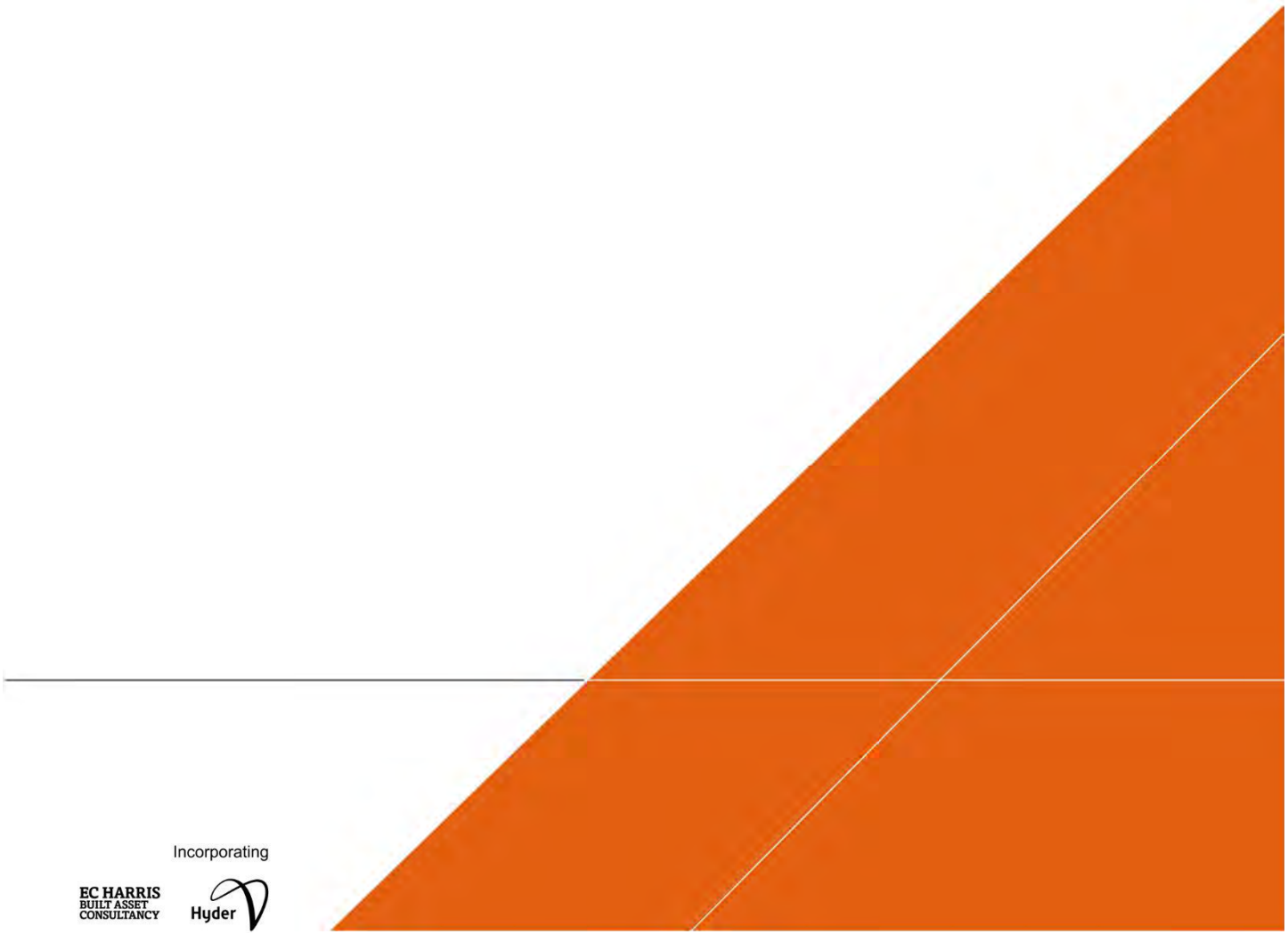
ARCADIS Design & Consultancy for natural and built assets

A320 CORRIDOR STUDY

Feasibility Study Final Report

APRIL 2018



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VERSION CONTROL

Version	Date	Author	Changes
1.0	13.03.18	JM	Final Report (draft)
2.0	19.04.18	JM	Final Report

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TABLES

APPENDICES

1 Introduction

Arcadis has been appointed jointly by Surrey Heath Borough Council (SHBC), Runnymede Borough Council (RBC) and Woking Borough Council (WBC) to assess the cumulative quantum and distribution of vehicular trips from development proposals in Runnymede, Surrey Heath and Woking boroughs and forecast the impacts on the A320 corridor. The study outcome is to develop a preferred package of mitigation measures to address and/or minimise the impact of the proposed growth to enable delivery of the developments. Ultimately the study is to inform the boroughs' Local Plans.

1.1 Background

Associated with the development of the RBC Local Plan, Surrey County Council (SCC), working with consultancy firm Minnerva, has undertaken a Strategic Highway Assessment of the impact of the preferred development option included in the Runnymede Local Plan on the road network. Whilst the study area is the extent of RBC, the Strategic Highway Assessment Report (SHAR) factors in proposed growth in neighbouring authority areas, specifically the strategic sites being considered by WBC and SHBC for allocation in their respective Local Plans such as Martyrs Lane in WBC and Fairoaks Airport in SHBC.

A sub-model (or cordoned model) of the study area has been created from the county wide strategic transport model. The model years and scenarios within the Runnymede SHAR are as follows:

- 2014 Base Models; and
- 2036 Future Year Models
  - Scenario 1: Do Minimum: This scenario includes committed developments identified from the base year (since 2014) to the forecast year 2036, where committed developments comprise sites already built, or are in the process of construction, or have planning permission.
  - Scenario 2: Local Plan Growth: This scenario is a continuation of Scenario 1 plus the preferred options for development as contained in the emerging Runnymede 2035 Local Plan. Scenario 2 includes particular consideration to the DERA Longcross South site and how the southern and northern parts of the development are linked.

Note that the Fairoaks airfield and Martyrs Lane developments are included in both Scenarios 1 and 2.

The models cover the following time periods:

- AM peak: 0700 – 1000 hours;
- Inter peak: 1000 – 1600 hours;
- PM peak: 1600 – 1900 hours; and
- Off peak: 1900 – 0700 hours.

The Runnymede SHAR indicates that the largest flow increases are in the Chertsey South area near St Peter's Hospital, with network performance expected to deteriorate at the following locations:

- A320 / St Peter's Way in the AM and PM peaks;
- A320 / Holloway Hill in the AM peak;
- A320 Guildford Road through Ottershaw in the PM peak; and
- St Peter's Hospital access approach to the A320 Guildford Road roundabout in the PM peak.

The study identifies that the predicted increase in vehicle trips at the local level results in rerouting, particularly causing longer distance trips to alter their motorway junctions for local origins and destinations. The additional congestion around St Peter's Hospital causes the longer distance trips to reroute away from the M25 Junction 11 to avoid the substantial delay at this location. It is noted that the AM peak hour is most sensitive to vehicles altering their routes to avoid local congestion.

The study concludes that if development is progressed at St Peters and the surrounding area, major investment will be needed to mitigate against this impact and make sure that emergency access is not compromised. The study notes that if mitigation measures are not implemented there will be a severe transport impact and as such, it is advised that these sites are not progressed together in their current sizes, without mitigation.

As a result of the findings from the SHAR the A320 Corridor study has been commissioned to investigate in more detail the location and extent of the issues that have been identified. This A320 Corridor study report should be read in conjunction with the Runnymede Local Plan SHAR. It should also be noted that the definition of the Do Minimum scenario in each report is different. In the SHAR the Do Minimum scenario does not include Local Plan development whereas in the A320 Corridor study the Do Minimum scenario includes Local Plan development but does not include mitigation measures.

1.2 Objectives

The project objectives are to:

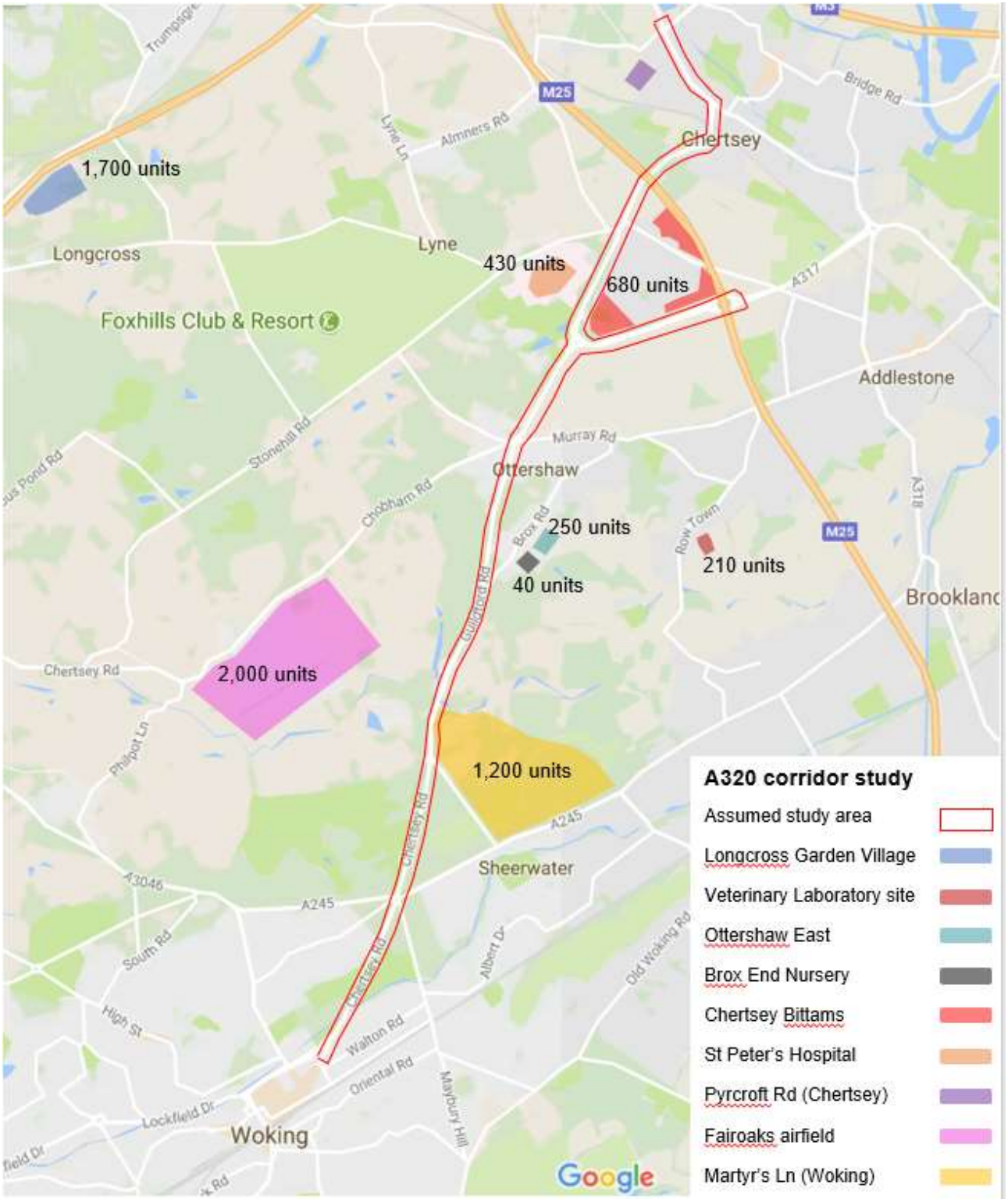
- Identify capacity constraints;
- Identify the volume of movements that need to be accommodated or the volume that can be accommodated; and
- Produce strategic mitigation measures, including sustainable measures, to accommodate all or some of the additional movements and enable development led growth.

1.3 Study Area

The study area covers the A320 from the Chilsey Green Road / B388 Thorpe Road / Staines Road / St Ann's Road roundabout, Chertsey in the north to the Victoria Way / Chertsey Road roundabout, Woking in the south. It also includes the A320 St Peter's Way from Guildford Road to the M25 Junction 11 (see Figure 1). The extents of the study area have been based on the following:

1. Potential large developments affect trip numbers significantly on the sections of the A320 in the study area. Related trip numbers reduce on the east side of the M25 and on the A320 towards Staines; and
2. The Runnymede Local Plan SHAR considered the proposed study area to be of greatest concern (see sections 5.2.1 – 5.2.3 of the SHAR) and where possible mitigation measures were difficult to identify without further work.

Figure 1 – Study Area and Key Potential Development Sites



1.4 Key Potential Developments

The key potential developments that have been included as part of this study and are included in the 2036 Future Year Do Minimum scenario (for the A320 Corridor Study) are summarised in Table 1 and their locations are indicated in Figure 1.

Table 1 – Key Potential Developments

Site	Proposed Residential Units
Longcross Garden Village	1,700 units
Veterinary Laboratory site at Rowtown	210 units
Ottershaw East	250 units
Brox End Nursery, Ottershaw	40 units
Chertsey Bittams sites	680 units
St Peter's Hospital	430 units
Pyrcroft Road housing site, Chertsey	280 units
Fairoaks airfield	2,000 units
Martyr's Lane (subject to decision by WBC)	1,200 units

1.5 Project Stages

The project has been divided into four stages:

- Stage 1: Understanding the current situation;
- Stage 2: Understanding the future situation;
- Stage 3: Options for solutions; and
- Stage 4: Option testing and appraisal.

1.6 Report Structure

This report documents the findings from Stages 1 to 4 of this study and should be read in conjunction with the "A320 Corridor Study, Feasibility Study – Interim Report (February 2018)" which provides more detail on the concept and initial sketch designs produced in the early stages of the project. The remainder of this report is structured as follows:

- Chapter 2 summarises the relevant policies;
- Chapter 3 details the existing transport infrastructure;
- Chapter 4 provides the analysis of collision data;
- Chapter 5 details the key land designations in the area surrounding the corridor;
- Chapter 6 outlines the stakeholder engagement process;
- Chapter 7 provides the traffic modelling results for the Base and Future Years;
- Chapter 8 details the process undertaken in the development of mitigation measures and summarises the schemes selected to be taken forward for traffic model assessment;

- Chapter 9 provides the assessment of the junction improvements. It also details the feasibility designs and associated costs;
- Chapter 10 outlines the proposed link improvements;
- Chapter 11 details the suggested travel demand management measures;
- Chapter 12 summarises the status of the proposed schemes; and
- Chapter 13 provides the conclusions and recommendations of the study.

2 Policy Review

2.1 Introduction

This section provides an overview of the national, regional and local policy and guidance framework that has informed this study.

2.2 National Policy

An overview of the national policy relevant to this study is presented in this section, together with relevant national guidance.

2.2.1 National Planning Policy Framework (2012)

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF sets out 12 core planning principles that should underpin decision taking. The principle which relates to transport planning and in the turn the proposed developments is to:

"actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling and focus significant development in locations which are or can be made sustainable."

Chapter 4 – Promoting sustainable transport states that:

"*the transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel" and that "local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development*".

The policy framework further states that:

"developments should be located and designed where practical to:

Accommodate the efficient delivery of goods and supplies;

- *Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
- *Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones; and*
- *Consider the needs of people with disabilities by all modes of transport."*

This congestion study should therefore ensure sustainable transport options are prioritised in recommendations brought forward.

2.3 Sub Regional Policy

Surrey County Council is Highway Authority of which the study area resides. This section outlines the county wide strategic transport objectives.

2.3.1 Surrey Transport Plan (2017)

The Surrey Transport Plan (STP), the county's third Local Transport Plan covers the period from April 2011 to March 2026. The STP sets out the strategy to help people to meet their transport and travel needs effectively, reliably, safely and sustainably within Surrey, in order to promote economic vibrancy, protect and enhance the environment, improve the quality of life, and reduce carbon emissions.

The Plan comprises strategies, sections on the overarching vision and objectives, transport problems in Surrey, the indicators and targets, implementation programmes and the statutory assessments.

The following objectives have been included:

- **Effective transport** – To facilitate end-to-end journeys for residents, business and visitors by maintaining the road network, delivering public transport services and, where appropriate, providing enhancements.
- **Reliable transport** – To improve the journey time reliability of travel in Surrey.

- **Safe transport** – To improve road safety and the security of the travelling public in Surrey.
- **Sustainable transport** – To provide an integrated transport system that protects the environment, keeps people healthy and provides for lower carbon transport choices.

The Plan identifies a number of Surrey's transport trends relevant to this study, including:

- **Existing transport infrastructure capacity** – Congestion does occur during the peak periods and at local hotspots, and rapidly arises when either incidents occur or traffic flow is disrupted, estimated to amount to about £550m per annum[1].
- **Trip patterns** – Over one-third of Surrey working residents commute out of the county with 24% travelling to London. In 2001, 15% of those working in Surrey travelled to work from outside the county. This demand for commuting in/out of the county puts pressure on the transport network[2].
- **Connectivity of existing networks** – Surrey's main road and rail networks are radial, centred upon London, with the exception of the M25. The networks are described as being relatively poor exacerbated by the dispersed nature of towns resulting in a wide variation in access to facilities.

This study should therefore identify any transport issues and appropriate interventions intended to enhance the transport network. These interventions could include improved journey time reliability measures and road safety measures. The Plan also highlights how transport networks should be integrated and provide benefits to people's health and the environment.

2.3.2 Surrey Transport Plan: Congestion Strategy (2014)

The Congestion Strategy, one of the strategies of the STP, sets out the overall approach to tackling congestion in Surrey. The aim of the strategy is to improve the reliability of journeys, reduce delays at congestion hotspots and improve the provision of journey planning information for travel in Surrey. It provides a congestion programme of specific schemes and lays out an integrated approach to managing congestion:

- A mixture of network and demand management;
- Promoting alternatives to car travel; and
- New infrastructure.

Surrey's highway network is extremely busy. Congestion occurs during the peak periods and rapidly arises when either incidents occur or traffic flow is disrupted. At the same time, travel demand is increasing as a result of additional development, both within and outside the county's boundaries.

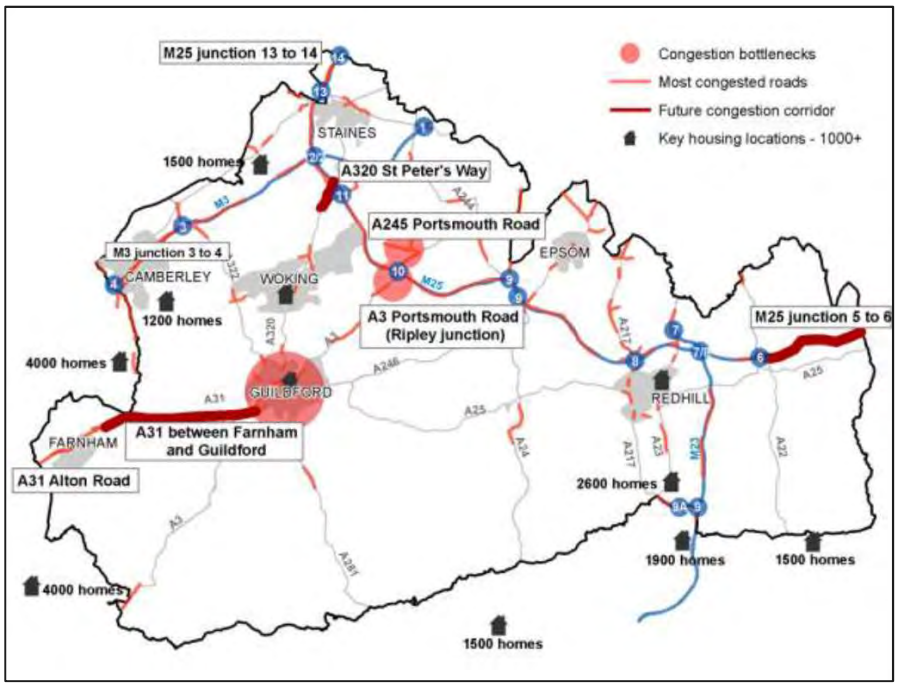
The STP has identified the following congestion bottlenecks within the study area:

- Runnymede – A320 St Peter's Way (surrounding the M25 junction 11) and A317 Corridor; and
- Woking – A320 Corridor and A319 / Chertsey Road / Chobham High Street.

The current and future areas within the county suffering from the most severe congestion are presented in the STP (as Figure 7) and shown in Figure 2.

[1] Calculated by Surrey County Council's Transport Studies team, based on 2007-08 data.
[2] Census 2001

Figure 2 - Current and future congestion areas on our road network



The study should therefore focus on improving journey time reliability with particular attention given to tackling congestion hot spots.

2.3.3 Highways and Transport Strategic Business Plan

The overarching ambition of this business plan is:

"*To enable safe, reliable journeys and the growth of prosperous places, now and in the future*".

The Plan sets out at a high level, what the county intends to do to in order to fulfil their purpose, how they will do it and the expected outcomes. This will later be supplemented by a Delivery Plan which will contain further details, including programmes of work.

The plan intends to:

- **Improve and grow Surrey's highway infrastructure**, by providing new transport and flood alleviation infrastructure to support the growth of prosperous places, protect communities from flooding, and make it easier for people to access public services.
- **Maintain and operate the network**, by investing our capital and revenue funding in maintenance schemes and activities that will make best use of the existing infrastructure to get the most value from our highways assets, and to keep the highway safe and serviceable for users.
- **Develop the service**, to ensure we are able to adapt and evolve to changing demands.

Investment in strategic transport improvements and flood alleviation schemes is essential to support the economic prosperity of Surrey. Between 2016 to 2021 it is intended to:

- Deliver major transport infrastructure schemes including the Runnymede Roundabout Development scheme, worth £4.8m and the Epsom Town Centre scheme worth £2.8m;
- Deliver three resilience schemes, worth £12.75m;
- Deliver wider network benefits schemes, worth £3.75m; and
- In partnership with the Environment Agency we will work to secure funding for and deliver flood alleviation schemes in Godalming (£4m), Guildford (£3.8m) and Leatherhead (£3.4m).

This congestion study should therefore help contribute to the improvements of Surrey's highway infrastructure, to support economic growth whilst ensuring the network is adaptable to changing demands.

2.4 Local Policy

This section provides a summary of the local policy documents of Runnymede Borough Council, Woking Borough Council and Surrey Heath Borough Council.

2.4.1 Runnymede Local Plan (2001)

The Runnymede current Local Plan was adopted in 2001 and sets out policies for guiding and controlling the way that buildings and land are used and developed in Runnymede. The Plan was intended to serve to 2006 however, a majority of policies have now been 'saved' under the Planning and Compulsory Purchase Act 2004 and continue to form part of the development plan.

In considering proposals for major highway improvements the Plan states that:

"…the County Council has regard to the provisions of Structure Plan Policy MT10. This Policy requires that priority be given to schemes that solve existing problems with economic and/or environmental benefits".

All development proposals will be expected to comply with current highway design standards. The Borough Council will seek to ensure that Access and Circulation Arrangements (Policy MV4) are appropriate to:

- The type of development proposed; and
- The area in which it is located, and do not aggravate:
  - Traffic congestion;
  - Accident potential; and
  - Environmental and amenity consideration in the vicinity.

Under Policy M43 Transport Infrastructure Contributions, the Plan seeks to ensure that new development should be integrated as satisfactorily as possible into the transport network and that improvements should be made where necessary as part of those developments. It finds that:

"the highways system in Runnymede will remain under pressure in the peak traffic periods over the plan period, particularly on the more urbanised sections of the main traffic routes. Any additional traffic generated alongside these routes would further impede movement and make conditions more hazardous".

The Local Plan (2001) will eventually be replaced by emerging 'Runnymede 2035' Local Plan, which is currently under consultation.

The study should therefore primarily focus on the existing transportation problems within the study area and provide advice on the appropriate interventions that will benefit economically and environmentally.

2.4.2 Woking Core Strategy (2012)

The Core Strategy is the main document within Woking Borough Council's Local Development Framework (LDF) which sets out the overall local strategic context for the preparation of other local development documents, and includes:

- A 'spatial vision' which sets out how Woking Borough will develop to 2027;
- 13 strategic objectives for the Borough which focus on the key issues and challenges facing the area;
- A delivery strategy for achieving those objectives, which sets out how much development is expected to happen, where and by what means; and
- Clear arrangements for monitoring and delivery.

Key issues and challenges facing the Borough include the delivery of infrastructure and services (including transport) to keep pace with development. These may include cross boundary issues relevant to the implementation of the Core Strategy which states:

"*…the Council will work with others to ensure that the transport impacts of development with cross boundary implications are fully assessed and mitigated. Transport for Woking and Transport for Surrey partnership groups have been established to coordinate transport matters across Woking and Surrey respectively".*

The A320 is described as providing a good link through the borough connecting the M25, Guildford and Chertsey. However, there is peak hour traffic congestion, particularly in Woking Town Centre and in the Monument Road area.

Borough Wide policy *CS18 Transport and Accessibility* states that:

"*the Council is committed to developing a well integrated community connected by a sustainable transport system which connects people to jobs, services and community facilities, and minimises impacts on biodiversity*".

This is to be achieved by the following:

- Locating most new development in the main urban areas, served by a range of sustainable transport modes, such as public transport, walking and cycling to minimise the need to travel and distance travelled.
- Ensuring development proposals provide appropriate infrastructure measures to mitigate the adverse effects of development traffic and other environmental and safety impacts (direct or cumulative). Transport Assessments will be required for development proposals, where relevant, to fully assess the impacts of development and identify appropriate mitigation measures. Developer contributions will be secured to implement transport mitigation schemes.
- Requiring development proposals that generate significant traffic or have significant impact on the Strategic Road Network to be accompanied by a travel plan, clearly setting out how the travel needs of occupiers and visitors will be managed in a sustainable manner.
- Ensuring that changes made to transport infrastructure or increase in road vehicle usage will not have an adverse effect on the integrity of a Special Protection Area (SPA), Special Area of Conservation (SAC) or Ramsar site.

Essential to the achievement of the spatial vision is an integrated transport system that provides easy access to jobs, community facilities, green infrastructure and recreation, by all modes; in particular sustainable transport modes such as public transport, walking and cycling.

This study therefore should ensure that improvements to infrastructure mitigate adverse impacts of development traffic, including safety impacts, whilst not having adverse impacts on the environment.

2.4.3 Surrey Heath Core Strategy & Development Management Policies 2011-2028 (2012)

The Surrey Heath Local Plan provides the local policy framework for the Borough against which planning applications will be assessed. The Core Strategy and Development Management Policies Development Plan Document (adopted 2012) sets out the key policies that will be used to determine the location, amount, type and timing of new development within the Borough in the period up to 2028.

The core and design policies relevant to this study have been included below:

Policy CP 11 Movement, states:

"the Council will work with the highway authority to seek improvements to and better integration of walking and cycling routes and facilities, the efficient and safe operation of the highway network while seeking to reduce the need to travel, encourage the use of sustainable modes of transport and reduce the impact of traffic on residential areas."

The policy aims to address the associated problems of high car dependency leading to traffic congestion and unsustainable travel patterns. Without intervention, this is likely to worsen over time, posing a risk to economic growth and the strategic and local highway infrastructure.

The Council's Transport Assessment (2010) undertaken by Surrey County Council does not highlight the need for any major highways infrastructure on the local highway network to support the development set out in this

Core Strategy. However, it identifies a need to undertake more detailed studies to confirm whether mitigation measures are required for localised impacts.

Development Management Policy DM11 Traffic Management and Highway Safety finds that effective traffic management is essential to the safe and free flow of movement on the highway network and can improve accessibility and potentially reduce congestion by understanding flows of traffic at peak and non-peak periods.

Proposals should also consider their impact on the highway network and where necessary provide mitigation which reduces this impact and which improves traffic management and highway safety.

The study should therefore seek to improve sustainable transport networks and reduce traffic impacts on residential areas.

3 Existing Transport Infrastructure

3.1 Introduction

This section describes the existing transport infrastructure in the vicinity of the corridor, including:

- Walking, cycling and equestrian;
- Public Transport; and
- Highway network.

3.2 Walking, Cycling and Equestrian Network

3.2.1 Walking and Cycling Infrastructure

The study area transport network provides good provision for walking and cycling however the highway lacks in lighting provision in certain areas.

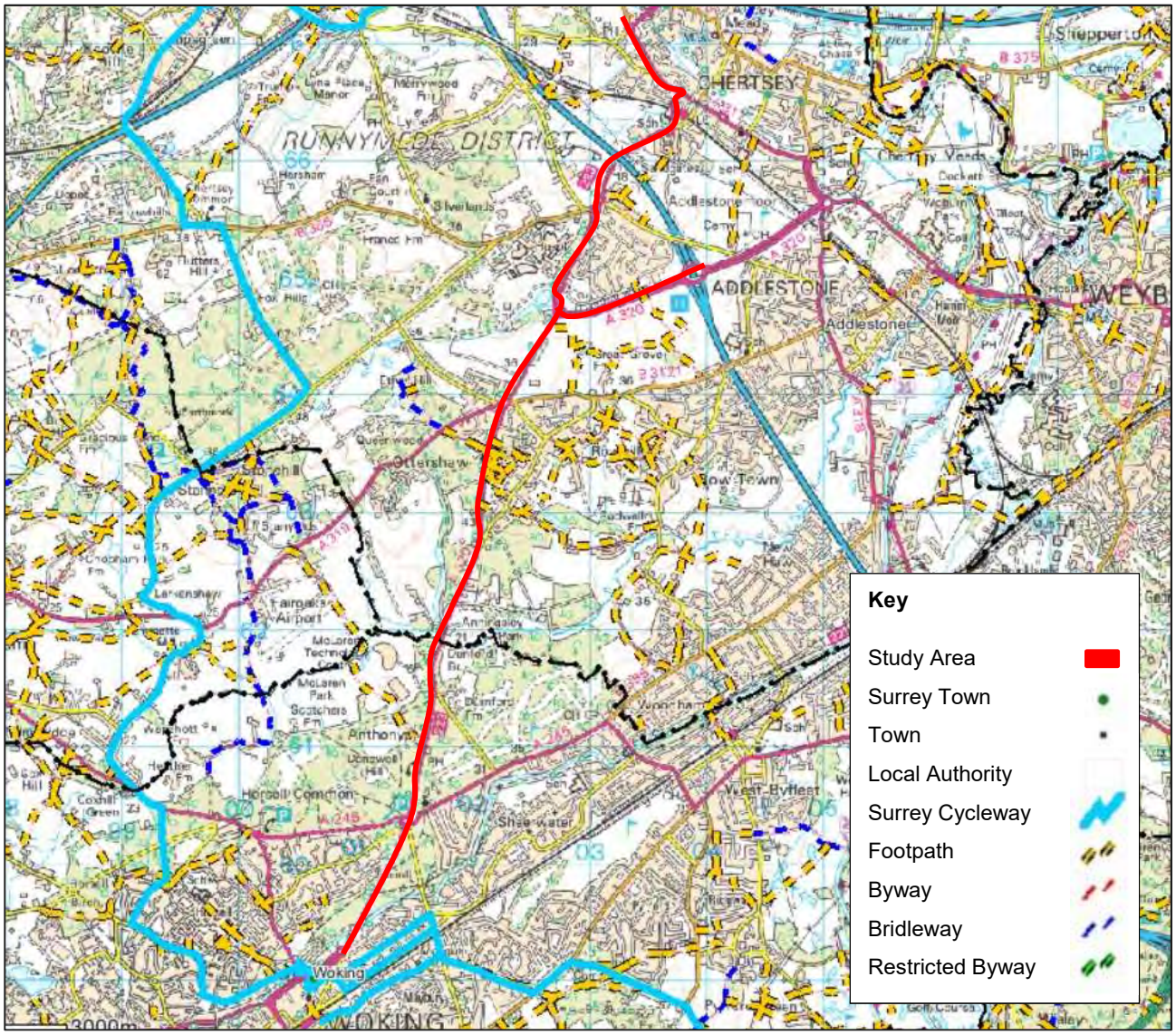
There is good provision in terms of footways and footpaths throughout the study area, with provision along the majority of the route. Public rights of way within the area are shown in Figure 3, illustrating an extensive network of footpaths in the Ottershaw area. Safety or perception of safety may be an issue for pedestrians using footpaths between the less built up areas along the study route, including along Guildford Road.

Figure 4 highlights the cycle network within the study area. National Cycle Network Route 223 provides a route on main and quiet roads from Chertsey to Shoreham-by-Sea. Within the study area National Cycle Network Route 223 runs along the corridor from its southern point in Woking until the Bell Bridge Road/The Knoll/Guildford Road roundabout, providing a traffic-free route for cyclists. The facilities include a shared footway/cycleway (with some short sections of on-footway segregated cycle lane) on the western side of the A320 corridor between Woking and Holloway Hill, where the route crosses to the eastern footway and connects to a cycle route along Green Lane towards Addlestone. The route continues northwards as a mix of on-footway segregated cycle lane and shared footway/cycleway to Bell Bridge Road where the cycle route continues towards Chertsey rail station and town centre via Guildford Street. This route connects to a Greenway (part of NCN Route 4) which runs parallel to the A320 corridor northwards towards Staines and east towards Walton-On-Thames.

3.2.2 Equestrian Network

There are no public bridleways intersecting the study area. The nearest equestrian route is located off the A319 Chobham Road, approximately 600m south-west of the A320 Guildford Road/B3121 Murray Road/Chobham Road roundabout. The bridleway links with Chobham Road to the south-east and Foxhills Road to the north. The route is shown in Figure 3.

