March 2019

PROPOSED HOUSING ALLOCATION WEST OF SOUTHWATER

COLLECTION OF ADDITIONAL DOCUMENTATION

SOUTHWATER PARISH COUNCIL

BEESON HOUSE, 26 LINTOT SQUARE, SOUTHWATER,
RH13 9LA

INTRODUCTION

This document contains a collection of additional documentation which may be useful at examination relating to the proposed housing allocation in the Submission Southwater Neighbourhood Development Plan.

The documentation pertains to concerns raised at the Regulation 14 consultation relating to potential impacts on the highway network and heritage (the Grade II* Listed Great House Farmhouse).

HERITAGE

With regard to heritage, the following is included in this document:

1. Email dated 04/12/2018 to Berkeley Strategic requesting a Heritage Impact Assessment.
2. Review of Principal Heritage Considerations: Neighbourhood Plan Proposals (Dec 2018) received from Berkeley Strategic on 19/02/2018.
3. Email dated 20/12/2018 to Horsham District Council
4. Email dated 20/12/2018 to West Sussex County Council
5. Email dated 20/12/2018 to Historic England.
6. Email response from Historic England dated 11/01/2019.
7. Email response from WSCC dated 16/01/2019.
8. Email correspondence between Horsham District Council and Berkeley Strategic dated 25/01/2019.
9. Email from Berkeley dated 12/02/2018 containing updated Turley Review of Principal Heritage Considerations: Neighbourhood Plan Proposals (Feb 2019)
10. Email dated 15/02/2019 and preceding email chain with Horsham District Council.

HIGHWAY NETWORK

With regard to the highway/ network, the following is included in this document:

11. Email dated 04/12/2018 to Berkeley Strategic requesting a Strategic Highway Assessment.
12. WSP Neighbourhood Plan Highway Capacity Assessment received from Berkeley Strategic on 21/12/2018.
13. Technical Note prepared by RGP for the Neighbourhood Plan Steering Group sent to Berkeley Strategic on 25/01/2019
14. WSP Response to RGP/ Technical Note dated 11/02/2019

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Email dated 04/12/2018 to Berkeley Strategic requesting a Heritage Impact Assessment.

Andrew Metcalfe

From: Andrew Metcalfe
Sent: 05 December 2018 11:23
To: [redacted]
Cc: Catherine Tobin (Private); Graham Watkins [redacted]
Subject: RE: Southwater
Attachments: 53 - Historic England.pdf

Jonathan,

Please find attached the representations, or extracts from representations from Historic England, WSCC and HDC for your information.

Specifically the comments relate to the need for:

1. A Strategic Transport Assessment
2. A Heritage Impact Assessment

After considering this at the Steering Group meeting last night it was considered that the plan must have these pieces of evidence in place and that they demonstrate the proposed allocation can come forward in an acceptable way.

As you know timing we are on course to submit the plan to HDC on 24 January 2018. For this to occur much of January will be used to progress the plan through the Parish Council's internal democratic sign off processes, we therefore need to have all evidence prior to Christmas at the very latest, ideally no later than 14 December.

I trust you will be able to assist in providing the required information, as always if you have any queries please do not hesitate to contact me.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

enplan incorporating vista

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Jonathan Lambert [redacted]
Sent: 05 December 2018 10:24
To: Andrew Metcalfe [redacted]
Subject: Southwater

Andrew

Further to our telephone conversation least week, are you in a position yet to share the Historic England representation with me?

Kind regards

Jon

Jon Lambert
Planning Director

Berkeley Strategic
Berkeley Strategic Land Limited

[redacted]

www.berkeleygroup.co.uk

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Review of Principal Heritage Considerations: Neighbourhood Plan Proposals (Dec 2018) received from Berkeley Strategic on 19/02/2018.

Great House Farm, Southwater, Horsham

Review of Principal Heritage Considerations: Neighbourhood Plan Proposals

December 2018

Turley Heritage

Contents

Our reference
BERH3008

December 2018

1. Assessment

Background

1.1 Great House Farmhouse, Worthing Road, Southwater is a grade II* listed building. Proposals are coming forward in the Draft Southwater Neighbourhood Plan for allocation of land in the surroundings and setting of the listed building for future housing development. This assessment considers likely heritage matters relevant to such proposals in light of the general thrust of heritage planning policy[1].

1.2 Whilst this assessment does not seek to define a precise area that is suitable for development it puts forward a set of considerations that should be used in subsequently defining the extent of built development within the allocated area. In so doing we seek to review the presently suggested clause in the Neighbourhood Plan policy SNP2 (below) regarding the principle of a landscaped buffer being created around Great House Farmhouse (7) seeking to preserve the listed building's setting.

ALLOCATION FOR RESIDENTIAL DEVELOPMENT

This plan allocates land west of Southwater to provide a minimum of 422 residential units. Our assessments have concluded that development of this area will have the least negative impacts on the parish and continue to support the plan's Core Principles set out in SNP1, in particular it will

- Be within 15 minutes walking distance of Lintot Square which will positively reinforce Lintot Square as our services and facilities hub.
- Minimise harmful impacts on landscape.
- Provide a range of residential properties that meets the needs of current and future residents.
- Be able to provide a minimum of 422 residential units.
- Not result in any adverse impacts on the highway network, particularly with regard to ques and traffic at rush hour.

SNP2 – ALLOCATION FOR RESIDENTIAL DEVELOPMENT

Land west of Southwater, as shown on the Neighbourhood Plan Map, is allocated for the provision of at 422 - 450 new residential units consisting of:

- **A minimum of 350 homes falling in use class C3.**
- **A minimum of 72 homes falling in use class C2.**
- **Public open space**

Development proposals on this site must meet the following criteria to be considered acceptable:

1) **The proposed layout should respect existing field boundaries and hedgerows along them. These hedgerows should not be removed but enhanced to provide green corridors through the development**
2) **Improved/upgraded pedestrian and cycle routes to Christs Hospital Railway Station must be provided, including upgrading the Downs Link so far as the Christs Hospital Railway Station.**
3) **Pedestrian and cycle routes throughout the development will be required to ensure that Lintot Square is always within 15 minutes walking distance from all parts of the site.**
4) **No Category A, B or C trees should be removed for the purposes of accommodating development. Only trees which are unsafe and represent a health and safety risk may be removed.**
5) **No building should have more than three storeys. Buildings should reduce in height and density the further they are from the village centre / Lintot Square.**
6) **Be in accordance with other policies contained in the Development Plan.**
7) **A green landscaped buffer of at least 100m should be created around the Grade II* Listed Great House Farmhouse to preserve its setting.**
8) **To ensure the development does not give rise to unacceptable impacts on the local education system, and to reduce unnecessary journeys to and from school, the landowner shall enter a legal agreement to provide land for a new educational institution within the parish boundaries as dictated by SNP3.**
9) **To ensure the development does not give rise to unacceptable impacts on our roads necessary highway improvements within the parish will be provided in accordance with SNP4.**

[1] s. 66(1) Planning (Listed Buildings and Conservation Areas) Act 1990; National Planning Policy Framework (2018); National Planning Policy Guidance; and, Historic England, The Setting of Heritage Assets (2017)

Significance

1.3 Great House Farmhouse is included at grade II* on the statutory list of buildings of special architectural or historic interest after review of its original listing dating from 1980 in 2012. The building is assessed by Historic England to be of '*more than special architectural or historic interest*', of C16th origins and built on an earlier site.

1.4 The extensive list entry description illustrates that architectural interest generally resides in the accumulated evidence of high-status building of unusual plan, high quality construction, intactness and a range of fixtures and fittings. Special historic interest derives from being the most important domestic building in the area, built on a site once associated with Sele Priory, bounded by moats or ponds within a relict medieval landscape[2]. Its curtilage comprises a number of related farm buildings dating from the C18th to C20th, some of interest, others not and more utilitarian in appearance.

1.5 Whilst the listed building's intrinsic significance is derived from architectural and historic interest, its surroundings play some role in contributing to that significance in terms of heritage setting.

Architecture and layout

1.6 Aspects of the listed building's architectural interest bear upon setting considerations:

i. The L-plan with the main range aligned roughly north-south with secondary range in three bays and also two-storeys and attics aligned roughly east-west.

ii. The brick chimney stack which rises prominently above the eastern elevation has grouped facetted brick shafts with moulded caps, set on a square base.

iii. A former entrance at the angle [of the north elevation] with the kitchen wing has been blocked; first floor oriel window on the north elevation – richly detailed, typical of late C16 and early C17 supported by plain and possibly earlier

[2] i.e. a landscape where evolutionary processes came to an end at some time in the past with some distinguishing features still visible in material form.

brackets which are integral to the structure of the bay; first floor chamber [main range] intact oriel window of high quality. Traces of opposing window opening on south-facing elevation at head of passage.

1.7 This suggests a primary and secondary axis in the layout of the building emphasised by the surviving and evidential oriel windows facing north and south respectively from the first floor chamber of the principal range.

Setting

1.8 Elements of setting likely to be considered important in contributing to significance:

i. The building being constructed on a medieval site associated with Sele Priory, bounded by moats or ponds. The farmhouse is presently enclosed to the north-west and east by a series of ditches or ponds and approached from the east by a small brick bridge which crosses the pond or moat. The ponds are stone-lined and latterly used for watering farm horses and cattle. A former earth closet remains standing to the west of the house and a wall and hedge line to the west and south of the house indicating the extent of the historic enclosure.

ii. Associated with the principal listed building are a series of traditional C18 to C20 farm buildings together with modern farm buildings lying to the south east of the house, outside the area enclosed by ponds and ditches.

iii. The listed building is noted to be set within a wider relict medieval landscape.

1.9 The listed building enjoys a series of elements of setting from its immediate surroundings comprising the possible moated enclosure, to the intermediate with the associated farmyard, to its wider surroundings comprising the wider landscape. Whilst mention is made of the surviving relict medieval landscape associated with the listed building, account must also be taken of change over time. For example, the bisecting of this landscape by the railway in the C19th now provides an important public right of way allowing experience and appreciation of the wider landscape of the area. The wider landscape within which Great House Farmhouse sits also continues to change with implementation of housing development to the west of Worthing Road and immediately east of the farm.

1.10 Taken together these points suggest broad principles that could be taken into account in prescribing parameters for the location of new built form within the setting of the listed building.

2. Principles

Guiding principles

2.1 On the basis of assessment of the overarching aspects of special interest of the listed building and elements of setting likely to contribute to its significance the following principles are suggested in guiding the location of development within its surroundings:

- Conservation of the immediate 'enclosure' element of setting to the listed building – historically important and largely legible today.
- Conservation of the associated farm yard and traditional buildings that contribute to significance with the removal of modern utilitarian structures.
- Conservation of key elements of wider setting that contribute to significance
  - areas to the north and south of the listed building based upon its orientation and features, retained as open land.
  - visual relationship across open land to Courtland Wood - a legible historic landscape feature.
  - continued and improved (through removal of utilitarian buildings) visual relationship across fields to south and thereby key public route of the Downs Link.

Policy wording

2.2 In light of the above principles it is suggested that policy to inform the location of residential development in the surroundings of the listed building should refer to the following matters:

In order to conserve elements of setting that contribute to the significance of the listed building, any buffer zone should comprise and allow for the following:

- ***Parcels of land to the north and south of the listed building retained as open land;***
- ***An visual inter-relationship with Courtland Wood maintained together with key landscape features; and,***
- ***A considered approach to edges of built form likely to be seen from and in association with the listed building.***

2.3 In summary the proposed extent of the allocated area is capable of accommodating residential development as proposed in the draft Neighbourhood Plan while conserving elements of setting that contribute to heritage significance if all of the allocated area is not used for built development. The actual extent of built development within the allocated area should be considered in more detail at application stage through the

preparation of a detailed heritage impact assessment taking account of the guiding principles set out above in the suggested amended policy wording.

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8th Floor
Lacon House
84 Theobald's Road
London
WC1X 8NL

T 020 7851 4010

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Email dated 20/12/2018 to Horsham District Council

Andrew Metcalfe

From: Andrew Metcalfe
Sent: 21 December 2018 12:57
To: 'Norman.Kwan'
Cc: [redacted] uk; Catherine Tobin; Graham Watkins; [redacted] 'Barbara.Childs'
Subject: Southwater Neighbourhood Plan - Great House Farmhouse (HDC)
Attachments: Great House Farm - Heritage Considerations (Southwater NP).pdf

Importance: High

Dear Norman,

I am writing on behalf of the Southwater Neighbourhood Plan Steering Group. Following the recent Regulation 14 Consultation the Steering Group have been considering the best way to amend the plan, where appropriate, in response to comments that have been received. We are working to a tight timetable and hope to submit the plan in early 2019.

Several Stakeholders raised concerns about the potential impact the proposed neighbourhood plan allocation may have on Great House Farmhouse, a Grade II* Listed Building. Notably these stakeholders include Historic England, Horsham District Council and West Sussex County Council. Concerns were raised with regard to the proposed policy approach of including a 100m buffer around the property.

To understand and address these concerns, the Steering Group approached the developer promoting the site and asked them to undertake a Heritage Impact Assessment to inform the preparation of the allocation policy. The attached report has now been received which proposes wording to be included in SNP2 – ALLOCATION FOR RESIDENTIAL DEVELOPMENT.

We would like to ensure that any changes to the policy wording suitably address the concerns raised by yourselves in previous responses and with this in mind we would appreciate any feedback you may have on the attached report and proposed wording.

Moving forward, we will take your feedback into account, update the policy as appropriate and, if necessary, host a meeting w/c 14th January 2019 (with Historic England, Horsham District Council and West Sussex Council in attendance) to discuss and agree the proposed policy wording with regard to Great House Farmhouse.

As we are looking to move forward swiftly, we would invite you to provide any comments you may have on the attached report by close of play on Friday 11th January. Please can you also provide your availability w/c 14th January to meet at Beeson House, 26 Lintot Square, Fairbank Road, Southwater, West Sussex RH13 9LA. Should the responses received not require a meeting to discuss it may be cancelled by it would be good to get a date and time in the diary for the eventuality one is required.

Should you need to view the Reg.14 consultation material, it is all still available at https://southwater.joomla.com/reg-14-consultation.html

We would like to thank you for your assistance and engagement with this process. Please accept our apologies for timing and how this has coincided with the Christmas break. Should the timescales I have set out above present any problem please do not hesitate to contact me.

Finally, may I wish you a Merry Christmas and a Happy New Year.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

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Email dated 20/12/2018 to West Sussex County Council

Andrew Metcalfe

From: Andrew Metcalfe
Sent: 21 December 2018 12:57
To: [redacted]
Cc: Catherine Tobin; Graham Watkins; [redacted]
Subject: Southwater Neighbourhood Plan - Great House Farmhouse (WSCC)
Attachments: Great House Farm - Heritage Considerations (Southwater NP).pdf

Importance: High

Dear Caroline,

I am writing on behalf of the Southwater Neighbourhood Plan Steering Group. Following the recent Regulation 14 Consultation the Steering Group have been considering the best way to amend the plan, where appropriate, in response to comments that have been received. We are working to a tight timetable and hope to submit the plan in early 2019.

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Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

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Email dated 20/12/2018 to Historic England.

Andrew Metcalfe

From: Andrew Metcalfe
Sent: 21 December 2018 12:57
To: 'Byrne, Alan'
Cc: [redacted] Catherine Tobin; Graham Watkins
Subject: Southwater Neighbourhood Plan - Great House Farmhouse (HE)
Attachments: Great House Farm - Heritage Considerations (Southwater NP).pdf

Importance: High

Dear Alan,

I am writing on behalf of the Southwater Neighbourhood Plan Steering Group. Following the recent Regulation 14 Consultation the Steering Group have been considering the best way to amend the plan, where appropriate, in response to comments that have been received. We are working to a tight timetable and hope to submit the plan in early 2019.

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To understand and address these concerns, the Steering Group approached the developer promoting the site and asked them to undertake a Heritage Impact Assessment to inform the preparation of the allocation policy. The attached report has now been received which proposes wording to be included in SNP2 – ALLOCATION FOR RESIDENTIAL DEVELOPMENT.

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Finally, may I wish you a Merry Christmas and a Happy New Year.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

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Email response from Historic England dated 11/01/2019.

Andrew Metcalfe

From: Byrne, Alan <[redacted]k>
Sent: 11 January 2019 09:21
To: Andrew Metcalfe
Subject: RE: Southwater Neighbourhood Plan - Great House Farmhouse (HE)

Andrew

Thank you, and the Steering Group, for the positive consideration of my comments. I look forward to receiving the amended policy wording.

I would prefer not to comment specifically on the position of Horsham DC, but as the planning authority its requirements must take precedence over others and, ultimately, they are the body adopting the NDP and will need to be satisfied. I would be pleased to review my own comments in the light of any changes to the policy arising from the points made in Horsham's letter, if they are able to be taken on board to the parish council. I hope this helps.

Best regards,

Alan

Alan Byrne BSc MSc IHBC
Historic Environment Planning Adviser
Planning Group
Historic England South East, Eastgate Court, 195-205 High Street, Guildford GU1 3EH
Direct Line: [redacted]

From: Andrew Metcalfe [mailto[redacted]
Sent: 10 January 2019 17:27
To: Byrne, Alan
Subject: RE: Southwater Neighbourhood Plan - Great House Farmhouse (HE)

Alan,

I am pleased to report that the Steering Group are happy to amend the plan as you suggest and involve you in preparing the final wording to be included in the policy.

On a side, we have today received the attached response from HDC and would appreciate your thoughts on their position.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

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Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Byrne, Alan [redacted]
Sent: 08 January 2019 16:42
To: Andrew Metcalfe [redacted]
Subject: RE: Southwater Neighbourhood Plan - Great House Farmhouse (HE)

Hi Andrew

I'm sorry I was unavailable and have just come out of a meeting.

I was going to drop you a line tomorrow, but in view of your meeting this evening I will respond now.

The Turley report is very useful in addressing, to a large extent, the safeguarding of the setting of the listed farmhouse and goes some way to allaying our concerns. In particular, we support a revised policy that avoids the definition of a geographic buffer zone and replaces this with a definition of significance based upon the relationship of the heritage asset with its setting.

The report itself falls short of what we would consider to be a heritage impact assessment per se, and is why it is titled a "Review of Principal Heritage Consideration" perhaps, but it does cover the key issues well and the suggested policy wording would add, to a large extent, the comfort we are looking for in terms of how setting is addressed in the planning of new housing on the site.

I do have, however, a couple of residual queries:

Firstly, is it intended that the new policy wording proposed by the Turley report is added to, or inserted into, the draft NP policy or is it intended that it replaces it? If the former (which we would prefer) it would be helpful to see the full text of the revised policy.

Secondly, would it be possible to add part of paragraph 2.3 relating to "the preparation of a detailed heritage impact assessment taking account of the guiding principles set out above" at application stage as an additional bullet point (preferable) to the revised policy, or at least as supporting text? This will ensure that such an assessment will form part of the planning of the housing site.

Perhaps you could lay these suggestions before the steering group this evening and report back to me on their position later in the week.

Best regards,

Alan

Alan Byrne BSc MSc IHBC
Historic Environment Planning Adviser
Planning Group
Historic England South East, Eastgate Court, 195-205 High Street, Guildford GU1 3EH
Direct Line: [redacted]

From: Andrew Metcalfe [redacted]
Sent: 08 January 2019 16:00
To: Byrne, Alan
Subject: RE: Southwater Neighbourhood Plan - Great House Farmhouse (HE)

Alan,

I just tried to call - I was just wondering how you are getting on with the below?

We have a Steering Group meeting tonight and it would be helpful to get a brief update from you on your position if possible so that I can update the group.

I look forward to hearing from you.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

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Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Byrne, Alan [redacted]
Sent: 21 December 2018 14:55
To: Andrew Metcalfe [redacted]>
Subject: RE: Southwater Neighbourhood Plan - Great House Farmhouse (HE)

Dear Andrew

We will be closing our office at 4pm this afternoon and I don't think I can get a response back before then. I will pick this up as soon as we re-open in the New Year, and will respond within the timeframe you have suggested. I am hoping we can deal with this as an exchange of emails but if a meeting is deemed necessary I will let you know my diary availability nearer the time if that's okay.

Best wished for Christmas and a happy New Year.

Best regards,

Alan

Alan Byrne BSc MSc IHBC
Historic Environment Planning Adviser
Planning Group
Historic England South East, Eastgate Court, 195-205 High Street, Guildford GU1 3EH
Direct Line: [redacted]

From: Andrew Metcalfe [redacted]
Sent: 21 December 2018 12:57
To: Byrne, Alan
Cc: Small, Martin; [redacted] Catherine Tobin; Graham Watkins
Subject: Southwater Neighbourhood Plan - Great House Farmhouse (HE)
Importance: High

Dear Alan,

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We would like to thank you for your assistance and engagement with this process. Please accept our apologies for timing and how this has coincided with the Christmas break. Should the timescales I have set out above present any problem please do not hesitate to contact me.

Finally, may I wish you a Merry Christmas and a Happy New Year.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

enplan incorporating vista

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

[redacted]

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Email response from WSCC dated 16/01/2019.

Andrew Metcalfe

From: Caroline West <[redacted]
Sent: 16 January 2019 17:54
To: Andrew Metcalfe
Cc: Parish Clerk (Southwater); Graham Watkins; [redacted] Norman.Kwan
Subject: RE: Southwater Neighbourhood Plan - Great House Farmhouse (WSCC)
Attachments: Southwater NLP- Great House Farm - HLC.PDF

Dear Andrew

Following my e-mail earlier this week, please find below comments as requested, from colleagues in Environment and Heritage.

Regarding matters affecting preservation of the setting of the Grade II* Listed Great House Farm, it is welcomed that the proposed 100m buffer zone surrounding the designated heritage asset has been reconsidered in the Turley report.

At present the core late medieval/ early Tudor farmhouse sits within an immediately surrounding fieldscape with woods that is considered to be of medieval origin, reinforcing the link between the original farmstead and its remaining relict rural setting, a key factor in assessing its significance (information on fieldscapes from the *Sussex Historic Landscape Characterisation* (HLC) survey - see attached plan showing key medieval elements).

The observations (1.9) that the medieval fieldscape has been bisected (to the south and west) by the former railway (now Downs Link bridleway) and encroached upon by new housing to the west of Worthing Road are fairly made. But the medieval fieldscape to the north and west, with Courtland Wood at its heart – an assart wood, remnant of former woodland and waste out of which the medieval fields were first enclosed – remain largely intact.

Inclusion in the proposed revision of the policy wording (2.2) of the buffer zone allowing for a visual inter-relationship with Courtland Wood, together with key landscape features, is welcome in principle. But the adjacent medieval fields and medieval wood are both integral parts of the relict medieval landscape, and are complementary in contributing to the significance of the farmhouse as a heritage asset.

To maintain a legible setting to the farmhouse, the visual relationship referred to in the revised policy wording of SNP2, it is considered, should include intact and open parts of the medieval fieldscape between the farmstead and the wood, without intervening new development, as part of the proposed green buffer.

Any queries please come back to me.

Kind regards

Caroline

Caroline West
Planning Policy and Infrastructure Team Manager | Economy, Planning, and Place Directorate
West Sussex County Council, Ground Floor, Northleigh, County Hall, Chichester PO19 1RH
[redacted] Web: www.westsussex.gov.uk

From: Andrew Metcalfe [redacted]
Sent: 21 December 2018 12:57
To: Caroline West
Cc: Parish Clerk (Southwater); Graham Watkins; [redacted]
Subject: Southwater Neighbourhood Plan - Great House Farmhouse (WSCC)
Importance: High

Dear Caroline,

I am writing on behalf of the Southwater Neighbourhood Plan Steering Group. Following the recent Regulation 14 Consultation the Steering Group have been considering the best way to amend the plan, where appropriate, in response to comments that have been received. We are working to a tight timetable and hope to submit the plan in early 2019.

Several Stakeholders raised concerns about the potential impact the proposed neighbourhood plan allocation may have on Great House Farmhouse, a Grade II* Listed Building. Notably these stakeholders include Historic England, Horsham District Council and West Sussex County Council. Concerns were raised with regard to the proposed policy approach of including a 100m buffer around the property.

To understand and address these concerns, the Steering Group approached the developer promoting the site and asked them to undertake a Heritage Impact Assessment to inform the preparation of the allocation policy. The attached report has now been received which proposes wording to be included in SNP2 – ALLOCATION FOR RESIDENTIAL DEVELOPMENT.

We would like to ensure that any changes to the policy wording suitably address the concerns raised by yourselves in previous responses and with this in mind we would appreciate any feedback you may have on the attached report and proposed wording.

Moving forward, we will take your feedback into account, update the policy as appropriate and, if necessary, host a meeting w/c 14th January 2019 (with Historic England, Horsham District Council and West Sussex Council in attendance) to discuss and agree the proposed policy wording with regard to Great House Farmhouse.

As we are looking to move forward swiftly, we would invite you to provide any comments you may have on the attached report by close of play on Friday 11th January. Please can you also provide your availability w/c 14th January to meet at Beeson House, 26 Lintot Square, Fairbank Road, Southwater, West Sussex RH13 9LA. Should the responses received not require a meeting to discuss it may be cancelled by it would be good to get a date and time in the diary for the eventuality one is required.

Should you need to view the Reg.14 consultation material, it is all still available at https://southwater.joomla.com/reg-14-consultation.html

We would like to thank you for your assistance and engagement with this process. Please accept our apologies for timing and how this has coincided with the Christmas break. Should the timescales I have set out above present any problem please do not hesitate to contact me.

Finally, may I wish you a Merry Christmas and a Happy New Year.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

enplan incorporating vista

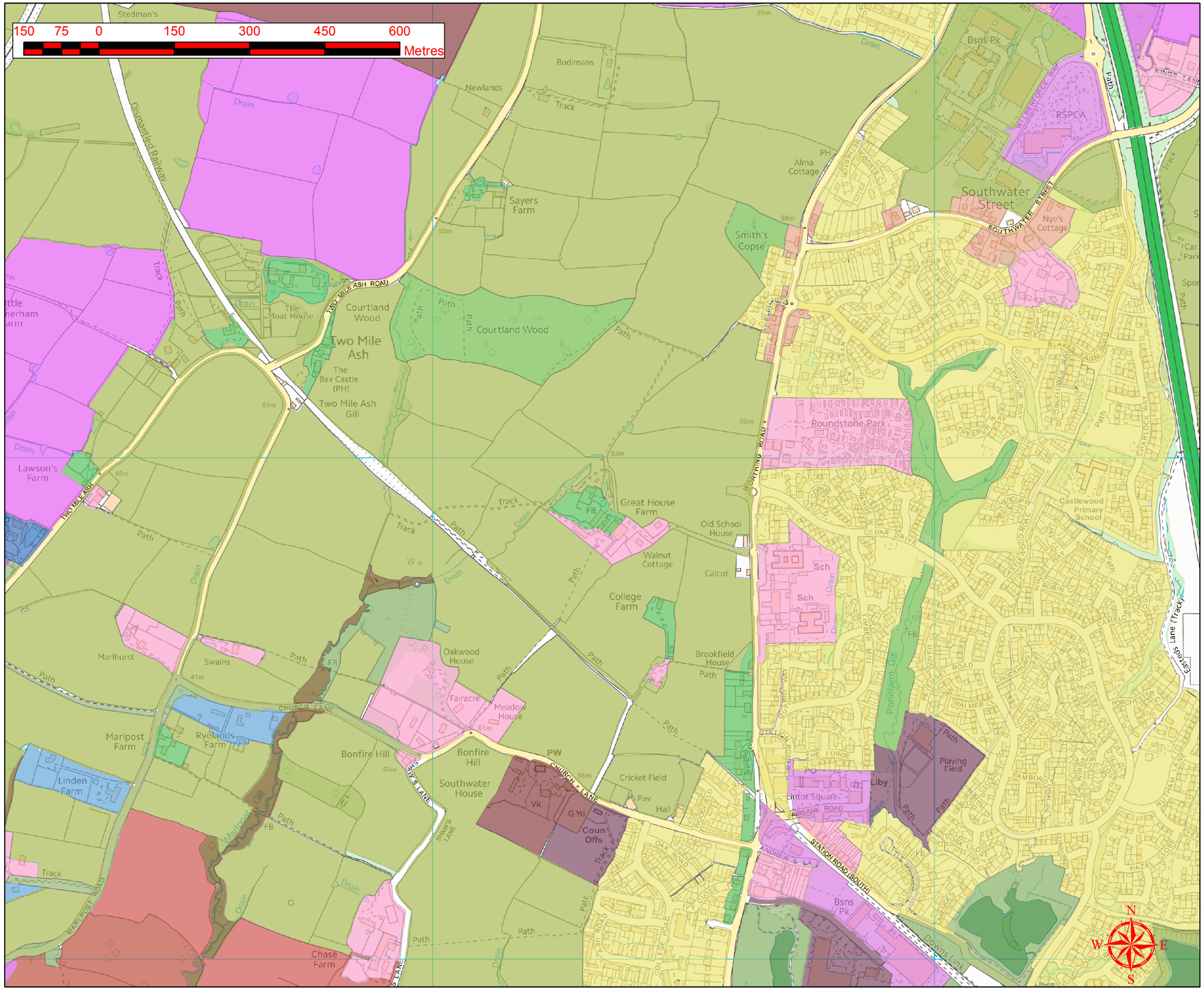
Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

[redacted]

please don't print this e-mail unless you really need to

Great House Farm, Southwater - Sussex Historic Landscape Characterisation



Informal fieldscapes, Medieval (AD 1066-1499)

((Woods only) Assart Wood (AD 1066-1499)

Early Post-Medieval Formal planned/ private enclosure (AD 1500 -1599)

Scale: 1:7500

8

Email correspondence between Horsham District Council and Berkeley Strategic dated 25/01/2019.

