

Sworders

Land at Sheering, Epping Forest

Site Access Appraisal

January 2018



www.bancroftconsulting.co.uk

LAND AT SHEERING, EPPING FOREST
SITE ACCESS APPRAISAL
JANUARY 2018

1.0 INTRODUCTION

- 1.1 Bancroft Consulting were appointed by Sworders, on behalf of their Client, to provide highways and transportation advice in respect of proposals for land to the north of B183 'The Street' in Sheering, Essex. The development would comprise 16 dwellings. **Figure 1** shows the location of the site in context with its local area.
- 1.2 The objective of this Site Access Appraisal is to provide the Local Planning Authority, Highway Authority and Local Plan Inspector with confidence that a satisfactory access with adequate visibility can be achieved along The Street.
- 1.3 This report takes into account current Government policy contained within the National Planning Policy Framework [NPPF] (DCLG, March 2012), Paragraph 32 of which emphasises the importance of delivering “safe and suitable” access. It also considers current best practice advice and design guidance in the document 'Manual for Streets [MfS] (DfT, 2007) and its companion document 'Manual for Streets 2 – Wider Application of the Principles' [MfS2] (CIHT, 2010). Furthermore, the local standards contained within the Essex Design Guidance (Essex County Council *et al.*, 2005) are taken into account.
- 1.4 In respect of highways and transportation issues, Paragraph 32 of the NPPF sets out the following requirements:

“All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- *safe and suitable access to the site can be achieved for all people; and*
- *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development.*

Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.”

- 1.5 Appendix B of the Essex County Council publication ‘Development Management Policies’ (2011) defines the threshold of undertaking a more detailed assessment at 25 and above for residential dwellings. A scheme of 16 dwellings should not generate significant levels of movement (car and non-car), and this falls below the prescribed limit where more detailed assessment is required. As such, the focus of this internal report is to demonstrate that a safe and suitable access can be achieved.
- 1.6 This assessment follows site visit that was undertaken on 8 January 2018, between 1300 and 1400 hours. The purpose of the site visit was to review the existing constraints at the current access. Another site visit was undertaken previously on 26 October 2016, between 0945 and 1145 hours, where a manual radar speed survey was conducted at the existing site access and measurements of the key highway features in the surrounding area were taken.

2.0 BACKGROUND INFORMATION

- 2.1 The site currently comprises undeveloped land to the north of The Street. The site is in two linked parts. The southern part is bound by residential dwellings to the east and west. There is also a farm located to the north of the site. The northern part is bound by the school to the west and farmstead to the east. The site is located within the centre of Sheering, with amenities such as Sheering C of E Primary School and The Cock Inn Hotel located to the west and Sheering Post Office located to the east. Further afield, it is located approximately 7 kilometres to the northeast of Harlow and 9.5 kilometres to the south of Bishop’s Stortford.

Highway Layout

- 2.2 The existing site access extends from the northern edge of The Street and has a varying carriageway width of between approximately 3.8 and 5.2 metres with a 2.1 metres verge to the east and 2 metres verge to the west, which extends along the

site frontage. On-site observations showed that the access currently serves a farm, with an existing dwelling and rear access with parking to number 1 'The Street'.

- 2.3 The Street is a single carriageway road that is subject to a 30-mph speed limit along the site frontage. It links to Sheering Road, which provides direct access into Hatfield Heath to the east and the B183 extends to the west into Harlow. On-site measurements showed that the carriageway has a width of approximately 6 metres in the vicinity of the existing access and is bound by a footway measuring 1.9 metres in width to its southern edge. Along the northern edge, there is a 1.8 metres wide footway with a grass verge to the west of the existing site access. Solid on-street white line carriageway markings are located along both edges of The Street. The site frontage is bound by dense vegetation including shrubbery and trees with the access to the southeast.

Highway Safety

- 2.4 Inspection of Personal Injury Accident (PIA) data provided by the 'CrashMap' website (www.crashmap.co.uk) shows that there has been one accident along B183 The Street in the vicinity of the site within the most recent three-year period between 2015 to 2017, as shown in **Figure 2**. The PIA occurred to the west of the site along The Street, near to the junction with Church Road and was classified as 'slight'. According to CrashMap the accident only involved a cyclist, which does not represent an ongoing highway safety issue, so it can be reasonably concluded that there are no significant highway safety problems associated with The Street that would affect the deliverability of a safe and suitable access arrangement.

