

**From:** Ray Houghton [Ray.Houghton@bidwells.co.uk]  
**Sent:** 28 August 2009 13:55  
**To:** Polly Wake  
**Cc:** amy.hanner@norfolk.gov.uk; richard.doleman@norfolk.gov.uk  
**Subject:** Triangle Site-Cromer (C17)

**Attachments:** Ver 2 Cromer South Southbound.docx; Ver 2 Cromer Junction Northbound.docx; Ver 2 Cromer Junction Southbound.docx; Ver 2 Cromer South Northbound.docx  
Polly

I attach the survey results which I hope you will find self-explanatory. Please also refer to Steve Amann's comments below.

We consider that the site specific information demonstrates unequivocally that safe access can be gained to the proposed site using a realigned junction with The Avenue and Norwich Road (A149). Speeds are within 85<sup>th</sup> percentile and therefore the proposed visibility splays are appropriate and represent a significant improvement in highways safety compared to the existing.

I am forwarding this email to County Highways in order that they can comment on the information with a view agreement being reached between all parties on the access issue. This agreement could then be referred to the Working Party in September with the appropriate changes made to the Plan thereby negating the need to refer the case to the Inspector during the Examination.

Regards

**Ray Houghton**  
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Planning Division

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>>> Steve Amann 28/08/2009 11:37 >>>  
Ray

Please see the attached speed survey results for Cromer.

As you will note 85%ile speeds are as follows:

Junction Inbound (north) 34.7 mph  
Junction Outbound (south) 36.7 mph

Southern Site Inbound (North) 34.7 mph  
Southern Site Outbound (South) 35.3 mph

The northbound direction is the visibility critical direction and speeds on this approach are around 1 mph lower than the outbound and should be taken as being 35 miles per hour.

As the proposal relates to the modification of an existing junction, the 85%ile wet weather speed should be used in any junction improvement proposals as set out in the Design Manual for Roads and Bridges (TD 22/81) *....for improvement of alignments and major/minor junctions or accesses, and for new major/minor junctions or accesses on existing roads, the normal design methods are based on the 85 percentile wet weather journey speed of vehicles.*

The measurement of wet weather 85%ile speeds as set out in TD 22/81 requires a deduction of 4kph (2.5 mph) on the dry weather 85%ile.

This would give the following speeds (for design purposes) on approach and at the access from the north:

Junction Site Inbound (North) wet weather 85%ile 32.2 mph  
Southern Site Outbound (North) wet weather 85%ile 32.2 mph

It is clear from the above survey summary and breakdown that vehicle speeds are generally compliant with the posted speed limits in the vicinity and moreover, should the posted speed limit sign be relocated to the south of the rail bridge, it would effect a reduction on these speeds.

In view of this, the residential allocation, along with the proposed junction improvement could be accommodated safely and moreover the proposal, by virtue of the realignment of the access road and the relocation of the posted speed limit, would have a beneficial impact on highway safety in the vicinity of the site.

Additionally, the fact that vehicles in the 40mph section of Norwich Road are travelling at speeds significantly lower than the speed limit would lend support to the view that relocating the 30 mph speed limit to the south of the rail bridge would deliver reductions in speed in the access location.

I trust this is clear, if you need further clarification please call me.

Regards

Steve

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# SSTOWE Group Ltd (Transportation Survey Services)

**Datasets:**

**Site:** Norwich Rd, Cromer, Southern Site.  
**Filename:** Ver 2 Cromer South Southbound.Docx  
**Survey Duration:** 00:54 01 August 2009 => 03:16 16 August 2009  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 00:54 01 August 2009 => 03:16 16 August 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 6 - 99 mph.  
**Direction:** Southbound  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 75428 / 156479 (48.20%)

## Speed Statistics by Hour

**Description:** Southern Site adjacent to railway  
**Filter time:** 00:54 01 August 2009 => 03:16 16 August 2009  
**Filter:** Cls(1 2 3 4 5 6 7 8 9 10 11 12 13 ) Dir(S) Sp(6,99) Headway(>0)

Vehicles = 75428

Posted speed limit = 37 mph, Exceeding = 6240 (8.27%), Mean Exceeding = 39.43 mph

Maximum = 59.5 mph, Minimum = 7.0 mph, Mean = 32.0 mph

85% Speed = 35.3 mph, 95% Speed = 38.0 mph, Median = 31.8 mph

12 mph Pace = 26 - 38, Number in Pace = 69158 (91.69%)

