mayer brown

STORE PROPERTY INVESTMENTS LIMITED
LAND WEST OF BROOK LANE AND SOUTH OF A259

STAGE 1 - ROAD SAFETY AUDIT

JUNE 2018

the journey is the reward

ARUN DISTRICT COUNCIL A/46/18/RES

STORE PROPERTY INVESTMENTS LIMITED
LAND WEST OF BROOK LANE AND SOUTH OF A259

STAGE 1 - ROAD SAFETY AUDIT

JUNE 2018

Project Code:	**S/SPILRustington.1.6**
Prepared by:	**Martyn Parr**
Approved by:	**John Reid**
Issue Date:	**June 2018**
Status:	**Final**

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Store Property Investments Limited

Land West of Brook Lane and South of A259

Stage 1 - Road Safety Audit

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1 Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out following instructions from Mayer Brown Limited's Planning Team 3, on the access arrangements associated with a proposed mixed use development on the land west of Brook Lane and south of the A259.

1.2 The Road Safety Audit Team membership was as follows:

Team Leader

Martyn Parr — MSoRSA, MCIHT, HECoC
Road Safety Manager – Mayer Brown Limited
(Certificate of Competency in Road Safety Audit gained in February 2015)

Team Member

John Reid — MSc, DipHTE, MCIHT, FSoRSA, MITAI, HECoC
Technical Director (Safety) – Mayer Brown Limited
(Certificate of Competency in Road Safety Audit gained in April 2012)

1.3 The Road Safety Audit took place at the Woking Office of Mayer Brown Limited on 14th June 2018.

1.4 The Road Safety Audit comprised an examination of the drawings and Technical Note provided (see **Appendix C**) provided by Vera Lamont of Planning Team 3 (Design Team).

1.5 The Audit Team are advised that there are no departures from standard.

1.6 A site visit was conducted by both Road Safety Audit Team Members on 7th June 2018 from 10:15 hrs onwards, during which the weather was sunny and the existing road surface was dry. Traffic conditions were low to moderate.

1.7 The terms of reference of the Road Safety Audit are as described in HD 19/15. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

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1.8 The Audit is concerned only with the works that are to be adopted by West Sussex Council.

1.9 All comments and recommendations are referenced to a reduced scale copy of drawing 'SPRUST(BROOK LANE).l/10', provided in **Appendix B** of this report.

1.10 The proposals comprise of the demolition of existing buildings on site and the erection of a mixed-use development comprising of residential units and care home ancillary facilities including railway crossing together with associated access, car parking

1.11 The site is located on land to the west of Brook Lane and south of the A259.

1.12 The proposed access from the A259 dual carriageway is a left in/left out junction with merge and diverge lanes.

1.13 The A259 has a speed limit of 70mph.

1.14 As requested by the Design Team, the Auditors are asked to provide comment specifically concerning the potential provision of a mini-roundabout arrangement south of the proposed junction that is subject to this Stage 1 Road Safety Audit. The details of the mini-roundabout arrangement are as shown in **Appendix B**.

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2 Items Raised at the Stage 1 Road Safety Audit

Specific Comment – Mini-Roundabout

2.1 **Problem**

Location: Proposed mini-roundabout southbound approach (please refer to reference point 2.1 in **Appendix B**)

Summary: Potential queuing at mini roundabout – Rear end type collisions

The Audit Team are satisfied with the general arrangement of the proposed traffic mini-roundabout junction and that there is likely to be minimal traffic approaching from the south and turning east into the other site, resulting in southbound traffic waiting and giving way.

However it is important to ensure that there is sufficient capacity for the type and volume of traffic this development site will generate. Waiting traffic could tail back from stop line and obstruct westbound through lane of the A259 with consequence risk of tail end collisions.

Recommendation

Ensure that the southbound approach lane provides sufficient capacity for anticipated vehicles entering the proposed development site and the site located to the east.

General

2.2 **Problem**

Location: General

Summary: Servicing Arrangements

Details of swept paths have not been provided. It is important that all anticipated vehicles can access the site appropriately without traversing the footway or requiring excessive reversing manoeuvres.

Recommendation

Undertake swept path analysis using anticipated vehicles to ensure that the vehicles can access the site appropriately.

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2.3 **Problem**

Location: General

Summary: Visibility splays

Visibility splays have not been formally identified on the drawings submitted at this stage. It will be important that adequate splays are provided, this should include junction, pedestrian inter-visibility and forward visibility splays.

It was noted during the site inspection that junction and forward visibility splays could be obstructed by existing vegetation.

Recommendation

Provide visibility splays in accordance with relevant design standards and ensure that the splays will be kept free from obstruction. Any vegetation within the splays should be maintained to ensure that it does not extend beyond a vertical height of 0.6m. It will also be important that appropriate visibility is provided to all pedestrian crossing landing points.

Non-Motorised Users (NMUs)

2.4 **Problem**

Location: A259 south side, east of the proposed junction

Summary: Footway continuity

It is unclear at this stage whether the proposed footway on the southside of the A259 will tie-in with the existing retail facilities to the east of the development site. The retail facilities include a foodstore which is likely to attract pedestrian movements between the development site and the aforementioned retail facilities. It is important to ensure that pedestrians are able to access the retail facilities without traversing the grass verge or stepping into westbound through lane of the A259.

Recommendation

Provide footway continuity linking the site and the retail facilities located further east.

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Signage

2.5 **Problem**

Location: A259 south side (please refer to reference point 2.5 in **Appendix B**)

Summary: Carriageway obstruction

There is an existing sign (diag 562) located on the westbound approach to the proposed junction (see **Photo 2.1** below). This sign may need to be relocated as appears that it is currently sited on the verge that will either form part of the deceleration lane for the proposed junction or the proposed footway.

Photo 2.1: Existing warning sign on the westbound approach

Recommendation

Relocate sign and sign posts.

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2.6 **Problem**

Location: A259 central reserve (please refer to reference point 2.6 in **Appendix B**)

Summary: Carriageway obstruction

The proposed junction is located on a dual carriageway section of the westbound A259, it is therefore important that drivers leaving the development site turn left to join the westbound traffic flow.

Recommendation

Provide appropriate signing on the central reserve to ensure that vehicles turn left when egressing the development site.

2.7 **Problem**

Location: General.

Summary: Advanced signing

Details of advanced signing have not been provided. It is important that advanced signing is provided to minimise the risk of late braking and direction changes, which could result in rear end collisions or side swipes.

Recommendation

Provide adequate advanced signing to design standards.

