

Appendix F – Road Safety Audit Designer’s Responses

Adastral Park, Ipswich : Eastern Priority Junction Access off Ipswich Road

Technical Note : Designer's Response to Road Safety Audits at Stage 1

13th June 2017

1 Introduction

Brookbanks Consulting Limited (BCL) is commissioned by Commercial Estates Group (CEG) Ltd to provide technical advice on viability and delivery on a proposed mixed use development at Adastral Park, Martlesham Heath, Suffolk. A Transport Assessment has been produced that has assessed the potential implications. A range of highway interventions has been subsequently identified.

For the Outline Planning Application, the following access strategy was offered:

- Traffic Signals Access off the A12 Dual Carriageway;
- Two simple priority junction accesses off Ipswich Road;
- Simple priority junction access off Gloster Road through the North-west Quadrant.

The Transport Assessment also identified that off-site highway mitigation measures were necessary at the following locations:

- A14 / A12 / A1156 Interchange;
- A12 / Newbourne Rd / Foxhall Road Roundabout;
- A12 / Barrack Square / Eagle Way Roundabout and Gloster Road / Barrack Square Priority Junction;
- A12 / Anson Road / Eagle Way Roundabout;
- A12 / A1214 Roundabout;
- A1189 Heath Road / Foxhall Road Roundabout;
- A1189 Bixley Road / A1156 Felixstowe Road Bixley Roundabout;
- A1214 / A1189 Gyratory Junction.

All design options, at the request of Suffolk County Council, have been subject to a Stage 1 Road Safety Audit. This note sets out the findings of the audits for the Eastern Priority Junction Access off Ipswich Road together with a designers response.

2 Designer's Response

The Designers Response should be read in conjunction with the Road Safety Audit (ref SESL1715) as attached in Appendix A.

Problem 1

Location: Ipswich Road / eastern access

Summary: Junction form may not be adequate. Traffic flows were not available for this junction. As this access serves a significant size site it may require a ghost island.

Recommendation: Assess the projected flows and provide a ghost island if the numbers merit it.

BCL Response: *It has been demonstrated through Paramics modelling that the proposed junction will work adequately with respect to traffic flows, as there is minimal queuing from Ipswich Road to the east wishing to turn into the site. This is attributable to the road being lightly trafficked and not serving a substantial area.*

3 Limitations

Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.

The benefits of this report are provided to Carlyle Land Ltd and Commercial Estates Group for the proposed development on Land at Adastral Park.

Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.

Safety Engineering Services Ltd

Land South and East of Adastral Park, Ipswich
Proposed Priority Junction
Eastern Access off Ipswich Road

Stage 1 Road Safety Audit

Stage 1 Road Safety Audit

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Report Number	Client Reference	Report Status
SESL1715	10391	FINAL

1 INTRODUCTION

This report presents the findings of a Road Safety Audit carried out on off-site highway mitigation works proposed to enable site access to land to the south and east of Adastral Park, Ipswich, at the request of Brookbanks Consulting Ltd. The development will consist of up to 2000 dwellings, local centres, with facilities to serve recreation and education.

The audit was carried out by the following:

S Hancock	Road Safety Audit Team Leader Safety Engineering Services Ltd
D Ramsden Certificate of Competency gained in June 2015	Road Safety Audit Team Member Safety Engineering Services Ltd

The audit took place on Saturday 27 May 2017 and comprised a desktop study of the plans provided and a drive and walk through of the site by both team members. During the site visit, the weather was sunny and fine and the road surfaces were dry. Traffic at the time of the audit was very light.

A list of drawings and documents provided for the purpose of audit is in Appendix A. The locations of any problems have been identified on an annotated drawing in Appendix B.

The main terms of reference of the audit are as described in HD19/15. The 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.

There are eleven junctions in total requiring offsite highway mitigation works associated with this development. This Road Safety Audit focuses on the proposed priority junction of Adastral Park Road with Ipswich Road.

2 ROAD SAFETY AUDIT FINDINGS

2.1 PROBLEM

Location: Ipswich Road / eastern access

Summary: Junction form may not be adequate.

Traffic flows were not available for this junction. As this access serves a significant size site it may require a ghost island.

RECOMMENDATION

Assess the projected flows and provide a ghost island if the numbers merit it.

3 AUDIT STATEMENT

We certify that this audit has been carried out in accordance with HD 19/15.

Signed:



S Hancock
Audit Team Leader
Safety Engineering Services Ltd

Date 28 May 2017

Signed:

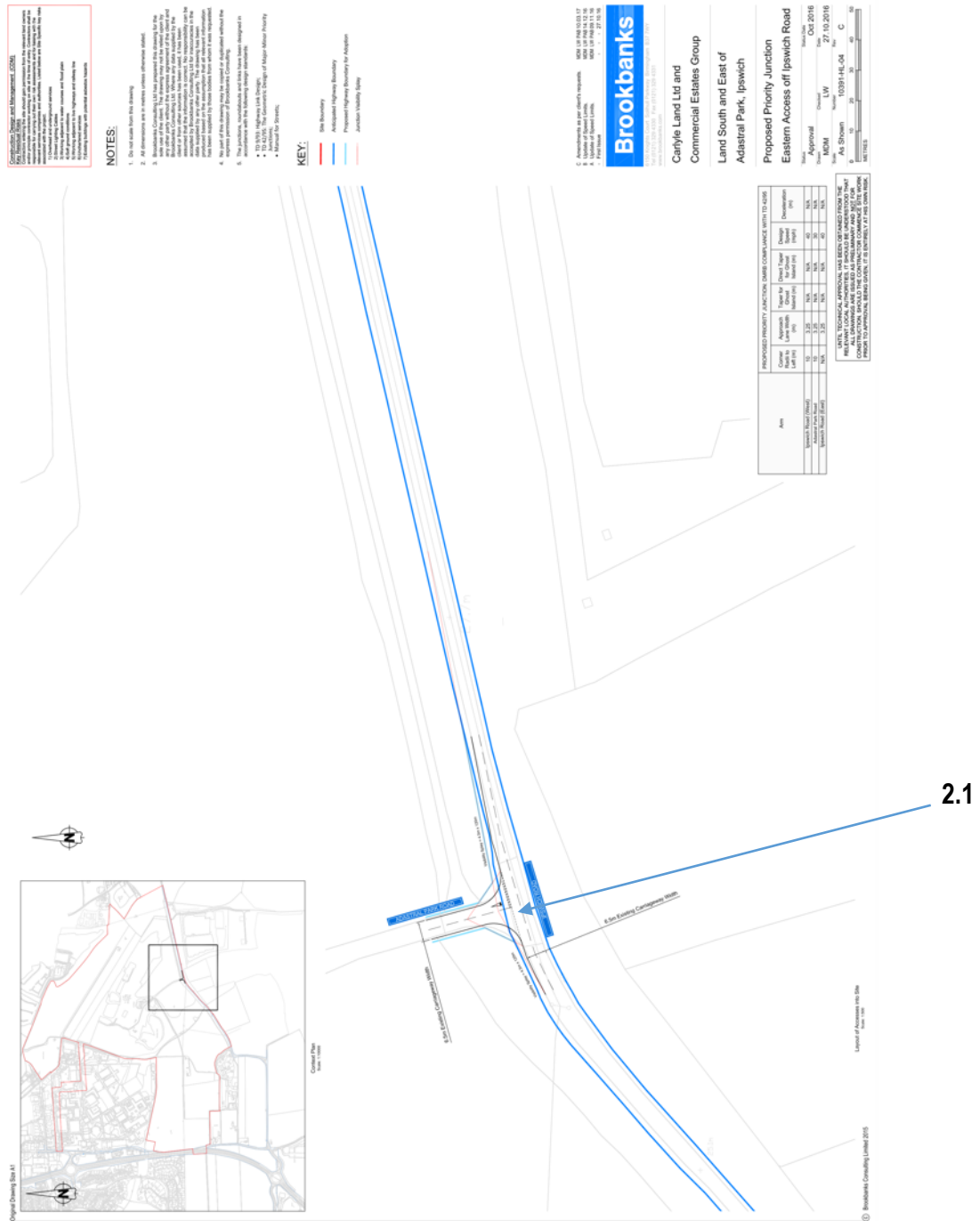


D Ramsden
Audit Team Member
Safety Engineering Services Ltd

Date: 30 May 2017

DRAWINGS AND DOCUMENTS PROVIDED FOR AUDIT

10391-H-04 Rev C	Proposed Priority Junction - Eastern Access off Ipswich Road
10391TA01Rv2	Land South and East of Adastral Park - Transport Assessment