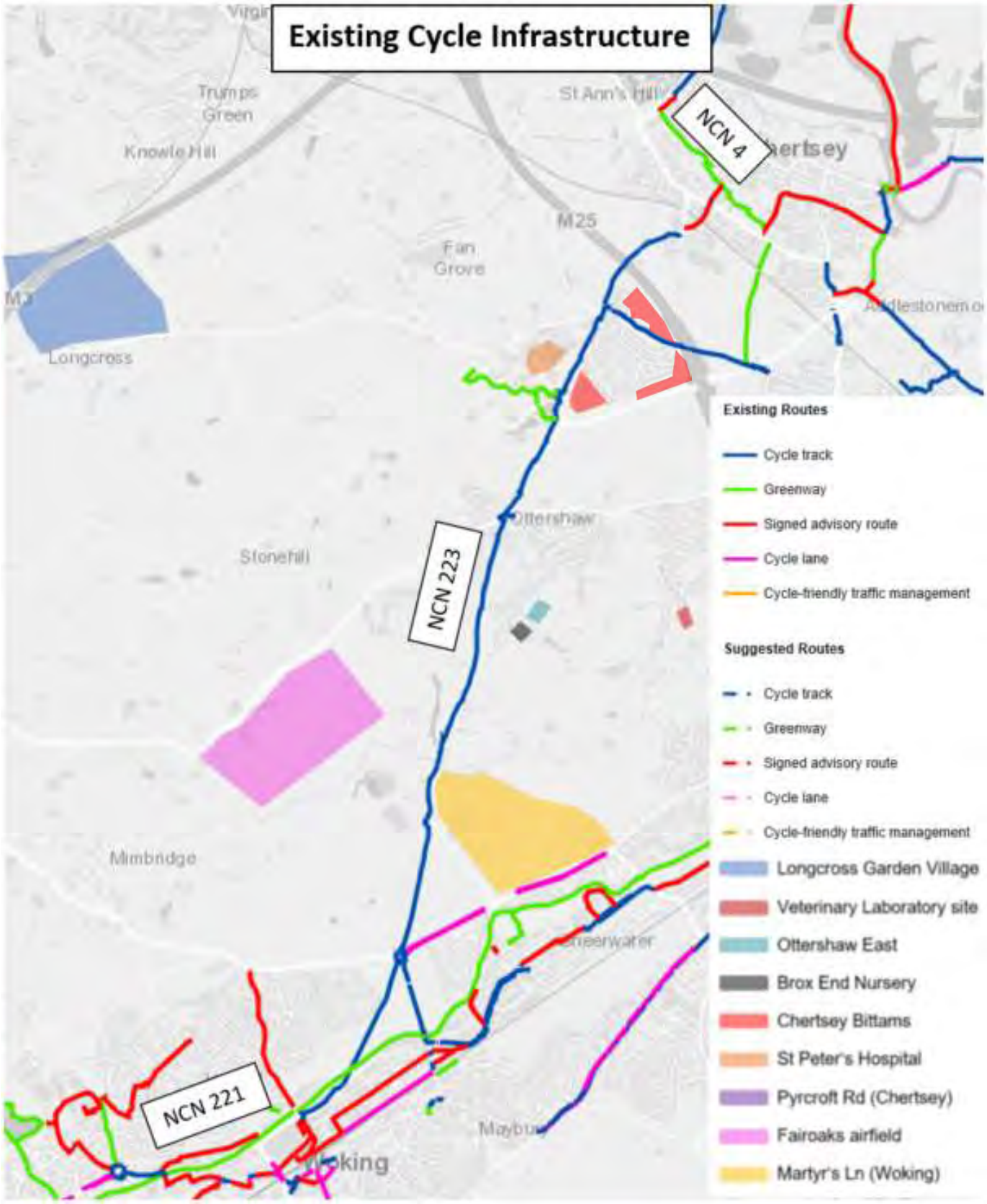
Figure 3 - Public Rights of Way Map



Source: Surrey County Council[3]

[3] Surrey County Council Public Rights of Way Map - http://surreymaps.surreycc.gov.uk/public/viewer.asp

Figure 4 – Surrey Cycle Infrastructure Map



Source: Surrey CC, Travel Smart in Surrey, Cycle Infrastructure Map. Note: not to scale.

3.3 Public Transport Network

3.3.1 Bus Network

The 'Guidelines for Providing for Journeys on Foot' define public transport accessibility as "how far a location is from the public transport network and the level of service of that network" and suggest ranges for desirable (400m), acceptable (800m), and preferred maximum (1,200m) walking distances.

The bus stops along the route include the following: Six Crossroads (south), A320 Chertsey Road; Six Crossroads (north), A320 Chertsey Road; Bleak House (south), A320 Chertsey Road; Bleak House (north), A320 Chertsey Road; McLaren (south), A320 Chertsey Road; McLaren (north), A320 Chertsey Road; St Peter's Hospital, A320 Guildford Road; White Lodge Centre, A320 Guildford Road; and Sir William Perkins's School, A320 Guildford Road.

Table 2 provides a summary of existing bus services within the study area, with a map showing the bus routes shown in Figure 5. The summary indicates low-frequency services within the area.

Table 2 – Frequency of Bus Services

Service Number	Bus Route	AM Peak	PM Peak
446	Kingfield – Staines	1	1
457	Chertsey South – Chertsey South	No services at peak time	1
461	Chertsey – South-Kingston on Thames	2	2
556	Woking – Row Town	1	1
557	Sunbury - Addlestone	1	1
593	Staines - Woking	No services at peak time and only Monday, Wednesday and Fridays	No services at peak time and only Monday, Wednesday and Fridays
637	Chertsey South – Brooklands	School Service	School Service

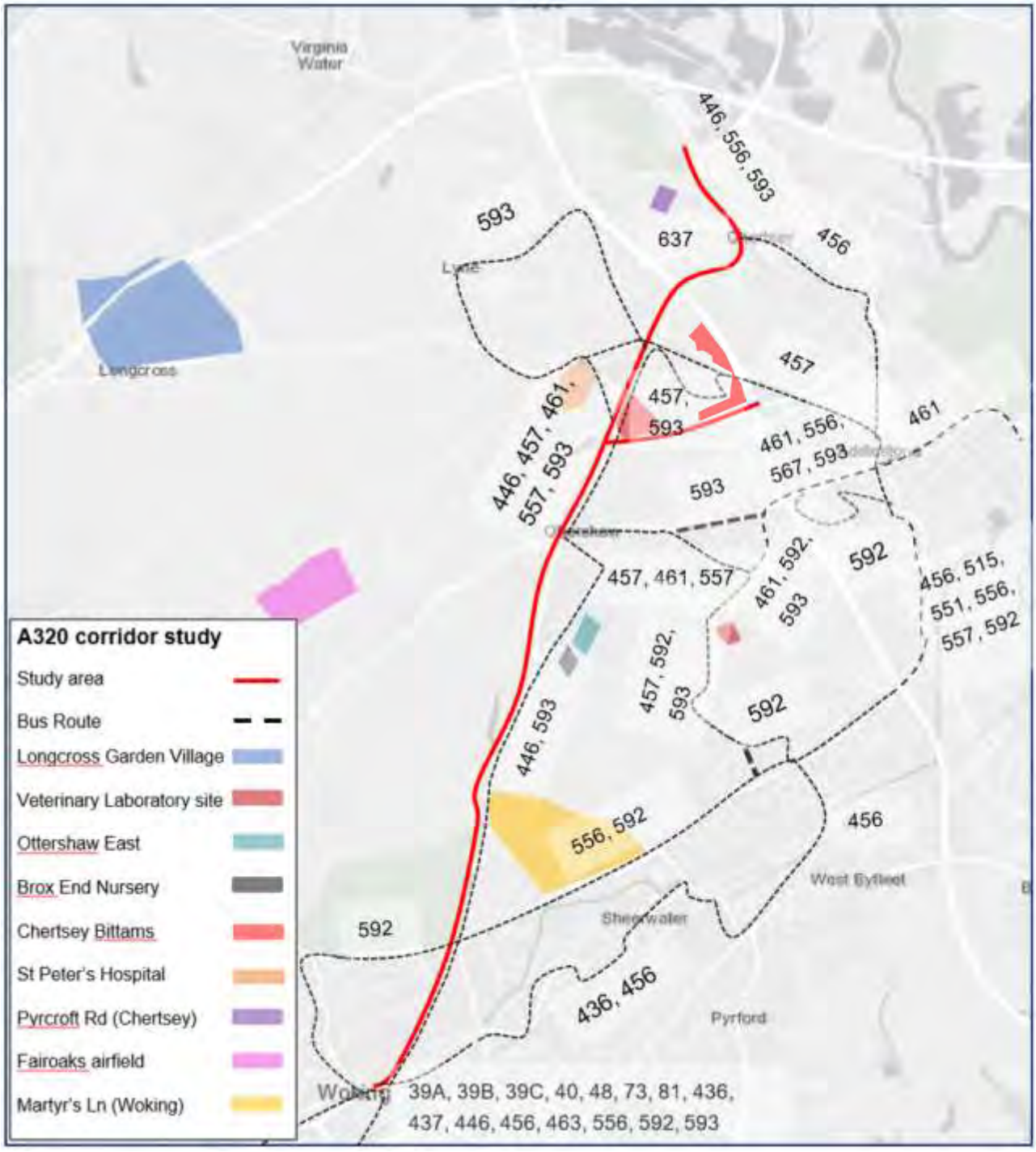
In addition to the services listed in Table 2, Sir William Perkins School operates coach services to / from:

- Camberley;
- Cobham;
- Twickenham;
- Upper Halliford / Shepperton;

- West Molesey;
- Windsor (two routes); and
- Woking.

There is a single coach operating on each route with the services scheduled to arrive in time for the start of the school day at 0820 hours. The return journeys commence at 1700 hours Monday to Thursday and 1510 on Fridays.

Figure 5 – Key Bus Routes



Source: ArcMap 10.3.1, Surrey County Council Bus Map.

3.3.2 Rail Services

The nearest rail stations to the study area are Woking rail station and Chertsey rail station. Other stations located within 5km of the study area include West Byfleet, Addlestone and Byfleet & New Haw rail stations.

There are a number of key destinations accessible from Woking and Chertsey rail stations as summarised in Table 3. Walking and cycling accessibility maps are presented in Figure 6 and Figure 7 to show geographical accessibility by foot and cycle from the following rail stations: Woking, Chertsey, West Byfleet, Addlestone, and Byfleet & New Haw, Virginia Water and Longcross.

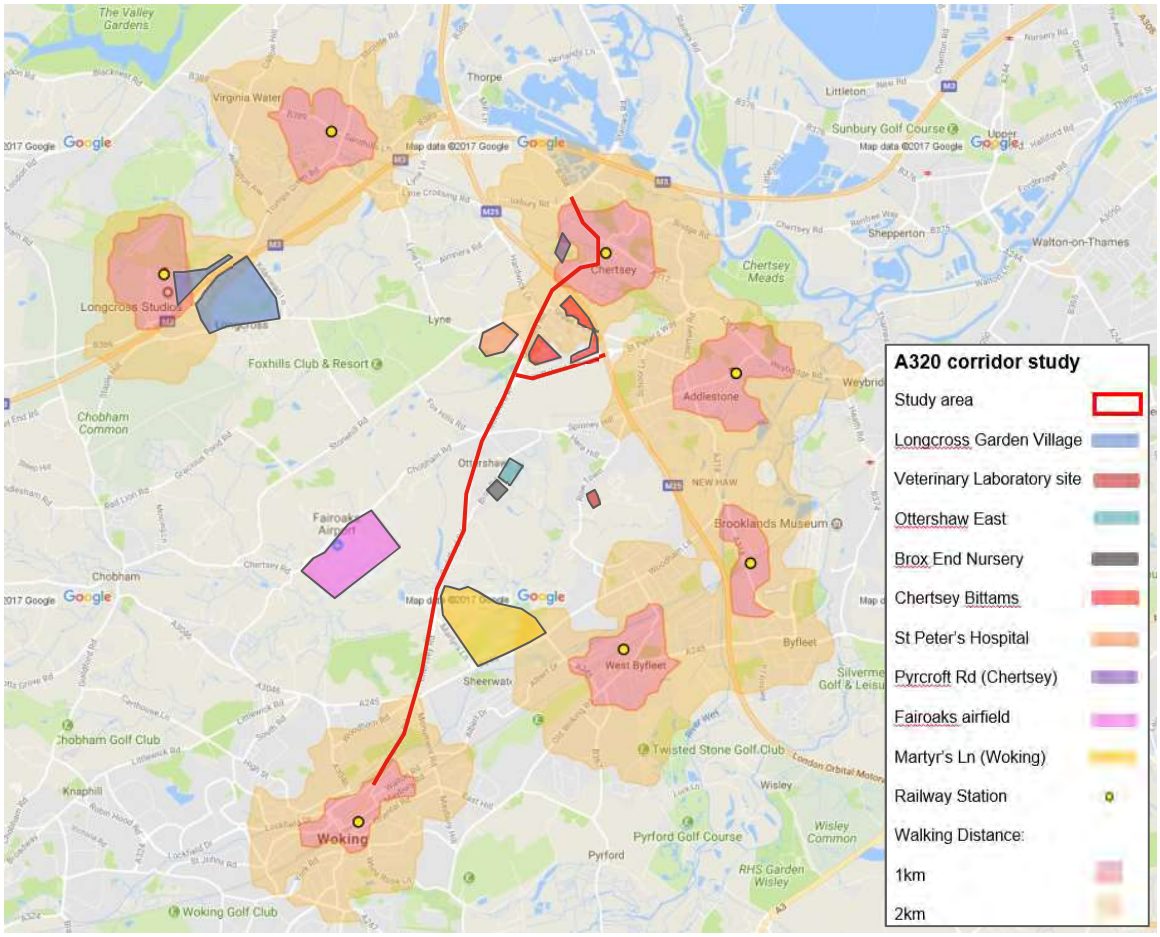
Table 3 - Woking and Chertsey Station Rail Services

Rail Station	Destination	Average Journey Time	Approximate Frequency
Woking	London Waterloo	35 minutes	5 minutes
	Alton	41 minutes	30 minutes
	Portsmouth Harbour	1 hour 45 minutes	15 minutes
	Haslemere	34 minutes	15 minutes
	Exeter St Davids	2 hours 58 minutes	1 hour
	Basingstoke	39 minutes	16 minutes
	Weymouth	2 hours 15 minutes	1 hour
	Portsmouth & Southsea	1 hour 37 minutes	15 minutes
	Yeovil Pen Mill	2 hours 11 minutes	1-2 hours
Chertsey	Weybridge	8 minutes	30 minutes
	London Waterloo	1 hour 16 minutes	30 minutes
	Egham	17 minutes	30 minutes
	Staines	22 minutes	30 minutes

3.3.2.1 Walking and Cycling Accessibility

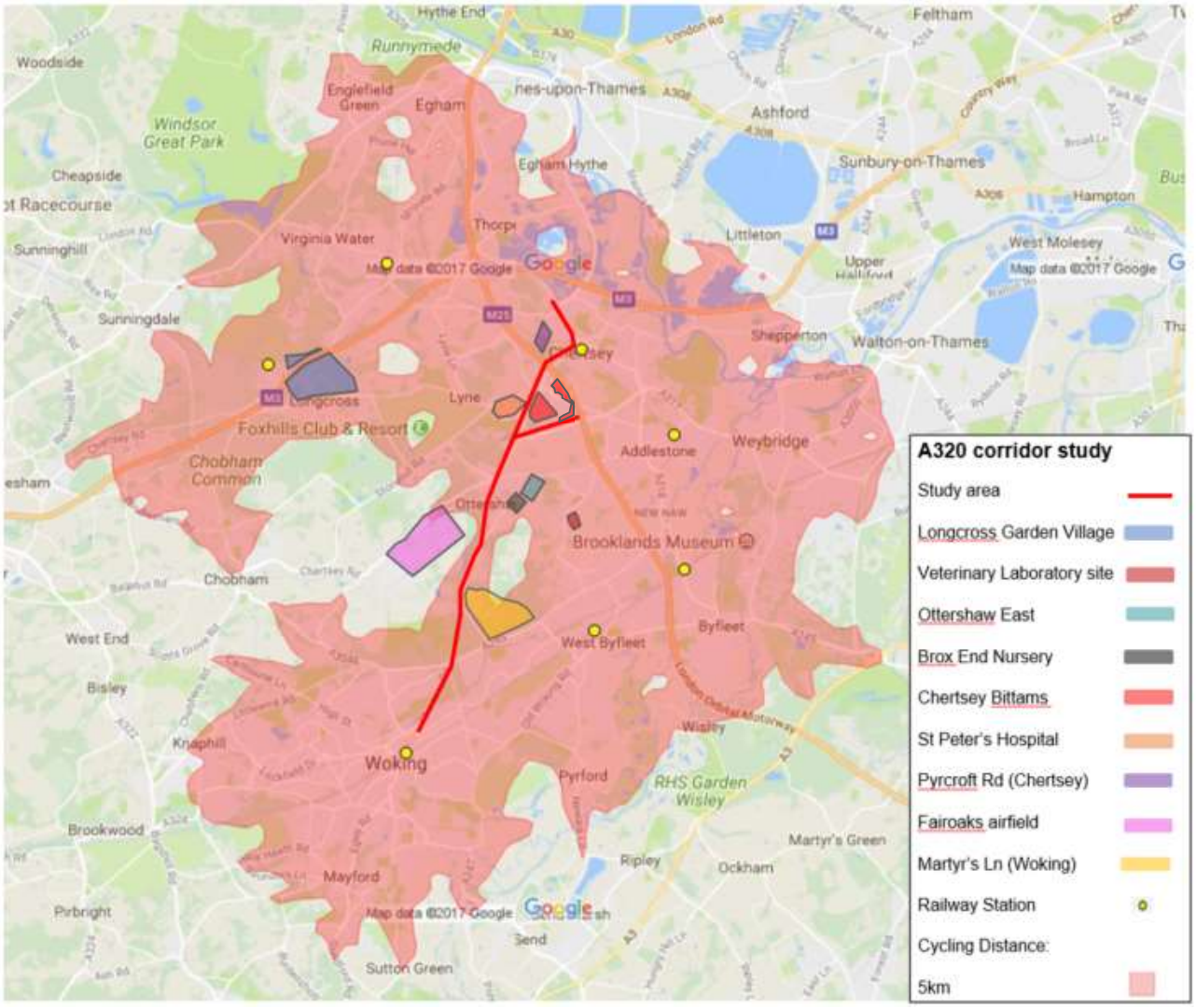
Walking and cycling accessibility from the rail stations in the vicinity of the study area and proposed developments has been mapped. Figure 6 illustrates that only a limited number of the proposed developments are within a 2km walk distance to a rail station. In particular, the Fairoaks airfield, Ottershaw East, Brox End Nursery and Veterinary Laboratory sites are a long walk from any station and therefore it would be necessary to combine rail travel to/from these sites with an alternative mode of transport, such as bus or cycle. Figure 7 indicates that the majority of the development sites are within the 5km cycle distance from rail stations. The only exception is the Fairoaks airfield site. However, it is important to note that the routes to the stations may not be attractive for cyclists, particularly as some routes are rural in nature, with narrow carriageways, a high volume of traffic, relatively high speed limits and limited cycle infrastructure. As such the uptake of cycling as a mode of transport to connect to rail stations may be limited unless infrastructure improvements are implemented.

Figure 6 - Walking Accessibility



Source: Visiography TRACC. Note: not to scale.

Figure 7 - Cycle Accessibility



Source: Visiography TRACC. Note: not to scale.

3.3.2.2 Station Car Parks

Parking is provided at the following stations:

- Woking
  - 570 spaces with 6 accessible spaces;
- West Byfleet
  - 290 spaces with 2 accessible spaces;
- Virginia Water
  - Station car park: 85 spaces with 2 accessible spaces (operated by Network Rail / South Western);
  - British Legion car park: 19 spaces (operated by RBC);
  - Memorial Gardens car park: 97 spaces with 2 accessible spaces (operated by RBC); and
- Chertsey
  - 19 spaces with 1 accessible space.

3.4 Highway Network

3.4.1 Links

The A320 provides a route between Chertsey in the north and Woking in the south on a broadly north-south alignment. The route also passes through the village of Ottershaw. For the majority of its length the A320 is a single carriageway, although between the Chobham Road / Murray Road roundabout in Ottershaw and St Peter's Way roundabout the A320 consists of two northbound lanes and a single southbound lane. The A320 is dual carriageway for a short section between the St Peter's Way and Bittams Lane / Hillswood Drive roundabouts.

The A320 is subject to a 30mph speed limit between the Brookhouse roundabout and Boundary Road in Woking. The speed limit increases to 50mph north of Boundary Road. Approximately 400m north of the Brox Road priority junction the speed limit reduces to 40mph. Immediately north of Barrsbrook Farm Road (in the vicinity of Chertsey Recreation Ground) the speed limit reduces to 30mph.

There is footway provision through the urban settlements of Woking, Ottershaw and Chertsey. A shared pedestrian and cycle way is located on the west side of the carriageway between Woking and Holloway Hill roundabout, and on the east side of the carriageway between the Holloway Hill roundabout and the Bell Bridge Road junction.

The section of St Peter's Way between Guildford Road the M25 Junction 11 also forms part of the A320 and the study area. This section of St Peter's Way is a dual carriageway subject to a 50mph speed limit. There is no footway provision along this section.

3.4.2 Key Junctions

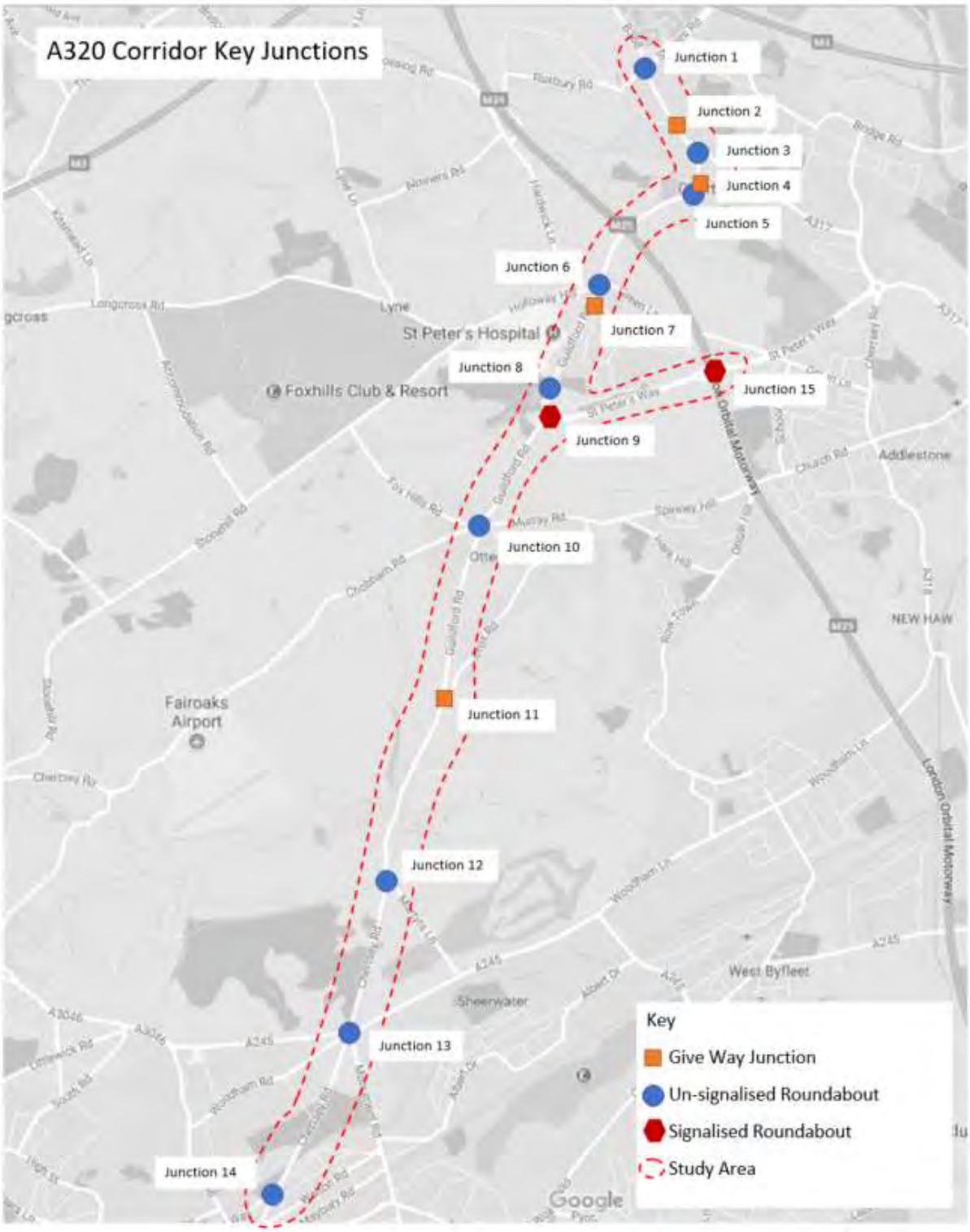
The key junctions along the corridor are set out in Table 4 and illustrated in Figure 8.

Table 4 – Key Junctions

Junction Number	Junction Name	Junction Type
1	Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road	Unsignalised roundabout
2	Pyrcroft Road / Cowley Avenue / Chilsey Green Road	Priority junction
3	Pyrcroft Road / Bell Bridge Road / Cowley Lane	Unsignalised roundabout
4	Guildford Road / Bell Bridge Road	Left in, left out priority junction
5	Guildford Road / The Knoll / Bell Bridge Road	Unsignalised roundabout
6	Guildford Road / Holloway Hill and Guildford Road / Green Lane	Double roundabout, unsignalised
7	Guildford Road / Little Green Lane	Priority junction
8	Guildford Road / Hillswood Drive / Bittams Lane	Unsignalised roundabout
9	Guildford Road / A320 St Peter's Way	Roundabout, part time signals
10	Guildford Road / Murray Road / Chobham Road	Unsignalised roundabout
11	Guildford Road / Brox Road	Priority junction
12	Chertsey Road / Martyrs Lane	Unsignalised roundabout

13	Chertsey Road / Monument Road / Woodham Road	Unsignalised roundabout
14	Victoria Way / A320 Chertsey Road	Unsignalised roundabout
15	M25 Junction 11, excluding M25 mainline	Part signalised roundabout

Figure 8 – Junction References



A320 Chilsey Green Road / St Ann's Road / B388 Thorpe Road / A320 Staines Road junction

This is a four-arm priority controlled roundabout at the northern end of the study area. All approaches are a single lane, with the exception of the A320 Staines Road east arm which is a two lane approach. There are informal crossings consisting of dropped kerbs and refuge islands across the Staines Road and Chilsey Green Road arms. Tactile paving is provided at the Staines Road crossing only.

A320 Pyrcroft Road / Cowley Lane / A320 Chilsey Green Road junction

This junction is a four-arm priority controlled crossroads, with Pyrcroft Road (west) and Cowley Road forming the minor arms. A320 Pyrcroft Road (south) and A320 Chilsey Green Road are single lanes at the junction with right turn pockets (both approximately 15m long) provided for access to the minor arms. The two minor arms are single lane approaches although the Cowley Lane approach flares to two lanes approximately 15m from the junction. A signalised pedestrian crossing is located on the Chilsey Green Road arm immediately to the north of the junction. There are informal crossings comprising dropped kerbs, tactile paving and refuge islands on the other three arms of the junction. The informal crossing on A320 Pyrcroft Road is approximately 50m south of the junction.

A320 Pyrcroft Road / A320 Bell Bridge Road / Cowley Lane

This junction forms a four-arm priority controlled roundabout. The A320 corridor forms the northwest and southern arms of the roundabout, with the eastern A317 arm providing a link into Chertsey town centre and beyond to Weybridge. On the A320 Bell Bridge Road approach there is a dedicated left turn lane to the A320 Pyrcroft Road (west) plus a single lane approach to the roundabout that flares into two lanes 10m from the junction. The A320 Pyrcroft Road approaches (east and west arms) are single lanes flaring to two lanes approximately 15m from the junction. Cowley Lane is a single lane approach. An informal pedestrian crossing consisting of dropped kerb and tactile paving provided across the Cowley Lane arm. Crossings consisting of dropped kerbs, tactile paving and refuge islands are also located across the Pyrcroft Road (east) and Bell Bridge Road arms. There is no pedestrian crossing provision on the Pyrcroft Road (west) arm at the junction. However, there is a staggered informal crossing (with dropped kerbs and tactile paving) on the A320 Pyrcroft Road approximately 80m west of the junction.

A320 Bell Bridge Road / Guildford Road junction

This junction is a priority controlled junction, with Guildford Road forming the minor arm. Access to / from Guildford Road is left-in, left-out only. An informal pedestrian crossing comprising dropped kerbs, tactile paving and refuge island is provided across Guildford Road. A signalised crossing comprising dropped kerbs and tactile paving is located on A320 Bell Bridge Road immediately to the north of the junction.

A320 Guildford Road / The Knoll / A320 Bell Bridge Road

This junction forms a priority controlled three-arm roundabout. The Knoll arm provides access to a residential and industrial area, Bell Bridge Road arm provides access into Chertsey and the Guildford Road arm provides access towards Woking. The A320 Guildford Road and the A320 Bell Bridge Road are single lane approaches flaring to two lanes for approximately 10m. The Knoll is a single lane approach. A dropped kerb, tactile paving and refuge island is provided at The Knoll arm of the roundabout. There are crossing facilities at the junction on the A320 arms. However, there is an informal crossing comprising dropped kerbs, tactile paving and a refuge island immediately to the south of the access to Sir William Perkins's School (approximately 80m south of the roundabout).

A320 Guildford Road / Holloway Hill and A320 Guildford Road / Green Lane double roundabout

These junctions effectively form a priority controlled double roundabout. Each roundabout comprises three-arms and is situated to the north of the Guildford Road/Little Green Lane junction. At the Holloway Hill roundabout the A320 southern arm is a single lane approach whilst the A320 northern arm and Holloway Hill approaches are two lanes for approximately 30m. At the Green Lane junction the A320 southern arm consists of two lanes for approximately 30m. The A320 northern arm and Green Lane are single lane approaches. A dropped kerb with refuge island is located at each of the Holloway Hill roundabout arms, with tactile paving provided at the crossing on the southern arm. Cyclists using NCN route 223 are signed to cross the southern arm at this location as the cycle infrastructure changes from the west to the east side of

the A320. Dropped kerbs with refuge islands are also located at each of the Green Lane roundabout arms, with tactile paving provided at the crossings on the north and west arms.

A320 Guildford Road / Little Green Lane junction

This junction is a priority controlled junction, providing access into a residential area. There is no right turn pocket on the A320. There are dropped kerbs and tactile paving across Little Green Lane.

A320 Guildford Road / Hillswood Drive / Bittams Lane roundabout

This priority controlled five-arm roundabout is located approximately 150m north of the A320 Guildford Road / St Peter's Way junction and provides access to St Peter's Hospital and Hillswood Business Park, which hosts several major local employers including Samsung Electronics, Regus and Astellas Pharma. The A320 southern arm consists of a two lane approach plus a left turn slip lane. The A320 northern arm comprises two lanes for approximately 50m. Hillswood Drive consists of a single lane approach with a short flare and the remaining arms comprise a single lane approach. Informal crossing facilities comprising dropped kerbs, tactile paving and refuge islands are located at the A320 north arm, the hospital access, and Hillswood Drive arm. There are no crossing facilities on the A320 south or Bittams Lane arms.

A320 Guildford Road / A320 St Peter's Way roundabout

This is a priority controlled three-arm roundabout, with part-time signals. The A320 Guildford Road forms the northern and southern arms, with the A320 St Peter's Way forming the eastern arm. The A320 southern arm consists of three lanes for approximately 80m on the approach to the roundabout. The two offside lanes are designated for vehicles to the M25. The A320 northern arm has a dedicated left turn lane for vehicles travelling to the M25. The offside lane, which flares to two lanes 15m from the junction, is designated for vehicles to the A320 south. The A320 St Peter's Way is a two lane approach flaring to three lanes approximately 15m from the junction. There are no pedestrian crossing facilities at this roundabout. Approximately 1km to the east of this roundabout, St Peter's Way forms the western approach to M25 Junction 11, which is a large part signalised roundabout.

A320 Guildford Road / Murray Road / Chobham Road

This is a priority controlled roundabout with four arms and is located in the village of Ottershaw. The A320 and Murray Road approaches consist of a single lane with a short flare. Both A320 approaches are relatively narrow and to the south this is a function of the limited width within the assumed highway boundary. There is a dedicated left turn lane from Chobham Road onto the A320 Guildford Road, which merges with northbound traffic a short distance north of the roundabout. The northbound exit from the roundabout onto the A320 Guildford Road appears only sufficiently wide for a single lane of traffic although flares into two lanes after a short distance. All other exits are a single lane. A signalised pedestrian crossing with tactile paving is located on the A320 south arm approximately 50m south of the roundabout. Informal crossings comprising dropped kerb, tactile paving and refuge island are located on the other three arms.

A320 Guildford Road / Brox Road

This is a priority junction located to the south of Ottershaw, with Brox Road forming the minor arm of the junction. Brox Road joins the A320 at an acute angle and is a single lane carriageway. There is no right turn pocket provided on the A320. A private road with a gated entrance, leading to what is assumed to be a property, is located on the opposite side of the highway. An informal crossing consisting of a dropped kerb is provided across the A320 north arm providing a connection between Brox Road and the footway / cycleway on the western side of the A320.

