transportation strategy which complements the proposed development.

10.2 PEDESTRIAN AND CYCLE INFRASTRUCTURE IMPROVEMENTS

- 10.2.1. As discussed in preceding chapters of this TA, the proposed development will include a comprehensive internal network of pedestrian and cycle routes connecting the site with the surrounding area. High-quality facilities will be provided throughout the site and along the length of the SWDR, including crossing points at strategic locations.
- 10.2.2. A number of connection points were identified as part of the assessment, and these are discussed in Section 6 of this TA. These connection points will provide future residents with sufficient accessibility to pedestrian and cycle routes to the main attractors within the town, including schools, the town centre and the railway station. These routes will then facilitate NMU journeys within Wokingham and beyond via the railway station.
- 10.2.3. Internally, existing PROWs traversing the site will be incorporated into the pedestrian and cycle network. Additionally, a comprehensive wayfinding strategy will be developed throughout the development, focused on raising awareness and encourage residents to make use of the linked pedestrian and cycle routes.
- 10.2.4. The pedestrian and cycle facilities provided as part of the development proposals will connect to the existing off-site provision at multiple locations as discussed in Section 6 of this TA.
- 10.2.5. The connection points that will form part of the routes to the key destinations include:
- Pedestrian/cyclist connection to Montague Park via Eastern Gateway;
 - Pedestrian/cyclist connection via Easthampstead Road, which will be upgraded as an extension to the development spine road and as part of the associated signalised junction provided by WBC;
 - Pedestrian connection via the existing pedestrian overbridge and public footpath WOKI FP 171 to Gypsy Lane; and
 - Pedestrian/cyclist connection to Finchampstead Road via Western Gateway.
- 10.2.6. Given the size of the proposed development and its location in relation to key destinations, a number of route options were identified depending on the starting point within site. The routes to various key destinations in the area will utilise the above-outlined connection points and are as follows:
- Educational facilities: WSP drawing 70001684-SK-033-SHEET 1 Rev A illustrates the likely routes to educational facilities in the vicinity of the site;
 - Town Centre: the potential routes to the town centre are shown in WSP drawing 70001684-SK-033-SHEET 2 Rev A; and
 - Railway Station: routes to the railway station are illustrated in WSP drawing 70001684-SK-033-SHEET 3 Rev A.

- 10.2.7. An extensive audit of the routes outlined above was carried out. The audit focused on the existing pedestrian and cyclist facilities connecting to the site access points set out above and assessed the quality of the surface, presence of street lighting and general amenity and quality of the provision amongst others. The key features of each of the routes are detailed in the listed WSP drawings, along with a description of the existing issues and their proposed or potential mitigation.
- 10.2.8. Some of the considered mitigation measures for the routes covered by the audit could be covered under WBC's Community Infrastructure Levy (CIL) Regulation 123 List (2017). Therefore, as part of the development's transport strategy, contributions will be made, where applicable, to infrastructure improvements. These improvements include:
- replacement of the railway bridges on the A321 Finchampstead Road as part of the extension of the western connection proposed by the development and the route to the town centre, which is specified within WBC's CIL List 2017 to be "*replacement railway bridges on the A321 Finchampstead Road, specifically of the southern underbridge, single span masonry arch bridge (bridge no. 1165 Network Rail reference 19/1375); and northern underbridge, single span masonry arch bridge (bridge no. 1166 Network Rail reference no. 4/34)*";
 - the pedestrian overbridge over the WRRL as part of the proposal to enhance the internal footway connection, considered under WBC's CIL List as "*PRoW and Cycle Network improvements including four crossings over the Waterloo Line (Tanhouse/Gypsy Lane/Star Lane/Eastern Gateway)*."
- 10.2.9. It is important to note that a key element to the success of the walk and cycle strategy is the crossing at Gypsy Lane. The internal masterplan will fully support use of this crossing, however at present is not suitable for all users. The CIL contribution will specifically need to address this crossing and be used to improve both crossing the WRRL but also the connection north through Gypsy Lane.
- 10.2.10. Apart from the above contributions towards improvements already identified within WBC's CIL List 2017, there are other mitigation options which could be supported as part of the development, in extent proportionate to its scale.
- 10.2.11. Surface markings could be implemented on the section of highway between the railway footbridge and the pedestrian route alongside Langborough Recreation Field, to improve driver awareness of pedestrians and to provide a safer segregated route.
- 10.2.12. Potential improvements that were also identified as part of the audit include general maintenance of vegetation, where required, in order to enhance the existing provision and encourage an intensification of use.
- 10.2.13. Provision of dropped kerbs and tactile paving is also proposed at appropriate locations, along with identification of suitable routes for cyclists within the town by introducing a wayfinding strategy directing cyclists to low-speed roads or traffic calmed roads where possible.
- 10.2.14. Specific improvements are recommended for the link between Montague Park development and Waterloo Road, which is currently unlit and unsurfaced. Providing a connection at this location with a hard surface and street lights could be considered. Discussions will take place with WBC to see how best to deliver this measure, if Montague Park does not already plan to do so.