Survey Results

- 2.5 A manual radar speed survey was conducted at the site access location at the Street, on 26 October 2016. The survey took place between 0945 and 1145 hours, when the weather conditions were dry and fine. The survey recorded a total of 200 vehicle speeds, comprising 100 readings in the eastbound direction and 100 readings in the westbound direction. **Appendix A** contains the full survey results, which demonstrates 85th percentile wet weather speeds of 33.44mph in the eastbound direction and 31.94mph in the westbound direction.

	Mean	85thile	85thile wet weather*
Eastbound	31.77mph	35.92mph	33.44mph
Westbound	30.67mph	34.42mph	31.94mph

**Based on dry weather conditions during the survey, 85thile wet weather speeds have been calculated as per DMRB TA22/81*

- 2.6 This assessment demonstrates that vehicles are generally travelling in the excess of the 30mph speed limit, in both directions.

Site and Highway Boundaries

- 2.7 Site and highway boundary plans were supplied by Sworders (shown at **Appendix B**).

3.0 DEVELOPMENT PROPOSALS

- 3.1 The proposed development comprises 16 dwellings, with access onto The Street to the southeast of the site.

4.0 PROPOSED SITE ACCESS LAYOUT

- 4.1 **Drawing F16123/01 Revision B** shows a proposed Mews Court access with a minimum width of 4.8 metres in accordance with page 133 of the Essex Design Guide. The layout includes an initial access width of 5.3 metres, which allows for two large cars to safely enter and depart as shown in the viewport within **Drawing F16123/01 Revision B**.
- 4.2 Chapter 10 of MfS2 provides detailed formulae for calculating visibility splays taking into account 85th percentile vehicle speeds, the percentage of HGV movements and the carriageway gradient. The results of the speed survey show that measured 85th percentile wet weather vehicle speeds are below 60kph in both directions and that HGV movements comprise more than 5% of the overall traffic. On this basis, a 1.5 seconds perception-reaction time and a 0.375g deceleration rate have been used.

On-site observations indicate that no gradient measurement should be incorporated within the visibility calculation, as The Street is relatively flat.

- 4.3 The results contained at **Appendix A**, show that by adopting the above approach, visibility splays of 55 metres to the southwest (or right towards northeastbound traffic) and 52 metres to the northeast (or left towards southwestbound traffic) would be required. These splays would need to be taken to the nearside carriageway edge, in line with page 155 of the Essex Design Guidance. However, it is important to note that since the Essex Design Guidance was published in 2005, MfS and MfS2 have since been published with overriding guidance. Paragraph 10.5.3 of MfS2 states the following:

“The Y distance represents the distance that a driver who is about to exit from the minor arm can see to the left and right along the main alignment. For simplicity it has previously been measured along the nearside kerb line of the main arm, although vehicles will normally be travelling at a distance from the kerb line. Therefore, a more accurate assessment of visibility splay is made by measuring to the nearside edge of the vehicle track.”

- 4.4 **Drawing Number F16123/04 Revision A** shows that from a 2.4 metres set back distance the splay distance can only be achieved to the right of the access, which is classed as the critical direction. To the left (or east) of the access a splay of 2.4 metres x 41 metres is achievable to the centre of the carriageway. However, a splay of 52 metres can be achieved to the left/east from a 2.2 metres set back distance, from the effective edge of carriageway, to the nearside edge of the carriageway. Therefore, there are two different options that can be examined.

Option 1

- 4.5 **Drawing F16123/04 Revision A** shows how the visibility splay of 55 metres to the west of the access can be achieved from a 2.4 metres set back distance, However, a splay of 41 metres to the east can be achieved when taken to the centre of the carriageway, leaving it 11 metres short of the prescribed distance. MfS2 supports visibility splays being taken to the centre of the carriageway in some circumstances, with Paragraph 10.5.5 stating that:

“Some circumstances make it unlikely that vehicles approaching from the left on the main arm will cross the centreline of the main arm – opposing flows may be physically segregated at that point, for example. If so, the visibility splay to the left can be measured to the centreline of the main arm.”