A320 Chertsey Road / Martyrs Lane

This is a four-arm priority controlled roundabout, known as the Paragon roundabout. On the southern and western arms, there is a single lane plus a shorth flare on the approach to the roundabout whilst the northern and western arms comprise one lane on the approach. All four arms leading away the roundabout comprise one lane. Informal pedestrian crossings are located at each arm of the roundabout comprising dropped kerb, tactile paving and refuge island.

A320 Chertsey Road / Monument Road / Woodham Road / A245 Woodham Lane

This is a large six-arm priority controlled roundabout, known as the Six Crossroads roundabout. All six approaches consist of one lane plus a short flare, whilst all six exits comprise a single lane. The A245 Woodham Lane arm provides access into Sheerwater to the east, the southern arms provide access to parts of Woking, Shores Road provides a connection towards Chobham in the west and the Chertsey Road north arm provides a link to Ottershaw. Informal pedestrian crossings consisting of dropped kerbs, tactile paving and refuge islands are located at each arm of the roundabout.

A320 Victoria Way / A320 Chertsey Road

This is a three-arm priority controlled roundabout, known as the Brookhouse roundabout, located on the northern outskirts of Woking Town Centre. Chertsey Road southern arm provides access to the town centre and rail station, whilst the A320 Victoria Way effectively forms a bypass around the Town Centre and provides access to multi-storey car parks in the town centre. All three arms leading onto the roundabout comprise road markings indicating two lanes. The Chertsey Road north arm comprises two southbound lanes from approximately 30m north of the roundabout. The Chertsey Road south arm comprises one lane approaching the main roundabout circulatory and a segregated left turn lane. The Victoria Way arm comprises two lanes, one for ahead traffic onto the A320 and one for vehicles turning right onto Chertsey Road south. An informal pedestrian crossing comprising dropped kerb, tactile paving and refuge island is located at the Chertsey Road north arm. There are no other crossings at the roundabout.

M25 Junction 11 (excluding M25 mainline)

This four-arm partly-signalised roundabout is located to the west of Addlestone and provides access to and exit from the M25. The roundabout is grade separated above the M25. The junctions of the circulatory and exit slip roads from the motorway are signalised, whilst the St Peter's Way approaches are unsignalised. The exit slip roads from the motorway are two lanes with one of these lanes being a dedicated left turn lane. The St Peter's Way (west) approach has two lanes plus a dedicated left turn lane which commences approximately 70m from the junction. The St Peter's Way (east) approach consists of two lanes. There are no pedestrian crossing facilities at this junction.

4 Collision Analysis

4.1 Introduction

Collision data was obtained from SCC for the most recent three-year period up to the 30th June 2017 to identify any highway safety issues.

4.2 Number of Collisions and Severity

Table 5 shows that the total number of collisions per year along the corridor have been relatively consistent, with a slight peak between 1st July 2015 and 30th June 2016 (47 collisions). The number of fatal collisions has increased each year, however, as the numbers are low it is not possible to determine if this is a statistically significant trend.

In total, 128 collisions have been recorded in the data period with 115 of these recorded as slight in severity, ten as serious in severity and three as fatal. It is to be noted that data interpretation has grouped the collision by severity according to the highest severity of (single) collision recorded. Appendix A contains detailed collision analysis identifying the number of collisions per link and per junction.

It should be noted that the full details of the cause of collisions are sometimes not given.

Table 5 - Collisions by Severity and Year

Year	Severity			
	Slight	Serious	Fatal	Total
1st July 2014 – 30th June 2015	37	3	0	40
1st July 2015 – 30th June 2016	40	6	1	47
1st July 2016 – 30th June 2017	38	1	2	41
Total	**115**	**10**	**3**	**128**

4.3 Number of Casualties

An analysis of the total number of casualties by user type over the study period is presented in Table 6. The analysis indicates the majority of casualties were drivers of cars, LGVs. MGVs and HGVs, with around a quarter of casualties being passengers in vehicles. 16% of casualties were motorcyclists, cyclists and pedestrians.

Table 6 – Total Number of Casualties

Casualty Type	Number of Casualties	Percentage*
Driver (Car, LGV, MGV, HGV)	102	59%
Passenger	42	24%
Motorcyclist	13	7%
Cyclist	13	7%
Pedestrian	4	2%
Total	**174**	**100%**

*Figures have been rounded

4.4 Conditions

An analysis of the recorded weather conditions has been completed and the results are summarised in Table 7. The results indicate that the vast majority of collisions occurred in fine conditions with around 10% of collisions occurring in wet conditions.

Table 7 – Collision Conditions

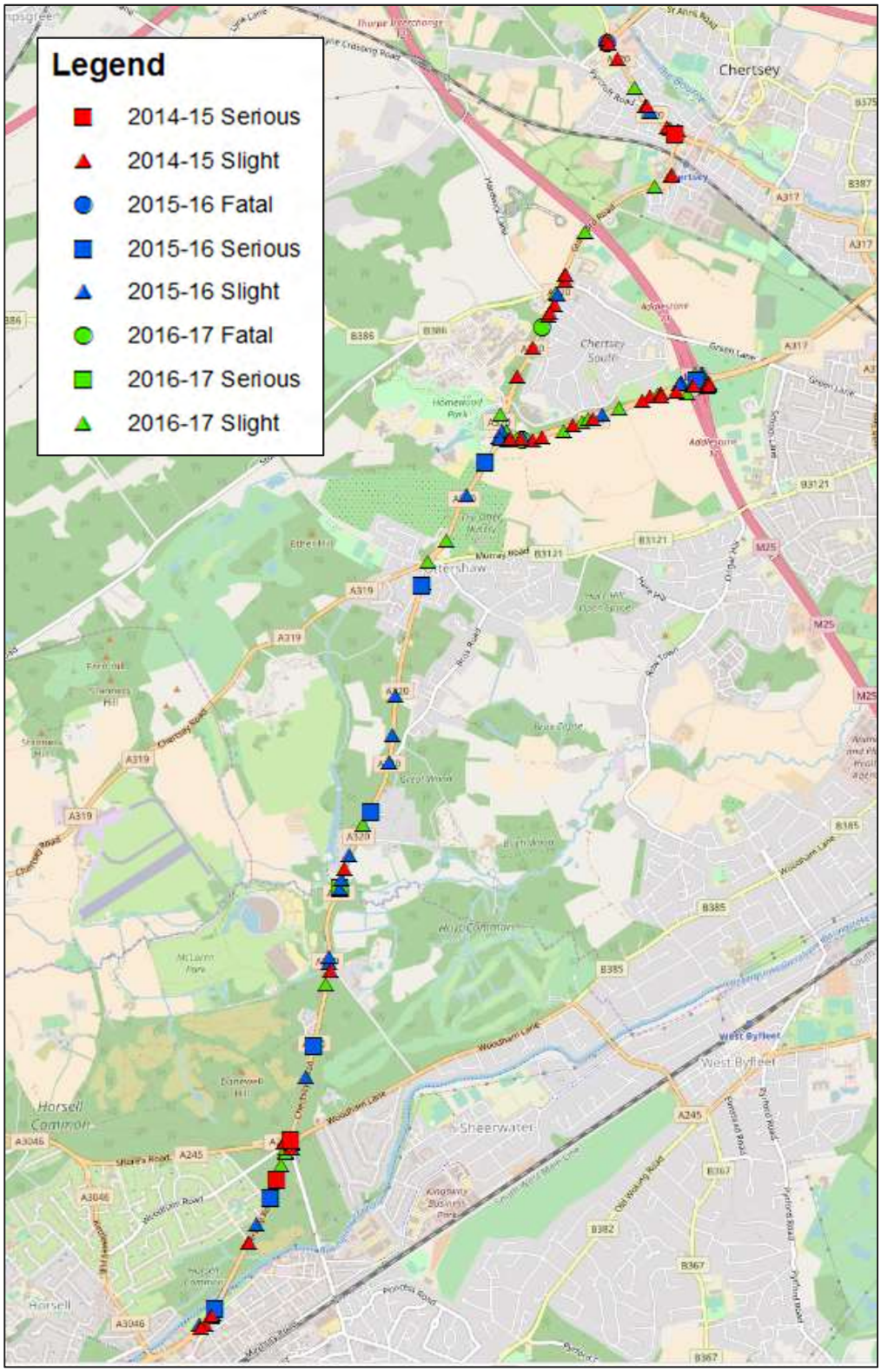
Conditions	Number of Collisions	Percentage*
Fine	108	84%
Raining	11	9%
Windy	2	2%
Wind-Rain	1	1%
Fog-Mist	2	2%
Other	4	3%
Total	**128**	**100%**

*Figures have been rounded

4.5 Collision Locations

The collision map in Figure 9 shows the location, severity and year of all recorded collisions within the study area over the three-year period.

Figure 9 – Collision Map



4.6 Collision Analysis

Collision analysis has been conducted by junction and by link. The junctions have been numbered and are set in Table 4, whilst the links have been categorised by their connection between, and not including, the key junctions. Junction analysis has included any collisions within 30m of the junction.

4.6.1 Junction Analysis

Collision analysis by junction is set out in Table 8.

Table 8 - Collisions by junction and severity

Junction Number	Junction Name	Severity			Total
		Fatal	Serious	Slight	
1	Chilsey Green Road/St Ann's Road/B388 Thorpe Road/ Staines Road	1	0	2	3
2	Pyrcroft Road/Cowley Avenue/Chilsey Green Road	0	0	3	3
3	Pyrcroft Road/Bell Bridge Road/Cowley Lane	0	1	3	4
4	Guildford Road/Bell Bridge Road	0	0	0	0
5	Guildford Road/The Knoll/Bell Bridge Road	0	0	0	0
6	Guildford Road/Holloway Hill and Guildford Road/Green Lane	0	0	3	3
7	Guildford Road/Little Green Lane	0	0	2	2
8	Guildford Road/Hillswood Drive/Bittams Lane	0	0	0	0
9	Guildford Road/A320 St Peter's Way	0	0	8	8
10	Guildford Road/Murray Road/Chobham Road	0	0	1	1
11	Guildford Road/Brox Road	0	0	2	2
12	Chertsey Road/Martyrs Lane	0	0	3	3
13	Chertsey Road/Monument Road/Woodham Road/A245	0	1	11	12
14	Victoria Way/A320 Chertsey Road	0	0	3	3
15	M25 J11 (excluding M25 mainline)	0	0	17	17
Total		**1**	**2**	**58**	**61**

A320 Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road

Three collisions occurred at this junction, two of which were slight in severity and one was fatal. The cause of the fatal collision has been attributed to alcohol impairment and loss of control.

Pyrcroft Road / Cowley Avenue / A320 Chilsey Green Road

Three collisions have been recorded at this junction. No common factors have been established between the collisions.

Pyrcroft Road / A320 Bell Bridge Road / Cowley Lane

In total, four collisions have been recorded at this junction, three of which were slight in severity and one was serious. The serious collision involved a pedestrian walking out onto the highway without looking properly. Two of the slight collisions involved cyclist falling off their bikes. At the Cowley Lane arm, a cyclist fell when turning right at the roundabout however it is noted that this was due to the slippery surface of the road due to the weather. The other collision occurred on the Bell Bridge Road arm and involved a cyclist losing control.

A320 Guildford Road / Bell Bridge Road

No collisions have been recorded within the data period at this junction.

A320 Guildford Road / The Knoll / A320 Bell Bridge Road

No collisions have been recorded within the data period at this junction.

A320 Guildford Road / Holloway Hill and A320 Guildford Road / Green Lane

Three collisions slight in severity have been recorded at this junction. No common factors have been established between the collisions.

A320 Guildford Road / Little Green Lane

Two collisions slight in severity have been recorded at this junction. No common factors have been established between the two collisions.

A320 Guildford Road / Hillswood Drive / Bittams Lane

No collisions have been recorded within the data period at this junction.

A320 Guildford Road / A320 St Peter's Way

A total of eight collisions have been recorded at this junction. Three of these collisions occurred on or adjacent to the St Peter's Way arm of the roundabout. One collision involved defective brakes when attempting to stop at the roundabout. Another collision involved vehicles moving out of the way of a vehicle on a response call, and vehicle 1 colliding with the roundabout, and vehicle 2 colliding with vehicle 1. The remaining collision involved driving through the overgrowth and crashing into a tree and was caused by alcohol impairment. No causal patterns or trends in the type of collision have been identified between the collisions.

A320 Guildford Road / Murray Road / Chobham Road

One collision slight in severity has been identified at this junction. The cause is not considered attributable to the highway layout.

A320 Guildford Road / Brox Road

Two collisions slight in severity have been recorded at this junction. The causes of these collisions do not share common factors.

A320 Chertsey Road / Martyrs Lane

Three collisions of slight severity have been recorded at this junction over the data period. Two of the three collisions occurred due to a vehicle colliding with a stationary vehicle in front.

A320 Chertsey Road / Monument Road / Woodham Road / A245

A total of twelve collisions occurred at this junction, making this the junction with the second highest collision concentration in the study area over the data period. Of these, eleven were slight in severity and one was serious. The one severe collision recorded involved a cyclist being knocked by a vehicle who had not seen the cyclist coming when travelling southbound from Chertsey Road (north arm). Three of the collisions slight in severity occurred at the Shores Road arm of the roundabout. Two of these collisions involved a vehicle coming onto the roundabout and hitting another vehicle already there. The causes of both collisions were identified as failing to look properly. The third collision involved a vehicle at the roundabout turning left onto Shore's Road and colliding with another vehicle. The cause of this collision was attributed to failing to judge

another person's path or speed. The collision indicates the cause could be a result of visibility or gap acceptance issues at the roundabout.

A320 Victoria Way / Chertsey Road

In total, three collisions, all slight in severity, occurred at this junction. All three collisions occurred at separate arms and bear no commonalities with causation factors.

M25 J11 (excluding M25 mainline)

In total, 17 collisions have been recorded at this junction, all of which were slight in severity. This junction has the highest concentration of collisions within the study area. Six collisions occurred at the east arm of the junction with two colliding into the rear of a vehicle after stopping at the roundabout to look. Rear shunts have also been identified at the west (four collisions) and east of the junction (three collisions).

4.6.2 Link Analysis

Collision analysis by link is set out in Table 9.

Table 9 - Collisions by link and severity

Link	Link Length (km)	Severity			Total	Collision Rate per km
		Fatal	Serious	Slight		
1-2	0.5	0	0	2	2	1
2-3	0.3	0	0	2	2	0.6
3-4	0.3	0	0	2	2	0.6
4-5	0.1	0	0	0	0	0
5-6	0.9	0	0	4	4	3.6
6-7	0.2	0	0	0	0	0
7-8	0.7	1	0	4	5	3.5
8-9	0.2	0	0	1	1	0.2
9-10	0.9	0	1	2	3	2.7
10-11	1.3	0	1	4	5	6.5
11-12	1.3	0	2	6	8	10.4
12-13	1.1	0	1	6	7	7.7
13-14	1.2	0	3	8	11	13.2
9-15	1.3	1	0	16	17	22.1
Total	**10.3**	**2**	**8**	**57**	**67**	-

Link 1-2

Two collisions occurred on this link within the data period, both of which were slight in severity. No common causal factors have been established.

Link 2-3

Two collisions occurred on this link within the data period, both of which were slight in severity. No common causal factors have been established.

Link 3-4

Two collisions occurred on this link within the data period, both of which were slight in severity. No common causal factors have been established.

Link 4-5

No collisions have been recorded within the data period on this link.

Link 5-6

All four of the collisions recorded on this link were slight in severity. Two of these collisions involved vehicles turning into Salesian School.

Link 6-7

No collisions have been recorded within the data period on this link.

Link 7-8

Five collisions have been recorded on this link, four of which were slight in severity and one was fatal. The fatal collision was caused by a tree fall. Two collisions were caused by rear shunts.

Link 8-9

One collision has been recorded on this link. The collision was slight and severity and caused due to a medical issue.

Link 9-10

Three collisions have been identified on this link over the data period. One of these collisions was serious and was caused by a medical episode. No common factors have been established between the collisions.

Link 10-11

Five collisions have been recorded on this link, four of which were slight in severity and one was serious. Three of these collisions occurred by the garages adjacent to the Coach Road junction. Two of these were slight in severity and one was serious. The serious collision involved a vehicle turning right and struck a motorcyclist overtaking. Another of the collisions involved a vehicle turning right.

Link 11-12

A total of eight collisions have been recorded on this link. Six of these collisions were slight in severity and two were serious. One serious collision involved a cyclist on the shared pedestrian/cycle route being hit by a vehicle on the carriageway. A slight collision involved a pedestrian playing in the highway as a HGV travelled past. It is unknown what hit the pedestrian, however it is stated that the HGV did not make contact with the pedestrian. The other serious collision was caused by a probable medical episode. Four collisions were caused by rear shunts.

Link 12-13

In total, seven collisions have been identified on this link, six of which were slight in severity and one was serious. The serious collision involved a vehicle losing control, crossing the carriageway, and crashing into a wall. Two of the collisions occurred where vehicles have pulled out of Bleak House car park. One of these collisions involved a vehicle turning right. The direction is unknown for the other collision.

Link 13-14

Eleven collisions have been recorded within the data period, eight of which were slight in severity and three were serious. This link falls under the second highest collision rate per km with an estimated collision rate of 13.2km per km. The noted cause of each serious collision is as follows: failed to look properly and sudden breaking. Six collisions have involved rear shunts, one of which was serious. These types of collisions

typically occur during congested conditions on the approaches to roundabouts where vehicles are seeking gaps in the circulatory flow of traffic.

Two slight collisions involved a pedestrian crossing the road. One of these collisions occurred at the Chertsey Road / Boundary Road junction where a vehicle on Chertsey Road was turning right whilst a pedestrian was crossing the road. The other collision involved a pedestrian walking out into the road when it had appeared that the vehicle had stopped. This collision occurred at the Chertsey Road / Woodham Rise junction.

Link 9-15

17 collisions occurred on this link, 16 of which were slight in severity and one was fatal. This link has the highest collision rate per km throughout the study area within the data period, with an estimated rate of 22 collisions per km. The fatal collision occurred after a vehicle left the carriageway and hit a tree. It is unknown why this occurred. Two slight collisions occurred on the exit of the Guildford Road / St Peter's Way junction travelling eastbound. One of the collisions involved losing control on the bend and the other collision involved a motorcyclist falling off at the bend. This indicates the geometry of the junction and speed limit may need to be reviewed. Eight of the collisions involved rear shunts, notably often in heavy traffic conditions. Two collisions involved vehicles changing lanes.

4.7 Summary

In summary, the collision analysis as identified the following main points:

- Shores Road arm of Six Crossroads roundabout – possible visibility and/or gap acceptance issues;
- Pyrcroft Road / Bell Bridge Road / Cowley Lane – two collisions involving cyclist falls;
- St Peter's Way (east arm) of M25 J11 – possible visibility issue and problem with rear shunt collisions;
- Link 13-14 (Brookhouse roundabout to Six Crossroads roundabout) – issue with rear shunt collisions;
- Bleak House car park (between Paragon Roundabout and Six Crossroads roundabout) – two collisions involving cars exiting car park;
- Link 11-12 (Brox Road to Paragon Roundabout) – cyclist injured by vehicle on highway despite being on the shared pedestrian/cycleway. Also, several rear shunt collisions;
- By garages adjacent to the Coach Road junction south of the Chobham Road roundabout – three collisions involving vehicles turning at the junction;
- A320 St Peter's Way exit from the junction with Guildford Road – two collisions involving vehicles losing control on the bend; and
- A320 St Peter's Way – Eight collisions involved rear shunts, notably in periods of heavy traffic.

In summary, the analysis of collision data for the three-year period up to the end of June 2017 has highlighted several locations where there a number of rear shunt collisions. There are also several junctions and areas where common causation collision factors have been identified.

The collision descriptions suggest that some collisions could be attributable to the layout of the local highway network, therefore mitigation measures such as junction redesign should be considered.

5 Environmental Designations

A review of the key environmental designations along the corridor have been reviewed to identify any key issues or constraints. The plans illustrating the designations are provided in Appendix B and the key points are summarised below.

5.1 Biodiversity

- The vast majority of the corridor is situated in the Green Belt;
- Horsell Common Site of Special Scientific Interest (SSSI) is located immediately to the west of the A320, bordering the corridor between Six Crossroads roundabout and Anthonys (side road), approximately 440m south of the Paragon Roundabout; and
- There is registered common land both sides of the A320 between Boundary Road, Woking to the south and the WBC – RBC boundary to the north (approximately 500m north of the Paragon Roundabout).

5.2 Hydrology

- The section of the corridor from the St Peter's Hospital / Hillswood Drive roundabout lies within Flood Zones 2 and 3; and
- The section of the corridor north of St Peter's Hospital lies within Source Protection Zones 2 and 3.

5.3 Cultural Heritage

There are several Grade II listed buildings in the immediate vicinity of the A320 corridor in the study area, as detailed below.

- Old Farmhouse, Runnymede, approximately 540m north of the Paragon Roundabout;
- Christ Church, Runnymede, approximately 500m south of the Chobham Road roundabout in Ottershaw;
- No. 2 Chobham Road in Ottershaw, Runnymede;
- Wheelers Green, Runnymede, immediately to the north of the A320 St Peter's Way; and
- Cowley's Almhouses, Chertsey, Runnymede, on Guildford Road near the junction with the A320 Bell Bridge Road.

6 Stakeholder Engagement

A stakeholder engagement strategy was developed at the outset of the project to ensure input was received from the early stages. The engagement strategy, as agreed with the client Project Manager consisted of the following steps:

- **Workshop 1** – to agree project objectives and identify issues and opportunities. This was held on Tuesday 28th November 2017. Plans of the issues and opportunities identified at the workshop and through the course of the project are presented in Appendix C; and,
- **Workshop 2** – to present the results of the traffic modelling exercise and initial ideas for mitigation measures. This was held on the 11th January 2018 and provided the opportunity to add to refine the list of options to be considered.

In addition to the workshops a presentation will be held at the end of the study to detail the results and conclusion of the study.

The list of project stakeholders, as agreed with the client Project Manager, is shown in Table 10.

Table 10 – Project Stakeholders

Organisation	Contact
Surrey Heath Borough Council – Planning Policy	Jane Ireland
Runnymede Borough Council – Local Plans	Georgina Pacey
Runnymede Borough Council – Economic Development	Rachel Raynaud
Woking Borough Council – Planning Policy	Ernest Amoako
Surrey County Council – Development Planning	Andy Stokes / Kerry James
Surrey County Council – Strategic Transport	Will Bryans
Surrey County Council – Passenger Transport	David Ligertwood
Surrey County Council – Road Safety	Duncan Knox
Surrey County Council – Major Schemes	David Stempfer
Highways England	Janice Burgess
Surrey Police	Graham Cannon
St Peter's Hospital	Andrew Grimes
South East Coast Ambulance Service	Russell Kempton

7 Base Year (2017) and Do Minimum (2036) Traffic Modelling

As highlighted in Chapter 1, as part of the development of the RBC Local Plan, SCC has undertaken a Strategic Highway Assessment of the impact of the proposed developments in the Local Plan on the road network. This has been completed using a cordoned model of the county multi-modal strategic transport model, version SINTRAM72. This model has a 2014 base year and a 2036 forecast year. It includes a Variable Demand Module and already includes all the proposed development considered for this study (as detailed in Table 1). This SCC study has indicated locations where the largest flow increases are expected on the network and specifically along the A320 corridor. As outlined in the introduction this corridor study is to assess in further detail the impact of proposed developments on the junctions and links along the A320.

It was agreed with SHBC, RBC, WBC and SCC that the key junctions in Table 4 plus the links on the corridor will be assessed to determine the impact of the proposed development along the corridor.

7.1 Data Collection

To assess the junctions a data collection exercise was completed to establish the 2017 traffic flows. Manual classified turning counts were completed for each of the junctions on Tuesday 31st October 2017 between:

- 0700 – 1000hrs; and
- 1500 – 1900hrs.

Automatic Traffic Counts (ATCs) were undertaken at the locations detailed in Table 11. The ATCs collected traffic volumes, vehicle speed and vehicle class for a seven-day period commencing 31st October 2017.

Table 11 – ATC Locations

Location
A320 Chertsey Road, 150m north of Woodham Rise
A320 Chertsey Road, 100m south of Anthonys
A320 Guildford Road, 300m south of Brox Road
A320 Guildford Road, 300m north of Brox Road
A320 Guildford Road, mid-way between Murray Road and A320 St Peter's Way
A320 St Peter's Way, mid-way between A320 Guildford Road and M25 Junction 11
A320 Guildford Road, 200m south of Little Green Lane
A320 Guildford Road, 200m south of Barrsbrook Farm Road
A320 Bell Bridge Road, 150m south of Pyrcroft Road
A320 Pyrcroft Road, mid-way between Cowley Avenue and Cowley Lane
A320 Chilsey Green Road, 50m north of Erkenwald Close

SCC also provided the following data from the Strategic Highway Assessment:

- 2014 Base model traffic volumes;
- 2036 Do Something model traffic volumes;
- Zone select links plots for all key developments; and
- The Runnymede Transport Assessment Report (June 2016).

Traffic signal timing data was received from SCC for the Guildford Road / St Peter's Way junction and from Highways England for the M25 Junction 11.

7.2 Methodology

Junction models have been developed for the AM and PM peak periods for each of the surveyed junctions using the relevant software (LinSig, ARCADY and PICADY).

7.2.1 Growth Factor

To establish the 2036 Do Minimum Forecast Year traffic flows a percentage increase in flow between 2014 and 2036 has been calculated for each junction using the outputs from the SCC Strategic Model used in the RBC Local Plan SHAR. The growth factor has been calculated using the Scenario 2 model used in the RBC Local Plan SHAR and includes all background and committed development, plus the proposed developments in the Runnymede Local Plan. The actual growth factors vary by junction although, on average, the growth factor is around 20%. This single growth factor per junction has been applied to the 2017 traffic counts to calculate the 2036 Do Minimum Forecast Year traffic flows. However, as the strategic model does not calibrate well at a local scale (i.e. junction turning volumes), local inaccuracies occur. On movements where this occurs absolute traffic growth between the 2014 and 2036 models has been applied. Professional judgment has been applied in selecting these movements, as both the volumes and the percentage increase need to be considered. Such an approach is similar to applying both a background traffic increase plus a local development traffic.

It has been assumed that there is no growth in traffic volumes between 2014 (strategic model base year) and 2017 (traffic counts).

7.3 2017 Base Year Summary Results

To assess the performance of the junctions we have analysed the Ratio of Flow to Capacity (RFC) results from the traffic models for each junction. The results have been presented on plans to show where the key congestion "hotspots" are located. The categorisation of the junction performance is based on the following criteria:

Red indicates a RFC of more than 1 and represents a junction where at least one turning movement is predicted to be over theoretical capacity.

Amber indicates a junction with a RFC of between 0.85 and 1 for at least one turning movement. 0.85 has been selected to represent the practical capacity.

Yellow indicates a junction with a RFC of between 0.75 and 0.85 for at least one turning movement. This represents a junction with some reserve capacity.

A black outline indicates that all predicted RFC are below 0.75 and the junction is considered to be operating within capacity.

7.3.1 AM Peak Hour

The results for the 2017 Base AM peak are presented in Figure 10 and are summarised below. In general, the results indicate that the key congestion hotspots are at the northern end of the corridor, plus the Six Crossroads roundabout to the south.

Junctions over theoretical capacity (Red):

- Junction 1: Chilsey Green Road/St Ann's Road/B388 Thorpe Road/Staines Road roundabout;
- Junction 6: Guildford Road/Holloway Hill and Guildford Road/Green Lane double mini-roundabout;
- Junction 7: Guildford Road/Little Green Lane priority junction;

- Junction 8: Guildford Road/Hillswood Drive/Bittams Lane roundabout; and
- Junction 13: Chertsey Road/Monument Road/Woodham Road/A245 roundabout.

Junctions over practical capacity (Amber):

- Junction 5: Guildford Road/The Knoll/Bell Bridge Road roundabout;
- Junction 10: Guildford Road/Murray Road/Chobham Road roundabout; and
- Junction 15: M25 J11 (excluding M25 mainline).

7.3.2 PM Peak Hour

The results for the 2017 Base PM peak are presented in Figure 11 and are summarised below. In general, the results indicate that the key congestion hotspots are the junctions where the A320 intersects with key east-west routes, specifically at Holloway Hill-Green Lane, Ottershaw and Six Crossroads roundabout. The St Peter's Hospital access roundabout is also a hotspot.

Junctions over theoretical capacity (Red):

- Junction 6: Guildford Road/Holloway Hill and Guildford Road/Green Lane double mini-roundabout;
- Junction 8: Guildford Road/Hillswood Drive/Bittams Lane roundabout;
- Junction 10: Guildford Road/Murray Road/Chobham Road roundabout; and
- Junction 13: Chertsey Road/Monument Road/Woodham Road/A245 roundabout.

Junctions over practical capacity (Amber):

- Junction 1: Chilsey Green Road/St Ann's Road/B388 Thorpe Road/Staines Road roundabout; and
- Junction 15: M25 J11 (excluding M25 mainline).

Figure 10 – 2017 Base RFC Results: AM Peak Hour

Figure 11 – 2017 Base RFC Results: PM Peak Hour

7.4 2036 Do Minimum Forecast Year Summary Results

The results in this section indicate the performance of the corridor should the development in the borough Local Plans proceed without the implementation of mitigation measures. Whilst the increase in traffic volumes varies from junction to junction along the corridor and at each junction the increase varies between approaches, there is on average around a 20% increase in traffic volumes in the 2036 Do Minimum Forecast Year compared to the 2017 Base Year traffic volumes.

7.4.1 AM Peak Hour

The results for the 2036 Do Minimum Forecast Year AM peak are presented in Figure 12 and are summarised below. In general, the results indicate that the vast majority of junctions are operating over theoretical capacity.

Junctions over theoretical capacity (Red):

- Junction 1: Chilsey Green Road/St Ann's Road/B388 Thorpe Road/Staines Road roundabout;
- Junction 3: Pyrcroft Road/Bell Bridge Road/Cowley Lane roundabout;
- Junction 5: Guildford Road/The Knoll/Bell Bridge Road roundabout;
- Junction 6: Guildford Road/Holloway Hill and Guildford Road/Green Lane double mini-roundabout;
- Junction 7: Guildford Road/Little Green Lane priority junction;
- Junction 8: Guildford Road/Hillswood Drive/Bittams Lane roundabout;
- Junction 10: Guildford Road/Murray Road/Chobham Road roundabout;
- Junction 12: Chertsey Road/Martyrs Lane roundabout;
- Junction 13: Chertsey Road/Monument Road/Woodham Road/A245 roundabout;
- Junction 14: Victoria Way/Chertsey Road roundabout; and
- Junction 15: M25 J11 (excluding M25 mainline).

7.4.2 PM Peak Hour

The results for the 2036 Do Minimum Forecast Year PM peak are presented in Figure 13 and are summarised below. In general, the results indicate that the majority of the large junctions to the north of the study area are congestion hotspots.

Junctions over theoretical capacity (Red):

- Junction 6: Guildford Road/Holloway Hill and Guildford Road/Green Lane double mini-roundabout;
- Junction 7: Guildford Road/Little Green Lane priority junction;
- Junction 8: Guildford Road/Hillswood Drive/Bittams Lane roundabout;
- Junction 10: Guildford Road/Murray Road/Chobham Road roundabout;
- Junction 13: Chertsey Road/Monument Road/Woodham Road/A245 roundabout; and
- Junction 15: M25 J11 (excluding M25 mainline).

Junctions over practical capacity (Amber):

- Junction 1: Chilsey Green Road/St Ann's Road/B388 Thorpe Road/Staines Road roundabout;
- Junction 3: Pyrcroft Road/Bell Bridge Road/Cowley Lane roundabout;
- Junction 5: Guildford Road/The Knoll/Bell Bridge Road roundabout; and
- Junction 9: Guildford Road/St Peter's Way signalised roundabout.

