



## 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:** 23  
**Date:** June 2017  
**Prepared By:** Matthew Moss  
**Checked By:** Lee Witts  
**Subject/Topic:** Proposed Adastral Park Roundabout and Gloster Road Mitigation 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 of this roundabout design is to mitigate the additional traffic caused by the development to minimize congestion at these junctions. This note should be read in conjunction with drawing no: 10391-HL-23. The existing length of the A12 Dual Carriageway, Barracks Square, Gloster Road and Eagle Way affected by this scheme are:</p> <ul style="list-style-type: none"><li>• Approximate carriageway and footway dimensions: A12 (North and South): 2 No. 7.3m Carriageways, 5m Central Reservation. Barrack Square, Gloster Road and Eagle Way: 7.3m Carriageways. No footways.</li><li>• Local Vegetation/Existing Constraints: All approaches will need vegetation to be cropped back. Approach Visibility from A12 North is constrained by a footbridge, however this is still DMRB compliant.</li><li>• Local Speed Limits: A12 (North and South): 70 mph (120 kph). Barrack Square, Gloster Road and Eagle Way: 30 mph (60 kph).</li><li>• Street Lighting: Junction is fully lit.</li><li>• Local water courses that may constrain the site: None.</li><li>• Local Accesses that must be maintained: None.</li></ul> <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div></div> <p><b>Figure 1:</b> A12 (North) looking South</p> <p><b>Figure 2:</b> Barrack Square looking West towards Gloster Road</p>



**Figure 3:** Gloster Road (West) looking South



**Figure 4:** Barrack Square looking East towards Gloster Road



**Figure 5:** Barrack Square looking West



**Figure 6:** A12 (South) looking North

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 16/07: The Geometric Design of Roundabouts
  - TD 42/95: The Geometric Design of Major-Minor Priority Junctions
- Traffic Signs Manual Design Standard: Chapter 5 Road Markings
- Manual for Streets

3

#### **Site Surveys:**

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

4

#### **2D Design Elements:**

- Northern Arm (Major): A12 Ring Road (North) 70 mph
- Eastern Arm (Minor): Barrack Square 30 mph
- North-Eastern Arm (Minor): Gloster Road 30 mph
- Southern Arm (Major): A12 Ring Road (South) 70 mph
- Western Arm (Minor): Eagle Way 30 mph
- Design Speed for the Major Road = 120 kph (TD 9/93, Table 2);
- Design Speed for the Minor Roads = 60 kph (TD 9/93, Table 2) and 48 kph (Manual for Streets Table 7.1);

- 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 Site Distance Minor Road = 90m (TD 9/93, Table 3. TD 16/07 Item 8.3 and Figure 8/1.) and 43m (Manual for Streets Table 7.1);
- Visibility Distance for a roundabout with an Inscribed Circle Diameter of 60m to 100m = 50m (TD 16/07, Table 8/1);
- Forward Visibility at Entry (TD 16/07, Item 8.4 and Figure 8/2) = 50m;
- Visibility to the Right (TD 16/07, Items 8.5 to 8.7 and Figures 8/3 and 8/4) = 50m;
- Circulatory Visibility (TD 16/07, Item 8.9 and Figure 8/5) = 50m;

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 16/07							
	Entry Width (m)	Entry Radius into Rotary (m)	Exit Radius from Rotary (m)	Stopping Sight Distance (m)	Entry Angle (degrees)	Entry/Exit Design Speed (mph)	Approx. Indicative Circular Diameter (m)	Maximum Radius of Deflection (m)
A12 Ring Road (North)	10.5	20	No Change	295	24	70	81.5	55
Barracks Square	10.5	27	39	43 (MfS)	36	30	81.5	39
A12 Ring Road (South)	10.5	20	No Change	295	23	70	81.5	87
Eagle Way	No Change	No Change	No Change	No Change	No Change	No Change	81.5	59

The definition of a Major/Minor Priority Junction as described in Item 2.1 of TD 42/95 is as follows:-

2.1 Major/minor priority junctions are the most common form of junction control. Traffic on the minor road gives way to traffic on the major road and is normally controlled by "Give Way" signs and road markings. However, where there are severe visibility restrictions, "Stop" signs and road markings may be considered, with appropriate reference to the Traffic Signs Regulations and General Directions.

2.2 The advantage of all major/minor priority junctions is that through traffic on the major road is not delayed. However, high major road speeds or the possibility of major road overtaking traffic manoeuvres should not be encouraged at major/minor priority junctions.

2.3 For more heavily used junctions, more complex forms of junction layout are required. Due to the uncertainty of traffic forecasting, designers should always consider whether the layout they are designing could be upgraded to provide more capacity, if this should prove necessary in the future.

	DMRB COMPLIANCE WITH TD 42/95					
	Corner Radii (m)	Approach Lane Width (m)	Taper for Ghost Island (m)	Direct Taper for Ghost Island (m)	Design Speed (mph)	Deceleration Length (m)
Barrack Square (West)	15	3.5	1 in 20	N/A	30	N/A
Gloster Road	15	3.65	N/A	N/A	30	N/A
Barrack Square (East)	N/A	3.5	1 in 20	5	30	25

## 5 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 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 existing 70 mph and 30 mph speed limits on the highway.

### Road Markings

The existing road markings along the A12 Dual Carriageway, Eagle Way, Barrack Square and Gloster Road have been provided in response to the current speed limits. All road markings have been informed by Traffic Signs Manual Chapter 5.

## 6 Highway Boundary

The location of the existing highway boundary has been determined using plans provided by Suffolk County Council which has been transferred onto survey data.

