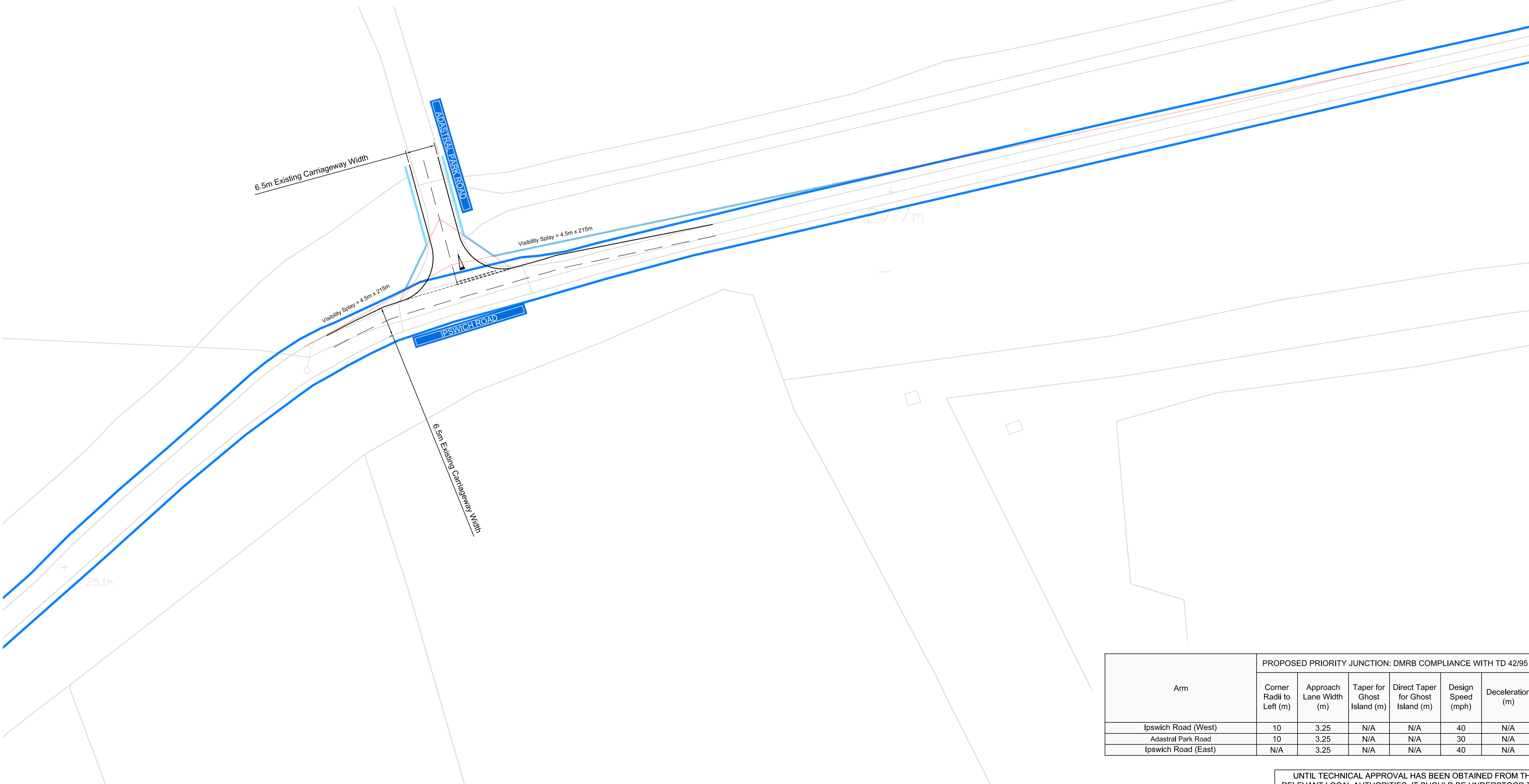


Context Plan
Scale: 1:10000



Layout of Accesses into Site
Scale: 1:500

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:

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4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The junctions, roundabouts and links have been designed in accordance with the following design standards:
 - TD 9/93: Highway Link Design;
 - TD 42/95: The Geometric Design of Major-Minor Priority Junctions;
 - Manual for Streets;

KEY:

- Site Boundary
- Anticipated Highway Boundary
- Proposed Highway Boundary for Adoption
- - - Junction Visibility Splay

D	Update of Speed Limits.	MDM LW PAB 11.09.17
C	Amendments as per client's requests.	MDM LW PAB 10.03.17
B	Update of Speed Limits.	MDM LW PAB 14.12.16
A	Update of Speed Limits.	MDM LW PAB 09.11.16
-	First Issue	- - - 27.10.16

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Carlyle Land Ltd and
 Commercial Estates Group