Junction Arrangement

2.8 **Problem**

Location: Proposed central island (please refer to reference point 2.8 in **Appendix B**)

Summary: Margin omitted

The westbound approach on the A259 to the proposed junction is provided with a margin (circa 1 metre), is delineated by a solid white line. The proposed northern kerb line of the proposed traffic island does not benefit from a margin. This could result in vehicles striking the kerb and subsequently losing control.

Recommendation

Offset the northern kerb line southwards to provide an appropriate margin.

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3 Audit Team Statement

3.0 AUDIT TEAM STATEMENT

We certify that this Road Safety Audit has been carried out as described in HD 19/15.

ROAD SAFETY AUDIT TEAM LEADER

Martyn Parr – MSoRSA, MCIHT, HECoC
Road Safety Manager
Mayer Brown Limited
Lion House
Oriental Road
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Surrey
GU22 8AR

Signed

Date 14/06/18

ROAD SAFETY AUDIT TEAM MEMBER

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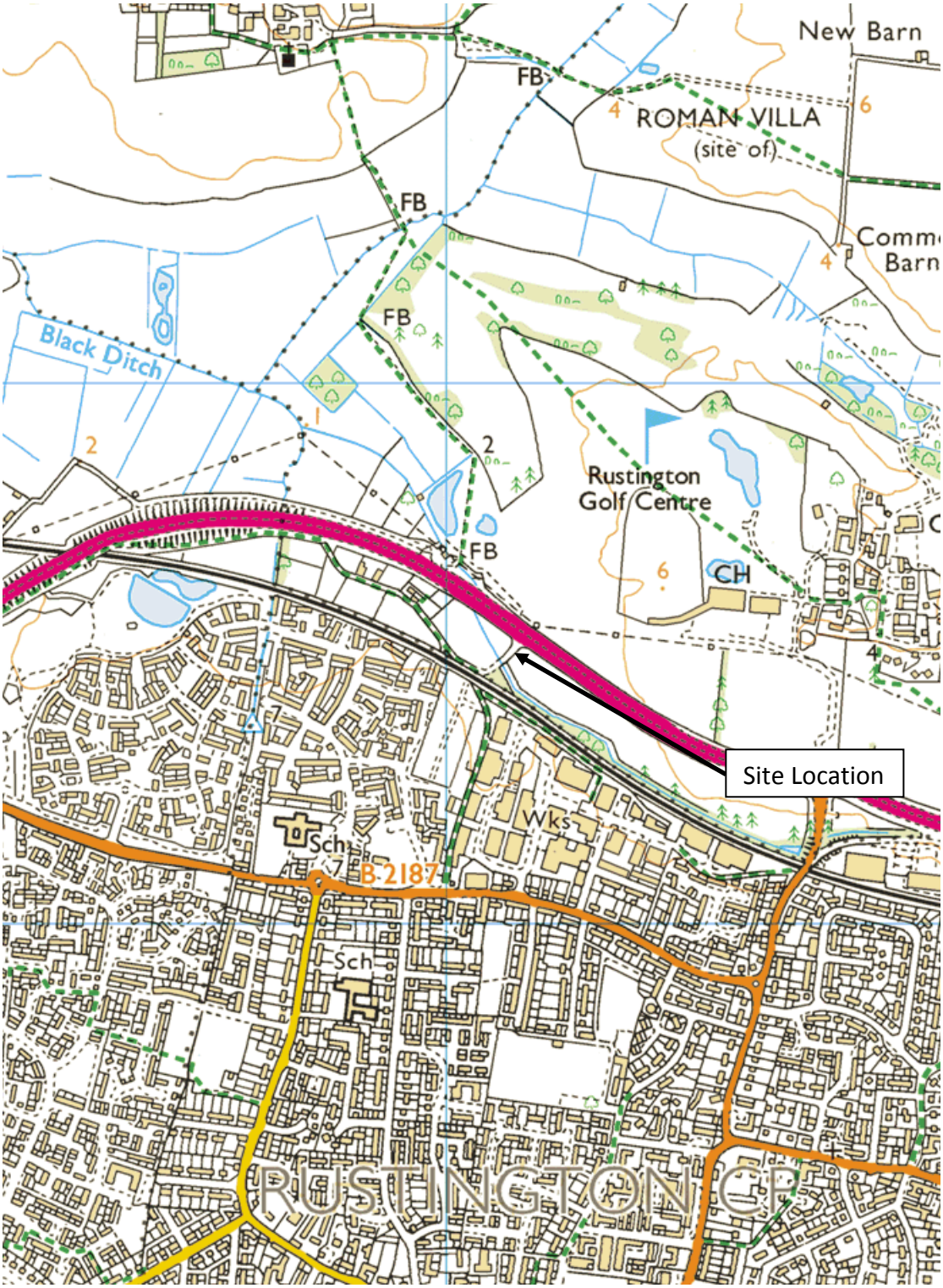
Oriental Road
Woking
Surrey
GU22 8AR