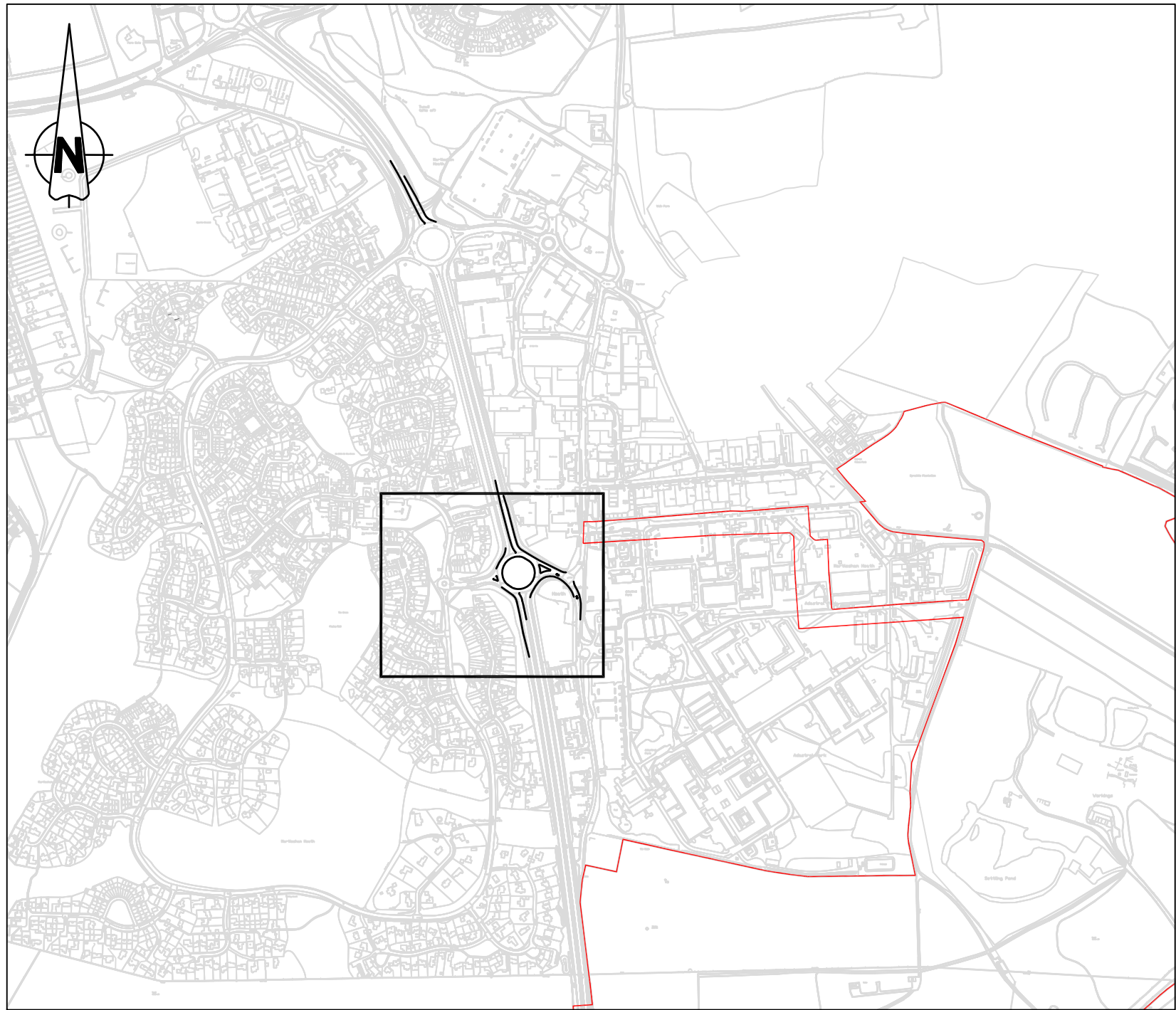
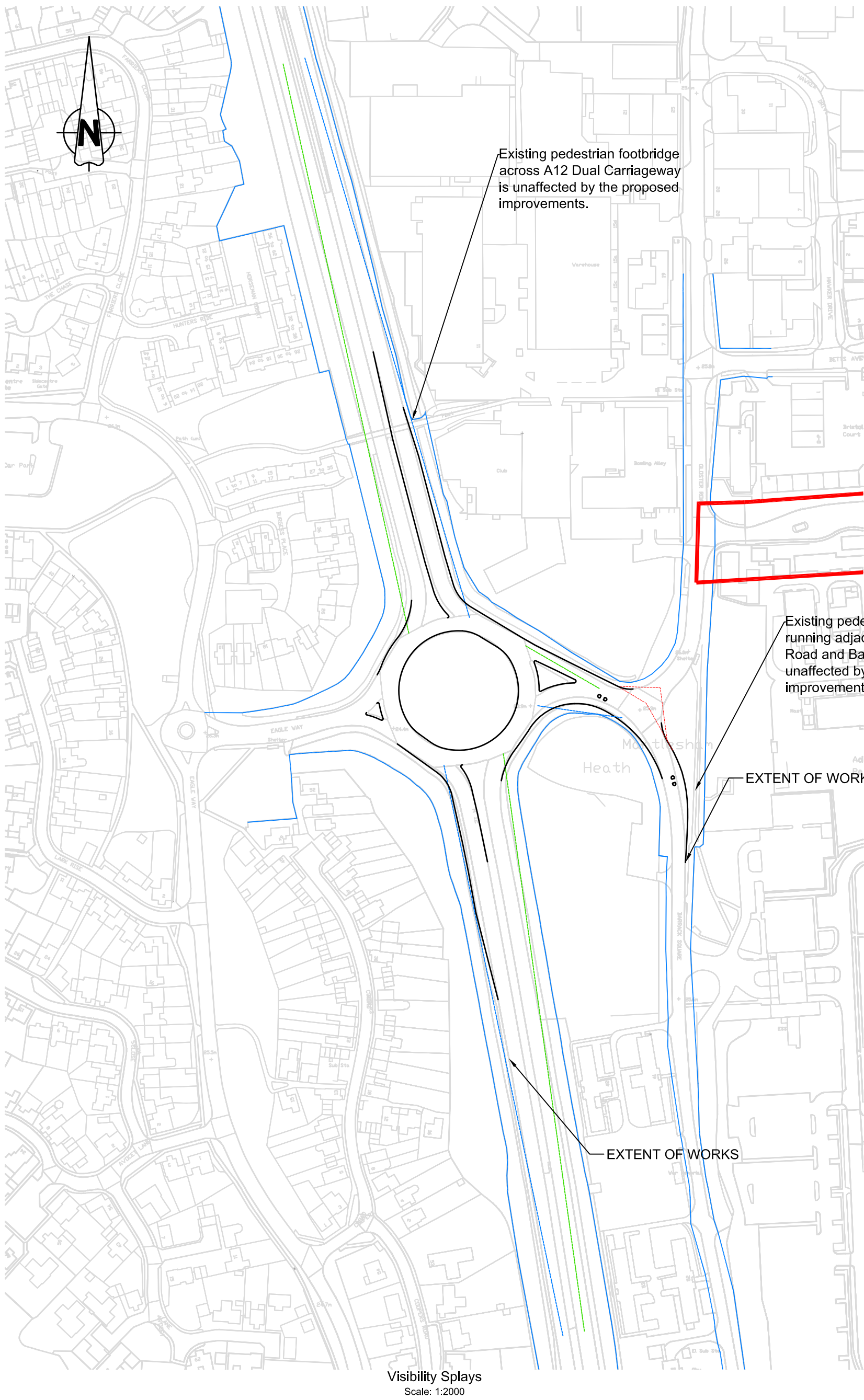
It has been confirmed by Suffolk County Council that the Highway Boundary is located as indicated on the drawings.

The design of this roundabout 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 3<sup>rd</sup> party land not within the control of the Developer or Highway Authority.