Land South and East of
 Adastral Park, Ipswich

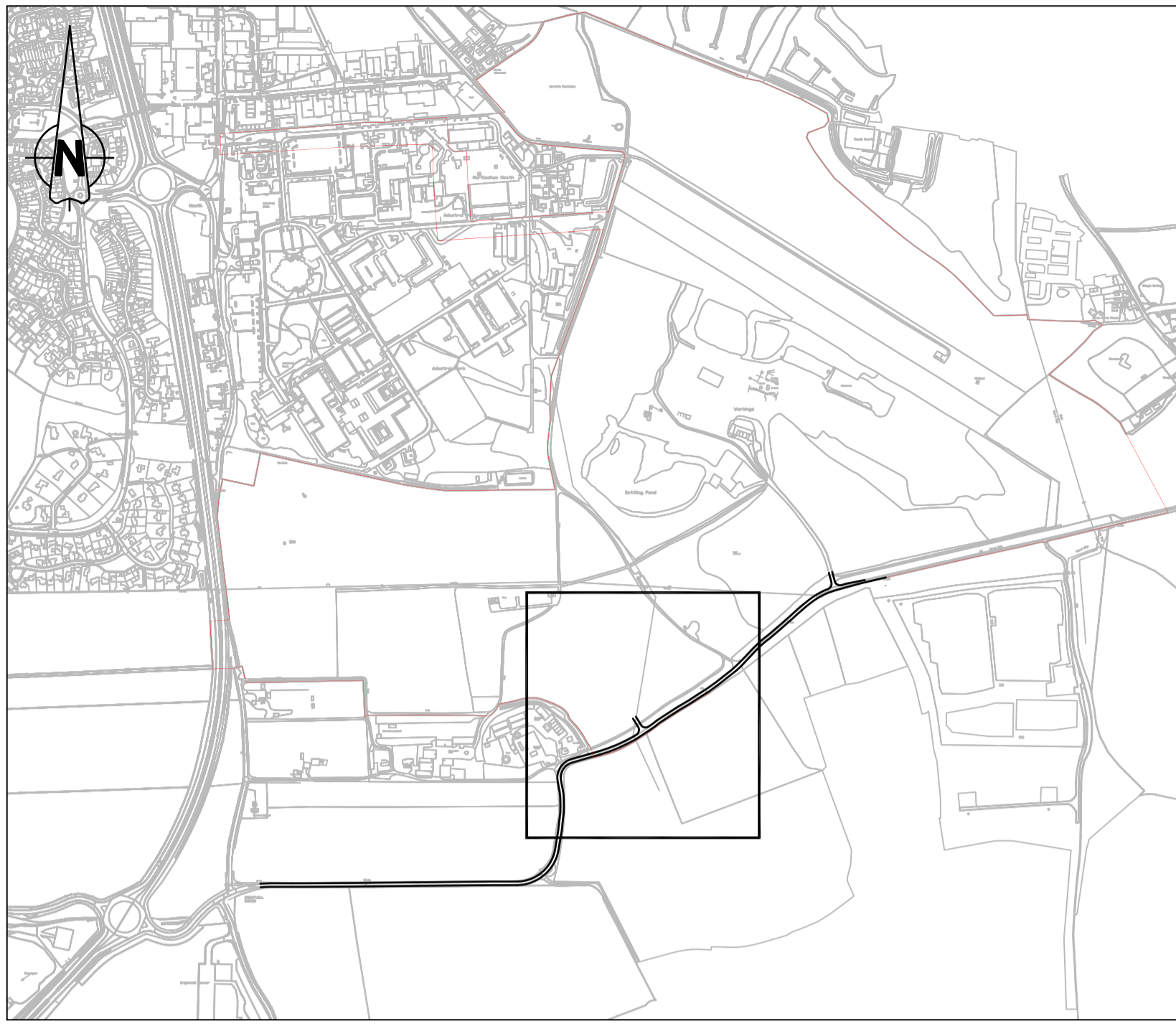
**Proposed Priority Junction
 Eastern Access off Ipswich Road**

Status	Approval	Status Date	Oct 2016
Drawn	MDM	Checked	LW
Date		Date	27.10.2016
Scale	As Shown	Number	10391-HL-04
Rev		Rev	D