Andrew Metcalfe

From: Jonathan Lambert [redacted]
Sent: 25 January 2019 13:03
To: 'Sean.Rix'
Cc: Norman.Kwan; Andrew Metcalfe
Subject: RE: Southwater N.Plan - Great House Farmhouse

Sean

Thank you for your e-mail.

I would be very happy to arrange a time for us to visit the site. It would also be helpful if we could use this as an opportunity to discuss the assessment you require.

Could you suggest some dates / times when you would be available, ideally over the next week or so, as it would be helpful if we could move discussions on reasonably quickly.

I look forward to hearing from you.

Kind regards

Jon

Jon Lambert
Planning Director

Berkeley Strategic
Berkeley Strategic Land Limited

Berkeley House | 19 Portsmouth Road | Cobham | KT11 1JG
[redacted]

www.berkeleygroup.co.uk

From: Sean.Rix [redacted]
Sent: 24 January 2019 16:11
To: Jonathan Lambert [redacted]
Cc: Norman.Kwan [redacted]
Subject: [EXTERNAL] RE: Southwater N.Plan - Great House Farmhouse

Dear Jon,

Apologies for not returning your calls. I am often out of the office so email is the best means to contact me. What I require is a heritage impact assessment that shows that the number of dwellings put forward in the Neighbourhood Plan is deliverable on this plot of land in relation to the desirability of preserving the special interest of the adjacent listed building and its setting. This can then be used as part of the evidence base supporting the N.P. in examination. This request is in line with guidance published by Historic England in particular Advice Note 11.

I have not had the opportunity to visit the proposed site and would find it helpful if I could meet with you to understand the situation fully.

Regards,
Seán

Seán Rix
Senior Conservation Officer

[redacted]

Horsham District Council, Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone: 01403 215100 (calls may be recorded) www.horsham.gov.uk Chief Executive: Glen Chipp

From: Jonathan Lambert[redacted]
Sent: 24 January 2019 15:51
To: Sean.Rix[redacted]
Cc: Norman.Kwan[redacted]
'Andrew Metcalfe'[redacted]
Subject: RE: Southwater N.Plan - Great House Farmhouse

Sean

I have called a couple of times this week to try and discuss with you the issues raised in relation to Great House Farm at Southwater as set out in Norman's letter to Andrew dated 11th January, but unfortunately we have not had a chance to speak.

I therefore thought it might be helpful if I set out in an e-mail our thoughts on the issues raised having discussed them with Turley our heritage consultant.

The numb of the issue is that at this stage we do not have a detailed scheme prepared that would enable us to undertake the impact assessment as referred to in Norman's letter.

This does not mean that we have not considered the heritage issues relating to Great House Farm and our consideration of these issues is set out in the Review of Principle Heritage Considerations prepared by Turley in December. In addition to the analysis in this report, we have considered the generous scope that exists to provide open space within the development to conserve the setting of the listed building. Indeed, assuming a density of development which is comparable to the neighbouring Broadacres development, the Neighbourhood Plan proposed level of development could be accommodated while retaining approximately 40% of the allocated site area as undeveloped open land.

We believe that the extent, location and form of the development is best determined at the application stage through the preparation of a detailed Heritage Impact Assessment.

I set out below for your consideration a suggested further amended policy wording which reflects this approach and also picks up on the comments made by WSCC in relation to features that they would like to see considered in the definition of any buffer zone.

In order to conserve elements of setting that contribute to the significance of the listed building, any buffer zone should comprise and allow for the following:

- ***Parcels of land to the north and south of the listed building retained as open land;***

- ***An visual inter-relationship with Courtland Wood and other parts of the medieval fieldscape between is maintained together with key landscape features; and,***

- ***A considered approach to edges of built form likely to be seen from and in association with the listed building.***

The extent, location and form of built development within the allocated area will be determined at the application stage when the impact of development on these elements should be assessed through a Heritage Impact Assessment.

I look forward to your comments on this suggested approach and policy wording. Please do not hesitate to call me should you wish to discuss this.

Kind regards

Jon Lambert
Planning Director

Berkeley Strategic

Berkeley Strategic Land Limited

[redacted]

www.berkeleygroup.co.uk

From: Andrew Metcalfe [redacted]
Sent: 18 January 2019 15:37
To: Jonathan Lambert [redacted]
Cc: Sean.Rix [redacted] Norman.Kwan [redacted]e [redacted]
Subject: [EXTERNAL] Southwater N.Plan - Great House Farmhouse

Jon,

Following out conversation I have spoken with Norman at HDC. The outcome of that discussion is that we believe it best if you liaise directly with Sean (Conservation Officer) at HDC to ensure that you produce exactly what he is expecting to see.

To ensure all concerned have had sight of the various responses received to date I attach the responses to the Turley report from Historic England, HDC and WSCC.

I would appreciate it if you kept me copied in on any emails etc. and, as with the viability work, if a meeting were to be arranged I may wish to attend to keep up to speed on things.

Trust this ok with you. Hopefully it will ensure that no abortive work is completed and material can be produced that satisfies the concerns of the LPA with regard to the proposed Southwater N.Plan allocation.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

enplan incorporating vista

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Norman.Kwan[redacted]
Sent: 18 January 2019 15:30
To: Andrew Metcalfe[redacted]
Cc: Sean.Rix[redacted]
Subject: Great House Farmhouse

Hello Andrew,

I've spoken with Sean following our brief chat. We're both happy for Berkeley to contact Sean directly to discuss the masterplan approach. I've attached his contact details below. Regards,

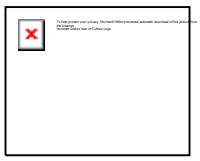
Seán Rix
Senior Conservation Officer

[redacted]

[redacted]

Norman Kwan
Senior Neighbourhood Planning Officer

[redacted]



Horsham District Council, Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone: 01403 215100 (calls may be recorded) www.horsham.gov.uk Chief Executive: Glen Chipp

9

Email from Berkeley dated 12/02/2018 containing updated Turley Review of Principal Heritage Considerations: Neighbourhood Plan Proposals (Feb 2019)

Andrew Metcalfe

From: Jonathan Lambert [redacted]
Sent: 12 February 2019 15:11
To: Andrew Metcalfe; Sean.Rix
Cc: Norman.Kwan; Catherine Private; 'Roger Mascall'
Subject: RE: Southwater N.Plan - Great House Farmhouse
Attachments: Great House Farm - Heritage Considerations (Southwater NP) February 2019.pdf

Andrew / Sean

Further to our site meeting last Wednesday, please find attached an updated version of the Review of Principal Heritage Considerations report that was previously issued to you in December 2018.

This has been updated to include a section dealing with the capacity of the site to accommodate development having regard to the design principles identified, a plan showing these design principles and a suggested amended policy wording.

We believe that this demonstrates that for the purposes of supporting the Neighbourhood Plan allocation, due regard has been given to the setting of the listed building in determining the capacity of the site to accommodate development.

I hope that this provides you with the further information that you require. Please do not hesitate to contact me if you have any questions.

Kind regards

Jon Lambert
Planning Director

Berkeley Strategic
Berkeley Strategic Land Limited

[redacted]

www.berkeleygroup.co.uk

From: Andrew Metcalfe [redacted]
Sent: 18 January 2019 15:37
To: Jonathan Lambert [redacted]
Cc: Sean.Rix [redacted] Norman.Kwan [redacted]

[redacted]
Subject: [EXTERNAL] Southwater N.Plan - Great House Farmhouse

Jon,

Following out conversation I have spoken with Norman at HDC. The outcome of that discussion is that we believe it best if you liaise directly with Sean (Conservation Officer) at HDC to ensure that you produce exactly what he is expecting to see.

To ensure all concerned have had sight of the various responses received to date I attach the responses to the Turley report from Historic England, HDC and WSCC.

I would appreciate it if you kept me copied in on any emails etc. and, as with the viability work, if a meeting were to be arranged I may wish to attend to keep up to speed on things.

Trust this ok with you. Hopefully it will ensure that no abortive work is completed and material can be produced that satisfies the concerns of the LPA with regard to the proposed Southwater N.Plan allocation.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

enplan incorporating vista

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
[redacted]
[redacted]

From: Norman.Kwan [redacted]
Sent: 18 January 2019 15:30
To: Andrew Metcalfe [redacted]
Cc: Sean.Rix [redacted]
Subject: Great House Farmhouse

Hello Andrew,

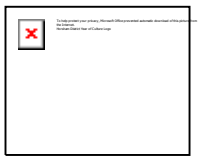
I've spoken with Sean following our brief chat. We're both happy for Berkeley to contact Sean directly to discuss the masterplan approach. I've attached his contact details below. Regards,

Seán Rix
Senior Conservation Officer

[redacted]

Norman Kwan
Senior Neighbourhood Planning Officer

[redacted]



Great House Farm, Southwater, Horsham

Review of Principal Heritage Considerations: Neighbourhood Plan Proposals

February 2019

Contents

Our reference
BERH3008

February 2019

1. Assessment

Background

1.1 Great House Farmhouse, Worthing Road, Southwater is a grade II* listed building. Proposals are coming forward in the Draft Southwater Neighbourhood Plan for allocation of land in the surroundings and setting of the listed building for future housing development. This assessment considers likely heritage matters relevant to such proposals in light of the general thrust of heritage planning policy[1].

1.2 Whilst this assessment does not seek to define a precise area that is suitable for development it puts forward a set of considerations that should be used in subsequently defining the extent of built development within the allocated area. In so doing we seek to review the presently suggested clause in the Neighbourhood Plan policy SNP2 (below) regarding the principle of a landscaped buffer being created around Great House Farmhouse (7) seeking to preserve the listed building's setting.

ALLOCATION FOR RESIDENTIAL DEVELOPMENT

This plan allocates land west of Southwater to provide a minimum of 422 residential units. Our assessments have concluded that development of this area will have the least negative impacts on the parish and continue to support the plan's Core Principles set out in SNP1, in particular it will

- Be within 15 minutes walking distance of Lintot Square which will positively reinforce Lintot Square as our services and facilities hub.
- Minimise harmful impacts on landscape.
- Provide a range of residential properties that meets the needs of current and future residents.
- Be able to provide a minimum of 422 residential units.
- Not result in any adverse impacts on the highway network, particularly with regard to ques and traffic at rush hour.

SNP2 – ALLOCATION FOR RESIDENTIAL DEVELOPMENT

Land west of Southwater, as shown on the Neighbourhood Plan Map, is allocated for the provision of at 422 - 450 new residential units consisting of:

- **A minimum of 350 homes falling in use class C3.**
- **A minimum of 72 homes falling in use class C2.**
- **Public open space**

Development proposals on this site must meet the following criteria to be considered acceptable:

1) **The proposed layout should respect existing field boundaries and hedgerows along them. These hedgerows should not be removed but enhanced to provide green corridors through the development**
2) **Improved/upgraded pedestrian and cycle routes to Christs Hospital Railway Station must be provided, including upgrading the Downs Link so far as the Christs Hospital Railway Station.**
3) **Pedestrian and cycle routes throughout the development will be required to ensure that Lintot Square is always within 15 minutes walking distance from all parts of the site.**
4) **No Category A, B or C trees should be removed for the purposes of accommodating development. Only trees which are unsafe and represent a health and safety risk may be removed.**
5) **No building should have more than three storeys. Buildings should reduce in height and density the further they are from the village centre / Lintot Square.**
6) **Be in accordance with other policies contained in the Development Plan.**
7) **A green landscaped buffer of at least 100m should be created around the Grade II* Listed Great House Farmhouse to preserve its setting.**
8) **To ensure the development does not give rise to unacceptable impacts on the local education system, and to reduce unnecessary journeys to and from school, the landowner shall enter a legal agreement to provide land for a new educational institution within the parish boundaries as dictated by SNP3.**
9) **To ensure the development does not give rise to unacceptable impacts on our roads necessary highway improvements within the parish will be provided in accordance with SNP4.**

[1] s. 66(1) Planning (Listed Buildings and Conservation Areas) Act 1990; National Planning Policy Framework (2018); National Planning Policy Guidance; and, Historic England, The Setting of Heritage Assets (2017)

Significance

1.3 Great House Farmhouse is included at grade II* on the statutory list of buildings of special architectural or historic interest after review of its original listing dating from 1980 in 2012. The building is assessed by Historic England to be of '*more than special architectural or historic interest*', of C16th origins and built on an earlier site.

1.4 The extensive list entry description illustrates that architectural interest generally resides in the accumulated evidence of high-status building of unusual plan, high quality construction, intactness and a range of fixtures and fittings. Special historic interest derives from being the most important domestic building in the area, built on a site once associated with Sele Priory, bounded by moats or ponds within a relict medieval landscape[2]. Its curtilage comprises a number of related farm buildings dating from the C18th to C20th, some of interest, others not and more utilitarian in appearance.

1.5 Whilst the listed building's intrinsic significance is derived from architectural and historic interest, its surroundings play some role in contributing to that significance in terms of heritage setting.

Architecture and layout

1.6 Aspects of the listed building's architectural interest bear upon setting considerations:

i. The L-plan with the main range aligned roughly north-south with secondary range in three bays and also two-storeys and attics aligned roughly east-west.

ii. The brick chimney stack which rises prominently above the eastern elevation has grouped facetted brick shafts with moulded caps, set on a square base.

iii. A former entrance at the angle [of the north elevation] with the kitchen wing has been blocked; first floor oriel window on the north elevation – richly detailed, typical of late C16 and early C17 supported by plain and possibly earlier

[2] i.e. a landscape where evolutionary processes came to an end at some time in the past with some distinguishing features still visible in material form.

brackets which are integral to the structure of the bay; first floor chamber [main range] intact oriel window of high quality. Traces of opposing window opening on south-facing elevation at head of passage.

1.7 This suggests a primary and secondary axis in the layout of the building emphasised by the surviving and evidential oriel windows facing north and south respectively from the first floor chamber of the principal range.

Setting

1.8 Elements of setting likely to be considered important in contributing to significance:

i. The building being constructed on a medieval site associated with Sele Priory, bounded by moats or ponds. The farmhouse is presently enclosed to the north-west and east by an enclosing tree belt and a series of ditches or ponds and approached from the east by a small brick bridge which crosses the pond or moat. The ponds are stone-lined and latterly used for watering farm horses and cattle. A former earth closet remains standing to the west of the house and a wall and hedge line to the west and south of the house indicating the extent of the historic enclosure.

ii. Associated with the principal listed building are a series of traditional C18 to C20 farm buildings together with modern farm buildings lying to the south east of the house (predominantly of utilitarian appearance), outside the area enclosed by ponds and ditches.

iii. The listed building is noted to be set within a wider relict medieval landscape although the nature and extent of its survival today is varied.

1.9 The listed building enjoys a series of elements of setting from its immediate surroundings comprising the possible moated enclosure, to the intermediate with the associated farmyard, to its wider surroundings comprising the wider landscape.

1.10 An extensive tree belt encompasses the immediate setting of the listed building such that there is limited inter-visbility with the surrounding landscape in an arc from the west to the north.

1.11 Whilst mention is made of the surviving relict medieval landscape associated with the listed building, account must also be taken of change over time. For example, the bisecting of this landscape by the railway in the C19th now provides an important public right of way allowing experience and appreciation of the wider landscape of the area. The wider landscape within which Great House Farmhouse sits also continues to change with implementation of housing development to the west of Worthing Road and immediately east of the farm.

1.12 Taken together these points suggest broad principles that could be taken into account in prescribing parameters for the location of new built form within the setting of the listed building.

2. Principles

Guiding principles

2.1 On the basis of assessment of the overarching aspects of special interest of the listed building and elements of setting likely to contribute to its significance the following principles are suggested in guiding the location of development within its surroundings:

- Conservation of the immediate 'enclosure' element of setting to the listed building – historically important and largely legible today.
- Conservation of the associated farm yard and traditional buildings that contribute to significance with the potential removal of modern utilitarian structures.
- Conservation of key elements of wider setting that contribute to significance
  - areas to the north and south of the listed building based upon its orientation and features, retained as open land.
  - visual relationship across open land to Courtland Wood - a legible historic landscape feature, and other parts of the medieval fieldscape retained.
  - continued and improved (including through potential removal of utilitarian buildings) visual relationship across fields to south and thereby key public route of the Downs Link.

2.2 Illustration of these considerations is provided at Appendix 1

Site allocation capacity

2.3 The draft Neighbourhood Plan allocation extends to an area of approximately 54 acres. The application of the principles set out in paragraph 2.1 through the design process is likely to result in the retention of approximately 20 acres of open land within the allocated area. The remaining area of land would be available for development and could accommodate the level of development proposed in the draft Neighbourhood Plan assuming a style and density of development which is comparable to the neighbouring Broadacres development.

Policy wording

2.4 In light of the above principles it is suggested that policy to inform the location of residential development in the surroundings of the listed building should refer to the following matters:

In order to conserve elements of setting that contribute to the significance of the listed building, development of the site for the allocated purposes should comprise and allow for the following:

- ***Parcels of land to the north and south of the listed building retained as open land;***

- ***An visual inter-relationship with Courtland Wood and other parts of the medieval fieldscape between is maintained together with key landscape features; and,***

- ***A considered approach to edges of built form likely to be seen from and in association with the listed building.***

The extent, location and form of built development within the allocated area will be determined at the application stage when the impact of development on these elements should be assessed through a Heritage Impact Assessment.

Summary

2.5 In summary the proposed extent of the allocated area is capable of accommodating residential development as proposed in the draft Neighbourhood Plan while conserving elements of setting that contribute to heritage significance if all of the allocated area is not used for built development. The actual extent of built development within the allocated area should be considered in more detail at application stage through the preparation of a detailed heritage impact assessment taking account of the guiding principles set out above in the suggested policy wording.

Appendix 1: Setting Considerations

Existing tree belts / woodland

Views

Historic fieldscape / hedge enclosure

Landscape buffer

CLIENT **Berkeley Strategic**

PROJECT **Southwater, Horsham**

DRAWING: **Heritage Design Principles**

PROJECT NO.	STATUS	
BERH3008	Draft	
DRAWING NO.	SCALE	
101	NTS @ A4	
REVISION	DATE	CHECKED BY
01	February 2019	RM

Turley

Turley Office
8th Floor
Lacon House
84 Theobald's Road
London
WC1X 8NL

T 020 7851 4010

10

Email dated 15/02/2019 and preceding email chain with Horsham District Council.

Andrew Metcalfe

From: Sean.Rix[redacted]
Sent: 15 February 2019 10:05
To: Andrew Metcalfe
Cc: Norman.Kwan; Catherine Private
Subject: RE: Southwater N.Plan - Great House Farmhouse

Thanks Andrew. I am content with this wording to be included within the policy.

Regards,
Seán

Seán Rix
Senior Conservation Officer

[redacted]

Horsham District Council, Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone: 01403 215100 (calls may be recorded) www.horsham.gov.uk Chief Executive: Glen Chipp

From: Andrew Metcalfe[redacted]
Sent: 15 February 2019 09:42
To: Sean.Rix[redacted]
Cc: Norman.Kwan[redacted]
Subject: RE: Southwater N.Plan - Great House Farmhouse

Morning Sean,

Yes happy with your tweaked wording – it's just naming a document to be submitted that causes problems. Asking for an appropriate assessment as you suggest should be fine.

Accordingly I propose the following be included in the policy:

> *The extent, location and form of built development must be carefully considered, following completion of an appropriate assessment, and conserve elements of setting that contribute to the significance of Great House Farmhouse (a Grade II* Listed Building). In particular, any proposed development should allow for:*
> *• Parcels of land to the north and south of the listed building retained as open land;*
> *• An visual inter-relationship with Courtland Wood and other parts of the medieval fieldscape between is maintained together with key landscape features; and,*
> *• A considered approach to edges of built form likely to be seen from and in association with the listed building.*

Please can you confirm whether you are content with this wording?

Kind regards,

Andrew Metcalfe

Senior Planner @ Enplan
01892 545460 | www.enplan.net

From: Sean.Rix [redacted]
Sent: 15 February 2019 09:36
To: Andrew Metcalfe [redacted]
Cc: Norman.Kwan [redacted] Catherine Private [redacted]
Subject: RE: Southwater N.Plan - Great House Farmhouse

Thank you Andrew. I will defer to Norman for a view on the intricacies of policy wording and evidence bases. But surely an appropriate level of assessment can be referred to, for instance;

> *The extent, location and form of built development must be carefully considered, following completion of an appropriate assessment, and conserve elements of setting that contribute to the significance of Great House Farmhouse (a Grade II* Listed Building) central to any design.*

I draw attention to the request from Alan Byrne who suggested in an email to you, a similar reference;

> Secondly, would it be possible to add part of paragraph 2.3 relating to "the preparation of a detailed heritage impact assessment taking account of the guiding principles set out above" at application stage as an additional bullet point (preferable) to the revised policy, or at least as supporting text? This will ensure that such an assessment will form part of the planning of the housing site.

Regards,
Seán

Seán Rix
Senior Conservation Officer

[redacted]

From: Andrew Metcalfe <[redacted]
Sent: 14 February 2019 16:46
To: Sean.Rix [redacted]
Cc: Norman.Kwan [redacted]
Subject: RE: Southwater N.Plan - Great House Farmhouse
Importance: High

Sean,

Thank you for your email.

We will integrate the spirit of para 2.4 into the final policy, however - please see the below:

(i) Whilst I understand the reasoning for the request, I do not think it appropriate to include the illustration within the Neighbourhood Plan itself. Such plans are often removed by Independent Examiners at Examination as they bear little resemblance to any final scheme. The policy wording

in this instance should be sufficient. The evidence that lead up to submission, including the Heritage Considerations report will be included within the evidence base and clearly referred to in policies supporting text in the plan.

(ii) With regard to the policy wording, the Neighbourhood Plan cannot require a document (such as a Heritage Impact Assessment) as this can only be done by HDC via the local validation list. For this scheme HDC require a Heritage Statement which would include a suitable HIA. I propose that the wording included in the policy reads as follows:

The extent, location and form of built development must be carefully considered and conserving elements of setting that contribute to the significance of Great House Farmhouse (a Grade II Listed Building) central to any design. As part of the design, any proposed development should allow for:*
• Parcels of land to the north and south of the listed building retained as open land;
• An visual inter-relationship with Courtland Wood and other parts of the medieval fieldscape between is maintained together with key landscape features; and,
• A considered approach to edges of built form likely to be seen from and in association with the listed building.

Please can you confirm whether you would object to the above proposed wording.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Sean.Rix[redacted]
Sent: 14 February 2019 11:14
To: Jonathan Lambert[redacted]>; Andrew Metcalfe <[redacted]
Cc: Norman.Kwan[redacted]
'Roger Mascall'[redacted]
Subject: RE: Southwater N.Plan - Great House Farmhouse

Dear Jon,

Thank you for the report. I am satisfied with the conclusions, illustration and suggestion for the policy wording to refer to the points described in paragraph 2.4.

Andrew, can I assume the suggestion in paragraph 2.4 is acceptable and these points, including the final paragraph referring to a H.I.A,. and accompanying illustration will be referred to in the policy? If this is the case I confirm I will raise no objection in principle to policy SNP2.

Regards,
Seán

Seán Rix
Senior Conservation Officer

[redacted]

Horsham District Council, Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone: 01403 215100 (calls may be recorded) www.horsham.gov.uk Chief Executive: Glen Chipp

From: Jonathan Lambert [redacted]
Sent: 12 February 2019 15:11
To: 'Andrew Metcalfe' [redacted] Sean.Rix [redacted]
Cc: Norman.Kwan [redacted]
'Roger Mascall [redacted]
Subject: RE: Southwater N.Plan - Great House Farmhouse

Andrew / Sean

Further to our site meeting last Wednesday, please find attached an updated version of the Review of Principal Heritage Considerations report that was previously issued to you in December 2018.

This has been updated to include a section dealing with the capacity of the site to accommodate development having regard to the design principles identified, a plan showing these design principles and a suggested amended policy wording.

We believe that this demonstrates that for the purposes of supporting the Neighbourhood Plan allocation, due regard has been given to the setting of the listed building in determining the capacity of the site to accommodate development.

I hope that this provides you with the further information that you require. Please do not hesitate to contact me if you have any questions.

Kind regards

Jon Lambert
Planning Director

Berkeley Strategic Land Limited

[redacted]

www.berkeleygroup.co.uk

From: Andrew Metcalfe [redacted]
Sent: 18 January 2019 15:37
To: Jonathan Lambert [redacted]
Cc: Sean.Rix [redacted] Norman.Kwan [redacted]
Subject: [EXTERNAL] Southwater N.Plan - Great House Farmhouse

Jon,

Following out conversation I have spoken with Norman at HDC. The outcome of that discussion is that we believe it best if you liaise directly with Sean (Conservation Officer) at HDC to ensure that you produce exactly what he is expecting to see.

To ensure all concerned have had sight of the various responses received to date I attach the responses to the Turley report from Historic England, HDC and WSCC.

I would appreciate it if you kept me copied in on any emails etc. and, as with the viability work, if a meeting were to be arranged I may wish to attend to keep up to speed on things.

Trust this ok with you. Hopefully it will ensure that no abortive work is completed and material can be produced that satisfies the concerns of the LPA with regard to the proposed Southwater N.Plan allocation.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Norman.Kwan [redacted]
Sent: 18 January 2019 15:30
To: Andrew Metcalfe [redacted]
Cc: Sean.Rix [redacted]
Subject: Great House Farmhouse

Hello Andrew,

I've spoken with Sean following our brief chat. We're both happy for Berkeley to contact Sean directly to discuss the masterplan approach. I've attached his contact details below. Regards,

Seán Rix
Senior Conservation Officer

[redacted]

Norman Kwan
Senior Neighbourhood Planning Officer

[redacted]

Horsham District Council, Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone: 01403 215100 (calls may be recorded) www.horsham.gov.uk Chief Executive: Glen Chipp

11

Email dated 04/12/2018 to Berkeley Strategic requesting a Strategic Highway Assessment.

Andrew Metcalfe

From: Andrew Metcalfe
Sent: 05 December 2018 11:23
To: [redacted]
Cc: Catherine Tobin (Private); Graham Watkins[redacted]
Subject: RE: Southwater
Attachments: 53 - Historic England.pdf

Jonathan,

Please find attached the representations, or extracts from representations from Historic England, WSCC and HDC for your information.

Specifically the comments relate to the need for:

1. A Strategic Transport Assessment
2. A Heritage Impact Assessment

After considering this at the Steering Group meeting last night it was considered that the plan must have these pieces of evidence in place and that they demonstrate the proposed allocation can come forward in an acceptable way.