- 4.6 It is acknowledged that visibility to the southwest is satisfactory, which is the critical direction, however visibility to the northeast is restricted. Paragraph 10.5.9 of MfS2 states;

“The Y distance should be based on the recommended SSD values. However, based on the research referred to above, unless there is local evidence to the contrary, a reduction in visibility below the recommended level will not necessarily lead to a significant problem.”

- 4.7 Paragraph 10.4.2 of MfS2 also states the following:

“It has often been assumed that a failure to provide visibility at priority junctions in accordance with the values recommended in MfS1 or DMRB (as appropriate) will result in an increased risk of injury collisions. Research carried out by TMS Consultancy for MfS2 has found no evidence of this. Research into cycle safety at T-junctions found that higher cycle collision rates are associated with greater visibility.”

- 4.8 Research shows that restricted visibility, whether to the carriageway edge or centreline, does not increase the risk of a highly safety problem. Therefore, the achievable visibility splay of up to 2.4 x 41 metres should therefore be deemed acceptable.

Option 2

- 4.9 **Drawing Number F16123/04 Revision A** shows how the calculated visibility splays could be achieved in the horizontal plane to the northeast of the access and from a 2.2 metres setback distance within land owned by the applicant. Paragraph 10.5.8 of MfS2 states that:

“A minimum X distance of 2m may be considered in some slow-speed situations when flows on the minor arm are low, but using this value will mean that the front of some vehicles will protrude slightly into the running carriageway of the major arm, and many drivers will tend to cautiously nose out into traffic. The ability of drivers and cyclists to see this overhang from a reasonable distance, and to manoeuvre around it without undue difficulty, should be considered.”

- 4.10 On-site observations showed that the road was relatively lightly trafficked during the off-peak period in which the site visit was undertaken. The speed survey also shows that 100 readings were recorded in each direction over a period of 2 hours. Paragraph 7.9.3 in MfS states the thresholds for a low level of traffic are as follows:

“a relatively low limit on traffic (300 vehicles per peak hour or 3,000 vehicles per day) has generally been used when deciding whether direct access was appropriate.”

- 4.11 **Drawing Number F16123/04 Revision A** highlights that visibility to the southwest of the access (i.e. the critical direction) can be achieved beyond the required splay. Therefore, it is reasonable to suggest that vehicles would be able to slowly nudge out of the access to achieve the required visibility to the nearside edge of the carriageway to the northeast.
- 4.12 As mentioned in paragraph 2.2 of this report, the carriageway has solid white line markings along the edge therefore the line of traffic would be located nearer to the centre of the carriageway. So, the white line can be classed as the effective edge of the carriageway. Page 229 of the Traffic Signs Regulations and General Directions Guidance (2016) requires the edge of the line to be 0.20 metres from the kerb therefore the effective edge of carriageway would allow for a setback distance of 2.2 metres. The required splay distance of 52 metres to the east is achievable from a setback distance of 2.2 metres from the effective edge of carriageway.
- 4.13 Furthermore, the access currently operates sufficiently. The Personal Injury Accident records, discussed in Section 2 of this report, confirm that there have been no recorded incidents at the existing access over the latest 3-year period. In

practice, visibility is a geometric measurement based on the speed of the road which would not alter as a result of a slight increase in turning movements. The NPPF places emphasis on planning decisions being evidence led, and therefore there are no reasons to believe that a safety problem would arise at the site access as a result of the proposed development. Therefore, either option would comply with current design guidance and should therefore be acceptable.