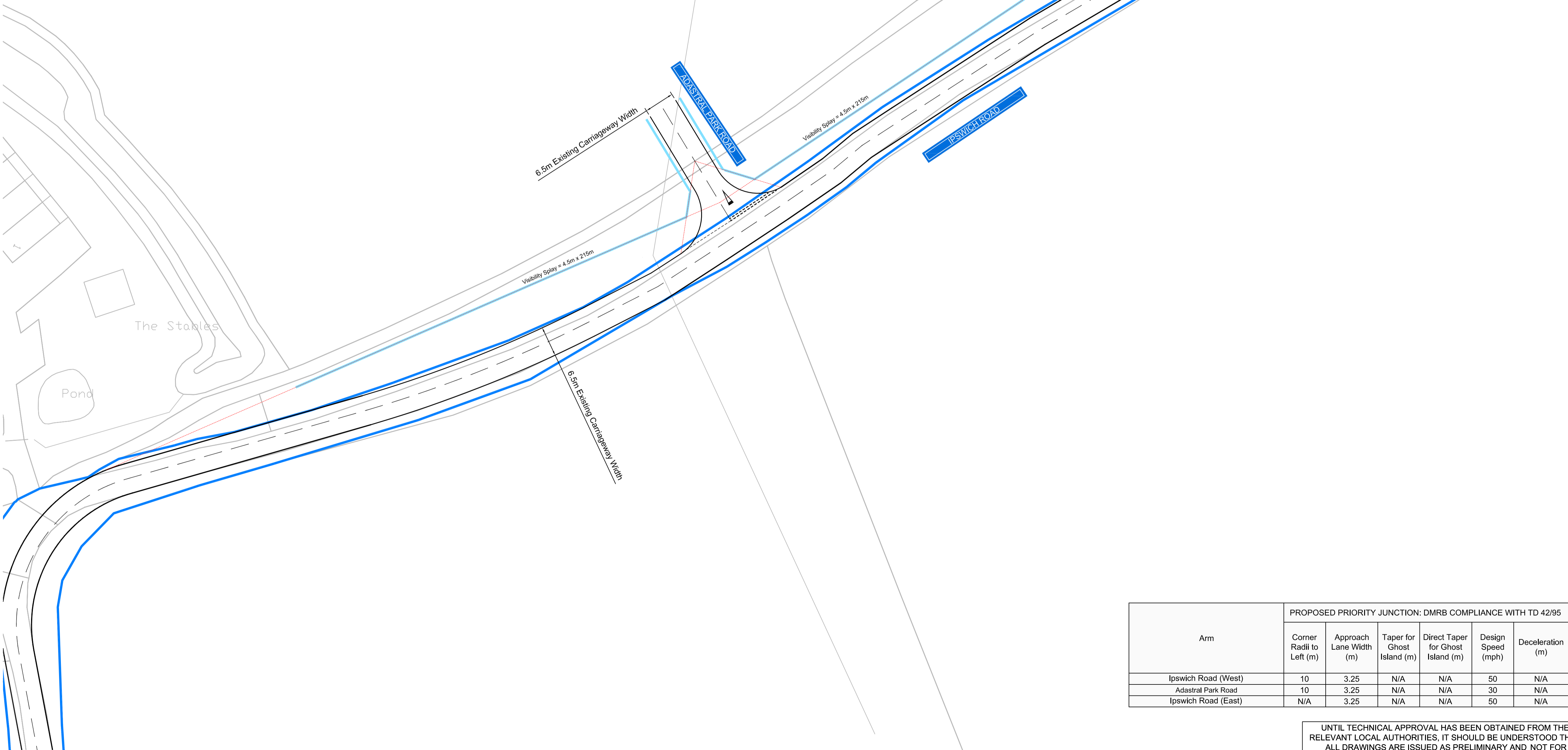
0 10 20 30 40 50
 METRES

Arm	PROPOSED PRIORITY JUNCTION: DMRB COMPLIANCE WITH TD 42/95					
	Corner Radii to Left (m)	Approach Lane Width (m)	Taper for Ghost Island (m)	Direct Taper for Ghost Island (m)	Design Speed (mph)	Deceleration (m)
Ipswich Road (West)	10	3.25	N/A	N/A	40	N/A
Adastral Park Road	10	3.25	N/A	N/A	30	N/A
Ipswich Road (East)	N/A	3.25	N/A	N/A	40	N/A

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR COMMENCE SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.



Context Plan
Scale: 1:10000



Layout of Accesses into Site
Scale: 1:500

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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 - TD 42/95: The Geometric Design of Major-Minor Priority Junctions;
 - Manual for Streets;

KEY:

- Site Boundary
- Anticipated Highway Boundary
- Proposed Highway Boundary for Adoption
- - - Junction Visibility Splay

E Update of Speed Limits.	MDM LW PAB 11.09.17
D Amendments to avoid trees.	MDM LW PAB 06.06.17
C Amendments as per client's requests.	MDM LW PAB 10.03.17
B Update of Speed Limits.	MDM LW PAB 14.12.16
A Update of Speed Limits.	MDM LW PAB 09.11.16
- First Issue	- - - 27.10.16

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Carlyle Land Ltd and
 Commercial Estates Group

Adastral Park
 Ipswich, Suffolk

**Proposed Priority Junction
 Western Access off Ipswich Road**

Status	Approval	Status Date	Oct 2016
Drawn	MDM	Checked	LW
Date		Date	27.10.2016
Scale	As Shown	Number	10391-HL-05
Rev		Rev	E



0 10 20 30 40 50
 METRES

Arm	PROPOSED PRIORITY JUNCTION: DMRB COMPLIANCE WITH TD 42/95					
	Corner Radii to Left (m)	Approach Lane Width (m)	Taper for Ghost Island (m)	Direct Taper for Ghost Island (m)	Design Speed (mph)	Deceleration (m)
Ipswich Road (West)	10	3.25	N/A	N/A	50	N/A
Adastral Park Road	10	3.25	N/A	N/A	30	N/A
Ipswich Road (East)	N/A	3.25	N/A	N/A	50	N/A

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR COMMENCE SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.