As you know timing we are on course to submit the plan to HDC on 24 January 2018. For this to occur much of January will be used to progress the plan through the Parish Council's internal democratic sign off processes, we therefore need to have all evidence prior to Christmas at the very latest, ideally no later than 14 December.

I trust you will be able to assist in providing the required information, as always if you have any queries please do not hesitate to contact me.

Kind regards,

Andrew Metcalfe
Senior Planner | MPlan(Hons) MRTPI

enplan incorporating vista

Enplan, 10 Upper Grosvenor Road, Tunbridge Wells, Kent TN1 2EP
Offices also at Milton Keynes

[redacted]

From: Jonathan Lambert [redacted]
Sent: 05 December 2018 10:24
To: Andrew Metcalfe [redacted]
Subject: Southwater

Andrew

Further to our telephone conversation least week, are you in a position yet to share the Historic England representation with me?

Kind regards

Jon

Jon Lambert
Planning Director

Berkeley Strategic
Berkeley Strategic Land Limited

[redacted]

www.berkeleygroup.co.uk

12

WSP Neighbourhood Plan Highway Capacity Assessment received from Berkeley Strategic on 21/12/2018.

Berkeley Strategic

LAND WEST OF WORTHING ROAD. SOUTHWATER

Neighbourhood Plan Highway Capacity Assessment

Berkeley Strategic

LAND WEST OF WORTHING ROAD. SOUTHWATER

Neighbourhood Plan Highway Capacity Assessment

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70016993

DATE: DECEMBER 2018

Berkeley Strategic

LAND WEST OF WORTHING ROAD. SOUTHWATER

Neighbourhood Plan Highway Capacity Assessment

WSP

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WSP.com

QUALITY CONTROL

Issue/revision	1st Draft	Final	Revision 1	Revision 2
Remarks				
Date	18.12.18	20.12.18		
Prepared by	Adam Coleman	Adam Coleman		
Signature				
Checked by	Allan Norcutt	Allan Norcutt		
Signature				
Authorised by	Allan Norcutt	Allan Norcutt		
Signature				
Project number	70016993	70016993		
Report number				
File reference				

CONTENTS

TABLES

1. INTRODUCTION

1.1. BACKGROUND

1.1.1. WSP has been commissioned by Berkeley Strategic to assess the highway impacts of the development of land to the west of Worthing Road, Southwater for circa. 450 homes as is proposed in the draft Southwater Neighbourhood Plan published in September 2018.

1.1.2. The proposed neighbourhood plan development is located to the north and west of the existing Broadacres development which received planning consent for 540 dwellings and 54 Retirement Living dwellings and is currently under construction, with 39 dwellings occupied as of October 2018.

1.1.3. The main access to the Broadacres development is via a four-arm roundabout with Worthing Road / Cedar Drive (the design for which is shown on Drawing Number 0398/SK/07), with a secondary access provided via a simple priority controlled junction just south of the Cedar Drive roundabout.

1.1.4. In order to accommodate the Broadacres development there was an obligation for improvements to be delivered at the A24 Hop Oast Roundabout, which principally related to a free-flow left turn lane from Worthing Road on to the A24. These improvements were delivered in the late summer of 2018, resulting in the layout illustrated on Drawing Number 0398/SK/014.

1.1.5. It is proposed that the Neighbourhood plan development is accessed via the existing Broadacres development spine road via the two existing access points on Worthing Road.

1.1.6. It should be noted that all the assumptions and methodologies adopted within this note have not been discussed or agreed with West Sussex County Council.

1.2. REPORT STRUCTURE

1.2.1. The structure of this report is as follows:

- Chapter 2 - Baseline Traffic Flows: Detail is provided on how the baseline flows have been derived;
- Chapter 3 - Development Trip Generation: Detail is provided on how the trip generation for the development has been derived;
- Chapter 4 - Assessment of Site Access Junctions;
- Chapter 5 - Assessment of Off-Site Junctions; and
- Chapter 6 - Summary and Conclusions.

2. BASELINE TRAFFIC FLOWS

2.1. 2018 OBSERVED FLOWS

2.1.1. The following junctions were surveyed after completion of the improvement works to Hop Oast roundabout which are referred to in Chapter 1:

- Hop Oast Roundabout (A24/Worthing Road)
- A24 / Mill Straight Pollards Hill Roundabout
- Worthing Road / Cedar Drive Roundabout
- Worthing Road site access (priority junction)
- Worthing Road / Fairbank Road Signal Junction
- A272 / A24 / Cowfold Road signal controlled junction

2.1.2. These surveys were undertaken on Tuesday 9 October 2018 between the periods 07:00 to 10:00 and 16:00 to 19:00 and the locations of the junctions are illustrated on **Figure 1**.

2.1.3. Analysis of the survey data identified the AM and PM peak hours to be:

- 07:30 to 08:30 for the A24 Corridor
- 08:00 to 09:00 for the Worthing Road Corridor
- 17:00 to 18:00 for both the A24 and Worthing Road Corridors.

2.1.4. The difference between the 07:30 to 08:30 and 08:00 to 09:00 flows are only small (for example, the total flows at the Hop Oast junction are 3,410 as compared to 3,290). Therefore, all the AM peak hour tests have been completed using the 08:00 to 09:00 flows as this is when the development would be generating the highest volume of trips.

2.2. TRAFFIC GROWTH

2.2.1. The Tempro Database (Version 7.2) has been interrogated to derive baseline traffic growth factors from the base year of 2018 to a future year of 2036. The trip rates that were derived for the Horsham 009 output area, within which the site and Southwater is located, are summarised in the following table:

Table 1 - Growth Rates, 2018 to 2036 (Tempro 7.2, Horsham 009)

Period	Trunk Roads	Principal Roads	Minor Roads	All Roads
AM Peak	1.1632	1.1529	1.1614	1.1581
PM Peak	1.1729	1.1626	1.1711	1.1678

2.2.2. As will be discussed in the following chapter, the 540 consented dwellings at the Broadacres development are expected to generate two-way movements of 300 and 271 vehicles during the AM and PM peak periods respectively which is based on updated trip rates as compared to the 2014 Transport Assessment associated with the consented Broadacres development. This represents a

30% and 24% growth to the existing two-way flows along Worthing Road in the vicinity of the Cedar Drive site access.

2.2.3. It can therefore be seen that the consented Broadacres development already accounts for growth forecasts to 2036, even before one considers demand from additional dwellings at the site, as it is unlikely that any other significant growth beyond this would occur along the Worthing Road corridor itself. Therefore, no additional background growth to the Worthing Road corridor flows has been applied.

2.2.4. Similarly, it is considered that the development would contribute growth along the A24 corridor and consequently the full Tempro growth of circa 17% may not be realised, and could be as low as 5%. However, for robustness, assessments of growth along the A24 corridor using both 5% and 17% has been undertaken.

2.3. THE CONSENTED BROADACRES DEVELOPMENT TRIPS

2.3.1. The Broadacres development received planning permission for the development of 540 dwellings and 54 Retirement Living dwellings.

2.3.2. At the time of the traffic surveys 39 dwellings were occupied and therefore the trip generation from the remaining dwellings needed to be accounted for. However, it was apparent from the surveys that there are large numbers of construction trips travelling to and from the site which would skew the level of traffic associated with the 39 dwellings.

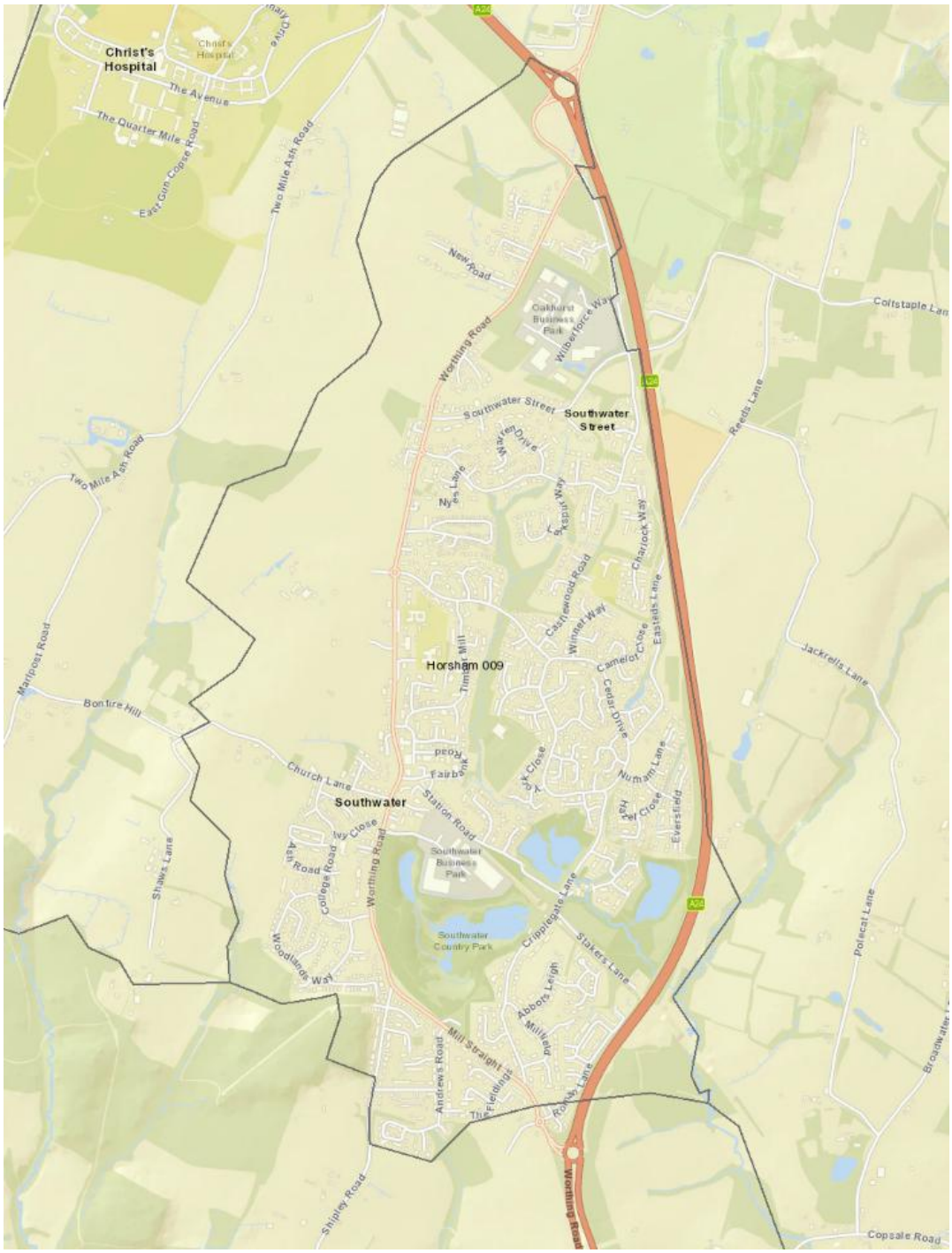
2.3.3. As construction vehicles are also accessing the site, and cannot be differentiated from the residential trips, all traffic travelling to and from the site has been removed from the site access junction and replaced with the TRICS trip generation forecasts for the full 540 dwellings.

2.3.4. It has been assumed that the 54 Retirement Living dwellings do not generate trips during the peak periods or if they do the numbers are very low and relatively localised. A review of sites within the 'Retirement Flats' category of the TRICS database identified two-way trip rates of 0.108 and 0.087 during the AM and PM peak hours respectively which means that the 54 dwellings would generate in the region of six two-way trips during the peak hours; i.e. an immaterial volume particularly when one considers that the majority would most likely be local trips, for example, trips to local shops.

2.4. TRIP ASSIGNMENT

RESIDENTIAL TRIPS

2.4.1. The assignment of residential trips from the development has been based on Journey to Work data from the 2011 Census for the Horsham 009 Middle Super Output Area (MSOA. As illustrated below, the Horsham 009 MSOA covers Southwater. This assignment has been applied to all trips.



2.4.2. The resultant assignment of residential trips is summarised in the following table and illustrated on **Figure 2**.

Table 2 - Development Trip Assignment (Residential)

Route No.	Route Description	Proportion
1	Worthing Road (N) / Horsham	24%
2	A24 (E) / Crawley	24%
3	A24 (W) / Warnham	19%
4	A264 / Broadbridge Heath	7%
5	A272 (W)	5%
6	A24 (S)	7%
7	A272 (E)	8%
8	Southwater Street	6%
Total		**100%**

3. TRIP GENERATION

3.1. INTRODUCTION

3.1.1. This chapter provides detail on how the trip generation forecasts for the development have been derived.

3.2. RESIDENTIAL ELEMENT

3.2.1. The TRICS Database (Version 7.5.3) had been interrogated to derive rates for the residential element. The 'Houses, Privately Owned' section of the database was reviewed, with the following site characteristics selected:

- All UK sites (excluding Northern Ireland and Greater London were selected) with a dwelling range of between 200 and 2,000 dwellings located in Suburban and Edge of Town locations.
- Population within 5 miles of the development sites between 50,000 and 100,000 and between 5,000 to 15,000 within 1 mile.

3.2.2. The rates that were derived from the search are provided in the following table, along with the volume of trips that would be generated by the consented 540 dwellings plus the circa. 450 homes proposed in the draft Southwater Neighbourhood Plan (for ease of assessment this has been rounded to a total of 1,000 dwellings).

Table 3 - Residential Trip Rates & Generation

Period	Trip Rates (per dwelling)			Trip Generation (1,000 dwellings)		
	Arrival	Departure	Total	Arrival	Departure	Total
AM (0800-0900)	0.144	0.411	0.555	144	411	555
PM (1700-1800)	0.345	0.157	0.502	345	157	502

3.2.3. The above rates are considered appropriate and should be robust in that:

- The 'Private Housing' sub-land use has been used rather than the 'Mixed Private and Affordable Housing' category; and
- A number of sites included within the TRICS analysis would not have a Travel Plan in place

3.2.4. As a cross-check to the above a search of all sites within the 'Private Housing' sub-land use that are located within West Sussex has been undertaken. This identified five sites which collectively generated AM and PM peak two-way trip rates of 0.552 and 0.496 respectively which are comparative to the values presented above. Consequently, it is considered that the trip rates used in Table 3 represent a good basis for the analysis.

3.2.5. It should be noted that these trip rates, and the distribution outlined in Chapter 2, has been applied across the board, including the consented Broadacres development. The trip rates shown in Table 3 are lower than those which were used in the planning application for the consented Broadacres development but reflect data which is within the latest version of the TRICS database, thereby including more recently completed developments, etc. which are therefore likely to be more

reflective of the development once it is built out. Once the proposals proceed to application stage, and depending on the scale of the Broadacres development which has been built out at that time, additional surveys of the site access and thus site-specific trip rates could be determined and compared with those outlined above.

4. ASSESSMENT OF SITE ACCESS JUNCTIONS

4.1. INTRODUCTION

4.1.1. This chapter assesses the operation of the existing Broadacres development and identifies the number of additional dwellings that could potentially be accommodated within the Neighbourhood Plan allocation without further site accesses being required.

4.1.2. The Worthing Road / Cedar Drive site access roundabout and the secondary site access junction immediately to the south of the site have been modelled in the Junction 9 software using the observed traffic flows, with the results presented below for a number of scenarios.

4.2. 2018 ASSESSMENT (OBSERVED FLOWS)

4.2.1. The operation of the two site access junctions in the existing situation based on the surveys undertaken in October 2018 are set out below.

Table 4 - Worthing Road / Cedar Drive / Site Access Roundabout: 2018 Baseline

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (N)	0.29	0	0.62	2
Cedar Drive	0.40	1	0.17	0
Worthing Road (S)	0.43	1	0.39	1
Site Access	0.04	0	0.03	0

Table 5 - Worthing Road Secondary Site Access: 2018 Baseline

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (S)	0.00	0	0.00	0
Site Access	0.02	0	0.00	0

4.2.2. The results presented above are representative of the existing operation of the junctions based on the queue length surveys that were completed at the same time as the traffic count surveys.

4.3. 2036 BASELINE ASSESSMENTS (INCLUDING CONSENTED 540 DWELLINGS)

4.3.1. As previously discussed, it is considered that the trips that are forecast to be generated by the proposed Broadacres development will account for the level of future year growth to 2036, and therefore no additional background growth has been added to the observed year 2018 flows.

4.3.2. It should be noted that the junction assessments have been completed using the 'one-hour profile' scenario within Junctions 9, which means that the traffic flow volumes peak during the central period of the assessment. In reality, by 2036 the flow profile would be expected to have levelled out throughout the peak hour to account for wider traffic movements and congestion across the much wider highway network, resulting in 'peak spreading' (i.e. people starting their journey earlier or later). The use of the 'one-hour profile' means that an added element of robustness is added to the assessments and counters the fact that no additional background growth has been added to the Worthing Road corridor.

4.3.3. The Worthing Road / Cedar Drive site access roundabout and the secondary site access junction have been assessed with the year 2036 baseline flows, which includes the 540 dwellings from the Broadacres development, and the results are presented in the following tables. These are based on a peak profile.

Table 6 - Worthing Road / Cedar Drive / Site Access Roundabout: 2036 Baseline (Includes Consented 540 Dwellings)

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (N)	0.33	1	0.73	3
Cedar Drive	0.41	1	0.19	0
Worthing Road (S)	0.47	1	0.42	1
Site Access	0.21	0	0.07	0

Table 7 - Worthing Road Secondary Site Access: 2036 Baseline (Includes Consented 540 Dwellings)

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Site Access	0.19	0	0.08	0
Worthing Road (N)	0.03	0	0.09	0

4.4. 2036 DEVELOPMENT ASSESSMENTS

4.4.1. A series of tests have been completed to understand the total number of dwellings that could potentially be accommodated by the existing site access arrangements.

4.4.2. For these tests, the following has been assumed:

- For trips that route via the north, 75% would use the Cedar Drive Roundabout and 25% the secondary priority access; and
- For trips that route via the south, 25% would use the Cedar Drive Roundabout and 75% the secondary priority access.

4.4.3. The tests demonstrate that a total of 1,000 dwellings (540 dwellings within the Broadacres development plus up to 460 additional dwellings within the proposed Neighbourhood Plan allocation) could potentially be accommodated via the existing site access arrangements without exceeding a maximum Ratio of Flow to Capacity (RFC) value of 0.85. This assumes that the local authority accept that two accesses are sufficient to serve 1,000 dwellings which we see no reason why they would not.

4.4.4. The results of the assessment are summarised in the following tables and are based on a peaked profile.

Table 8 - Worthing Road / Cedar Drive / Site Access Roundabout: 2036 with 1,000 Dwellings

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (N)	0.38	1	0.84	5
Cedar Drive	0.43	1	0.22	0
Worthing Road (S)	0.53	1	0.47	1
Site Access	0.40	1	0.13	0

Table 9 - Worthing Road Secondary Site Access: 2036 with 1,000 Dwellings

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Site Access	0.36	1	0.14	0
Worthing Road (N)	0.06	0	0.17	0

4.4.5. The results of the assessment show that the Cedar Drive roundabout is the limiting factor in accommodating any additional dwellings, albeit may be possible to reach agreement to an RFC up to 0.90 subject to discussions with the local authority. It is therefore considered that there would be no benefit in modifying the secondary priority controlled access arrangement to provide additional capacity.

4.4.6. Having said this, it may be possible for more capacity to be made available at the Cedar Drive roundabout junction if peak-spreading is realised, resulting in a flatter profile of movements through the peak hour. Similarly, improvements may be possible at this junction to again accommodate further development.

4.4.7. The following table summarises the operation of the Cedar Drive roundabout in 2036 if a flat arrival profile is assumed.

Table 10 - Worthing Road / Cedar Drive / Site Access Roundabout: 2036 with 1,000 Dwellings. Flat Arrival Profile

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (N)	0.34	1	0.76	3
Cedar Drive	0.38	1	0.19	1
Worthing Road (S)	0.47	1	0.42	1
Site Access	0.34	1	0.11	1

4.4.8. By comparing the results presented in Tables 8 and 10 it can be seen that the improvement in junction operation through the use of applying a flat arrival profile is that the RFC decreases from a maximum of 0.53 to 0.47 during the AM peak period and from 0.84 to 0.76 during the PM peak period. If this is realised then it may be possible to provide some additional dwellings although it is recommended to retain some flexibility in the operation of the junction to account for any nuances in the analysis, such as the proportion of trips to / from the south using this access, etc. This approach would of course have to be discussed with WSCC.

4.4.9. Whilst the existing accesses could theoretically accommodate up to 1,000 dwellings an assessment of the wider highway network is required in order to understand whether this level of development triggers the need for any off-site highway improvements and this is covered within the following chapter.

5. ASSESSMENT OF OFF-SITE JUNCTIONS

5.1. INTRODUCTION

5.1.1. Based on the findings set out in Chapter 4, which is that 1,000 dwellings can be accommodated via the two existing site accesses on Worthing Road, an assessment of the impact on the wider highway network has been undertaken and is set out below for the following key junctions:

- Worthing Road / Fairbank Road Signal Junction;
- A24 Hop Oast Roundabout;
- A24 / Mill Straight / Pollards Hill Roundabout; and
- A272 / A24 / Cowfold Road signal controlled junction

5.1.2. Taking each of these in turn.

5.2. WORTHING ROAD / FAIRBANK ROAD

5.2.1. The existing Worthing Road / Fairbank Road signalised junction has been assessed for 1,000 dwellings with the results summarised below. As with the other assessments of the Worthing Road corridor no growth has been applied to the background traffic flows on the basis that this is realised as a result of the development itself.

Table 11 - Worthing Road / Fairbank Road Signal Junction: 2036 with 1,000 dwellings

Arm	AM		PM	
	Degree of Saturation	Mean Max Queue	Degree of Saturation	Mean Max Queue
Worthing Road (N)	50.5%	7	77.4%	9
Fairbank Road	49.1%	4	78.0%	7
Worthing Road (S)	56.3%	8	72.7%	8
PRC	**59.9%**		**15.3%**	

5.2.2. It can be seen from the above that the existing Worthing Road / Fairbank Road signalised junction operates within its theoretical operational capacity in 2036 when subjected to the demand from 1,000 dwellings.

5.3. HOP OAST JUNCTION

5.3.1. As a starting point an assessment has been undertaken of the existing Hop Oast Roundabout (as reconfigured in the late summer of 2018) to determine the number of dwellings that it could theoretically accommodate before further mitigation measures are necessary.

5.3.2. As previously discussed, the development itself would represent a level of the Tempro growth predicted to occur between 2018 and 2036. Therefore, only a limited level of background growth has been applied to the observed flows, with a 5% factor applied to the through flows on the A24, with no additional growth applied to the trips that route via the Worthing Road corridor. However, a sensitivity

test applying 17% growth to flows along the A24 corridor has also been undertaken to account for the potential for greater levels of growth to be realised.

EXISTING HOP OAST JUNCTION

5.3.3. The existing Hop Oast Roundabout arrangement (as reconfigured in the late summer of 2018) has been assessed with the development trips from the 540 Broadacres development dwellings (based on the trip rates presented in this report) and the results are set out in the following tables, with the first two tables summarising the test for 2018 (i.e. no growth applied to the A24 through flows) for the peaked and flat arrival scenarios and the second set of tables for 2036 with 5% growth applied to the A24 corridor for the peaked and flat arrival profiles.

Table 12 - Hop Oast Roundabout: 2018 Development (540 Dwellings) – Peaked Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.31	1	1.01	22
A24 (S)	0.86	7	0.61	2
Worthing Road	0.34	1	0.23	1
A24 (N)	0.62	2	0.81	5

Table 13 - Hop Oast Roundabout: 2018 Development (540 Dwellings) – Flat Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.26	1	0.80	4
A24 (S)	0.77	4	0.54	2
Worthing Road	0.28	1	0.20	1
A24 (N)	0.54	2	0.72	3

Table 14 - Hop Oast Roundabout: 2036 Development (540 Dwellings) – 5% background growth applied to A24 through-flows. Peaked Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.31	1	1.07	36
A24 (S)	0.89	8	0.63	2
Worthing Road	0.35	1	0.23	1
A24 (N)	0.64	2	0.84	6

Table 15 - Hop Oast Roundabout: 2036 Development (540 Dwellings) – 5% background growth applied to A24 through-flows. Flat Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.27	1	0.83	5
A24 (S)	0.80	4	0.56	2
Worthing Road	0.29	1	0.20	1
A24 (N)	0.56	2	0.75	4

5.3.4. The results presented above show how, with a flat arrival profile, the junction is forecast to be operating close to capacity with the 540 dwellings in place with a maximum RFC value of 0.83 experienced on the B237 Worthing Road approach. However, whilst not presented here it is considered that if 17% growth were realised on the A24 approaches then the RFC on this arm could increase to 0.9 or more in the evening peak hour given that it has to give-way to more traffic on the roundabout. As a result, because of this, and the potential impacts if a peaked profile is realised on this strategic part of the highway network, it is considered that further improvements are likely to be necessary at Hop Oast Roundabout to accommodate additional dwellings at Southwater.

5.3.5. An assessment of what improvements may be necessary at Hop Oast Roundabout to accommodate 1,000 dwellings in total has therefore been undertaken and is presented below.

HOP OAST ROUNDABOUT IMPROVEMENTS

5.3.6. As set out in Chapter 4, the two existing site accesses on Worthing Road could accommodate up to 1,000 dwellings (including the consented Broadacres development of 540 dwellings). However, as set out above there is very limited spare capacity available at Hop Oast Roundabout to accommodate the demand which would be generated by the additional 460 dwellings associated with the potential Neighbourhood Plan allocation. An assessment has therefore been undertaken to establish what improvements are likely to be necessary at Hop Oast Roundabout to accommodate that demand.

5.3.7. A scheme has been identified which allows for widening of the entry of the northern arm to the roundabout such that a flare forming a third lane down to the give-way line at the roundabout is created, providing additional storage space for circa six Passenger Car Units (PCUs) in length. In order to achieve this the central island on this arm has been cut back. To facilitate this and ensure that the alignment of the revised approach lines up with the circulatory carriageway, the central roundabout island is also cut back. This arrangement is shown on Drawing Number 70016993/SK-01 Rev B.

5.3.8. The results of the analysis undertaken for this layout are presented in the following tables, for both the 5% and 17% growth scenarios applied to A24 flows with a both a flat and peaked arrival profile.

Table 16 - Hop Oast Roundabout: 2036 with 1,000 Dwellings – 5% background growth applied to A24 through-flows. Peaked Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.28	1	0.97	16
A24 (S)	0.88	7	0.65	2
Worthing Road	0.48	1	0.28	1
A24 (N)	0.67	2	0.88	8

Table 17 - Hop Oast Roundabout: 2036 with 1,000 Dwellings – 5% background growth applied to A24 through-flows. Flat Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.24	1	0.76	4
A24 (S)	0.78	4	0.57	2
Worthing Road	0.40	1	0.25	1
A24 (N)	0.59	2	0.79	4

Table 18 - Hop Oast Roundabout: 2036 with 1,000 Dwellings – 17% background growth applied to A24 through-flows. Peaked Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.35	1	1.33	128
A24 (S)	1.02	46	0.73	3
Worthing Road	0.60	2	0.35	1
A24 (N)	0.80	4	1.02	48

Table 19 - Hop Oast Roundabout: 2036 with 1,000 Dwellings – 17% background growth applied to A24 through-flows. Flat Arrival

Arm	AM		PM	
	RFC	Queue	RFC	Queue
B237 Worthing Road	0.30	1	1.05	81
A24 (S)	0.91	10	0.67	2
Worthing Road	0.51	1	0.30	1
A24 (N)	0.70	3	0.91	10

5.3.9. The results presented above where 5% growth is applied to the A24 corridor show that the proposed improvements identified for the junction result in a nil-detriment (and actually slight betterment) position in 2036 when accommodating the demand from 1,000 dwellings when compared to the demand from the consented 540 dwellings in 2036 on the existing (as reconfigured in 2018) layout of the junction. Indeed, if a flat arrival profile can be agreed then the junction with the identified improvements is forecast to operate with RFC values below 0.85.

5.3.10. The results of how the existing roundabout would operate in 2036 with demand from the consented 540 dwellings and the application of 17% growth along the A24 corridor has not been presented above. However, based on the findings of applying 5% growth it is considered that whilst the results of the improvements show that the junction operates well over its theoretical capacity if 17% growth were realised on the A24 approaches, this would still represent nil-detriment (or again even slight betterment) to the situation which would otherwise arise by 2036 anyway.