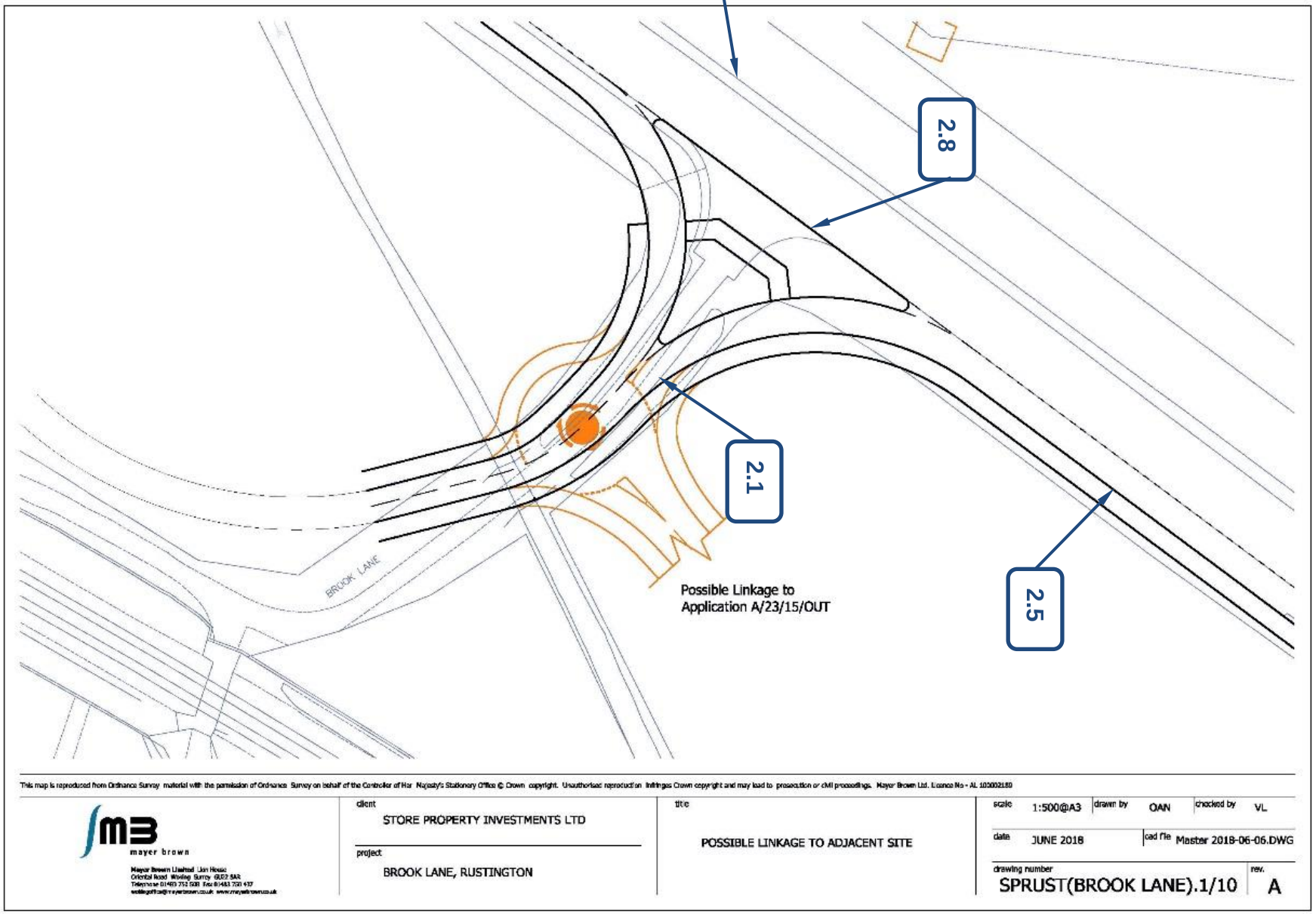
Signed

Date 14/06/18

APPENDIX A: Site Location Plan


New Barn
FB
ROMAN VILLA
(site of)
FB
Comm
Barn
FB
Black Ditch
Rustington
Golf Centre
FB
CH
Site Location
Wks
Sch
B 2187
Sch
RUSTINGTON CP

APPENDIX B: Reference Plan



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client
STORE PROPERTY INVESTMENTS LTD

project
BROOK LANE, RUSTINGTON

title
POSSIBLE LINKAGE TO ADJACENT SITE

scale	1:500@A3	drawn by	OAN
checked by	VL		
date	JUNE 2018	cad file	Master 2018-06-06.DWG

drawing number
SPRUST(BROOK LANE).1/10

rev.
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APPENDIX C: Technical Note

Technical Note – Brook Lane Access

Introduction

1.1 Mayer Brown Ltd have been instructed by Store Property Investments Limited to provide highways and transport related assistance in support of an approved planning permission (A/169/17/OUT) for demolition of existing buildings on site and the erection of a mixed-use development comprising residential units and care home (Use Class C2 and C3) and ancillary facilities including railway crossing together with associated access, car parking and landscaping. The site is located on land to the west of Brook Lane and south of the A259.

1.2 Planning permission for the application was approved on 15th January 2018, subject to compliance with the associated planning conditions. Of these, condition 16 states that;

"No development shall commence until the vehicular access serving the development has been constructed in accordance with plans and details submitted to and approved in writing by the Local Planning Authority at 'reserved matters' stage."

1.3 This Technical Note has been produced in response to the above and provides detail of the proposed access at Brook Lane. Specifically, this note provides the following;

- a layout drawing and description of the access along with a design audit; and
- a capacity assessment of the junction.

Site Access

1.4 A layout drawing of the proposed access is attached to this note at **Appendix A**.

1.5 The proposed access from the A259 dual carriageway is a left in/left out junction with merge and diverge lanes. The junction has been designed using the DMRB (Design Manual for Roads and Bridges), in particular TD 42/95 Geometric Design of Major/Minor Junctions. The A259 has a speed limit of 70mph, and therefore a design speed of 120kph is appropriate.

1.6 The junction has been located based on a visibility splay of 9m X-distance and 295m Y-distance from the roundabout to the east of the site. DMRB TD 42/95 – Table 7/1 states that on a major road with 120kph design speed a visibility splay with a Y-distance of 295m should be provided.

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1.7 The proposed nearside diverge has a total deceleration length of 140m including a 30m taper as set out in DMRB TD 42/95 – tables 7/5b and 7.4 for a 120kph design speed.

1.8 The proposed merge taper has been designed to a 120kph design speed. A merge taper of 135m long as set out in DMRB TD 42/95 – table 7/6 for a 120kph design speed is proposed.

1.9 The nearside kerb radius where the diverge lane meets the minor road is 40m, as set out in DMRB TD 42/95 – 7.54 which states that the minimum radius is 20m for a design speed of 85kph and at least 40m above this speed.

1.10 The nearside kerb radius where the minor road meets the merge lane is 30m as set out in the DMRB TD42/95 – 7.61 for a design speed of 120kph.

1.11 A Design Audit in the form of a Major/Minor Priority Junction Check List is attached at **Appendix B**.

Junction Capacity Assessment

1.12 The proposed Brook Lane access was previously assessed in the Transport Assessment (March 2017) submitted as part of the planning application. However, although the traffic associated with the proposal for the (SDB) mixed-use retail park to the east of Brook Lane (A/23/15/OUT) was included in this previous assessment as cumulative development traffic flows, a subsequent revised application for the site (A/11/17/OUT) has predicted a higher level of development traffic. Therefore, the proposed Brook Lane access has been re-assessed to reflect the increased level of arrivals and departures associated with the proposed SDB development.

1.13 The proposed site access left in/left out junction with A259 New Road has been assessed using the PICADY programme within the Junctions 9 software. The results are set out in **Tables 1.1** and **1.2** for the base (including cumulative development, i.e. the SDB proposals) plus development scenarios, The current access in this location is very different to what is proposed with very little use due to it serving only a couple of properties and therefore there is not an observed scenario. A copy of the PICADY output files is contained in **Appendix C**.