Figure 12 – 2036 Do Minimum Forecast Year RFC Results: AM Peak Hour

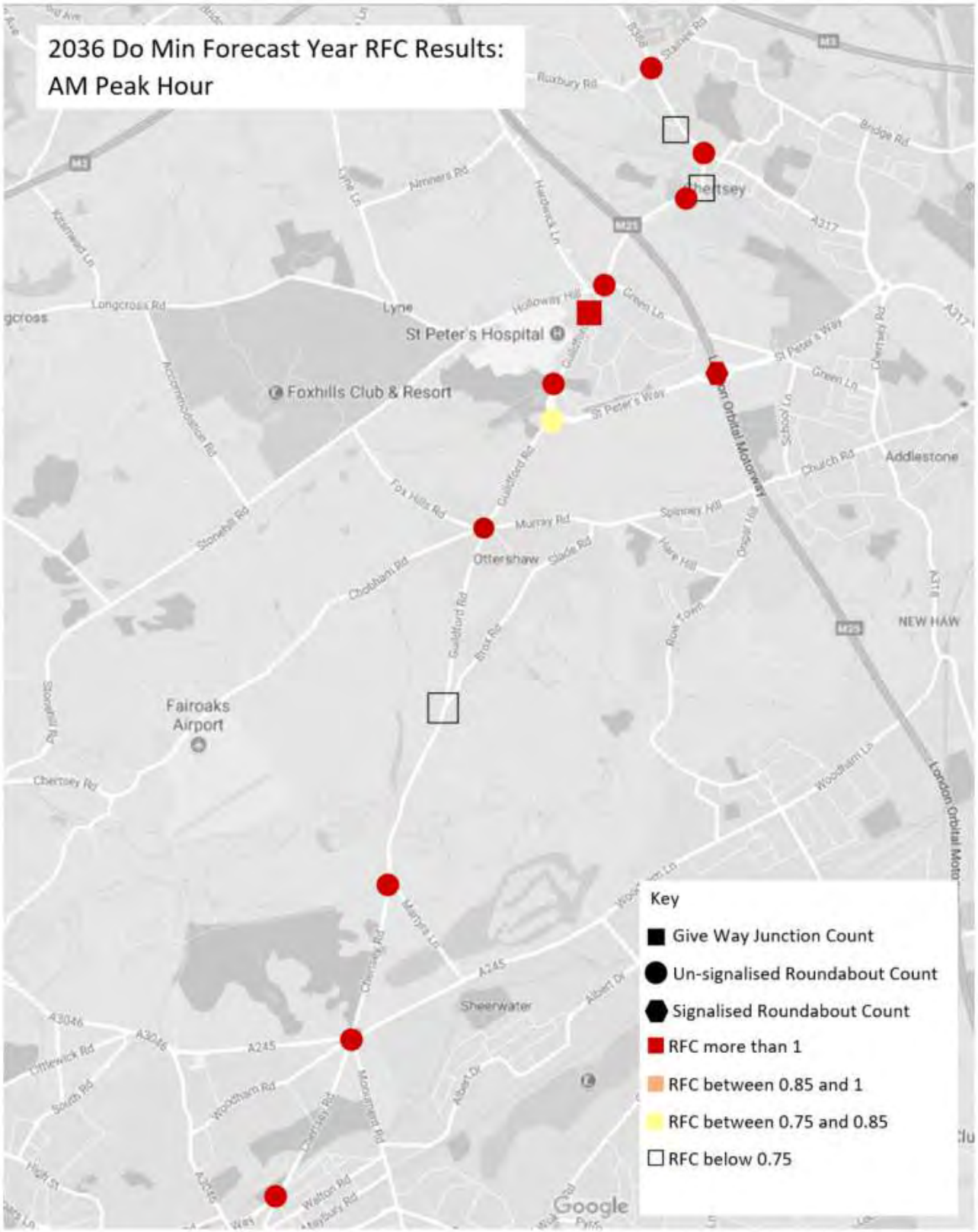
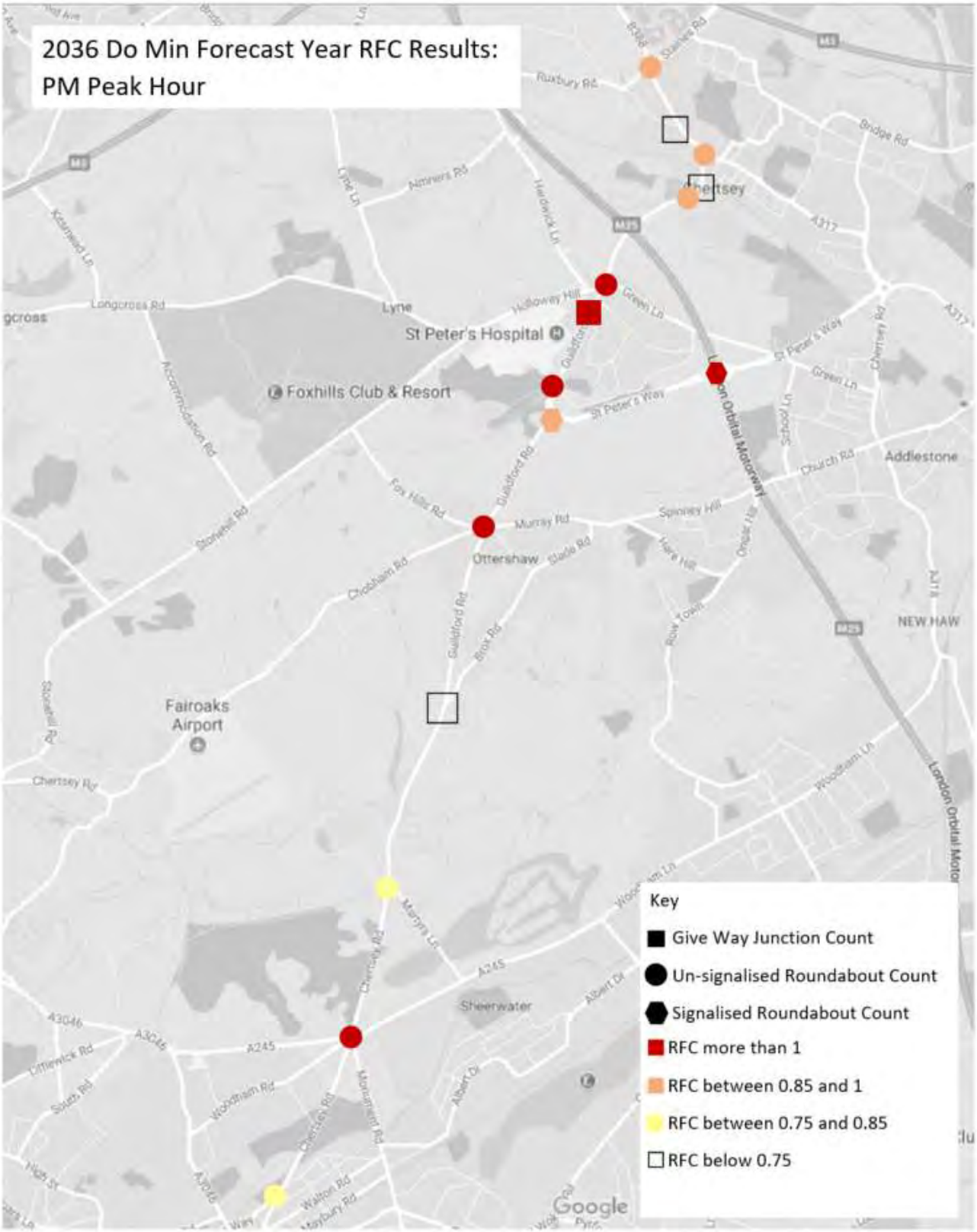


Figure 13 – 2036 Do Minimum Forecast Year RFC Results: PM Peak Hour



7.5 Detailed Junction Modelling Results

This section details the traffic modelling results per junction for the AM and PM peak periods for the 2017 Base Year and the 2036 Do Minimum Future Year.

7.5.1 Junction 1: A320 Chilsey Green Road / St Ann's Road / B388 Thorpe Road / A320 Staines Road

AM Peak

The results in Table 12 indicate that in the AM peak period in the 2017 Base Year the Chilsey Green Road arm is operating over theoretical capacity and the Thorpe Road arm is operating over practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction deteriorates with the Chilsey Green Road arm expected to operate significantly over theoretical capacity. The Thorpe Road and Staines Road arms are predicted to operate over practical capacity.

Table 12 – Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Staines Road	0.56	0.68	2	0.77	0.94	11
A320 Chilsey Green Road	0.90	1.11	54	1.01	1.37	157
St Ann's Road	0.39	0.68	2	0.42	0.74	3
Thorpe Road	0.65	0.92	7	0.66	0.93	8

PM Peak

The results in Table 13 indicate that in the PM peak period in the 2017 Base Year the Chilsey Green Road and Thorpe Road arms are operating over practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction deteriorates slightly with the Chilsey Green Road and Thorpe Road arms continuing to operate over practical capacity.

Table 13 – Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Staines Road	0.51	0.67	2	0.53	0.69	2
A320 Chilsey Green Road	0.76	0.91	7	0.79	0.95	10
St Ann's Road	0.22	0.33	1	0.23	0.35	1
Thorpe Road	0.78	0.86	6	0.81	0.90	7

7.5.2 Junction 2: Pyrcroft Road / Cowley Avenue / A320 Chilsey Green Road

AM Peak

The results in Table 14 indicate that in the AM peak period the junction operates within capacity in both the 2017 Base Year and the 2036 Do Minimum Future Year.

Table 14 – Pyrcroft Road / Cowley Avenue / Chilsey Green Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chilsey Green Road	0.00	0.02	0	0.00	0.03	0
Cowley Avenue	0.08	0.10	0	0.11	0.24	0
A320 Pyrcroft Road South	0.00	0.02	0	0.00	0.03	0
Pyrcroft Road West	0.10	0.25	0	0.18	0.66	1

PM Peak

The results in Table 15 indicate that in the PM peak period the junction operates within capacity in both the 2017 Base Year and the 2036 Do Minimum Future Year.

Table 15 – Pyrcroft Road / Cowley Avenue / Chilsey Green Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chilsey Green Road	0.00	0.01	0	0.00	0.01	0
Cowley Avenue	0.03	0.09	0	0.03	0.10	0
A320 Pyrcroft Road South	0.03	0.05	0	0.03	0.05	0
Pyrcroft Road West	0.16	0.24	0	0.17	0.26	0

7.5.3 Junction 3: Pyrcroft Road / A320 Bell Bridge Road / Cowley Lane

AM Peak

The results in Table 16 indicate that in the AM peak period in the 2017 Base Year the Pyrcroft Road East arm is operating below practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate. The Pyrcroft Road East arm is expected to operate over theoretical capacity and the Pyrcroft Road West arm is predicted to operate around practical capacity.

Table 16 – Pyrcroft Road / Bell Bridge Road / Cowley Lane Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
Cowley Lane	0.00	0.02	0	0.00	0.05	0
Pyrcroft Road East	0.60	0.80	4	0.90	1.19	125
A320 Bell Bridge Road	0.22	0.44	1	0.32	0.73	3
A320 Pyrcroft Road West	0.53	0.58	1	0.78	0.84	5

PM Peak

The results in Table 17 indicate that in the PM peak period in the 2017 Base Year the junction is expected to operate within capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with Pyrcroft Road East arm expected to operate over practical capacity.

Table 17 – Pyrcroft Road / Bell Bridge Road / Cowley Lane Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
Cowley Lane	0.02	0.02	0	0.02	0.03	0
Pyrcroft Road East	0.57	0.63	2	0.82	0.91	8
A320 Bell Bridge Road	0.33	0.43	1	0.40	0.50	1
A320 Pyrcroft Road West	0.54	0.69	2	0.57	0.73	3

7.5.4 Junction 4: Guildford Road / A320 Bell Bridge Road

AM Peak

The results in Table 18 indicate that in the AM peak period the junction operates within capacity in both the 2017 Base Year and the 2036 Do Minimum Future Year.

Table 18 – Guildford Road / Bell Bridge Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Bell Bridge Road North	0.00	0.00	0	0.00	0.00	0
Guildford Road	0.11	0.39	1	0.20	0.73	2
A320 Bell Bridge Road South	0.00	0.03	0	0.00	0.05	0

PM Peak

The results in Table 19Table 18 Table 14indicate that in the PM peak period the junction operates well within capacity in both the 2017 Base Year and the 2036 Do Minimum Future Year.

Table 19 – Guildford Road / Bell Bridge Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Bell Bridge Road North	0.00	0.00	0	0.00	0.00	0
Guildford Road	0.13	0.22	0	0.16	0.27	0
A320 Bell Bridge Road South	0.00	0.03	0	0.00	0.04	0

7.5.5 Junction 5: A320 Guildford Road / The Knoll / A320 Bell Bridge Road

AM Peak

The results in Table 20 indicate that in the AM peak period in the 2017 Base Year The Knoll arm is operating over practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with The Knoll arm expected to operate over theoretical capacity.

Table 20 – Guildford Road / The Knoll / Bell Bridge Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Bell Bridge Road	0.04	0.08	0	0.08	0.14	0
The Knoll	0.63	0.90	7	0.78	1.14	65
A320 Guildford Road	0.42	0.58	1	0.53	0.72	3

PM Peak

The results in Table 21 indicate that in the PM peak period in the 2017 Base Year The Knoll arm is operating below practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with The Knoll arm expected to operate over practical capacity.

Table 21 – Guildford Road / The Knoll / Bell Bridge Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Bell Bridge Road	0.06	0.18	0	0.08	0.24	0
The Knoll	0.65	0.77	3	0.79	0.95	12
A320 Guildford Road	0.44	0.57	1	0.53	0.69	2

7.5.6 Junction 6a: A320 Guildford Road / Green Lane

AM Peak

The results in Table 22 indicate that in the AM peak period in the 2017 Base Year the Green Lane arm is operating over theoretical capacity and the Guildford Road North arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with both the Guildford Road North and Green Lane arms predicted to operate significantly over theoretical capacity. Traffic volumes are predicted to increase significantly on the A320 Guildford Road North resulting in a significant deterioration in performance on this approach. As vehicles on Green Lane are required to give way to vehicles on Guildford Road North there is less opportunity for vehicles on Green Lane to exit.

Table 22 – Guildford Road / Green Lane Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.60	0.84	5	1.58	2.24	991
Green Lane	0.83	1.29	51	1.06	1.99	159
A320 Guildford Road South	0.45	0.61	2	0.50	0.70	2

PM Peak

The results in Table 23 indicate that in the PM peak period in the 2017 Base Year the Guildford Road North arm is operating over practical capacity and the Green Lane arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with both the Guildford Road North and Green Lane arms predicted to operate over theoretical capacity.

Table 23 – Guildford Road / Green Lane Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.71	0.88	6	0.93	1.14	86
Green Lane	0.63	0.75	3	0.92	1.02	21
A320 Guildford Road South	0.45	0.49	1	0.57	0.63	2

7.5.7 Junction 6b: A320 Guildford Road / Holloway Hill

AM Peak

The results in Table 24 indicate that in the AM peak period in the 2017 Base Year the Holloway Hill arm is operating over theoretical capacity and the Guildford Road North and South arms are operating over practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with all arms predicted to operate over theoretical capacity. Traffic volumes are predicted to increase significantly on the A320 Guildford Road North resulting in a significant deterioration in performance on this approach. In addition, traffic volumes are expected to increase on Holloway Hill as this forms a key route from the Longcross development to the M25 Junction 11.

Table 24 – Guildford Road / Holloway Hill Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.69	0.91	8	1.43	1.86	744
A320 Guildford Road South	0.80	0.86	5	0.96	1.03	25
Holloway Hill	0.86	1.07	45	0.98	1.21	145

PM Peak

The results in Table 25 indicate that in the PM peak period in the 2017 Base Year the Guildford Road South arm is operating over theoretical capacity and the Holloway Hill arm is operating over practical capacity. The Guildford Road North arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with all arms predicted to operate over theoretical capacity.

Table 25 – Guildford Road / Holloway Hill Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.70	0.79	3	0.93	1.06	33
A320 Guildford Road South	0.90	1.13	35	1.22	1.47	246
Holloway Hill	0.82	0.88	6	1.03	1.09	103

7.5.8 Junction 7: A320 Guildford Road / Little Green Lane

AM Peak

The results in Table 26 indicate that in the AM peak period in the 2017 Base Year the Little Green Lane arm is operating over theoretical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with the Little Green Lane arm predicted to operate further over theoretical capacity.

Table 26 – Guildford Road / Little Green Lane Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.00	0.00	0	0.00	0.00	0
Little Green Lane	0.45	1.07	11	0.57	1.36	26
A320 Guildford Road South	0.00	0.07	0	0.00	0.08	0

PM Peak

The results in Table 27 indicate that in the PM peak period in the 2017 Base Year the junction operates well within capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with the Little Green Lane arm predicted to operate further over theoretical capacity. Due to the increase in traffic volumes on the A320 Guildford Road it is expected that there will be limited opportunities for vehicles to exit Little Green Lane in the AM peak period with the current priority control.

Table 27 – Guildford Road / Little Green Lane Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.00	0.30	0	0.00	0.54	1
Little Green Lane	0.02	0.45	1	0.03	1.28	1
A320 Guildford Road South	0.00	0.01	0	0.00	0.07	0

7.5.9 Junction 8: A320 Guildford Road / Hillswood Drive / Bittams Lane

AM Peak

The results in Table 28 indicate that in the AM peak period in the 2017 Base Year the Bittams Lane arm operates significantly above theoretical capacity and the Guildford Road North arm is operating close to theoretical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with the Bittams Lane and Guildford Road North arms predicted to operate significantly over theoretical capacity. The deterioration on Bittams Lane is expected to be a result of the increased traffic volumes associated with the nearby Chertsey Bittams development. With the general increase in volume of traffic on the network it is expected that there will be limited opportunities for vehicles on Bittams Lane to enter the roundabout.

Table 28 – Guildford Road / Hillswood Drive / Bittams Lane Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.86	0.97	13	1.17	1.33	309
Bittams Lane	0.98	1.47	116	1.91	2.54	361
A320 Guildford Road South	0.39	0.56	1	0.49	0.70	2
Hillswood Drive	0.03	0.07	0	0.05	0.09	0
Hospital Access	0.24	0.31	0	0.44	0.59	1

PM Peak

The results in Table 29 indicate that in the PM peak period in the 2017 Base Year the Guildford Road North arm is operating over theoretical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with the Guildford Road North arm predicted to operate over theoretical capacity and the Hospital Access arm expected to operate over practical capacity.

Table 29 – Guildford Road / Hillswood Drive / Bittams Lane Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.83	1.03	32	1.01	1.27	183
Bittams Lane	0.16	0.33	1	0.23	0.52	1
A320 Guildford Road South	0.29	0.46	1	0.33	0.53	1
Hillswood Drive	0.32	0.38	1	0.39	0.48	1
Hospital Access	0.57	0.69	2	0.65	0.87	6

7.5.10 Junction 9: A320 Guildford Road / A320 St Peter's Way

AM Peak

The results in Table 30 indicate that in the AM peak period in the 2017 Base Year the junction operates within capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with the St Peter's Way and Guildford Road South (straight) arms predicted to be approaching practical capacity.

Table 30 – Guildford Road / A320 St Peter's Way Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 St Peter's Way	N/A	0.66	5	N/A	0.82	9
A320 Guildford Road South (Straight)	N/A	0.64	4	N/A	0.79	6
Access Road	N/A	0.01	0	N/A	0.02	0
A320 Guildford Road North	N/A	0.19	1	N/A	0.23	1

PM Peak

Table 31 indicates that in the PM peak period in the 2017 Base Year the Guildford Road South (straight) arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate with the Guildford Road South (straight) arm predicted to operate above practical capacity and the St Peter's Way arm expected to be approaching practical capacity.

Table 31 – Guildford Road / A320 St Peter's Way Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 St Peter's Way	N/A	0.64	4	N/A	0.76	5
A320 Guildford Road South (Straight)	N/A	0.79	7	N/A	0.89	9
Access Road	N/A	0.00	0	N/A	0.00	0
A320 Guildford Road North	N/A	0.25	1	N/A	0.30	2

7.5.11 Junction 10: A320 Guildford Road / Murray Road / Chobham Road

AM Peak

The results in Table 32 indicate that in the AM peak period in the 2017 Base Year the Guildford Road South, Guildford Road North and Murray Road arms are operating over practical capacity and the Chobham Road arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate significantly. The Murray Road, Guildford Road South and Chobham Road arms are predicted to operate over theoretical capacity, with extremely poor performance expected on the Chobham Road arm. This is expected to be primarily attributed to the additional traffic generated by the Fairoaks airfield development as Chobham Road

provides the key route to the M25 Junction 11. The Guildford Road North arm is predicted to remain over practical capacity.

Table 32 – Guildford Road / Murray Road / Chobham Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.69	0.86	5	0.67	0.86	5
Murray Road	0.57	0.87	6	0.89	1.40	118
A320 Guildford Road South	0.60	0.94	10	0.65	1.01	17
Chobham Road	0.46	0.80	3	1.26	2.32	244

PM Peak

The results in Table 33 indicate that in the PM peak period in the 2017 Base Year the Chobham Road arm is operating above theoretical capacity and the Guildford Road North arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate, with the Chobham Road arm predicted to operate significantly over theoretical capacity. As stated above this is likely to be primarily related to trips associated with the Fairoaks airfield development. The Guildford Road South and Guildford Road South arms are predicted to operate over practical capacity whilst the Murray Road arm is expected to be approaching practical capacity.

Table 33 – Guildford Road / Murray Road / Chobham Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.65	0.80	4	0.69	0.86	5
Murray Road	0.47	0.54	1	0.69	0.80	4
A320 Guildford Road South	0.64	0.74	3	0.76	0.89	7
Chobham Road	0.91	1.24	43	2.00	2.71	410

7.5.12 Junction 11: A320 Guildford Road / Brox Road

AM Peak

The results in Table 34 indicate that in the AM peak period in the 2017 Base Year the Brox Road arm is operating over theoretical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate, with the Brox Road arm predicted to operate further above theoretical capacity.

Table 34 – Guildford Road / Brox Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.00	0.00	0	0.00	0.00	0
Brox Road	0.45	1.07	11	0.57	1.22	26
A320 Guildford Road South	0.00	0.07	0	0.00	0.04	0

PM Peak

The results in Table 35 indicate that in the PM peak period in the 2017 Base Year the junction operates well within capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate, with the Brox Road arm predicted to operate above theoretical capacity. This is a result of the expected increase in the volume of vehicles on the A320 resulting in limited opportunities for vehicles to exit Brox Road.

Table 35 – Guildford Road / Brox Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.00	0.30	0	0.00	0.54	1
Brox Road	0.02	0.45	1	0.03	1.28	1
A320 Guildford Road South	0.00	0.01	0	0.00	0.07	0

7.5.13 Junction 12: A320 Chertsey Road / Martyrs Lane

AM Peak

The results in Table 36 indicate that in the AM peak period in the 2017 Base Year the Chertsey Road South arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate, with the Martyrs Lane arm predicted to operate above theoretical capacity and the Chertsey Road South arm expected to operate above practical capacity. The significant deterioration in performance on Martyrs Lane is expected to be a result of the proposed Martyrs Lane development. With more vehicles entering the roundabout from Martyrs Lane there will be fewer gaps for vehicles on the A320 Chertsey Road South to enter the roundabout.

Table 36 – Chertsey Road / Martyrs Lane Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	0.53	0.61	2	0.53	0.61	2
Martyrs Lane	0.49	0.62	2	0.82	1.04	25
A320 Chertsey Road South	0.76	0.83	5	0.82	0.91	8
McLaren Access	0.06	0.10	0	0.07	0.11	0

PM Peak

The results in Table 35Table 37 indicate that in the PM peak period in the 2017 Base Year the junction operates within capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate. However, all arms remain within practical capacity, with the McLaren Access expected to operate close to practical capacity. The deterioration in performance on the McLaren Access is expected to be a result of higher traffic volumes on the roundabout limiting the opportunity to enter the junction.

Table 37 – Chertsey Road / Martyrs Lane Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	0.50	0.56	1	0.62	0.71	2
Martyrs Lane	0.15	0.21	0	0.42	0.55	1
A320 Chertsey Road South	0.36	0.51	1	0.47	0.66	2
McLaren Access	0.41	0.57	1	0.59	0.83	4

7.5.14 Junction 13: A320 Chertsey Road / Monument Road / Woodham Road / A245

AM Peak

The results in Table 38 indicate that in the AM peak period in the 2017 Base Year the Chertsey Road North, Chertsey Road South and A245 West arms operate above theoretical capacity. The Monument Road arm is operating close to theoretical capacity whilst the A245 East and Woodham Road arms are approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate significantly. The Chertsey Road North, Monument Road, Chertsey Road South and A245 West arms are predicted to operate significantly above theoretical capacity and the A245 East and Woodham Road arms are expected

to operate close to theoretical capacity. As the junction already operates over capacity the expected growth in traffic as a result of the proposed development will exacerbate the existing issues.

Table 38 – Chertsey Road / Monument Road / Woodham Road / A245 Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	1.02	1.19	81	1.27	1.49	234
A245 East	0.68	0.78	3	0.84	0.97	12
Monument Road	0.83	0.95	11	1.13	1.29	139
A320 Chertsey Road South	0.92	1.27	108	1.18	1.69	302
Woodham Road	0.55	0.77	3	0.70	0.98	11
A245 West	1.86	2.07	423	2.34	2.64	631

PM Peak

The results in Table 39 indicate that in the PM peak period in the 2017 Base Year the Chertsey Road North, Monument Road, Chertsey Road South and A245 West arms operate above theoretical capacity. The A245 East arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate significantly. The Chertsey Road North, Monument Road, Chertsey Road South and A245 West arms are predicted to operate significantly above theoretical capacity and the A245 East arm is expected to operate above practical capacity. As mentioned above the junction already operates over capacity so the expected growth in traffic as a result of the proposed development will exacerbate the existing issues.

Table 39 – Chertsey Road / Monument Road / Woodham Road / A245 Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	0.94	1.15	54	1.11	1.34	155
A245 East	0.62	0.76	3	0.73	0.89	6
Monument Road	0.92	1.38	69	1.16	1.77	209
A320 Chertsey Road South	0.96	1.25	70	1.14	1.48	172
Woodham Road	0.38	0.49	1	0.44	0.59	1
A245 West	1.34	1.64	219	1.58	1.89	335

7.5.15 Junction 14: Victoria Way / A320 Chertsey Road

AM Peak

The results in Table 40 indicate that in the AM peak period in the 2017 Base Year the junction operates within practical capacity, although the Victoria Way arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate. The Victoria Way arm is predicted to operate above theoretical capacity and the Chertsey Road North arm is expected to operate above practical capacity.

Table 40 – Victoria Way / A320 Chertsey Road Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	0.54	0.65	2	0.75	0.92	9
Chertsey Road South	0.19	0.30	0	0.29	0.47	1
A320 Victoria Way	0.72	0.80	4	0.97	1.07	77

PM Peak

The results in Table 41 indicate that in the PM peak period in the 2017 Base Year the junction operates within practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate, with the Victoria Way arm predicted to be approaching practical capacity. Nonetheless, the junction remains within practical capacity.

Table 41 – Victoria Way / A320 Chertsey Road Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	0.32	0.43	1	0.42	0.57	1
Chertsey Road South	0.38	0.47	1	0.52	0.62	2
A320 Victoria Way	0.48	0.63	2	0.63	0.83	4

7.5.16 Junction 15: M25 J11 (excluding M25 mainline)

AM Peak

The results in Table 42Table 40 indicate that in the AM peak period in the 2017 Base Year the junction operates within practical capacity, although the M25 North Off Slip and M25 South Off Slip are both at/approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate. The St Peter's Way West arm is predicted to operate above theoretical capacity and this is expected to be a result of a large proportion of the additional traffic from the proposed developments routing to the M25. The remaining arms are expected to operate above practical capacity.

Table 42 – M25 J11 (excluding M25 mainline) Junction Capacity Assessment Results: AM Peak

AM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
M25 North Off Slip	N/A	0.85	18	N/A	0.91	21
A320 St Peter's Way East	N/A	0.71	6	N/A	0.85	16
M25 South Off Slip	N/A	0.83	8	N/A	0.89	10
A320 St Peter's Way West	N/A	0.72	1	N/A	1.11	312

PM Peak

The results in Table 43 indicate that in the PM peak period in the 2017 Base Year the M25 South Off Slip is operating above practical capacity and the St Peter's Way West arm is approaching practical capacity.

In the 2036 Do Minimum Future Year the performance of the junction is expected to deteriorate. The M25 South Off Slip is predicted to operate above theoretical capacity, the St Peter's Way West arm is expected to operate above practical capacity and the St Peter's Way East arm is expected to be approaching practical capacity.

Table 43 – M25 J11 (excluding M25 mainline) Junction Capacity Assessment Results: PM Peak

PM Peak						
Arm	2017 Base Year			2036 Do Minimum Future Year		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
M25 North Off Slip	N/A	0.59	6	N/A	0.66	7
A320 St Peter's Way East	N/A	0.69	2	N/A	0.83	12
M25 South Off Slip	N/A	0.97	15	N/A	1.09	33
A320 St Peter's Way West	N/A	0.83	2	N/A	0.94	7

7.6 Link Analysis

An analysis of the links between junctions along the corridor has been completed using the DMRB methodology. The results indicate that the majority of links are adequate for the 2017 Base and 2036 Do Minimum traffic flows, although some widening of the existing single lane carriageways would be beneficial to accommodate the additional traffic flow in the 2036 Do Minimum scenario. In addition, the A320 St Peter's Way would require widening to a three lane dual carriageway to accommodate the demand approaching the M25 in the 2036 Do Minimum scenario.

8 Mitigation Development

Alongside the junction and link assessments a long list of interventions, ranging from small scale measures to large scale changes, were developed to mitigate the impact of the expected traffic growth in the 2036 Do Minimum Future Year scenario. These included junction and link improvement schemes plus travel demand management measures and were developed in collaboration with stakeholders through the project workshops referred to in Section 6. The measures were presented as concept scheme options and subsequently developed into initial sketch designs. The concept scheme drawings and initial sketch design drawings can be found in the "A320 Corridor Study, Feasibility Study – Interim Report".

These measures were subsequently reviewed and discussed with the Project Board in January 2018 to prioritise the interventions for testing based on a high level review of the scheme against the predicted traffic flows in the 2036 Do Minimum Future Year scenario. The review also considered the potential impact on sustainable modes of transport and third party land. Based on the review some interventions were identified to be assessed further, others were selected to be tested only if the preferred option did not provide sufficient benefits, whilst other schemes were agreed not to be tested at this stage. For those schemes that were agreed not to be tested the initial sketch design or concept scheme drawings have been provided in Appendix D of this report.

Table 44 summarises the details and actions for the schemes identified for each junction and link as agreed with the Project Board in January 2018.

Table 44 – Junction and Link Scheme Summary

Ref	Location	Option	Details	Action
Junction 1	Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road roundabout	Option 1	Widen entries and exits. Two lane circulatory carriageway	Progress to traffic model testing
		Option 2	New larger roundabout	Only progress to testing if Option 1 is insufficient
Junction 2	Chilsey Green Road / Cowley Avenue / Pyrcroft Road	N/A	No issues identified in the 2036 Do Minimum Future Year scenario	No design or traffic modelling required
Junction 3	Pyrcroft Road / Bell Bridge Road / Cowley Lane roundabout	Option 1	New signal controlled junction	Progress to traffic model testing
Junction 4 and 5	Guildford Road / Bell Bridge Road junction and Guildford Road / The Knoll / Bell Bridge Road roundabout	Option 1	New signal controlled junction	Progress to traffic model testing
Link 1	A320 Guildford Road (Outside Salesian School)	Option 1	Carriageway widening to allow free flow of traffic and parking	No traffic modelling required. Progress to feasibility design
Junction 6a and 6b	Guildford Road / Holloway Hill and Guildford Road / Green Lane roundabouts	Option 1	Widen entries and exits to Green Lane roundabout	Limited benefit expected compared to scale of issue. Do not progress to traffic model testing
		Option 2	New larger roundabout	Only progress to testing if Option 3 is insufficient
		Option 3	New signal controlled junctions with bypass lane	Progress to traffic model testing

Junction 7	Guildford Road / Little Green Lane	N/A	Existing and future capacity issues on Little Green Lane but very low traffic volumes on this approach. Design changes not considered appropriate based on the scale of the issue.	No design or traffic modelling required
Link 2	A320 Guildford Road (Holloway Hill to Bittams Lane)	Option 1	Carriageway widening to provide additional lane and wider shared use footway/cycleway	No traffic modelling required. Progress to feasibility design
Junction 8	Guildford Road / Hillswood Drive / Bittams Lane roundabout	Option 1	New larger roundabout	Progress to traffic model testing
		Option 2	Signalise existing roundabout	Limited benefit expected compared to scale of issue. Do not progress to traffic model testing
Junction 9	Guildford Road / St Peter's Way	N/A	Junction operates close to practical capacity in the 2036 Do Minimum Future Year scenario. No intervention considered necessary.	No design or traffic modelling required
Link 3	A320 Guildford Road (St Peter's Way to Chobham Road)	Option 1	Carriageway widening to create standard lane widths	No traffic modelling required. Progress to feasibility design
Junction 10	Guildford Road / Murray Road / Chobham Road roundabout	Option 1	Widen entries and exits	Limited benefit expected compared to scale of issue. Do not progress to traffic model testing
		Option 2	New larger roundabout	Progress to traffic model testing
Junction 11	Guildford Road / Brox Road junction	Option 1	Carriageway widening to create right turn pocket	No traffic modelling required. Progress to feasibility design
Junction 12	Chertsey Road / Martyrs Lane roundabout	Option 1	Widen entries and exits. Two lane circulatory carriageway	Limited impact at junction. Only to be tested and developed once WBC have completed Regulation 19
Junction 13	Chertsey Road / Monument Road / Woodham Road / A245 roundabout	Option 1	Widen exit on Chertsey Road north. Two lane circulatory carriageway	Limited benefit expected compared to scale of issue. Do not progress to traffic model testing
		Option 2	New larger roundabout	Progress to traffic model testing
Junction 14	Victoria Way / A320 Chertsey Road roundabout	Option 1	Dedicated northbound lane from Victoria Way to A320 Chertsey Road	No traffic modelling required. Progress to feasibility design
Link 4	A320 St Peter's Way (Guildford Road to M25 Junction 11)	Option 1	Widen St Peter's Way to three lanes eastbound	Further consultation with Highways England required before progressing.