5.3.11. This nil-detriment approach would of course need to be discussed and agreed with WSCC.

5.4. A24 / MILL STRAIGHT / POLLARDS HILL ROUNDABOUT

5.4.1. The existing A24 / Mill Straight / Pollards Hill roundabout arrangement has been assessed with the results summarised in the following tables. This represents a worst-case assessment as it is understood that there are some improvements proposed at this junction, which are discussed further below. Tables 20 and 22 assume 5% background growth to the A24 corridor flows, with Tables 21 and 23 assuming 17% background growth.

Table 20 - A24 / Mill Straight / Pollards Hill Roundabout: 2036 with 1,000 dwellings – 5% background growth applied to A24 through-flows.

Arm	AM		PM	
	RFC	Queue	RFC	Queue
A24 (N)	0.51	1	0.88	8
A24 (S)	0.76	4	0.61	2
Mill Straight	0.54	2	0.21	1

Table 21 - A24 / Mill Straight / Pollards Hill Roundabout: 2036 with 1,000 dwellings – 17% background growth applied to A24 through-flows.

Arm	AM		PM	
	RFC	Queue	RFC	Queue
A24 (N)	0.56	2	0.97	22
A24 (S)	0.84	6	0.66	2
Mill Straight	0.62	2	0.22	1

5.4.2. It can be seen from the above that with 1,000 dwellings the existing A24 / Mill Straight / Pollards Hill roundabout operates close to its theoretical operational capacity in 2036 with 5% growth applied to the A24 corridor, with the junction operating at its theoretical operational capacity with 17% growth applied.

5.4.3. However, it should be noted that these results are based on the unrealistic / worst-case assumption that there is a peaked traffic profile. Therefore, an assessment using a flat profile has been undertaken and is presented below.

Table 22 - A24 / Mill Straight / Pollards Hill Roundabout: 2036 with 1,000 dwellings – 5% background growth applied to A24 through-flows. Flat Profile

Arm	AM		PM	
	RFC	Queue	RFC	Queue
A24 (N)	0.46	1	0.80	4
A24 (S)	0.69	3	0.55	2
Mill Straight	0.45	1	0.18	1

Table 23 - A24 / Mill Straight / Pollards Hill Roundabout: 2036 with 1,000 dwellings – 17% background growth applied to A24 through-flows. Flat Profile

Arm	AM		PM	
	RFC	Queue	RFC	Queue
A24 (N)	0.50	1	0.88	8
A24 (S)	0.76	4	0.60	2
Mill Straight	0.50	1	0.19	1

5.4.4. The results presented above with a flat profile forecast that the junction will operate with RFC values of below 0.85 with the 5% growth scenario, with the maximum value slightly increasing with the 17% growth scenario, with an RFC of 0.88; i.e. still below 0.90.

5.4.5. It should be noted that the consented Broadacres development of 540 dwellings identified improvements to this roundabout, which included widening to the northbound and southbound approaches to this roundabout. These have not been assessed within this report but it can be seen from the results above that these improvements would reduce the RFCs and queues on those approaches and subsequently the impact from the additional 460 dwellings associated with the potential Neighbourhood Plan allocation should not trigger the need for any further improvements at this junction.

5.4.6. It is also worth noting that the proposed Wates development at Mill Straight (Planning Application Ref. DC/14/2582) is to provide a financial contribution of 50% towards widening of the northbound and southbound A24 approaches to the roundabout as set out within the S106 Agreement which accompanies that scheme.

5.5. A272 / A24 / COWFOLD ROAD JUNCTION (BUCK BARN)

5.5.1. The existing A272 / A24 / Cowfold Road signalised junction has been assessed with the results presented below. The junction is currently operating at practical capacity and the results of the following scenarios are presented below:

- 2018 Observed Flows;
- 2036 Baseline Flows;
- 2036 plus 540 dwellings; and
- 2036 plus 1,000 dwellings.

5.5.2. It should be noted that the future year tests include scenarios where background growth of 5% and 17% are applied to both the A24 and A272 corridor flows.

Table 24 – A24 Worthing Road / A272 Cowfold Road: 2018 Observed Flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	78.7%	11	93.9%	30
A272 Cowfold Rd (E)	71.8%	8	89.0%	15
A24 Worthing Rd (S)	79.2%	14	94.1%	18
A272 Cowfold Rd (W)	79.0%	9	91.3%	14
Practical Reserve Capacity	13.6%		-4.5%	

Table 25 – A24 Worthing Road / A272 Cowfold Road: 2036 Baseline Flows – 5% background growth applied to A24 through-flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	79.3%	12	97.8%	36
A272 Cowfold Rd (E)	71.8%	8	90.2%	17
A24 Worthing Rd (S)	81.8%	15	94.1%	24
A272 Cowfold Rd (W)	82.1%	10	94.8%	16
Practical Reserve Capacity	9.6%		-8.6%	

Table 26 – A24 Worthing Road / A272 Cowfold Road: 2036 Baseline Flows – 17% background growth applied to A24 through-flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	84.6%	14	103.6%	62
A272 Cowfold Rd (E)	69.2%	8	92.0%	18
A24 Worthing Rd (S)	88.3%	18	101.9%	25
A272 Cowfold Rd (W)	85.4%	11	103.0%	25
Practical Reserve Capacity	1.9%		-15.2%	

Table 27 – A24 Worthing Road / A272 Cowfold Road: 2036 Plus 540 dwellings – 5% background growth applied to A24 through-flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	80.3%	12	96.9%	35
A272 Cowfold Rd (E)	73.3%	9	90.2%	17
A24 Worthing Rd (S)	81.8%	15	97.9%	25
A272 Cowfold Rd (W)	82.1%	10	94.8%	16
Practical Reserve Capacity	9.6%		-8.7%	

Table 28 – A24 Worthing Road / A272 Cowfold Road: 2036 Plus 540 dwellings – 17% background growth applied to A24 through-flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	86.6%	14	105.9%	74
A272 Cowfold Rd (E)	70.5%	8	92.2%	18
A24 Worthing Rd (S)	88.3%	18	106.4%	32
A272 Cowfold Rd (W)	85.4%	11	103.0%	25
Practical Reserve Capacity	1.9%		-18.2%	

Table 29 – A24 Worthing Road / A272 Cowfold Road: 2036 with 1,000 dwellings – 5% background growth applied to A24 through-flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	81.3%	12	97.6%	35
A272 Cowfold Rd (E)	74.7%	9	90.2%	17
A24 Worthing Rd (S)	81.8%	14	94.1%	17
A272 Cowfold Rd (W)	82.1%	10	98.9%	19
Practical Reserve Capacity	9.6%		-9.9%	

Table 30 – A24 Worthing Road / A272 Cowfold Road: 2036 with 1,000 dwellings – 17% background growth applied to A24 through-flows

Arm	AM		PM	
	DoS	Queue	DoS	Queue
A24 Worthing Rd (N)	95.1%	16	110.4%	84
A272 Cowfold Rd (E)	86.6%	12	106.1%	81
A24 Worthing Rd (S)	92.3%	18	110.2%	41
A272 Cowfold Rd (W)	92.3%	14	106.6%	30
Practical Reserve Capacity	-5.6%		-22.7%	

5.5.3. A summary of the Practical Reserve Capacity values for each of the above scenarios is provided in the following table.

Table 31 – A24 Worthing Road / A272 Cowfold Road: PRC Summary

Scenario	PRC (%)	
	AM	PM
2018 Observed	13.6	-4.5
2036 Baseline - 5% Growth to A24 Corridor	9.6	-8.6
2036 Baseline - 17% Growth to A24 Corridor	1.9	-15.2
2036, 540 dwellings - 5% Growth to A24 Corridor	9.6	-8.7
2036, 540 dwellings - 17% Growth to A24 Corridor	1.9	-18.2
2036 with 1,000 dwellings - 5% Growth to A24 Corridor	9.6	-9.9
2036 with 1,000 dwellings - 17% Growth to A24 Corridor	-5.6	-22.7

5.5.4. From the results presented above it can be seen that the junction is forecast to be operating above its theoretical operational capacity in all scenarios, including current day. However, the impact of the Southwater development generated trips is not considered significant, particularly when one considers that the 540 dwellings have already been consented and this is the benchmark against which to assess the impact of introducing a further 460 dwellings associated with the potential Neighbourhood Plan allocation.

5.5.5. As an example, the introduction of an additional 460 dwellings associated with the potential Neighbourhood Plan allocation leads to the PM Peak PRC values deteriorating from -8.7% to -9.9% when 5% growth is applied to the A24 corridor and from -18.2% to -22.7% when 17% growth is applied to the A24 corridor.

5.5.6. Whilst the PRC does deteriorate with the introduction of development it should be noted that once the operational capacity of the junction is exceeded the PRC declines exponentially to the demand placed upon it. It is however considered that a financial contribution towards potential improvements at this junction may be appropriate to support the delivery of 1,000 dwellings; i.e. an additional 460 dwellings from those already consented as part of the Broadacres development.

5.5.7. It is worth noting that there were three measures identified within the current Horsham IDP to improve the operation of this junction; two related to the refurbishment of the signals and one related to the extension of the right-turn lane on the A24 northbound approach. However, WSCC has confirmed that the work related to the refurbishment of the signals has already been completed and this was for the replacement of the hardware and not to any measures / modifications to improve operation performance.

5.5.8. Furthermore, WSCC confirmed that the proposal to extend the length of the right turn lane has since been discounted as it offered no benefit, with this being confirmed through assessments completed by WSP.

6. SUMMARY AND CONCLUSIONS

6.1. SUMMARY

6.1.1. This report has considered how many additional dwellings could be delivered at the existing Southwater development via the existing site access arrangements and then assessed the impacts from that quantum of development at key junctions across the wider highway network.

6.1.2. The assumptions that have been made for the assessment work are considered robust. However, they would still need to be agreed with West Sussex County Council. For example:

- No background growth applied to the Worthing Road corridor flows, with the Southwater development trips already accounting for the forecast growth levels to 2036;
- 5% background growth applied to the A24 through flows but not the other movements;
- A sensitivity test of 17% background growth applied to the A24 through flows;
- Improvements previously identified at Pollards Hill Roundabout have not been accounted for;
- Agreement to the proposed trip generation assumptions;
- Retirement Living dwellings assumed to not generate trips during the peak periods;
- Agreement to the trip assignment assumptions which have been based on 2011 Census Data.

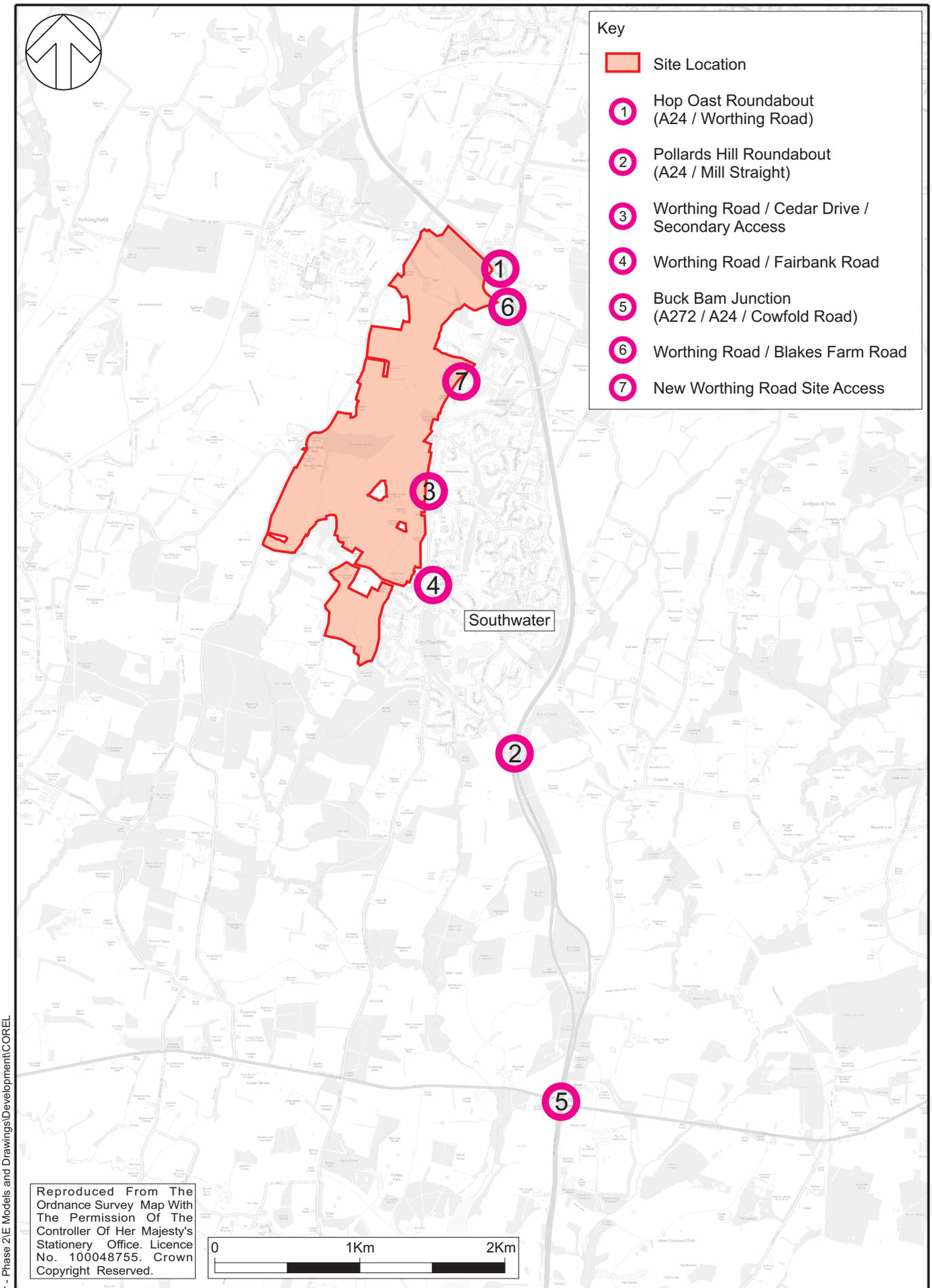
6.1.3. It should be noted that the assessments completed along the Worthing Road corridor have been completed with a peaked profile. In reality, and as indicated by the 2018 observed flows, the profile during 2036 would in all likelihood be flat and a number of assessments based on that have been undertaken and presented in this report.

6.1.4. It should be noted that all the assumptions and methodologies adopted within this note have not been discussed or agreed with West Sussex County Council.

6.2. CONCLUSIONS

6.2.1. The analysis set out in this report has concluded that up to 1,000 dwellings (including the 540 consented dwellings at the Broadacres development plus 460 additional dwellings within the Neighbourhood Plan allocation) could be delivered via the existing site access arrangements. However, there are some off-site mitigation measures which are likely to be required in order to facilitate the delivery of this level of development and these include:

- Improvements to the Hop Oast roundabout as illustrated on Drawing Number 70016993/SK-01B.
- Possible financial contributions towards improvement of the A24(N) arm of the A24 / Mill Straight (Pollards Hill) roundabout should it be proven to be justified that 17% growth along the A24 corridor and a peak profile is needed – however, it is felt that this is unlikely to be justified based on the results of recent traffic surveys; and
- Possible financial contributions towards improvements at the A24 / A272 (Buck Barn) signalised junction.



TITLE:

Study Area Junctions

FIGURE No:

1

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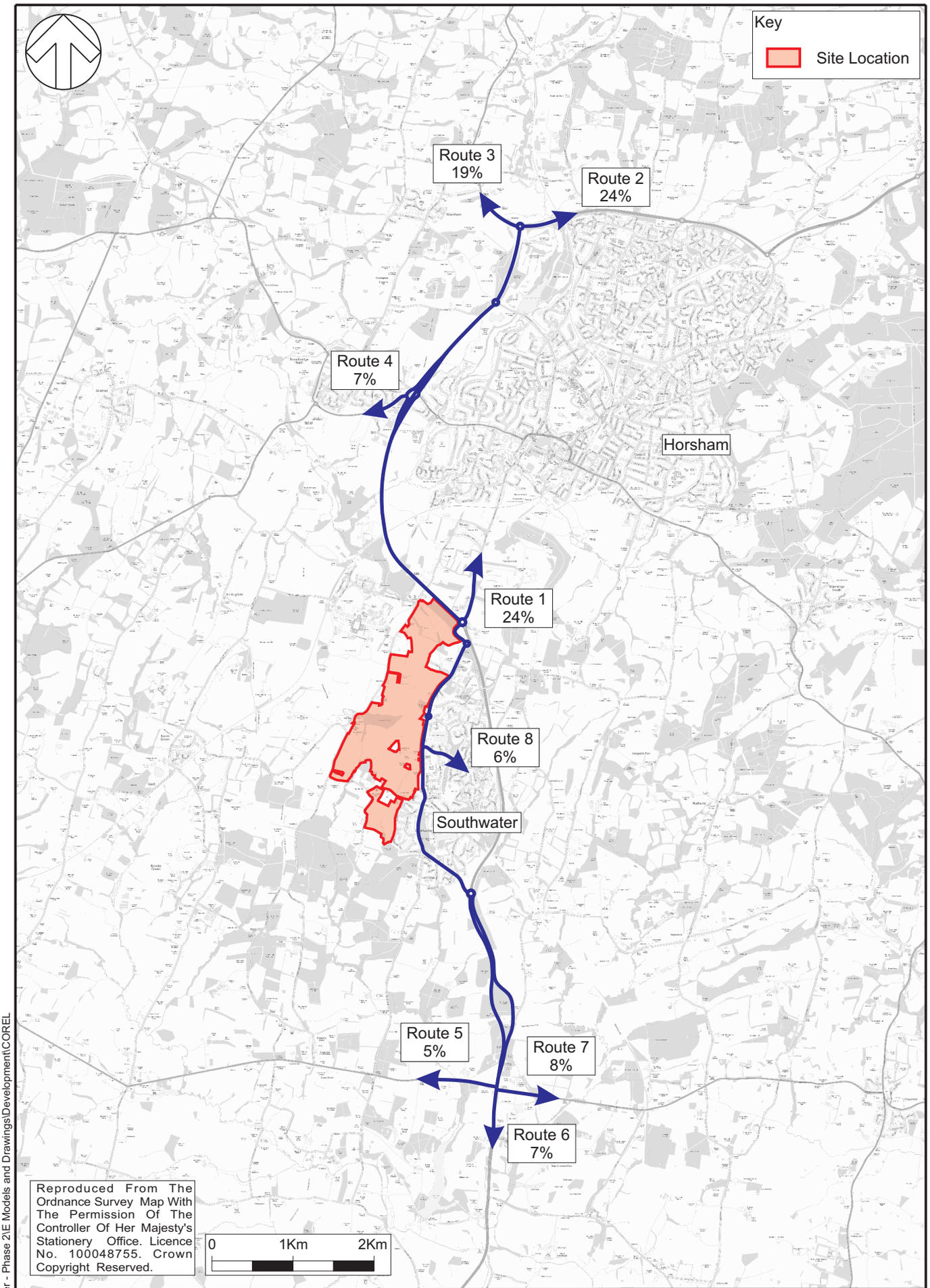

TITLE:

Trip Distribution
(Residential Trips)

FIGURE No:

2

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DO NOT SCALE

KEY

43m STOPPING SIGHT DISTANCE

HIGHWAY BOUNDARY PROVIDED BY WSCC

WSP DESIGN HAS BEEN BASED ON TOPOGRAPHICAL SURVEY DATA AND DESIGNED TO THE EDGE OF THE EXISTING PAVEMENT. HIGHWAY BOUNDARY DATA HAS BEEN PROVIDED BY WSCC ON OS MAPPING. THE TWO SETS OF MAPPING DO NOT ALIGN, THE HIGHWAY BOUNDARY THEREFORE NEEDS TO BE CONFIRMED WITH WSCC IN RELATION TO THE TOPO SURVEY

6

REV	DATE	BY	DESCRIPTION	CHK	APD
C	24/10/14	PM	REISSUED BASED ON INCLUDED NOTE	SA	KK
B	13/10/14	PM	HIGHWAY BOUNDARY DATA AND SITE BOUNDARY ADDED	SA	KK
A	12/02/14	AJT	FIRST ISSUE	KK	KK

DRAWING STATUS: FOR INFORMATION ONLY

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TITLE: NORTHERN ROUNDABOUT DESIGN

SCALE @ A3:	CHECKED:	APPROVED:
1:500	SA	KK
CAD FILE: 0398-SK-07 C.DWG	DESIGN-DRAWN: PM	DATE: October 14
PROJECT No: 70000398	DRAWING No: 0398/SK/07	REV: C

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REV	DATE	BY	DESCRIPTION	CHK	APD
A	10/03/14	LEW	FIRST ISSUE	SA	KK

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TITLE:
HOP OAST ROUNDABOUT -
PROPOSED JUNCTION IMPROVEMENTS

SCALE @ A3:	CHECKED:	APPROVED:
1:1000	SA	KK
CAD FILE:	DESIGN-DRAWN:	DATE:
0398-SK-14	LEW	March 2014

PROJECT No:	DRAWING No:	REV:
70000398	0398/SK/014	A

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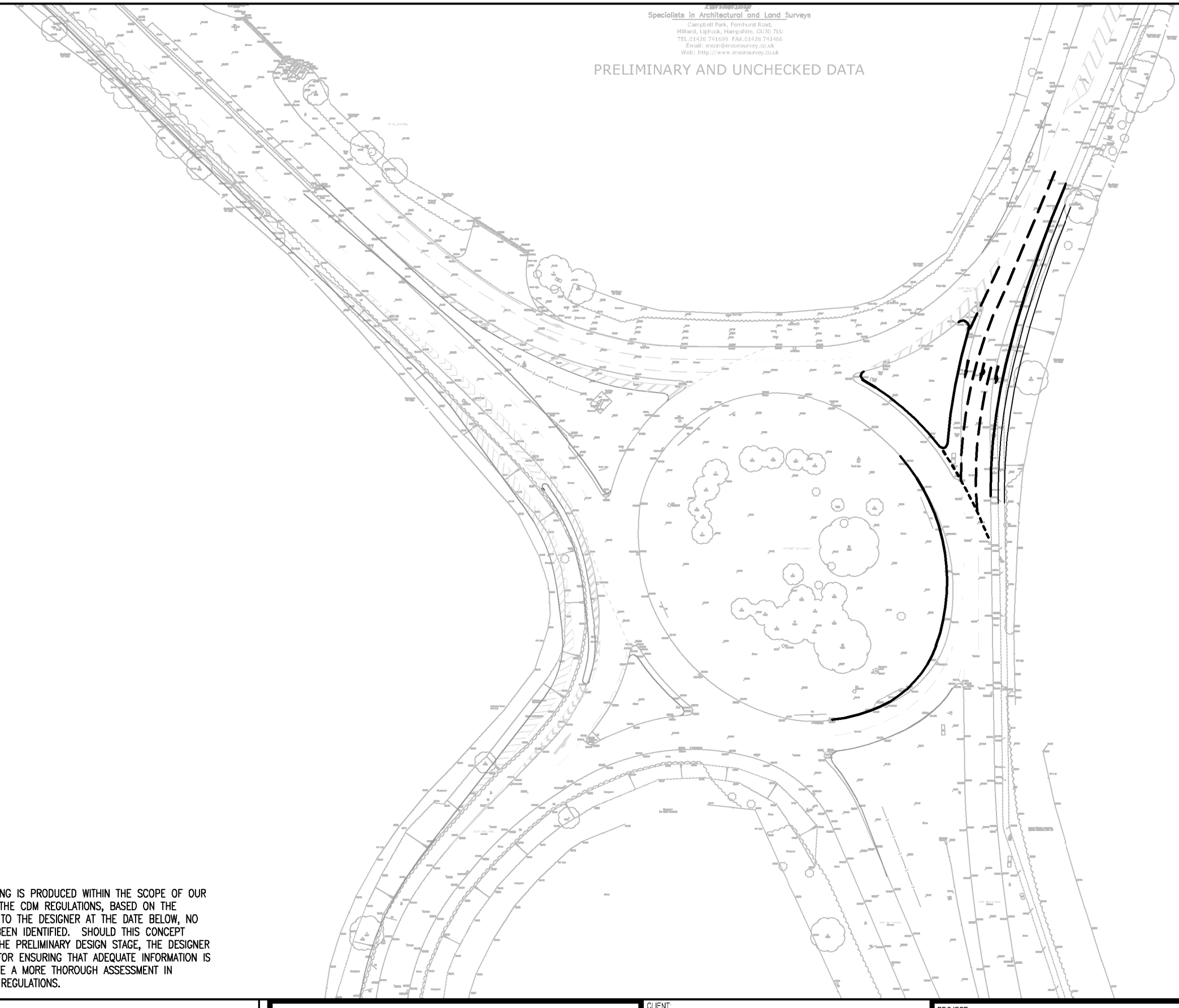

NOTE:

1. THIS CONCEPT DRAWING IS PRODUCED WITHIN THE SCOPE OF OUR CLIENT BRIEF. UNDER THE CDM REGULATIONS, BASED ON THE INFORMATION AVAILABLE TO THE DESIGNER AT THE DATE BELOW, NO RESIDUAL RISKS HAVE BEEN IDENTIFIED. SHOULD THIS CONCEPT DRAWING ADVANCE TO THE PRELIMINARY DESIGN STAGE, THE DESIGNER WILL BE RESPONSIBLE FOR ENSURING THAT ADEQUATE INFORMATION IS ACQUIRED TO UNDERTAKE A MORE THOROUGH ASSESSMENT IN ACCORDANCE WITH THE REGULATIONS.

REV	DATE	BY	DESCRIPTION	CHK	APP
B	20/12/2018	RJM	MARKINGS UPDATED	AC	AN
A	14/12/2018	LEW	FIRST ISSUE	AC	AC

DRAWING STATUS:
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ARCHITECT:

PROJECT: LAND WEST OF WORTHING ROAD

TITLE: HOP OAST ROUNDABOUT IMPROVEMENT SCHEME

SCALE @ A3:	CHECKED:		APPROVED:
1:1000	AC		AC
PROJECT No:	DESIGNED:	DRAWN:	DATE:
700016993	LEW	LEW	December 18

DRAWING No: 70016993-SK-001 REV: B

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12

Technical Note prepared by RGP for the Neighbourhood Plan Steering Group sent to Berkeley Strategic on 25/01/2019

TECHNICAL NOTE

LAND WEST OF WORTHING ROAD, SOUTHWATER

Review of 'Neighbourhood Plan Highway Capacity Assessment'

Date: January 2019 **Ref: SWPC/18/4412s**

1 INTRODUCTION

1.1 This Technical note (TN) has been prepared by Russell Giles Partnership Ltd (RGP) on behalf of Southwater Parish Council. The purpose of this report is to identify areas of the capacity assessment undertaken by WSP in its report "*Land West of Worthing Road. Southwater – Neighbourhood Plan Highway Capacity Assessment*", which is prepared on behalf of Berkeley Strategic, that should be given further attention to provide the most realistic traffic conditions in Southwater at 2036, along the A24 and Worthing Road, assuming 1,000 extra dwellings at the Broadacres Development.

1.2 RGP has undertaken extensive capacity modelling for the Parish Council in 2015, in order to facilitate communications with West Sussex County Council as Highway Authority, over the future of the A24, since Southwater is principally reliant on the Hop Oast and Pollards Hill roundabouts for access from and to the wider highway network.

1.3 In preparing this Technical Note, RGP has considered the Regulation 14 Consultation Responses from Horsham District Council and West Sussex County Council – specifically the WSCC officer level comments on the Southwater Neighbourhood Plan draft pre-submission dated September 2018.

1.4 WSCC's Strategic Transport Assessment adopted in 2015, tested the cumulative impact of strategic development proposed in the Horsham District Planning Framework. The study identified the additional travel demand as a result of planned development, in addition to development already committed, plus background growth. WSCC's Strategic Transport Assessment "*…identified that the major impacts from the strategic development sites will be to the main junctions on the A24 and A264 around Horsham and that these impacts could be successfully mitigated by a combination of deliverable highway improvements and sustainable transport measures. Further work to develop these improvements will take place as development comes forward.*"

1.5 Arising from the Strategic Transport Assessment is the Infrastructure Delivery Plan, as approved by HDC on 27th April 2016. Extracts of this document for Shipley and Southwater is appended to this report at **Appendix A**, and transport-related measures for those Parishes for implementation up to the year 2025 are highlighted.