Adastral Park, Ipswich : Western Priority Junction Access off Ipswich Road

Technical Note : Designer's Response to Road Safety Audits at Stage 1

13th June 2017

1 Introduction

Brookbanks Consulting Limited (BCL) is commissioned by Commercial Estates Group (CEG) Ltd to provide technical advice on viability and delivery on a proposed mixed use development at Adastral Park, Martlesham Heath, Suffolk. A Transport Assessment has been produced that has assessed the potential implications. A range of highway interventions has been subsequently identified.

For the Outline Planning Application, the following access strategy was offered:

- Traffic Signals Access off the A12 Dual Carriageway;
- Two simple priority junction accesses off Ipswich Road;
- Simple priority junction access off Gloster Road through the North-west Quadrant.

The Transport Assessment also identified that off-site highway mitigation measures were necessary at the following locations:

- A14 / A12 / A1156 Interchange;
- A12 / Newbourne Rd / Foxhall Road Roundabout;
- A12 / Barrack Square / Eagle Way Roundabout and Gloster Road / Barrack Square Priority Junction;
- A12 / Anson Road / Eagle Way Roundabout;
- A12 / A1214 Roundabout;
- A1189 Heath Road / Foxhall Road Roundabout;
- A1189 Bixley Road / A1156 Felixstowe Road Bixley Roundabout;
- A1214 / A1189 Gyratory Junction.

All design options, at the request of Suffolk County Council, have been subject to a Stage 1 Road Safety Audit. This note sets out the findings of the audits for the Western Priority Junction Access off Ipswich Road together with a designers response.

2 Designer's Response

The Designers Response should be read in conjunction with the Road Safety Audit (ref SESL1716) as attached in Appendix A.

Problem 1

Location: Ipswich Road / proposed western access

Summary: Visibility is obstructed. There are a large number of significant sized trees in the vicinity of this junction which may obstruct visibility.

Recommendation: Measure the visibility at a setback of 2.4 metres and specify the removal of any trees which fall within this.

BCL Response: *The vegetation clearance including trees has been specified for this site through an arboricultural survey. This has resolved that any trees blocking the visibility splay are not protected and therefore can be removed.*

Problem 2

Location: Ipswich Road / western access

Summary: Junction form may not be adequate. Traffic flows were not available for this junction. As this access serves a significant size site it may require a ghost island.

Recommendation: Assess the projected flows and provide a ghost island if the numbers merit it.

BCL Response: *It has been demonstrated through Paramics modelling that the proposed junction will work adequately with respect to traffic flows, as there is minimal queuing from Ipswich Road to the east wishing to turn into the site. This is attributable to the road being lightly trafficked and not serving a substantial area.*

3 Limitations

Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.

The benefits of this report are provided to Carlyle Land Ltd and Commercial Estates Group for the proposed development on Land at Adastral Park.

Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.

Safety Engineering Services Ltd

Land South and East of Adastral Park, Ipswich
Proposed Priority Junction
Western Access

Stage 1 Road Safety Audit

Stage 1 Road Safety Audit

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Report Number	Client Reference	Report Status
SESL1716	10391	FINAL

1 **INTRODUCTION**

This report presents the findings of a Road Safety Audit carried out on off-site highway mitigation works proposed to enable site access to land to the south and east of Adastral Park, Ipswich, at the request of Brookbanks Consulting Ltd. The development will consist of up to 2000 dwellings, local centres, with facilities to serve recreation and education.

The audit was carried out by the following:

S Hancock	Road Safety Audit Team Leader Safety Engineering Services Ltd
D Ramsden Certificate of Competency gained in June 2015	Road Safety Audit Team Member Safety Engineering Services Ltd

The audit took place on Saturday 27 May 2017 and comprised a desktop study of the plans provided and a drive and walk through of the site by both team members. During the site visit, the weather was fine and sunny and the road surfaces were dry. Traffic at the time of the audit was very light.

A list of drawings and documents provided for the purpose of audit is in Appendix A. The locations of any problems have been identified on an annotated drawing in Appendix B.

The main terms of reference of the audit are as described in HD19/15. The 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.

There are eleven junctions in total requiring offsite highway mitigation works associated with this development. This Road Safety Audit focuses on the proposed westernmost simple priority junction.

2 ROAD SAFETY AUDIT FINDINGS

2.1 PROBLEM

Location: Ipswich Road / proposed western access

Summary: Visibility is obstructed

There are a large number of significant sized trees in the vicinity of this junction which may obstruct visibility.

RECOMMENDATION

Measure the visibility at a setback of 2.4 metres and specify the removal of any trees which fall within this.

2.2 PROBLEM

Location: Ipswich Road / eastern access

Summary: Junction form may not be adequate.

Traffic flows were not available for this junction. As this access serves a significant size site it may require a ghost island.

RECOMMENDATION

Assess the projected flows and provide a ghost island if the numbers merit it.

3 AUDIT STATEMENT

We certify that this audit has been carried out in accordance with HD 19/15.


Signed:



S Hancock
Audit Team Leader
Safety Engineering Services Ltd

Date 28 May 2017

Signed:

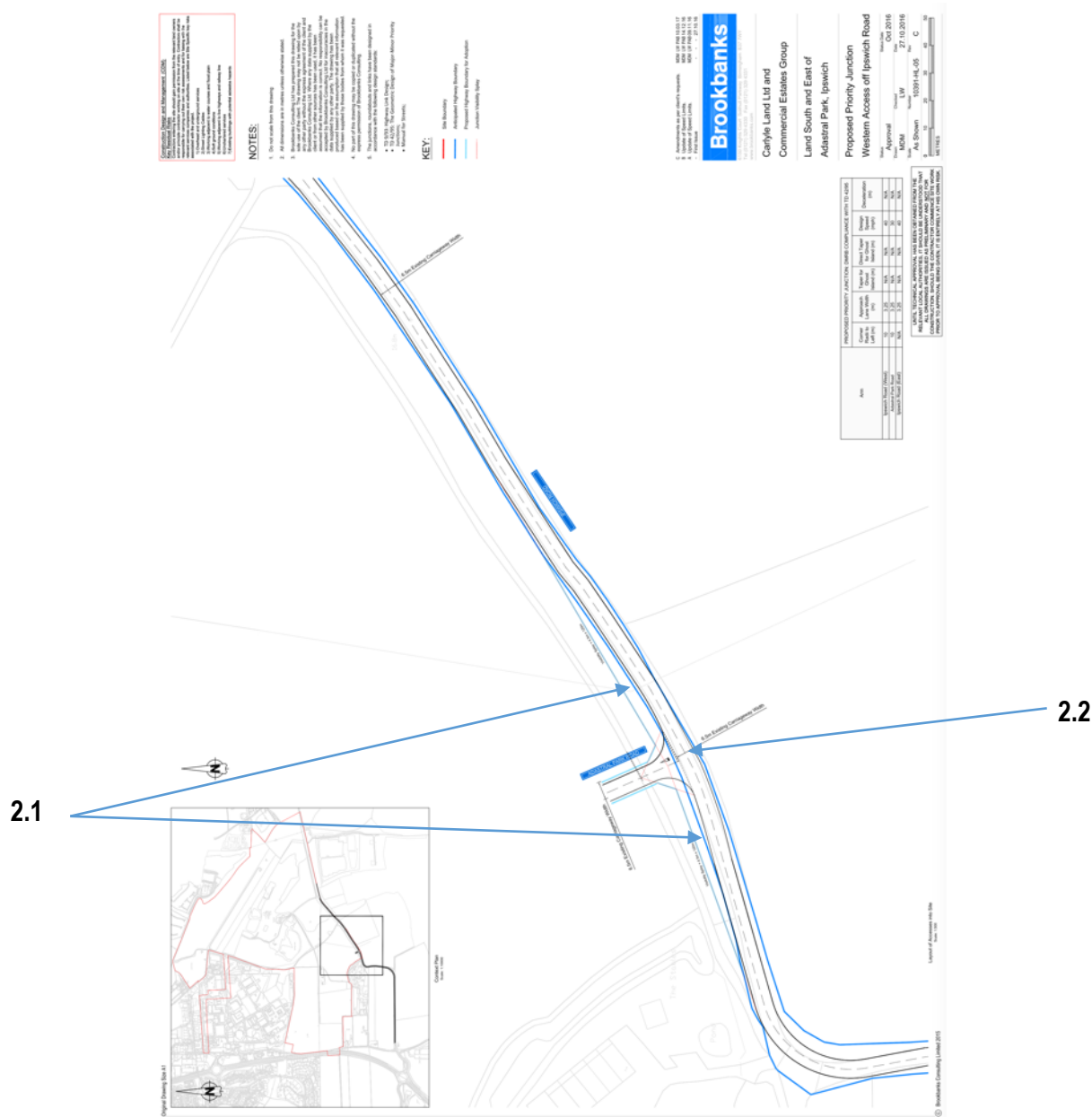


D Ramsden
Audit Team Member
Safety Engineering Services Ltd

Date: 30 May 2017

DRAWINGS AND DOCUMENTS PROVIDED FOR AUDIT

10391-H-05 Rev C	Proposed Priority Junction - Western Access
10391TA01Rv2	Land South and East of Adastral Park - Transport Assessment



Adastral Park, Ipswich : North-west Quadrant Access off Gloster Road

Technical Note : Designer's Response to Road Safety Audits at Stage 1

13th June 2017

1 Introduction

Brookbanks Consulting Limited (BCL) is commissioned by Commercial Estates Group (CEG) Ltd to provide technical advice on viability and delivery on a proposed mixed use development at Adastral Park, Martlesham Heath, Suffolk. A Transport Assessment has been produced that has assessed the potential implications. A range of highway interventions has been subsequently identified.

For the Outline Planning Application, the following access strategy was offered:

- Traffic Signals Access off the A12 Dual Carriageway;
- Two simple priority junction accesses off Ipswich Road;
- Simple priority junction access off Gloster Road through the North-west Quadrant.

The Transport Assessment also identified that off-site highway mitigation measures were necessary at the following locations:

- A14 / A12 / A1156 Interchange;
- A12 / Newbourne Rd / Foxhall Road Roundabout;
- A12 / Barrack Square / Eagle Way Roundabout and Gloster Road / Barrack Square Priority Junction;
- A12 / Anson Road / Eagle Way Roundabout;
- A12 / A1214 Roundabout;
- A1189 Heath Road / Foxhall Road Roundabout;
- A1189 Bixley Road / A1156 Felixstowe Road Bixley Roundabout;
- A1214 / A1189 Gyratory Junction.

All design options, at the request of Suffolk County Council, have been subject to a Stage 1 Road Safety Audit. This note sets out the findings of the audit for the North-west Quadrant Access together with a designers response.

2 Designer's Response

The Designers Response should be read in conjunction with the Road Safety Audit (ref SESL1718) as attached in Appendix A.

Problem 1

Location: Quadrant Access Road/ Gloster Road

Summary: Risk of loss of control/sideswipes on the bends. The bends in the road are designed in accordance with the Manual for Streets, but the approaches are straight and will not encourage the requisite speeds to travel around them. This could lead to losses of control and/or poor lane discipline due to speed. It is recognised that the red line boundary is a constraint and it may not be possible to realign the road.

Recommendation: Provide traffic calming / speed management measures to reduce speeds on the straight sections.

BCL Response: *The potential provision of traffic calming measures will be discussed at detailed design stage.*

3 Limitations

Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.

The benefits of this report are provided to Carlyle Land Ltd and Commercial Estates Group for the proposed development on Land at Adastral Park.

Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.

Safety Engineering Services Ltd

Land South and East of Adastral Park, Ipswich
**Proposed Priority Junction
North-west Quadrant Access**

Stage 1 Road Safety Audit

Stage 1 Road Safety Audit

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Report Number	Client Reference	Report Status
SESL1718	10391	FINAL

1 **INTRODUCTION**

This report presents the findings of a Road Safety Audit carried out on off-site highway mitigation works proposed to enable site access to land to the south and east of Adastral Park, Ipswich, at the request of Brookbanks Consulting Ltd. The development will consist of up to 2000 dwellings, local centres, with facilities to serve recreation and education.

The audit was carried out by the following:

S Hancock	Road Safety Audit Team Leader Safety Engineering Services Ltd
D Ramsden Certificate of Competency gained in June 2015	Road Safety Audit Team Member Safety Engineering Services Ltd

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A list of drawings and documents provided for the purpose of audit is in Appendix A. The locations of any problems have been identified on an annotated drawing in Appendix B.

The main terms of reference of the audit are as described in HD19/15. The 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.

There are eleven junctions in total requiring offsite highway mitigation works associated with this development. This Road Safety Audit focuses on the proposed priority junction with Gloster Road and the access road.

2 ROAD SAFETY AUDIT FINDINGS

2.1 PROBLEM

Location: Quadrant Access Road/ Gloster Road

Summary: Risk of loss of control/sideswipes on the bends.

The bends in the road are designed in accordance with the Manual for Streets, but the approaches are straight and will not encourage the requisite speeds to travel around them. This could lead to losses of control and/or poor lane discipline due to speed. It is recognised that the red line boundary is a constraint and it may not be possible to realign the road.

RECOMMENDATION

Provide traffic calming / speed management measures to reduce speeds on the straight sections.

3 AUDIT STATEMENT

We certify that this audit has been carried out in accordance with HD 19/15.


Signed:



S Hancock
Audit Team Leader
Safety Engineering Services Ltd

Date 28 May 2017

Signed:



D Ramsden
Audit Team Member
Safety Engineering Services Ltd

Date: 30 May 2017

DRAWINGS AND DOCUMENTS PROVIDED FOR AUDIT

10391-H-06	Proposed Priority Junction - North-west Quadrant Access
10391TA01Rv2	Land South and East of Adastral Park - Transport Assessment

Adastral Park, Ipswich : Off-site Highway Mitigation to A14/A1156 Felixstowe Road / A12 Ring Road / Bucklesham Lane Roundabout

Technical Note : Designer's Response to Road Safety Audits at Stage 1

13th June 2017

1 Introduction

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The Transport Assessment also identified that off-site highway mitigation measures were necessary at the following locations:

- A14 / A12 / A1156 Interchange;
- A12 / Newbourne Rd / Foxhall Road Roundabout;
- A12 / Barrack Square / Eagle Way Roundabout and Gloster Road / Barrack Square Priority Junction;
- A12 / Anson Road / Eagle Way Roundabout;
- A12 / A1214 Roundabout;
- A1189 Heath Road / Foxhall Road Roundabout;
- A1189 Bixley Road / A1156 Felixstowe Road Bixley Roundabout;
- A1214 / A1189 Gyratory Junction.

All design options, at the request of Suffolk County Council, have been subject to a Stage 1 Road Safety Audit. This note sets out the findings of the audit for the A14 / A12 / A1156 Interchange together with a designers response.