Technical Note for Design Strategy

Project Name: Land South and East of Adastral Park, Ipswich, Suffolk
Project Number: 10391
Client Name: Carlyle Land Ltd and Commercial Estates Group
Note Number: 04
Date: June 2017
Prepared By: Matthew Moss
Checked By: Lee Witts
Subject/Topic: Proposed Priority Junction Access off Gloster Road

Item	Subject
<p>1</p>	<p>Brookbanks Consulting Limited is appointed by CEG to provide transportation advice for a proposed mixed-use development on land at Adastral Park near Ipswich in Suffolk. The aim of this priority junction design is to provide an access from the west of the proposed development via Gloster Road.</p> <p>This note should be read in conjunction with drawing no: 10391-HL-06. The existing length of Gloster Road affected by this scheme is:</p> <ul style="list-style-type: none"> • Approximate carriageway and footway dimensions: Average 7.3m Carriageway. • Local Vegetation/Existing Constraints: The local area is constrained by shared boundaries with the BT Adastral Park Complex. • Local Speed Limits: 30 mph (60 kph). • Street Lighting: Fully lit. • Local water courses that may constrain the site: None. • Local Accesses that must be maintained: None affected by the proposed works. <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="240 1431 707 1765">  <p>Figure 1: Gloster Road looking North</p> </div> <div data-bbox="818 1431 1310 1765">  <p>Figure 2: Gloster Road looking South</p> </div> </div>
<p>2</p>	<p>Design Standards:</p> <p>The design parameters of the proposed junction have been determined following a review of the following documents:-</p>

- Design Manual for Roads and Bridges:
 - TD 9/93: Highway Link Design;
 - TD 42/95: Geometric Design of Major-Minor Priority Junctions.
- Manual for Streets;
- Traffic Signs Manual Design Standard: Chapter 5 Road Markings

3 Site Surveys:

No surveys were carried out for the site at the time of writing.

4 2D Design Elements:

- Northern Arm (Major): Gloster Road (North) 30 mph
- Eastern Arm (Minor): Quadrant Access Road 30 mph
- Southern Arm (Major): Gloster Road (South) 30 mph
- Design Speed for the Major Road = 48 kph (Manual for Streets: Table 7.1);
- Design Speed for the Minor Road = 48 kph (Manual for Streets: Table 7.1);

DMRB COMPLIANCE WITH TD 42/95						
	Corner Radii (m)	Lane Widths through Junction (m)	Taper for Ghost Island (m)	Direct Taper for Ghost Island (m)	Design Speed (mph)	Deceleration Length (m)
Gloster Road (South)	10	3.65	N/A	N/A	30	N/A
Quadrant Access Road	10	3.25	N/A	N/A	30	N/A
Ipswich Road (North)	N/A	3.65	N/A	N/A	30	N/A