1.6 The work prepared by WSP is in response to WSCC officer comments that, "…*due to the scale and location of the proposed site allocation in the Southwater Neighbourhood Plan, the level of growth proposed is not in accordance with the background level growth assumptions in the Strategic Transport Assessment for the Local Plan. Therefore, further Transport Assessment is required in order to assess if there will be severe impacts on the transport network, which could not be mitigated to a satisfactory level, by using measures that would be feasible, viable and deliverable.*"

1.7 Since September 2018 - on the 18 December 2018, the outcome of the Major Road Network consultation was announced, which identifies the A264, A24 and A272 as part of the country's Major Road Network. As such, the traffic growth anticipated by WSCC's officer in its consultation on the Southwater Neighbourhood Plan would be significantly greater than anticipated as background to the officer's comment that, "… *the level of growth proposed is not in accordance with the background level growth assumptions in the Strategic Transport Assessment for the Local Plan.*" RGP verbally confirmed this essential element to any traffic assessment with WSCC as background to this Technical Note.

1.8 Given this background, WSP has responded to WSCC comments by way of its report. However, in the light of the more recent MRN proposals adopted by Central Government, WSCC should review its advice to Southwater Parish Council, and WSP should respond accordingly by way of further assessment.

Overview Summary of Findings

1.9 RGP's overview summary of the WSP report, is that:

i) it should be reviewed in the light of the adoption of the MRN proposals, by reference to WSCC and the MRN objectives identified in **paragraph 2.10** of this report;

ii) WSP have modelled the usual morning and afternoon/evening peak periods, but Southwater Parish Council Steering Group considers that the picking-up period for the Southwater Infant Academy is a sensitive time to increases in traffic on the Worthing Road, particularly in the context of the narrowing of Worthing Road south of the school and the new zebra crossings. It is important to the impact of up to 1000 new dwellings in Southwater to assess Worthing Road comprehensively by considering vehicular traffic volumes in models for all junctions likely to come under stress, and traffic management on Worthing Road, particularly in the vicinity of the Southwater Infant Academy;

iii) WSP identifies junction 6 (Worthing Road/Blakes Farm Road) in its report but does not identify modelling results. However, given RGP's work in 2015, and the Google Earth imagery for the key assessment periods, it is apparent that WSP's assessment work should include Worthing Road/Southwater Street and Station Road/Shipley Road/Mill Straight. The imagery for a Tuesday at 08:15, 15:15 and 17:30 is attached to this Technical Note at **Appendix B**. RGP's observations of the imagery indicate that traffic is slow-moving:

08:15

a) on two of the three arms at the junction of Worthing Road and Southwater Street;

b) in both directions on Worthing Road between its junction with Cedar Drive and Fairbank Road;

c) on all arms of the Station Road/Shipley Road/Mill Straight junction.

15:15

d) on two of the three arms at the junction of Worthing Road and Southwater Street;

e) in both directions on Worthing Road between its junction with Cedar Drive and Fairbank Road;

f) on Shipley Road

17:30

g) on the north-bound carriage of Worthing Road between its junction with Cedar Drive and Fairbank Road.

iv) WSP's assessment should be comprehensive in its treatment of Worthing Road in that it should assess and validate all junctions currently under stress in 2018/19 and its consideration of the junction conditions of capacity should be undertaken in a modally inclusive way to include any impact resulting from pedestrian crossings and traffic management schemes.

2 BASELINE TRAFFIC FLOWS

2018 Observed Flows

2.1 The survey data used by WSP was collected during the morning and afternoon peak periods on Tuesday 9th October 2018 and recorded flows at the following junctions:

i) Hop Oast Roundabout (A24 / Worthing Road)

ii) A24 / Mill Straight / Pollards Hill Roundabout

iii) Worthing Road / Cedar Drive Roundabout/secondary access

iv) Worthing Road site access/Fairbank Road

v) A272 / A24 / Cowfold Road signal-controlled junction

vi) Worthing Road / Blakes Farm Road

vii) New Worthing Road site access

2.2 Queue length surveys were also recorded at the two site access junctions.

2.3 It is common practice to observe flows over at least two days to safeguard against using abnormal flows - as such, the survey data used to assess the surrounding junctions may represent an anomalous day.

2.4 Further, the absence of queue length surveys at most of the junctions assessed means that the junction capacity models of these junctions cannot be validated to ensure the model accurately reflects the operation of the junctions.

2.5 The M23 near Gatwick Airport is undergoing major improvement over an 11 mile (18km) stretch, between junction 8 near Merstham and junction 10 at Copthorne. The work intends to provide an all-lane running smart motorway. The A24 and M3 both run north/south, and the two roads are close enough as to provide alternative routes for motorists. It may be that traffic congestion on the M3 could has cause higher than normal flows.

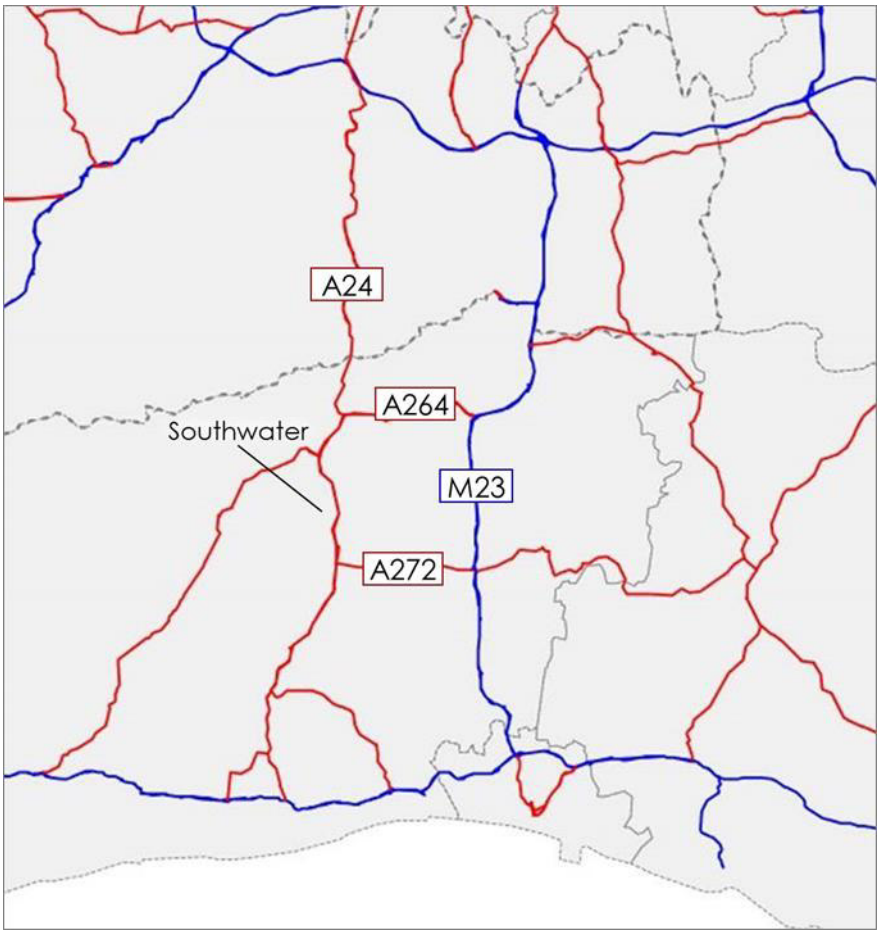
2.6 It is inconclusive from a review of WSCC's traffic database of flows on the A24 as to whether the data used by WSP has been materially affected by the M23 road works. Similarly, once the M23 works are complete, it may be that some A24 road users may switch to the M23.

Traffic Growth

2.7 WSP's assessment derived the expected growth on the local road network between 2018 and 2036 using TEMPro (version 7.2). However, the report goes on to argue that the trips generated by Broadacres development already account for all growth between 2018 and 2036, and as such WSP do not apply any growth factor to the baseline traffic flows on the local roads. RGP considers that, since TEMPro is based on other economic factors, in addition to increased housing, some additional growth should be applied to the base flows.

2.8 Further, the report also argues that the Broadacres development would contribute to growth along the A24 corridor and contends that as a result, growth on the A24 could be as low as 5% (rather than 17% predicted by TEMPro). WSP gives no explanation of how the 5% figure has been derived.

2.9 Further still, future traffic growth on the A24 will likely exceed the TEMPro high growth estimate as a result of the government's MRN proposals. The MRN will link areas intended for economic growth and as such those roads would be eligible for financial assistance from the Government to fund road schemes, including at the Buck's Barn junction of the A24 and the A272.



Excerpt from the Major Road Network Consultation Map

2.10 The effect of the MRN designations of roads is not reflected within TEMPro. The WSP assessment of the three A24 junctions is based on low growth of 17% and further considers that the Broadacres development would represent the growth on Worthing Road and Mill Straight, and so has applied a growth factor of 5% on those arms of the Hop Oast and Pollards Hill junctions. The MRN objectives are:

i) "Reduce congestion – alleviating local and regional congestion, reducing traffic jams and bottlenecks.

ii) Support economic growth and rebalancing – supporting the delivery of the Industrial Strategy, contributing to a positive economic impact that is felt across the regions.

iii) Support housing delivery – unlocking land for new housing developments.

iv) Support all road users – recognising the needs of all users, including cyclists, pedestrians and disabled people.

v) Support the Strategic Road Network (SRN) – complementing and supporting the existing SRN by creating a more resilient road network in England."

2.11 The MRN road designation is likely to increase HGV traffic proportions which is not reflected in the TEMPro factoring.

2.12 It is therefore anticipated that the growth factors applied to flows through the junctions would likely fall short of the growth rates, which will likely be observed in the future. WSCC has not taken account of this in the officer level comments of September 2018 to the Southwater Neighbourhood Plan draft pre-submission, upon which WSP undertook its work.

2.13 As of October 2018, when the surveys were undertaken, 39 dwellings within the Broadacres development were occupied, and so to reflect the impact of that entire development as if all dwellings were occupied at the time of the traffic surveys, the traffic associated with Broadacres was synthesised and added to the surveyed data to create the base conditions. This approach may be minimally robust in that the traffic associated with the 39 dwellings being double-counted.

3 TRIP ASSIGNMENT

3.1 WSP assigned vehicle trips to the local road network based on journey to work data included within the 2011 census. The assignment methodology follows generally accepted practice and as such is considered to provide a reasonable estimate of traffic distribution.

3.2 However, whilst census data provides a reasonable estimate of traffic distribution to/from residential developments, a more accurate distribution could have been derived using surveys of traffic originating in existing residential estates in Southwater.

4 TRIP GENERATION

4.1 WSP's assessment estimated the trips generation associated with the future development using the TRICS database (version 7.5.3). The assessment robustly estimated trips based on 1000 dwellings, assuming all dwellings were privately owned houses. The trip generation assessment is considered appropriately robust.

5 ASSESSMENT OF SITE ACCESS JUNCTIONS

5.1 The reader is referred to the introduction of this report as WSP's brief should be expanded to include all junctions on Worthing Road that currently experience traffic stress.

5.2 The results of the access junctions in 2018 have been validated by queue-length surveys, however the reader is referred to **Appendix B** which tends to show that further work is needed to reflect apparent junction/activity interaction on Worthing Road.

5.3 As regards the A24, it is likely that through communication with WSCC, there would be additional background growth needed to be applied at the three identified junctions on the A24 over that applied by WSP. WSCC, may also require a level of background growth applied to the Worthing Road junction assessments.

5.4 Since the Central Government's MRN will change the characteristics of the MRN designated roads, Central Government will invite bids for funding for major improvements to roads on the MRN. It is therefore essential that a 'worse-case' assessment is undertaken to best identify likely major works on the A24.

5.5 Either ODTAB or a FLAT profile input has been used by WSP for the input of traffic data to junction models. The DIRECT input method has been applied to the site access only. Where junctions exist, the ideal choice of input is the DIRECT method, i.e. input as has been measured through the surveys. The queue lengths and/or delay should then be validated through observations on the ground. The validation work has been carried out for the site accesses only.

5.6 The results of the 2036 models to justify 1000 dwellings served via two accesses show a result at the Worthing Road (north) arm of the Worthing Road/Cedar Drive/Site Access Roundabout at the desirable maximum flow to capacity ratio and small queues. However, the Google Earth imagery attached at **Appendix B** shows slow-moving traffic in 2018, and so tends to cast doubt on the model results.

6 ASSESSMENT OF OFF-SITE JUNCTIONS

Four Junctions modelled on the Worthing Road corridor

6.1 Given the Google Earth imagery, RGP's familiarity with the peak traffic conditions in Southwater, and expressed concern from Southwater Parish Council over traffic conditions in the vicinity of the infants' school for example, it is considered that WSP's brief should be expanded to assess sensitive areas on Worthing Road currently outside of its brief and its base results validated through queue-length surveys. It appears that there may be some suppressed demand as shown by the slow-moving traffic on the Google Earth imagery.

6.2 As regards junctions on the A24, the WSCC officer comments on the Southwater Parish Council Neighbourhood Plan pre-draft consultation did not include consideration of the subsequently approved MRN. Since growth on the A24 will be considerably higher than the low growth WSP has applied to the A24, the results of WSP's models should be revisited.

Three Junctions on the A24 Corridor

6.3 WSP identify the A24/A272 Buck's Barn junction as under considerable demand stress at 2018 and shows predicted deterioration in its performance by applying 5% growth, 17% growth (low growth TEMPro). Clearly, traffic associated with 1,000 additional dwellings at Southwater would increase delays at that junction further. However, by applying higher growth to A24 traffic to reflect the effects of the MRN would increase delays further.

6.4 Similarly, whilst WSP's models show that Hop Oast and Pollards Roundabouts would operate satisfactorily under its post-1,000 dwelling 2036 assessment, under the MRN objectives, the designation of the A24 is likely to significantly increase growth on the A24, over the levels applied by WSP.

7 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

7.1 WSP's instruction followed the Regulation 14 consultation response from WSCC, and since then Central Government's MRN has been adopted, which includes the designation of the A24 as part of the MRN. WSP did not consult WSCC as background to its report. In the light of the MRN designation, WSCC would likely require a higher rate of growth to be applied to the A24, and for a level of background traffic growth to be applied to the Worthing Road/Station Road/Mill Straight corridor. The matter of traffic growth is the single-most important element of the assessment that is key to either demonstrating realistically, or not, that the A24 will flow at 2036, with an additional 1,000 dwellings at Southwater.

7.2 Other aspects of WSP's assessment that WSCC would likely wish to see attention given to are:

- The Station Road section between Cedar Drive and Church Lane/Andrews Lane, particularly where there is school activity;
- All junctions where there is slow moving traffic on the Worthing Road/Station Road/Mill Straight corridor;
- Traffic data collected to include queue-length;
- Trip assignment, by surveying an existing estate access

7.3 This report makes the following recommendations:

i) WSP should survey an established development in Southwater to identify trip assignment rather than relying purely on census data;

ii) Further capacity modelling assessments which includes more robust estimates of traffic growth on the local road network, in particular future growth on the A24 which would likely be increased as a result of the government's MRN proposals;

iii) Further capacity modelling assessments should also factor in other constraints to traffic flows on Worthing Road such as pedestrian crossing points and traffic management schemes on the road.

iv) In view of the foregoing, RGP advice to Southwater Parish Council is that the work conducted by WSP and detailed within their report should not be relied upon in its plans for the future of Southwater. However, the fundamental approach to the assessment is considered reasonable and with further expansion could provide the comprehensive assessment that is necessary to determine the future impact of the development proposals.

v) RGP advise that WSCC are consulted to agree the background working of any assessment, particularly in light of how the MRN proposals would impact growth on the A24.

APPENDIX A

Horsham District Council

Infrastructure Delivery Plan

As approved by Council 27th April 2016

This Infrastructure Delivery Plan was approved by Council on 27th April 2016 as background evidence to support the consultation on the Community Infrastructure Levy :Draft Charging Schedule. Comments or suggested additions to this list should be sent by **5pm Friday 17th June 2016 to** https://www.horsham.gov.uk/planningpolicy/planning-policy/current-consultations

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Ashington	Transport	Improve on street parking at Church Lane/Foster Lane junction improving sports pavilion car	£40,000	£0	£0	£40,000	WSCC	£0	2025
	Transport	Speed Management - A24 south of Ashington First School	£24,800	£24,800	£0	£0	PC	£0	2016-2025
	Transport	Improve speed tables in London Road		*	£0	£0	WSCC	£0	2020
	Transport	Extend street lighting to some areas of the		*	£0	£0	WSCC	£0	2015-2025
	Transport	Junction improvements at Rectory Lane/Meiros Way		*	£0	£0	WSCC	£0	2015-2025
	Transport	Noise reduction A24			£0	£0	WSCC	£0	2020
	Community Facilities	Additional Sports Pitches		*	£0	£0	PC	£0	2015-2025
	Community Facilities	Improved accessibility to allotments		*	£0	£0	PC	£0	2020
	Community Facilities	Lights and footpath for Youth Shelter, traversing wall			*	£0	PC or Ashington Community Centre	£0	2015-2025
	Community Facilities	Play Equipment	£10,000	£10,000	£0	£0	HDC	£0	2020
	Community Facilities	Extension of Community Centre (new sports/youth wing to allow demolition of adequate old hall and	£500,000	£500,000	£0	£0	Parish Council	£0	2025
	Education	School Safety Zone	£20,000	£20,000	£0	£0	WSCC	£0	2015-2020

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Broadbridge Heath	Transport	Traffic Calming	£200,000	£0	£200,000	£0	WSCC	£0	Start 2015-16
	Transport	Broadbridge Heath to Oakhill cycle route	£285,000	£0	£285,000	£0	WSCC	£0	2015-2025
	Transport	Cycle facility - Old Wickhurst Lane - creation of cycle route; upgrade from footpath to bridleway, signage,	£33,000	£0	£33,000	£0	Developer	£0	2015-2025
	Transport	Land south of Broadbridge Heath - Provision of new east - west link road from A24 to A281.		£0	* (Directly providing)	£0	Developer providing directly on	£0	2015-2025
	Transport	Land south of Broadbridge Heath - provision of new grade-separated junction on the A24 (part - A24 road		£0	* (Directly providing)	£0	Developer providing directly on	£0	2015-2025
	Transport	A24 Farthings Hill junction improvements	£1,449,000	£0	£1,449,000	S106, WSCC and other	Developer	£0	2015-2025
	Transport	New vehicular access onto Hills Farm Lane to serve first phase of Berkeley		£0	* (Directly providing)	Developer	Developer providing directly on	£0	2015-2025
	Transport	Broadbridge Heath traffic management scheme	£250,000	£0	£250,000	S106 and WSCC	Developer	£0	2015-2025
	Transport	Warnham Lanes traffic management scheme	£110,000	£0	£110,000	S106 and WSCC	Developer	£0	2015-2025
	Transport	More Buses		*		£0	Arriva/Compass/Metro	£0	2015-2025
	Transport	Downs Link Improvements		£100,000		£0	WSCC	£0	2016 onwards
	Education	Secondary School - expansion of Tanbridge House School to 10FE in permanent accommodation	£5,750,000	£0	£5,750,000	S106 and WSCC (inc Basic Needs	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Broadbridge Heath	Education	Primary Schools - relocation and expansion of Shelley Primary School, moving from a 40	£9,700,000	£0	£9,700,000	S106 and WSCC (inc Basic Needs	WSCC	£0	2017-2018
	Education	Primary Schools - Expansion of Arunside from 1FE to 2FE from September	£4,431,000	£0	£4,431,000	S106 and WSCC (inc Basic Needs	WSCC	£0	2015-2025
	Education	Early Years - contribution towards an extra classroom at Arunside Primary	£250,000	£0	£250,000	S106 and WSCC (inc Basic Needs	WSCC	£0	2015-2025
	Education	Sixth Form – Collyers Expansion	£1,084,600	£0	£1,084,600	S106 and other	Sixth form provider	£0	2015-2025
	Education	Primary School			*	£0	WSCC	£0	2017-2018
	Libraries	Service improvements	£150,000	£0	£150,000	S106	WSCC	£0	2015-2025
	Open Space, Sport and Recreation	Extension to existing Leisure Centre?	?	?		£0		Land provided by S106 re	?
	Community Facilities	Improve outdoor facilities	£200,000	£0 £0	£200,000	HDC	£0	2015 - 2025	
	Community Facilities	Village Centre Improvements	£25,000	£25,000	£0	£0	HDC	£0	2015 - 2025
	Open Space, Sport and Recreation	Football Pavilion	£700,000	?	£0	HDC	£0	2016	
	Community Facilities	Improve quality, capacity and accessibility of play areas	£200,000	TBC	TBC	£0	TBC	TBC	TBC
	Improvements to Scout facilities	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Billingshurst	Transport	Junction improvement - A29 Oakhurst Lane	*		* (Directly providing)	£0	Developer providing directly on	£0	S106 Trigger
	Transport	Lighting request on the footbridge over the A29 to better enable children to safely cross the youth club.	*			£0	WSCC	£0	2015-2025
	Transport	Marringdean Road to Natts Lane pedestrian improvements to join up footpaths in Marringdean Road	*	*	*	S106 and CIL	WSCC	£0	2015-2025
	Transport	Bus Service and stop improvements	£12,000	£12,000	£0	£0	WSCC	£0	2015-2025
	Transport	Railway station improvements				£0		£0	2015-2025
	Transport	Traffic calming - entrance to Billingshurst on East Street	*					£0	2015-2025
	Transport	Improvements to the school travel plan	£95,486	£95,486	£0	£0	WSCC	£0	2015 - 2025
	Education	Secondary School - land and contributions towards expansion of the Weald School and contribution	£10,000,000	£0	£10,000,000	£0	WSCC	£0	2015-2025 (Sept 2017+)
	Education	Primary Schools - land and contributions towards the construction costs of one	£4,800,000	£0	£4,800,000 - £5,400,000	£0	Developer	£0	2015-2025 (Sept 2019+)
	Education	Early Years - contributions towards an extra classroom at the primary school to provide a pre-school	£250,000	£0	£250,000	£0	WSCC	£0	2015-2025
	Libraries	Potential partnership project with Village Community and Conference Centre	£75,000	£0	£75,000-£100,000		WSCC	£0	2015-2025
	Transport	Village enhancement scheme - Billingshurst Station (delivery of scheme to improve accessibility and	£100,000	£0	£100,000	£0	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Billingshurst	Community Facilities	Improvements to Billingshurst Community Buildings	£35,000	£35,000	£0	£0	Billingshurst Parish Council	£0	2015-2025
	Community facilities	Billingshurst play area improvements	£700,000	£700,000	£0	£0	HDC	£0	2015-2025
	Green Space	Station Road Gardens	£210,000	£168,000		£0	Billingshurst Parish Council	£42,000 (Parish Council)	2015-2025
	Green Space	Allotments	£20,000	£20,000	£0	£0			2015-2025
	Public and Community Facilities	Fire and Rescue - provide hydrant within drill yard	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Community Facilities	Dedicated Youth Facility - Billi Eye Project	£800,000	TBC	TBC	TBC	Parish Council	TBC	TBC
	Transport	Car parking for station	TBC	TBC	TBC	TBC	WSCC/Network Rail	£0	TBC
	Community Facilities	Provision of day care facilities for senior citizens	TBC	TBC	TBC	TBC	WSCC	£0	TBC
	Flood Risk	Surface Water Management Plan and sustainable drainage	TBC	TBC	TBC	TBC	WSCC	£0	TBC
	Community Facilities	Provision of burial ground	TBC	TBC	TBC	TBC	HDC	£0	TBC
	Health	Provision of additional health services including dentist	TBC	TBC	TBC	TBC	NHS	£0	TBC
	Police	Provision of additional PCSOs	TBC	TBC	TBC	TBC	Sussex Police	£0	TBC

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Billingshurst	Transport	Five Oaks roundabout A264/A29	*	*	*	S106 and CIL	WSCC	£0	
Bramber	Transport	Upgrade footpath leading up to St. Nicholas' Church	£10,000	£0	£0	£10,000	Parish Council	£0	2015-2025
	Transport	All-weather hard surfacing of Downs Link	£150,000	£150,000	£0	£0	WSCC	£0	2015-2025
	Transport	Downs Link A283 crossing – provide 2m wide central refuge + 30mph speed	£30,000	£0	£0	30000?	WSCC	£0	2015-2025
	Transport	20mph speed limit	£4,000	£0	£0	£4,000	WSCC to confirm	£0	2015-2025
	Transport	New Footway – Maudlyn Lane to Soper Lane	£6,000	£6,000	£0	£0	WSCC	£0	2015-2025
	Community Facilities	Upgrade Clays Field as a Public amenity area				£0	Parish Plan	£0	2015-2025
	Transport	Improvements to 30mph signage	£17,000	0 £0	£17,000	Balfour Beatty	£0	2018	
	Flood Risk	Investigations to determine flood prevention measures required due to issues arising from housing	TBC	TBC	TBC	TBC	TBC	£0	TBC
	Highways	Redesign of pavement for consistency and to improve safety	TBC	TBC	TBC	TBC	Parish Council	O	2020
Colgate	Transport	Traffic Calming (pinch points on Forest Road)		*		£0	WSCC	£0	2015-2025
	Transport	Formal crossing on A24	TBC	*	*	£0		£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Colgate	Transport	Pedestrian Scheme - provision of footway on south side of A264 from Holmbush	TBC	*	*	£0		£0	2015-2025
	Transport	Route Safety Scheme - A264 Faygate to Crawley	£80,000	£80,000	£0	£0		£0	2020-2025
	Community Facilities	Colgate Village Hall Improvements	TBC	*	*		Village Hall Committee		
	Community Facilities	Colgate Village Play Area Improvements	£50,000	£50,000	£0	£0	Village Hall Committee		
Cowfold	Transport	Cycling Facilities – 3m shared cycle track widen and resurface / crossing point	£7,886	£7,886	£0	£0		£0	2020
	Transport	Air Quality - study to look at means of reducing traffic emissions and congestion in village centre (either		*		£0	£0	£0	201502030
	Transport	Speed Management - A281 southbound entrance to Cowfold (possibly				£0		£0	2015-2025
	Transport	Improved footway - A281 (Hare and Hounds Public House southwards)	£99,000	0	£0	£99,000		£0	2015-2025
	Transport	Improved footway A281/A230 (north of village)	£94,900		£0	£94,900		£0	2015-2025
	Community Facilities	Improved/new pavilion	£50,000	£50,000	£0	£0	Cowfold Parish Council/HDC	£0	2020-2025
Henfield	Transport	Traffic Speed Indicator	£5,000	£5,000	£0	£0	PC	£0	2018-20
	Transport	New Long Stay Car Park	£100,000	0	£0	£100,000	PC	£0	2016-17

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Henfield	Transport	Improve junction High Street/Church Street	£100,000		£0	£100,000	WSCC?	£0	2016 onwards
	Transport	VAS sign - London Road	£15,000	£15,000	£0	£0	WSCC	£0	2016 onwards
	Transport	School Safety Zone - St Peter's CE Primary School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Transport	Cycle Link between Deer Park and the Downs Link	£200,000	200000 £0	£0	PC	£0	2016-17	
	Health	Extension to medical centre	£500,000	£500,000	£0	£0	Medical Centre	£0	2018-20
	Community Facilities	Henfield Haven (formerly Day Centre) requires reserve funding	£15,000pa	£15,000	£0	£0	Henfield Social Enterprise CIC	£0	2018-20
	Community Facilities	Town / village enhancement scheme - accessibility improvements and access to Farmers Market, measures identified in TPG study.	£8,099	£8,099	£0	£0		£0	2015-2025
	Community Facilities	Henfield Play Facility improvements	£600,000	£600,000	£0	£0		£0	
	Community Facilities	3G pitch	£1,461,000	£1,461,000	£0	£0	HDC	£0	2020
	Community Facilities	Allotments	£30,000	£30,000	£0	£0	HDC	£0	2016-2025
	Community Facilities	Noise barrier around skate park	£40,000	£0	£0	£40,000	PC/HDC	£0	2016 onwards
	Open Space, Sport and Recreation	Construction of two earth bunds around reed bed	£30,000	£0	£0	£30,000	PC	£0	2016-17
	Open Space, Sport and Recreation	New pavilion	£250,000	£250,000	£0	£0	PC	£0	2016-17
	Open Space, Sport and	Extension to cricket pavilion	£500,000	£0	£0	£0	500000	£0	2016-17

