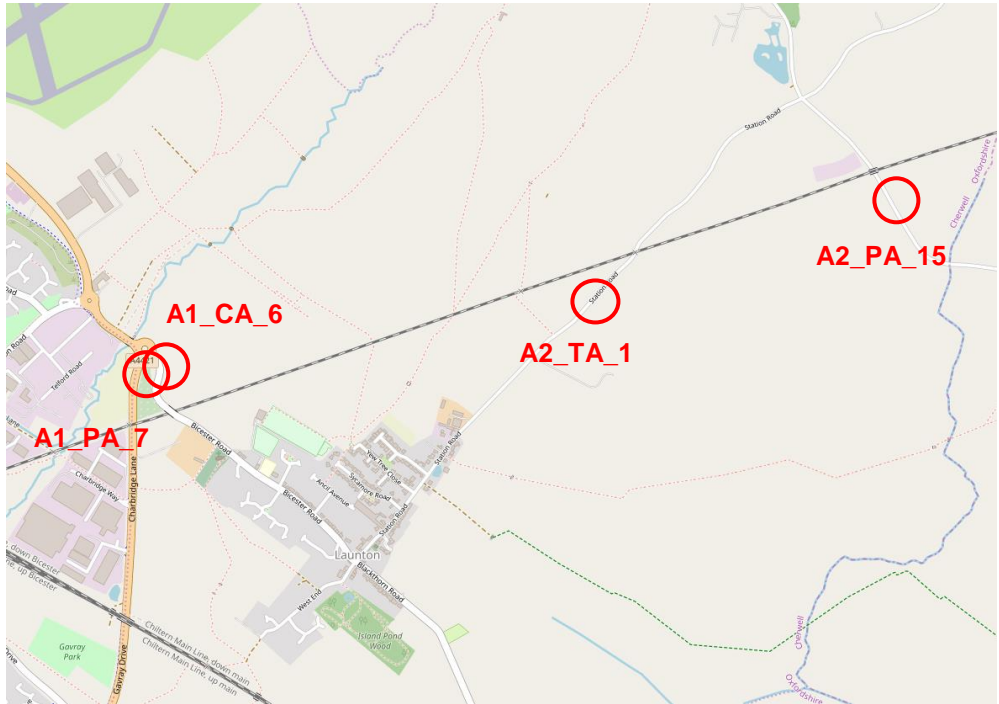


<b>Departure Reference:</b>	N003	<b>Departure Type:</b>	General
<b>Document File Name:</b>	133735_RW-EWR-XX-XX-RP-CH-000108	<b>Local Highway Authority:</b>	Oxfordshire County Council

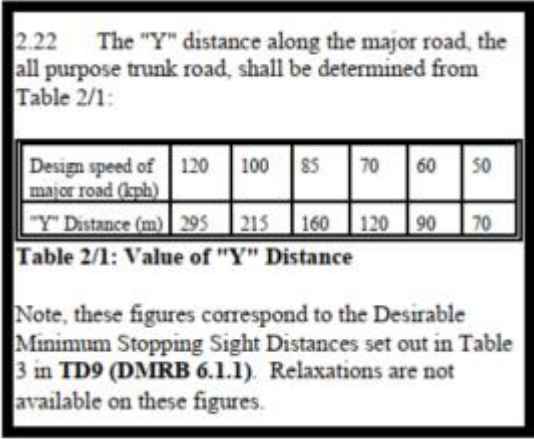
<b>Departure Title:</b>	<p>Reduced visibility standard at the junction with the highway network at:</p> <ul style="list-style-type: none"> <li>• Other Access - A1_CA_6 (Bicester Road)</li> <li>• Other Access - A1_PA_7 (Bicester Road)</li> <li>• Other Access - A2_TA_1 (Station Road)</li> <li>• Other Access - A2_PA_15 (Bicester Road)</li> </ul>
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<b>Departure Location:</b>	
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<b>Supporting Information:</b>	<p><b>General Arrangement Drawing Numbers</b></p> <p>A1_CA_6 - 133735_2A-EWR-OXD-A1_CA_6-DR-CH-010001        A1_PA_7 - 133735_2A-EWR-OXD-A1_PA_7-DR-CH-010001        A2_TA_1 - 133735_2A-EWR-OXD-A2_TA_1-DR-CH-010001        A2_PA_15 - 133735_2A-EWR-OXD-A2_PA_15-DR-CH-010001</p> <p><b>Visibility Splay Drawing Numbers</b></p> <p>A1_CA_6 - 133735_2A-EWR-OXD-A1_CA_6-DR-CH-010008        A1_PA_7 - 133735_2A-EWR-OXD-A1_PA_7-DR-CH-010008        A2_TA_1 - 133735_2A-EWR-OXD-A2_TA_1-DR-CH-010007        A2_PA_15 - 133735_2A-EWR-OXD-A2_PA_15-DR-CH-010007</p>
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<b>Consultations:</b>	Oxfordshire County Council
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DEPARTURE DETAILS