2 Designer's Response

The Designers Response should be read in conjunction with the Road Safety Audit (ref SESL1718) as attached in Appendix A and revised Drawing No: 10391-HL-11C as attached in Appendix B.

Problem 1

Location: Circulatory carriageway / A14 westbound exit slip

Summary: Likelihood of shunt accidents or failure to comply with signals. The visibility of the offside signals for drivers in the offside lane by the bridge parapet and as there is a significant risk of the nearside signal being obstructed by high sided vehicles, drivers in the offside may not appreciate the presence of the signals in time.

Recommendation: Provide a signal layout which ensures that drivers in the offside lane will have a view of at least one signal head at the requisite distance. One solution would be the provision of a mast arm.

BCL Response: *High-mast traffic signals have now been provided on the A14 Westbound Off-slip approach as advised.*

Problem 2

Location: All approaches to signals.

Summary: Mature trees (and other vegetation) obstruct visibility. There are a significant number of large trees (and other vegetation) which obstruct the various visibility splays required. These splays need to be cleared and kept clear for the life of the signals.

Recommendation: Apply for the removal of the trees to ensure the requisite splays can be achieved for signalisation.

BCL Response: *All trees and other vegetation that hinder visibility to traffic signal heads are recommended to be cropped back and maintained on a regular basis.*

Problem 3

Location: Dedicated left-turn lane, A14 to A1156

Summary: Risk of vehicles striking kerb or signal head. With kerbed dedicated lanes, vehicles are known to strike the kerb which can result in loss of control or overturning for high sided vehicles. This hatching means that vehicles approach in the straightest line possible and then drive directly adjacent to the kerb following the tightest radius around this bend. They are also running directly next to the nearside signal head, which is sited on this relatively narrow feature.

Recommendation: Swap the start of the nearside hatching to the offside of this lane which will also achieve better segregation between this and the adjacent signalised ahead lane. Continue the hatching around on the kerbed side, increasing the distance between the running area and the kerbs and signal head. The hatching should be then provided on both sides to create the largest radius path around this bend. At detailed design, reflective features should be provided along the length of the kerbed island to minimise the chance of it being struck by vehicles, both turning left and exiting the circulatory.

BCL Response: *In TD 51/17 for the design of Segregated Left turn Lanes and Subsidiary Deflection Islands at Roundabouts, hatching is advised to be on the nearside of the curve in Paragraph 2.5.10. In addition, placing the hatching on the off-side would reduce forward visibility for vehicles travelling along this lane outside of the hatched area. Reflective features will be discussed at detailed design stage.*

Problem 4

Location: Circulatory carriageway / A12 ring road.

Summary: Risk of sideswipes and shunts (and non-compliance with stopline). The circulatory carriageway is reduced down to one lane on approach to the signals with the A12 entry. The hatching appears to create a pinch point for the two exit lanes to the A12 Ring Road which could lead to sideswipes. It also reduces stacking capacity at the signals which could result in queuing back into the offside exit lane, which if not anticipated could result in high speed shunts. (The layout also appears to show the stopline not extending from kerb to kerb, which means vehicles can legally cross the hatching against a red light).

Recommendation: Provide two lanes on this approach, removing the hatching.

BCL Response: *This has now been amended to reflect this observation.*

3 Limitations

Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.

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Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.

Safety Engineering Services Ltd

Land South and East of Adastral Park, Ipswich
A14 Roundabout Signalisation

Stage 1 Road Safety Audit

Stage 1 Road Safety Audit

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Report Number	Client Reference	Report Status
SESL1718	10391	FINAL

1 INTRODUCTION

This report presents the findings of a Road Safety Audit carried out on off-site highway mitigation works proposed to enable site access to land to the south and east of Adastral Park, Ipswich, at the request of Brookbanks Consulting Ltd. The development will consist of up to 2000 dwellings, local centres, with facilities to serve recreation and education.

The audit was carried out by the following:

S Hancock	Road Safety Audit Team Leader Safety Engineering Services Ltd
D Ramsden Certificate of Competency gained in June 2015	Road Safety Audit Team Member Safety Engineering Services Ltd

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The main terms of reference of the audit are as described in HD19/15. The 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.

There are eleven junctions in total requiring offsite highway mitigation works associated with this development. This Road Safety Audit focuses on the proposals to signalise 3 of the 5 arms of the A14/A1156 Felixtowe Road/A12 Ring Road/Bucklesham Lane roundabout.

2 ROAD SAFETY AUDIT FINDINGS

2.1 PROBLEM

Location: Circulatory carriageway / A14 westbound exit slip

Summary: Likelihood of shunt accidents or failure to comply with signals.

The visibility of the offside signals for drivers in the offside lane by the bridge parapet and as there is a significant risk of the nearside signal being obstructed by high sided vehicles, drivers in the offside may not appreciate the presence of the signals in time.

RECOMMENDATION

Provide a signal layout which ensures that drivers in the offside lane will have a view of at least one signal head at the requisite distance. One solution would be the provision of a mast arm.

2.2 PROBLEM

Location: All approaches to signals.

Summary: Mature trees (and other vegetation) obstruct visibility.

There are a significant number of large trees (and other vegetation) which obstruct the various visibility splays required. These splays need to be cleared and kept clear for the life of the signals.

RECOMMENDATION

Apply for the removal of the trees to ensure the requisite splays can be achieved for signalisation.

2.3 PROBLEM

Location: Dedicated left-turn lane, A14 to A1156

Summary: Risk of vehicles striking kerb or signal head.

With kerbed dedicated lanes, vehicles are known to strike the kerb which can result in loss of control or overturning for high sided vehicles. This hatching means that vehicles approach in the straightest line possible and then drive directly adjacent to the kerb following the tightest radius around this bend. They are also running directly next to the nearside signal head, which is sited on this relatively narrow feature.

RECOMMENDATION

Swap the start of the nearside hatching to the offside of this lane which will also achieve better segregation between this and the adjacent signalised ahead lane. Continue the hatching around on the kerbed side, increasing the distance between the running area and the kerbs and signal head. The hatching should be then provided on both sides to create the largest radius path around this bend. At detailed design, reflective features should be provided along the length of the kerbed island to minimise the chance of it being struck by vehicles, both turning left and exiting the circulatory.

2.4 PROBLEM

Location: Circulatory carriageway / A12 ring road.

Summary: Risk of sideswipes and shunts (and non-compliance with stopline).

The circulatory carriageway is reduced down to one lane on approach to the signals with the A12 entry. The hatching appears to create a pinch point for the two exit lanes to the A12 Ring Road which could lead to sideswipes. It also reduces stacking capacity at the signals which could result in queuing back into the offside exit lane, which if not anticipated could result in high speed shunts. (The layout also appears to show the stopline not extending from kerb to kerb, which means vehicles can legally cross the hatching against a red light.)

RECOMMENDATION

Provide two lanes on this approach, removing the hatching.

3 AUDIT STATEMENT

We certify that this audit has been carried out in accordance with HD 19/15.