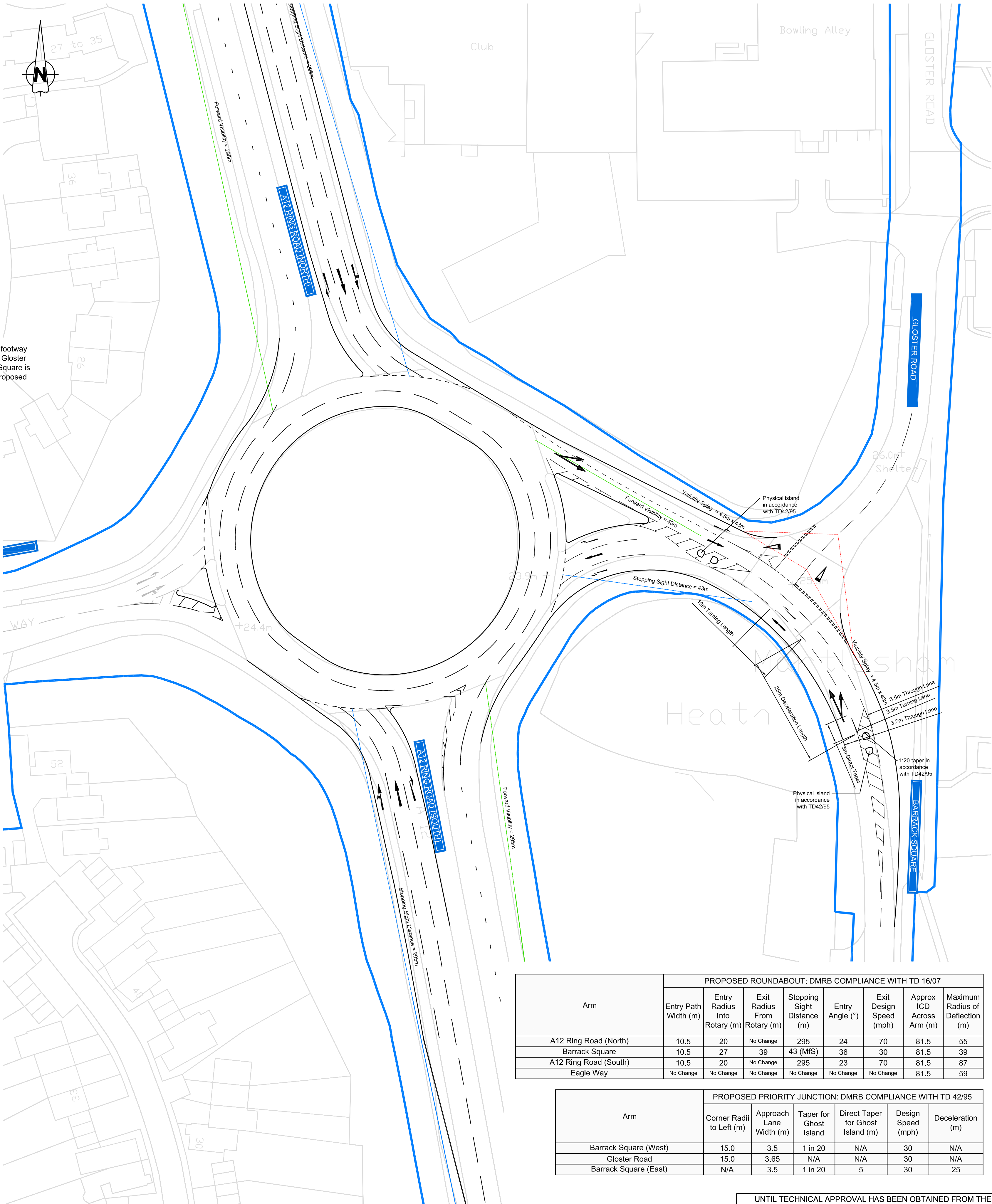
## 7 Street Lighting

The proposed junction already has a system of street lighting in place. However, the proposed roundabout 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.





Context Plan  
Scale: 1:10000



Indicative Junction Layout  
Scale: 1:500

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)	Approx ICD Across Arm (m)	Maximum Radius of Deflection (m)
A12 Ring Road (North)	10.5	20	No Change	295	24	70	81.5	55
Barrack Square	10.5	27	39	43 (MfS)	36	30	81.5	39
A12 Ring Road (South)	10.5	20	No Change	295	23	70	81.5	87
Eagle Way	No Change	No Change	No Change	No Change	No Change	No Change	81.5	59

Arm	PROPOSED PRIORITY JUNCTION: DMRB COMPLIANCE WITH TD 42/95					
	Corner Radii to Left (m)	Approach Lane Width (m)	Taper for Ghost Island	Direct Taper for Ghost Island (m)	Design Speed (mph)	Deceleration (m)
Barrack Square (West)	15.0	3.5	1 in 20	N/A	30	N/A
Gloster Road	15.0	3.65	N/A	N/A	30	N/A
Barrack Square (East)	N/A	3.5	1 in 20	5	30	25

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.

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:

- Do not scale from this drawing
- All dimensions are in metres unless otherwise stated.
- Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
- No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
- 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
  - TD 9/93: Highway Link Design;
  - TD 16/07: The Geometric Design of Roundabouts.
  - TD 42/95: The Geometric Design of Major-Minor Priority Junctions.

## KEY:

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


B Further amendments for deflection. MDM DN PAB 15.06.17  
A Amendments as per client's requests. MDM LW PAB 03.03.17  
- First Issue - - - 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:  
Adastral Park Roundabout  
and Gloster Road Mitigation

Status			Status Date		
Approval			Feb 2017		
Drawn		Checked		Date	
MDM		LW		28.02.2017	
Scale		Number		Rev	
As Shown		10391-HL-23		B	
01020304050					
					