<b>Relevant Standards:</b>	DMRB, Volume 6, Section 2, Part 6, TD 41/95 DMRB, Volume 6, Section 2, Part 6, TD 9/93
<b>Clause/Paragraphs:</b>	TD 41/95, Paragraph 2.22  
<b>Departure Description:</b>	Visibility from minor arm along major road is sub-standard.
<b>Associated Departures:</b>	None
<b>Reason for Departure:</b>	It is not possible to provide the full visibility at each of the accesses listed above.

DESIGN DETAILS

<b>Design Year Traffic Flow (AADT):</b>	Unknown
<b>Design Speed:</b>	The design speed of the major road is calculated using advise in TD 9/93, Paragraph 1.7. <b>Extracts from TD 9/93</b>  1.7 <u>Existing Rural Road Improvements:</u> (including short diversions or bypasses up to about 2 km in length) Design Speed shall be derived in a similar manner to Paragraph 1.6 above, with Ac measured over a minimum length of 2 km incorporating the improvement, provided there are no discontinuities such as roundabouts. The strategy for the contiguous sections of road, however, must be considered when determining Ac and the cross-sectional design. It might be unnecessary to provide a full Standard cross-section for a minor re-alignment within a low Standard route, unless it represented a stage of a realistic improvement strategy.

### Selection of Design Speed

1.6 New Rural Roads: Design Speed shall be derived from Figure 1, which shows the variation in speeds for a given Lc against Ac. The Design Speeds are arranged in bands, ie. 120, 100, 85, etc., within which suffixes A and B indicate the higher and lower categories of each band. An initial alignment to a trial Design Speed should be drawn

up, and Ac measured for each section of the route demonstrating significant changes thereof, over a minimum length of 2 km. The Design Speed calculated from the ensuing Ac and Lc should be checked against the initial choice to identify locations where elements of the initial trial alignment may be relaxed to achieve cost or environmental savings, or conversely where design should be upgraded, according to the calculated Design Speed. If any changes to road geometry result, then the Design Speed should be recalculated to check that it has not changed.

Paragraph 1.3 identifies how Alignment Constraint, Ac is calculated for a single carriageway;

$$Ac = 12 - VISI/60 + 2B/45$$

Where

B = Bendiness in degrees/km

And VISI is established from Annex A, paragraph 3;

3. For existing roads, an empirical relationship has been derived which provides estimates of VISI given in bendiness and verge width (applicable up to VISI = 720m) i.e.

$$\text{Log}_{10} \text{VISI} = 2.46 + \text{VW}/25 - \text{B}/400$$

where:

VW = Average verge width (averaged for both sides of the road)

B = Bendiness (Degree per km - minimum Length of about 2 km)

This relationship is valid for existing roads, but on long straight roads, or where sight distance is available outside the highway boundary, significant underestimates of VISI will result.

Paragraph 1.4 identifies how the Layout Constraint Lc is established

1.4 Layout Constraint Lc: This measures the degree of constraint imparted by the road cross section, verge width, and frequency of junctions and accesses. Table 1 shows the values of Lc relative to cross section features and density of access, expressed as the total number of junctions, laybys and commercial accesses per km, summed for both sides of the road, where:

L = Low Access numbering 2 to 5 per km

M = Medium Access numbering 6 to 8 per km

H = High Access numbering 9 to 12 per km

Road Type	S2				WS2		D2AP		D3AP	D2M	D3M
Carriageway Width (Ex. Metre Strips)	6m		7.3m		10m		Dual 7.3m		Dual 11m	Dual 7.3m & Hard Shoulder	Dual 11m & Hard Shoulder
Degree of Access and Junctions	H	M	M	L	M	L	M	L	L	L	L
Standard Verge Width	29	26	23	21	19	17	10	9	6	4	0
1.5m Verge	31	28	25	23	There is no research data available for 4 lane Single Carriageway roads between 12 and 14.6m width (S4). In the limited circumstances for their use described in this document, Design Speed should be estimated assuming a normal D2AP with a Layout Constraint of 15 - 13 kph						
0.5m Verge	33	30									