5.0 CONCLUSIONS

- 5.1 Bancroft Consulting were appointed by Sworders, on behalf of their Client, to provide highways and transportation advice in respect of proposals to develop 16 dwellings on land off The Street in Sheering, Essex. The objective of this Site Access Appraisal is to provide the local Planning Authority, Highway Authority and Local Plan Inspector with confidence that a satisfactory access with adequate visibility can be achieved along The Street, in accordance with Paragraph 32 of the NPPF.
- 5.2 A manual radar speed survey was conducted at the existing site access location on 26 October 2016. The speed survey should that using the 85th percentile wet weather vehicle speeds the required visibility splays would be 52 metres to the northeast and 55 metres to the southwest.
- 5.3 **Drawing Number F16123/01 Revision B** shows a proposed site access, which comprises the geometric standards of a Mews Court access, including a 4.8 metres wide carriageway. **Drawing Number F16123/01 Revision B** shows that the initial width has been increased to 5.3 metres wide to allow for two large vehicles to enter and depart the site at the same time, without direct conflict.
- 5.4 **Drawing Number F16123/04 Revision A** shows that visibility can be achieved to the right from a 2.4 metres set back to the southwest of the access (critical direction) in line with Essex Design Guidance. Visibility to the left cannot meet the requirements within Essex Design Guidance, however MfS allows for a more pragmatic approach particularly to the non critical direction. Therefore, two different options have been examined, which show that the resulting visibility should be

acceptable. Option 1 shows that from a 2.4 set back distance a visibility splay of 41 metres can be achieved. Whereas, Option 2 shows that the required 52 metres visibility splay can be achieved from a 2.2 metres set back distance from the effective edge of carriageway. Either option would comply with current national design guidance and should therefore be acceptable.

- 5.5 The above information demonstrates how an improved site access could be delivered that meets the requirements of national guidance but does not meet the full requirements of Essex Design Guidance. However, Essex Design Guidance is an out-dated document published in 2005, whereas current national guidance within MfS (2007) and MfS2 (2010) adopts a more flexible approach. Therefore, it is considered that the improved site access accords with the policies within Paragraph 32 of the NPPF, which emphasises the importance of delivering “*safe and suitable*” access.



SCALE: Do Not Scale	CLIENT: SWORDERS	JOB TITLE: LAND AT SHEERING, EPPING FOREST	bancroftconsulting <small>transport consultancy services</small>	
DATE: 10.01.18	TITLE: DETAILED SITE LOCATION PLAN		JOB NUMBER: F16123	FIGURE: 1
DRAWN: EU				



Location:

Years

3 of 19 years selected

Severity

Fatal

Serious

Slight

Casualty Types:

All Casualty Types

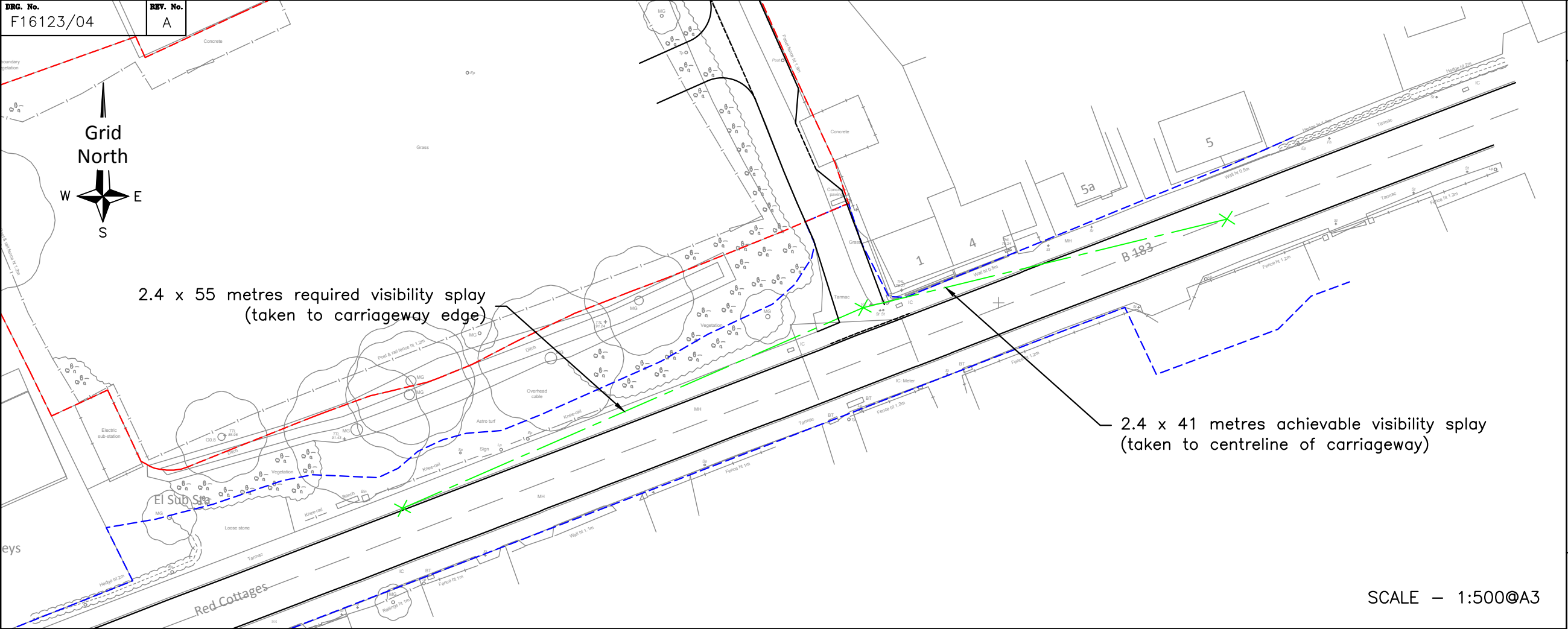
Vehicles Involved:

All Vehicle Types

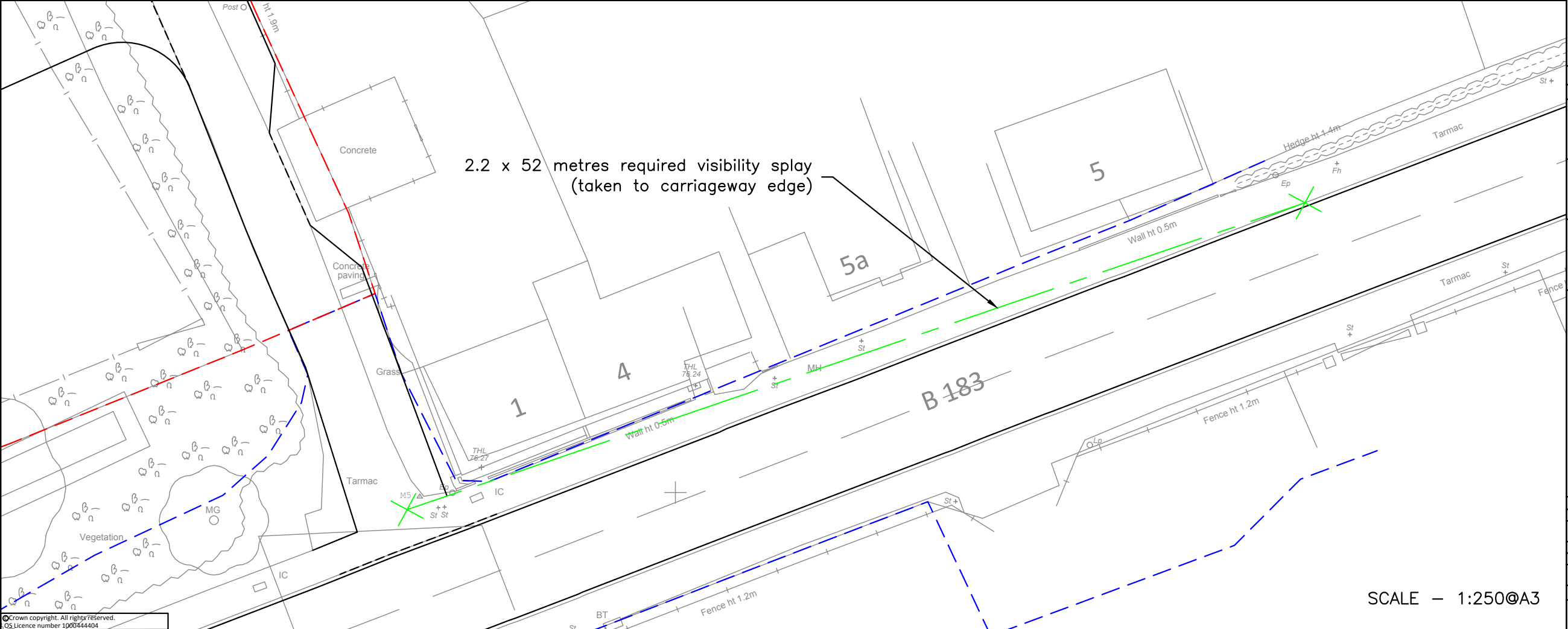
Search

SCALE: Do Not Scale	CLIENT: SWORDERS	JOB TITLE: LAND AT SHEERING, EPPING FOREST	bancroftconsulting transport consultancy services	
DATE: 10.01.18	Accident Data (taken from www.crashmap.co.uk) from 2015-2017		JOB NUMBER: F16123	FIGURE: 2
DRAWN: EU				

NOTES:



SCALE - 1:500@A3



SCALE - 1:250@A3

REV.	DATE	DESCRIPTION	BY	CHECKED BY
A	18.01.18	UPDATED FOLLOWING COMMENTS	EU	CIB

CLIENT
SWORDERS

CONTRACT
LAND AT THE STREET, SHEERING

TITLE
VISIBILITY ASSESSMENT AT THE PROPOSED SITE ACCESS

bancroftconsulting
transport consultancy services

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7 Gregory Boulevard
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f 0115 9648201
e office@bancroftconsulting.co.uk

DRAWN BY	
NAME (PRINT)	DATE
KH	12.01.18
CHECKED BY	
NAME (PRINT)	DATE
AEM	12.01.18
SCALE AS SHOWN	STATUS PRELIMINARY
DRG. NO. F16123/04	REV A

APPENDIX A – SPEED SURVEY RESULTS

observed speed mph x	no. of readings f	fx	fx ²
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	1	18	324
19	1	19	361
20	0	0	0
21	1	21	441
22	0	0	0
23	0	0	0
24	3	72	1728
25	0	0	0
26	5	130	3380
27	7	189	5103
28	13	364	10192
29	21	609	17661
30	28	840	25200
31	29	899	27869
32	22	704	22528
33	21	693	22869
34	7	238	8092
35	8	280	9800