Signed:



S Hancock
Audit Team Leader
Safety Engineering Services Ltd

Date 28 May 2017

Signed:

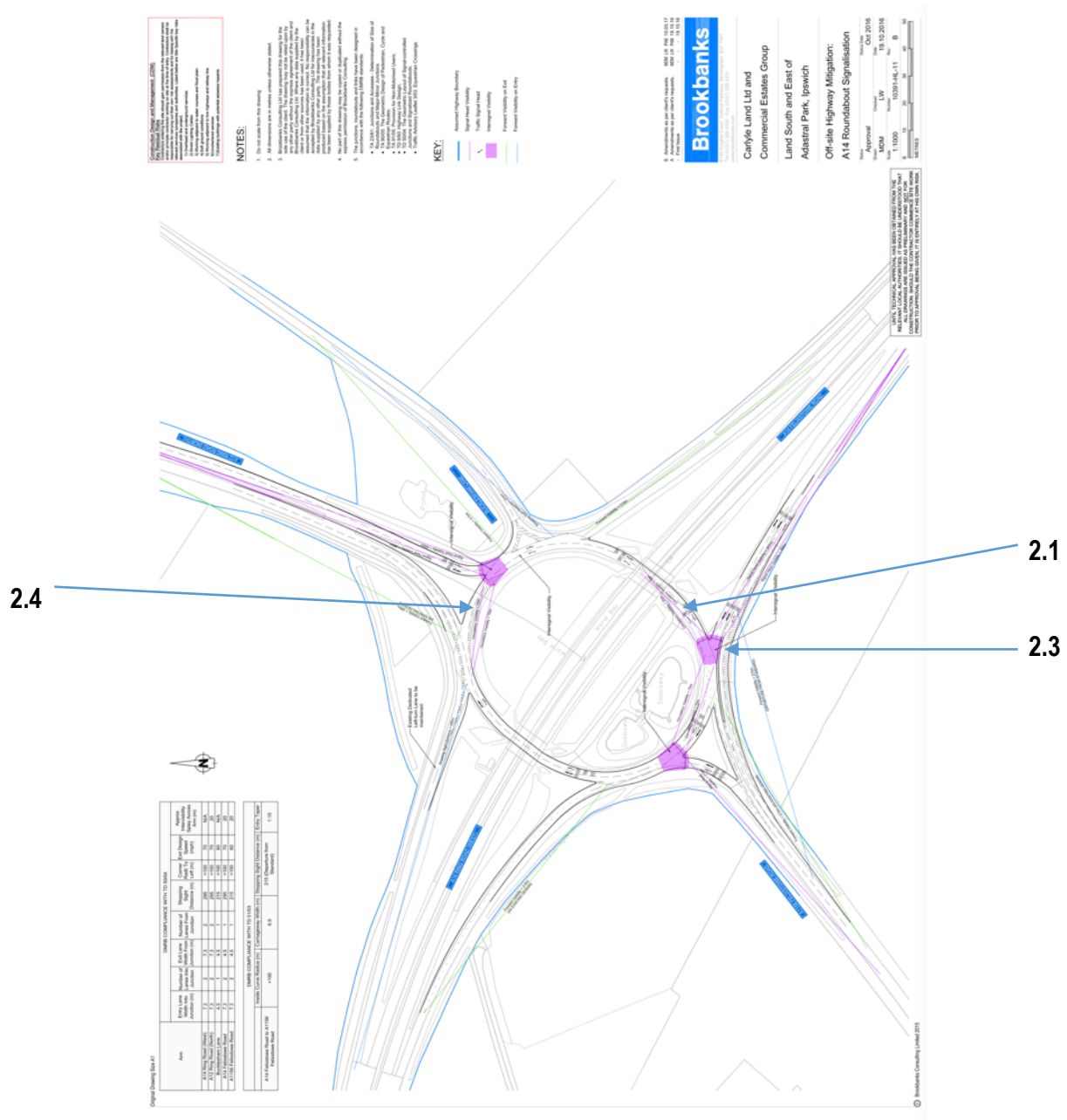


D Ramsden
Audit Team Member
Safety Engineering Services Ltd

Date: 30 May 2017

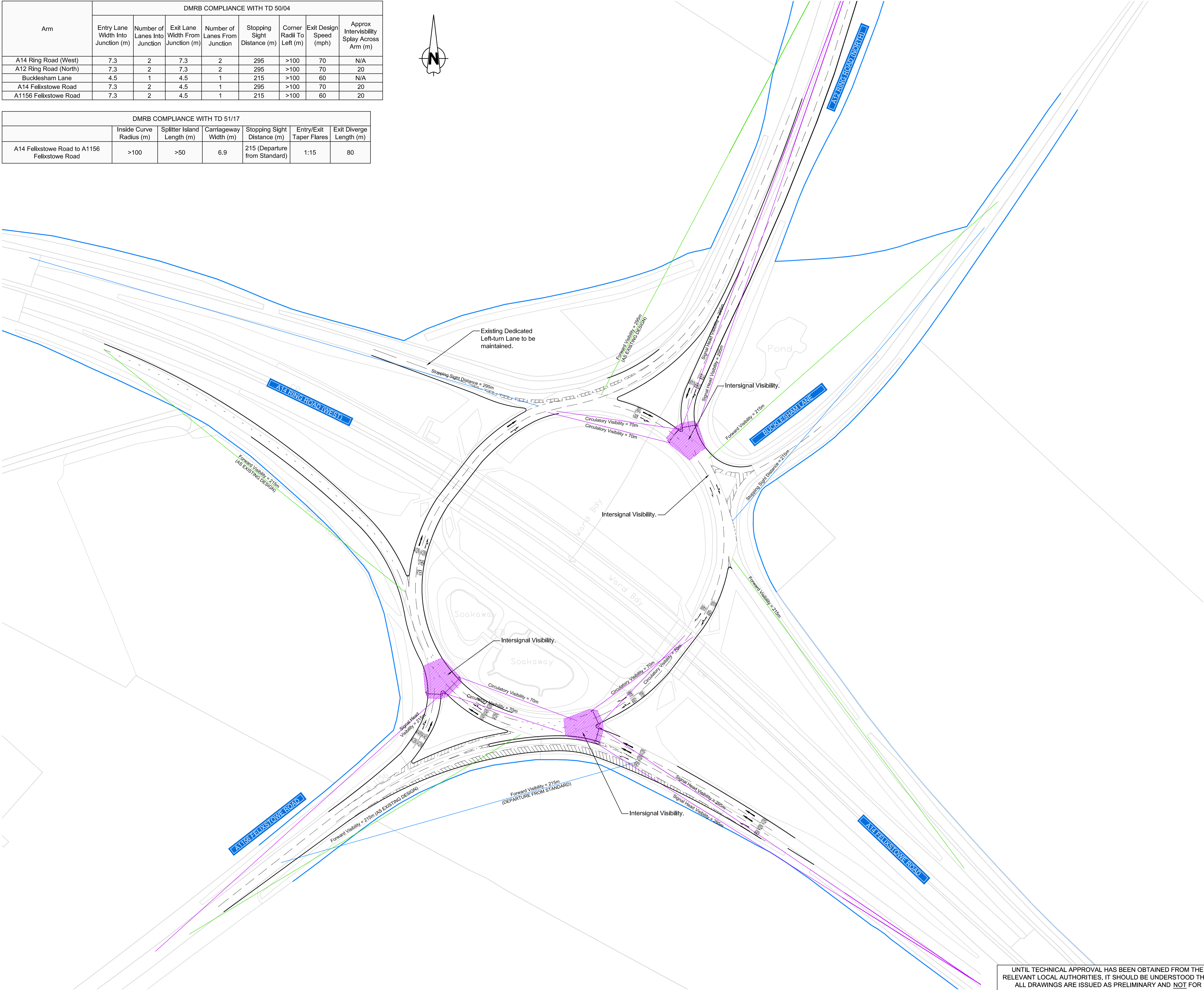
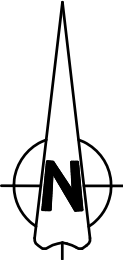
DRAWINGS AND DOCUMENTS PROVIDED FOR AUDIT

10391-H-11 Rev B	Offsite Highway Mitigation - A14 Roundabout Signalisation
10391TA01Rv2	Land South and East of Adastral Park - Transport Assessment



Arm	DMRB COMPLIANCE WITH TD 50/04							
	Entry Lane Width Into Junction (m)	Number of Lanes Into Junction	Exit Lane Width From Junction (m)	Number of Lanes From Junction	Stopping Sight Distance (m)	Corner Radii To Left (m)	Exit Design Speed (mph)	Approx Intervisibility Splay Across Arm (m)
A14 Ring Road (West)	7.3	2	7.3	2	295	>100	70	N/A
A12 Ring Road (North)	7.3	2	7.3	2	295	>100	70	20
Bucklesham Lane	4.5	1	4.5	1	215	>100	60	N/A
A14 Felixstowe Road	7.3	2	4.5	1	295	>100	70	20
A1156 Felixstowe Road	7.3	2	4.5	1	215	>100	60	20