Arm	2019 Base + Development Scenario			
	Weekday AM Peak		Weekday PM Peak	
	Max RFC	Max Queue (vehs)	Max RFC	Max Queue (vehs)
Site Access (Left Out)	0.11	0.1	0.26	0.3

Table 1.1: PICADY Results – A259 New Road/Site Access – 2019 Base plus Development Flows Scenario

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Arm	2022 Base + Development Scenario			
	Weekday AM Peak		Weekday PM Peak	
	Max RFC	Max Queue (vehs)	Max RFC	Max Queue (vehs)
Site Access (Left Out)	0.12	0.1	0.26	0.3

Table 1.2: PICADY Results – A259 New Road/Site Access – 2022 Base plus Development Flows Scenario

1.14 **Tables 1.1** and **1.2** illustrate that the proposed site access will operate well within capacity for both the 2019 and 2022 predicted traffic flows. The junction experiences a maximum RFC of 0.26 during the 2019 and 2022 PM peak hour with a maximum queue of 0.3 (one) vehicle during each peak.

1.15 It should be noted that the core PICADY model is calibrated only for two-way junctions, it is however possible to model one-way junctions and the proposed site access has been modelled in accordance with TRL Software Knowledge Base Article 15: One-way roads.

Summary

1.16 This Technical Note has been produced in response to condition 16 associated with the planning permission (A/169/17/OUT) for a mixed-use development located on land to the west of Brook Lane and south of the A259. Condition 16 requires detail regarding the proposed vehicular access to the site.

1.17 A layout plan illustrating the proposed access has been produced and is attached to this note. A design check has been undertaken and demonstrates that the proposed access is in compliance with the standards for a major/minor priority junction as set out in section TD 42/95 of the DMRB.

1.18 A junction capacity assessment has demonstrated that the proposed access road will operate well within capacity with the predicted development traffic for both the application site, and the proposed mixed-use retail park to the east of Brook Lane.

Author: RG

Date: 20th March 2018

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APPENDIX A: Layout Plan

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client
STORE PROPERTY INVESTMENTS LTD

project
BROOK LANE, RUSTINGTON

title
PROPOSED SITE ACCESS

scale	1:1000@A3	drawn by	OAN	checked by	RDG
date	MARCH 2018	cad file	Master 2018-03-08.DWG		

drawing number
SPRUST(BROOK LANE).1/08

rev.
A

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APPENDIX B: Design Check

Major / Minor Priority Junction Check List
TD 42/95

Para	Design Standard	Design Complies Y/N	Design Checker Comment	Designer's Comment
2.11	**Choice of Major/Minor Priority Junction** Table 2/1 shows the major/minor priority junction forms considered suitable for various major road carriageway types in both urban and rural situations. This Table should be used as a starting point in choosing the most appropriate type of major/minor priority junction to use at a particular site.	Y	No comment required	
2.12	Fig 2/2 may be useful when considering further the options for a site. For single carriageway roads it shows approximately the various levels of T-junction which may be applicable for different combinations of flows. The information takes into account geometric and traffic delays, entry and turning traffic flows, and accident costs. However, it must be noted that Fig 2/2 gives the starting point for junction choice and there are other factors such as those indicated in para 2.6 to be considered before a final decision is made.	N/A	No comment required	
2.15	**Simple** Simple junctions are appropriate for most minor junctions on single carriageway roads, but must not be used for wide single carriageways or dual carriageways. For new rural junctions they shall only be used when the design flow in the minor road is not expected to exceed about 300 vehicles 2-way AADT, and that on the major road is not expected to exceed 13,000 vehicles 2-way AADT.	N/A	No comment required	
2.16	At existing rural, and at urban junctions the cost of upgrading a simple junction to provide a right turning facility will vary from site to site. However, upgrading should always be considered where the minor road flow exceeds 500 vehicles 2-way AADT, a right turning accident problem is evident, or where vehicles waiting on the major road to turn right inhibit the through flow and create a hazard.	N/A	No comment required	
2.18	The decision to provide a right turning facility shall be made in accordance with the warrants given in paras 2.15 and 2.16. The choice of type of right turn facility to be used, however, will depend on the particular site characteristics.	N/A	No right turn facility	
2.20	**Ghost Island** Ghost islands shall be used on new single carriageway roads, or in the upgrading of existing junctions to provide right turning vehicles with a degree of shelter from the through flow. They are highly effective in improving safety, and are relatively cheap, especially on wide 2-lane single carriageway roads where very little extra construction cost is involved.	N/A	No ghost island facility	
3.4	**Horizontal Alignment** Ideally, major/minor priority junctions should not be sited where the major road is on a sharp curve. However, where the siting of a major/minor priority junction on a curve is unavoidable, the preferred alignment is where T-junctions are sited with the minor road on the outside of the curve. This is especially important for junctions on climbing lane sections or dual carriageways, to ensure that minor road traffic has a clear view of vehicles on the major road that may be overtaking through the junction. Junctions on the inside of sharp curves are most undesirable.	Y	The major road has a straight alignment in the vicinity of the proposed junction and therefore will not affect visibility at the junction	
3.6	**Vertical Alignment** The best locations for junctions are on level ground, or where the gradient of the approaches does not exceed 2% either uphill or downhill. Downhill approaches in excess of this figure, particularly on high speed roads, can induce traffic speeds above those desirable through the junction, and lead to a misjudgement of the approach speed by drivers entering from the minor road. Uphill approaches are also undesirable since it is difficult for drivers to appreciate the layout of a junction when they are approaching it on an up gradient. They cannot see the full layout from the	Y	The overall gradient on the major road approach (A259) is less than 2%	
5.3	**Cyclists' Facilities** Consideration should be given to cyclists where an existing cycle lane crosses the minor road (Fig 5/1). In this instance, the greatest danger has been found to be a collision with vehicles emerging from the minor road, and from motor vehicles turning right or left from the major road and thus cutting across the path of the cyclist.	N/A	No existing cycling facilities on major road.	
5.5	Bearing in mind the practicalities and economics, it is important to consider the provision of facilities that take cyclists away from the mouth of the junction. This will minimise the interaction between cyclists and motor vehicles and provide safe crossing points.	Y	Shared footway/cycleway is provided with perpendicular crossings at the splitter island	