10.2.15. The level crossing on Easthampstead Road, some 75m to the south of its junction with Waterloo Road, is one of the above mentioned potential mitigation options resulting from the audit. However, the improvements to a railway crossing are fully in the scope of the line operator (i.e. Network Rail). It is understood that Network Rail carried out the assessment of the crossing and included it in their signalisation upgrade scheme. Introduction of an obstacle detector at the crossing was also planned to take place in 2018. The relevant assessment is contained in **Appendix F**. This planned improvement is likely to enhance safety along this route for all road users including pedestrians and cyclists.

SUMMARY

10.2.16. The internal network of pedestrian and cycle routes within site will be comprehensive and connect to all existing routes and PROW.

10.2.17. Improvements considered by WBC within the town will benefit the users of the pedestrian and cycle routes from the site. The locations identified for CIL contributions will form part of a wider improvement strategy.

10.2.18. General improvements will be made throughout the network of pedestrian and cycle routes leading to the town centre, schools and railway station. This includes a wayfinding and signage strategy, resurfacing, installation of dropped kerbs and tactile paving, and maintenance of vegetation.

10.3 MITIGATION MEASURES

10.3.1. Section 8 of this report assessed the impact of the existing traffic growth in addition to development traffic at key junctions surrounding the development and wider area. The majority of the junctions are deemed to operate without a significant detrimental impact due to the Project Development.

10.3.2. However, the priority junction between Waterloo Road, Peacock Lane and Old Wokingham Road was shown to be both over capacity on Waterloo Road approach in all scenarios and requires further consideration.

10.3.3. As highlighted earlier in this TA, this junction is a known constraint on the network and a junction already requiring improvements subject to conditions made upon the approved Eastern Gateway application (Condition 9) which is to be constructed later this year (2019).

10.3.4. WSP have looked at opportunities to provide additional capacity within the existing adoptable highway and to enable vehicles to flow more freely through the junction. The initial option included additional flaring on the approach to the junction along Waterloo Road, however this appeared to offer limited benefit and the high flow along Old Wokingham Road and Peacock Lane restricted vehicles entering the junction.

10.3.5. The next option available was the introduction of a roundabout. A normal or compact roundabout could not be accommodated within the available highway adopted land and therefore a mini-roundabout has been considered further with potential layout shown in WSP drawing 70001684-SK-040-A. The results of the Junctions 9 assessment are summarised in **Error! Reference source not found.** Table 10-1 and Table 10-2 below

Table 10-1 – Junction 8 – Waterloo Road / Peacock Lane / Old Wokingham Road - Mini-roundabout Assessment – AM Peak

ARM	2026: Do MINIMUM AM		2026: Do SOMETHING AM		2036: Do MINIMUM AM		2036: Do SOMETHING AM	
	RFC	MAX Q	RFC	MAX Q	RFC	MAX Q	RFC	MAX Q
Peacock Lane	0.89	7	1.00	22	1.07	48	1.18	97
Old Wokingham Road	1.48	304	1.48	256	1.64	460	1.79	528
Waterloo Road	0.60	2	1.07	34	0.63	2	0.96	13

Source: Junctions 9 Output

Table 10-2 – Junction 8 – Waterloo Road / Peacock Lane / Old Wokingham Road – Mini-roundabout Assessment – PM Peak