7 Traffic Signs

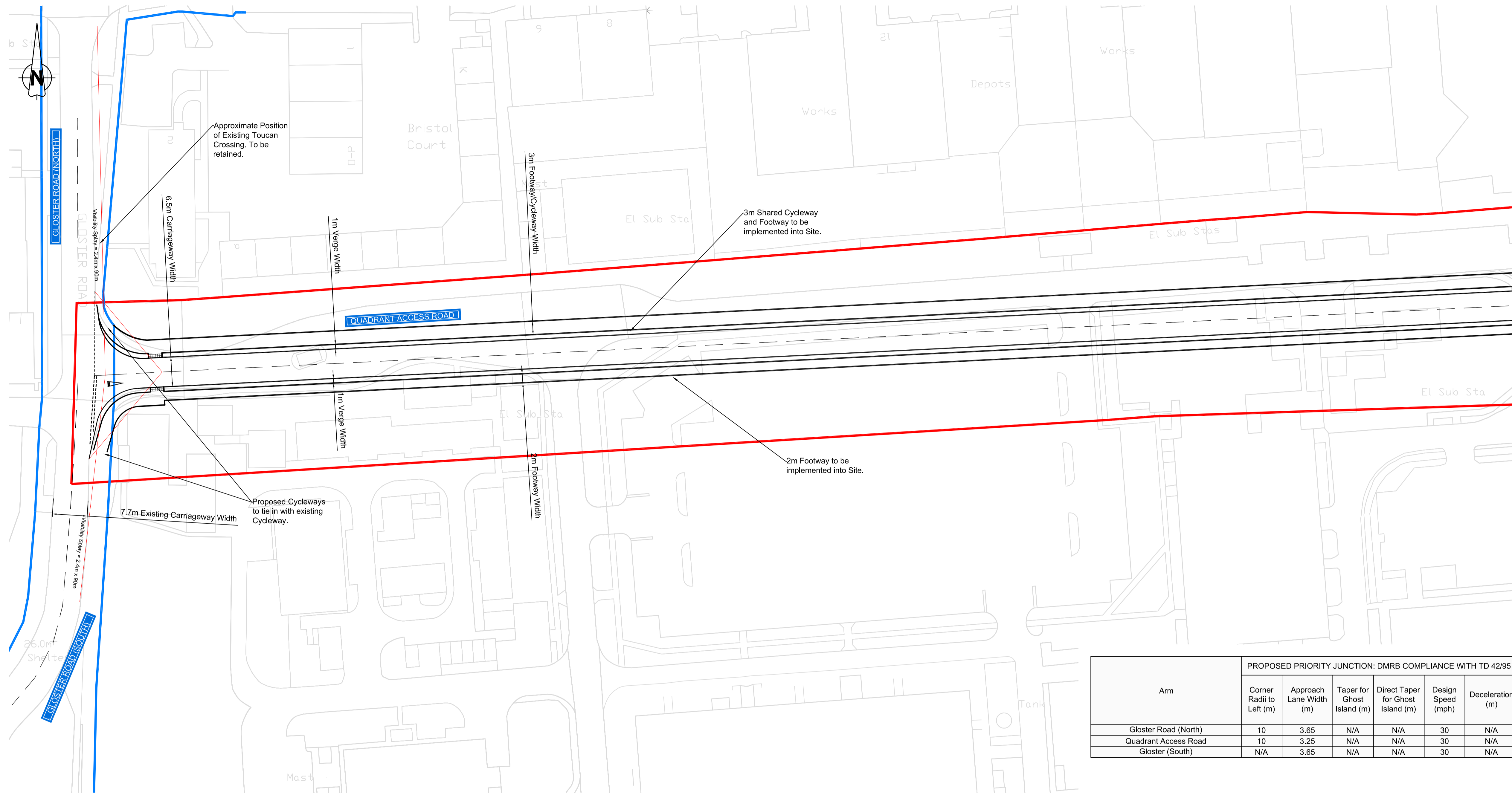
Advance Direction Signs (ADS) shall be provided on the approaches to the priority junction, as well as Flag type directional signs on the exit arms as prescribed in the Traffic Signs Regulations and General Directions (TRSGD). Care has been taken with the positioning and the size of these signs so that they do not interfere with driver’s visibility requirements. A 2m mounting height will be provided to Flag type signs to ensure visibility is not restricted (Mandatory Item 8.2).

Guidance on the design of directional traffic signs is given in the Traffic Signs Manual (Chapter 7) and LTN 1/94 – ‘The Design and Use of Directional Informatory Signs’, particularly Appendix A. The ‘x’ heights for these directional sign have been informed by the 30 mph speed limit being imposed on the highway.

Road Markings

The road markings along Gloster Road have been provided in response to the speed limit of 30 mph. The proposed speed limit along Quadrant Access Road (30 mph) has required the road markings to be designed to reflect this limit. All road markings have been informed by Traffic Signs Manual Chapter 5.

<p>8</p>	<p>Highway Boundary</p> <p>The location of the existing highway boundary has been determined using plans provided by Suffolk County Council which has been transferred onto survey data.</p> <p>It has been confirmed by Suffolk County Council that the Highway Boundary is located as indicated on the drawings.</p> <p>The design of this priority junction requires additional carriageway width in order to accommodate the infrastructure. The priority junction will be constructed slightly off line to the existing carriageway so that no works encroach onto 3rd party land not within the control of the Developer or Highway Authority.</p>
<p>9</p>	<p>Street Lighting</p> <p>Gloster Road, at the location of the proposed junction already has a system of street lighting in place. However, the proposed Priority Junction and the Development Access Road is recommended to be illuminated by a system of street lighting. The extent and classification of lighting will be determined by Suffolk County Council.</p>



Layout of Priority Junction for Access Road into Site
Scale: 1:500

Arm	PROPOSED PRIORITY JUNCTION: DMRB COMPLIANCE WITH TD 42/95					
	Corner Radii to Left (m)	Approach Lane Width (m)	Taper for Ghost Island (m)	Direct Taper for Ghost Island (m)	Design Speed (mph)	Deceleration (m)
Gloster Road (North)	10	3.65	N/A	N/A	30	N/A
Quadrant Access Road	10	3.25	N/A	N/A	30	N/A
Gloster (South)	N/A	3.65	N/A	N/A	30	N/A

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.