5.6	Such facilities may include the following:- a. Shared use by pedestrians and cyclists of a displaced cycle track/footway with a controlled or uncontrolled crossing. b. A signposted alternative cycle route away from the junction. c. Full grade separation, for example by means of a combined pedestrian/cyclist subway system. If provision of any of these is not possible, then greater emphasis should be placed on the safety aspects of the design of the major/minor priority junction layout, by careful attention to the provision of crossing places. 5.7 In urban areas, if the volume of cyclists is significant, but not high enough to justify economically a grade separated crossing, then consideration may be given to signalising the whole junction.	Y	Shared footway/cycleway to be provided. Signage to be dealt with at the detailed design stage	
5.8	**Equestrians' Facilities** Where it is expected that there will be regular use of the junction approaches by ridden horses, of the order of more than 20 passages a week, consideration should be given to the provision of dedicated crossing places. Horses require longer headway between vehicles than cyclists and pedestrians, to allow an adequate margin of safety for crossing. Therefore, the location of such crossings should preferably be at some distance from the junction to permit suitable visibility by the rider. As set out in TA 57 (DMRB 6.3), the visibility distances recommended are considerably greater for equestrians than those set out in Chapter 7 of this standard.	N/A	No equestrian facilities provided	
5.12	**Pedestrians' Facilities** The requirements of pedestrians should be carefully considered in the design and choice of major/minor priority junctions. Although it is preferable to provide separate pedestrian routes away from the junction, where road widths are less and traffic movements more predictable, this is rarely practical, in which case the following facilities should be considered:- a. A minor road central refuge at an unmarked crossing place (Fig 5/2) . b. Zebra crossing, with or without a central refuge. c. Displaced controlled pedestrian crossing. d. Subway or footbridge.	Y	Pedestrian crossing provided at splitter island	
5.13	The type of facility selected will depend upon the volumes and movements expected of both pedestrians and traffic, and shall be designed in accordance with current recommendations and requirements - BD 29 (DMRB 2.2); TD 36 (DMRB 6.3.1); TD 28, TA 52 (DMRB 8.5). The use of different types of pedestrian facility at the same junction is not recommended as this could lead to confusion by pedestrians and drivers.	Y	Pedestrian crossing provided at splitter island	
5.15	Defined at-grade pedestrian crossing points on the minor road should be a minimum of 15m back from the "Give Way" line, and should be sited so as to reduce to a minimum the width to be crossed by pedestrians provided they are not involved in excessive detours from their desired paths. Central refuges should be used wherever possible, but not in the major road in a rural situation.	Y	Pedestrian crossing provided at splitter island	
5.16	In urban areas, where large numbers of pedestrians are present, guard rails or other deterrents should be used to prevent indiscriminate crossing of the carriageway. The design of guard railing should not obstruct drivers' visibility requirements. Guard rails which are designed to maintain drivers' visibility of pedestrians through them, and vice versa, are available, but should be checked in case blind spots do occur. TA 57 (DMRB 6.3) refers.	Y	The requirement for guard railing to be dealt with at the detailed design stage	
7.2	**Design Speed** Geometric standards for junctions are related to the traffic speed of the major road, and for new roads this is the design speed as defined in TD 9 (DMRB 6.1.1). Reference should be made to TD 9 in order to determine the appropriate design speed.	Y	The junction has been designed in accordance with the design speed of the major road (120kph)	
7.3	**Visibility** Minor road traffic has to join or cross the major road when there are gaps in the major road traffic streams. It is therefore essential that minor road drivers have adequate visibility in each direction to see the oncoming major road traffic in sufficient time to permit them to make their manoeuvres safely. This concept also applies to major road traffic turning right into the minor road. As well as having adverse safety implications, poor visibility reduces the capacity of turning movements. Visibility shall however, not be excessive as this can provide a distraction away from nearer opposing traffic.	Y	No right turn out of junction so only require visibility to right. 9m x 295m is required and achievable	
7.4	Drivers approaching a major/minor priority junction from both the major road and the minor road shall have unobstructed visibility as indicated in the following sections. The envelope of visibility for driver's eye height is as set out in TD 9 (DMRB 6.1.1.2.2).	Y	295m forward visibility is achievable	
7.5	**Visibility - Major Road** Drivers approaching a major/minor priority junction along the major road approaches shall be able to see the minor road entry from a distance corresponding to the Desirable Minimum Stopping Sight Distance (SSD) for the design speed of the major road, as described in TD 9 (DMRB 6.1.1). This visibility allows drivers on the major road to be aware of traffic entering from the minor road in time for them to be able to slow	Y	295m forward visibility is achievable	

7.6	**Visibility - Minor Road** The principle of providing the required visibility for drivers approaching the junction from the minor road has three distinct features. a. Approaching drivers shall have unobstructed visibility of the junction from a distance corresponding to the Desirable Minimum Stopping Sight Distance (SSD) for the design speed of the minor road, as described in TD 9 (DMRB 6.1.1). This allows drivers time to slow down safely at the junction, or stop, if this is necessary. Where a "Give Way" sign is proposed the visibility envelope shall be widened to include the sign. b. From a point 15m back along the centreline of the minor road measured from the continuation of the line of the nearside edge of the running carriageway of the major road (not from the continuation of the back of the major road hardstrip if this is present), an approaching driver shall be able to see clearly the junction form, and those peripheral elements of the junction layout. This provides the driver with an idea of the junction form, possible movements and conflicts, and possible required action before reaching the major road. c. The distance back along the minor road from which the full visibility is measured is known as the `x' distance. It is measured back along the centreline of the minor road from the continuation of the line of the nearside edge of the running carriageway of the major road. The `x' distance shall be desirably 9m (but see para 7.8). From this point an approaching driver shall be able to see clearly points to the left and right on the nearer edge of the major road running carriageway at a distance given in Table 7/1, measured from its intersection with the centreline of the minor road. This is called the `y' distance and is defined in Fig 7/1. Relaxations are not available for this distance.	a. Y b. Y c. Y	a. visibility in excess of 90m is achievable for the minor road on plan which corresponds to a design speed of 60kph assuming traffic will travel at up to 30mph on the minor road b. Visibility from 15m back is achievable c. 9m x 295m visibility is achievable	
7.7	If the line of vision lies partially within the major road carriageway, it shall be made tangential to the nearer edge of the major road running carriageway, as shown in Fig 7/2.	Y	Line of vision does not lie within the major road carriageway	
7.8	In difficult circumstances, the `x' distance may be taken as a Relaxation from 9.0m to 4.5m for lightly trafficked simple junctions, and in exceptionally difficult circumstances, to 2.4m back from the nearer edge of the major road running carriageway. The `x' distance, from which full `y' distance visibility is provided, shall not be more than 9m, as this induces high minor road approach speeds into the junction, and leads to excessive land take.	Y	9m x 295m visibility to the right is achievable	
7.17	**Corner Radii** Where no provision is made for large goods vehicles, it is recommended that the minimum circular corner radius at simple junctions should be 6m in urban areas and 10m in rural areas. Where provision is to be made for large goods vehicles, the recommended circular corner radius is:- a. 10m at urban simple junctions, followed by a taper of 1:5 over a distance of 30m, measured from the edge of the major road carriageway up the minor road in the case of the entry to the minor road, and followed by a similar taper measured from the centreline of the minor road along the major road for the entry to the major road. b. 15m at rural simple junctions, with tapers of 1:10 over a distance of 25m. c. 15m at ghost island junctions, with tapers of 1:6 over a distance of 30m. d. 15m at simple staggered junctions, with tapers of 1:8 over a distance of 32m. e. 20m radius in all other circumstances. These radii only apply where there are no nearside diverge tapers or lanes, or nearside merge tapers. Figures for these are given in paras 7.54 and 7.61 respectively.	N/A	Nearside diverge and merge tapers provided	
7.18	Where large goods vehicles comprise a significant proportion of the turning movements, use of the compound curve shown in Fig 7/3 is recommended.	N/A	No comment required	
7.20	**Through Lanes** At ghost island junctions, the through lane in each direction shall not be greater than 3.65m wide, exclusive of hardstrips, but shall not be less than 3.0m wide.	N/A	No comment required	
7.21	At single lane dualling junctions, the through lane in each direction shall be 4.0m wide exclusive of hardstrips. This width, with the hardstrips, will allow traffic to pass a stopped vehicle without leaving the paved width.	N/A	No comment required	