Junction 15	M25 J11 (excluding M25 mainline)	Option 1	Three lane circulatory carriageway at Junction 11	Further consultation with Highways England required before progressing.
		Option 2	Direct links: East to North and West to South and dedicated left turn lane from St Peter's Way (east) to M25 south	Further consultation with Highways England required before progressing.
		Option 3	New junction on M25 and/or M3	Further consultation with Highways England required before progressing.

9 Junction Improvements and Assessments

This section provides the details of the proposed schemes for each junction, including the results of the traffic modelling assessment. Feasibility designs have been prepared for the majority of schemes whilst for a small number of locations the initial sketch or outline design drawings have been provided.

Rough order of magnitude construction cost estimates have been prepared for each of the scheme designs and are presented below. At this very early stage of the design process there are a large number of "unknowns", including land ownership and highway boundary extents. Therefore, a number of assumptions have been made in preparing the costs including the following:

- Fees associated with design development have been estimated based on a percentage of the estimated construction cost. The percentages applied are:
  - 10% for schemes with a construction cost over £1m;
  - 18% for schemes with a construction cost between £500,000 and £1m; and
  - 25% for schemes with a construction cost below £500,000.
- Compulsory purchase costs have been included at sites identified. The price is assumed to be £1,500 per m^2 based on the cost of land being sold by local land agents;
- Utility diversion costs are difficult to predict and there is currently no information from the utility companies on the location of their plant. Therefore, diversion costs have been estimated based on a percentage of the estimated construction cost. The percentages applied are:
  - 10% for schemes with a construction cost over £1m;
  - 15% for schemes with a construction cost between £500,000 and £1m; and
  - 20% for schemes with a construction cost below £500,000.

  These are an estimate and the final figure for utility diversions may vary significantly;
- As the design is at a very early stage an Optimism Bias of 40% has been applied to the costs; and
- Costs are based on 2018 Quarter 1 prices. No inflation has been applied.

It should be noted that the scheme costs are likely to change as the scheme progresses, as currently:

- The scheme layout is not fixed and the extent of works has not been finalised;
- The schemes are based on OS mapping. Once detailed topographical surveys are available there is potential that the scheme design and extents may change;
- No allowance has been made for landscaping works, which may be significant for the larger schemes;
- No cost has been included for environmental investigations (e.g. bat surveys);
- No cost has been included for land that is required for the scheme that currently appears to be common land or open fields;
- There is no detailed survey information such as ground investigations, pavement condition, drainage, etc.;
- The works phasing is unknown and this will have a significant impact on costs;
- For the larger schemes the construction costs may be reduced due to economies of scale;
- Whilst an assumed compulsory purchase cost has been included where applicable, a land agent will be required to calculate the cost of compulsory purchase of private land which will give an accurate cost of compulsory purchase; and
- At this stage no cost has been included for building over common land.

9.1 Junction 1: A320 Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road

9.1.1 Scheme Assessment

The initial sketch scheme Option 1 for the Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road was tested using ARCADY. The initial assessment indicated that minor changes to the location and extent of carriageway widening at the junction was required to ensure the junction performed within capacity.

9.1.2 Scheme Description

The updated Option 1 scheme is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2001 Revision 01 (see Appendix E) and includes the following measures:

- Carriageway widening on:
  - Both sides of Staines Road to increase the lane widths on the approach to the roundabout and to provide a two lane exit;
  - Both sides of Chilsey Green Road to provide a two lane entry and exit;
  - St Ann's Road to provide a two lane entry; and
  - Both sides of Thorpe Road to provide a two lane entry and exit;
- Marking the circulatory carriageway as two lanes; and
- New controlled crossing on Chilsey Green Road in the vicinity of Pyrcroft Grange Primary School.

At this stage of the project highway boundary information has not been available for review. Therefore, the drawing has included an assumed highway boundary. Based on this it is assumed that the majority of the proposed works would be within the highway boundary, although some third party land may be required. Further investigation of the precise location of the highway boundary will be required at the next stage of the design process.

9.1.3 Option 1: 2036 Do Something Future Year Results

AM Peak

The traffic modelling results for the Option 1 scheme in the AM peak hour in the 2036 Do Something Future Year are provided in Table 45.

Table 45 – A320 Chilsey Green Road / St Ann's Road / B388 Thorpe Road / A320 Staines Road Junction Capacity Assessment Results: AM Peak

AM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 1		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Staines Road	0.56	0.68	2	0.77	0.94	11	0.68	0.83	5
A320 Chilsey Green Road	0.90	1.11	54	1.01	1.37	157	0.65	0.83	4
St Ann's Road	0.39	0.68	2	0.42	0.74	3	0.26	0.45	1
Thorpe Road	0.65	0.92	7	0.66	0.93	8	0.46	0.63	2

The traffic model results indicate that the junction would operate around practical capacity in the AM peak hour with the implementation of the proposed Option 1 scheme.

PM Peak

The traffic modelling results for the Option 1 scheme in the PM peak hour in the 2036 Do Something Future Year are provided in Table 46.

Table 46 – A320 Chilsey Green Road / St Ann's Road / B388 Thorpe Road / A320 Staines Road Junction Capacity Assessment Results: PM Peak

PM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 1		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Staines Road	0.51	0.67	2	0.53	0.69	2	0.47	0.61	2
A320 Chilsey Green Road	0.76	0.91	7	0.79	0.95	10	0.50	0.59	1
St Ann's Road	0.22	0.33	1	0.23	0.35	1	0.14	0.52	0
Thorpe Road	0.78	0.86	6	0.81	0.90	7	0.55	0.61	2

The traffic model results indicate that the junction would operate below practical capacity in the PM peak hour with the implementation of the proposed Option 1 scheme.

9.1.4 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 1 feasibility scheme is £1.3m (see assumptions on costs at the start of Chapter 9).

9.1.5 Conclusion

Based on the results of this feasibility study it is concluded that minor improvements to the Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road roundabout would accommodate the expected increase in traffic volumes at this junction and would improve the performance of the junction compared to the 2017 Base Year operation. Further investigation will be required at the next stage of the design process to determine if the third party land can be obtained.

9.2 Junction 3: Pyrcroft Road / A320 Bell Bridge Road / Cowley Lane

9.2.1 Scheme Assessment

The Option 1 proposal to create a signal controlled junction at the existing Pyrcroft Road / Bell Bridge Road / Cowley Lane roundabout was assessed using a spreadsheet model based on volume to capacity ratio calculations. The results indicate that the signal controlled layout would not provide capacity improvements, although the scheme would provide benefits for pedestrians and cyclists.

The future year traffic modelling exercise predicts that the main capacity constraint at this junction is limited to the Pyrcroft Road East arm which is expected to operate over theoretical capacity in the AM peak period and over practical capacity in the PM peak period.

A key issue at this junction in the existing situation is blocking back of southbound traffic through the junction in the AM peak period. This is a result of a combination of factors including:

- Congestion as a result of the limited capacity at the Guildford Road / Green Lane junction;
- Kerbside activity outside Salesian School which disrupts the flow of traffic and can prevent two way movement, especially for larger vehicles; and

- Frequent use of the controlled pedestrian crossing immediately north of the Bell Bridge Road / Guildford Road junction. This is especially the case in the AM peak hour when there is high demand from movements to Sir William Perkins' School.

9.2.2 Conclusion

As the capacity constraints are predicted to be limited in the future year scenario it is recommended that the performance of the junction is monitored following the implementation of measures to resolve the capacity issues at the Guildford Road / Green Lane junction and the disruption in traffic flow created by the kerbside activity outside Salesian School. Should congestion issues persist further investigation of a suitable solution should be undertaken.

Nevertheless, there is potential to improve the pedestrian and cycle facilities at the Pyrcroft Road / Bell Bridge Road / Cowley Lane roundabout. It is recommended that a more detailed investigation is undertaken on the key pedestrian and cycle issues at the junction and a range of options should be considered to provide enhanced facilities for these modes of transport.

The initial sketch design for the proposed scheme to implement a signal controlled junction is provided in Appendix D. As detailed in the "A320 Corridor Study, Feasibility Study – Interim Report" (February 2018), the rough order of magnitude cost for this scheme is £2.5m.

9.3 Junction 4 and 5: A320 Bell Bridge Road / Guildford Road and A320 Bell Bridge Road / The Knoll / A320 Guildford Road

9.3.1 Scheme Assessment

The Option 1 proposal to create a signal controlled junction at the existing Bell Bridge Road / The Knoll / Guildford Road roundabout was assessed using a spreadsheet model based on volume to capacity ratio calculations. The results indicate that the signal controlled layout would not provide capacity improvements.

The future year traffic modelling exercise predicts that the main capacity constraint at this junction is limited to The Knoll arm which is expected to operate over theoretical capacity in the AM peak period and over practical capacity in the PM peak period.

A key issue at this junction in the existing situation is blocking back of southbound traffic through the junction in the AM peak period. This is a result of a combination of:

- Congestion as a result of the limited capacity at the Guildford Road / Green Lane junction; and
- Kerbside activity outside Salesian School which disrupts the flow of traffic and can prevent two way movement, especially for larger vehicles.

9.3.2 Conclusion

As the capacity constraints are predicted to be limited to The Knoll approach in the future year scenario and the predicted traffic volumes on this approach are expected to be relatively low, it is recommended that the performance of the junction is monitored following the implementation of measures to resolve the capacity issues at the Guildford Road / Green Lane junction and the disruption in traffic flow created by the kerbside activity outside Salesian School. Should congestion issues persist further investigation of a suitable solution should be undertaken.

The initial sketch design for the proposed scheme to implement a signal controlled junction is provided in Appendix D. As detailed in the "A320 Corridor Study, Feasibility Study – Interim Report" (February 2018), the rough order of magnitude cost for this scheme is £1.7m.

9.4 Junction 6a and 6b: A320 Guildford Road / Green Lane and A320 Guildford Road / Holloway Hill

9.4.1 Scheme Assessment

Volume to capacity ratio calculations were completed for the proposed implementation of signal controls at the Green Lane and Holloway Hill junctions, as presented in the sketch drawings (Option 3). The assessment of the traffic volumes for the 2036 Future Year indicate that a three lane southbound approach

to the Guildford Road / Green Lane junction is required and that the short link between the Green Lane and Holloway Hill junctions would need to be widened significantly. As there is a short distance between the two junctions the ability to select the correct lane and change lane would be restricted. The size and layout of the junction would also limit the effectiveness of the junction operation. Consequently, this option was not considered feasible.

As set out in Table 44 Option 2, a large elongated roundabout incorporating both the Green Lane and Holloway Hill junctions, was subsequently reviewed. As noted above, there is predicted to be a high volume of southbound traffic through the junction. There is also predicted to be a high volume of vehicles turning right from Holloway Hill onto the A320 in the AM peak period. With the implementation of a single large roundabout these traffic movements would limit the opportunity for vehicles on Green Lane to enter the roundabout. Therefore, this option was not considered feasible.

Consequently, a new scheme to implement a large signal controlled crossroads (Option 4) was considered as a possible solution to the congestion issues at the junctions. The initial assessment indicated that a more conventional junction layout would deliver the necessary improvements. The implementation of a signal controlled junction also enables the provision of controlled crossing facilities for pedestrians and cyclists which is considered important at this location given the proximity of Salesian School and the fact that it forms part of the route from Chertsey and Chertsey Station to St Peter's Hospital. However, as the volume of traffic that is to be processed through the junction is expected to be relatively high and due to the geometry of the approach roads the footprint of the junction will be relatively large and will require significant third party land.

9.4.2 Scheme Description

The feasibility design for the signal controlled crossroads (Option 4) is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2003 Revision 01 (see Appendix E) and includes the following measures:

- Three lane approaches on Guildford Road north and Holloway Hill;
- Two lane approaches on Green Lane and Guildford Road south;
- Left turn slip lanes on all approaches;
- Two lane exits on all arms of the junction;
- Right turn pocket on Holloway Hill at the junction with Hardwick Lane;
- 4m wide shared use footway / cycleways around the junction; and
- Controlled pedestrian and cycle crossings.

At this stage of the project highway boundary information has not been available for review. Therefore, the drawing has included an assumed highway boundary. Nevertheless, due to the scale of the junction required to accommodate the predicted traffic flows significant third party land would be required. As the proposed scheme affects a large area of green space environmental assessments would be required should this scheme be progressed.

9.4.3 Option 4: 2036 Do Something Future Year Results

The existing junction operation for the Guildford Road / Green Lane and Guildford Road / Holloway Hill roundabouts have been assessed using ARCADY. For the Option 4 signal controlled junction LinSig has been used to assess the junction performance.

AM Peak

The 2017 Base Year and 2036 Do Minimum Future Year results are provided in Table 47. The traffic modelling results for the Option 4 scheme in the AM peak hour in the 2036 Do Something Future Year are provided in Table 48.

Table 47 – Guildford Road / Green Lane and Guildford Road / Holloway Hill Junction Capacity Results 2017 Base Year and 2036 Do Minimum: AM Peak

AM Peak							
Junction	Arm	2017 Base Year			2036 Do Minimum Future Year		
		Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
Guildford Road / Green Lane	A320 Guildford Road North	0.60	0.84	5	1.58	2.24	991
	Green Lane	0.83	1.29	51	1.06	1.99	159
	A320 Guildford Road South	0.45	0.61	2	0.50	0.70	2
Guildford Road / Holloway Hill	A320 Guildford Road North	0.69	0.91	8	1.43	1.86	744
	A320 Guildford Road South	0.80	0.86	5	0.96	1.03	25
	Holloway Hill	0.86	1.07	45	0.98	1.21	145

Table 48 – Guildford Road / Green Lane / Holloway Hill Junction Capacity Assessment Results 2036 Do Something Option 4: AM Peak

AM Peak			
Arm	Lane	2036 Do Something Option 4	
		DoS (%)	Queue (PCU)
A320 Guildford Road North	Left	94.5%	30
	Ahead 1	94.5%	30
	Ahead 2	68.7%	16
	Right	85.2%	17
Green Lane	Left	93.3%	15
	Ahead	93.3%	15
	Ahead and Right	87.9%	12
A320 Guildford Road South	Left	70.3%	6
	Ahead 1	70.3%	6
	Ahead 2	70.8%	6
	Right	15.8%	1
Holloway Hill	Left	93.3%	19
	Ahead	93.3%	19
	Right	88.2%	14

The traffic model results indicate that the proposed Option 4 junction would operate above practical capacity in the AM peak hour. All approaches, except Guildford Road south, are predicted to be approaching theoretical capacity. However, in general the results indicate that there would be a slight improvement in the performance of the junction compared to the 2017 Base Year.

PM Peak

The 2017 Base Year and 2036 Do Minimum Future Year results are provided in Table 49. The traffic modelling results for the Option 3 scheme in the PM peak hour in the 2036 Do Something Future Year are provided in Table 50.

Table 49 – Guildford Road / Green Lane and Guildford Road / Holloway Hill Junction Capacity Results 2017 Base Year and 2036 Do Minimum: PM Peak

AM Peak							
Junction	Arm	2017 Base Year			2036 Do Minimum Future Year		
		Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
Guildford Road / Green Lane	A320 Guildford Road North	0.71	0.88	6	0.93	1.14	86
	Green Lane	0.63	0.75	3	0.92	1.02	21
	A320 Guildford Road South	0.45	0.49	1	0.57	0.63	2
Guildford Road / Holloway Hill	A320 Guildford Road North	0.70	0.79	3	0.93	1.06	33
	A320 Guildford Road South	0.90	1.13	35	1.22	1.47	246
	Holloway Hill	0.82	0.88	6	1.03	1.09	103

Table 50 – Guildford Road / Green Lane / Holloway Hill Junction Capacity Assessment Results 2036 Do Something Option 4: PM Peak

PM Peak			
Arm	Lane	2036 Do Something Option 4	
		DoS (%)	Queue (PCU)
A320 Guildford Road North	Left	45.7%	6
	Ahead 1	45.7%	6
	Ahead 2	34.1%	6
	Right	87.4%	12
Green Lane	Left	81.5%	8
	Ahead	81.5%	8
	Ahead and Right	82.5%	8
A320 Guildford Road South	Left	72.5%	6
	Ahead 1	72.5%	6
	Ahead 2	60.1%	6
	Right	19.7%	2
Holloway Hill	Left	71.2%	9
	Ahead	71.2%	9
	Right	88.6%	14

The traffic model results indicate that the proposed Option 4 junction would operate above practical capacity in the PM peak hour. The Guildford Road north and Holloway Hill approaches are predicted to operate above practical capacity and the Green Lane approach is predicted to be approaching practical capacity. However, in general the results indicate that there would be a slight improvement in the performance of the junction compared to the 2017 Base Year.

9.4.4 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 4 feasibility scheme is £5.2m (see assumptions on costs at the start of Chapter 9).

9.4.5 Conclusion

The existing roundabouts at the Green Lane and Holloway Hill junctions are currently operating over theoretical capacity. A large volume of traffic is expected to be routed through these junctions as a result of the proposed development in the area, meaning the junctions are predicted to operate significantly over capacity in 2036. The proposed scheme for the Guildford Road / Green Lane / Holloway Hill junction has been designed to accommodate the predicted peak hour traffic volumes for the 2036 Future Year scenario and improve the performance of the junction compared to the 2017 Base Year operation. This, combined

with the geometry of the approaches to the junction, mean that the junction is very large and will require significant land acquisition.

The feasibility design has been developed to indicate the size of the junction that would be required and during the subsequent design stages refinement of the design would be required to ensure the junction operates as efficiently as possible and that pedestrian and cycle routes are as direct as possible and with as few crossing movements as possible. This process will help to minimise the impact of the junction changes on the surrounding area, albeit, with the traffic flows predicted the junction will need to be relatively large to accommodate the volume of traffic.

In addition, further discussions with the Highway Authority would be required to evaluate the acceptable performance of the junction against the footprint of the junction. The feasibility design brings the operation of the junction below theoretical capacity and improves performance slightly compared to the 2017 Base Year operation. However, should it be deemed acceptable for the junction to operate above the 2036 Do Something predicted levels of congestion in the peak periods it may be possible to slightly reduce the footprint of the junction.

9.5 Junction 8: A320 Guildford Road / Hillswood Drive / Bittams Lane

9.5.1 Scheme Assessment

The Option 1 scheme to implement a larger roundabout was tested using ARCADY. The results indicated that this scheme would not deliver sufficient improvement in the performance of the junction. The key findings from the assessment indicated that a three lane approach was required on the A320 Guildford Road north approach and that additional capacity was required on the Bittams Lane approach. Subsequently, an Option 3 scheme was developed to provide the additional capacity on these approaches whilst also improving the St Peter's Hospital access which is predicted to operate over practical capacity in the PM peak period.

9.5.2 Scheme Description

The feasibility design for the proposed scheme at the Guildford Road / Hillswood Drive / Bittams Lane roundabout is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2005 Revision 01 (see Appendix E) and includes the following measures:

- Three lane approach on Guildford Road north;
- A dedicated lane through the roundabout for southbound vehicles on Guildford Road;
- Three lane exit on Guildford Road south;
- Two lane entry and exit on the St Peter's Hospital access road;
- Left turn only exit on the Bittams Lane approach;
- 4m wide shared use footway / cycleway along the west side of Guildford Road to the north of the junction;
- Enhanced pedestrian and cycle crossing across the Guildford Road north arm; and
- Relocated bus stop lay-by on the Guildford Road north approach.

As highlighted above, it is proposed to implement a traffic island on the east side of the circulatory carriageway to improve the capacity for southbound movements through the junction. This is a result of the imbalance of traffic movements at the junction. The consequence of this measure is that all vehicles approaching the roundabout on Bittams Lane will be forced to turn left. The data indicates that the vast majority of vehicles are predicted to turn left at this junction, but those vehicles wishing to access Hillswood Drive, St Peter's Hospital and Guildford Road north would be required to use the Guildford Road / St Peter's Way roundabout to complete a u-turn. It is predicted that this would affect 270 vehicles in the AM peak hour and 15 vehicles in the PM peak hour in the 2036 Future Year scenario.

There are currently no bus routes on this section of Bittams Lane, however, the proposed measure may increase journey times for emergency vehicles using this route. At the next stage of the design process measures to retain direct access to the roundabout for emergency vehicles could be explored (for example, dropped or battered kerbs on the proposed traffic island).

At this stage of the project highway boundary information has not been available for review. Therefore, the drawing has included an assumed highway boundary. It is anticipated that, based on the current assumptions, some third party land would be required to implement the scheme. Further assessment of the highway boundary and land requirements would be necessary at the next stage of the design process.

It should also be noted that planning applications are currently being reviewed for nearby developments including St Peter's Hospital and the Chertsey Bittams sites. It will be necessary to review the proposed scheme developed as part of this study alongside any highway improvement schemes required as part of the planning application conditions to ensure compatibility and consistency.

9.5.3 Option 3: 2036 Do Something Future Year Results

AM Peak

The traffic modelling results for the Option 3 scheme in the AM peak hour in the 2036 Do Something Future Year are provided in Table 51.

Table 51 – Guildford Road / Hillswood Drive / Bittams Lane Junction Capacity Assessment Results: AM Peak

AM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 3		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.86	0.97	13	1.17	1.33	309	0.75	0.85	5
Bittams Lane	0.98	1.47	116	1.91	2.54	361	0.63*	0.90*	7*
A320 Guildford Road South	0.39	0.56	1	0.49	0.70	2	0.61	0.81	4
Hillswood Drive	0.03	0.07	0	0.05	0.09	0	0.06	0.10	0
Hospital Access	0.24	0.31	0	0.44	0.59	1	0.33	0.43	1

** Results are based on a PICADY model assessment due to the proposed scheme layout*

The traffic model results indicate that the junction would operate above practical capacity in the AM peak hour with the implementation of the proposed Option 3 scheme. The Bittams Lane approach is predicted to operate above practical capacity but below theoretical capacity and the Guildford Road north approach is predicted to operate at practical capacity. The results indicate that the junction performance would be improved compared to the 2017 Base Year operation.

PM Peak

The traffic modelling results for the Option 3 scheme in the AM peak hour in the 2036 Do Something Future Year are provided in Table 52.

Table 52 – Guildford Road / Hillswood Drive / Bittams Lane Junction Capacity Assessment Results: PM Peak

PM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 3		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.83	1.03	32	1.01	1.27	183	0.64	0.81	4
Bittams Lane	0.16	0.33	1	0.23	0.52	1	0.06*	0.15*	0*
A320 Guildford Road South	0.29	0.46	1	0.33	0.53	1	0.34	0.54	1
Hillswood Drive	0.32	0.38	1	0.39	0.48	1	0.39	0.48	1
Hospital Access	0.57	0.69	2	0.65	0.87	6	0.46	0.61	2

** Results are based on a PICADY model assessment due to the proposed scheme layout*

The traffic model results indicate that the junction would operate below practical capacity in the PM peak hour with the implementation of the proposed Option 3 scheme and that the junction performance would be improved compared to the 2017 Base Year operation.

9.5.4 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 3 feasibility scheme is £1.7m (see assumptions on costs at the start of Chapter 9).

9.5.5 Conclusion

Based on the results of this feasibility study it is concluded that improvements to the Guildford Road / Hillswood Drive / Bittams Lane roundabout would accommodate the expected increase in traffic volumes at this junction and would improve the performance of the junction compared to the 2017 Base Year operation. Further investigation will be required at the next stage of the design process to determine if the third party land can be obtained. It would also be necessary to ensure the proposals are aligned with the highway improvements linked to adjacent developments.

9.6 Junction 10: A320 Guildford Road / Murray Road / Chobham Road

9.6.1 Scheme Assessment

The Option 2 scheme to implement a large roundabout at the Guilford Road / Murray Road / Chobham Road roundabout was tested using ARCADY. The results indicated that a larger roundabout would not provide sufficient capacity. However, a larger roundabout with a dedicated left turn lane from Chobham Road to Guildford Road north would deliver greater benefits. Therefore, a revised design (Option 3) was developed to reflect the assessment.

9.6.2 Scheme Description

The feasibility design for the proposed scheme at the Guildford Road / Murray Road / Chobham Road roundabout is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2007 Revision 02 (see Appendix E). The scheme has been developed to minimise the impact on properties to the south of the junction and to use the open space to the north east of the current junction. Due to the close proximity of the Murray Road, Guildford Road south and Chobham Road approaches, achieving the required junction geometry results in the repositioning of the junction significantly to east of the current alignment. The key features of the scheme include:

- Large conventional roundabout with two lane entries and exits on all approaches;

- Dedicated left turn lane from Chobham Road to Guildford Road north;
- Realignment of Brook Road;
- Loss of the existing surface car park located to the north of Murray Road;
- 4m wide shared use footway / cycleway along the west side of Guildford Road; and
- Controlled crossing facilities at the southern end of the proposed junction.

At this stage of the project highway boundary information has not been available for review. Therefore, the drawing has included an assumed highway boundary. Nevertheless, due to the scale of the junction required to accommodate the predicted traffic flows significant third party land would be required. As the proposed scheme affects a large area of green space, environmental assessments would be required should this scheme be progressed.

The scheme also results in the removal of the surface car park on the north side of Murray Road. Further investigation of the options for the relocation of the parking provision will be required at the next stage of the design process. Access arrangements for the ambulance station would require further investigation at the next stage of the design process should the scheme be progressed.

9.6.3 Option 3: 2036 Do Something Future Year Results

AM Peak

The traffic modelling results for the Option 3 scheme in the AM peak hour in the 2036 Do Something Future Year are provided in Table 53.

Table 53 – Guildford Road / Murray Road / Chobham Road Junction Capacity Assessment Results: AM Peak

AM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 3		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.69	0.86	5	0.67	0.86	5	0.54	0.68	2
Murray Road	0.57	0.87	6	0.89	1.40	118	0.59	0.88	6
A320 Guildford Road South	0.60	0.94	10	0.65	1.01	17	0.46	0.74	3
Chobham Road	0.46	0.80	3	1.26	2.32	244	0.31	0.49	1

The traffic model results indicate that the junction would operate slightly above practical capacity in the AM peak hour with the implementation of the proposed Option 3 scheme. This is due to the fact that the Murray Road approach is predicted to operate above practical capacity but below theoretical capacity. Nonetheless, the results indicate that the junction performance would be improved compared to the 2017 Base Year operation.

PM Peak

The traffic modelling results for the Option 3 scheme in the PM peak hour in the 2036 Do Something Future Year are provided in Table 54.

Table 54 – Guildford Road / Murray Road / Chobham Road Junction Capacity Assessment Results: PM Peak

PM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 3		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Guildford Road North	0.65	0.80	4	0.69	0.86	5	0.56	0.74	3
Murray Road	0.47	0.54	1	0.69	0.80	4	0.46	0.54	1
A320 Guildford Road South	0.64	0.74	3	0.76	0.89	7	0.56	0.64	2
Chobham Road	0.91	1.24	43	2.00	2.71	410	0.43	0.60	1

The traffic model results indicate that the junction would operate below practical capacity in the PM peak hour with the implementation of the proposed Option 3 scheme and that the junction performance would be improved compared to the 2017 Base Year operation.

9.6.4 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 3 feasibility scheme is £6.8m (see assumptions on costs at the start of Chapter 9).

9.6.5 Conclusion

The existing Guildford Road / Murray Road / Chobham Road roundabout is currently operating over practical capacity in the AM peak hour and above theoretical capacity in the PM peak hour. A large volume of traffic is expected to be routed through these junctions as a result of the proposed development in the area, meaning the junction is predicted to operate significantly over theoretical capacity in 2036 in both the AM and PM peak hours. The proposed scheme for the junction has been designed to accommodate the predicted peak hour traffic volumes for the 2036 Future Year scenario and improve the performance of the junction compared to the 2017 Base Year operation. This, combined with the geometry of the approaches to the junction, mean that the junction is very large and will require significant land acquisition.

Further discussions with the Highway Authority would be required to evaluate the acceptable performance of the junction against the footprint of the junction. As stated above, the feasibility design aims to bring the performance of the junction to around practical capacity. However, should it be deemed acceptable for the junction to operate above practical capacity, but below theoretical capacity in the peak periods it may be possible to slightly reduce the footprint of the junction.

Should this scheme be progressed further investigation of the ability to obtain the necessary third party land will be required. It will also be necessary to undertake environmental investigations and consider alternative locations for car parking provision.

9.7 Junction 11: A320 Guildford Road / Brox Road

9.7.1 Scheme Description

The feasibility design for the proposed scheme at the Guildford Road / Brox Road junction is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2008 Revision 01 (see Appendix E). The proposed scheme includes carriageway widening on the west side of Guildford Road to allow for the implementation of a right turn pocket at the junction with Brox Road. The scheme is intended to prevent vehicles waiting to turn right into Brox Road from blocking through traffic. Due to the nature of the scheme it was agreed with the Project Board that traffic modelling was not required.

At this stage of the project highway boundary information has not been available for review and therefore, the drawing has included an assumed highway boundary. Based on this information it is not expected that third party land will be required to deliver the scheme although this will need to be confirmed at the next stage of the design process.

9.7.2 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 1 feasibility scheme is £0.3m (see assumptions on costs at the start of Chapter 9).

9.7.3 Conclusion

It is expected that the proposed scheme at the Guildford Road / Brox Road junction would improve the flow of northbound traffic on the A320. At the next stage of the design process further investigation of the position of the highway boundary will be required to determine the extent of any third party land requirements. An assessment of the impact of the scheme on the loss of trees will also be required.

9.8 Junction 13: A320 Chertsey Road / Monument Road / Woodham Road / Shores Road

9.8.1 Scheme Assessment

A larger roundabout (Option 2) at the Six Crossroads roundabout was tested using ARCADY. The results indicated that it would not deliver sufficient improvement to accommodate the expected increase in traffic in the 2036 Future Year scenario. The results indicated that the addition of a dedicated left turn lane from Shores Road to Chertsey Road north would improve the performance of the junction, and consequently an Option 3 layout was developed.

It should be noted that as part of the stakeholder consultation exercise a scheme to implement a flyover or underpass at the Six Crossroads roundabout was suggested. Following analysis of the traffic movements and volumes in the 2036 Do Minimum scenario it is considered that a grade separated solution would not be justified. In addition, the expected negative impacts of the scheme on the local environment would be significant and are likely to be disproportionate to any benefits that may be generated.

9.8.2 Scheme Description

The feasibility design for the proposed scheme at the Six Crossroads roundabout is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2009 Revision 01 (see Appendix E) and includes the following measures:

- Two lane entries and exits on all approaches;
- Three lane circulatory carriageway;
- Dedicated left turn lane from Shores Road to Chertsey Road north; and
- 4m wide shared use footway / cycleway around the junction.

At this stage of the project highway boundary information has not been available for review. Therefore, the drawing has included an assumed highway boundary. Nevertheless, due to the scale of the junction required to accommodate the predicted traffic flows significant third party land would be required. The majority of the area surrounding the junction is designated common land and to the north west is the Horsell Common SSSI. The proposed indicative scheme would affect a large area of common land and also the SSSI. At the next stage of the design process further refinement of the design is recommended to minimise the impact on the SSSI and environmental assessments would be required.

9.8.3 Option 3: 2036 Do Something Future Year Results

AM Peak

The traffic modelling results for the Option 3 scheme in the AM peak hour in the 2036 Do Something Future Year are provided in Table 55.

Table 55 – Chertsey Road / Monument Road / Woodham Road / A245 Junction Capacity Assessment Results: AM Peak

AM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 3		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	1.02	1.19	81	1.27	1.49	234	0.77	0.89	6
A245 East	0.68	0.78	3	0.84	0.97	12	0.69	0.81	4
Monument Road	0.83	0.95	11	1.13	1.29	139	0.59	0.68	2
A320 Chertsey Road South	0.92	1.27	108	1.18	1.69	302	0.63	0.86	7
Woodham Road	0.55	0.77	3	0.70	0.98	11	0.26	0.42	1
A245 West	1.86	2.07	423	2.34	2.64	631	0.71	0.79	4

The traffic model results indicate that the junction would operate slightly above practical capacity in the AM peak hour with the implementation of the proposed Option 3 scheme. This is due to the fact that the Chertsey Road north and south approaches are predicted to operate above practical capacity but below theoretical capacity. Nonetheless, the results indicate that the junction performance would be improved compared to the 2017 Base Year operation.

PM Peak

The traffic modelling results for the Option 3 scheme in the PM peak hour in the 2036 Do Something Future Year are provided in Table 56.

Table 56 – Chertsey Road / Monument Road / Woodham Road / A245 Junction Capacity Assessment Results: PM Peak

PM Peak									
Arm	2017 Base Year			2036 Do Minimum Future Year			2036 Do Something Option 3		
	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)	Min RFC	Max RFC	Queue (Veh)
A320 Chertsey Road North	0.94	1.15	54	1.11	1.34	155	0.58	0.73	3
A245 East	0.62	0.76	3	0.73	0.89	6	0.56	0.70	2
Monument Road	0.92	1.38	69	1.16	1.77	209	0.58	0.86	5
A320 Chertsey Road South	0.96	1.25	70	1.14	1.48	172	0.59	0.75	3
Woodham Road	0.38	0.49	1	0.44	0.59	1	0.19	0.25	0
A245 West	1.34	1.64	219	1.58	1.89	335	0.49	0.63	2

The traffic model results indicate that the junction would operate slightly above practical capacity in the PM peak hour with the implementation of the proposed Option 3 scheme. This is due to the fact that the Monument Road approach is predicted to operate marginally above practical capacity, but below theoretical

capacity. Nonetheless, the results indicate that the junction performance would be significantly improved compared to the 2017 Base Year operation.

9.8.4 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 3 feasibility scheme is £6.9m (see assumptions on costs at the start of Chapter 9).