36	9	324	11664
37	4	148	5476
38	8	304	11552
39	3	117	4563
40	1	40	1600
41	4	164	6724
42	1	42	1764
43	0	0	0
44	0	0	0
45	0	0	0
46	3	138	6348
47	0	0	0
48	0	0	0
49	0	0	0
50	0	0	0
51	0	0	0
52	0	0	0
53	0	0	0
54	0	0	0
55	0	0	0
56	0	0	0
57	0	0	0
58	0	0	0
59	0	0	0
60	0	0	0
61	0	0	0
62	0	0	0
63	0	0	0
64	0	0	0
65	0	0	0
66	0	0	0
67	0	0	0
68	0	0	0
69	0	0	0
70	0	0	0
71	0	0	0
72	0	0	0
73	0	0	0
74	0	0	0
75	0	0	0
76	0	0	0
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0
Total Σ	200	6353	205239

SPEED READINGS

location: **Sheering**
direction: **Northeastbound**
day: **Wednesday**
date: **26.10.16**
time: **0945 to 1145**

SUMMARY

mean 31.77 mph 51.11 kph
85%ile 35.92 mph 57.80 kph
wet 85%ile 33.44 mph 53.81 kph

Mean speed

$$\bar{x} = \frac{\sum fx}{\sum f} = 31.77 \text{ mph}$$

Standard deviation

$$S_x = \sqrt{\frac{1}{\sum f - 1} \times \left[\sum fx^2 - \frac{(\sum fx)^2}{\sum f} \right]} = 4.16 \text{ mph}$$

85 percentile dry weather spot speed

$$\bar{x} + S_x = 35.92 \text{ mph}$$

85 percentile wet weather journey speed

$$\bar{x} + S_x - 2.478 = 33.44 \text{ mph}$$

checks: 85%ile/mean = 1.13
should be 1.1 to 1.25

S.D./mean = 0.13
should be approx 1/6 (0.17)

Note: The above readings greater than 20mph have been adjusted by +1mph as a result of the latest calibration test - 23.05.16.