ARM	2026: Do MINIMUM PM		2026: Do SOMETHING PM		2036: Do MINIMUM PM		2036: Do SOMETHING PM	
	RFC	MAX Q	RFC	MAX Q	RFC	MAX Q	RFC	MAX Q
Peacock Lane	1.20	118	1.38	271	1.31	198	1.39	299
Old Wokingham Road	0.94	11	1.24	100	1.10	53	1.49	247
Waterloo Road	0.38	1	0.61	2	0.46	1	0.56	2

Source: Junctions 9 Output

- 10.3.6. The Junctions 9 assessment shows a considerable improvement in the RFC across the junction with the construction of a mini-roundabout in place of the existing priority junction. However, there is predicted to be significant queuing and delay on approaches previously unrestricted.
- 10.3.7. Again, caution needs to be had on the results given the limitations on assessing mini-roundabouts, however this does not provide a suitable conclusion to the most appropriate strategy in mitigating the impact of the Project Development and the SWDR.
- 10.3.8. Taking into account the requirement for WBC to identify solutions at this junction in the near future, further complicated by the junction lying within Bracknell Forest Council (BFC) adopted highway, it is recommended that all parties continue to consider the most appropriate strategy in mitigating the impacts at this junction. This may include traffic calming features within the Project Development in order to dissuade drivers from using this route, however this strategy will require consideration from all parties and the design of such traffic calming would be subject to reserved matters applications.

- 10.3.9. Whilst further considerations are necessary, the mini-roundabout could provide an effective interim solution to ease congestion at the junction in the future scenarios until WBC devise a long-term solution as part of their commitment in the Eastern Gateway Application.

10.4 TRAVEL PLAN

- 10.4.1. The proposed development will look to contribute towards Wokingham's 'My Journey' Personal Travel Plan to further enhance the use of sustainable modes of transport. This involves a financial contribution being made towards the costs of WBC's travel planning service. WBC will then take on the role of travel planner for the development, offering the most relevant service for the residents in question. The Council is better placed to coordinate travel planning not only within the Borough but across all developments included in the initiative and reaching out to adjacent authorities.

10.5 PUBLIC TRANSPORT

- 10.5.1. A public transport strategy has been developed in liaison with the public transport team at WBC and Reading Bus. Although the details and final format of the bus service to be provide is likely to evolve over time as some of the inherent uncertainties become clearer, a way forward has been agreed with Reading Bus, the likely operator of the final service.
- 10.5.2. The Bus Strategy for the development is set out in **Appendix P**. It gives more detail on the basis of the strategy at this stage in the context of a likely review of services to take place in the next few months.
- 10.5.3. In summary, a 30-minute service is potentially possible Monday to Friday, with an hourly service on Saturdays. Whilst a stand-alone service for the site could only provide a 40-minute service, it is considered that integration of the new service with revised existing services would allow a 30-minute frequency to be provided. This will be subject to further discussions with Reading Bus and WBC.
- 10.5.4. Destinations to be served by the service would include the Town Centre, the Tesco retail site on Finchampstead Road and the new Coppid Beech Park and Ride site, which is potentially to be offering onward services to the Elizabeth Line (Crossrail) at Twyford. These are shown in **Figure 21**.
- 10.5.5. A variable level of subsidy will be required to support the service until it becomes financially self-sustaining in due course. An initial picture of viability has been derived using assumptions based on a self-contained service offering a 40-minute frequency, even though a more frequent service is likely to be forthcoming in tandem with the planned review of services. Based on normal assumptions discussed and agreed with Reading Bus, the service would become self-financing once 1590 dwellings had been occupied. This finding ignores the trips that could potentially be undertaken by residents in Montague Park (a further 660 dwellings) the land to the west of the proposed development (the Persimmon-owned land yielding up to 200 dwellings) and by existing residents along the route of the service.
- 10.5.6. The overall subsidy required will be discussed with WBC and provision made within the legal agreement setting out the financial obligations. An illustration of possible levels of subsidy is given in **Appendix P**.