7.23	**Minor Road Approaches** On a minor road approach of nominal width 7.3m, where a channelising island, as described in Annex 2, is provided both lanes shall be 4.0m wide at the point where the hatched markings surrounding the channelising island begin. At the point where the channelising island commences, the widths on either side shall be as follows:- a. On the approach to the major road, 4.0m wide for a ghost island or 4.5m wide for single lane dualling or a dual carriageway, exclusive of hardstrips. If the approach on the minor road consists of two lanes, this dimension shall be 5.5m. b. On the exit from the major road, 4.5m wide for a ghost island or 5.0m wide for single lane dualling or a dual carriageway, exclusive of hardstrips.	N/A	No comment required	
7.24	If there are no channelising islands in the minor road, the nominal approach width should continue up until the tangent point of the curve to join the edge of the major road running carriageway.	N/A	No comment required	
7.25	**Carriageway Widths Around Curves** Where carriageways are taken around short radius corners, added width shall be provided to cater for the swept area of larger goods vehicles and the "cut in" of trailer units. On single lane sections greater than 50m in length an allowance shall be made for broken down vehicles as in para 7.21. Table 7/2 shows the recommended minimum widths for various nearside corner radii based on the design vehicle. For radii above 100m, the standards set out in TD 9 (DMRB 6.1.1) shall be used.	Y	Inside corner radius of diverge lane is 40m with a width greater than the minimum allowable of 4.7m to accommodate HGV movements. Inside corner radius of merge lane is 30m with a width greater than the minimum allowable of 5.3m to accommodate HGV movements	
7.26	Where 15.5m long vehicles are anticipated, but are likely to form only a very small percentage of the total number of vehicles and where conflicts will not occur on bends, the carriageway widths should be designed to cater for those lesser vehicles that will use the junction.	Y	The carriageway widths have been designed to accommodate delivery vehicles of up to 16.5m in length	
7.30	**Tapers** Central islands, whether for ghost islands (Fig 7/8) or single lane dualling (Fig 7/9) should normally be developed symmetrically about the centreline of the major road to their maximum width at the tapers shown in Table 7/3. The maximum island width should continue through the junction to the tangent point of the minor road radius and the edge of the major road carriageway.	N/A	No comment required	
7.32	**Turning Lengths** The turning length is provided to allow long vehicles to position themselves correctly for the right turn. The turning length shall be 10m long irrespective of the type of junction, design speed or gradient, measured from the centreline of the minor road. It is shown on Figs 7/4, 7/5 and 7/6.	N/A	No comment required	
7.33	Where capacity calculations indicate that for significant periods of time there will be vehicles queuing to turn right from the major road, the turning length shall be increased to allow for a reservoir queuing length to accommodate such vehicles. Where reservoir provision appears desirable at a junction with ghost islands, consideration shall be given to providing physical islands instead to afford greater protection to turning traffic. Where site conditions prevent this, the reservoir space may still be provided.	N/A	No comment required	
7.34	The direct taper length is the length over which the width of a right turning lane is developed. For ghost islands and the physical islands in single lane dualling and dual carriageway junctions right turning lanes shall be introduced by means of a direct taper whose length is part of the deceleration length, and depends on the design speed. This taper length is given in Table 7/4.	N/A	No comment required	
7.35	**Ghost Islands** For new junctions, the desirable width of a ghost island turning lane shall be 3.5m, but a Relaxation to 3.0m is permissible. At urban and suburban junctions it can sometimes be advantageous to use a greater width not exceeding 5.0m to allow a degree of shelter in the centre of the road for large goods vehicles turning right from the minor road to execute the turn in two separate manoeuvres. On rural roads, with design speeds above 85kph or where hardstrips are present, widths greater than 3.65m are inadvisable because wide ghost islands in these situations create a sense of space that could encourage hazardous overtaking at junctions.	N/A	No comment required	
7.36	For improvements to existing junctions where space is very limited a reduced width may be unavoidable. The width of ghost islands shall not be less than 2.5m.	N/A	No comment required	
7.37	At left/right staggered junctions, the deceleration lengths would overlap but the width of the ghost island shall not be increased to make them lie side by side. The starting points of the right turning section shall be joined by a straight line, which will mean at higher design speeds, the full width of the turning lane will not be developed until the end of the diverging section (as shown in Fig 8/3). The width of the turning lane shall be the full width of the ghost island.	N/A	No comment required	