LAND AT SHEERING, EPPING FOREST NORTHEASTBOUND SPEED SURVEY RESULTS

observed speed mph	no. of readings		
x	f	fx	fx ²
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	2	46	1058
24	1	24	576
25	8	200	5000
26	8	208	5408
27	19	513	13851
28	15	420	11760
29	32	928	26912
30	31	930	27900
31	16	496	15376
32	18	576	18432
33	14	462	15246
34	4	136	4624
35	8	280	9800
36	6	216	7776
37	7	259	9583
38	2	76	2888
39	3	117	4563
40	2	80	3200
41	1	41	1681
42	3	126	5292
43	0	0	0
44	0	0	0
45	0	0	0
46	0	0	0
47	0	0	0
48	0	0	0
49	0	0	0
50	0	0	0
51	0	0	0
52	0	0	0
53	0	0	0
54	0	0	0
55	0	0	0
56	0	0	0
57	0	0	0
58	0	0	0
59	0	0	0
60	0	0	0
61	0	0	0
62	0	0	0
63	0	0	0
64	0	0	0
65	0	0	0
66	0	0	0
67	0	0	0
68	0	0	0
69	0	0	0
70	0	0	0
71	0	0	0
72	0	0	0
73	0	0	0
74	0	0	0
75	0	0	0
76	0	0	0
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0
Total Σ	200	6134	190926

SPEED READINGS

location: **Sheering**
direction: **Southwestbound**
day: **Wednesday**
date: **26.10.16**
time: **0945 to 1145**

SUMMARY

mean 30.67 mph 49.35 kph
85%ile 34.42 mph 55.38 kph
wet 85%ile 31.94 mph 51.39 kph

Mean speed

$$\bar{x} = \frac{\sum fx}{\sum f} = 30.67 \text{ mph}$$

Standard deviation

$$S_x = \sqrt{\frac{1}{\sum f - 1} \left[\sum fx^2 - \frac{(\sum fx)^2}{\sum f} \right]} = 3.75 \text{ mph}$$

85 percentile dry weather spot speed

$$\bar{x} + S_x = 34.42 \text{ mph}$$

85 percentile wet weather journey speed

$$\bar{x} + S_x - 2.478 = 31.94 \text{ mph}$$

checks: 85%ile/mean = 1.12
should be 1.1 to 1.25

S.D./mean = 0.12
should be approx 1/6 (0.17)

Note: Where speed readings exceed 20mph a + 1mph adjustment has been applied as a result of the latest speed gun calibration test - 23.05.16.

LAND AT SHEERING, EPPING FOREST SOUTHWESTBOUND SPEED SURVEY RESULTS

Vehicle speeds	33.44 mph 53.80 kph 14.95 v (m/s) 223.38 v ²	Formula: $SSD = vt + v^2 / 2(d + 0.1a)$	<table border="1"> <thead> <tr> <th colspan="2">Manual for Streets 2</th> <th>DMRB</th> </tr> </thead> <tbody> <tr> <td>Light Vehicles (less than 5% HGVs)</td> <td>HGVs/Buses (over 5% of total vehicles)</td> <td>All traffic</td> </tr> <tr> <td>1.5s</td> <td>1.5s</td> <td>2s</td> </tr> <tr> <td>0.45g</td> <td>0.375g</td> <td>0.25g</td> </tr> </tbody> </table>			Manual for Streets 2		DMRB	Light Vehicles (less than 5% HGVs)	HGVs/Buses (over 5% of total vehicles)	All traffic	1.5s	1.5s	2s	0.45g	0.375g	0.25g
Manual for Streets 2			DMRB														
Light Vehicles (less than 5% HGVs)	HGVs/Buses (over 5% of total vehicles)		All traffic														
1.5s	1.5s		2s														
0.45g	0.375g	0.25g															
Driver Perception-Reaction time	1.5 t (s) 22.42 v x t	<table border="1"> <tr> <td>Perception-Reaction Time (t)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Deceleration Rate (g = 9.81m/s²)</td> <td></td> <td></td> <td></td> </tr> </table>			Perception-Reaction Time (t)				Deceleration Rate (g = 9.81m/s ²)								
Perception-Reaction Time (t)																	
Deceleration Rate (g = 9.81m/s ²)																	
Deceleration Rate	0.375 g 3.68 d (m/s) 7.36 2d																
Gradient	0.00 a* 3.68 d+0.1a 7.3575 2(d+0.1a)	Enter gradient as positive for uphill towards junction and negative for downhill towards junction															
Stopping Sight Distance (SSD) =	v t + $v^2 / 2(d + 0.1a)$ 22.42 + 30.36 = 52.78																
SSD Bonnet Adjusted (SSD+2.4)**	55.18																