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
	Recreation								
Henfield	Open Space, Sport and Recreation	Drainage	£200,000	£0	£0	£200,000	PC	£0	2016-17
	Cemetery	Henfield Cemetery Extension	£60,000	£60,000	£0	£0	PC/HDC?	£0	2020-2025
	Library	Library Services - upgrade of facilities	£30,000	£30,000	£0	£0	WSCC	£0	2015 -2031
Horsham Town	Transport	Cycle facility - creation of a safe crossing of A264 to complete (Horsham - Crawley Cycle Route (requires construction of path, signage, promotion) Cycle Route - Horsham to Crawley Phase 3. Provision of Bridleway on the same route (no cost included).	£140,900	£0	£140,900	£0	Developer		2015-2025
	Transport	Aspirational Cycle network	£1,159,054	£1,159,054	£0	£0	WSCC	£0	2015-2025
	Transport	Cycle route enhancements - upgrade and widen existing footways, on road cycle way in both directions on Rusper Road	£499,491	£499,491	£0	£0		£0	2015-2025
	Transport	Public transport service enhancement	£470,000	£0	£470,000	£0	Developer	£0	2015-2025
	Transport	A24/A264 Great Daux Roundabout junction improvements	£4,422,000	£0	£4,422,000	S106 and WSCC	Developer	£0	2015-2025
	Transport	A24/B2237 Robin Hood Roundabout improvements	£660,000	£0	£660,000	S106 and WSCC	Developer	£0	2015-2025
	Transport	A264/Rusper Road improvement			*	£0	Developer	£0	2015-2025
	Transport	A264/B2195 Moorhead Roundabout improvements	£110,000	£0	£110,000	£0	Developer	£0	2015-2025
	Transport	A264/Tower Road/ Faygate Lane junction 19 improvements	£398,000	£0	£398,000	£0	Developer	£0	2015-2025
	Transport	New Railway Station	£13,600,000	£0	£	£13,600,000	Developer / Network Rail		2015-2025
	Transport	Route safety scheme - Great Daux	£80,000	£0	£80,000	£0	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		roundabout to Surrey Border							
Horsham Town	Education	Secondary Schools - land and contributions towards the construction cost for a new secondary school (6FE) with potential to expand to 8FE	£26,700,000	£0	£26,700,000 - £28,500,000	S106 and WSCC (inc Basic Need Grant)	Developer	£0	2015-2025 (Sept 2020+)
	Education	Primary School - land and contributions towards the construction costs for two new primary school to include early years and community facilities.	£16,600,000	£0	£16,600,000 - £19,000,000	S106 and WSCC (inc Basic Need Grant)	Developer	£0	2015-2025 (Sept 2020+)
	Education	Special Education - land and contributions towards the construction costs of a new special school (minimum 60 places for ages 2-19)	£8,000,000	£0	£8,000,000	S106 and WSCC Basic Need Grant	Developer and WSCC	£0	2015-2025 (Sept 2020+)
	Education	Early Years - land and contributions towards two 50 place co-located nursery/early years facilities with primary schools and community facilities.	£1,644,000	£0	£1,644,000	S106 and WSCC Basic Need Grant	Developer and WSCC	£0	2015-2025
	Education	Sixth Form - contributions towards appropriate facilities at the College of Richard Collyer or equivalent sixth form provision.	£1,720,000	£0	£1,720,000	£0	Sixth Form Provider	£0	2015-2025
	Education	Safer Routes to Schools/Travel Plan – Heron Way	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	Safer Routes to Schools/Travel Plan – Forest School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	School Safety Zone/Travel Plan- St Marys Primary School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	School Safety Zone - Greenway and Trafalgar School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	Safer Route to Schools - Horsham Nursery	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		School & Kingslea							
Horsham Town	Education	Safer Routes to School Scheme - Tanbridge House School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	School Safety Zone - Queen Elizabeth School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	Route safety scheme - Lambs Farm Road, Roffey - Traffic management	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	School Safety Zone/Travel Plan - Littlehaven Primary School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Libraries	Tier 7 Library offer at strategic site	£75,000	£0	£75,000 - £100,000	£0	WSCC	£0	2015-2025
	Green Infrastructure / Transport	The Green Grid Key Routes are North Horsham to Town Centre and Holbrook Club to Town Centre via Novartis site.	£2,500,000	£2,500,000	£0	£0	WSCC/HDC	£0	2015-2025
	Green Infrastructure	Horsham townscape enhancement	£40,000	£40,000	£0	£0	HDC	£0	2015-2025
	Green Infrastructure	Improved drainage on sports pitches	£500,000	£500,000	£0	£0	HDC	£0	2015-2025
	Community Facilities	Horsham Play Area improvements (Play equipment, landscaping, fencing)	£3,300,000	£3,300,000	£0	£0	HDC	£0	2016-2025
	Community Facilities	3G pitch	£1,461,000	0 £1,461,000	£0	HDC	£0	2016-2025	
	Community Facilities	Changing rooms and community facility improvements at neighbourhood recreation grounds	£3,300,000	£3,300,000	£0	£0	HDC	£0	2016-2025
	Utilities	Sewerage and water distribution infrastructure for land north of Horsham	Not known	£0	£0	Developer and Southern Water	Southern Water and the developer	£0	In parallel with development

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
	Utilities	Sewerage infrastructure for Novatis site.	Not known	£0	£0	Developer and Southern Water	Southern Water and the developer	£0	In parallel with development
Horsham Town	Open Space, Sport and Recreation	Riverside Walk improvements in Forest	£100,000	£100,000	£0	HLF	HTCP/HDC	£0	On-going
	Open Space, Sport and Recreation	Riverside Walk improvements in North Horsham	£100,000	£100,000	£0	HLF	HTCP/HDC	£0	On-going
	Open Space, Sport and Recreation	Riverside Walk improvements in Trafalgar	£100,000	£100,000	£0	HLF	HTCP/HDC	£0	On-going
	Community Facilities	Improvements to North Street subway		*		£0	PC/WSCC	£0	2016 onwards
	Open Space, Sport and Recreation	Riverside Walk improvements in Denne		*		£0	HDC	£0	On-going
	Flood Risk	Warnham Mill/Provender Mill	£2,000,000	0 £0	£2,000,000	Environment Agency	£0	2022	
	Healthcare	Primary Care Centre	£7,000,000	£0	£0	£700,000	NHS England	Project only agreed in principle by NHS England at this stage	2021 estimated depending on planning consent for the major development
	Community Facilities	Horsham Rugby Club Improvements	£100,000	£100,000	£0	£0	HDC	£0	TBC
	Community Facilities	Tennis Bubble - Horsham Tennis Club	£400,000	£400,000	£0	£0	HDC	£0	TBC
	Community Facilities	Horsham Skate Park remodelling to concrete	£150,000	£150,000	£0	£0	HDC	£0	2024
	Transport	Five Oaks roundabout A264/A281	£871,000	£0	£871,000	S106 and WSCC	Developer	£0	
	Transport	Broadbridge Heath & Slinfold to Christs							

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		Hospital pedestrian & cycle route improvement via the Downs Link & Horsham Town neighbouring access links							
Horsham Town	Transport	Public transport service enhancement	£1,116,000	£0	£1,116,000	£0	Developer	£0	
	Community Facilities	Parkour outdoor training area	£150,000	£150,000	£0	£0	HDC	TBC	2017
Nuthurst	Transport	Extension to pavement at entrance to Swallowfield	?	*		£0	WSCC	£0	2015-2031
	Transport	Improvements to junction	?	*		£0	WSCC	£0	2015-2031
	Transport	Safe access to A281	?	*		£0	WSCC	£0	2015 - 2031
	Transport	Cycle Track	?	*		£0	WSCC	£0	2015-2031
	Transport	Car Parking	?	*		£0	WSCC	£0	2015-2031
	Education	Safer Routes to School Scheme	£10,000	£10,000	£0	£0	WSCC	£0	2015-2013
Pulborough	Open Space, Sport and Recreation	Sports and Youth Club	£750,000	£500,000	£250,000	£0	PC	£250,000	2016-17
	Community Facilities	3G pitch	£1,461,000	£1,461,000	£0	£0	HDC	£0	2015-2015
	Community Facilities	Pulborough Play Facility Improvements	£200,000	£200,000	£0	£0	HDC	£0	2015-2025
	Utilities	Telecommunications Infrastructure - High Speed Broadband	£30,000	£30,000	£0	£0	BT/WSCC	£0	2016 onwards
	Transport	A Roads inadequate for HGVs	£1,000,000	?		£0	WSCC	Some S106 funds - amount unknown	2020
	Transport	Air Quality management	*	*		£0		£0	2015-2020
	Transport	Pedestrian enhancements – Provision of pedestrian in road warning signs and vehicle activated sign to manage traffic speeds in conjunction with possible minor amendments to the	£35,000	£35,000	£0	£0	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		speed limit to improve pedestrian safety in the vicinity of A283 Stopham Road railway bridge							
Pulborough	Transport	Pedestrian enhancements – Pedestrian crossing on A283 by railway station (east of Station Approach)	*	*		£0	WSCC	£0	2015-2025
Rusper	Transport	Potential new railway station on the Horsham - Three Bridges line with associated car parking and multi-modal interchange	£11,430,000	£0		£11,430,000 - £16,600,000 0	Developer	£0	2015 – 2020
Rudgwick	Transport	Improvements to junction	?	?		£0	WSCC	£0	2020
	Transport	Car Parking	?	?		£0	WSCC	£0	2020
	Education	Safer Routes to School Scheme at Rudgwick Primary School consisting of a crossing point on Queen Elizabeth Road about 30m west of the junction with Princess Anne Road.	£5,000	£5,000	£0	£0	WSCC	£0	2015 – 2020
	Community Facilities	Multi games area	£120,000	£120,000	£0	£0	HDC/Rudgwick Parish Council	£0	2015 – 2020
	Community Facilities	Refurbishment of the Jubilee Hall, Church Street	£50,000	£50,000	£0	£0	WSCC	£0	2015 – 2020
Shermanbury	Community Facilities	Village Hall	£200,000	£200,000	£0	£0	PC	£0	2015-2025
	Open Space, Sports and Recreation	Play Area	£200,000	£200,000	£0	£0	PC	£0	2015-2025
	Transport	Improvement and installation of pedestrian footpaths	£50,000	£0	£0	£50,000	WSCC	£0	2015-2025
	Transport	Pedestrian road crossings	£50,000	£0	£0	£50,000	WSCC	£0	2015-2025
Shipley	Transport	A24 Buck Barn - Increase length of northbound right turning lane	£100,000	£0	£100,000	£0	WSCC	£0	2015-2025
	Transport	Buck barn traffic lights	£320,000	£0	£320,000	£0	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		refurbishment							
	Transport	Buck Barn traffic lights refurbishment Phase 2	£100,000	£0	£100,000	£0	WSCC	£0	2015-2025
Slinfold	Transport	Speed activated signs	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
Slinfold	Community Facilities	Village Hall	£250,000	£250,000	£0	£0	PC	£0	2015-2025
	Community Facilities	Upgrade sports pavilion, Cherry Tree	£10,000	£10,000	£0	£0	PC/Football Club	£0	2015-2025
	Community Facilities	New Scout Hut	?	?		£0	PC/Scouts	£0	2015-2025
	Community Facilities	Youth Space	?	?		£0	PC/Youth Club	£0	2015-2025
	Community Facilities	Upgrade cricket pavilion	£500,000	?	£0	£500,000	PC/Cricket Club	£0	2015-2025
	Open Space, Sport and Recreation	Village Green / Village Orchard	?	?		£0	PC/Community	£0	2015-2025
	Open Space, Sport and Recreation	Upgrade and add play equipment	£50,000	£30,000	£0	£20,000	PC/Youth Club	£0	2015-2025
	Telecommunications	Improved broadband and mobile signals	?	?		£0	Telecoms Provider/BT/WSCC?	£0	2015-2025
Southwater	Transport	Pedestrian/Cycle bridge across A24	£2,000,000	£2,000,000		£0	WSCC	£0	2020
	Transport	Circular Bus Route	?	?		£0	Bus Service Provider	£0	2020
	Transport	Bus Shelters with Real Time Passenger Information	?	?		£0	Bus Service Provider/WSCC	£0	On-going
	Transport	Circular leisure cycle/walking route around parish	?	?		£0	WSCC	£0	2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
	Transport	Cycle Facility - Shared Use Cycle/pedestrian bridge across A24 linking Southwater to Horsham (Reeds Lane) and Cycle Route - Southwater to Hop Oast (B2237 Worthing Road) cycle route via Southwater Street bridge over A24	£2,124,500	£11,000	£2,113,500	S106 and CIL	Developer	£0	2015-2025
	Transport	Public transport service enhancement				£0	Public transport providers	£0	2015-2025
Southwater	Transport	A24/B2237 Worthing Road (Hop Oast) Roundabout improvements	£264,000	£0	£264,000	£0	Developer	£0	2015-2025
	Transport	Aspirational Cycle Network - Southwater	£47,554	£47,554	£0	£0	WSCC	£0	2015-2025
	Transport	Cycle Facility - Station Road to North Street (route to provide improved access to railway station. Will need to be a combination of signs and further measures to remove parking to allow enough space for improvement - also part of the route is a freight route)	£36,000	£36,000	£0	£0	WSCC	£0	2015-2025
	Transport	A24/Mill Straight Junction 21 improvements	£86,000	£0	£86,000	£0	Developer	£0	2015-2025
	Transport	Tarmac footpath	?	?		£0	WSCC	£0	2020
	Utilities	Broadband	?	?		£0	BT/WSCC?	£0	On-going
	Open Space, Sport and Recreation	Continued enhancement and maintenance of Country Park	?	?		£0	HDC/PC	£0	On-going
	Community Facilities	Hall Space provision e.g. for Scouts and Guides	£1,000,000	?		£0	HDC/PC	£0	On-going
	Community Facilities	Youth worker provision	£140,000	£140,000	£0	£0 [removed: £70,000pa]	Parish Council	£0	On-going
	Community	Allotments	£65,000	£650,000	£0	£0	PC	£0	2020

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
	Facilities								
	Community Facilities	Southwater Country Park Attractions	£5,000,000	£5,000,000	£0	£0		£0	2015-2020
	Community Facilities	3G pitch	£1,000,000	£400,000	£600,000	£0		£0	
	Open Space, Sport and Recreation	Southwater Leisure Centre Changing Rooms	£61,000	£61,000	£0	Grants	PC	£0	2017
	Open Space, Sport and Recreation	Extension to Southwater Leisure Centre	£750,000	£750,000	£0	PC	£0	2025	
Southwater	Transport	Hop Oast Waste Recycling Site: anticipated that capacity may be needed to serve future housing growth.	£2,500,000	£2,500,000	£0	£0	WSCC	£0	2015-2025
	Education	Early Years - contribution to provide or expand a pre-school facility in the village, possibly in an extra classroom at an existing school.	£250,000	£0	£250,000	£0	Developer	£0	2015-2025
	Education	Primary School - contribution towards expansion of existing primary schools in Southwater	£2,000,000	£0	£2,000,000 - £3,000,000	£0	Developer	£0	2015-2025 (Sept 2019+)
	Education	Secondary School - contribution towards the expansion of Tanbridge House School	£250,000	£0	£250,000	£0	Developer	£0	2015-2025
	Libraries	Contribute to re-design of library offer in partnership with Southwater Parish Council	£30,000	£0	£30,000	£0	WSCC	£0	2015-2025
	Utilities	Sewerage and water distribution infrastructure for Southwater strategic site	Not known	£0	£0	Developer and Southern Water	Southern Water and the developer	£0	In parallel with developme nt
	Community Facilities	Play Area improvements - 10 small play areas and 3 NEAPs	£800,000	£800,000	£0	£0	HDC	HDC/CiL	TBC
	Community Facilities	MUGA and Football Wall	TBC	TBC	TBC	£160,000	HDC/Parish Council	Lottery Grants, LA contribution	TBC

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
								s and developer contributions	
	Transport	Land widening on approach to Hop Oast roundabout	TBC	£0	TBC	£0	WSCC	TBC	TBC
Storrington and Sullington	Public Conveniences	Introduction of public toilets	?	?		£0	HDC?	£0	2016 onwards
	Mobile Signal	Improved mobile phone coverage 4G and beyond	?	?		£0	?	£0	2015-2025
	Youth Facilities	Replacement toddler play equipment and new skate park	£120,000	£80,000	£40,000	£0	PC/HDC	£40,000 (S106)	2016 onwards
Storrington and Sullington	Open Space, Sport and Recreation	Hurston Lane Field improvement plan- new football pitches and running track	?	?		£0		£0	2015-2025
	Community Facilities	3G pitch	£1,461,000	£1,461,000	£0	£0	HDC	£0	2015-2020
	Community Facilities	Storrington and Sullington Play Facility improvements	£400,000	£400,000	£0	£0	HDC	£0	2015-2020
	Community Facilities	Improvements to Parish Hall (replacement windows, resurfacing of car park)	£24,000	£24,000	£0	£0	PC	£0	2015-2025
	Open Space, Sport and Recreation	Improvements to Riverside Walk	?	?		£0	HDC?	£0	2015-2025
	Transport	Air Quality - possible changes to road network (e.g. changes to B2139 School Hill / High Street / Manleys Hill mini roundabout junction and / or closure of School Hill with traffic redirected via Old Mill Drive / Mill Lane				£0		£0	2015-2030
	Library	Library Service - upgrading of facilities to meet increased demand from new developments	£60,000	£60,000	£0	£0	WSCC	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Steyning	Community Facilities	Play equipment	£30,000	£0	£30,000	£0	HDC	£0	2015-2030
	Community Facilities	Play equipment	£35,000	£35,000	£0	£0	HDC	£0	2015-2030
	Education	Safer Routes to School Scheme - Steyning Grammar School	£30,000	£30,000	£0	£0	WSCC	£0	2015-2025
	Education	School Safety Zone - Ashurst Primary School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Education	School Safety Zone - St Andrew's Primary School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
Steyning	Education	School Safety Zone - Steyning Grammar School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2025
	Library	Library Service - upgrading of facilities to meet increased demand from new developments	£30,000	£30,000	£0	£0	WSCC	£0	2015-2025
	Community Facilities	Steyning and Upper Beeding Play Facility improvements	£500,000	0 £500,000	£0	HDC	£0	2015-2025	
Thakeham	Education	School Safety Zone - Thakeham First School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2031
Upper Beeding	Community Facilities	Sports facilities project (re-building and extension of faculties	£200,000	£200,000	£0	£0	Parish Council	£0	2015-2025
	Community Facilities	New play equipment (LEAP)	£50,000	£50,000	£0	£0	Parish Council	£0	2015 - 2025
Washington	Transport	Extension to existing car park	?	*		£0	PC	£0	2015-2025
	Transport	Improvements to junction	?	*		£0	WSCC	£0	2015-2025
	Community Facilities	Village Hall Improvements	£50,000	?		£0	SDNP?	£0	2015-2025
	Health	New GP Surgery	£200,000	?		£0	SDNP?	£0	2015-2025
	Open Space, Sport and Recreation	Replacement children's play area	£65,000	?		£0	SDNP?	£0	2015-2025

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
	Open Space, Sport and Recreation	Millennium Footpath	£75,000	?		£0	SDNP?	£0	2015-2025
	Education	School Safety Zone - St Mary's C of E First School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2031
West Chiltington	Utilities	Mobile/Cellular, 3G and 4G capacity and quality	?	*		£0	WSCC/Utility Companies	£0	2015-2025
	Utilities	Broadband speed/super fast	?	*		£0	WSCC/Utility Companies	£0	2015-2025
West Chiltington	Transport	Bus Routes to surrounding towns. Bus routes to surrounding towns, villages, stations, shops and GP surgeries	?	*		£0	Bus Companies	£0	2015-2025
	Transport	Bus Shelters	£9,000	£9,000	£0	£0	WSCC/HDC	£0	2015-2025
	Transport	Upgrade of footpaths to accessible all weather surface to allow use by pushchairs/buggies, wheelchairs & mobility scooters	?	*		£0	WSCC	£0	2015-2025
	Transport	Shared access road surface with 20mph road speed for enhanced pedestrian safety.	?	*		£0	WSCC	£0	2015-2025
	Transport	School drop off and pick up parking facilities	?	*		£0	WSCC	£0	2015-2025
	Community Facilities	Youth facilities in the village - District wide need	?	*	£0	£0	WSCC/HDC	£0	2015-2025
	Healthcare	GP Capacity	?	*		£0	CCG/NHS England	£0	2015-2025
	Education	School Safety Zone - West Chiltington Community First School	£10,000	£10,000	£0	£0	WSCC	£0	2015-2031
Warnham	Transport	Strood Lane entry control and associated traffic calming	£100,000	£0	£0	£100,000	WSCC	£0	2015-2025
	Transport	Broadbridge Heath Road limited to 40	?	*		£0	WSCC	£0	2015-2025

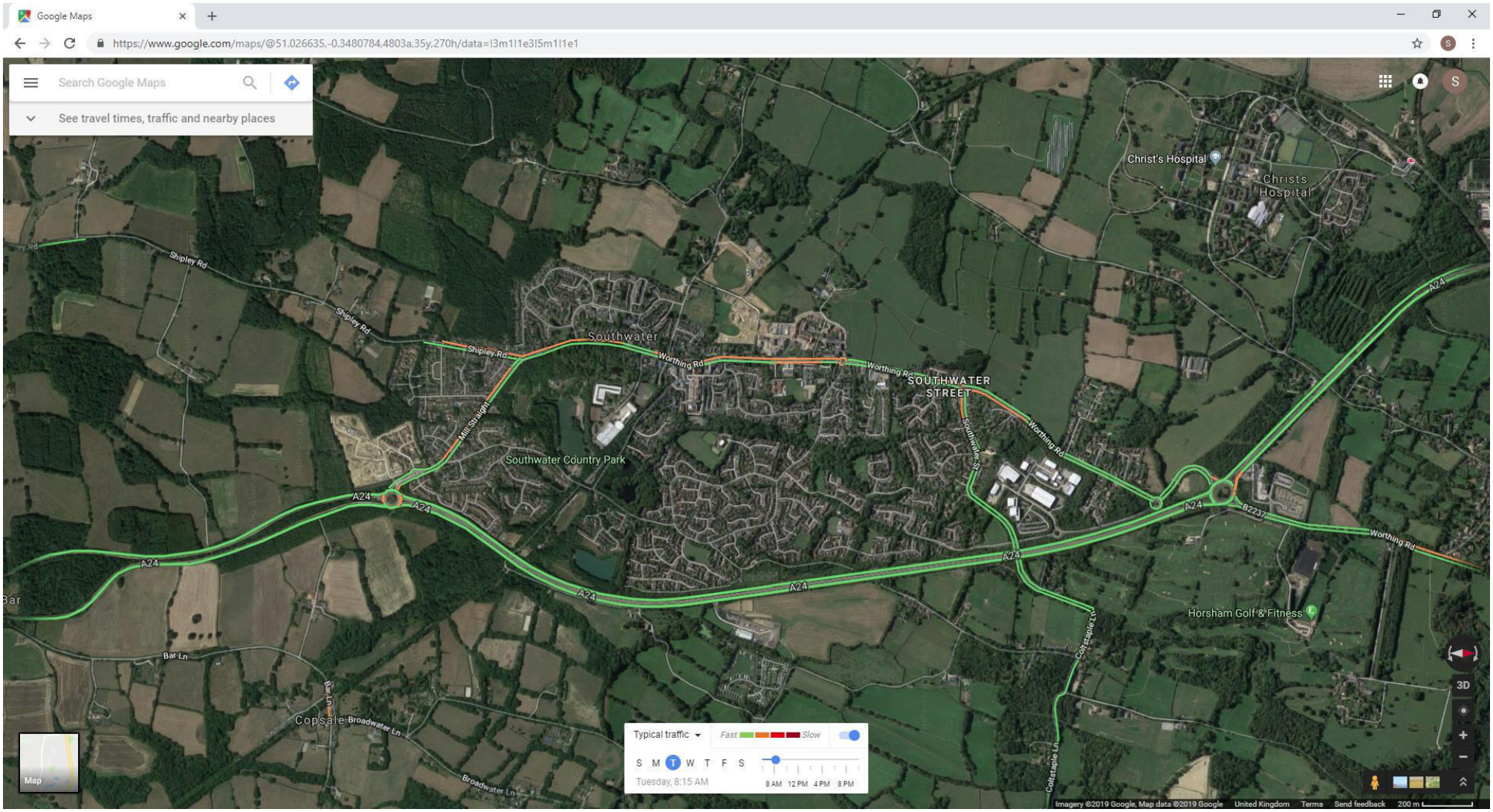
Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		mph							
	Transport	Friday Street traffic calming	£20,000	£0	£0	£20,000	PC	£0	2015-2025
	Transport	40 mph speed limit on A24	£12,000	£0	£0	£12,000	PC	£0	2015-2025
	Transport	Signal controlled pedestrian crossing, Kingsfold				£0	WSCC	£0	2015-2025
	Transport	A24 junction safety scheme				£0	WSCC	£0	2015-2025
	Transport	Cycle Route – District Wide	*		£0	£0	WSCC	£0	2015-2025
	Transport	Traffic Calming	£200,000	0	£200,000	0	WSCC	£0	2015-2025
Warnham	Community Facilities	New Pavilion	£250,000		£250,000		Cricket Club/PC	£0	2015-2025
	Open Space, Sport and Recreation	New Play Area	£50,000		£50,000		PC	£0	2015-2025
	Community Facilities	Allotments	£50,000		£50,000		PC	£0	2015-2025
	Education	School Safety Zone - Warnham Primary	£10,000	£10,000	£0	£0	WSCC	£0	2015-2031
Wiston	Transport	Pavement at Hole Street	?	*		£0	WSCC	£0	2015-2025
	Community Facilities	Children's Play Area	?	*		£0	HDC	£0	2015-2025
	Transport	Reduction in speed limit on Hole Street	?	*		£0	WSCC	£0	2015-2025
	Transport	Traffic calming measures on Hole Street/Water Lane	?	*		£0	WSCC	£0	2015-2025
	Community Facilities	Replacement Village Hall	£200,000	?		£0	SDNP	£0	2015-2025
	Open Space, Sports and Recreation	New children's play area	£50,000	?		£0	SDNP	£0	2015-2025
	Transport	Cycle Path	£1,040,000	?		£0	SDNP	£0	2015-2025
	Transport	Pavement/Footpath	£30,000	?		£0	SDNP	£0	2015-2025
District	Police	Division based accommodation	£509,952	*	*	£0	Police	£0	Dependent on building programme

Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
Wide	Police	Central and Shared accommodation	£1,434,240	*	*	£0	Police	£0	Dependent on building programme
	Police	Provision of fleet vehicles (marked and unmarked cars, vans and units for road policing)	£231,710	*	*	£0	Police	£0	Dependent on building programme
	Police	Specialist Officer Equipment (e.g. body worn camera, radio/telecoms, specialist safety/detection equipment and training)	£708,238	*	*	£0	Police	£0	Dependent on building programme
District Wide	Police	Information Technology Equipment for Officers	£116,000	*	*	£0	Police	£0	Dependent on building programme
	Police	Information Technology Equipment for Police staff members	£64,000	*	*	£0	Police	£0	Dependent on building programme
	Police	ANPR Cameras x 6 future areas of vulnerability	£66,000	*	*	£0	Police	£0	Dependent on building programme
	Police	Custody Provision	£319,404	*	*	£0	Police	£0	Dependent on building programme
	Police	Provision of fleet bicycles	£11,600	*	*	£0	Police	£0	Dependent on building programme
	Community Facilities	Extension of/strategic location for Hockey	£1,000,000	£1,000,000	£0	£0	TBC	TBC	TBC
	Community Facilities	Improvements to dryside sport and leisure centres (sports halls, activity halls, studios, sport specific areas, changing facilities and ancillary areas). Equates to min of 6 badminton courts plus additional requirements)	£7,500,000	£2,500,000	£1,000,000	£4,000,000	TBC	TBC	TBC
	Community Facilities	Improvements to existing Swimming Pool provision (swimming pools, leisure	£3,000,000	£3,000,000	£0	£0	HDC/Community Partners	TBC	TBC