DMRB COMPLIANCE WITH TD 51/17						
	Inside Curve Radius (m)	Splitter Island Length (m)	Carriageway Width (m)	Stopping Sight Distance (m)	Entry/Exit Taper Flares	Exit Diverge Length (m)
A14 Felixstowe Road to A1156 Felixstowe Road	>100	>50	6.9	215 (Departure from Standard)	1:15	80



Construction Design and Management (CDM), Key Residual Risks
Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

- 1) Overhead and underground services
- 2) Street Lighting Cables
- 3) Working adjacent to water courses and flood plain
- 4) Soft ground conditions
- 5) Working adjacent to live highways and railway line
- 6) Unchartered services
- 7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated.
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5. The junctions, roundabouts and links have been designed in accordance with the following DMRB standards:
 - TA 23/81: Junctions and Accesses - Determination of Size of Roundabouts and Major-Minor Junctions
 - TA 90/05: The Geometric Design of Pedestrian, Cycle and Equestrian Routes;
 - TA 91/05: Provision for Non-Motorised Users;
 - TD 9/93: Highway Link Design;
 - TD 50/04: The Geometric Layout of Signal-controlled Junctions and Signalized Roundabouts;
 - Traffic Advisory Leaflet 3/03: Equestrian Crossings.

KEY:

- Assumed Highway Boundary
- Signal Head Visibility
- Traffic Signal Head
- High-mast Traffic Signal Head
- Intersignal Visibility
- Forward Visibility on Exit
- Forward Visibility on Entry

B Amendments as per Road Safety Audit. MDM LW PAB 12.06.17
B Amendments as per client's requests. MDM LW PAB 10.03.17
A Amendments as per client's requests. MDM LW PAB 19.10.16
- First Issue - - - 19.10.16

Brookbanks

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Carlyle Land Ltd and
Commercial Estates Group

Land South and East of
Adastral Park, Ipswich

Off-site Highway Mitigation:
A14 Roundabout Signalisation

Status			Status Date		
Approval			Oct 2016		
Drawn		Checked	Date		
MDM		LW	19.10.2016		
Scale		Number	Rev		
1:1000		10391-HL-11	C		
<div><div>01020304050</div><div>METRES</div></div>					

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Adastral Park, Ipswich : Offsite Highway Mitigation to A12 / Anson Road / Eagle Way Roundabout

Technical Note : Designer's Response to Road Safety Audits at Stage 1

13th June 2017

1 Introduction

Brookbanks Consulting Limited (BCL) is commissioned by Commercial Estates Group (CEG) Ltd to provide technical advice on viability and delivery on a proposed mixed use development at Adastral Park, Martlesham Heath, Suffolk. A Transport Assessment has been produced that has assessed the potential implications. A range of highway interventions has been subsequently identified.

For the Outline Planning Application, the following access strategy was offered:

- Traffic Signals Access off the A12 Dual Carriageway;
- Two simple priority junction accesses off Ipswich Road;
- Simple priority junction access off Gloster Road through the North-west Quadrant.

The Transport Assessment also identified that off-site highway mitigation measures were necessary at the following locations:

- A14 / A12 / A1156 Interchange;
- A12 / Newbourne Rd / Foxhall Road Roundabout;
- A12 / Barrack Square / Eagle Way Roundabout and Gloster Road / Barrack Square Priority Junction;
- A12 / Anson Road / Eagle Way Roundabout;
- A12 / A1214 Roundabout (Signal Timing Modification only);
- A1189 Heath Road / Foxhall Road Roundabout;
- A1189 Bixley Road / A1156 Felixstowe Road Bixley Roundabout;
- A1214 / A1189 Gyratory Junction.

All design options, at the request of Suffolk County Council, have been subject to a Stage 1 Road Safety Audit. This note sets out the findings of the audit for the A12 / Anson Road / Eagle Way Roundabout together with a designers response.

2 Designer's Response

The Designers Response should be read in conjunction with the Road Safety Audit (ref SESL1721) as attached in Appendix A and revised Drawing No: 10391-HL-24B as attached in Appendix B.

Problem 1

Location: A12 southbound approach.

Summary: Lack of deflection could result in high entry speeds with associated loss of control or entry/circulating accidents. It appears that suitable entry path curvature is not achieved as a result of the widening. Insufficient entry path curvature has a significant effect on the safety of roundabouts.

Recommendation: If entry path curvature cannot be achieved due to the widening, alternative measures should be considered to increase capacity.

***BCL Response:** The approach entry kerb radius has been narrowed to the minimum advised value of 20m as per Paragraph 7.49 in DMRB standard TD 16/07 Geometric Design of Roundabouts. This will now achieve deflection on the approaching arm and therefore satisfy the mandatory requirements of Paragraph 7.56 in TD 16/07.*

3 Limitations

Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.

The benefits of this report are provided to Carlyle Land Ltd and Commercial Estates Group for the proposed development on Land at Adastral Park.

Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.

Safety Engineering Services Ltd

Land South and East of Adastral Park, Ipswich
Martlesham Roundabout

Stage 1 Road Safety Audit

Stage 1 Road Safety Audit

CONTENTS

1 INTRODUCTION 1

2 ROAD SAFETY AUDIT FINDINGS 2

3 AUDIT STATEMENT 2

APPENDIX A..... 4

APPENDIX B..... 6

Report Number	Client Reference	Report Status
SESL1721	10391	FINAL

1 INTRODUCTION

This report presents the findings of a Road Safety Audit carried out on off-site highway mitigation works proposed to enable site access to land to the south and east of Adastral Park, Ipswich, at the request of Brookbanks Consulting Ltd. The development will consist of up to 2000 dwellings, local centres, with facilities to serve recreation and education.

The audit was carried out by the following:

S Hancock	Road Safety Audit Team Leader Safety Engineering Services Ltd
D Ramsden Certificate of Competency gained in June 2015	Road Safety Audit Team Member Safety Engineering Services Ltd

The audit took place on Saturday 27 May 2017 and comprised a desktop study of the plans provided and a drive and walk through of the site by both team members. During the site visit, the weather was sunny and fine and the road surfaces were dry. Traffic at the time of the audit was moderate.

A list of drawings and documents provided for the purpose of audit is in Appendix A. The locations of any problems have been identified on an annotated drawing in Appendix B.

The main terms of reference of the audit are as described in HD19/15. The 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.

There are eleven junctions in total requiring offsite highway mitigation works associated with this development. This Road Safety Audit focuses on the proposed amendments to the A12 Ring Road/Eagle Way/Anson Road roundabout, comprising a lane increase to the northern entry arm.

2 ROAD SAFETY AUDIT FINDINGS

2.1 PROBLEM

Location: A12 southbound approach.

Summary: Lack of deflection could result in high entry speeds with associated loss of control or entry/circulating accidents.

It appears that suitable entry path curvature is not achieved as a result of the widening. Insufficient entry path curvature has a significant effect on the safety of roundabouts.

RECOMMENDATION

If entry path curvature cannot be achieved due to the widening, alternative measures should be considered to increase capacity.

3 AUDIT STATEMENT

We certify that this audit has been carried out in accordance with HD 19/15.