* for simplicity, gradient will be given as zero where details of levels are unavailable and observed gradients are deemed to be insignificant in terms of the effect on vehicle braking

** 2.4 metres added to splay to allow for bonnet length of approaching vehicles

VISIBILITY SPLAY CALCULATOR - LAND AT SHEERING, EPPING FOREST - SPLAY TO SOUTHWEST

Vehicle speeds	31.94 mph 51.39 kph 14.28 v (m/s) 203.79 v ²	Formula: $SSD = vt + v^2 / 2(d + 0.1a)$	<table border="1"> <thead> <tr> <th colspan="2">Manual for Streets 2</th> <th>DMRB</th> </tr> </thead> <tbody> <tr> <td>Light Vehicles (less than 5% HGVs)</td> <td>HGVs/Buses (over 5% of total vehicles)</td> <td>All traffic</td> </tr> <tr> <td>1.5s</td> <td>1.5s</td> <td>2s</td> </tr> <tr> <td>0.45g</td> <td>0.375g</td> <td>0.25g</td> </tr> </tbody> </table>			Manual for Streets 2		DMRB	Light Vehicles (less than 5% HGVs)	HGVs/Buses (over 5% of total vehicles)	All traffic	1.5s	1.5s	2s	0.45g	0.375g	0.25g
Manual for Streets 2			DMRB														
Light Vehicles (less than 5% HGVs)	HGVs/Buses (over 5% of total vehicles)		All traffic														
1.5s	1.5s		2s														
0.45g	0.375g	0.25g															
Driver Perception-Reaction time	1.5 t (s) 21.41 v x t	<table border="1"> <tr> <td>Perception-Reaction Time (t)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Deceleration Rate (g = 9.81m/s²)</td> <td></td> <td></td> <td></td> </tr> </table>			Perception-Reaction Time (t)				Deceleration Rate (g = 9.81m/s ²)								
Perception-Reaction Time (t)																	
Deceleration Rate (g = 9.81m/s ²)																	
Deceleration Rate	0.375 g 3.68 d (m/s) 7.36 2d																
Gradient	0.00 a* 3.68 d+0.1a 7.3575 2(d+0.1a)	Enter gradient as positive for uphill towards junction and negative for downhill towards junction															
Stopping Sight Distance (SSD) =	v t + $v^2 / 2(d + 0.1a)$ 21.41 + 27.70 = 49.11																
SSD Bonnet Adjusted (SSD+2.4)**	51.51																

* for simplicity, gradient will be given as zero where details of levels are unavailable and observed gradients are deemed to be insignificant in terms of the effect on vehicle braking

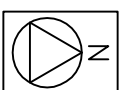
** 2.4 metres added to splay to allow for bonnet length of approaching vehicles

VISIBILITY SPLAY CALCULATOR - LAND AT SHEERING, EPPING FOREST - SPLAY TO NORTHEAST

APPENDIX B – OWNERSHIP BOUNDARY PLAN



Highways Boundary



SWORDERS
Agricultural Commercial Real Estate

LAND TO THE NORTH OF
THE STREET, SHEERING CM22 7LU

TITLE: SITE PLAN

[illegible]