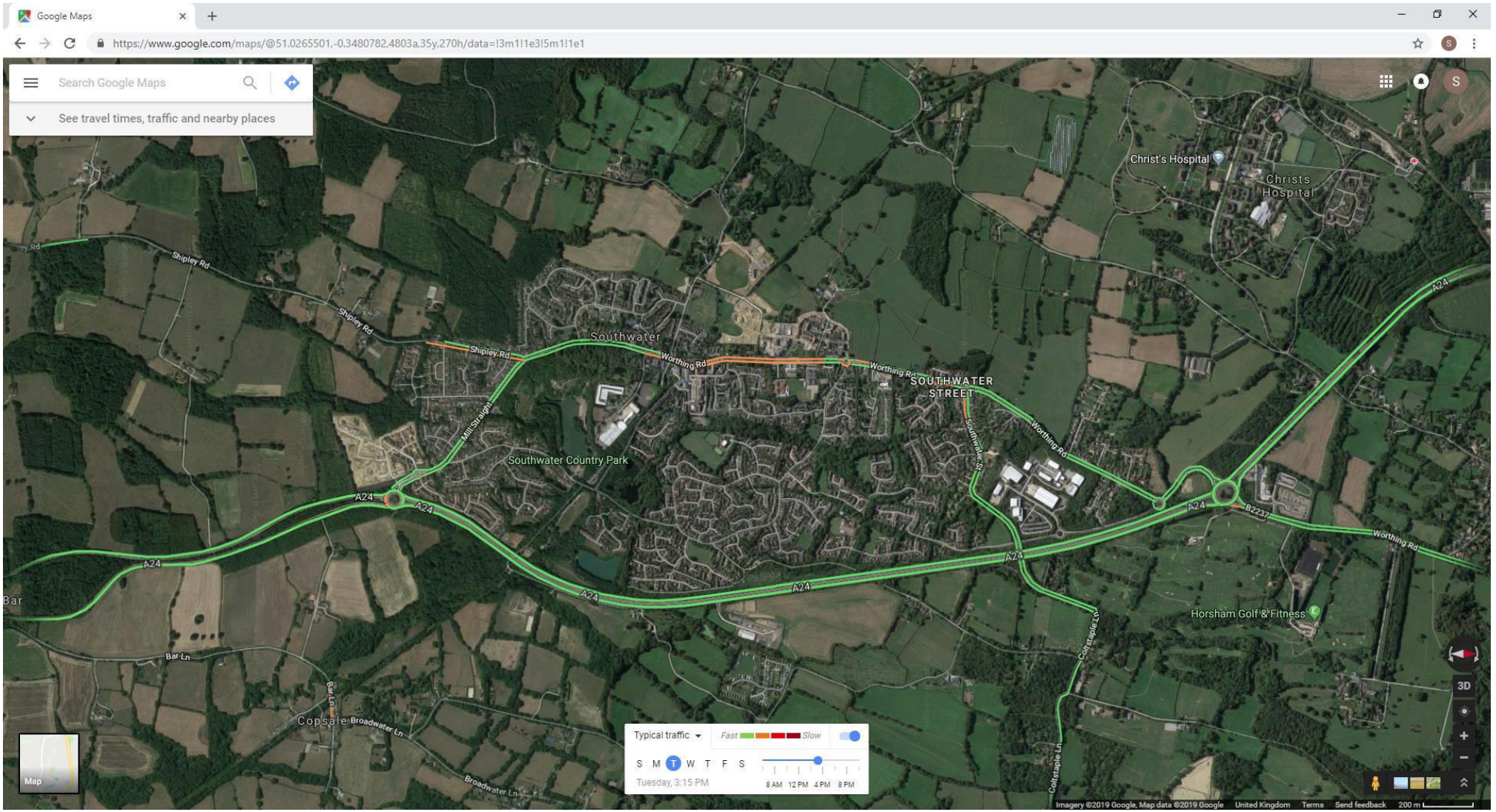
Location	Infrastructure Type	Infrastructure Project	Total Cost (Min)	Funding Source CIL (Min)	Funding Source S106	Funding Source Other	Delivered By	Existing Comm Funding	Delivery Timescale
		waters, changing facilities and associated water treatment plant (Equates to min of 280m2 of water space of 5-6 swimming lanes plus additional requirements).							
	Community Facilities	Improvements to bowls facilities (outdoor flat greens, indoor bowls, short mat bowls)	£200,000	£200,000	£0	£0	HDC	TBC	TBC
District Wide	Community Facilities	Improvements to existing health and fitness facilities (Exercise, gym work stations or equivalent (equates to 160 exercise stations))	£350,000	£350,000	£0	£0	HDC/Community Partners	TBC	TBC
	Community Facilities	Multi-functional green space 5.5sqm per person (per new resident) or tartaric and sub-district MFGs	£2,370,000	£2,370,000	£0	£0	HDC	TBC	TBC
	Community Facilities	New seating in green spaces and recreation grounds	£200,000	£200,000	£0	£0	HDC	TBC	TBC
	Community Facilities	Green space infrastructure access improvements/access to the countryside improvements	£700,000	£700,000	£0	£0	HDC	TBC	TBC
	Community Facilities	Parkour/freestyle gymnastics Indoor facility to accommodate Parkour/Freestyle Gymnastics with associated ancillary facilities	£1,000,000	£1,000,000	£0	£0	HDC	TBC	2015-2020
	Community Facilities	Indoor tennis 4 courts	£500,000	£500,000	£0	£0	HDC	TBC	TBC

APPENDIX A

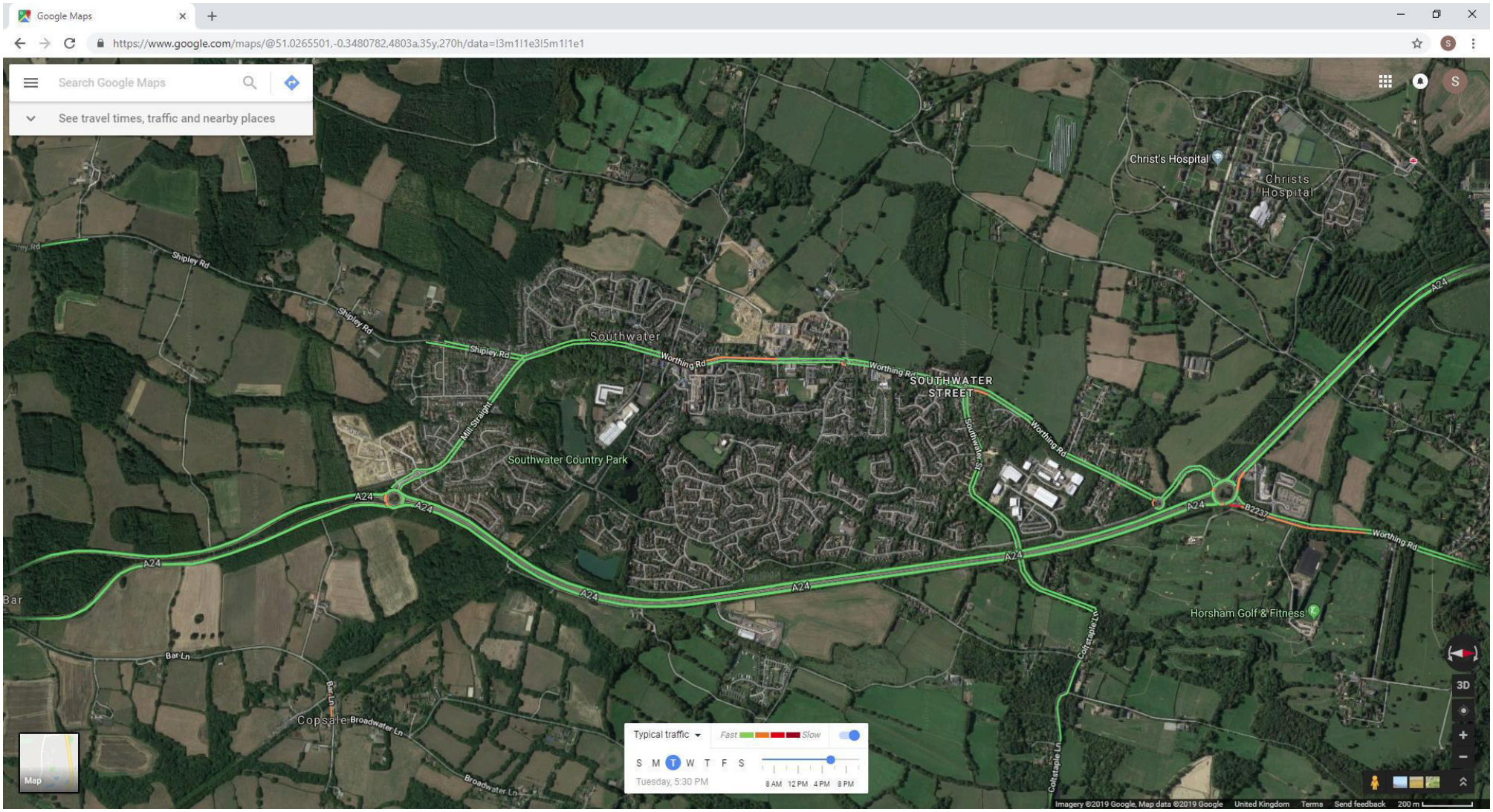
08:15 – Approximate School Drop-off



15:15 – Approximate School Pick-up



17:30 – PM Peak Hour



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WSP Response to RGP Technical Note dated 11/02/2019

LAND WEST OF WORTHING ROAD, SOUTHWATER
Transport Technical Note 1

Job Title	Land West of Worthing Road, Southwater	**Project Number**	70016993
Client	Berkeley Strategic		
Subject	WSP Response to RGP Technical Note		
Date	11th February 2019		

1.1 INTRODUCTION

1.1.1 This Technical Note 1 (TN1) has been written in response to the January 2019 TN that has been prepared by Russell Giles Partnership (RGP), referenced SWPC/18/4412s, with regards to the WSP report entitled 'Land West of Worthing Road, Southwater – Neighbourhood Plan Highway Capacity Assessment' dated 3 January 2019.

1.1.2 The RGP TN contains commentary on a number of items and it is considered that these can be broken down into six key topics which are responded to in the following sections.

1.2 REGULATION 14 RESPONSES / WSCC COMMENTS

1.2.1 Within paragraph 1.3 of the TN, RGP make reference to the Regulation 14 Consultation Responses from Horsham District Council and West Sussex County Council (WSCC) on the Southwater Neighbourhood Plan draft pre-submission and how these documents were considered in the preparation of their TN.

1.2.2 Also, within paragraph 1.6 of the TN, it is noted that the WSP assessment work was prepared in response to WSCC officer comments, some of which are copied within paragraph 1.6 of the RGP TN.

1.2.3 As discussed further within this note, it is considered that the completed assessment work is suitably robust to demonstrate the feasibility of the proposed development. However, it is accepted that a more thorough Transport Assessment (TA) will need to be completed at planning application stage to demonstrate the full impact of the proposals and the detail and methodology for this will need to be agreed with WSCC and this may result in slight modification to the junction assessment element.

1.3 MAJOR ROADS NETWORK AND TRAFFIC GROWTH

1.3.1 The following is stated within paragraphs 1.7 and 1.8 of the RGP TN:

> *"Since September 2018 - on the 18 December 2018, the outcome of the Major Road Network consultation was announced, which identifies the A264, A24 and A272 as part of the country's Major Road Network. As such, the traffic growth anticipated by WSCC's officer in its consultation on the Southwater Neighbourhood Plan would be significantly greater than anticipated as background to the officer's comment that, "… the level of growth proposed is not in accordance with the background level growth assumptions in the Strategic Transport Assessment for the Local Plan." RGP verbally confirmed this essential element to any traffic assessment with WSCC as background to this Technical Note.*
>
> *Given this background, WSP has responded to WSCC comments by way of its report. However, in the light of the more recent MRN proposals adopted by Central Government, WSCC should review its advice to Southwater Parish Council, and WSP should respond accordingly by way of further assessment."*

1.3.2 Our understanding is that whilst some schemes have been announced as part of the proposals to create a Major Road Network (MRN) there is no clarity on what further schemes may come forward and fulfil the criteria against which the MRN is being assessed by the DfT. RGP state that future traffic growth on the A24 will likely exceed the TEMPro high growth estimate as a result of the government's MRN proposals. Reference is also made to HGV traffic proportions being likely to increase along the A24.

1.3.3 However, we are not aware of any evidence or guidance which sets out how traffic growth on the MRN may materialise in this way or any guidance on how this should be taken into consideration by local authorities and developers which differs from the current industry standard adopted approach using TEMPro, adjusted to reflect known committed and planned development but we will continue to liaise with WSCC to monitor how their approach to this issue may evolve.

1.3.4 With regards to the application of TEMPro, RGP state, quite rightly, that TEMPro is based on other economic factors in addition to housing and that consequently some growth should be applied along the Worthing Road corridor to account for non-housing growth. However, as stated in the WSP report, the level of growth predicted to occur along the Worthing Road corridor as a result of the west of Southwater development of 1,000 dwellings exceeds that predicted by TEMPro across all economic factors. Consequently, it is considered reasonable to assume that no further growth is likely to be realised.

1.3.5 With respect to the level of growth along the A24 corridor the WSP report surmises that the level of traffic predicted to use the A24 from the west of Southwater development would form a proportion of the growth expectations in traffic along that corridor. Two scenarios for growth levels along the A24 were therefore assessed, one with the full 17% predicted by TEMPro and another using a figure of 5%.

1.3.6 The figure of 5% was derived following a review of the percentage impact that trips from the west of Southwater development would have on flows at Hop Oast Roundabout and was therefore considered to provide a reasonable basis from which to assess that and other junctions along the A24 corridor. However, notwithstanding this the full adjusted TEMPro growth rate of 17% has also been applied and assessed as set out in the report.

1.3.7 With the A24 forming part of the MRN it is considered that a number of improvements along it will be identified and implemented, including at key constraints such as the Buck Barn junction and consequently this would only provide benefit in terms of the capacity and operation of the corridor and its key nodes. When a planning application comes forwards for the proposed Neighbourhood Plan allocation, then the status of the MRN and any improvements schemes along the A24 corridor can be reviewed alongside any guidance which may emerge with respect to how it is assessed at that time. When a planning application comes forward the scope of assessment work will be agreed with WSCC.

1.4 SOUTHWATER INFANT ACADEMY

1.4.1 Bullet point 2 of paragraph 1.9 of the RGP TN states how *"Southwater Parish Council Steering Group considers that the picking-up period for the Southwater Infant Academy is a sensitive time to increases in traffic on the Worthing Road, particularly in the context of the narrowing of Worthing Road south of the school and the new zebra crossings. It is important to the impact of up to 1,000 new dwellings in Southwater to assess Worthing Road comprehensively by considering vehicular traffic volumes in models for all junctions likely to come under stress, and traffic management on Worthing Road, particularly in the vicinity of the Southwater Infant Academy"*.

1.4.2 It is acknowledged that the completed assessment work only assessed the traditional morning and evening peak periods and not the afternoon school 'pick-up period', which is traditionally between around 2:45pm and 3:30pm depending on the hours of operation of the school. However, it is considered that the impact of the proposed expansion of the site would not be significant during the afternoon school peak for the following reasons:

- Due to the proximity of the school to the development and limited parking availability at the schools, it is considered that the vast majority of pupils living within the proposed development would walk or cycle to and from school, particularly as there are zebra crossings on Worthing Road facilitating safe walking routes. As a result, the volume of vehicular trips from the development to the school are likely to be small;
- The majority of vehicular trips (circa 75%) travelling to and from the site are predicted to be via the north and via the Cedar Drive roundabout access and therefore these trips would not travel along the section of Worthing Road that passes the schools (assuming they are not related to trips to / from the school itself which, as set out above, one would anticipate not being significant given the development is within walking distance);
- The overall volume of traffic flows along the Worthing Road corridor during the afternoon school pick-up period are lower than the afternoon peak period flows, as are the volume of trips generated by the proposed development. For example, a weeklong automatic traffic count was completed on the Worthing Road between Cedar Drive and Station Road and this recorded the following average weekday flows:
  - 1500-1600: 627 two-way flows (320 n/b, 307s/b)
  - 1600-1700: 676 two-way flows (320 n/b, 356s/b)
  - 1700-1800: 789 two-way flows (373 n/b, 416s/b)

1.4.3 As a result of the above comparison, it is concluded that the PM peak hour (1700-1800) represents the worst-case traffic impact scenario and therefore an assessment of the school drop-off period is not necessary.

1.5 ASSESSMENT STUDY AREA

1.5.1 Bullet point 3 of paragraph 1.9 of the RGP TN notes how junction 6 (Worthing Road / Blakes Farm Road) is referenced in the report but no modelling assessment or results are provided. This work has been undertaken with a summary of the operation of the Blakes Farm Road roundabout provided in the following tables, with the results attached within **Appendix A**.

1.5.2 It should be noted that the Blakes Farm roundabout was not included in the recent surveys and therefore the flows from surveys completed in 2012 have been used, with these adjusted based on the results of the recent surveys. As with the other assessments of the Worthing Road corridor no growth has been applied to the background traffic flows on the basis that this is realised as a result of the development itself.

Table 1 - Worthing Road / Blakes Farm Road Roundabout Access: 2036 Development – 1,000 Dwellings

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (N)	0.41	1	0.62	2
Blakes Farm	0.13	0	0.35	1
Worthing Road (S)	0.63	2	0.34	1

Table 2 - Worthing Road / Blakes Farm Road Roundabout Access: 2036 Development – 1,000 Dwellings – Flat Profile

Arm	AM		PM	
	RFC	Queue	RFC	Queue
Worthing Road (N)	0.37	1	0.57	1
Blakes Farm	0.12	0	0.30	0
Worthing Road (S)	0.57	1	0.31	0

1.5.3 From the results presented above it can be seen that the Worthing Road / Blakes Farm Road roundabout is forecast to operate within capacity in the year 2036.

1.5.4 Bullet point 3 of paragraph 1.9 also comments that: "*based on Google Earth imagery for the key assessment periods, it is apparent that WSP's assessment work should include Worthing Road / Southwater Street and Station Road / Shipley Road / Mill Straight. The imagery for a Tuesday at 08:15, 15:15 and 17:30 is attached to this Technical Note at Appendix B. RGP's observations of the imagery indicate that traffic is "slow-moving*".

1.5.5 WSP has the following comments with regards to the above statement:

- The use of Google imagery is not considered a standard or recognised way of selecting assessment study areas, albeit can be useful in understanding conditions in advance of undertaking any site visits or surveys. However, it is no substitute for surveys and observed queues which have been collected for those junctions assessed. Notwithstanding this, WSP disagree that the Google imagery shows the traffic at the identified junctions to be slow-moving, with the light orange banding being 2 on the Google scale of 1 to 4, where 1 is fast moving and 4 is slow moving;
- The Worthing Road / Church Lane / Andrew Lane junction was included within the TA that supported the consented Broadacres application, with this being agreed as part of the scoping process at that time. However, as the junction at that time was forecast to operate with a maximum RFC of 0.29 it was considered that as there have been no significant changes since the time of the original application which would have led to the junction performing particularly differently it could be excluded from the scope of assessment at this stage. However, if deemed necessary by WSCC, these junctions could be considered further through the planning application process; and
- The agreed scope of work for the TA that supported the consented Broadacres application did not include either the Worthing Road / Southwater Street or Station Road / Shipley Road / Mill Straight junctions due to their good operation and the limited impact that the additional development trips would have. WSP consider that as there have been no significant changes since the time of the original application which would have led to these junctions performing particularly differently it could be excluded from

the scope of assessment at this stage. However, if deemed necessary by WSCC, these junctions could be considered further through the planning application process.

1.6 ASSESSMENT METHODOLOGY

1.6.1 Within Chapter 2 of their TN, RGP make a number of comments with regards to the methodology adopted to derive the baseline and future year traffic flows and these are discussed below.

QUEUE SURVEYS

1.6.2 RGP state that: "*it is noted that queue length data was only collected for the site access junctions*".

1.6.3 It should be noted that queue length data was collected for all junctions and used as part of the model validation process.

OBSERVED FLOWS

1.6.4 With regards to the collection of traffic survey data, it is stated how "i*t is common practice to observe flows over at least two days"*. It is WSPs considered view that the common approach adopted by the industry is to collect detailed turning count and queue data over a one-day period (whilst also checking before and during the surveys that there are no planned / emergency roadworks or traffic incidents that may affect the results) and to then compare these with flows recorded through weeklong automatic traffic counts to ensure that traffic flow conditions on the survey day were representative of a typical day.

1.6.5 In this manner the flows from the day of the manual traffic counts were compared against the results of the weeklong automatic traffic counts (which included the day on which the manual counts were undertaken) in order to demonstrate their suitability.

M23 IMPROVEMENT WORKS

1.6.6 The RGP TN notes how the current M23 works may be affecting the routeing of strategic north to south movements, with the possible transfer of trips from the A23 / M23 corridor to the A24 corridor. As RGP indicate, it is unclear whether this has occurred; however even if there has been some re-routeing of traffic on to the A24 from the M23 then this would result in an over-estimation of traffic along the A24 corridor within the surveys meaning that the flows used in the assessment are robust.

1.6.7 Furthermore, no allowance has been made for any A24 traffic to potentially divert on to the M23 once the Smart motorway works are completed, again meaning that the flows used in the assessment work along the A24 are robust.

1.7 WSCC REQUIREMENTS

1.7.1 In the summary chapter of their TN, RGP list four points that they consider WSCC would likely want to see greater attention given to. These are copied below, along with WSP's comments:

— **RGP Comment:** The Station Road [*sic*] section between Cedar Drive and Church Lane/Andrews Lane, particularly where there is school activity;

WSP Response: As previously stated, the impact of the proposed development during the school afternoon pick-up period is likely to be negligible. However, it should be noted that a full Transport Assessment would be scoped with WSCC in support of an application and should this identify the need for any further assessment work then it would be undertaken at that time. However, it is considered that the starting position for scoping discussions would be to exclude the need to assess the Worthing Road section for the reasons set out above.

— **RGP Comment:** All junctions where there is slow moving traffic on the Worthing Road / Station Road / Mill Straight corridor;

WSP Response: As set out in this response, the study area assessed is considered to be appropriate and would form the basis of scoping discussions with WSCC. Should those scoping discussions require wider assessment then this could be addressed at the time of a planning application.

— **RGP Comment:** Traffic data collected to include queue-lengths

WSP Response: As confirmed queue length data was collected for all junctions surveyed and used as part of the model validation process for each of the junctions assessed.

— **RGP Comment:** Trip assignment, by surveying an existing estate access

WSP Response: The methodology adopted to forecast the assignment of trips to / from the development is considered suitable and in line with the industry recognised approach through the use of census data. This is in itself robust in that this is based on journey to work data and commuter trips are typically longer and by less sustainable modes than other journey purposes. Surveys of local estates would only provide detail on the immediate assignment of trips at the estates site access junction but not provide detail on the wider assignment or trip purpose and indeed there would be no guarantee that this would be reflective of the movements of the wider populous, which census data captures.

1.8 CONCLUSION

1.8.1 It is considered that the responses provided within this Technical Note and the previously completed assessment work as set out within the WSP report entitled 'Land West of Worthing Road, Southwater – Neighbourhood Plan Highway Capacity Assessment' (3 January 2019) provides a robust evidence base to support the proposed allocation.

APPENDIX A

BLAKES FARM ROAD: JUNCTIONS 9 RESULT FILE

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Worthing Road - Blakes Farm Road Existing 190207.j9
Path: S:\70016993 - Southwater - Phase 2\D Design and Analysis\Development\JUNCTION ASSESSMENTS\Worthing Road-Blakes Farm
Report generation date: 07/02/2019 10:58:09

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Existing Arrangement - 2018 Base OD								
A - Worthing Road (SB)	0.5	3.48	0.33	A	0.8	4.01	0.45	A
B - Blake's Farm Road	0.1	3.26	0.13	A	0.4	4.37	0.30	A
C - Worthing Road (NB)	0.7	3.90	0.42	A	0.4	3.08	0.26	A
Existing Arrangement - 2018 Base FLAT								
A - Worthing Road (SB)	0.4	3.31	0.30	A	0.7	3.72	0.41	A
B - Blake's Farm Road	0.1	3.18	0.11	A	0.4	4.04	0.26	A
C - Worthing Road (NB)	0.6	3.62	0.38	A	0.3	2.94	0.23	A
Existing Arrangement - 2018 Base + 1000 Dwellings OD								
A - Worthing Road (SB)	0.7	3.93	0.41	A	1.6	5.83	0.62	A
B - Blake's Farm Road	0.2	3.47	0.13	A	0.5	5.53	0.35	A
C - Worthing Road (NB)	1.7	6.14	0.63	A	0.5	3.46	0.34	A
Existing Arrangement - 2018 Base + 1000 Dwellings FLAT								
A - Worthing Road (SB)	0.6	3.68	0.37	A	1.3	5.05	0.57	A
B - Blake's Farm Road	0.1	3.37	0.12	A	0.4	4.91	0.30	A
C - Worthing Road (NB)	1.3	5.22	0.57	A	0.4	3.25	0.31	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Worthing Road - Blake's Farm Road Existing Junction AM Peak
Location	Southwater
Site number	
Date	23/02/2011
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	ukddd001 [ZW0465BAS1UK]
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2018 Base OD	AM	ONE HOUR	07:45	09:15		15	✓
D2	2018 Base OD	PM	ONE HOUR	16:45	18:15		15	✓
D3	2036 +2500Units	AM	ONE HOUR	07:45	09:15		15	✓
D4	2036 +2500Units	PM	ONE HOUR	16:45	18:15		15	✓
D5	2036 +2000Units	AM	ONE HOUR	07:45	09:15		15	✓
D6	2036 +2000Units	PM	ONE HOUR	16:45	18:15		15	✓
D7	2036 +1500Units	AM	ONE HOUR	07:45	09:15		15	✓
D8	2036 +1500Units	PM	ONE HOUR	16:45	18:15		15	✓
D9	2036 +1000Units	AM	ONE HOUR	07:45	09:15		15	✓
D10	2036 +1000Units	PM	ONE HOUR	16:45	18:15		15	✓
D11	Sc3 +1000Units	AM	ONE HOUR	07:45	09:15		15	✓
D12	Sc3 +1000Units	PM	ONE HOUR	16:45	18:15		15	✓
D13	Sc3 +2500Units	AM	ONE HOUR	07:45	09:15		15	✓
D14	Sc3 +2500Units	PM	ONE HOUR	16:45	18:15		15	✓
D15	Sc3 +2500Units +Emp	AM	ONE HOUR	07:45	09:15		15	✓
D16	Sc3 +2500Units +Emp	PM	ONE HOUR	16:45	18:15		15	✓
D17	2018 Base FLAT	AM	FLAT	07:45	09:15	90	15	✓
D18	2018 Base FLAT	PM	FLAT	16:45	18:15	90	15	✓
D19	2018 Base + 1000 Dwellings OD	AM	ONE HOUR	07:45	09:15		15	✓
D20	2018 Base + 1000 Dwellings OD	PM	ONE HOUR	16:45	18:15		15	✓
D21	2018 Base + 1000 Dwellings FLAT	AM	FLAT	07:45	09:15	90	15	✓
D22	2018 Base + 1000 Dwellings FLAT	PM	FLAT	16:45	18:15	90	15	✓

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Existing Arrangement	✓	✓	D1,D2,D17,D18,D19,D20,D21,D22	100.000	100.000