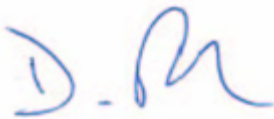
Signed:



S Hancock
Audit Team Leader
Safety Engineering Services Ltd

Date 28 May 2017

Signed:



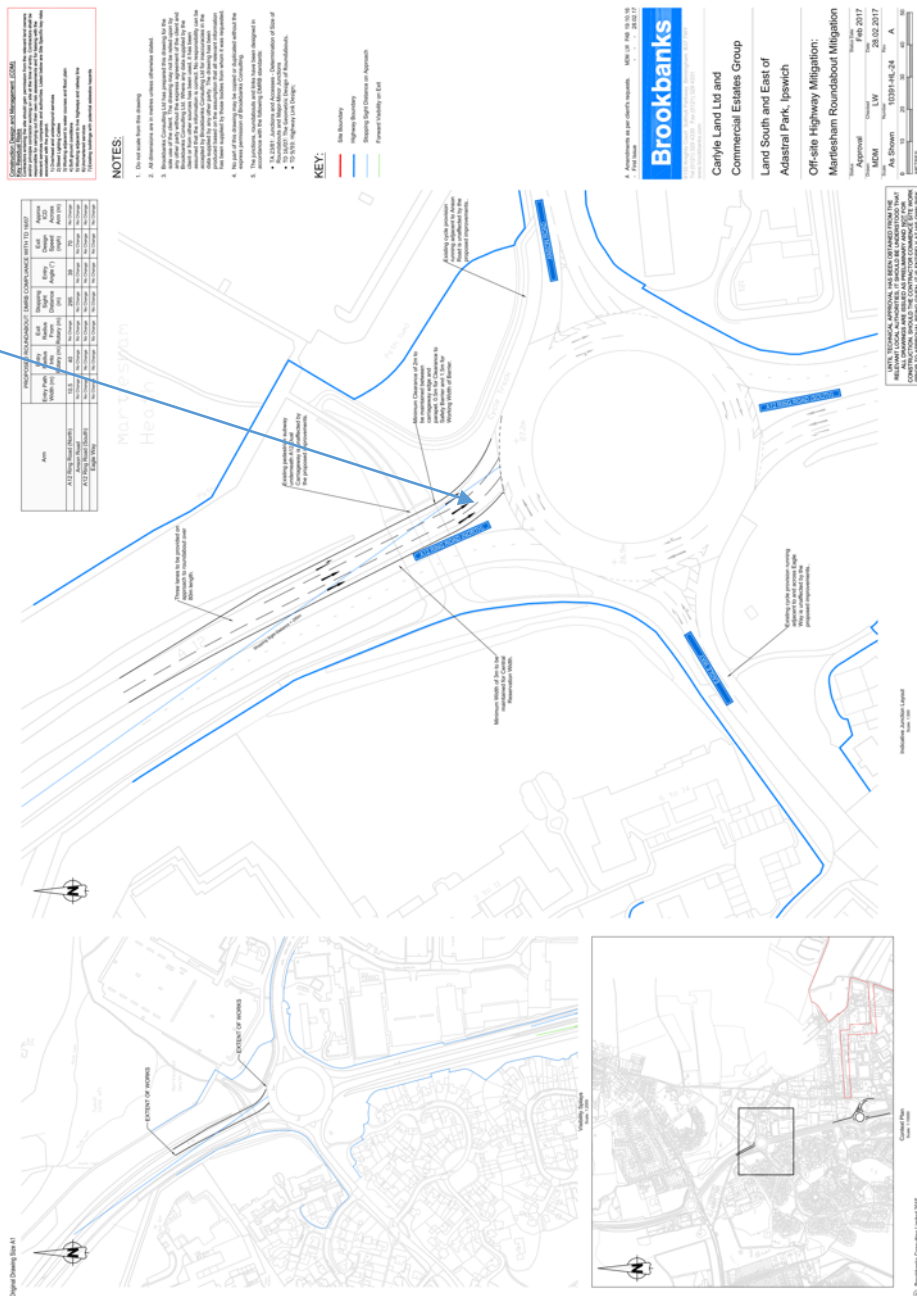
D Ramsden
Audit Team Member
Safety Engineering Services Ltd

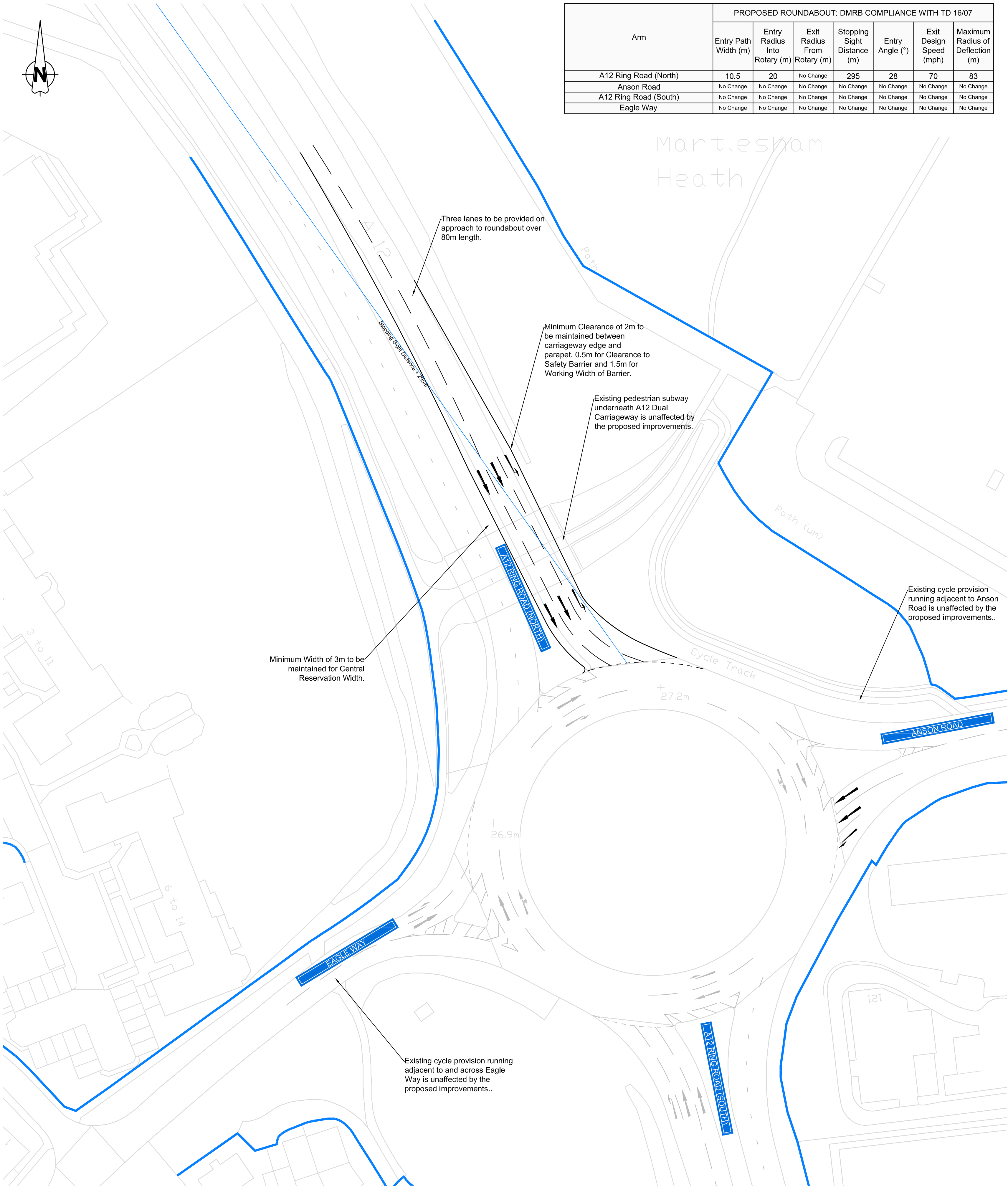
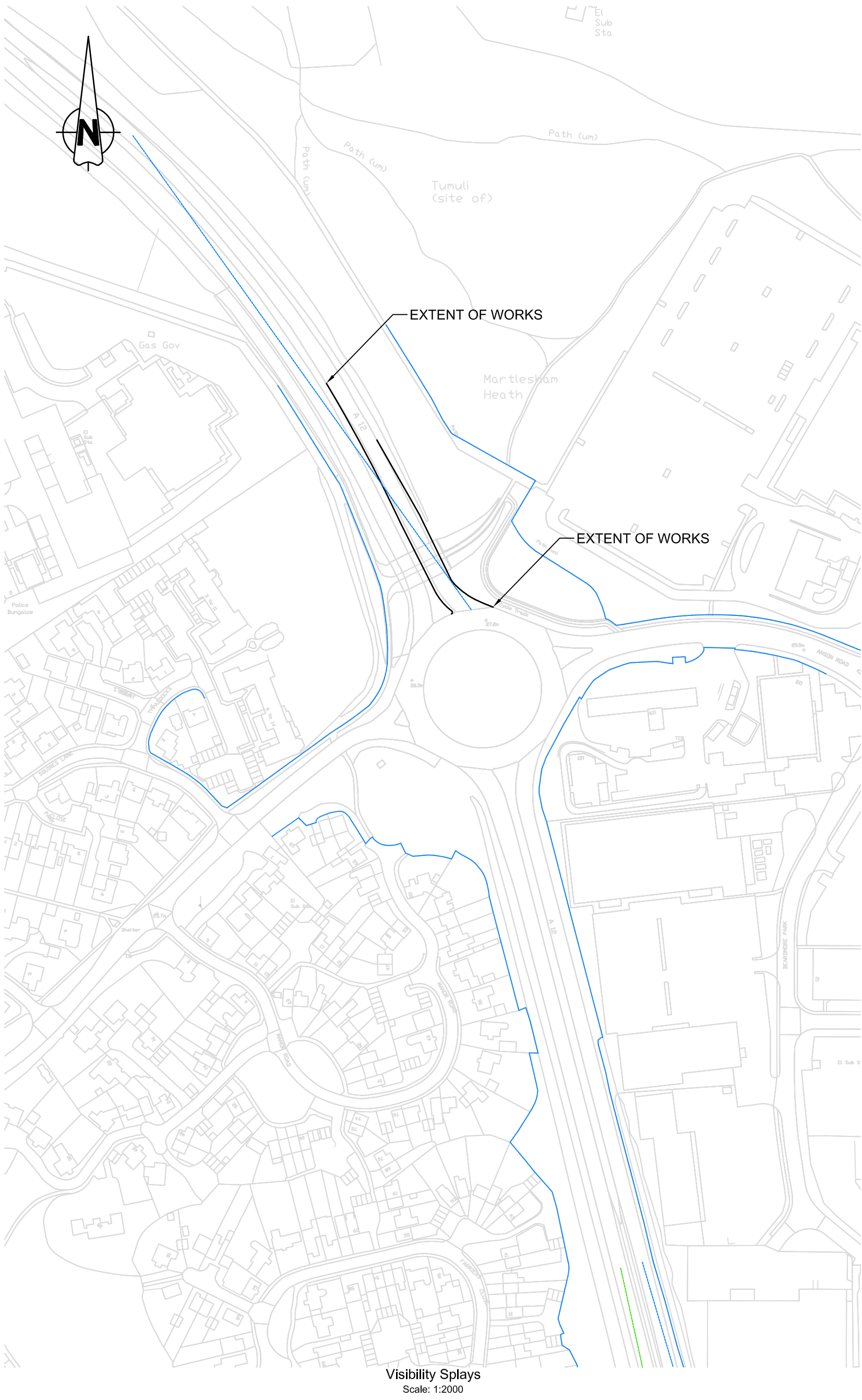
Date: 30 May 2017