METRES					



## Technical Note for Design Strategy

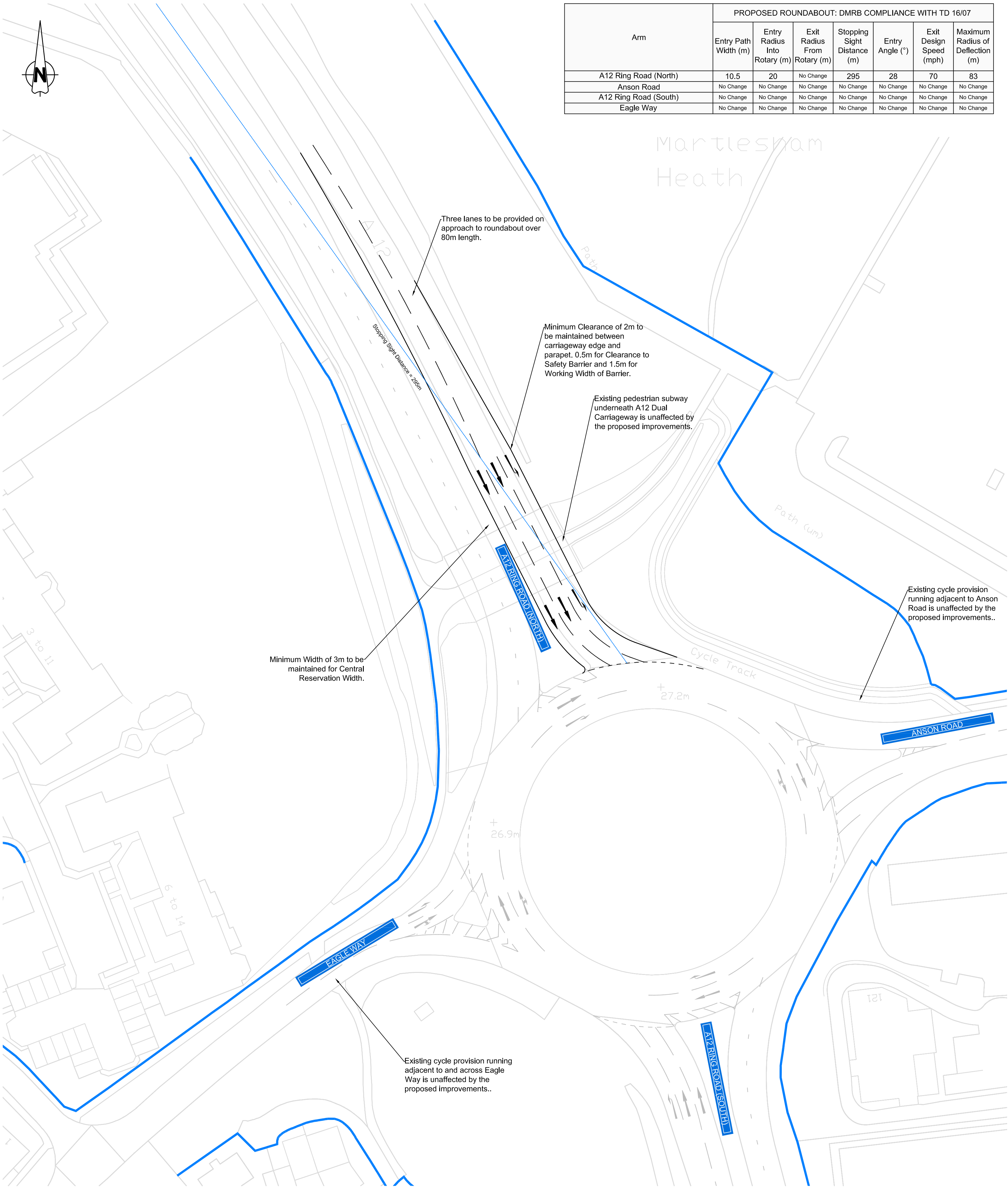
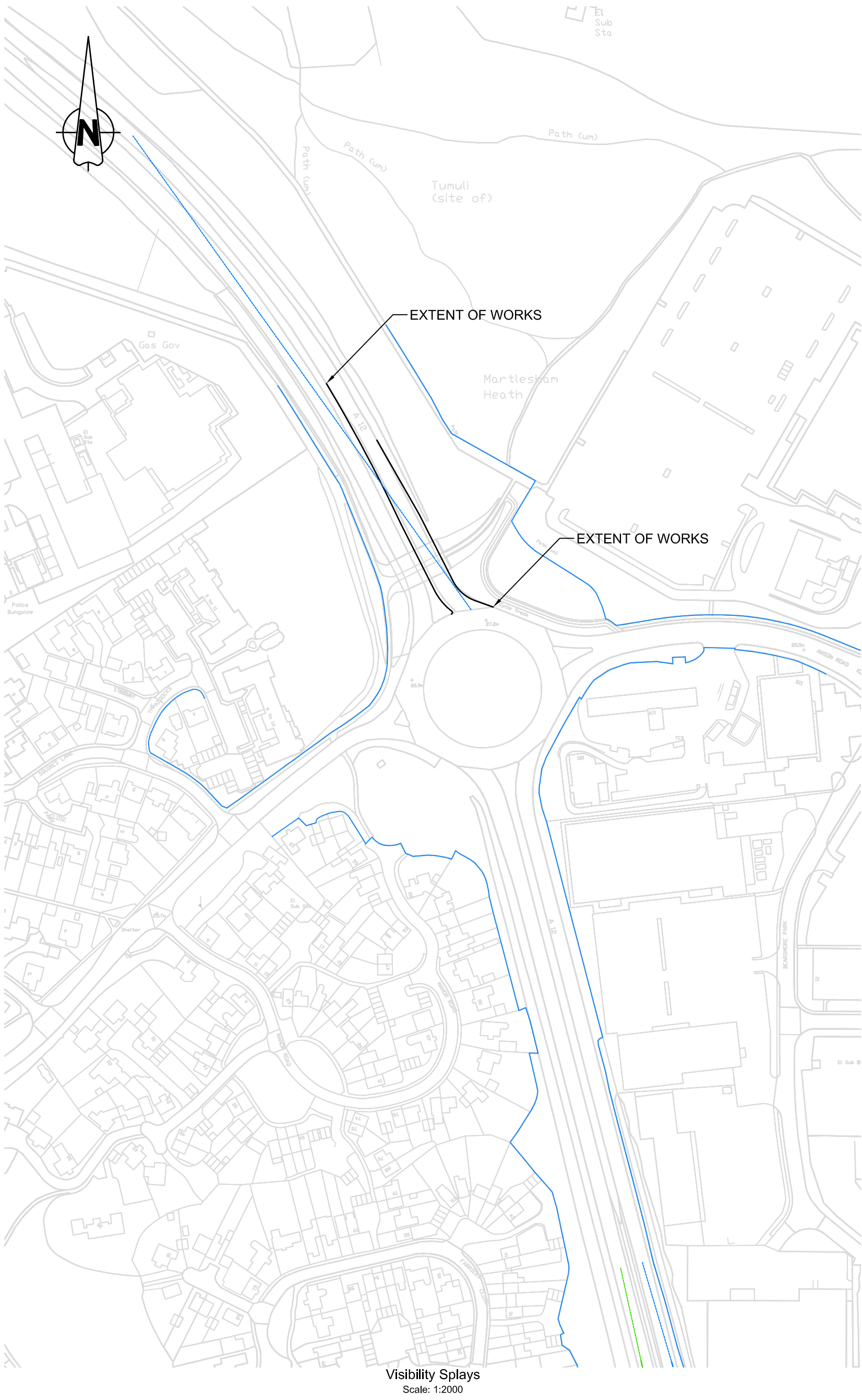
**Project Name:** Land South and East of Adastral Park, Ipswich, Suffolk  
**Project Number:** 10391  
**Client Name:** Carlyle Land Ltd and Commercial Estates Group  
**Note Number:** 24  
**Date:** June 2017  
**Prepared By:** Matthew Moss  
**Checked By:** Lee Witts  
**Subject/Topic:** Proposed Martlesham Roundabout Mitigation 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 lengthening the additional queuing lane on the A12 Southbound approach to the roundabout, 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-24. The existing lengths of roads affected by this scheme are:</p> <ul style="list-style-type: none"><li>• Approximate carriageway and footway dimensions: 10.95m Carriageways, 3-5m Central Reservation. No footways.</li><li>• Local Vegetation/Existing Constraints: The approach will need vegetation to be cropped back.</li><li>• Local Speed Limits: National Speed Limit.</li><li>• Street Lighting: Junction is fully lit.</li><li>• Local water courses that may constrain the site: None.</li><li>• Local Accesses that must be maintained: None.</li></ul> <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div></div> <p><b>Figure 1:</b> A12 (North) looking South</p> <p><b>Figure 2:</b> A12 (North) looking North</p>
2	<p><b>Design Standards:</b></p> <p>The design parameters of the proposed junction have been determined following a review of the following documents:-</p>