Existing Arrangement - 2018 Base OD, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	3.66	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	Worthing Road (SB)	
B	Blake's Farm Road	
C	Worthing Road (NB)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A - Worthing Road (SB)	3.65	6.90	9.0	30.0	40.0	19.0	
B - Blake's Farm Road	3.65	6.00	11.9	16.0	40.0	24.0	
C - Worthing Road (NB)	3.65	6.20	21.2	25.0	40.0	14.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A - Worthing Road (SB)	0.648	1648
B - Blake's Farm Road	0.616	1556
C - Worthing Road (NB)	0.676	1773

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2018 Base OD	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		ONE HOUR	✓	469	100.000
B - Blake's Farm Road		ONE HOUR	✓	146	100.000
C - Worthing Road (NB)		ONE HOUR	✓	615	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
From		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	264	205
	B - Blake's Farm Road	140	0	6
	C - Worthing Road (NB)	549	66	0

Proportions

	To			
From		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0.00	0.56	0.44
	B - Blake's Farm Road	0.96	0.00	0.04
	C - Worthing Road (NB)	0.89	0.11	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
From		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	3	4
	B - Blake's Farm Road	12	0	0
	C - Worthing Road (NB)	4	2	0

Average PCU Per Veh

	To			
From		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.026	1.039
	B - Blake's Farm Road	1.121	1.000	1.000
	C - Worthing Road (NB)	1.038	1.015	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - Worthing Road (SB)	353	364
	B - Blake's Farm Road	110	123
	C - Worthing Road (NB)	463	479
08:00-08:15	A - Worthing Road (SB)	422	435
	B - Blake's Farm Road	131	146
	C - Worthing Road (NB)	553	573
08:15-08:30	A - Worthing Road (SB)	516	533
	B - Blake's Farm Road	161	179
	C - Worthing Road (NB)	677	701
08:30-08:45	A - Worthing Road (SB)	516	533
	B - Blake's Farm Road	161	179
	C - Worthing Road (NB)	677	701
08:45-09:00	A - Worthing Road (SB)	422	435
	B - Blake's Farm Road	131	146
	C - Worthing Road (NB)	553	573
09:00-09:15	A - Worthing Road (SB)	353	364
	B - Blake's Farm Road	110	123
	C - Worthing Road (NB)	463	479

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.33	3.48	0.5	A	430	646
B - Blake's Farm Road	0.13	3.26	0.1	A	134	201
C - Worthing Road (NB)	0.42	3.90	0.7	A	564	847

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	353	88	50	1566	0.226	352	517	0.0	0.3	2.963	A
B - Blake's Farm Road	110	27	154	1306	0.084	110	248	0.0	0.1	3.010	A
C - Worthing Road (NB)	463	116	105	1635	0.283	461	158	0.0	0.4	3.064	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	422	105	59	1560	0.270	421	619	0.3	0.4	3.162	A
B - Blake's Farm Road	131	33	184	1288	0.102	131	296	0.1	0.1	3.110	A
C - Worthing Road (NB)	553	138	126	1620	0.341	552	190	0.4	0.5	3.371	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	516	129	73	1551	0.333	516	758	0.4	0.5	3.475	A
B - Blake's Farm Road	161	40	225	1265	0.127	161	363	0.1	0.1	3.260	A
C - Worthing Road (NB)	677	169	154	1599	0.423	676	232	0.5	0.7	3.898	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	516	129	73	1551	0.333	516	759	0.5	0.5	3.478	A
B - Blake's Farm Road	161	40	226	1264	0.127	161	363	0.1	0.1	3.261	A
C - Worthing Road (NB)	677	169	154	1599	0.424	677	232	0.7	0.7	3.905	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	422	105	59	1559	0.270	422	620	0.5	0.4	3.168	A
B - Blake's Farm Road	131	33	185	1288	0.102	131	297	0.1	0.1	3.111	A
C - Worthing Road (NB)	553	138	126	1619	0.341	554	190	0.7	0.5	3.379	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	353	88	50	1566	0.226	353	519	0.4	0.3	2.972	A
B - Blake's Farm Road	110	27	154	1305	0.084	110	249	0.1	0.1	3.011	A
C - Worthing Road (NB)	463	116	105	1634	0.283	464	159	0.5	0.4	3.074	A

Existing Arrangement - 2018 Base OD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	3.84	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2018 Base OD	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		ONE HOUR	✓	677	100.000
B - Blake's Farm Road		ONE HOUR	✓	317	100.000
C - Worthing Road (NB)		ONE HOUR	✓	376	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0	112	565
	B - Blake's Farm Road	255	0	62
	C - Worthing Road (NB)	370	6	0

Proportions

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0.00	0.17	0.83
	B - Blake's Farm Road	0.80	0.00	0.20
	C - Worthing Road (NB)	0.98	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	0	0
	B - Blake's Farm Road	0	0	0
	C - Worthing Road (NB)	0	0	0

Average PCU Per Veh

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.000	1.000
	B - Blake's Farm Road	1.000	1.000	1.000
	C - Worthing Road (NB)	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A - Worthing Road (SB)	510	510
	B - Blake's Farm Road	239	239
	C - Worthing Road (NB)	283	283
17:00-17:15	A - Worthing Road (SB)	609	609
	B - Blake's Farm Road	285	285
	C - Worthing Road (NB)	338	338
17:15-17:30	A - Worthing Road (SB)	745	745
	B - Blake's Farm Road	349	349
	C - Worthing Road (NB)	414	414
17:30-17:45	A - Worthing Road (SB)	745	745
	B - Blake's Farm Road	349	349
	C - Worthing Road (NB)	414	414
17:45-18:00	A - Worthing Road (SB)	609	609
	B - Blake's Farm Road	285	285
	C - Worthing Road (NB)	338	338
18:00-18:15	A - Worthing Road (SB)	510	510
	B - Blake's Farm Road	239	239
	C - Worthing Road (NB)	283	283

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.45	4.01	0.8	A	621	932
B - Blake's Farm Road	0.30	4.37	0.4	A	291	436
C - Worthing Road (NB)	0.26	3.08	0.4	A	345	518

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	510	127	5	1645	0.310	508	469	0.0	0.4	3.166	A
B - Blake's Farm Road	239	60	424	1295	0.184	238	89	0.0	0.2	3.403	A
C - Worthing Road (NB)	283	71	191	1643	0.172	282	470	0.0	0.2	2.644	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	609	152	5	1644	0.370	608	561	0.4	0.6	3.471	A
B - Blake's Farm Road	285	71	507	1243	0.229	285	106	0.2	0.3	3.756	A
C - Worthing Road (NB)	338	85	229	1618	0.209	338	563	0.2	0.3	2.812	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	745	186	7	1644	0.454	744	687	0.6	0.8	3.999	A
B - Blake's Farm Road	349	87	621	1173	0.298	349	130	0.3	0.4	4.363	A
C - Worthing Road (NB)	414	103	280	1583	0.262	414	689	0.3	0.4	3.078	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	745	186	7	1644	0.454	745	688	0.8	0.8	4.007	A
B - Blake's Farm Road	349	87	622	1173	0.298	349	130	0.4	0.4	4.371	A
C - Worthing Road (NB)	414	103	281	1583	0.262	414	690	0.4	0.4	3.079	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	609	152	5	1644	0.370	610	563	0.8	0.6	3.483	A
B - Blake's Farm Road	285	71	509	1242	0.229	285	106	0.4	0.3	3.763	A
C - Worthing Road (NB)	338	85	230	1617	0.209	338	565	0.4	0.3	2.817	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	510	127	5	1645	0.310	510	471	0.6	0.5	3.175	A
B - Blake's Farm Road	239	60	426	1293	0.185	239	89	0.3	0.2	3.414	A
C - Worthing Road (NB)	283	71	192	1643	0.172	283	473	0.3	0.2	2.648	A

Existing Arrangement - 2018 Base FLAT, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	3.45	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D17	2018 Base FLAT	AM	FLAT	07:45	09:15	90	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		FLAT	✓	469	100.000
B - Blake's Farm Road		FLAT	✓	146	100.000
C - Worthing Road (NB)		FLAT	✓	615	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0	264	205
	B - Blake's Farm Road	140	0	6
	C - Worthing Road (NB)	549	66	0

Proportions

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0.00	0.56	0.44
	B - Blake's Farm Road	0.96	0.00	0.04
	C - Worthing Road (NB)	0.89	0.11	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	3	4
	B - Blake's Farm Road	12	0	0
	C - Worthing Road (NB)	4	2	0

Average PCU Per Veh

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.026	1.039
	B - Blake's Farm Road	1.121	1.000	1.000
	C - Worthing Road (NB)	1.038	1.015	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - Worthing Road (SB)	469	484
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	615	637
08:00-08:15	A - Worthing Road (SB)	469	484
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	615	637
08:15-08:30	A - Worthing Road (SB)	469	484
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	615	637
08:30-08:45	A - Worthing Road (SB)	469	484
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	615	637
08:45-09:00	A - Worthing Road (SB)	469	484
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	615	637
09:00-09:15	A - Worthing Road (SB)	469	484
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	615	637

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.30	3.31	0.4	A	469	704
B - Blake's Farm Road	0.11	3.18	0.1	A	146	219
C - Worthing Road (NB)	0.38	3.62	0.6	A	615	923

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	469	117	66	1555	0.302	467	686	0.0	0.4	3.298	A
B - Blake's Farm Road	146	36	204	1277	0.114	145	329	0.0	0.1	3.180	A
C - Worthing Road (NB)	615	154	140	1610	0.382	613	210	0.0	0.6	3.601	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	469	117	66	1555	0.302	469	689	0.4	0.4	3.313	A
B - Blake's Farm Road	146	36	205	1276	0.114	146	330	0.1	0.1	3.184	A
C - Worthing Road (NB)	615	154	140	1609	0.382	615	211	0.6	0.6	3.620	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	469	117	66	1555	0.302	469	689	0.4	0.4	3.313	A
B - Blake's Farm Road	146	36	205	1276	0.114	146	330	0.1	0.1	3.184	A
C - Worthing Road (NB)	615	154	140	1609	0.382	615	211	0.6	0.6	3.620	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	469	117	66	1555	0.302	469	689	0.4	0.4	3.313	A
B - Blake's Farm Road	146	36	205	1276	0.114	146	330	0.1	0.1	3.184	A
C - Worthing Road (NB)	615	154	140	1609	0.382	615	211	0.6	0.6	3.620	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	469	117	66	1555	0.302	469	689	0.4	0.4	3.313	A
B - Blake's Farm Road	146	36	205	1276	0.114	146	330	0.1	0.1	3.184	A
C - Worthing Road (NB)	615	154	140	1609	0.382	615	211	0.6	0.6	3.620	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	469	117	66	1555	0.302	469	689	0.4	0.4	3.313	A
B - Blake's Farm Road	146	36	205	1276	0.114	146	330	0.1	0.1	3.184	A
C - Worthing Road (NB)	615	154	140	1609	0.382	615	211	0.6	0.6	3.620	A

Existing Arrangement - 2018 Base FLAT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	3.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D18	2018 Base FLAT	PM	FLAT	16:45	18:15	90	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		FLAT	✓	677	100.000
B - Blake's Farm Road		FLAT	✓	317	100.000
C - Worthing Road (NB)		FLAT	✓	376	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
From		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	112	565
	B - Blake's Farm Road	255	0	62
	C - Worthing Road (NB)	370	6	0

Proportions

		To		
From		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0.00	0.17	0.83
	B - Blake's Farm Road	0.80	0.00	0.20
	C - Worthing Road (NB)	0.98	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To	A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	0	0
	B - Blake's Farm Road	0	0	0
	C - Worthing Road (NB)	0	0	0

Average PCU Per Veh

From	To	A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.000	1.000
	B - Blake's Farm Road	1.000	1.000	1.000
	C - Worthing Road (NB)	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A - Worthing Road (SB)	677	677
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	376	376
17:00-17:15	A - Worthing Road (SB)	677	677
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	376	376
17:15-17:30	A - Worthing Road (SB)	677	677
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	376	376
17:30-17:45	A - Worthing Road (SB)	677	677
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	376	376
17:45-18:00	A - Worthing Road (SB)	677	677
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	376	376
18:00-18:15	A - Worthing Road (SB)	677	677
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	376	376

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.41	3.72	0.7	A	677	1016
B - Blake's Farm Road	0.26	4.04	0.4	A	317	476
C - Worthing Road (NB)	0.23	2.94	0.3	A	376	564

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	677	169	6	1644	0.412	674	623	0.0	0.7	3.701	A
B - Blake's Farm Road	317	79	563	1209	0.262	316	118	0.0	0.4	4.016	A
C - Worthing Road (NB)	376	94	254	1601	0.235	375	624	0.0	0.3	2.933	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	677	169	6	1644	0.412	677	625	0.7	0.7	3.721	A
B - Blake's Farm Road	317	79	565	1208	0.262	317	118	0.4	0.4	4.041	A
C - Worthing Road (NB)	376	94	255	1600	0.235	376	627	0.3	0.3	2.940	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	677	169	6	1644	0.412	677	625	0.7	0.7	3.721	A
B - Blake's Farm Road	317	79	565	1208	0.262	317	118	0.4	0.4	4.041	A
C - Worthing Road (NB)	376	94	255	1600	0.235	376	627	0.3	0.3	2.940	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	677	169	6	1644	0.412	677	625	0.7	0.7	3.721	A
B - Blake's Farm Road	317	79	565	1208	0.262	317	118	0.4	0.4	4.041	A
C - Worthing Road (NB)	376	94	255	1600	0.235	376	627	0.3	0.3	2.940	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	677	169	6	1644	0.412	677	625	0.7	0.7	3.721	A
B - Blake's Farm Road	317	79	565	1208	0.262	317	118	0.4	0.4	4.041	A
C - Worthing Road (NB)	376	94	255	1600	0.235	376	627	0.3	0.3	2.940	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	677	169	6	1644	0.412	677	625	0.7	0.7	3.721	A
B - Blake's Farm Road	317	79	565	1208	0.262	317	118	0.4	0.4	4.041	A
C - Worthing Road (NB)	376	94	255	1600	0.235	376	627	0.3	0.3	2.940	A

Existing Arrangement - 2018 Base + 1000 Dwellings OD, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	5.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D19	2018 Base + 1000 Dwellings OD	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		ONE HOUR	✓	576	100.000
B - Blake's Farm Road		ONE HOUR	✓	146	100.000
C - Worthing Road (NB)		ONE HOUR	✓	919	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0	264	312
	B - Blake's Farm Road	140	0	6
	C - Worthing Road (NB)	853	66	0

Proportions

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0.00	0.46	0.54
	B - Blake's Farm Road	0.96	0.00	0.04
	C - Worthing Road (NB)	0.93	0.07	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	3	4
	B - Blake's Farm Road	12	0	0
	C - Worthing Road (NB)	4	2	0

Average PCU Per Veh

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.026	1.039
	B - Blake's Farm Road	1.121	1.000	1.000
	C - Worthing Road (NB)	1.038	1.015	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - Worthing Road (SB)	434	448
	B - Blake's Farm Road	110	123
	C - Worthing Road (NB)	692	717
08:00-08:15	A - Worthing Road (SB)	518	535
	B - Blake's Farm Road	131	146
	C - Worthing Road (NB)	826	856
08:15-08:30	A - Worthing Road (SB)	634	655
	B - Blake's Farm Road	161	179
	C - Worthing Road (NB)	1012	1049
08:30-08:45	A - Worthing Road (SB)	634	655
	B - Blake's Farm Road	161	179
	C - Worthing Road (NB)	1012	1049
08:45-09:00	A - Worthing Road (SB)	518	535
	B - Blake's Farm Road	131	146
	C - Worthing Road (NB)	826	856
09:00-09:15	A - Worthing Road (SB)	434	448
	B - Blake's Farm Road	110	123
	C - Worthing Road (NB)	692	717

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.41	3.93	0.7	A	529	793
B - Blake's Farm Road	0.13	3.47	0.2	A	134	201
C - Worthing Road (NB)	0.63	6.14	1.7	A	843	1265

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	434	108	49	1564	0.277	432	745	0.0	0.4	3.177	A
B - Blake's Farm Road	110	27	234	1260	0.087	110	248	0.0	0.1	3.130	A
C - Worthing Road (NB)	692	173	105	1634	0.424	689	239	0.0	0.7	3.801	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	518	129	59	1557	0.332	517	891	0.4	0.5	3.459	A
B - Blake's Farm Road	131	33	280	1233	0.106	131	296	0.1	0.1	3.266	A
C - Worthing Road (NB)	826	207	126	1618	0.510	825	286	0.7	1.0	4.531	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	634	159	72	1549	0.409	633	1091	0.5	0.7	3.928	A
B - Blake's Farm Road	161	40	343	1197	0.134	161	363	0.1	0.2	3.472	A
C - Worthing Road (NB)	1012	253	154	1598	0.633	1009	350	1.0	1.7	6.088	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	634	159	73	1549	0.409	634	1093	0.7	0.7	3.935	A
B - Blake's Farm Road	161	40	344	1197	0.134	161	363	0.2	0.2	3.473	A
C - Worthing Road (NB)	1012	253	154	1598	0.633	1012	350	1.7	1.7	6.142	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	518	129	60	1557	0.333	519	895	0.7	0.5	3.470	A
B - Blake's Farm Road	131	33	281	1233	0.106	131	297	0.2	0.1	3.268	A
C - Worthing Road (NB)	826	207	126	1618	0.511	829	286	1.7	1.1	4.576	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	434	108	50	1564	0.277	434	749	0.5	0.4	3.190	A
B - Blake's Farm Road	110	27	235	1259	0.087	110	249	0.1	0.1	3.132	A
C - Worthing Road (NB)	692	173	105	1633	0.424	693	240	1.1	0.7	3.833	A

Existing Arrangement - 2018 Base + 1000 Dwellings OD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	5.10	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D20	2018 Base + 1000 Dwellings OD	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		ONE HOUR	✓	932	100.000
B - Blake's Farm Road		ONE HOUR	✓	317	100.000
C - Worthing Road (NB)		ONE HOUR	✓	492	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0	112	820
	B - Blake's Farm Road	255	0	62
	C - Worthing Road (NB)	486	6	0

Proportions

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0.00	0.12	0.88
	B - Blake's Farm Road	0.80	0.00	0.20
	C - Worthing Road (NB)	0.99	0.01	0.00

Vehicle Mix

Heavy Vehicle Percentages

From \ To	A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
A - Worthing Road (SB)	0	0	0
B - Blake's Farm Road	0	0	0
C - Worthing Road (NB)	0	0	0

Average PCU Per Veh

From \ To	A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
A - Worthing Road (SB)	1.000	1.000	1.000
B - Blake's Farm Road	1.000	1.000	1.000
C - Worthing Road (NB)	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A - Worthing Road (SB)	702	702
	B - Blake's Farm Road	239	239
	C - Worthing Road (NB)	370	370
17:00-17:15	A - Worthing Road (SB)	838	838
	B - Blake's Farm Road	285	285
	C - Worthing Road (NB)	442	442
17:15-17:30	A - Worthing Road (SB)	1026	1026
	B - Blake's Farm Road	349	349
	C - Worthing Road (NB)	542	542
17:30-17:45	A - Worthing Road (SB)	1026	1026
	B - Blake's Farm Road	349	349
	C - Worthing Road (NB)	542	542
17:45-18:00	A - Worthing Road (SB)	838	838
	B - Blake's Farm Road	285	285
	C - Worthing Road (NB)	442	442
18:00-18:15	A - Worthing Road (SB)	702	702
	B - Blake's Farm Road	239	239
	C - Worthing Road (NB)	370	370

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.62	5.83	1.6	A	855	1283
B - Blake's Farm Road	0.35	5.53	0.5	A	291	436
C - Worthing Road (NB)	0.34	3.46	0.5	A	451	677

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	702	175	5	1645	0.427	699	556	0.0	0.7	3.794	A
B - Blake's Farm Road	239	60	615	1177	0.203	238	88	0.0	0.3	3.829	A
C - Worthing Road (NB)	370	93	191	1643	0.225	369	661	0.0	0.3	2.823	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	838	209	5	1644	0.510	837	666	0.7	1.0	4.450	A
B - Blake's Farm Road	285	71	736	1102	0.259	285	106	0.3	0.3	4.400	A
C - Worthing Road (NB)	442	111	229	1618	0.273	442	792	0.3	0.4	3.062	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	1026	257	7	1644	0.624	1024	815	1.0	1.6	5.783	A
B - Blake's Farm Road	349	87	901	1001	0.349	348	130	0.3	0.5	5.510	A
C - Worthing Road (NB)	542	135	280	1583	0.342	541	969	0.4	0.5	3.453	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	1026	257	7	1644	0.624	1026	816	1.6	1.6	5.829	A
B - Blake's Farm Road	349	87	903	1000	0.349	349	130	0.5	0.5	5.531	A
C - Worthing Road (NB)	542	135	281	1583	0.342	542	971	0.5	0.5	3.457	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	838	209	5	1644	0.510	840	667	1.6	1.0	4.489	A
B - Blake's Farm Road	285	71	739	1100	0.259	286	106	0.5	0.4	4.422	A
C - Worthing Road (NB)	442	111	230	1617	0.274	443	795	0.5	0.4	3.066	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	702	175	5	1645	0.427	703	559	1.0	0.7	3.828	A
B - Blake's Farm Road	239	60	618	1175	0.203	239	89	0.4	0.3	3.849	A
C - Worthing Road (NB)	370	93	192	1642	0.226	371	665	0.4	0.3	2.833	A

Existing Arrangement - 2018 Base + 1000 Dwellings FLAT, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	4.51	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D21	2018 Base + 1000 Dwellings FLAT	AM	FLAT	07:45	09:15	90	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		FLAT	✓	576	100.000
B - Blake's Farm Road		FLAT	✓	146	100.000
C - Worthing Road (NB)		FLAT	✓	919	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0	264	312
	B - Blake's Farm Road	140	0	6
	C - Worthing Road (NB)	853	66	0

Proportions

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0.00	0.46	0.54
	B - Blake's Farm Road	0.96	0.00	0.04
	C - Worthing Road (NB)	0.93	0.07	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	3	4
	B - Blake's Farm Road	12	0	0
	C - Worthing Road (NB)	4	2	0

Average PCU Per Veh

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.026	1.039
	B - Blake's Farm Road	1.121	1.000	1.000
	C - Worthing Road (NB)	1.038	1.015	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - Worthing Road (SB)	576	595
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	919	952
08:00-08:15	A - Worthing Road (SB)	576	595
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	919	952
08:15-08:30	A - Worthing Road (SB)	576	595
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	919	952
08:30-08:45	A - Worthing Road (SB)	576	595
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	919	952
08:45-09:00	A - Worthing Road (SB)	576	595
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	919	952
09:00-09:15	A - Worthing Road (SB)	576	595
	B - Blake's Farm Road	146	163
	C - Worthing Road (NB)	919	952

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.37	3.68	0.6	A	576	864
B - Blake's Farm Road	0.12	3.37	0.1	A	146	219
C - Worthing Road (NB)	0.57	5.22	1.3	A	919	1378

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	576	144	66	1553	0.371	574	988	0.0	0.6	3.664	A
B - Blake's Farm Road	146	36	311	1216	0.120	145	329	0.0	0.1	3.361	A
C - Worthing Road (NB)	919	230	139	1608	0.571	914	317	0.0	1.3	5.143	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	576	144	66	1553	0.371	576	993	0.6	0.6	3.683	A
B - Blake's Farm Road	146	36	312	1215	0.120	146	330	0.1	0.1	3.366	A
C - Worthing Road (NB)	919	230	140	1608	0.572	919	318	1.3	1.3	5.224	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	576	144	66	1553	0.371	576	993	0.6	0.6	3.683	A
B - Blake's Farm Road	146	36	312	1215	0.120	146	330	0.1	0.1	3.366	A
C - Worthing Road (NB)	919	230	140	1608	0.572	919	318	1.3	1.3	5.224	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	576	144	66	1553	0.371	576	993	0.6	0.6	3.683	A
B - Blake's Farm Road	146	36	312	1215	0.120	146	330	0.1	0.1	3.366	A
C - Worthing Road (NB)	919	230	140	1608	0.572	919	318	1.3	1.3	5.224	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	576	144	66	1553	0.371	576	993	0.6	0.6	3.683	A
B - Blake's Farm Road	146	36	312	1215	0.120	146	330	0.1	0.1	3.366	A
C - Worthing Road (NB)	919	230	140	1608	0.572	919	318	1.3	1.3	5.224	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	576	144	66	1553	0.371	576	993	0.6	0.6	3.683	A
B - Blake's Farm Road	146	36	312	1215	0.120	146	330	0.1	0.1	3.366	A
C - Worthing Road (NB)	919	230	140	1608	0.572	919	318	1.3	1.3	5.224	A

Existing Arrangement - 2018 Base + 1000 Dwellings FLAT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A, B, C	4.52	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D22	2018 Base + 1000 Dwellings FLAT	PM	FLAT	16:45	18:15	90	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Worthing Road (SB)		FLAT	✓	932	100.000
B - Blake's Farm Road		FLAT	✓	317	100.000
C - Worthing Road (NB)		FLAT	✓	492	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0	112	820
	B - Blake's Farm Road	255	0	62
	C - Worthing Road (NB)	486	6	0

Proportions

		To		
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
From	A - Worthing Road (SB)	0.00	0.12	0.88
	B - Blake's Farm Road	0.80	0.00	0.20
	C - Worthing Road (NB)	0.99	0.01	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	0	0	0
	B - Blake's Farm Road	0	0	0
	C - Worthing Road (NB)	0	0	0

Average PCU Per Veh

From	To			
		A - Worthing Road (SB)	B - Blake's Farm Road	C - Worthing Road (NB)
	A - Worthing Road (SB)	1.000	1.000	1.000
	B - Blake's Farm Road	1.000	1.000	1.000
	C - Worthing Road (NB)	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A - Worthing Road (SB)	932	932
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	492	492
17:00-17:15	A - Worthing Road (SB)	932	932
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	492	492
17:15-17:30	A - Worthing Road (SB)	932	932
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	492	492
17:30-17:45	A - Worthing Road (SB)	932	932
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	492	492
17:45-18:00	A - Worthing Road (SB)	932	932
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	492	492
18:00-18:15	A - Worthing Road (SB)	932	932
	B - Blake's Farm Road	317	317
	C - Worthing Road (NB)	492	492

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A - Worthing Road (SB)	0.57	5.05	1.3	A	932	1398
B - Blake's Farm Road	0.30	4.91	0.4	A	317	476
C - Worthing Road (NB)	0.31	3.25	0.4	A	492	738

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	932	233	6	1644	0.567	927	738	0.0	1.3	4.984	A
B - Blake's Farm Road	317	79	815	1053	0.301	315	117	0.0	0.4	4.866	A
C - Worthing Road (NB)	492	123	254	1601	0.307	490	877	0.0	0.4	3.235	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	932	233	6	1644	0.567	932	741	1.3	1.3	5.055	A
B - Blake's Farm Road	317	79	820	1051	0.302	317	118	0.4	0.4	4.906	A
C - Worthing Road (NB)	492	123	255	1600	0.307	492	882	0.4	0.4	3.248	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	932	233	6	1644	0.567	932	741	1.3	1.3	5.055	A
B - Blake's Farm Road	317	79	820	1051	0.302	317	118	0.4	0.4	4.906	A
C - Worthing Road (NB)	492	123	255	1600	0.307	492	882	0.4	0.4	3.248	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	932	233	6	1644	0.567	932	741	1.3	1.3	5.055	A
B - Blake's Farm Road	317	79	820	1051	0.302	317	118	0.4	0.4	4.906	A
C - Worthing Road (NB)	492	123	255	1600	0.307	492	882	0.4	0.4	3.248	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	932	233	6	1644	0.567	932	741	1.3	1.3	5.055	A
B - Blake's Farm Road	317	79	820	1051	0.302	317	118	0.4	0.4	4.906	A
C - Worthing Road (NB)	492	123	255	1600	0.307	492	882	0.4	0.4	3.248	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
A - Worthing Road (SB)	932	233	6	1644	0.567	932	741	1.3	1.3	5.055	A
B - Blake's Farm Road	317	79	820	1051	0.302	317	118	0.4	0.4	4.906	A
C - Worthing Road (NB)	492	123	255	1600	0.307	492	882	0.4	0.4	3.248	A