11 CONSTRUCTION TRAFFIC

11.1 INTRODUCTION

- 11.1.1. This section gives a brief description of potential impacts related to traffic associated with the construction phase of the proposed residential development. A Construction Management Plan will be submitted to WBC and BCC for approval prior to the commencement of onsite works.

11.2 CONSTRUCTION TRAFFIC

- 11.2.1. An indicative phasing of an assumed construction methodology has been adopted to inform construction activities.
- 11.2.2. The vast majority of construction traffic movements will be generated from construction workers' cars and vans, having a temporary impact on the surrounding highway network throughout the construction phase.
- 11.2.3. The primary infrastructure associated with the proposed residential development will generate appreciably greater construction traffic, typically occurring in the early stages of development. During this period only some dwellings will be available for occupation, such that the combined traffic flows will be modest. It should be noted that the temporary effects of construction traffic have been considered prior to mitigation and that the effects are considered to be medium term as a consequence of the overall construction period.
- 11.2.4. The development includes 1,700 dwellings and associated community infrastructure. The build-out rate will be influenced by sales but, taking account of the economic climate and housing needs, up to 150 dwellings/year could be delivered, allowing the Travel Plan to deliver some mode shift.
- 11.2.5. Based on surveys of other construction sites and taking account of development infrastructure (including roads and utilities) as well as community uses construction traffic is likely to represent around 250 vehicles per day (vpd, two-way). At this rate of construction, staff numbers are modest, and delivery/plant traffic represents a significant proportion equating to around 100vpd (two-way). Many commercial vehicles arrive in the morning to serve construction operations for the day, but this typically reflects around 10-12 vehicles per hour (vph) between 7-11am.
- 11.2.6. It is envisaged that the construction traffic would be managed through a Construction Management Plan which will be the subject of a planning condition and is likely to include but not be limited to, the following basic assumptions.
- i Construction will take place over 50 weeks per year, on five weekdays and half a day at the weekend (Saturday).
 - i A full working day is likely to start at 8 am and finish at 6 pm; however, in winter construction would be limited to daylight hours.
 - i Where possible the timing of deliveries would be programmed to avoid peak hours and HGV construction traffic will be directed to use the primary road network to/from the development/construction site.
 - i Signs indicating route HGVS are permitted to use and prohibited from using will be erected.
 - i If possible, "FORS" registered freight operators will be used to supply the site.
 - i HGV speed limits of 20mph will apply on estate roads if used for construction routes.
 - i Dust suppression of lorry loads, and wheel-washing will take place.

12 SUMMARY AND CONCLUSION

12.1 SUMMARY

12.1.1. WSP have carried out this Transport Assessment of the Project development, adopted in the WBC Local Plan. It looks at the full range of transport issues and the outputs are summarised under each heading below.

12.1.2. There are three separate planning applications for the Project Development. An ES has also been prepared and Chapter 9 of the ES explains the transport impacts of the development and concludes that they are likely to be acceptable.

Policy

12.1.3. The site is part of policy-led proposals in the adopted WBC local plan for approximately 2500 new homes in South Wokingham. The proposals subject to the three planning applications represent Phase 2 of the SWSDL and its supporting SANG. Phase 1 has already been constructed, known as Montague Park. Phase 2, the Eastern Gateway has planning permission and will commence this year.

12.1.4. The development is proposed to be in line with all relevant national and local plan policies on transport. In particular, sustainable transport policies have influenced the evolution of the scheme with provision for travel by walking, cycling and bus all provided for.

12.1.5. Safe access is provided via the provision of the SWDR, which is being accommodated within the layout of the development scheme. The delivery of the SWDR is being progressed by WBC.

Existing Conditions

12.1.6. A review of existing conditions on the highway network has been carried out, especially in relation to the accident history of the study area. No particular issues are reported in relation to road safety, and whilst the local highway network is congested during peak hours, this is common to most urban areas. Facilities for journeys on foot, bicycle and on public transport are reasonably good and provide opportunities to tie the SWDL proposals in to them.

SWDR

12.1.7. The status of the SWDR project has been set out, being a project with 4 phases all at different stages of delivery from complete in the east to options assessment in the west. It is one of a number of highway infrastructure schemes being delivered by WBC to enable growth in the borough.