9.8.5 Conclusion

The existing Six Crossroads roundabout is currently operating significantly over theoretical capacity in both the AM and PM peak hours. The performance of the junction is expected to deteriorate further with the additional traffic volumes predicted in the 2036 Future Year scenario. The proposed scheme for the junction has been designed to accommodate the predicted peak hour traffic volumes for the 2036 Future Year scenario and improve the performance of the junction compared to the 2017 Base Year operation. As a result, the junction is very large and will require significant land acquisition.

Further discussions with the Highway Authority would be required to evaluate the acceptable performance of the junction against the footprint of the junction. As stated above, the feasibility design aims to bring the performance of the junction to around practical capacity. However, should it be deemed acceptable for the junction to operate above practical capacity, but below theoretical capacity in the peak periods it may be possible to slightly reduce the footprint of the junction. Further consideration of the impact of the scheme on the adjacent common land and SSSI will also be required.

9.9 Junction 14: Chertsey Road / A320 Victoria Way

9.9.1 Scheme Description

The feasibility design for the proposed scheme at the Chertsey Road / Victoria Way roundabout is illustrated on Drawing Number UA009947-LND-HFS-ZZ-GR-2010 Revision 01 (see Appendix E). The proposed scheme includes:

- Carriageway widening on the west side of Chertsey Road to allow for the implementation of a dedicated northbound lane from Victoria Way to Chertsey Road north; and
- 4m wide shared use footway / cycleway along the west side of the junction.

Due to the nature of the scheme it was agreed with the Project Board that traffic modelling was not required.

At this stage of the project highway boundary information has not been available for review. Therefore, the drawing has included an assumed highway boundary and based on this, it is expected that some third party land (part of Brookhouse Common) will be required to deliver the scheme.

9.9.2 Rough Order of Magnitude Scheme Costs

The estimated cost for the Option 1 feasibility scheme is £1.0m (see assumptions on costs at the start of Chapter 9).

9.9.3 Conclusion

It is expected that the proposed scheme at the Chertsey Road / Victoria Way junction would improve the operation of the junction by providing a dedicated lane for northbound traffic on Victoria Way. Northbound vehicles would therefore not be required to give-way to vehicles on the roundabout. At the next stage of the design process further investigation of the position of the highway boundary will be required to determine the extent of any third party land requirements. An assessment of the impact of the scheme on Brookhouse Common will also be required.

9.10 2036 Do Something Future Year Summary

The results of the impact of proposed mitigation measures at the key junctions along the corridor are summarised in Figure 14 and Figure 15. It should be noted that where mitigation measures have not been proposed or traffic modelling of the mitigation measures has not been completed the 2036 Do Minimum Forecast Year results are presented.

9.10.1 AM Peak Hour

The results for the 2036 Do Something Future Year AM peak are presented in Figure 14 and are summarised below. In general, the results indicate there is improvement at the key junctions along the corridor.
Junctions over theoretical capacity (Red):

- Junction 3: Pyrcroft Road/Bell Bridge Road/Cowley Lane roundabout

  This junction remains over theoretical capacity as the mitigation measures are expected to deliver pedestrian and cycle improvements rather than capacity improvements. It is suggested that the impact mitigation measures at Junction 6 and outside Salesian School are monitored to determine the residual issues at Junction 3.
- Junction 5: Guildford Road/The Knoll/Bell Bridge Road roundabout

  Capacity constraints are predicted to be limited to The Knoll approach in the future year scenario and the predicted traffic volumes on this approach are expected to be relatively low. It is suggested that the impact mitigation measures at Junction 6 and outside Salesian School are monitored to determine the residual issues at Junction 5.
- Junction 7: Guildford Road/Little Green Lane priority junction

  Capacity constraints are predicted to be limited to Little Green Lane and the predicted traffic volumes on this approach are expected to be relatively low. Therefore, mitigation measures at this junction are not proposed.
- Junction 12: Chertsey Road/Martyrs Lane roundabout

  Mitigation measures have been developed to concept stage but have not been tested using traffic modelling software at this stage. This will be completed once WBC complete Regulation 19 consultation. The results in Figure 14 are based on the 2036 Do Minimum Forecast Year modelling results.
- Junction 14: Victoria Way/Chertsey Road roundabout

  Mitigation measures have been developed to feasibility stage but have not been tested using traffic modelling software at this stage. Therefore, the results in Figure 14 are based on the 2036 Do Minimum Forecast Year modelling results.
- Junction 15: M25 J11 (excluding M25 mainline)

  Mitigation measures have been developed to concept stage but have not been tested using traffic modelling software at this stage as they will need to be considered as part of the Highways England RIS M25 Junction 10-16 smart motorway project.

Junctions over practical capacity (Amber):

For each of the junctions listed below the proposed mitigation measures have improved the performance of this junction so that it operates below theoretical capacity.

- Junction 6: Guildford Road/Holloway Hill and Guildford Road/Green Lane double mini-roundabout;
- Junction 8: Guildford Road/Hillswood Drive/Bittams Lane roundabout;
- Junction 10: Guildford Road/Murray Road/Chobham Road roundabout; and
- Junction 13: Chertsey Road/Monument Road/Woodham Road/A245 roundabout.

9.10.2 PM Peak Hour

The results for the 2036 Do Something Future Year PM peak are presented in Figure 15 and are summarised below. As with the AM peak, the results indicate there is improvement at the key junctions along the corridor.
Junctions over theoretical capacity (Red):

- Junction 7: Guildford Road/Little Green Lane priority junction

  Capacity constraints are predicted to be limited to Little Green Lane and the predicted traffic volumes on this approach are expected to be relatively low. Therefore, mitigation measures at this junction are not proposed.
- Junction 15: M25 J11 (excluding M25 mainline)

  Mitigation measures have been developed to concept stage but have not been tested using traffic modelling software at this stage as they will need to be considered as part of the Highways England RIS M25 Junction 10-16 smart motorway project.

Junctions over practical capacity (Amber):

- Junction 3: Pyrcroft Road/Bell Bridge Road/Cowley Lane roundabout

  This junction remains over practical capacity as the mitigation measures are expected to deliver pedestrian and cycle improvements rather than capacity improvements. It is suggested that the impact mitigation measures at Junction 6 and outside Salesian School are monitored to determine the residual issues at Junction 3.
- Junction 5: Guildford Road/The Knoll/Bell Bridge Road roundabout

  Capacity constraints are predicted to be limited to The Knoll approach in the future year scenario and the predicted traffic volumes on this approach are expected to be relatively low. It is suggested that the impact mitigation measures at Junction 6 and outside Salesian School are monitored to determine the residual issues at Junction 5.
- Junction 6: Guildford Road/Holloway Hill and Guildford Road/Green Lane double mini-roundabout

  The proposed mitigation measures have improved the performance of this junction so that it operates around practical capacity.
- Junction 9: Guildford Road/St Peter's Way signalised roundabout

  The junction is predicted to operate around practical capacity in the PM peak period in the 2036 Do Minimum Forecast Year and below practical capacity in the AM peak period. Therefore, no mitigation measures have been proposed.
- Junction 13: Chertsey Road/Monument Road/Woodham Road/A245 roundabout

  The proposed mitigation measures have improved the performance of this junction so that it operates around practical capacity.

Figure 14 – 2036 Do Something Future Year RFC Results: AM Peak Hour

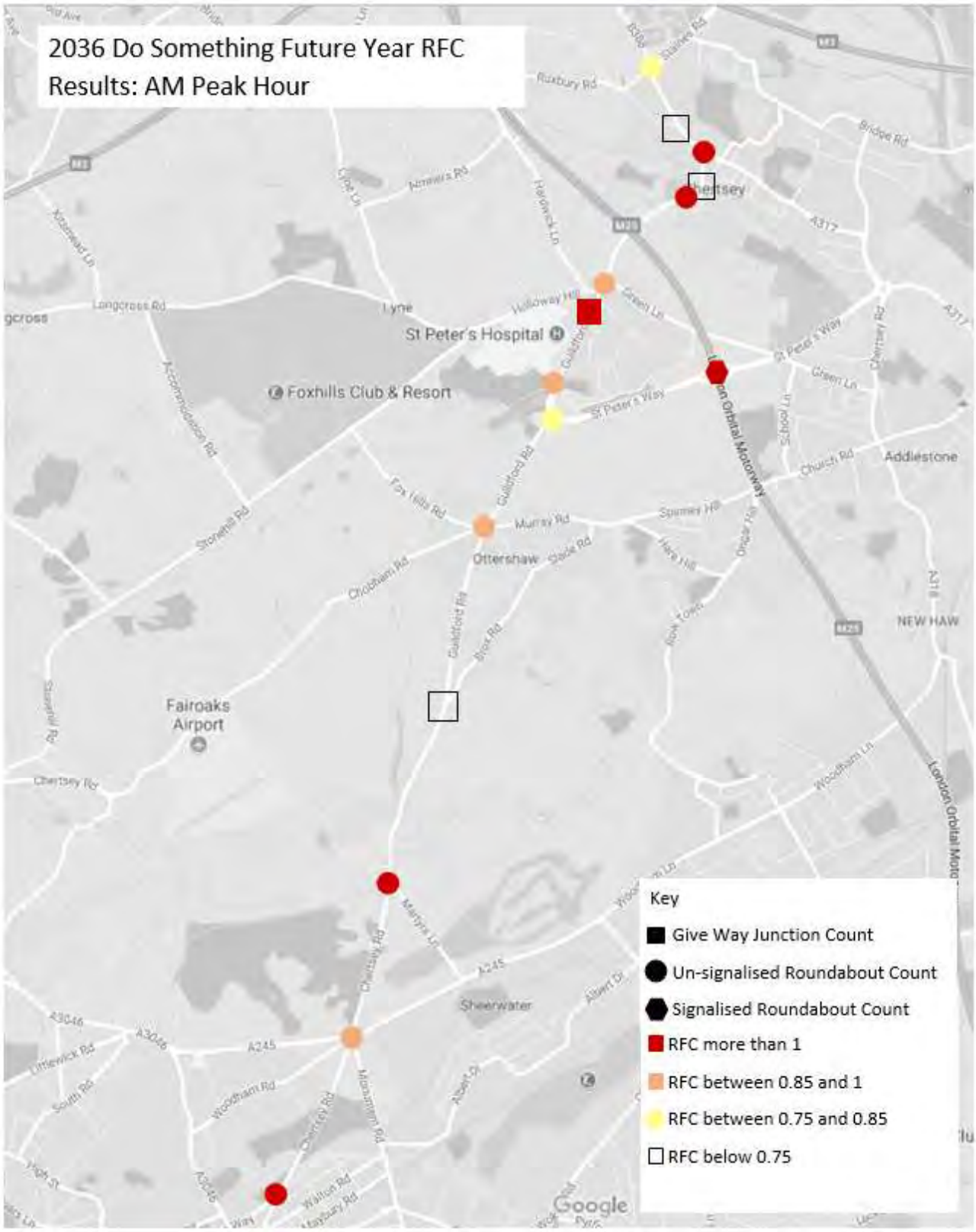


Figure 15 – 2036 Do Something Future Year RFC Results: PM Peak Hour

10 Link Improvements

10.1 Link 1: Guildford Road (Outside Salesian School)

The parking outside Salesian School results in the narrowing of the effective carriageway width on the A320 Guildford Road. As a result, two way movement along Guildford Road can be restricted especially if there are large vehicles. In addition, the kerbside activity results in disruption to the free-flow of traffic. Both of these factors result in upstream congestion. The proposed scheme on Link 1 is to widen the A320 Guildford Road carriageway to the west to provide sufficient width for two way movement over the length of the on-street parking outside Salesian School. It is also suggested that a designated parking bay is implemented to ensure parking activity is restricted to the widest section of the road.

The proposed scheme (see Drawing Number UA009947-LND-HFS-ZZ-GR-2002 Revision 01 in Appendix E) includes widening of the Guildford Road north approach to the Green Lane junction. This is based on the scheme progressing independently of the Guildford Road / Green Lane / Holloway Hill junction improvements. However, it will be necessary to consider the two schemes together if both are to be progressed.

To improve the pedestrian and cycle facilities it is proposed to convert the existing segregated cycle route on the east side of Guildford Road to a shared use footway / cycleway to provide consistency with the remainder of the cycle route. It is also proposed to widen the eastern footway on Guildford Road at the northern end of Salesian School to provide a continuation of the shared use footway / cycleway.

The estimated cost for the Option 1 feasibility scheme is £0.7m.

Should this option be taken forward further investigation of the exact position of the highway boundary will be necessary to determine if third party and will be required to deliver the scheme.

If this option is not considered feasible following further investigation, the potential to prevent parking outside the school during the peak network periods could be investigated further. This would need to be considered in conjunction with measures to promote travel by sustainable modes.

10.2 Link 2: Guildford Road (Holloway Hill to Bittams Lane)

The link assessments indicate that a single wide lane is required in both directions on the section of Guildford Road between Holloway Hill and Bittams Lane. The shared use footway / cycleway on the west side of Guildford Road is also relatively narrow in some locations and there is no footway on the east side of Guildford Road. It is proposed to widen the A320 Guildford Road to provide single wide traffic lanes in each direction plus a 4m wide shared use footway / cycleway (see Drawing Number UA009947-LND-HFS-ZZ-GR-2004 Revision 01 in Appendix E). It is also proposed to provide a 2m wide footway on the east side of Guildford Road. At either end of the link it is proposed to widen the carriageway to tie into the proposed schemes at the Guildford Road / Holloway Hill junction and the Guildford Road / Hillswood Drive / Bittams Lane junction.

The proposed scheme also includes the implementation of a shared use footway / cycleway between the western footway on Guildford Road to the St Peter's Hospital grounds. The proposal aims to reduce the journey time for pedestrians and cyclists accessing the hospital from the north and thereby encouraging travel by sustainable modes of transport. The proposed footway / cycleway would be routed across third party land and its exact position would need to be investigated further at the next stage of the design process.

It is anticipated third party land will be required to deliver the scheme and further assessment of this will be necessary at the next stage of the design process when the highway boundary information is available.

The estimated cost for the Option 1 feasibility scheme is £1.7m.

10.3 Link 3: Guildford Road (St Peter's Way to Chobham Road)

The section of Guildford Road between St Peter's Way and Chobham Road currently consists of two northbound lanes and one southbound lane. However, the lanes are narrow and larger vehicles travelling northbound straddle the two lanes. To improve the flow of traffic it is proposed to widen the carriageway to

provide a total of three 3.5m wide lanes (see Drawing Number UA009947-LND-HFS-ZZ-GR-2006 Revision 01 in Appendix E). This will require removal of the existing western footway adjacent to the carriageway and the loss of verge and trees.

It is proposed to widen the Guildford Road carriageway to the east immediately south of the St Peter's Way roundabout to extend the length of the two lane exit. This is intended to reduce the frequency and duration of the blocking back through the Guildford Road / St Peter's Way junction caused by the merge.

It is proposed that the existing cycle route located west of the existing verge/trees is converted to a 4m wide shared use footway / cycleway. This will require widening of the existing route in some locations.

It is anticipated third party land will be required to deliver the scheme and further assessment of this will be required at the next stage of the design process when the highway boundary information is available.

The estimated cost for the Option 1 feasibility scheme is £2.9m.

11 Travel Demand Management Measures

In addition to the interventions detailed on the feasibility design drawings there are other mitigation measures that could be considered to reduce the level of demand along the corridor. These travel demand management measures could include the following:

- Strengthen the measures and implementation of business travel plans. These include large employers in the local area such as St Peter's Hospital, businesses on Hillswood Business Park and McLaren. Measures may include personalised travel plans;
- Collaborative working between large employers (St Peter's Hospital, Hillswood Business Park and McLaren) to pool resources and develop joint measures to reduce demand (e.g. joint shuttle bus services);
- Develop interactive planning platforms, such as Urban Strategy developed by Dutch company TNO. The platform involves entering requisite data such as digital maps, traffic flows and demographic data. Various scenarios can then be run to determine the effect a modification, such as a road closure, will have on traffic intensity, air quality and noise pollution. The platform can be used to aid the planning decision process. However, the use of PTV software means the results of different scenarios can be provided quickly and combined with the ability to incorporate near real-time information (such as traffic speeds) it is possible to use the platform to assess the impact of incidents on the network (e.g. a lane closure) and take action to provide information to road users to influence the routing of traffic;
- Implement CCTV, Variable Message Signs and Automatic Number Plate Recognition (ANPR) technology to improve the management of the network. These measures are aimed to provide live information to the Highway Authority Network Management Centre on the congestion on the network. This will allow the Highway Authority to display messages to motorists advising of delays and incidents in the network and on the basis signs are appropriately located, motorist can potentially change routes. This option would need to be considered in conjunction with the interactive planning platforms detailed above to ensure the two measures are compatible;
- Enhance bus services along the corridor and to the new developments. This may include increasing the frequency of bus services and/or diverting bus routes to pass through new developments to encourage travel by bus. Such measures should be implemented at the outset of the developments to ensure sustainable travel behaviours are established on occupation of the developments;
- Improve advertising of bus routes, including the Woking to Heathrow bus service;
- Create new cycle routes to promote travel by sustainable modes. SCC have undertaken initial investigations of potential new cycle routes and have identified suggested routes along Holloway Hill, Murray Road, Chobham Road and Greenway routes in the vicinity of Ottershaw. These should be investigated further and schemes developed to enhance the cycle network in the vicinity of the A320 corridor. SCC are also developing cycling plans for Runnymede BC and Surrey Heath BC and from these plans further cycle routes and improvements may be suggested;
- Undertake an audit of the current cycle route along the A320 to identify measures to improve the quality of the route. Measures may include addressing key pinch points, improving crossings and maintaining a clear route, free of debris and vegetation; and
- Park and ride site north of Ottershaw to serve Woking, Heathrow and St Peter's Hospital;

At this stage it is anticipated that the implementation of a full suite of Travel Demand Management measures could reduce demand by up to 3%. This is based on results from other studies and taking into account the location and function of the A320. A report prepared by the European Platform on Sustainable Urban Mobility Plans titled "The Economic Benefits of Sustainable Urban Mobility Measures, Independent Review of Evidence: Reviews" (www.evidence-project.eu) documents the results of the review and analysis of evidence of 22 categories of interventions. The interventions cover a number of themes including demand management strategies, mobility management, collective passenger transport, less car dependent mobility options etc., and within each theme are a number of measures. The benefits of each measure, including the associated reduction in car trips varies widely and is dependent on the targeted audience for the measure, the overall package of measures, degree of integration etc. This information, together with professional experience, has been used to inform the estimate of the demand reduction that may be expected on the A320 Corridor.

12 Scheme Summary

A summary of the proposed schemes, associated high level scheme costs and status is provided in Table 57. The majority of schemes have been developed to feasibility standard. A small number of schemes have been developed to initial sketch or outline design standard due to the need to:

- Monitor the performance of other schemes which may help to resolve expected issues (Junctions 3, 4 and 5);
- Await the WBC Regulation 19 consultation to determine if measures will be necessary (Junction 12); and
- Undertake further discussions with Highways England due to the scale and potential impact of the proposed mitigation measures (Link 4 and Junction 15).

Please note that due to the complexity of options for the M25 Junction 11 (new three lane circulatory carriageway requiring new bridges and direct links respectively) and the potential impacts on the operation of the M25 (such as the additional trips joining the M25) outline stage drawings have been prepared and scheme costs will be developed should the scheme be progressed for further investigation. This will be dependent on further discussions with Highways England as part of the RIS2 M25 J10-16 Smart Motorway scheme and as part of the M25 SW Quadrant Study.

Initial discussions have been held with Highways England to understand the feasibility of implementing new junctions onto the M25 and/or M3 to relieve pressure on the M25 Junction 11. It is understood that at this point in time the implementation of new junctions on these sections of the motorway network are not being pursued. However, it is recommended that the situation is monitored should there be any changes in approach.

For those schemes that have been developed to concept or initial sketch design stage the rough order of magnitude costs from the “A320 Corridor Study, Feasibility Study – Interim Report” have been included in Table 57 for completeness.

The proposed measures included in this study aim to mitigate the impact of the proposed developments. To fully understand how much of the expected growth along the corridor can be accommodated it would be necessary to assess the combination of mitigation measures. This would be best achieved using the County Strategic Model, which would allow a like-for-like comparison of network performance and would identify the impact of any re-routing of vehicles as a result of the mitigation measures. As such the exercise would identify the residual impact on the network of the background growth and proposed developments within the Runnymede Local Plan.

Table 57 – Scheme Summary and Rough Order of Magnitude Costs

Ref	Location	Scheme	Description	Stage	Rough Order of Magnitude Cost	Status
Junction 1	Chilsey Green Road / St Ann's Road / B388 Thorpe Road / Staines Road roundabout	Option 1	Widen entries and exits. Two lane circulatory carriageway	Feasibility	£1.3m	Junction performance predicted to improve on the Base Year 2017 operation. Some third party land may be required – to be investigated further
Junction 3	Pyrcroft Road / Bell Bridge Road / Cowley Lane roundabout	Option 1	New signal controlled junction	Initial Sketch	£2.5m	Monitor benefits of Junction 6a and 6b improvements first. Separate pedestrian and cycle study required
Junction 4 and 5	Guildford Road / Bell Bridge Road junction and Guildford Road / The Knoll / Bell Bridge Road roundabout	Option 1	New signal controlled junction	Initial Sketch	£1.7m	Monitor benefits of Junction 6a and 6b improvements first
Link 1	A320 Guildford Road (Outside Salesian School)	Option 1	Carriageway widening to allow free flow of traffic and parking	Feasibility	£0.7m	Some third party land may be required – to be investigated further
Junction 6a and 6b	Guildford Road / Holloway Hill and Guildford Road / Green Lane roundabouts	Option 4	New signal controlled crossroads	Feasibility	£5.2m	Junction performance predicted to slightly improve on the Base Year 2017. Significant third party land required – to be investigated further. Environmental impacts to be investigated further
Link 2	A320 Guildford Road (Holloway Hill to Bittams Lane)	Option 1	Carriageway widening to provide additional lane and wider shared use footway/cycleway	Feasibility	£1.7m	Third party land may be required – to be investigated further
Junction 8	Guildford Road / Hillswood Drive / Bittams Lane roundabout	Option 3	Dedicated southbound lane and widen Hospital access	Feasibility	£1.7m	Junction performance predicted to improve on the Base Year 2017 operation. Some third party land required – to be investigated further
Link 3	A320 Guildford Road (St Peter's Way to Chobham Road)	Option 1	Carriageway widening to create standard lane widths	Feasibility	£2.9m	Third party land may be required– to be investigated further

Junction 10	Guildford Road / Murray Road / Chobham Road roundabout	Option 3	Larger roundabout with dedicated lane from Chobham Road to Guildford Road north	Feasibility	£6.8m	Junction performance predicted to improve on the Base Year 2017 operation. Significant third party land required – to be investigated further. Environmental impacts and alternative car park locations to be investigated further
Junction 11	Guildford Road / Brox Road junction	Option 1	Carriageway widening to create right turn pocket	Feasibility	£0.3m	Exact position of highway boundary to be confirmed
Junction 12	Chertsey Road / Martyrs Lane roundabout	Option 1	Widen entries and exits. Two lane circulatory carriageway	Initial Sketch	£1.1m	To be taken forward once WBC complete Regulation 19 consultation
Junction 13	Chertsey Road / Monument Road / Woodham Road / A245 roundabout	Option 3	New larger roundabout with dedicated lane from Shores Road to Chertsey Road north	Feasibility	£6.9m	Junction performance predicted to improve on the Base Year 2017 operation. Significant third party land required – to be investigated further. Environmental impacts to be investigated further
Junction 14	Victoria Way / A320 Chertsey Road roundabout	Option 1	Dedicated northbound lane from Victoria Way to A320 Chertsey Road	Feasibility	£1.0m	Third party land may be required – to be investigated further
Link 4	A320 St Peter's Way (Guildford Road to M25 Junction 11)	Option 1	Widen St Peter's Way to three lanes eastbound	Initial Sketch	£8.4m	To be investigated further in liaison with Highways England
Junction 15	M25 J11 (excluding M25 mainline)	Option 1	Three lane circulatory carriageway at Junction 11	Outline design	-	Not progressed at this stage
		Option 2	Direct links: East to North and West to South and dedicated left turn lane from St Peter's Way (east) to M25 south	Outline design	-	Not progressed at this stage
		Option 3	New junction on M25 and/or M3	Outline design	-	Not progressed at this stage

13 Conclusions and Recommendations

13.1 Conclusions

This study has undertaken a review of the 2017 Base Year operation of the A320 and assessed the expected impact of development proposed in the area. A workshop was also held with stakeholders to confirm and agree the existing and anticipated issues. This work has identified the following key points:

- The network is currently congested in the peak hours, especially at the northern end of the study area in the AM peak hour, the junctions where the A320 intersects with the east-west routes and at the St Peter's Hospital access roundabout;
- In general, the capacity constraints are at the junctions rather than along the links;
- A large proportion of the traffic movements are towards the M25 and therefore the A320 is acting as a collector road; and
- In the 2036 Do Minimum Future Year scenario the extent of the congestion along the corridor is exacerbated with the expected increase in traffic flows related to the Local Plan developments. As a result, the corridor is expected to be saturated, with the greatest congestion experienced in the AM peak.

Based on the traffic modelling results, site assessments and with input from stakeholders through the study workshops, a long list of mitigation measures was developed with the aim of increasing capacity at junctions and along links on the corridor. These measures included:

- Engineering solutions to increase capacity (i.e. increase supply)

  The solutions included a range of options from minor improvements to junctions within the current constraints to larger junction improvements that would require land acquisition. However, as specified in the brief significant infrastructure investment such as new bypass roads and have not been considered. However, grade separated junctions (tunnels and flyovers) have been considered during the scheme development process; and
- Travel demand management to reduce the number of vehicles on the network by promoting travel by sustainable modes and reducing the need to travel.

Initial sketch designs were developed for the long list of proposed mitigation measures and were included in the "A320 Corridor Study, Feasibility Study – Interim Report (January 2018)". These were subsequently discussed with the Project Board and a refined set of measures was selected for testing using local traffic models. Through this process of testing the measures have been refined and a preferred set of feasibility schemes have been developed to mitigate the predicted impact of increased traffic volumes expected in 2036 as a result of Local Plan development and background growth.

At some key junctions on the network the predicted traffic volumes that are to be accommodated requires a significant expansion of the junction footprint. The geometry of the approaches also influences the size and positioning of the junction. As a result, several proposed schemes require significant third party land and could have potential environmental impacts. These include the following junctions:

- Guildford Road / Green Lane / Holloway Hill;
- Guildford Road / Murray Road / Chobham Road; and
- Six Crossroads roundabout.

It should also be noted that, as the network is congested the implementation of engineering solutions to increase capacity is likely to result in:

- Additional traffic being processed through the network, increasing the volume of traffic that reaches the M25 Junction 11. This junction is currently operating at practical capacity and therefore cannot realistically accommodate additional traffic volumes. Initial discussions with Highways England indicate that mitigation measures identified at the M25 Junction 11 to accommodate this additional growth should be explored in collaboration with Highways England. Highways England's M25 Junctions 10-16 smart motorway project, which is an element of the Government's Road Investment Strategy (RIS) for the Road Period 1, should take into account anticipated growth along this stretch of the M25 corridor, including that proposed in Runnymede, to ensure suitable measures are considered during the feasibility stage,

especially as this scheme includes 'substantial widening of Junction 11' – reference: Summary of current assumption on the Road Investment Strategy delivery plan, December 2014, Department for Transport.. Should mitigation measures for the M25 Junction 11 not be progressed the additional traffic processed along the A320 as a result of improvements to the highway infrastructure would be held on St Peter's Way assuming the signal timings at the M25 Junction 11 remain consistent and that ramp metering on the northbound on-slip is active. It is considered that the A320 St Peter's Way approach to the M25 Junction 11 is a safe location to stack queuing traffic and widening the eastbound carriageway to three lane could allow traffic continuing east towards Addlestone to progress through Junction 11 with minimal delay. This will depend of lane discipline and therefore signing, and lane markings would need to be improved; and

- A network that is still congested but with a higher volume of vehicles. This will ultimately increase noise and air pollution along the corridor.

Nonetheless, whilst a significant volume of trips using the A320 route towards the M25, a large volume does not and therefore the proposed junction and link improvements will provide benefits to these journeys. Equally important are trips heading from the M25 to the economic centres of Chertsey and Woking. Improving the A320 will provide enhanced access to these and other locations.

Measures to reduce travel demand would have the benefit of providing additional capacity without contributing to the deterioration of air quality and increasing noise levels. However, maintaining the 2017 conditions is only possible if such measures can provide a sufficient level of capacity to equal the predicted increase in traffic volumes. The growth in traffic volumes between 2017 and 2036 is predicted to be on average around 20%, but the expected capacity improvements from demand management is only likely to be around 3%. This is based on reviews of evidence of the impact of a range of sustainable transport measures that affect demand for travel by single occupancy vehicles as detailed in "The Economic Benefits of Sustainable Urban Mobility Measures, Independent Review of Evidence: Reviews" (www.evidence-project.eu). Nevertheless, investment should be made to improve the infrastructure to maximise travel by sustainable modes and to minimise the demand to travel.

In order to determine how much of the expected growth along the corridor can be accommodated by the combination of mitigation measures included in this study, it would be necessary to assess the package of measures in the County Strategic Model. This would allow for a like-for-like comparison of network performance and would identify the impact of any re-routing of vehicles as a result of the mitigation measures. As such the exercise would identify the residual impact on the network of the background growth and proposed developments within the Runnymede Local Plan.

This study has fulfilled the objectives as set out in the scoping document and stated in Section 1.2 by identifying issues and constraints along the A320 corridor. Potential traffic growth up to 2036 has been calculated and the impact on the A320 corridor has been assessed. Mitigation measures to address the current and forecast issues have been identified and can be taken forward to feasibility when appropriate. As the Runnymede Borough Council Local Plan SHAR (sections 5.2.2 and 5.2.3) states that the area of greatest concern is the St Peter's Hospital area, the initial focus of investment should be in the vicinity of the hospital.

13.2 Recommendations

It is recommended that at the next stage of the design process, further investigation of the highway boundary location is undertaken to gain more certainty on the extent of third party land requirements to deliver the proposed mitigation measures, initially focussing on those suggested schemes in the vicinity of St Peter's Hospital.

At the next stage of the design process it will also be necessary to hold further discussions with SCC to agree the appropriate junction performance requirements as it may be possible to slightly reduce the scale and impact of the proposed mitigation measures at some locations if lower performance criteria are acceptable for the peak hours.

In addition, it is recommended that further discussions are held with Highways England to agree the process for developing and assessing mitigation measures on the Strategic Road Network as part of the RIS M25 Junction 10-16 smart motorway project.