7.38	**Width of Physical Islands in the Centre** At single lane dualling and dual carriageway junctions, the width of the central island at the crossing point shall be 10.0m, including central reserve hardstrips. This width will shelter most large goods vehicles turning right from the minor road, except for very long vehicles. In exceptional circumstances where use by very long vehicles is expected and a roundabout is not feasible, a width of 14.0m including hardstrips, will be needed to shelter the largest articulated vehicles (16.5m) and a width of 16.5m, including hardstrips, will be required to shelter drawbar trailer combinations (18.35m).	N/A	No comment required	
3.39	The minimum width of a physical island, usually located at the end of the direct taper shall be 3.5m (shown in Figs 7/5 and 7/6).	N/A	No comment required	
7.40	**Right Turning Lanes** The overall length of a right turning lane provided at ghost island, single lane dualling and dual carriageway junctions, will depend on the major road design speed and the gradient. It consists of a turning length, as described in paras 7.32 and 7.33, and a deceleration length. This component shall be provided in accordance with Tables 7/5a and 7/5b, in which the gradient is the average for the 500m length before the minor road.	N/A	No comment required	
7.42	**Central Reserve Openings** The opening in the central reserve for single lane dualling and dual carriageway junctions at the crossing point shall be 15.0m wide, as shown on Figs 7/5 and 7/6.	N/A	No comment required	
7.47	Where a traffic island serves as a refuge for pedestrians it shall be at least 1.5m wide and have openings in the centre at carriageway level to make the crossing easier for pedestrians (see Fig 5/2). Opposite the refuge openings, dropped kerbs shall be installed for the same reason. A refuge beacon about 4-5m high may be placed between the bollards. Care shall be taken that street furniture does not obstruct the drivers' view of pedestrians.	Y	Crossing of adequate width, with dropped kerbs to be provided on splitter island	
7.52	**Diverging Tapers and Lanes** Nearside diverging tapers shall not be provided at simple junctions (para 1.14). They shall be provided at junctions between "A" and "B" roads where the design speed for the A road is 85kph or above. They shall be provided at other junctions in the following circumstances for traffic in the design year:- a. Where the volume of left turning traffic is greater than 600 vehicles AADT. b. Where the percentage of large goods vehicles is greater than 20%, and the volume of left turning traffic is greater than 450 vehicles AADT. c. Where the junction is on an up or down gradient of greater than 4% at any design speed and the volume of left turning traffic is greater than 450 vehicles AADT. Where the major road flow is greater than 7000 - 8000 AADT then the above figures for turning traffic can be halved. At some junctions there may be safety benefits in providing nearside diverging tapers at lower flows.	a. Y b. N/A c. N/A	a. Diverge taper provided b. No comment required c. No comment required	
7.53	They shall not be provided where the minor road is on the inside of a curve where traffic on the diverging lane could adversely affect visibility for drivers emerging from the minor road. They shall generally not be provided where the design speed for the major road is less than 85kph nor where the cost of provision is excessive. In that case adequate warning of the junction ahead must be provided.	N/A	No comment required	
7.54	Nearside diverging tapers shall be formed by a direct increase to a width of 3.5m contiguous to the corner into the minor road (preferably of radius at least 20m where the main road design speed is 85kph and at least 40m above this speed). The width around this corner will depend on the radius selected. A "Give Way" line shall be provided so that the left turning traffic gives way to the traffic turning right from the major road. The length of this lane is defined as being from the beginning of the taper up to the "Give Way" line, as shown in Fig 7/11.	Y	No right turn in facility is to be provided and therefore no give way line is shown.	
7.55	The desirable length of a nearside diverging taper shall be that of the relevant deceleration length given in Tables 7/5a and 7/5b. Where there are severe site constraints this may be reduced by half as a Relaxation where the design speed is 85kph, but then a lane shall be at least 35m long.	Y	The proposed diverge lane has been designed using a design speed of 120kph with a lane 140m in length	
7.59	**Merging Tapers** Merging tapers shall only be used at dual carriageway junctions. They shall be provided where a "B" road joins an "A" dual carriageway road having a design speed of 85kph or above. They shall be provided generally where the design speed is 85kph or above and the volume of left turning traffic in the design year exceeds 600 vehicles AADT. However, where the merging taper is for an up gradient of greater than 4%, or where the percentage of large goods vehicles exceeds 20% the threshold value may be reduced to 450 vehicles AADT. They shall never be used at single lane dualling junctions. They shall not be provided where the cost of provision would be excessive.	Y	Design speed is 120 kph	

7.61	A separate turning lane, preferably of radius at least 25m where the main road design speed is 85kph and at least 30m above this speed, shall be used to introduce the merging taper from the minor road. The initial width of the lane, which will depend on the radius of the turning lane determined from Table 7/2, should be decreased at a constant taper depending on the design speed (Fig 7/13).	Y	30m radius provided between minor road and merging lane	
7.62	The lengths of the tapers to be used are given in Table 7/6. The minimum initial width of a merging taper shall be 3.5m.	Y	A 130m merging lane has been provided	
7.64	**Stagger Distances** For simple major/minor priority junctions with a right/left stagger, the minimum stagger distance shall be 50m. For a ghost island junction it shall also be 50m. For a junction with single lane dualling it shall be 40m, and for dual carriageways the distance shall be 60m. These are based on the distance required for manoeuvring the 18.35m drawbar trailer combination design vehicle between the two minor roads, and shall be provided on all new staggered junctions, including the upgrading of rural crossroads.	N/A	No comment required	
7.65	For simple left/right staggers, the minimum stagger distance shall be 50m. The minimum values for the other types of staggered major/minor priority junction are given in Table 7/7. For higher design speeds, this distance is based on the sum of the two deceleration lengths lying side by side plus the turning lengths (and queuing lengths, if appropriate) at each end, as indicated in the Table, otherwise it is based on the manoeuvring requirements of the design vehicle.	N/A	No comment required	

APPENDIX C: PICADY Output

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.2.5947
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Filename: 2018-03-20 A259 - Site Access.j9
Path: H:_Planning 2\Current Jobs\SPRust(BrookLane).1\Analysis\Picady
Report generation date: 20/03/2018 10:08:08

»2019 Base + Com Dev + Dev, AM
»2019 Base + Com Dev + Dev, PM
»2022 Base + Com Dev + Dev, AM
»2022 Base + Com Dev + Dev, PM

Summary of junction performance

	AM					PM				
	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	2019 Base + Com Dev + Dev									
Stream B-AC	0.1	6.20	0.11	A	218 %	0.3	7.60	0.26	A	115 %
Stream C-B	0.0	0.00	0.00	A	[Stream B-AC]	0.0	0.00	0.00	A	[Stream B-AC]
	2022 Base + Com Dev + Dev									
Stream B-AC	0.1	6.29	0.12	A	207 %	0.3	7.72	0.26	A	110 %
Stream C-B	0.0	0.00	0.00	A	[Stream B-AC]	0.0	0.00	0.00	A	[Stream B-AC]

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Proposed Left in/Left out Site Access Junction
Location	Rustington, West Sussex
Site number	
Date	18/09/2013
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	oneaves [MBWPC052]
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Base + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D2	2019 Base + Com Dev + Dev	PM	ONE HOUR	16:15	17:45	15	✓
D3	2022 Base + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2022 Base + Com Dev + Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2019 Base + Com Dev + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.18	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	218	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	A259 East		Major
B	Site Access		Minor
C	A259 West		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	20.00	✓	0.00		0.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	4.00	0	165

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	613	0.044	0.110	0.069	0.158
1	B-C	801	0.048	0.121	-	-
1	C-B	574	0.087	0.087	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Base + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1089	100.000
B		ONE HOUR	✓	68	100.000
C		ONE HOUR	✓	1128	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	52	1037
	B	0	0	68
	C	1128	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.11	6.20	0.1	A	62	94
C-A					1035	1553
C-B	0.00	0.00	0.0	A	0	0
A-B					48	72
A-C					952	1427