12.1.8. Extensive liaison has already taken place and will continue with WBC to ensure the optimal design for the SWDR is achieved.

12.1.9. The predicted benefits of the SWDR are set out, both in general terms relating to the redistribution of traffic movements more evenly around the town and in specific terms relating to the provision for pedestrians and cyclists along the new road.

Project Development

12.1.10. The development proposals themselves are described in terms of the transport and access strategy. The various access points to the site and their relationship to the existing community are described. Parking provision is set out to show that it is likely to comply with the current standards adopted by WBC. As this is an outline application for the residential element and local facilities, these details will be set out in subsequent reserved matters planning applications.

Assessment of impacts

12.1.11. The assessment of transport impacts has been carried out in conjunction with modelling carried out by WBC using its strategic traffic model, WSTM4. The study area and the specific impacts at local junctions have been based on the requirements of WBC and include areas of Wokingham where residents have expressed specific concern about the impacts of the development.

12.1.12. A number of analysis techniques have been used:

- i WSTM4 – the strategic traffic model;
- i Junctions 9 - for isolated non-signalised junctions;
- i VISSIM - a microsimulation model giving detailed information on queues and delays at the new junctions within the Easthampstead Road diversion network where performance is strongly influenced by the level crossing; and
- i LINSIG – for isolated or linked signalised junctions.

12.1.13. The WSTM4 modelling has indicated the general performance of the highway network in two future assessment years of 2026 and 2036. WSTM4 includes all the committed and other future development proposals likely to come forward up to each of these future years. These include developments in Wokingham and adjacent authorities as well as background growth due to economic growth generally.

12.1.14. Based on the outputs of WSTM4 and WBC officer's requirements, a number of junctions have been selected for more detailed operational assessment. In general, these operational assessments have proved that no mitigation is required to comply with national planning policy as set out in the NPPF. The only instances where mitigation is required are junctions which are subject to delivery by WBC ie, the Western Gateway, the junctions forming the Easthampstead Road diversion network, the Eastern Gateway and Waterloo Road/Old Wokingham Road/Peacock Lane (improvements to which are required by condition on the Eastern Gateway planning permission). However, it is possible that an interim mini roundabout scheme at Waterloo Road/Old Wokingham Road/Peacock Lane could be implemented as an interim solution pending the formulation of a strategy at this location with WBC and BFBC.

12.1.15. Assessments have been carried out to address the potential impacts on the M4 Junction 10, operated by Highways England. No impacts of significance that require mitigation have been identified. The M4 is currently subject to a major improvement scheme to increase its capacity.

Transport Strategy

12.1.16. A range of measures is identified to promote sustainable transport to and from the development.

12.1.17. For walking and cycling, there are measures that will assist in enhancing connections to the existing community, including:

- i A CIL scheme to replace the bridges on Finchampstead Road will improve conditions along this link to the town centre;

- i CIL schemes to carry out PRow and cycle network improvements at bridges over the WRRL
- i A Network Rail Obstacle detection warning system on the Easthamptead Road Level Crossing.

12.1.18. In addition, it is likely there will be general improvements to pedestrian and cycle accessibility to the town centre through the improvements to public realm undertaken recently and the predicted reductions on key roads arising from the redistribution of journeys caused by the introduction of the SWDR.

12.1.19. For personal transport planning, it is proposed to contribute towards WBC's "My Journey" travel planning programme in lieu of producing a site-specific travel plan. WBC will then carry out the necessary actions to encourage sustainable travel behaviours among residents.

12.1.20. For public transport, it is proposed to incorporate bus services to the development into a planned review of bus services so that a commercially viable 30-minute service can be provided. The initial discussions with Reading Bus indicate this is a feasible proposition. Bus stops with shelters and real-time arrival information are being incorporated into the design of the SWDR. The bus service would connect to the town centre, railway station and other local facilities.

Construction traffic

12.1.21. A review of construction traffic has been carried out and, in keeping with the conclusion of the ES in this regard, it has been shown that the impacts can be managed through a range of measures,

12.2 CONCLUSION

12.2.1. It is concluded that the proposed development can come forward in line with national and local policy in a way that can or will be mitigated such that the impacts on safety are acceptable and residual impacts on transport are less than severe.



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