	<ul style="list-style-type: none"><li>Design Manual for Roads and Bridges:<ul style="list-style-type: none"><li>➤ TA 23/81: Junctions and Accesses – Determination of Size of Roundabouts and Major-Minor Junctions;</li><li>➤ TD 9/93: Highway Link Design;</li><li>➤ TD 16/07: The Geometric Design of Roundabouts</li></ul></li><li>Traffic Signs Manual Design Standard: Chapter 5 Road Markings</li></ul>																																																						
3	<p><b>Site Surveys:</b></p> <p>No surveys were carried out for the site at the time of writing.</p>																																																						
4	<p><b>2D Design Elements:</b></p> <ul style="list-style-type: none"><li>Northern Arm (Major): A12 Ring Road (North) 70 mph</li><li>Design Speed for the Major Road = 120 kph (TD 9/93, Table 2);</li><li>Desirable Minimum Stopping Sight Distance Major Road = 295m (TD 9/93, Table 3. TD 16/07 Item 8.3 and Figure 8/1.);</li><li>Visibility Distance for a roundabout with an Inscribed Circle Diameter of over 100m = 70m (TD 16/07, Table 8/1);</li><li>Forward Visibility at Entry (TD 16/07, Item 8.4 and Figure 8/2) = 70m;</li><li>Visibility to the Right (TD 16/07, Items 8.5 to 8.7 and Figures 8/3 and 8/4) = 70m;</li><li>Circulatory Visibility (TD 16/07, Item 8.9 and Figure 8/5) = 70m.</li></ul> <p>The definition of a Normal Roundabout as described in Items 3.1 and 3.2 of TD 16/07 is as follows:-</p> <p>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.</p> <p>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.</p> <table><tr><th></th><th colspan="8">DMRB COMPLIANCE WITH TD 50/04</th></tr><tr><th></th><th>Entry Width (m)</th><th>Entry Radius into Rotary (m)</th><th>Exit Radius from Rotary (m)</th><th>Stopping Sight Distance (m)</th><th>Entry Angle (degrees)</th><th>Entry/Exit Design Speed (mph)</th><th>Approx. Indicative Circular Diameter (m)</th><th>Maximum Radius of Deflection (m)</th></tr><tr><td>A12 Ring Road (North)</td><td>10.5</td><td>20</td><td>No change</td><td>295</td><td>28</td><td>70</td><td>No change</td><td>83</td></tr><tr><td>Anson Road</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr><tr><td>A12 Ring Road (South)</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr><tr><td>Eagle Way</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr></table>		DMRB COMPLIANCE WITH TD 50/04									Entry Width (m)	Entry Radius into Rotary (m)	Exit Radius from Rotary (m)	Stopping Sight Distance (m)	Entry Angle (degrees)	Entry/Exit Design Speed (mph)	Approx. Indicative Circular Diameter (m)	Maximum Radius of Deflection (m)	A12 Ring Road (North)	10.5	20	No change	295	28	70	No change	83	Anson Road	No change	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	No change	Eagle Way	No change	No change	No change	No change	No change	No change	No change	No change
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5	<p><b>Traffic Signs</b></p> <p>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 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><b>Road Markings</b></p> <p>The existing road markings along the A12 Dual Carriageway have been provided in response to the current speed limit of 70 mph. All road markings have been informed by Traffic Signs Manual Chapter 5.</p>
6	<p><b>Highway Boundary</b></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 3<sup>rd</sup> party land not within the control of the Developer or Highway Authority.</p>
7	<p><b>Street Lighting</b></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>





**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 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

B Further amendments for deflection. MDM DN PAB 14.06.17  
A Amendments as per client's requests. MDM LW PAB 03.03.17  
- First Issue - - - 28.02.17

**Brookbanks**

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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					

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:** 25  
**Date:** June 2017  
**Prepared By:** Matthew Moss  
**Checked By:** Lee Witts  
**Subject/Topic:** Proposed A1189 Bixley Road / Foxhall Road Roundabout Mitigation 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 to widen the approach from Foxhall Road (East) to provide an additional 1m Entry Width and Foxhall Road (West) to provide an additional 1m Entry Width with an additional 1m Flare Length. By carrying this out, 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-25. The existing lengths of Foxhall Road affected by this scheme are:</p> <ul style="list-style-type: none"><li>• Approximate carriageway and footway dimensions: Foxhall Road: 2 x 6m Carriageways, 2 x 2m footways.</li><li>• Local Vegetation/Existing Constraints: The footways are constrained within the anticipated highway boundary.</li><li>• Local Speed Limits: 30 mph (48 kph).</li><li>• Street Lighting: Junction is fully lit.</li><li>• Local water courses that may constrain the site: None.</li><li>• Local Accesses that must be maintained: Not affected by the works.</li></ul> <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div></div> <p><b>Figure 1:</b> Foxhall Road (East) looking West</p> <p><b>Figure 2:</b> Foxhall Road (West) looking East</p>
2	<p><b>Design Standards:</b></p> <p>The design parameters of the proposed junction have been determined following a review of the following documents:-</p>



	<ul style="list-style-type: none"> <li>Design Manual for Roads and Bridges: <ul style="list-style-type: none"> <li>➤ TA 23/81: Junctions and Accesses – Determination of Size of Roundabouts and Major-Minor Junctions;</li> <li>➤ TD 16/07: The Geometric Design of Roundabouts</li> </ul> </li> <li>Manual for Streets</li> <li>Traffic Signs Manual Design Standard: Chapter 5 Road Markings</li> </ul>
3	<p><b>Site Surveys:</b></p> <p>No surveys were carried out for the site at the time of writing.</p>
4	<p><b>2D Design Elements:</b></p> <ul style="list-style-type: none"> <li>Eastern Arm (Minor): Foxhall Road (East) 30 mph</li> <li>Western Arm (Minor): Foxhall Road (West) 30 mph</li> <li>Design Speed for the Major Road = 48 kph (Manual for Streets Table 7.1);</li> <li>Desirable Minimum Stopping Sight Distance Major Road = 43m (Manual for Streets Table 7.1);</li> </ul>
5	<p><b>Traffic Signs</b></p> <p>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 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 30 mph speed limit on the highway.</p> <p><b>Road Markings</b></p> <p>The existing road markings along the Foxhall Road have been provided in response to the current speed limit of 30 mph. All road markings have been informed by Traffic Signs Manual Chapter 5.</p>
6	<p><b>Highway Boundary</b></p> <p>The location of the existing highway boundary has anticipated in terms of boundaries on satellite imagery between the highway and third party land. It is subject to confirmation 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 3<sup>rd</sup> party land not within the control of the Developer or Highway Authority.</p>

NOTES:

- KEY:

 Anticipated Highway Boundary  
 Stopping Sight Distance on Approach

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Carlyle Land Ltd and  
Commercial Estates Group

Land South and East of  
Adastral Park, Ipswich

Off-site Highway Mitigation:  
A1189 Bixley Road / Foxhall  
Road Roundabout Mitigation

Status	Approval			Status Date	Mar 2017
Drawn	Checked	Date			
MDM	LW	03.03.17			
Scale	Number	Rev			
As Shown	10391-HL-25	A			

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Context Plan  
Scale: 1:10000