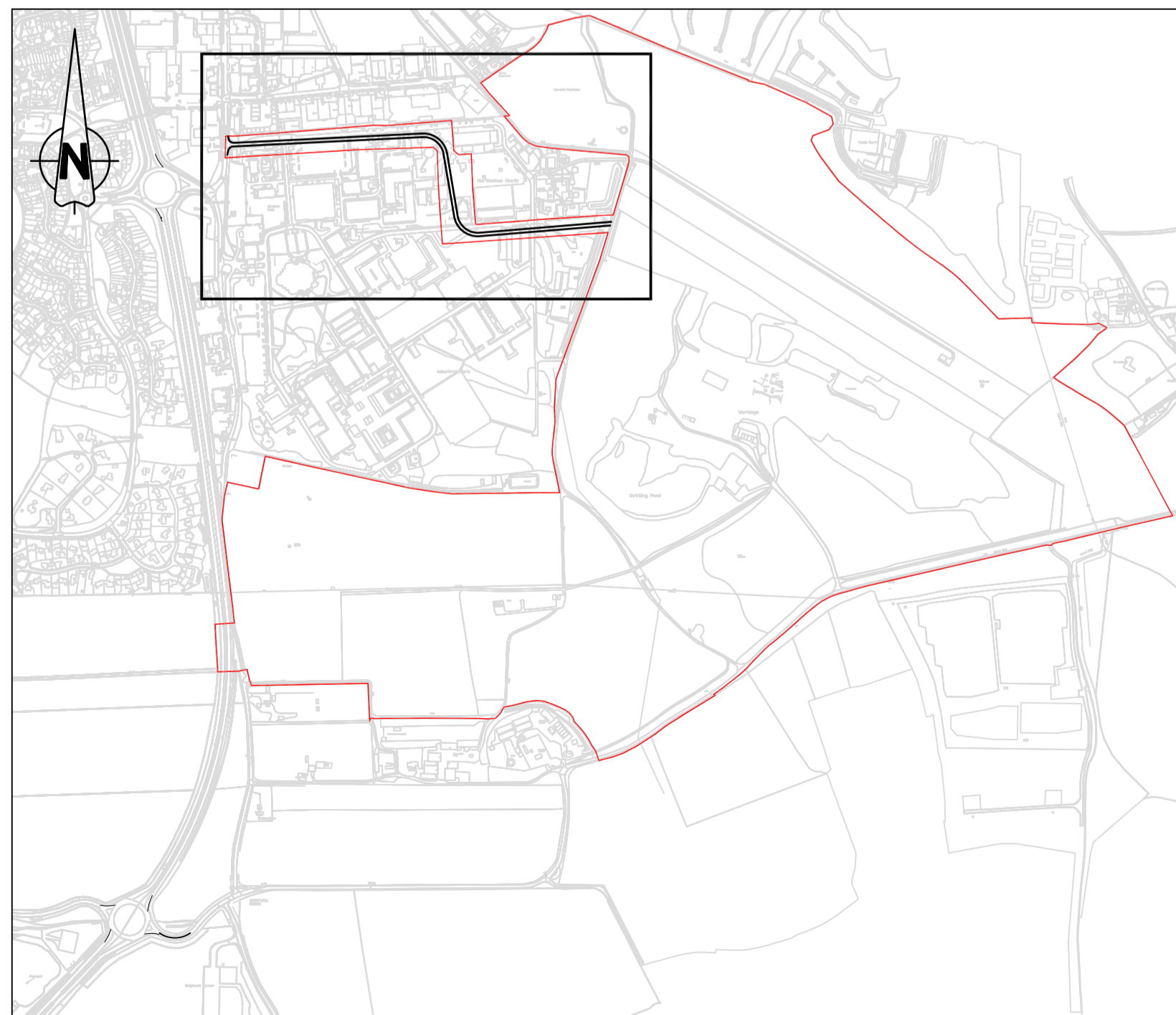
- 1) Overhead and underground services
- 2) Street Lighting Cables
- 3) Working adjacent to water courses and flood plain
- 4) Soft ground conditions
- 5) Working adjacent to live highways and railway line
- 6) Unchartered services
- 7) Existing buildings with potential asbestos hazards

NOTES:

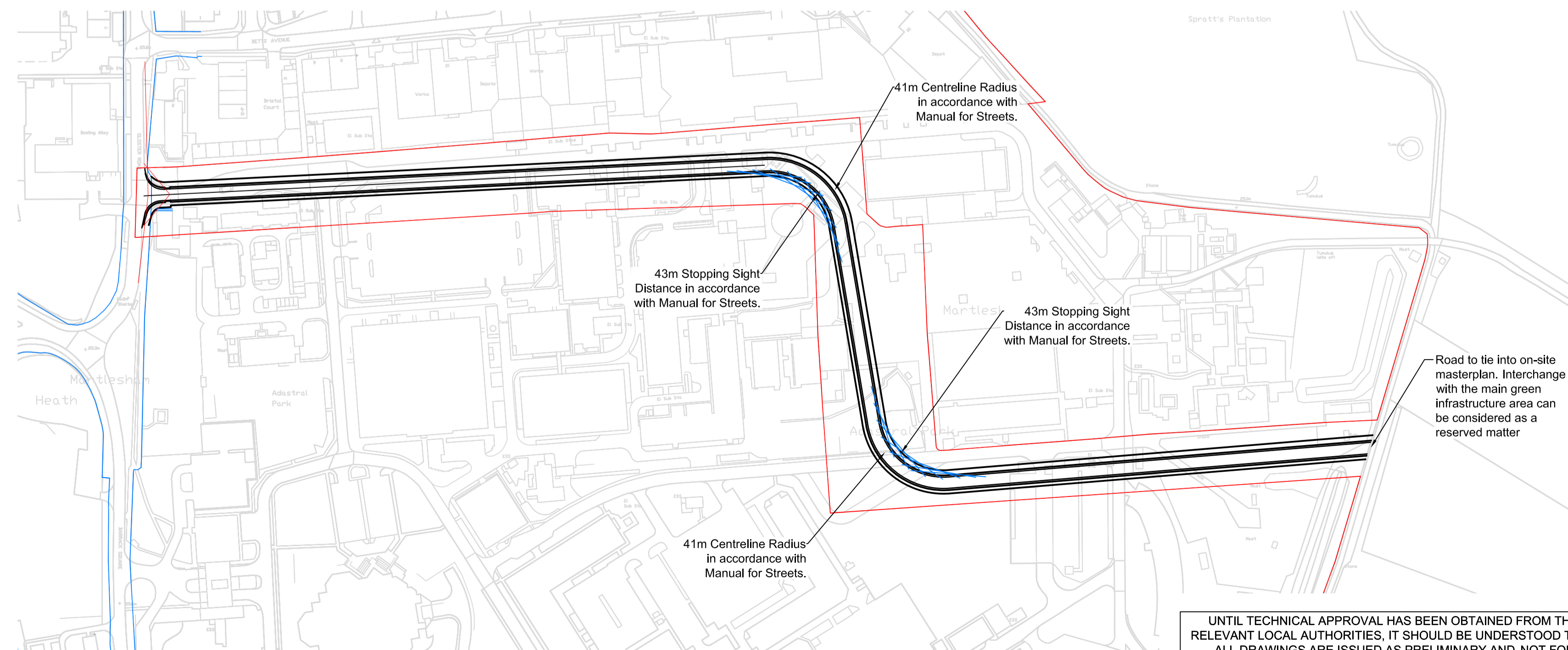
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5. The junctions, roundabouts and links have been designed in accordance with the following design standards:
 - TD 9/93: Highway Link Design;
 - TD 42/95: The Geometric Design of Major-Minor Priority Junctions;
 - Manual for Streets;

KEY:

- Site Boundary
- Anticipated Highway Boundary
- Junction Visibility Splay
- Stopping Sight Distance along Highway



Context Plan
Scale: 1:10000



Overview of Access Road into Site
Scale: 1:2000

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A Amendments to avoid trees. MDM LW PAB 06.06.17
 - First Issue - - - - - 23.03.16

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Carlyle Land Ltd and
 Commercial Estates Group

Land South and East of
 Aداstral Park, Ipswich

Proposed Priority Junction
 North-west Quadrant Access

Status	Approval	Checked	Date	Status Date
Drawn	MDM	LW	23.03.2017	March 2017
Scale	As Shown	Number	10391-HL-06	Rev
				A

Technical Note for Design Strategy

Project Name: Land South and East of Adastral Park, Ipswich, Suffolk
Project Number: 10391
Client Name: Carlyle Land Ltd and Commercial Estates Group
Note Number: 11
Date: June 2017
Prepared By: Matthew Moss
Checked By: Lee Witts
Subject/Topic: Proposed A14 Roundabout Signalisation Measures



Item	Subject
1	<p>Brookbanks Consulting Limited is appointed by CEG to provide transportation advice for a proposed mixed-use development on land at Adastral Park near Ipswich in Suffolk.</p> <p>The aim is that by implementing signals for the A12 Approach, the A14 Westbound Approach and the A1156 Felixstowe Road Approach, this will mitigate the additional traffic caused by the development to minimize congestion at this junction. This note should be read in conjunction with drawing no: 10391-HL-11. The existing lengths of roads affected by this scheme are:</p> <ul style="list-style-type: none">• Approximate carriageway and footway dimensions: 7.3m Carriageways, 3-5m Central Reservation. No footways.• Local Vegetation/Existing Constraints: The approach will need vegetation to be cropped back. There are a number of forward visibility lines which cross third party land, as per the existing layout. Therefore there are Departures from the relevant DMRB Standard.• Local Speed Limits: National Speed Limit.• Street Lighting: Junction is fully lit.• Local water courses that may constrain the site: None.• Local Accesses that must be maintained: None. <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div data-bbox="260 1615 716 1937">A photograph showing a road junction with road markings for A14 and A1156. The road is asphalt with white markings and arrows. There are trees and a cloudy sky in the background.</div> <div data-bbox="260 1944 609 1973"><p>Figure 1: A12 (North) looking South</p></div> <div data-bbox="839 1615 1310 1937">A photograph showing a road junction with a circulatory road. The road is asphalt with white markings and arrows. There are trees and a clear sky in the background.</div> <div data-bbox="839 1944 1161 1973"><p>Figure 2: A12 (North) Circulatory</p></div>