APPENDIX A

Collisions by Junction, Severity and Year

Junction Number	1st July 2014 – 30th June 2015			1st July 2015 – 30th June 2016			1st July 2016 – 30th June 2017			Total
	Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight	
1	0	0	2	0	0	1	0	0	0	**3**
2	0	1	2	0	0	4	0	0	5	**12**
3	0	0	1	0	0	2	0	0	0	**3**
4	0	0	0	0	0	1	0	0	1	**2**
5	0	0	0	0	0	0	0	0	1	**1**
6	0	0	1	0	0	4	0	0	3	**8**
7	0	0	0	0	0	0	0	0	0	**0**
8	0	0	1	0	0	0	0	0	1	**2**
9	0	0	1	0	0	1	0	0	1	**3**
10	0	0	0	0	0	0	0	0	0	**0**
11	0	0	0	0	0	0	0	0	0	**0**
12	0	1	0	0	0	2	0	0	1	**4**
13	0	0	1	0	0	1	0	0	1	**3**
14	0	0	2	1	0	0	0	0	0	**3**
15	0	0	5	0	0	6	0	0	6	**17**
Total	**0**	**2**	**16**	**1**	**0**	**22**	**0**	**0**	**20**	-

A320 Corridor Study

Collisions by Link, Severity and Year

Link	Link Length	1st July 2014 – 30th June 2015			1st July 2015 – 30th June 2016			1st July 2016 – 30th June 2017			Total	Collision Rate per km
		Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight		
1-2	1.2	0	1	3	0	2	2	0	0	3	**11**	**13.2**
2-3	1.1	0	0	0	0	1	4	0	0	2	**7**	**7.7**
3-4	1.3	0	0	1	0	1	4	0	1	1	**8**	**10.4**
4-5	1.3	0	0	0	0	1	3	0	0	1	**5**	**6.5**
5-6	0.9	0	0	0	0	1	1	0	0	1	**3**	**2.7**
6-7	0.2	0	0	0	0	0	0	0	0	1	**1**	**0.2**
7-8	0.7	0	0	4	0	0	0	1	0	0	**5**	**3.5**
8-9	0.2	0	0	0	0	0	0	0	0	0	**0**	**0**
9-10	0.9	0	0	1	0	0	1	0	0	2	**4**	**3.6**
10-11	0.1	0	0	0	0	0	0	0	0	0	**0**	**0**
11-12	0.3	0	0	1	0	0	0	0	0	1	**2**	**0.6**
12-13	0.3	0	0	1	0	0	1	0	0	0	**2**	**0.6**
13-14	0.5	0	0	1	0	0	0	0	0	1	**2**	**1**
7-15	1.3	0	0	9	0	0	2	1	0	5	**17**	**22.1**
Total	**10.3**	**0**	**1**	**21**	**0**	**6**	**18**	**2**	**1**	**18**	**67**	-

APPENDIX B

Environmental Designations

Riverside Walk, Virginia Water

Dumsey Meadow (SSSI)

Chertsey Meads

Chobham Common (SSSI)

Chobham Common (NNR)

Thursley, Ash, Pirbright & Chobham (SAC)

Horsell Common (SSSI)

Basingstoke Canal (SSSI)

Ockham and Wisley

Ockham and Wisley Commons (SSSI)

LEGEND:

- Study Area
- Ancient Woodland
- Green Belt
- Local Nature Reserve (LNR)
- National Nature Reserves (NNR)
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Registered Common Land

NOTES:

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN,

Rev	Date	Description	Drawn	Check	Approv
01	27/11/17	INITIAL ISSUE	AH	JM	JM

Client

PROJECT:

A320 CORRIDOR STUDY

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Surrey Heath Borough Council

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Biodiversity Constraints
Sheet 1 of 3

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Checked	J.Malyon	Date 24NOV17	Signed
Approved	J.Malyon	Date 24NOV17	Signed
Scale:	1:35,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10015548

Suitability Description:

For Information

Drawing Number: 001-10015548-UE31D-

Revision: 01

0 1,000 Meters

1:35,000

Print Date: 11-27-17 16:02:37

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LEGEND:

- Study Area
- Source Protection Zone 1
- Source Protection Zone 2
- Source Protection Zone 3
- Areas Benefiting From Flood Defence
- Flood Zone 2
- Flood Zone 3

NOTES:

Rev	Date	Description	Drawn	Check	Approv
01	27/11/17	INITIAL ISSUE	AH	JM	JM

Client

PROJECT:
A320 CORRIDOR STUDY

Client
Runnymede Borough Council
Woking Borough Council
Surrey Heath Borough Council

ARCADIS Design & Consultancy for natural and built assets

Registered office:
Arcadis House
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TITLE:

A320 Corridor Study
Hydrology Constraints
Sheet 2 of 3

Designed	A.Hankinson	Date 24NOV17	Signed
Drawn	A.Hankinson	Date 24NOV17	Signed
Checked	J.Malyon	Date 24NOV17	Signed
Approved	J.Malyon	Date 24NOV17	Signed
Scale:	1:35,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10015548

Suitability Description:
For Information

Drawing Number: 001-10015548-UE31D-
Revision: 01

Print Date: 11-27-17 15:52:49

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1:35,000

LEGEND:

- Study Area
- I
- II
- II*
- Scheduled Monument

NOTES:

Rev	Date	Description	Drawn	Check	Approv
01	27/11/17	INITIAL ISSUE	AH	JM	JM

Client

PROJECT:

A320 CORRIDOR STUDY

Client

Runnymede Borough Council
Woking Borough Council
Surrey Heath Borough Council

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TITLE:

A320 Corridor Study
Cultural Heritage Constraints
Sheet 3 of 3

Designed	A.Hankinson	Date 24NOV17	Signed
Drawn	A.Hankinson	Date 24NOV17	Signed
Checked	J.Malyon	Date 24NOV17	Signed
Approved	J.Malyon	Date 24NOV17	Signed
Scale:	1:35,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10015548

Suitability Description:

For Information

Drawing Number: 001-10015548-UE31D-

Revision: 01

Print Date: 11-27-17 15:50:43

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APPENDIX C

Issues and Opportunities Plans

KEY:

A320 CORRIDOR STUDY AREA

CHERTSEY STATION

- LEVEL CROSSING IN CHERTSEY CAN CAUSE CONGESTION IN THE TOWN
- SOUTH WEST RAILWAY TIMETABLE CHANGES WILL HAVE A DETRIMENTAL IMPACT ON ON SERVICES FROM CHERTSEY AS DIRECT TRAINS TO CENTRAL LONDON WOULD BE REMOVED

UTILITIES

- FUEL PIPELINE TO HEATHROW IS LOCATED IN THE VICINITY OF THE A320 NORTH OF THE M25

A320 GUILDFORD ROAD / HOLLOWAY HILL AND A320 GUILDFORD ROAD / GREEN LANE

- CONGESTION HOTSPOT IN AM AND PM PEAKS
- DIFFICULT JUNCTION FOR PEDESTRIANS AND CYCLISTS TO NEGOTIATE
- THE DOUBLE MINI-ROUNDABOUT DOES NOT OPERATE WELL WITH THE CURRENT VOLUME OF TRAFFIC

ST PETER'S HOSPITAL

- RELATIVELY LOW NUMBER OF HOSPITAL EMPLOYEES LIVE IN THE LOCAL AREA DUE TO THE LOCATION OF THE HOSPITAL

A320 GUILDFORD ROAD / HILLSWOOD DRIVE / BITTAMS LANE

- CONGESTION HOTSPOT IN AM AND PM PEAKS
- THERE IS EXIT BLOCKING AT THE ST PETER'S HOSPITAL ROUNDABOUT
- NORTHBOUND TRAFFIC DELAYS VEHICLES EXITING HILLSWOOD BUSINESS PARK AND ST PETER'S HOSPITAL. KEEP CLEAR MARKINGS ARE NOT OBEYED

A320 GUILDFORD ROAD / ST PETER'S WAY

- SHUNT TYPE COLLISIONS ON ST PETER'S WAY

CHOBHAM ROAD

- GEOMETRY FOR LEFT TURN FROM CHOBHAM ROAD TO A320 NORTH IS DIFFICULT TO NEGOTIATE

A320 GUILDFORD ROAD / MURRAY ROAD / CHOBHAM ROAD

- CONGESTION HOTSPOT IN AM AND PM PEAKS
- INCREASED TRAFFIC VOLUMES THROUGH OTTERSHAW AS A RESULT OF DEVELOPMENT WILL INCREASE SEVERANCE
- A MONUMENT MAY LIMIT THE ABILITY TO IMPROVE THE JUNCTION
- UNBALANCED USE OF APPROACH LANES

A320 GUILDFORD ROAD

- PELICAN CROSSING ON A320 TO THE SOUTH OF THE CHOBHAM ROAD JUNCTION CAN CONTRIBUTE TO CONGESTION

A320 CHERTSEY ROAD / MONUMENT ROAD / WOODHAM ROAD

- CONGESTION HOTSPOT IN AM AND PM PEAKS
- HIGH NUMBER OF ARMS AT THE ROUNDABOUT RESULTS IN SHORT DISTANCE BETWEEN ENTRIES AND EXITS
- CLUSTER OF COLLISIONS, PARTICULARLY ON SHORES ROAD APPROACH
- UNBALANCED USE OF APPROACH LANES

A320 CHERTSEY ROAD / BOUNDARY ROAD

- LIMITED CAPACITY OF RIGHT TURN POCKET TO BOUNDARY ROAD CAN RESULT IN VEHICLES QUEUING TO TURN RIGHT BLOCKING NORTHBOUND TRAFFIC ON A320

A320 CHILSEY GREEN ROAD / ST ANN'S ROAD / THORPE ROAD / STAINES ROAD

- CONGESTION HOTSPOT IN AM AND PM PEAKS

BELL BRIDGE ROAD / PYRCROFT ROAD

- TWO CYCLE COLLISIONS IN THREE YEARS. CYCLISTS LOST CONTROL

A320 GUILDFORD ROAD / THE KNOLL

- CONGESTION HOTSPOT IN AM PEAK

A320 GUILDFORD ROAD

- KERBSIDE ACTIVITY ON THE A320 ASSOCIATED WITH SALESIAN SCHOOL AND SIR WILLIAM PERKINS SCHOOL CAUSES DELAY

A320 GUILDFORD ROAD / LITTLE GREEN LANE

- CONGESTION HOTSPOT IN AM PEAK

ST PETERS WAY [M25]

- QUEUES REPORTED ON ST PETER'S WAY (EAST ARM) LEFT TURN LANE TO THE M25 SOUTHBOUND

M25 JUNCTION 11

- CONGESTION HOTSPOT IN AM AND PM PEAKS
- MEASURES THAT ENABLE A HIGHER VOLUME OF TRAFFIC TO ACCESS THE M25 MAY RESULT IN ACCESSIBILITY ISSUES, WHICH COULD RAISE OBJECTIONS
- RAT-RUNNING THROUGH JUNCTION DURING CONGESTED PERIODS ON MAINLINE
- LANE DROP ON MAINLINE AT JUNCTION 11 IS UNUSUAL AS JUNCTION 11 IS NOT LARGE
- THIS SECTION OF M25 IS A DBFO PROJECT ROAD. THIS CREATES FINANCIAL IMPLICATIONS FOR IMPROVEMENT WORKS WHICH COULD JEOPARDISE DELIVERY OF SCHEMES
- CLUSTER OF COLLISIONS, TYPICALLY REAR SHUNTS

MURRAY ROAD

- VEHICLES WAITING TO TURN RIGHT ON MURRAY ROAD INTO BROX ROAD CAN BLOCK THROUGH TRAFFIC AND CAUSE CONGESTION BACK TO THE A320
- FLOODING ON MURRAY ROAD

A320 GUILDFORD ROAD / BROX ROAD

- VEHICLES WAITING TO TURN RIGHT INTO BROX ROAD CAN BLOCK THROUGH TRAFFIC

A320 CHERTSEY ROAD / MARTYRS LANE

- CONGESTION OCCURS AT THE ROUNDABOUT
- LARGE ROUNDABOUT BUT LIMITED APPLICATION OF LANE MARKINGS
- FLOODING ISSUES
- ENVIRONMENTAL CONSTRAINTS

WOODHAM LANE

- PERCEIVED ACCIDENT ISSUE ON THE A245 WESTBOUND APPROACH TO ROUNDABOUT

MAYBURY HILL / COLLEGE ROAD AND MAYBURY HILL / ORIENTAL ROAD

- CONGESTION EXTENDS NORTH TO THE SIX CROSSROADS ROUNDABOUT FROM MINI ROUNDABOUTS

GENERAL ISSUES THROUGHOUT CORRIDOR

- POOR DIRECTION SIGNING RESULTS IN CONFUSION AND POOR USE OF LANES
- LIMITED WIDTH WITHIN THE HIGHWAY BOUNDARY
- THERE IS AN OFF-ROAD CYCLE ROUTE ALONG THE MAJORITY OF THE A320, BUT THE INFRASTRUCTURE COULD BE IMPROVED TO ENHANCE THE ROUTE. THERE ARE PINCH POINTS IN SEVERAL LOCATIONS INCLUDING THE BOURNE, SOUTH OF HOLLOWAY HILL AND NORTH OF SALESIAN SCHOOL
- LIMITED INFRASTRUCTURE FOR SUSTAINABLE TRANSPORT ALONG THE CORRIDOR
- LACK OF CYCLE NETWORK IN AREA TO CONNECT OTHER PLACES INTO THE LINEAR ROUTE
- LIMITED BUS SERVICES TO WEST OF A320

ARCADIS

A320 CORRIDOR - EXISTING ISSUES IDENTIFIED

SK/001

KEY:

A320 CORRIDOR STUDY AREA

LONGCROSS DEVELOPMENT

- LINK LONGCROSS BUS SERVICE IN WITH INCREASED FREQUENCY OF BUS SERVICES ALONG A320

A320 GUILDFORD ROAD / HOLLOWAY HILL AND A320 GUILDFORD ROAD / GREEN LANE

- REVIEW PEDESTRIAN AND CYCLE PROVISION
- POTENTIAL TO INVESTIGATE THE BENEFITS OF A SINGLE ELONGATED ROUNDABOUT AT THIS JUNCTION
- POTENTIAL FOR THE FARM TO THE NORTHWEST OF THE JUNCTIONS TO BE SOLD IN 2018

- SUGGESTED CYCLE TRACK

A320 GUILDFORD ROAD / HILLSWOOD DRIVE / BITTAMS LANE

- CONSIDER SIGNALISATION OF THE JUNCTION
- ENFORCEMENT OF KEEP CLEAR MARKINGS AND IMPROVE LANE MARKINGS

CHRISTMAS TREE FARM DEVELOPMENT SITE

- POTENTIAL TO WIDEN THE A320 AT THIS LOCATION TO CREATE A DUAL CARRIAGEWAY IF THE DEVELOPMENT PROCEEDS (ALTHOUGH IT IS NOT INCLUDED IN THE CURRENT LOCAL PLAN). HIGHWAY IMPROVEMENTS SUGGESTED AS PART OF THE DEVELOPMENT INCLUDE REVISIONS TO THE ROUNDABOUT AND IMPLEMENTATION OF TRAFFIC SIGNALS AT THE JUNCTION

A320 GUILDFORD ROAD / MURRAY ROAD / CHOBHAM ROAD ROUNDABOUT

- CONSIDER CPO OF LAND TO FACILITATE THE IMPLEMENTATION OF A BETTER JUNCTION
- THERE IS LAND TO THE NORTHEAST OF THE JUNCTION, INCLUDING GREEN SPACE AND A PUBLIC CAR PARK

M25 JUNCTION 11

- JUNCTION 11 IMPROVEMENTS COULD BE COMBINED WITH MAJOR RIS SCHEME TO WIDEN M25 BETWEEN JUNCTIONS 10 AND 16
- HIGHWAYS ENGLAND HOUSE AND GROWTH FUND MAY PROVIDE OPPORTUNITY TO BID FOR SCHEME FUNDING

- SUGGESTED CYCLE TRACK

A320 GUILDFORD ROAD / ST PETER'S WAY

- MORE JUNCTIONS AND LINKS TO TRANSPORT NETWORKS FROM DEVELOPMENTS AT ST PETER'S HOSPITAL AND THE BITTAMS

LAND EAST OF A320 GUILDFORD ROAD

- POTENTIAL FOR A STRATEGIC PARK AND RIDE SITE TO THE EAST OF A320 NORTH OF OTTERSHAW TO SERVE WOKING, HEATHROW AND ST PETER'S HOSPITAL. HOWEVER THIS COULD ATTRACT MORE TRAFFIC TO THE ADJACENT ROAD NETWORK

- SUGGESTED CYCLE GREENWAY

- WIDEN CYCLE ROUTE AT PINCH POINTS ALONG A320

GENERAL OPPORTUNITIES THROUGHOUT CORRIDOR

- NEW LIGHTING AND SIGNING
- OPPORTUNITIES TO EXPLORE USE OF MCLAREN, HILLSWOOD BUSINESS PARK AND ST PETER'S HOSPITAL TRANSPORT BUDGETS
- USE OF DEVELOPER CONTRIBUTIONS FROM THE PROPOSED NEW DEVELOPMENTS
- TURBO ROUNDABOUTS AND SPIRAL MARKINGS
- IMPROVE ADVERTISING OF BUS ROUTES TO HEATHROW
- BUS ROUTES TO NEW DEVELOPMENTS
- TECHNOLOGY, INCLUDING:
  - VARIABLE MESSAGE SIGNS
  - CCTV
  - ANPR
  - AVERAGE SPEED CAMERAS
  - DIAL UP SIGNAL CONTROL

ARCADIS

A320 CORRIDOR - OPPORTUNITIES IDENTIFIED AT STAKEHOLDER WORKSHOP

SK/002

APPENDIX D

Concept and Initial Sketch Design Drawings

PROPOSED SIGNAL CONTROLLED JUNCTION TO BE LINKED WITH PROPOSED SIGNAL CONTROLLED JUNCTION 5 AND OTHER NEARBY SIGNAL CONTROLLED JUNCTIONS

PYRCROFT ROAD

COWLEY LANE

BELL BRIDGE ROAD

EMC2 HOUSE

CLUB

GP

NOTES:

1. THIS DRAWING IS AN INITIAL SCHEME CONCEPT AND DOES NOT REPRESENT A FINAL DESIGN.
2. TRAFFIC MODELLING OF THE PROPOSED SCHEMES HAS NOT BEEN UNDERTAKEN AND THEREFORE THE PERFORMANCE OF THE LAYOUT HAS NOT BEEN ASSESSED. ONCE THE TRAFFIC MODELLING IS COMPLETED THE LAYOUT OF THE SCHEME MAY VARY OR THE SCHEME MAY BE DISCOUNTED.
3. SIMILARLY A FULL APPRAISAL OF THE SCHEME HAS NOT BEEN COMPLETED. ONCE THE APPRAISAL IS UNDERTAKEN THE SCHEME MAY VARY OR MAY BE DISCOUNTED.
4. THIS DRAWING IS BASED ON OS MAPPING. THE ACCURACY OF THE EXISTING LAYOUT WILL NEED TO BE CONFIRMED WITH A TOPOGRAPHICAL SURVEY AT A LATER STAGE IN THE DESIGN PROCESS. AS SUCH THE SCHEME IS SUBJECT TO CHANGE.
5. NO HIGHWAY BOUNDARY INFORMATION HAS BEEN MADE AVAILABLE AT THIS STAGE AND THEREFORE THE HIGHWAY BOUNDARY HAS BEEN ASSUMED. FURTHER INVESTIGATION WILL BE REQUIRED DURING THE LATER STAGES OF THE DESIGN PROCESS.
6. ALL PROPOSED ROAD MARKINGS ARE SHOWN IN BLACK. EXISTING ROAD MARKINGS ARE SHOWN IN GREY.

KEY:

- PROPOSED CONTROLLED CROSSING
- PROPOSED UNCONTROLLED CROSSING
- PROPOSED CYCLE & PEDESTRIAN LINK
- RELOCATED / REALIGNED BUS STOP

ARCADIS

A320 CORRIDOR - JUNCTION 3 - PYRCROFT ROAD / BELL BRIDGE ROAD / COWLEY LANE ROUNDABOUT - OPTION 1 [NOT TO SCALE]

SK/1003

PROPOSED SIGNAL CONTROLLED JUNCTION TO BE LINKED WITH PROPOSED SIGNAL CONTROLLED JUNCTION 3 AND OTHER NEARBY SIGNAL CONTROLLED JUNCTIONS

DESIGNATED PARKING BAY AND ROAD MARKINGS TO ALLOW FREE FLOW OF TRAFFIC

SIR WILLIAM PERKIN'S SCHOOL

BELL BRIDGE ROAD

GUILDFORD ROAD

PRETORIA ROAD

HANWORTH LANE

THE KNOLL

A320 GUILDFORD ROAD

NOTES:

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KEY:

- PROPOSED CONTROLLED CROSSING
- PROPOSED UNCONTROLLED CROSSING
- PROPOSED CYCLE & PEDESTRIAN LINK
- RELOCATED / REALIGNED BUS STOP

ARCADIS

A320 CORRIDOR - JUNCTION 4 - BELL BRIDGE ROAD / GUILDFORD ROAD & JUNCTION 5 - THE KNOLL / A320 GUILDFORD ROAD - OPTION 1 [NOT TO SCALE]

SK/1004

A320 CHERTSEY ROAD

McLAREN ACCESS

PARAGON ROUNDABOUT

A320 CHERTSEY ROAD

MARTYRS LANE

PROPOSED CARRIAGEWAY WIDENING TO CREATE TWO LANE ENTRIES AND EXITS ON A320 APPROACHES. ROAD MARKINGS TO INDICATE TWO LANE CIRCULATORY CARRIAGEWAY. LAND OWNERSHIP DETAILS TO BE CONFIRMED

NOTES:

1. THIS DRAWING IS AN INITIAL SCHEME CONCEPT AND DOES NOT REPRESENT A FINAL DESIGN.
2. TRAFFIC MODELLING OF THE PROPOSED SCHEMES HAS NOT BEEN UNDERTAKEN AND THEREFORE THE PERFORMANCE OF THE LAYOUT HAS NOT BEEN ASSESSED. ONCE THE TRAFFIC MODELLING IS COMPLETED THE LAYOUT OF THE SCHEME MAY VARY OR THE SCHEME MAY BE DISCOUNTED.
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KEY:

- PROPOSED CONTROLLED CROSSING
- PROPOSED UNCONTROLLED CROSSING
- PROPOSED CYCLE & PEDESTRIAN LINK
- RELOCATED / REALIGNED BUS STOP

SCHEME CONCEPT

ARCADIS

A320 CORRIDOR - JUNCTION 12 - PARAGON ROUNDABOUT - OPTION 1 [NOT TO SCALE]

SK/1016

POTENTIAL EMBANKMENT WORKS

PROPOSED CARRIAGEWAY WIDENING TO PROVIDE ADDITIONAL EASTBOUND LANE. LAND ACQUISITION REQUIRED

NOTES:

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KEY:

- PROPOSED CONTROLLED CROSSING
- PROPOSED UNCONTROLLED CROSSING
- PROPOSED CYCLE & PEDESTRIAN LINK
- RELOCATED / REALIGNED BUS STOP

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A320 CORRIDOR - LINK 4 - St PETER'S WAY / M25 JUNCTION 11 - OPTION 1 [NOT TO SCALE]

SK/1020

SCHEME CONCEPT

M25

M25 JUNCTION 11

ST PETER'S WAY

PROPOSED WIDENING OF CIRCULATORY CARRIAGEWAY TO PROVIDE THREE LANES. REQUIRES BRIDGE REPLACEMENTS

NOTES:

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6. ALL PROPOSED ROAD MARKINGS ARE SHOWN IN BLACK. EXISTING ROAD MARKINGS ARE SHOWN IN GREY.

KEY:

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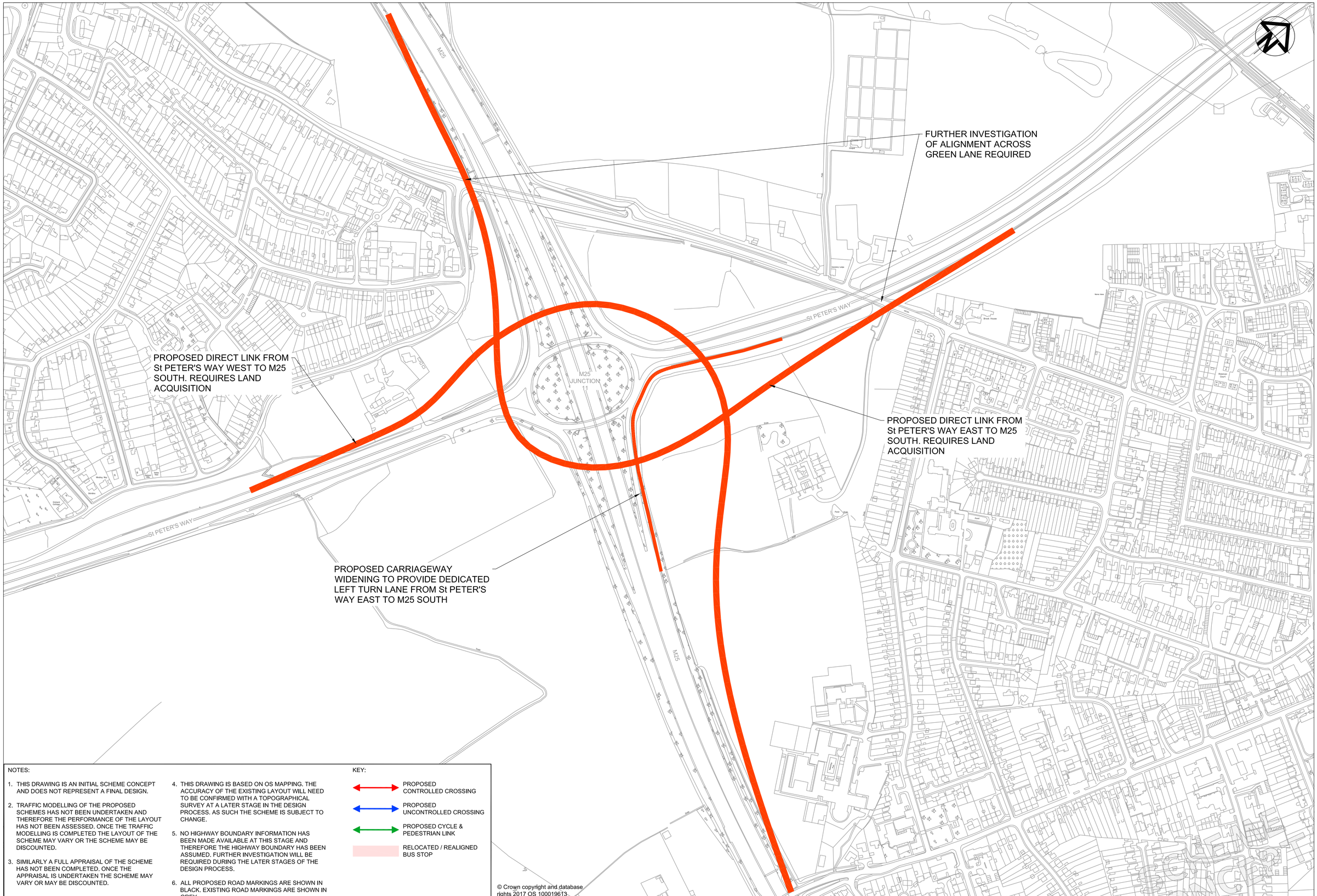
- PROPOSED UNCONTROLLED CROSSING
- PROPOSED CYCLE & PEDESTRIAN LINK
- RELOCATED / REALIGNED BUS STOP

ARCADIS

A320 CORRIDOR - JUNCTION 15 - St PETER'S WAY / M25 JUNCTION 11 - OPTION 1 [NOT TO SCALE]

SK/1021



NOTES:

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2. TRAFFIC MODELLING OF THE PROPOSED SCHEMES HAS NOT BEEN UNDERTAKEN AND THEREFORE THE PERFORMANCE OF THE LAYOUT HAS NOT BEEN ASSESSED. ONCE THE TRAFFIC MODELLING IS COMPLETED THE LAYOUT OF THE SCHEME MAY VARY OR THE SCHEME MAY BE DISCOUNTED.
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KEY:

- PROPOSED CONTROLLED CROSSING
- PROPOSED UNCONTROLLED CROSSING
- PROPOSED CYCLE & PEDESTRIAN LINK
- RELOCATED / REALIGNED BUS STOP

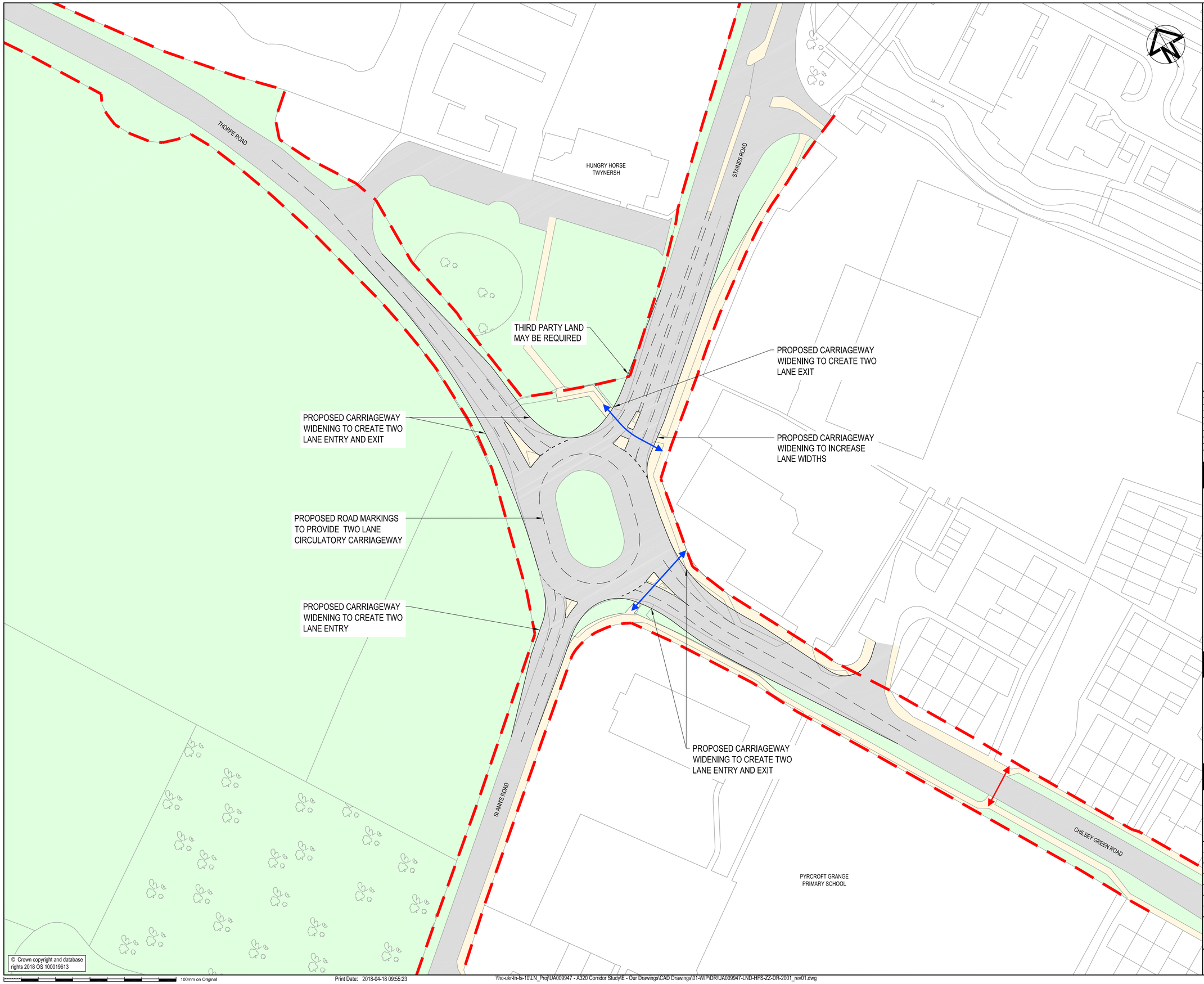
ARCADIS

A320 CORRIDOR - JUNCTION 15 - St PETER'S WAY / M25 JUNCTION 11 - OPTION 2 [NOT TO SCALE]

SK/1022

APPENDIX E

Feasibility Design Drawings



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LOCATION PLAN:

KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

1. THIS DRAWING IS A CONCEPT DESIGN AND NOT FOR CONSTRUCTION PURPOSES.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
3. AN ASSUMED HIGHWAY BOUNDARY HAS BEEN INCLUDED ON THE DRAWINGS. SCC TO CONFIRM EXACT POSITION OF HIGHWAY BOUNDARY.
4. THESE ARE CONCEPT DESIGNS AND REQUIRE FURTHER WORK AND INVESTIGATION BEFORE BEING TAKEN FORWARD. THE FOLLOWING (NOT EXHAUSTIVE) HAS NOT BEEN CONSIDERED AT THIS STAGE OF THE DESIGN:-
   - THE LOCATION OF STATUTORY UNDERTAKES PLANT,
   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede Borough Council · Surrey Heath Borough Council · Woking Borough Council

PROJECT:
A320
CORRIDOR STUDY

Site

A320 GUILDFORD ROAD
A320 CHERTSEY ROAD

Client

RUNNYMEDE BOROUGH COUNCIL
www.runnymede.gov.uk
SURREY HEATH BOROUGH COUNCIL
www.surreyheath.gov.uk
WOKING BOROUGH COUNCIL
www.woking.gov.uk

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www.arcadis.com

TITLE:

FEASIBILITY DESIGN
JUNCTION 1 - OPTION 1
STAINES ROAD / CHILSEY GREEN ROAD ROUNDABOUT

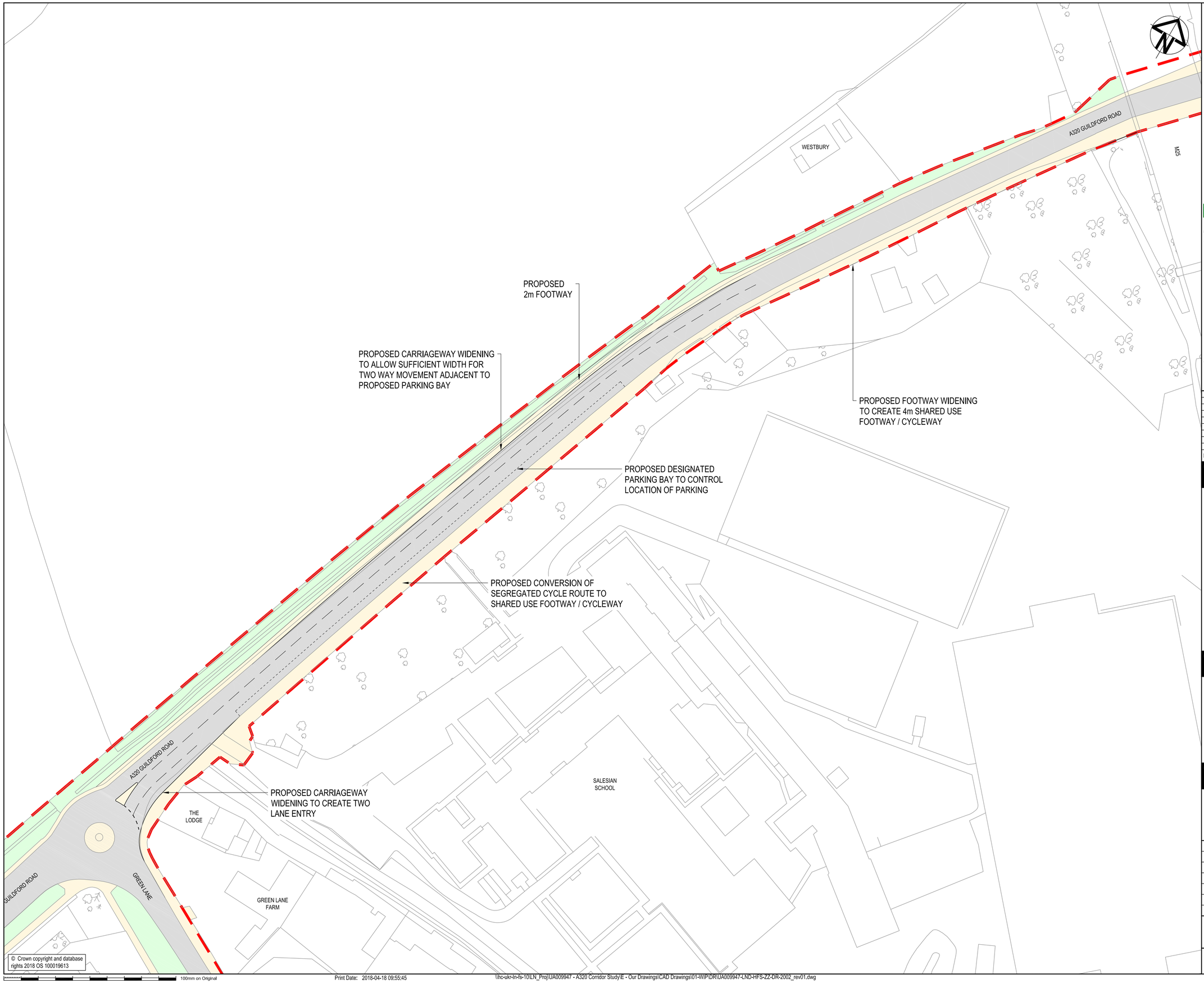
Designed	M.WHEELER	Signed / Date	JAN 2018
Drawn	M.WHEELER	Signed / Date	JAN 2018
Checked	D.HARDWICK	Signed / Date	8 MAR 2018
Approved	J.MALYON	Signed / Date	8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:

FOR REVIEW

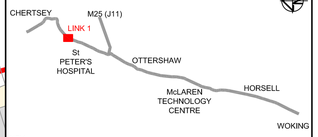
Drawing Number: UA009947-LND-HFS-ZZ-DR-2001

Revision: 01



100mm on Original

LOCATION PLAN:



KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

1. THIS DRAWING IS A CONCEPT DESIGN AND NOT FOR CONSTRUCTION PURPOSES.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
3. AN ASSUMED HIGHWAY BOUNDARY HAS BEEN INCLUDED ON THE DRAWINGS. SCC TO CONFIRM EXACT POSITION OF HIGHWAY BOUNDARY.
4. THESE ARE CONCEPT DESIGNS AND REQUIRE FURTHER WORK AND INVESTIGATION BEFORE BEING TAKEN FORWARD. THE FOLLOWING (NOT EXHAUSTIVE) HAS NOT BEEN CONSIDERED AT THIS STAGE OF THE DESIGN:-
   - THE LOCATION OF STATUTORY UNDERTAKES PLANT,
   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede Borough Council · Surrey Heath Borough Council · Woking Borough Council

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

ARCADIS Design & Consultancy for natural and built assets

Registered office:
Arcadis House
34 York Way
London
N1 9AB

Coordinating office:
Bernard Weatherill House
8 Mint Walk
Croydon, CR0 1EA
Tel: 44 (0)203 014 9000

www.arcadis.com

TITLE:

FEASIBILITY DESIGN
LINK 1 - OPTION 1
GUILDFORD ROAD

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

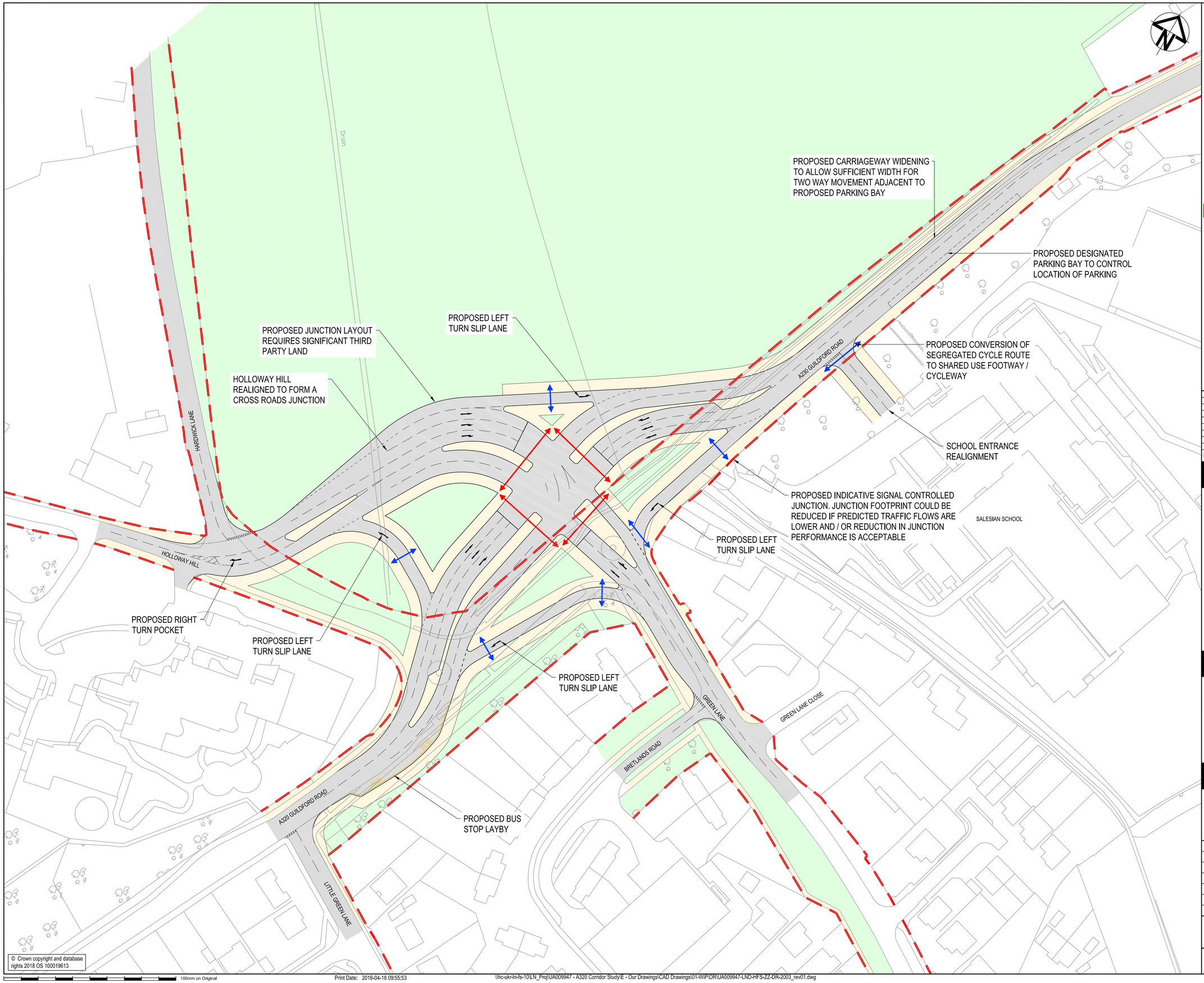
Suitability Description:
FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2002

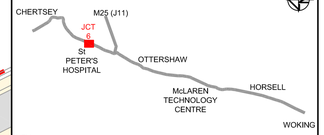
Revision: 01

Print Date: 2018-04-18 09:55:45

\\hc-ukr-ln-fs-10\LN_Proj\UA009947 - A320 Corridor Study\E - Our Drawings\CAD Drawings\01-WIP\DR\UA009947-LND-HFS-ZZ-DR-2002_rev01.dwg



LOCATION PLAN:



KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

1. THIS DRAWING IS A CONCEPT DESIGN AND NOT FOR CONSTRUCTION PURPOSES.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
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   - THE LOCATION OF STATUTORY UNDERTAKES PLANT,
   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede Borough Council · Surrey Heath Borough Council · Woking Borough Council

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

ARCADIS Design & Consultancy for natural and built assets

Registered office:
Arcadis House
34 York Way
London
N1 9AB

Coordinating office:
Bernard Weatherill House
8 Mint Walk
Croydon, CR0 1EA
Tel: 44 (0)203 014 9000

www.arcadis.com

TITLE:

FEASIBILITY DESIGN JUNCTION 6 - OPTION 4 A320 GUILDFORD ROAD

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:
FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2003

Revision: 01

100mm on Original

LOCATION PLAN:

KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

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2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
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   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede BOROUGH COUNCIL · SURREY HEATH BOROUGH COUNCIL · WOKING BOROUGH COUNCIL

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

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Coordinating office:
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Tel: 44 (0)203 014 9000

www.arcadis.com

TITLE:

FEASIBILITY DESIGN
LINK 2 - OPTION 1
A320 GUILDFORD ROAD

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:
FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2004

Revision: 01

Print Date: 2018-04-18 09:56:04

\\hc-ukr-in-fs-10\LN_Proj\UA009947 - A320 Corridor Study\E - Our Drawings\CAD Drawings\01-WIP\DR\UA009947-LND-HFS-ZZ-DR-2004_rev01.dwg

HILLSWOOD DRIVE

HOSPITAL ACCESS

St PETER'S HOSPITAL

PROPOSED CARRIAGEWAY WIDENING TO CREATE TWO LANE ENTRY AND EXIT

THIRD PARTY LAND REQUIRED

A320 GUILDFORD ROAD

PROPOSED BUS STOP LAYBY

THIRD PARTY LAND REQUIRED

ENHANCE EXISTING CROSSING FOR PEDESTRIANS AND CYCLISTS

PROPOSED CARRIAGEWAY WIDENING TO CREATE ADDITIONAL DEDICATED SOUTHBOUND LANE. VEHICLES EXITING BITTAMS LANE REQUIRED TO TURN LEFT

THIRD PARTY LAND REQUIRED

A320 GUILDFORD ROAD

A320 GUILDFORD ROAD

BITTAMS LANE

100mm on Original

LOCATION PLAN:

KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

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   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede BOROUGH COUNCIL · SURREY HEATH BOROUGH COUNCIL · WOKING BOROUGH COUNCIL

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

ARCADIS Design & Consultancy for natural and built assets

Registered office:
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N1 9AB

Coordinating office:
Bernard Weatherill House
8 Mint Walk
Croydon, CR0 1EA
Tel: 44 (0)203 014 9000

www.arcadis.com

TITLE:

FEASIBILITY DESIGN JUNCTION 8 - OPTION 3 GUILDFORD ROAD / BITTAMS LANE ROUNDABOUT

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:
FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2005

Revision: 01

Print Date: 2018-04-18 09:56:12

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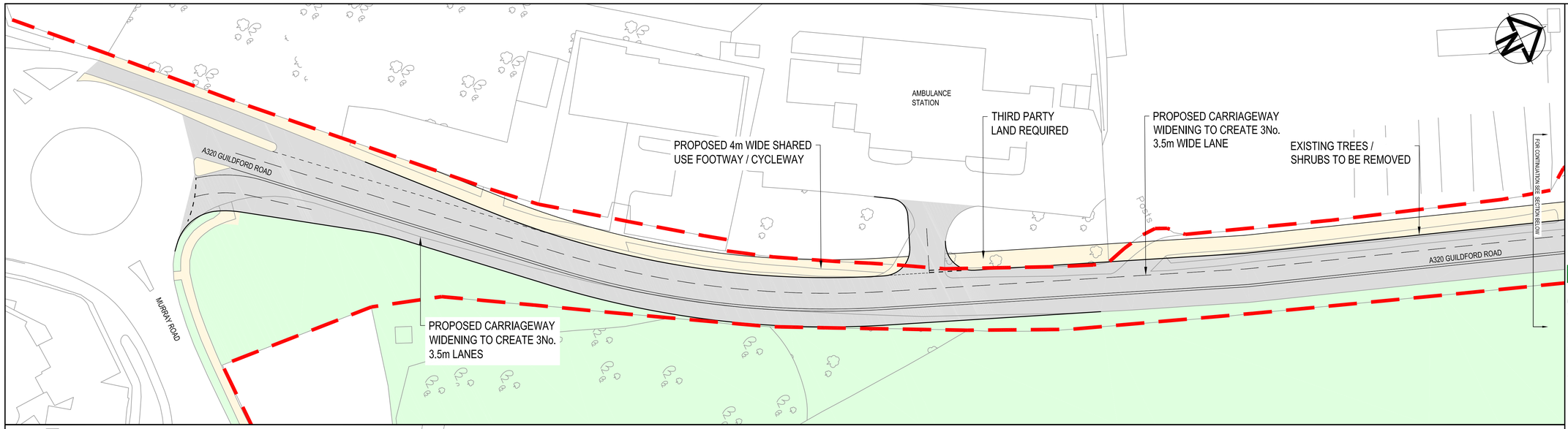

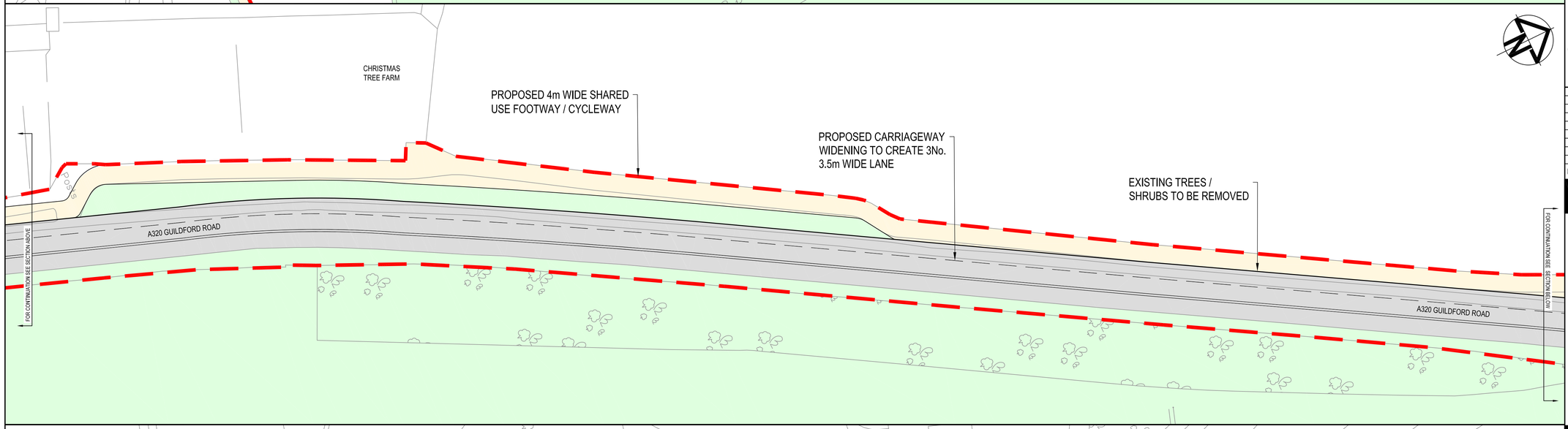

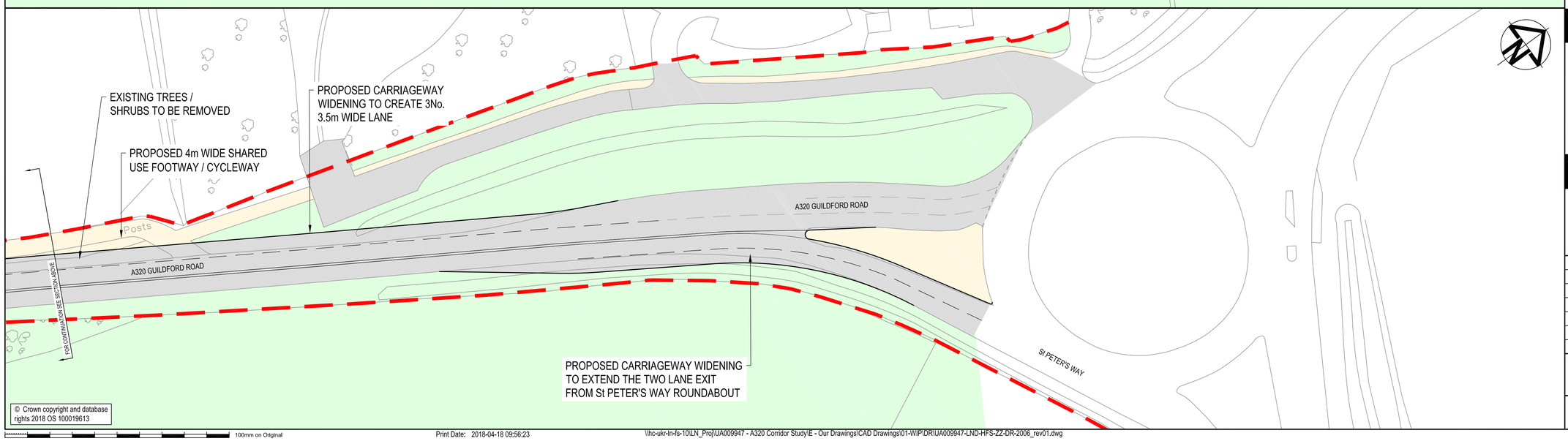

LOCATION PLAN:

KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

1. THIS DRAWING IS A CONCEPT DESIGN AND NOT FOR CONSTRUCTION PURPOSES.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
3. AN ASSUMED HIGHWAY BOUNDARY HAS BEEN INCLUDED ON THE DRAWINGS. SCC TO CONFIRM EXACT POSITION OF HIGHWAY BOUNDARY.
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   - THE LOCATION OF STATUTORY UNDERTAKES PLANT,
   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede BOROUGH COUNCIL · SURREY HEATH BOROUGH COUNCIL · WOKING BOROUGH COUNCIL

PROJECT:
A320
CORRIDOR STUDY

Site
A320 GUILDFORD ROAD
A320 CHERTSEY ROAD

Client
RUNNYMEDE BOROUGH COUNCIL
www.runnymede.gov.uk
SURREY HEATH BOROUGH COUNCIL
www.surreyheath.gov.uk
WOKING BOROUGH COUNCIL
www.woking.gov.uk

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Registered office:
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34 York Way
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N1 9AB

Coordinating office:
Bernard Weatherill House
8 Mint Walk
Croydon, CR0 1EA
Tel: 44 (0)203 014 9000

www.arcadis.com

TITLE:

FEASIBILITY DESIGN
LINK 3 - OPTION 1
A320 GUILDFORD ROAD

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

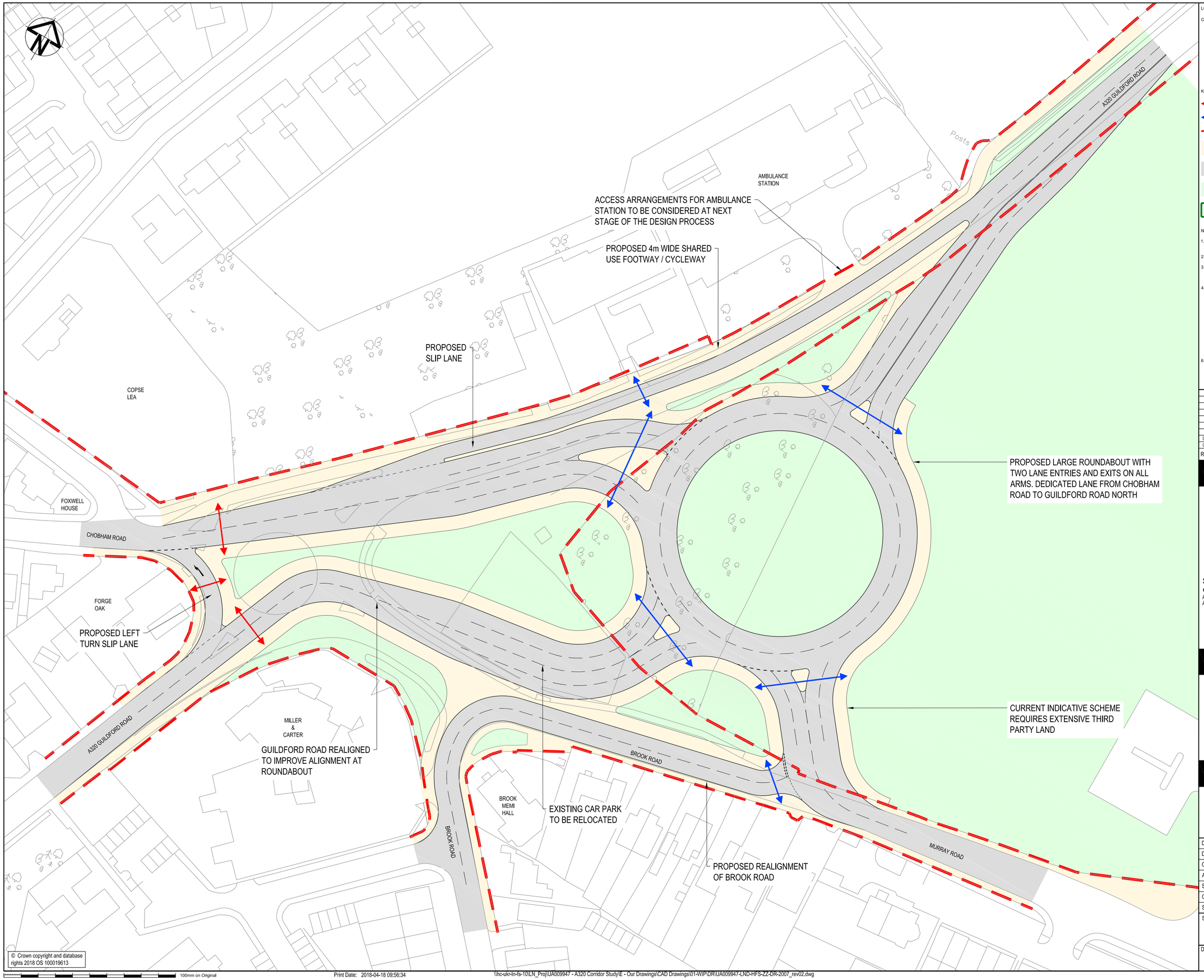
Suitability Description:
FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2006
Revision: 01

100mm on Original

Print Date: 2018-04-18 09:56:23

\\hc-ukr-ln-fs-10\LN_Proj\UA009947 - A320 Corridor Study\E - Our Drawings\CAD Drawings\01-WIP\DR\UA009947-LND-HFS-ZZ-DR-2006_rev01.dwg



100mm on Original

LOCATION PLAN:

KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

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   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
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   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
02	18/04/18	AMBULANCE STATION NOTE ADDED	MBW	DWH	JJM
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede Borough Council · Surrey Heath Borough Council · Woking Borough Council

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

ARCADIS Design & Consultancy for natural and built assets

Registered office:
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34 York Way
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Coordinating office:
Bernard Weatherill House
8 Mint Walk
Croydon, CR0 1EA
Tel: 44 (0)203 014 9000

www.arcadis.com

TITLE:

FEASIBILITY DESIGN JUNCTION 10 - OPTION 3 GUILDFORD ROAD / CHOBHAM ROAD ROUNDABOUT

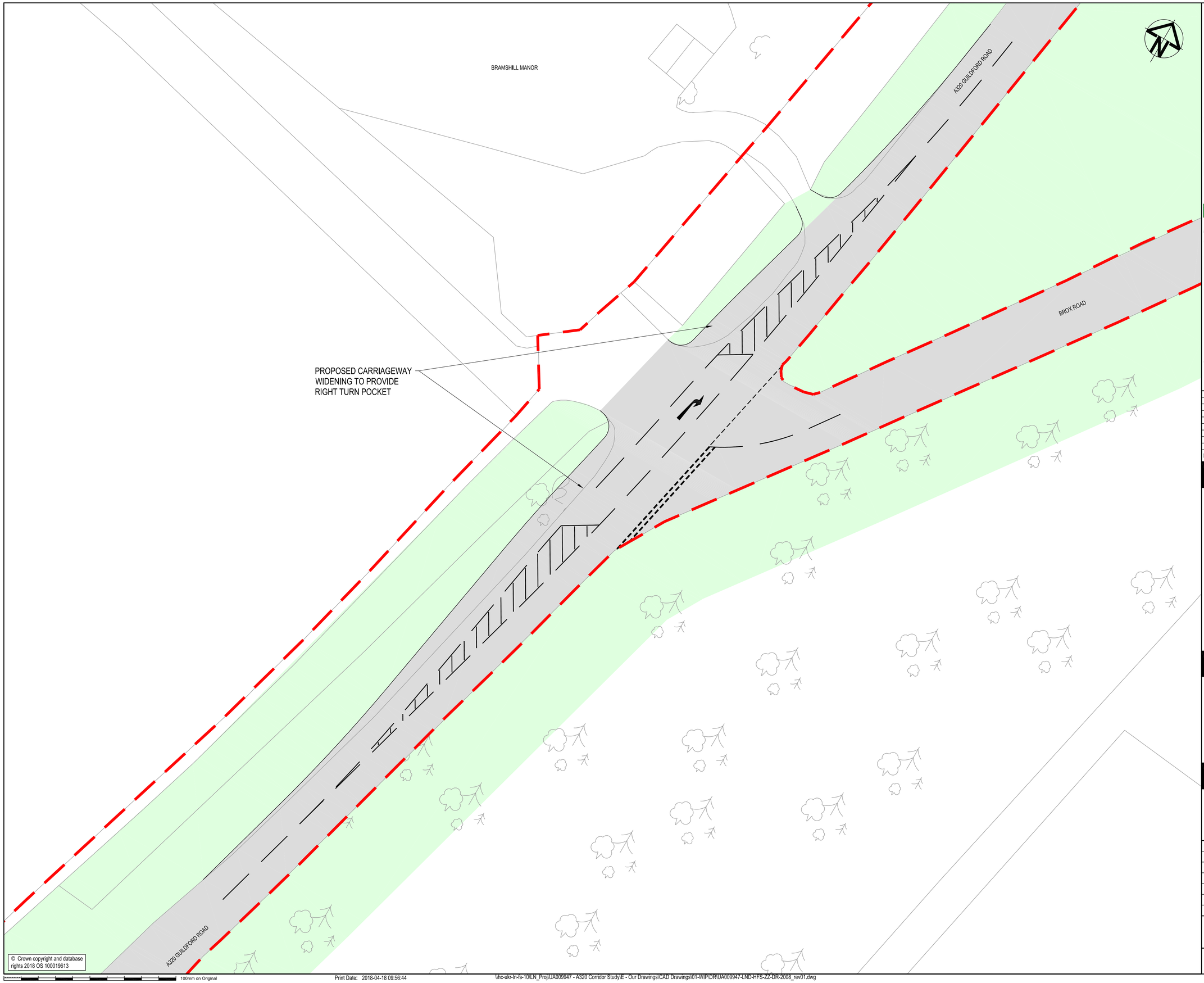
Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:
FOR REVIEW

Drawing Number:	Revision:
UA009947-LND-HFS-ZZ-DR-2007	02

Print Date: 2018-04-18 09:56:34

\\hc-ukr-in-fs-10\LN_Proj\UA009947 - A320 Corridor Study\E - Our Drawings\CAD Drawings\01-WIP\DR\UA009947-LND-HFS-ZZ-DR-2007_rev02.dwg



LOCATION PLAN:

KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

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   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede BOROUGH COUNCIL · SURREY HEATH BOROUGH COUNCIL · WOKING BOROUGH COUNCIL

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

ARCADIS Design & Consultancy for natural and built assets

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N1 9AB

Coordinating office:
Bernard Weatherill House
8 Mint Walk
Croydon, CR0 1EA
Tel: 44 (0)203 014 9000

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TITLE:

FEASIBILITY DESIGN JUNCTION 11 - OPTION 1 GUILDFORD ROAD / BROX ROAD JUNCTION

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:200	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:
FOR REVIEW

Drawing Number:	Revision:
UA009947-LND-HFS-ZZ-DR-2008	01

100mm on Original

Print Date: 2018-04-18 09:56:44

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CURRENT INDICATIVE SCHEME REQUIRES USE OF HORSELL COMMON SSSI LAND, ALTHOUGH POTENTIAL TO BE REVISED AT LATER DESIGN STAGES TO MINIMISE IMPACT ON SSSI

PROPOSED LEFT TURN SLIP LANE

PROPOSED 4m WIDE SHARED USE FOOTWAY / CYCLEWAYS AROUND JUNCTION

PROPOSED LARGE ELONGATED ROUNDABOUT WITH TWO LANE ENTRIES AND EXITS ON ALL ARMS AND THREE LANE CIRCULATORY CARRIAGEWAY. DEDICATED LANE FROM SHORES ROAD TO CHERTSEY ROAD NORTH

POTENTIAL TO IMPLEMENT TRAFFIC SIGNALS AT ONE OR TWO NODES ON JUNCTION TO REDUCE VEHICLE SPEEDS AND CREATE GAPS IN FLOW

SIGNIFICANT THIRD PARTY LAND REQUIRED ON ALL APPROACHES

A245 SHORES ROAD

A320 CHERTSEY ROAD

A245 WOODHAM LANE

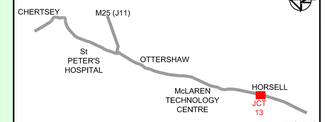
WOODHAM ROAD

A320 CHERTSEY ROAD

MONUMENT ROAD

SIX CROSSROADS ROUNDABOUT

LOCATION PLAN:



KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

1. THIS DRAWING IS A CONCEPT DESIGN AND NOT FOR CONSTRUCTION PURPOSES.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
3. AN ASSUMED HIGHWAY BOUNDARY HAS BEEN INCLUDED ON THE DRAWINGS. SCC TO CONFIRM EXACT POSITION OF HIGHWAY BOUNDARY.
4. THESE ARE CONCEPT DESIGNS AND REQUIRE FURTHER WORK AND INVESTIGATION BEFORE BEING TAKEN FORWARD. THE FOLLOWING (NOT EXHAUSTIVE) HAS NOT BEEN CONSIDERED AT THIS STAGE OF THE DESIGN:-
   - THE LOCATION OF STATUTORY UNDERTAKES PLANT,
   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede Borough Council · Surrey Heath Borough Council · Woking Borough Council

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

ARCADIS Design & Consultancy for natural and built assets

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TITLE:

FEASIBILITY DESIGN JUNCTION 13 - OPTION 3 SIX CROSSROADS ROUNDABOUT

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	NTS	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description:
FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2009

Revision: 01

100mm on Original

Print Date: 2018-04-18 09:56:53

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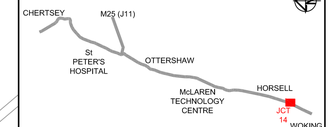
100mm on Original

LOCATION PLAN:



KEY:

- CONTROLLED CROSSING
- UNCONTROLLED CROSSING
- ASSUMED HIGHWAY BOUNDARY
- FOOTWAY
- CARRIAGEWAY
- VEGETATION / GRASSED AREA OR VERGE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

NOTES:

1. THIS DRAWING IS A CONCEPT DESIGN AND NOT FOR CONSTRUCTION PURPOSES.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
3. AN ASSUMED HIGHWAY BOUNDARY HAS BEEN INCLUDED ON THE DRAWINGS. SCC TO CONFIRM EXACT POSITION OF HIGHWAY BOUNDARY.
4. THESE ARE CONCEPT DESIGNS AND REQUIRE FURTHER WORK AND INVESTIGATION BEFORE BEING TAKEN FORWARD. THE FOLLOWING (NOT EXHAUSTIVE) HAS NOT BEEN CONSIDERED AT THIS STAGE OF THE DESIGN:-
   - THE LOCATION OF STATUTORY UNDERTAKES PLANT,
   - STREET LIGHTING DESIGN,
   - GROUND CONDITIONS,
   - DRAINAGE DESIGN,
   - LEVELS,
   - VIABILITY OF OBTAINING THIRD PARTY LAND,
   - EXISTING OR PROPOSED STRUCTURES; AND,
   - ENVIRONMENTAL IMPACTS.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE A320 CORRIDOR STUDY - DOCUMENT CONTROL REGISTER AND THE FOLLOWING DRAWINGS No:-
   - UA009947-LND-HFS-ZZ-DR-2001 TO UA009947-LND-HFS-ZZ-DR-2010.

Rev	Date	Description	Drawn	Check	Approv
01	08/03/18	ORIGINAL ISSUE	MBW	DWH	JJM

Client

Runnymede Borough Council · Surrey Heath Borough Council · Woking Borough Council

PROJECT:
A320
CORRIDOR STUDY

Site	Client
A320 GUILDFORD ROAD A320 CHERTSEY ROAD	RUNNYMEDE BOROUGH COUNCIL www.runnymede.gov.uk SURREY HEATH BOROUGH COUNCIL www.surreyheath.gov.uk WOKING BOROUGH COUNCIL www.woking.gov.uk

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TITLE:

FEASIBILITY DESIGN JUNCTION 14 - OPTION 1 CHERTSEY ROAD / VICTORIA WAY ROUNDABOUT

Designed	M.WHEELER	Signed	Date: JAN 2018
Drawn	M.WHEELER	Signed	Date: JAN 2018
Checked	D.HARDWICK	Signed	Date: 8 MAR 2018
Approved	J.MALYON	Signed	Date: 8 MAR 2018
Scale:	1:500	Datum:	AOD
Original Size:	A1	Grid:	OS
Suitability Code:	S3	Project Number:	UA009947

Suitability Description: FOR REVIEW

Drawing Number: UA009947-LND-HFS-ZZ-DR-2010

Revision: 01

Print Date: 2018-04-18 09:57:03

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A320 Corridor Study

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