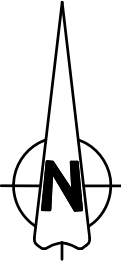
## Technical Note for Design Strategy

**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:** 26  
**Date:** March 2017  
**Prepared By:** Matthew Moss  
**Checked By:** Lee Witts  
**Subject/Topic:** Proposed A1189 Bixley Road / A1156 Felixstowe Road Roundabout Mitigation 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 to widen the approach from the A1189 Bixley Road to provide an additional 0.3m Entry Width. By carrying this out, 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-26. The existing lengths of Bixley Road affected by this scheme is:</p> <ul style="list-style-type: none"><li>• Approximate carriageway and footway dimensions: Bixley Road: 7m Carriageway, 2 x 2m footways.</li><li>• Local Vegetation/Existing Constraints: The footways are constrained within the anticipated highway boundary.</li><li>• Local Speed Limits: 30 mph (48 kph).</li><li>• Street Lighting: Junction is fully lit.</li><li>• Local water courses that may constrain the site: None.</li><li>• Local Accesses that must be maintained: Not affected by the works.</li></ul> <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div></div> <p><b>Figure 1:</b> Bixley Road (North) looking South</p> <p><b>Figure 2:</b> Bixley Road (North) looking North</p>
2	<p><b>Design Standards:</b></p> <p>The design parameters of the proposed junction have been determined following a review of the following documents:-</p>

	<ul style="list-style-type: none"> <li>Design Manual for Roads and Bridges: <ul style="list-style-type: none"> <li>➤ TA 23/81: Junctions and Accesses – Determination of Size of Roundabouts and Major-Minor Junctions;</li> <li>➤ TD 9/93: Highway Link Design;</li> <li>➤ TD 16/07: The Geometric Design of Roundabouts</li> </ul> </li> <li>Traffic Signs Manual Design Standard: Chapter 5 Road Markings</li> </ul>
3	<p><b>Site Surveys:</b></p> <p>No surveys were carried out for the site at the time of writing.</p>
4	<p><b>2D Design Elements:</b></p> <ul style="list-style-type: none"> <li>Northern Arm (Major): Bixley Road (North) 30 mph</li> <li>Design Speed for the Major Road = 60 kph (TD 9/93 Table 2);</li> <li>Desirable Minimum Stopping Sight Distance Major Road = 90m (TD 9/93 Table 2);</li> </ul>
5	<p><b>Traffic Signs</b></p> <p>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 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 30 mph speed limit on the highway.</p> <p><b>Road Markings</b></p> <p>The existing road markings along the Bixley Road have been provided in response to the current speed limit of 30 mph. All road markings have been informed by Traffic Signs Manual Chapter 5.</p>
6	<p><b>Highway Boundary</b></p> <p>The location of the existing highway boundary has anticipated in terms of boundaries on satellite imagery between the highway and third party land. It is subject to confirmation 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 3<sup>rd</sup> party land not within the control of the Developer or Highway Authority.</p>





Context Plan  
Scale: 1:10000

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:

- Do not scale from this drawing
- All dimensions are in metres unless otherwise stated.
- Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
- No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
- 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
  - TD 16/07: The Geometric Design of Roundabouts.
  - TD 9/93: Highway Link Design;

KEY:

- Anticipated Highway Boundary
- Stopping Sight Distance on Approach

B Amendments as per Road Safety Audit. MDM LW PAB 12.06.17  
A Amendments as per client's requests. MDM LW PAB 25.03.17  
- First Issue - - - 03.03.17


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Carlyle Land Ltd and  
Commercial Estates Group

Land South and East of  
Adastral Park, Ipswich

Off-site Highway Mitigation: A1189  
Bixley Road / A1156 Felixstowe  
Road Roundabout Mitigation



Status		Status Date	
Approval		Mar 2017	
Drawn	Checked	Date	
MDM	LW	03.03.17	
Scale	Number	Rev	
As Shown	10391-HL-26	B	
0 10 20 30 40 50			
			
METRES			

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## 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:** 27  
**Date:** June 2017  
**Prepared By:** Matthew Moss  
**Checked By:** Lee Witts  
**Subject/Topic:** Proposed A1189 Heath Road / Woodbridge Road Roundabouts Mitigation 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 to realign the east roundabout so that queuing for 6 PCUs is available on the A1189 Heath Road Approach. Also to reinstate the eastern part of the circulatory on the western roundabout. By carrying this out, 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-27. The existing lengths of carriageway affected by this scheme are:</p> <ul style="list-style-type: none"><li>• Approximate carriageway and footway dimensions: A1189 Heath Road: 10.5m Carriageway, 2m footways. Circulatory Carriageway Width: 7m.</li><li>• Local Vegetation/Existing Constraints: The footways are constrained within the anticipated highway boundary. An existing Bus Stop is to be relocated from the middle of the circulatory and reinstated to the south of the circulatory adjacent to the other Bus Stop.</li><li>• Local Speed Limits: 30 mph (60 kph).</li><li>• Street Lighting: Junction is fully lit.</li><li>• Local water courses that may constrain the site: None.</li><li>• Local Accesses that must be maintained: Not affected by the works.</li></ul> <p>No discussions have taken place with the Local Authority or Highways England at the time of writing.</p> <div></div> <p><b>Figure 1:</b> A1189 Heath Road (South) looking North</p> <p><b>Figure 2:</b> Corresponding Circulatory (East) looking South</p>





**Figure 3:** East Approach to Western Roundabout



**Figure 4:** Corresponding Circulatory (West) looking South

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 16/07: The Geometric Design of Roundabouts
- 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:**

- All Approach Arms and Circulatory Sections (Major): 30 mph
- Design Speed for the Major Roads = 48 kph (Manual for Streets Table 7.1);
- Desirable Minimum Stopping Sight Distance Major Road = 43m (Manual for Streets Table 7.1).

5

#### **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 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 signs have been informed by the existing 30 mph speed limit on the highway.


	<p><b>Road Markings</b></p> <p>The existing road markings along the Bixley Road have been provided in response to the current speed limit of 30 mph. All road markings have been informed by Traffic Signs Manual Chapter 5.</p>
6	<p><b>Highway Boundary</b></p> <p>The location of the existing highway boundary has anticipated in terms of boundaries on satellite imagery between the highway and third party land. It is subject to confirmation 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 3<sup>rd</sup> party land not within the control of the Developer or Highway Authority.</p>



NOTES:

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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:

-  Anticipated Highway Boundary
-  Stopping Sight Distance on Approach
-  Access to frontage to be maintained

B	Amendments as per Road Safety Audit.	MDM	LW	PAB	12.06.17
A	Amendments as per client's requests.	MDM	LW	PAB	25.03.17
-	First Issue	-	-	-	03.03.17

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Land South and East of  
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### Off-site Highway Mitigation: A1214 / A1189 Gyratory Junction Mitigation

Status		Status Date	
Approval		Mar 2017	
Drawn	Checked	Date	
MDM	LW	03.03.17	
Scale	Number	Rev	
As Shown	10391-HL-27	B	