Table 1 Layout Constraint Lc kph

Design speed is then established using Figure 1

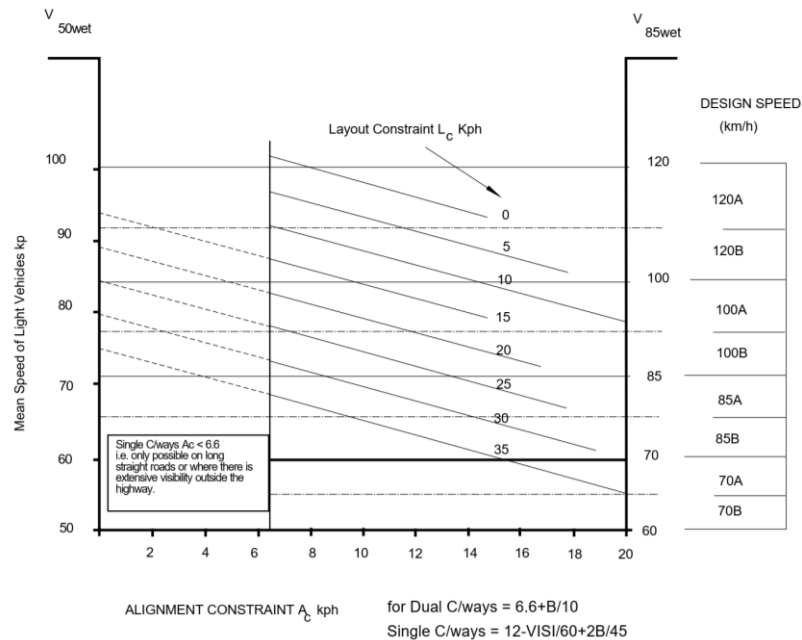


Figure 1 Selection of Design Speed (Rural Roads)

The design road speeds are calculated as follows;

Location	VW	B	Log10 VISI	VISI	Ac	Lc	Design speed kph
A1_CA_6	0.8	125	2.18	151	15	30	85
A1_PA_7	0.8	125	2.18	151	15	30	85
A2_TA_1	0.8	80	2.29	196	12	30	85
A2_PA_15	0.8	117	2.20	158	15	30	85

JUSTIFICATION

<p><b>Safety:</b></p>	<p>TD 41/95, Paragraph 2.21 states:</p> <div style="border: 2px solid black; padding: 5px;"> <p>2.21 Normally, an "X" distance of 4.5m shall be provided for a direct access where use in the design year is forecast not to exceed 500 AADT. The choice of set back distance is related to the forecast traffic using the access. For lightly used accesses, for example those serving a single dwelling or a small cul-de-sac of a half a dozen dwellings, the set back "X" may be reduced to 2.4m. The 2.4m set back relates to normally only one vehicle wishing to join the trunk road at one time. The 4.5m covers the situation where two light vehicles may want to accept the same gap in the trunk road traffic. Where in the case of lightly used accesses the site conditions are particularly difficult, then the set back "X" may be reduced to 2.0m as a Relaxation. Any further reduction would be a Departure from Standard under para 1.15.</p> </div> <p>All accesses have been designed with an 'x' distance of 2.4m, in line with TD41/95 Paragraph 2.21 which is deemed appropriate due to the low volumes of traffic that is anticipated to use the accesses.</p> <div style="border: 2px solid black; padding: 5px;"> <p>2.22 The "Y" distance along the major road, the all purpose trunk road, shall be determined from Table 2/1:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Design speed of major road (kph)</th> <th>120</th> <th>100</th> <th>85</th> <th>70</th> <th>60</th> <th>50</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">"Y" Distance (m)</td> <td>295</td> <td>215</td> <td>160</td> <td>120</td> <td>90</td> <td>70</td> </tr> </tbody> </table> <p><b>Table 2/1: Value of "Y" Distance</b></p> <p>Note, these figures correspond to the Desirable Minimum Stopping Sight Distances set out in Table 3 in TD9 (DMRB 6.1.1). Relaxations are not available on these figures.</p> </div> <p>The 'y' distances for design and relevant posted speed at each location are;</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Design Speed (kph)</th> <th>Posted Speed (mph/kph)</th> <th>Design Speed 'y' Distance (m)</th> <th>Temporary or Permanent</th> </tr> </thead> <tbody> <tr> <td>A1_CA_6</td> <td>85</td> <td>50/80</td> <td>160</td> <td>Permanent</td> </tr> <tr> <td>A1_PA_7</td> <td>85</td> <td>50/80</td> <td>160</td> <td>Permanent</td> </tr> <tr> <td>A2_TA_1</td> <td>85</td> <td>60/96</td> <td>160</td> <td>Temporary</td> </tr> <tr> <td>A2_PA_15</td> <td>85</td> <td>60/96</td> <td>160</td> <td>Permanent</td> </tr> </tbody> </table>	Design speed of major road (kph)	120	100	85	70	60	50	"Y" Distance (m)	295	215	160	120	90	70	Location	Design Speed (kph)	Posted Speed (mph/kph)	Design Speed 'y' Distance (m)	Temporary or Permanent	A1_CA_6	85	50/80	160	Permanent	A1_PA_7	85	50/80	160	Permanent	A2_TA_1	85	60/96	160	Temporary	A2_PA_15	85	60/96	160	Permanent
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A2_TA_1	85	60/96	160	Temporary																																				
A2_PA_15	85	60/96	160	Permanent																																				