DRAWINGS AND DOCUMENTS PROVIDED FOR AUDIT

10391-H-24 Rev A	Offsite Highway Mitigation - Martlesham Road Roundabout Mitigation
10391TA01Rv2	Land South and East of Adastral Park - Transport Assessment

2.1





Arm	PROPOSED ROUNDABOUT: DMRB COMPLIANCE WITH TD 16/07						
	Entry Path Width (m)	Entry Radius Into Rotary (m)	Exit Radius From Rotary (m)	Stopping Sight Distance (m)	Entry Angle (°)	Exit Design Speed (mph)	Maximum Radius of Deflection (m)
A12 Ring Road (North)	10.5	20	No Change	295	28	70	83
Anson Road	No Change	No Change	No Change	No Change	No Change	No Change	No Change
A12 Ring Road (South)	No Change	No Change	No Change	No Change	No Change	No Change	No Change
Eagle Way	No Change	No Change	No Change	No Change	No Change	No Change	No Change

Construction Design and Management (CDM)
Key Residual Risks
Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.
1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

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 - TA 23/81: Junctions and Accesses - Determination of Size of Roundabouts and Major-Minor Junctions
 - TD 16/07: The Geometric Design of Roundabouts.
 - TD 9/93: Highway Link Design;

KEY:

- Site Boundary
- Highway Boundary
- Stopping Sight Distance on Approach
- Forward Visibility on Exit

C Lane marks on Anson Rd added.
B Further amendments for deflection.
A Amendments as per client's requests.
- First Issue

GG DN DN 13.09.17
MDM DN PAB 14.06.17
MDM LW PAB 03.03.17
- - - 28.02.17

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Carlyle Land Ltd and
Commercial Estates Group

Land South and East of
Adastral Park, Ipswich

Off-site Highway Mitigation:
Martlesham Roundabout Mitigation

Status	Approval		Status Date	Feb 2017	
Drawn	MDM	Checked	LW	Date	28.02.2017
Scale	As Shown	Number	10391-HL-24	Rev	B
0 10 20 30 40 50 METRES					

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Adastral Park, Ipswich : Traffic Signals Access off the A12 Dual Carriageway with a Dedicated Right-turn Lane

Technical Note : Designer's Response to Road Safety Audits at Stage 1

7th September 2017

1 Introduction

Brookbanks Consulting Limited (BCL) is commissioned by Commercial Estates Group (CEG) Ltd to provide technical advice on viability and delivery on a proposed mixed use development at Adastral Park, Martlesham Heath, Suffolk. A Transport Assessment has been produced that has assessed the potential implications. A range of highway interventions has been subsequently identified.

For the Outline Planning Application, the following access strategy was offered:

- Traffic Signals Access off the A12 Dual Carriageway with a dedicated right-turn lane;
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- Simple priority junction access off Gloster Road through the North-west Quadrant.

The Transport Assessment also identified that off-site highway mitigation measures were necessary at the following locations:

- A14 / A12 / A1156 Interchange;
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- A12 / A1214 Roundabout;
- A1189 Heath Road / Foxhall Road Roundabout;
- A1189 Bixley Road / A1156 Felixstowe Road Bixley Roundabout;
- A1214 / A1189 Gyratory Junction.

All design options, at the request of Suffolk County Council, have been subject to a Stage 1 Road Safety Audit. This note sets out the findings of the audit for the traffic signals access off the A12 Dual Carriageway with a dedicated right-turn lane together with a designers response.

2 Designer's Response

The Designers Response should be read in conjunction with the Road Safety Audit (ref SESL1728) as attached in Appendix A and revised Drawing No: 10391-HL-07C as attached in Appendix B.

Problem 1

Location: A12 Ring Road

Summary: Likely excessive speed on approach to signals which can result in a number of accident types. The signalised junction is positioned on a national speed limit road, which encourages too higher speeds on approach to this type of junction.

Recommendation: To encourage reduced speed on the approach to the signal junction, a 50mph speed limit should be applied on the A12 between the Barrack Square roundabout to the north and Foxhall Road roundabout to the south.

BCL Comment: *The Stopping Sight Distance for the signalised crossing will achieve the required distances for the existing speed limit as specified in TD 9/93 Table 3. Advance warning sign provision to further enhance this will be discussed at detailed design stage.*