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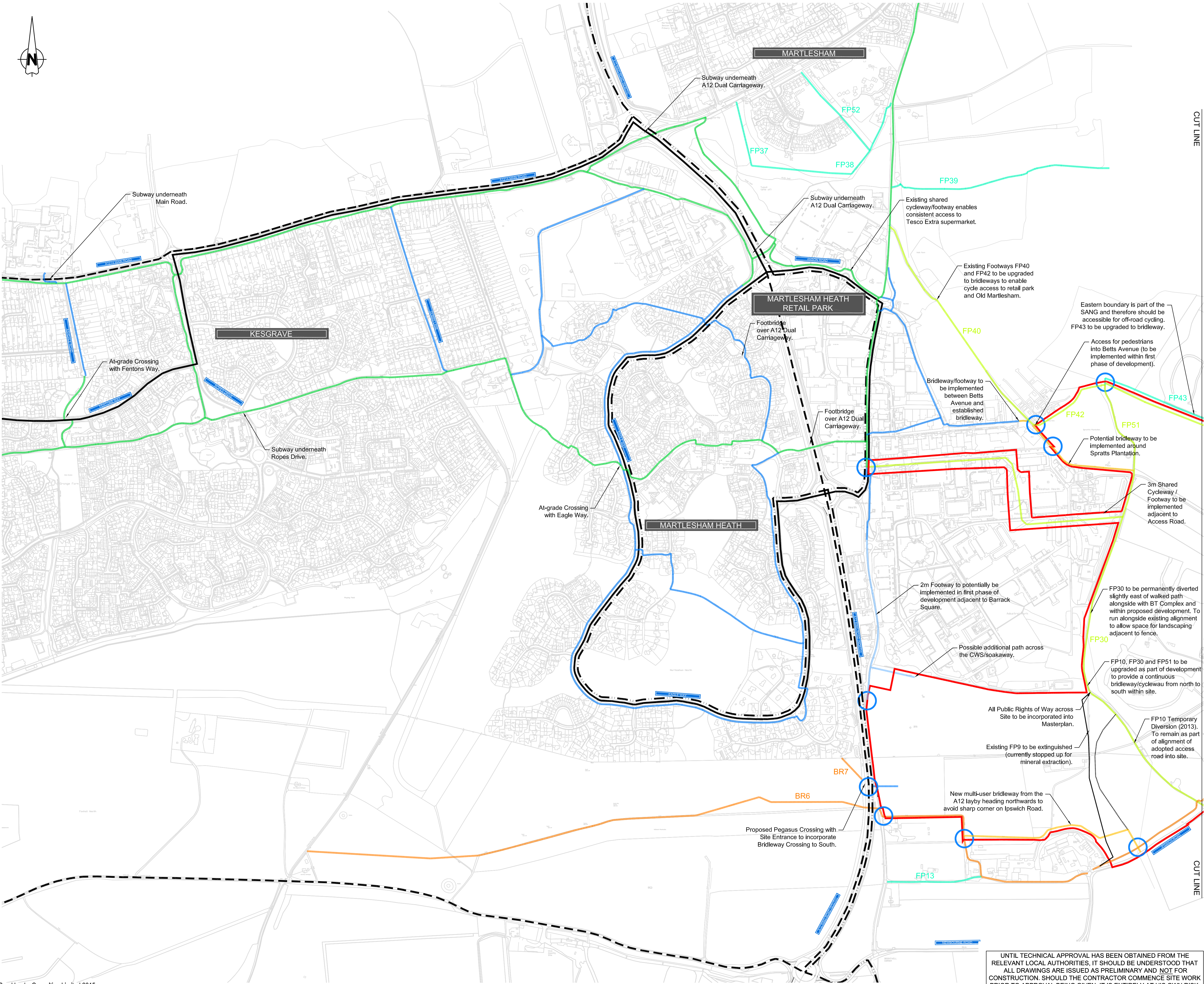
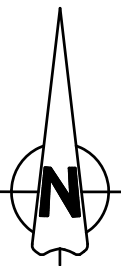
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Context Plan  
Scale: 1:10000





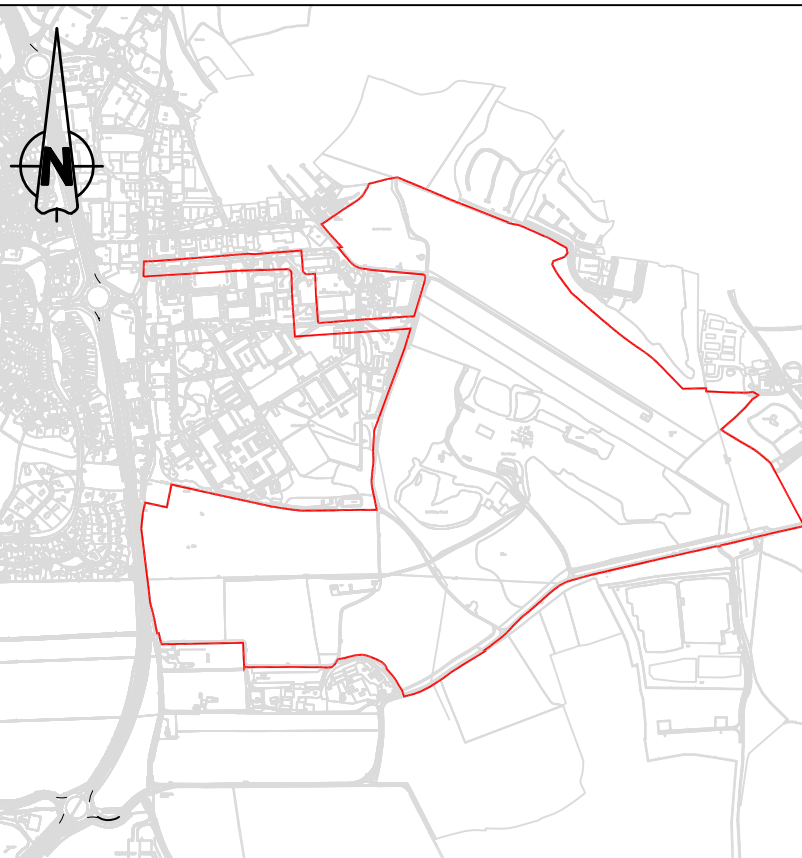
**Construction Design and Management (CDM)**  
**Key Residual Risks**  
Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and 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. This drawing has been based on survey data provided by a third party. Brookbanks Consulting Ltd cannot be held responsible for the accuracy of this information.