	The 'x' and 'y' distances specified and achieved at each location are;				
	Other Access Ref:	Distance ('y')		'x' Distance Achieved (m)	
		Specified (m)	Achieved (m)		
			Left		Right
	A1_CA_6	160	126	74	2.4
A1_PA_7	160	46	107	2.4	
A2_TA_1	160	29	208	2.4	
A2_PA_15	160	123	152	2.4	
	<p>Visibility has been maximised as far as reasonably practicable. The constraints are beyond the control of EWR Alliance and it is not possible to amend the constraints or move the access location, due to the requirements of maintenance and construction of EWR2.</p> <p>A1_CA_6 visibility to the right and A1_PA_7 visibility to the left is restricted due to their proximity to the existing roundabout on Bicester Road. Each accesses visibility in the opposite direction is restricted due to the existing road geometry of a tight bend on the Bicester Road. It is recognised that in both directions, vehicles will be travelling slower than the design speed of the road. In the northern direction, vehicles will be travelling slower exiting the roundabout and in the southern direction, vehicles will be slowing on approach to the roundabout - getting ready to stop if needed.</p> <p>A2_TA_1 is a temporary access that will be removed when the works are completed. Its access is restricted to the left due to mature vegetation. Visibility to the right can be achieved in line with the design speed distance requirements.</p> <p>A2_PA_15 is a permanent farm access. Visibility is restricted to the left due to the highway boundary which is out of the control of the EWR2 Alliance. Visibility to the right is restricted due to the railway overbridge abutment on the Bicester Road and the current road geometry.</p>				
<b>Congestion/Delay:</b>	n/a				
<b>Environment/Sustainability:</b>	It is not proposed to provide the full 'y' distance, as this would involve heavy vegetation clearance, including several mature trees.				
<b>Accessibility:</b>	n/a				
<b>Maintenance:</b>	Any vegetation trimming required to provide the 'y' distances, will be maintained during the course of the works, with this carried out at the appropriate time of year.				
<b>Economic (whole life cost):</b>	n/a				

MITIGATION

<b>Risk Assessment Classification:</b>	n/a
<b>Other Options Considered:</b>	n/a
<b>Mitigation:</b>	n/a

**CONCLUDING COMMENTS**

The design speed calculated along the Bicester Road, Station Road and Launton Road is 85kph. This correlates to the posted speed of 50mph/80kph for the Bicester Road (A1\_CA\_6 and A1\_PA\_7); however, it is lower than the posted speed of 60mph/96kph for both Station Road (A2\_TA\_1) and Launton Road (A2\_PA\_15). At each location this requires an 'y' distance of 160m to be provided. This has not been achieved in any direction apart from A2\_TA\_1 where a 'y' distance of 208m is achieved in the right direction looking towards Launton.

The sub-standard 'y' distance at A1\_CA\_6 and A1\_PA\_7 is due to their proximity to the roundabout. It is recognised at these locations, vehicles will be slower approaching the roundabout and also travelling slower on exit from the roundabout. Therefore, the proposed 'y' distance is commensurate with the road layout and vehicle movements at the roundabout.

A2\_TA\_1 is a temporary access and it is not deemed to be economically or environmentally viable to undertake verge widening for a temporary access. A2\_PA\_15 is a permanent access that is sited at a location to maximise the 'y' distance in each direction and provides sight visibility that is very close to the requirement for the design speed of the road. However, it still does not meet the full requirement due to the existing road geometry. Again, it is not deemed to be economically or environmentally viable to amend the road geometry at this location.

**ALLIANCE ASSURANCE**

	Name	Signed	Date
<b>Originator</b>	Andrew Kirk		19/02/2020
<b>Reviewer</b>	Lisa Taylor		19/02/2020
<b>Authorised</b>	Gareth Johnston		19/02/2020

**LOCAL HIGHWAY AUTHORITY RESPONSE**

For completion by Local Highway Authority Representative

Category		Tick
1	Approved	
2	Approved with comments*	
3	Rejected with comments*	

Name	Position	Signed	Date

\*comments are to be provided on the form provided. Responses will be provided back to the LHA on these forms and close out monitored. Link to template: [133735\\_RW-EWR-XX-XX-CM-CH-000002](#)

Note: Where comments impact upon a design decision or have multidiscipline impacts, they will be entered into BIMCollab the projects online issues management system.