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	51	13	701	0.073	51	0.0	0.1	5.532	A
C-A	849	212			849				
C-B	0	0	501	0.000	0	0.0	0.0	0.000	A
A-B	39	10			39				
A-C	781	195			781				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	61	15	682	0.090	61	0.1	0.1	5.797	A
C-A	1014	254			1014				
C-B	0	0	486	0.000	0	0.0	0.0	0.000	A
A-B	47	12			47				
A-C	932	233			932				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	75	19	655	0.114	75	0.1	0.1	6.199	A
C-A	1242	310			1242				
C-B	0	0	467	0.000	0	0.0	0.0	0.000	A
A-B	57	14			57				
A-C	1142	285			1142				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	75	19	655	0.114	75	0.1	0.1	6.201	A
C-A	1242	310			1242				
C-B	0	0	467	0.000	0	0.0	0.0	0.000	A
A-B	57	14			57				
A-C	1142	285			1142				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	61	15	682	0.090	61	0.1	0.1	5.800	A
C-A	1014	254			1014				
C-B	0	0	486	0.000	0	0.0	0.0	0.000	A
A-B	47	12			47				
A-C	932	233			932				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	51	13	701	0.073	51	0.1	0.1	5.540	A
C-A	849	212			849				
C-B	0	0	501	0.000	0	0.0	0.0	0.000	A
A-B	39	10			39				
A-C	781	195			781				

2019 Base + Com Dev + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.42	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	115	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2019 Base + Com Dev + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1319	100.000
B		ONE HOUR	✓	148	100.000
C		ONE HOUR	✓	1200	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	169	1150
	B	0	0	148
	C	1200	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.26	7.60	0.3	A	136	204
C-A					1101	1652
C-B	0.00	0.00	0.0	A	0	0
A-B					155	233
A-C					1055	1583

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	111	28	689	0.162	111	0.0	0.2	6.222	A
C-A	903	226			903				
C-B	0	0	487	0.000	0	0.0	0.0	0.000	A
A-B	127	32			127				
A-C	866	216			866				

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	133	33	667	0.200	133	0.2	0.2	6.739	A
C-A	1079	270			1079				
C-B	0	0	470	0.000	0	0.0	0.0	0.000	A
A-B	152	38			152				
A-C	1034	258			1034				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	163	41	637	0.256	163	0.2	0.3	7.586	A
C-A	1321	330			1321				
C-B	0	0	447	0.000	0	0.0	0.0	0.000	A
A-B	186	47			186				
A-C	1266	317			1266				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	163	41	637	0.256	163	0.3	0.3	7.598	A
C-A	1321	330			1321				
C-B	0	0	447	0.000	0	0.0	0.0	0.000	A
A-B	186	47			186				
A-C	1266	317			1266				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	133	33	667	0.200	133	0.3	0.3	6.756	A
C-A	1079	270			1079				
C-B	0	0	470	0.000	0	0.0	0.0	0.000	A
A-B	152	38			152				
A-C	1034	258			1034				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	111	28	689	0.162	112	0.3	0.2	6.242	A
C-A	903	226			903				
C-B	0	0	487	0.000	0	0.0	0.0	0.000	A
A-B	127	32			127				
A-C	866	216			866				

2022 Base + Com Dev + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.17	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	207	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2022 Base + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1136	100.000
B		ONE HOUR	✓	68	100.000
C		ONE HOUR	✓	1177	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	52	1084
	B	0	0	68
	C	1177	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	4
	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.12	6.29	0.1	A	62	94
C-A					1080	1620
C-B	0.00	0.00	0.0	A	0	0
A-B					48	72
A-C					995	1492

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	51	13	696	0.074	51	0.0	0.1	5.579	A
C-A	886	222			886				
C-B	0	0	497	0.000	0	0.0	0.0	0.000	A
A-B	39	10			39				
A-C	816	204			816				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	61	15	676	0.090	61	0.1	0.1	5.858	A
C-A	1058	265			1058				
C-B	0	0	482	0.000	0	0.0	0.0	0.000	A
A-B	47	12			47				
A-C	974	244			974				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	75	19	647	0.116	75	0.1	0.1	6.284	A
C-A	1296	324			1296				
C-B	0	0	461	0.000	0	0.0	0.0	0.000	A
A-B	57	14			57				
A-C	1194	298			1194				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	75	19	647	0.116	75	0.1	0.1	6.287	A
C-A	1296	324			1296				
C-B	0	0	461	0.000	0	0.0	0.0	0.000	A
A-B	57	14			57				
A-C	1194	298			1194				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	61	15	676	0.090	61	0.1	0.1	5.861	A
C-A	1058	265			1058				
C-B	0	0	482	0.000	0	0.0	0.0	0.000	A
A-B	47	12			47				
A-C	974	244			974				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	51	13	696	0.074	51	0.1	0.1	5.585	A
C-A	886	222			886				
C-B	0	0	497	0.000	0	0.0	0.0	0.000	A
A-B	39	10			39				
A-C	816	204			816				

2022 Base + Com Dev + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.41	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	110	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2022 Base + Com Dev + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1373	100.000
B		ONE HOUR	✓	148	100.000
C		ONE HOUR	✓	1253	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	169	1204
	B	0	0	148
	C	1253	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.26	7.72	0.3	A	136	204
C-A					1150	1725
C-B	0.00	0.00	0.0	A	0	0
A-B					155	233
A-C					1105	1657

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	111	28	684	0.163	111	0.0	0.2	6.276	A
C-A	943	236			943				
C-B	0	0	483	0.000	0	0.0	0.0	0.000	A
A-B	127	32			127				
A-C	906	227			906				

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	133	33	661	0.201	133	0.2	0.2	6.815	A
C-A	1126	282			1126				
C-B	0	0	466	0.000	0	0.0	0.0	0.000	A
A-B	152	38			152				
A-C	1082	271			1082				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	163	41	629	0.259	163	0.2	0.3	7.705	A
C-A	1380	345			1380				
C-B	0	0	441	0.000	0	0.0	0.0	0.000	A
A-B	186	47			186				
A-C	1326	331			1326				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	163	41	629	0.259	163	0.3	0.3	7.717	A
C-A	1380	345			1380				
C-B	0	0	441	0.000	0	0.0	0.0	0.000	A
A-B	186	47			186				
A-C	1326	331			1326				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	133	33	661	0.201	133	0.3	0.3	6.830	A
C-A	1126	282			1126				
C-B	0	0	466	0.000	0	0.0	0.0	0.000	A
A-B	152	38			152				
A-C	1082	271			1082				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	111	28	684	0.163	112	0.3	0.2	6.299	A
C-A	943	236			943				
C-B	0	0	483	0.000	0	0.0	0.0	0.000	A
A-B	127	32			127				
A-C	906	227			906				