- KEY:**
- Development Boundary
  - Existing Footway
  - Existing Shared Cycle/Pedestrian Route
  - Existing Bridleway
  - Existing PROW.
  - Access Point into Site for Pedestrians/ Cyclists
  - Potential Footway
  - Potential Shared Cycleway/ Footway/Bridleway
  - Potential Bridleway

- BUS ROUTES:**
- Route 66
  - Route 67
  - Route 63 / 64 / 65 / 65B
  - Route 172/174



Proposed Site Extents  
Scale: 1:20000  
A Further details of PROWs added. MDM LW PAB 14.06.17  
First Issue 22.03.17

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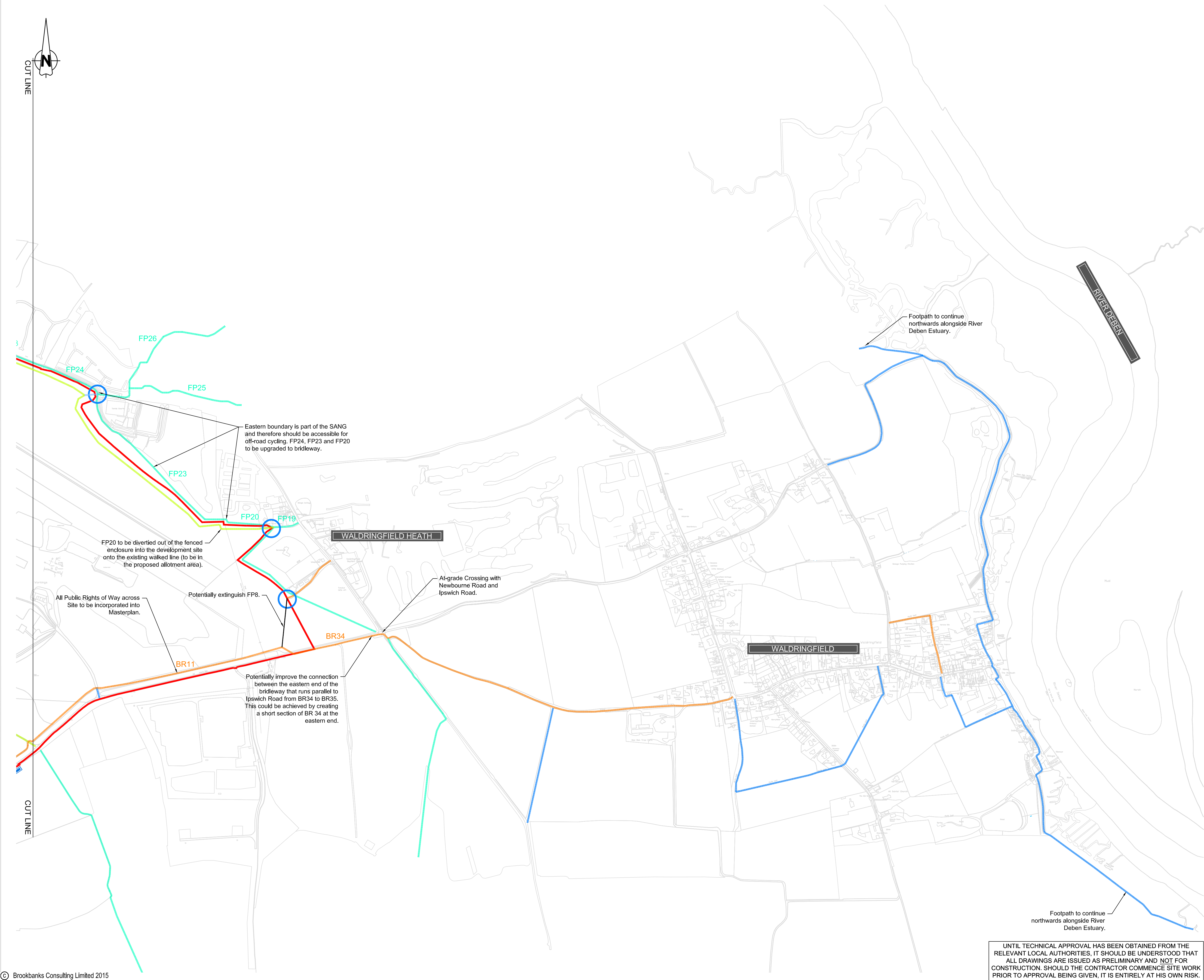
Land South and East of  
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Key Local Connection  
Strategy Page 1 of 2

Status	Approval	Checked	LW	Date	22.03.2017
Drawn	MDM	Number	10391-HL-101	Rev	A
Scale	1:5000				
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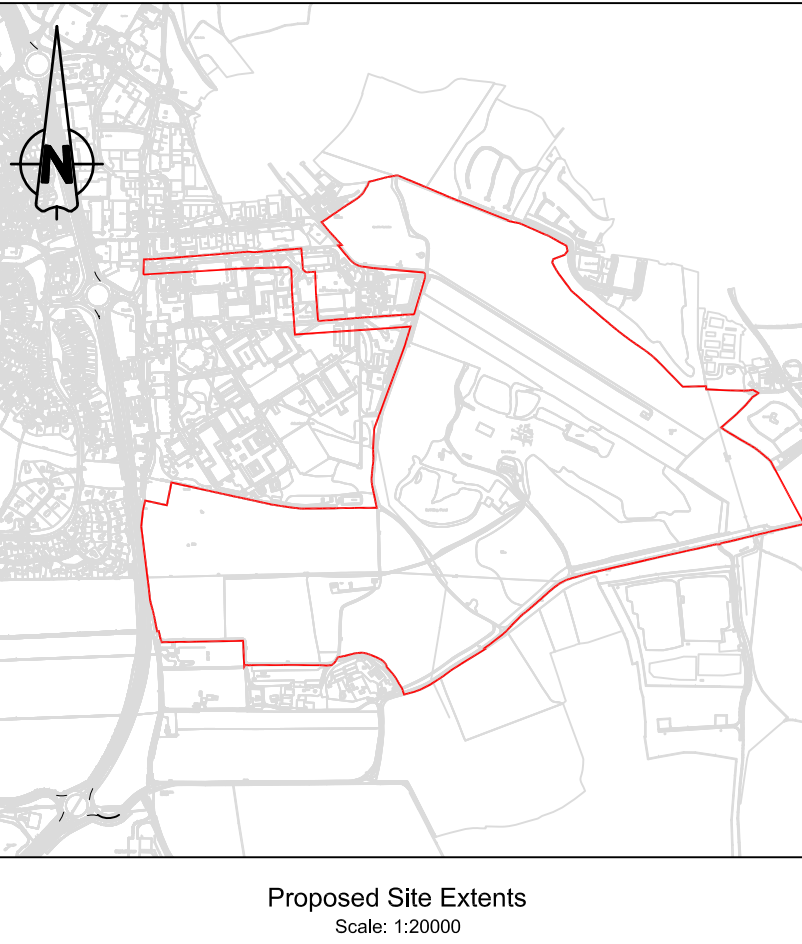
**Construction Design and Management (CDM)**  
**Key Residual Risks**  
 Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and 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. This drawing has been based on survey data provided by a third party. Brookbanks Consulting Ltd cannot be held responsible for the accuracy of this information.

**KEY:**

- Development Boundary
- Existing Footway
- Existing Shared Cycle/Pedestrian Route
- Existing Bridleway
- Existing PROW.
- Access Point into Site for Pedestrians/ Cyclists
- Potential Footway
- Potential Shared Cycleway/Footway



A Further details of PROWs added. MDM LW PAB 14.06.17  
 First Issue 22.03.17

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Land South and East of  
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Key Local Connection  
 Strategy Page 2 of 2

Status	Approval		Status Date
Drawn	MDM	LW	March 2017
Checked			Date
Scale	1:5000	10391-HL-102	Rev A
0 10 20 30 40 50			
METRES			

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