Figure 3: A14 (East) looking West



Figure 4: A14 (East) Circulatory



Figure 5: A1156 (South) looking North



Figure 6: A1156 (South) Circulatory



Figure 7: A14 (West) looking East



Figure 8: A14 (West) Circulatory

2 **Design Standards:**

The design parameters of the proposed junction have been determined following a review of the following documents:-

- Design Manual for Roads and Bridges:
 - TA 23/81: Junctions and Accesses – Determination of Size of Roundabouts and Major-Minor Junctions;
 - TD 9/93: Highway Link Design;
 - TD 50/04: The Design of Signalized Junctions and Signal-controlled Roundabouts
- Traffic Signs Manual Design Standard: Chapter 5 Road Markings

3 **Site Surveys:**

No surveys were carried out for the site at the time of writing.

2D Design Elements:

- Northern Arm (Major): A12 Ring Road (North) 70 mph
- North-Eastern Arm (Minor): Bucklesham Lane 60 mph
- Northern Arm (Major): A14 Felixstowe Road (East) 70 mph
- Northern Arm (Major): A1156 Felixstowe Road (South) 60 mph
- Western Arm (Major): A14 Ring Road (West) 70 mph
- Design Speed for the Major Road = 120 kph (TD 9/93, Table 2);
- Design Speed for the Minor Road = 100kph (TD 9/93, Table 2);
- Desirable Minimum Stopping Sight Distance Major Road = 295m (TD 9/93, Table 3. TD 16/07 Item 8.3 and Figure 8/1.);
- Desirable Minimum Stopping Sight Distance Minor Road = 215m (TD 9/93, Table 3. TD 16/07 Item 8.3 and Figure 8/1.).
- Visibility Distance for a roundabout with an Inscribed Circle Diameter of over 100m = 70m (TD 16/07, Table 8/1);
- Inter-visibility Zone for a traffic signalised junction/roundabout of 2.5m (TD 50/04 Item 2.10, Figure 2/2 and 2/3);
- Forward Visibility at Entry (TD 16/07, Item 8.4 and Figure 8/2) = 70m;
- Visibility to the Right (TD 16/07, Items 8.5 to 8.7 and Figures 8/3 and 8/4) = 70m;
- Circulatory Visibility (TD 16/07, Item 8.9 and Figure 8/5) = 70m.

The definition of a Normal Roundabout as described in Items 3.1 and 3.2 of TD 16/07 is as follows:-

3.1 A Normal Roundabout has a kerbed central island at least 4 metres in diameter (Figure 3/1). Its approaches may be dual or single carriageway roads. Usually, a Normal Roundabout has flared entries and exits to allow two or three vehicles to enter or leave the roundabout on a given arm at the same time. If so, its circulatory carriageway needs to be wide enough for two or three vehicles to travel alongside each other on the roundabout itself.

3.2 If a Normal Roundabout has more than four arms, it becomes large with the probability that higher circulatory speeds will result. Either a Double Roundabout or a Signalised Roundabout is a potential solution in these circumstances.

	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 (East)	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

Traffic Signs

Advance Direction Signs (ADS) shall be provided on the approaches to the roundabout, as well as Flag type directional signs on the exit arms as prescribed in the Traffic Signs Regulations and General Directions (TRSGD). Care has been taken with the positioning and the size of these signs so that they do not interfere with driver's visibility requirements. A 2m

	<p>mounting height will be provided to Flag type signs to ensure visibility is not restricted (Mandatory Item 8.2).</p> <p>Guidance on the design of directional traffic signs is given in the Traffic Signs Manual (Chapter 7) and LTN 1/94 – ‘The Design and Use of Directional Informatory Signs’, particularly Appendix A. The ‘x’ heights for these directional sign have been informed by the existing 70 mph and 60 mph speed limits as well as the 30 mph speed limit being imposed on the highway.</p> <p>Road Markings</p> <p>The existing road markings along all carriageways have been provided in response to the current speed limits. All road markings have been informed by Traffic Signs Manual Chapter 5.</p>
6	<p>Highway Boundary</p> <p>The location of the existing highway boundary has been determined using plans provided by Suffolk County Council which has been transferred onto survey data.</p> <p>It has been confirmed by Suffolk County Council that the Highway Boundary is located as indicated on the drawings.</p> <p>The design of this carriageway widening requires additional carriageway width in order to accommodate the infrastructure. The roundabout will be constructed slightly off line to the existing carriageway so that no works encroach onto 3rd party land not within the control of the Developer or Highway Authority.</p>
7	<p>Street Lighting</p> <p>The proposed junction already has a system of street lighting in place. However, the proposed improvements are recommended to be illuminated by an appropriate system of street lighting. The extent and classification of lighting will be determined by Suffolk County Council.</p>