Variance = 13.90, Standard Deviation = 3.73 mph

**Hour Bins (Partial days)**

Time	Bin	Min	Max	Mean	Median	85%	95%	>PSL 37 mph
0000	427 0.6%	21.7	51.3	34.8	34.2	39.4	41.8	137 32.1%
0100	229 0.3%	10.4	59.5	35.7	35.1	41.2	45.4	85 37.1%
0200	104 0.1%	7.4	50.6	36.4	35.6	42.1	44.7	45 43.3%
0300	62 0.1%	23.3	51.2	37.7	38.0	42.5	46.1	35 56.5%
0400	135 0.2%	24.7	52.2	37.8	37.4	42.3	44.3	81 60.0%
0500	396 0.5%	20.6	50.5	35.6	35.3	40.3	43.8	139 35.1%
0600	1326 1.8%	7.5	57.8	35.2	35.1	39.4	42.3	436 32.9%
0700	2239 3.0%	12.5	56.0	34.5	34.2	38.3	40.7	550 24.6%
0800	2743 3.6%	12.1	58.8	32.9	32.7	36.5	39.1	349 12.7%
0900	4003 5.3%	12.7	52.0	31.7	31.5	35.1	37.4	247 6.2%
1000	5214 6.9%	10.4	52.3	31.1	30.9	34.4	36.7	230 4.4%
1100	5658 7.5%	10.8	50.1	31.3	31.1	34.7	36.7	266 4.7%
1200	5330 7.1%	9.8	49.4	31.5	31.3	34.7	37.1	303 5.7%
1300	5026 6.7%	7.7	53.6	31.6	31.5	34.7	37.4	294 5.8%
1400	5454 7.2%	7.0	50.5	31.5	31.3	34.7	37.1	306 5.6%
1500	6060 8.0%	9.8	48.3	31.4	31.3	34.7	36.9	320 5.3%
1600	6872 9.1%	8.6	49.4	31.5	31.3	34.7	36.7	313 4.6%
1700	6851 9.1%	9.2	53.7	31.7	31.5	34.9	37.1	391 5.7%
1800	5038 6.7%	13.2	52.9	32.0	31.8	35.3	37.6	358 7.1%
1900	3781 5.0%	13.1	49.0	32.3	32.0	35.6	38.5	325 8.6%
2000	3014 4.0%	12.9	52.7	32.0	31.5	35.3	38.3	243 8.1%
2100	2545 3.4%	18.4	50.5	32.9	32.4	36.5	39.4	340 13.4%
2200	2041 2.7%	8.8	55.2	32.5	32.2	36.2	39.6	249 12.2%
2300	880 1.2%	22.4	58.8	34.1	33.6	38.3	41.2	198 22.5%
----	<b>75428 100.0%</b>	<b>7.0</b>	<b>59.5</b>	<b>32.0</b>	<b>31.8</b>	<b>35.3</b>	<b>38.0</b>	<b>6240 8.3%</b>

# SSTOWE Group Ltd (Transportation Survey Services)

**Datasets:**

**Site:** Norwich Rd, Cromer, Southern Site.  
**Filename:** Ver 2 Cromer South Northbound.Docx  
**Survey Duration:** 00:54 01 August 2009 => 03:16 16 August 2009  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 00:54 01 August 2009 => 03:16 16 August 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 6 - 99 mph.  
**Direction:** Northbound  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 81038 / 156479 (51.79%)

## Speed Statistics by Hour

**Description:** Southern Site adjacent to railway  
**Filter time:** 00:54 01 August 2009 => 03:16 16 August 2009  
**Filter:** Cls(1 2 3 4 5 6 7 8 9 10 11 12 13 ) Dir(N) Sp(6,99) Headway(>0)

Vehicles = 81038

Posted speed limit = 37 mph, Exceeding = 4305 (5.31%), Mean Exceeding = 39.29 mph

Maximum = 59.4 mph, Minimum = 6.4 mph, Mean = 31.5 mph

85% Speed = 34.7 mph, 95% Speed = 37.1 mph, Median = 31.3 mph

12 mph Pace = 25 - 38, Number in Pace = 75804 (93.54%)

Variance = 12.12, Standard Deviation = 3.48 mph

**Hour Bins (Partial days)**

Time	Bin	Min	Max	Mean	Median	85%	95%	>PSL 37 mph
0000	386 0.5%	19.5	48.3	34.3	33.8	39.1	42.3	105 27.2%
0100	191 0.2%	23.6	55.6	34.9	34.2	39.8	42.7	63 33.0%
0200	173 0.2%	24.5	53.3	35.6	34.9	40.0	42.5	64 37.0%
0300	86 0.1%	25.0	50.9	35.7	34.7	40.7	45.4	32 37.2%
0400	147 0.2%	23.5	49.0	35.2	35.1	39.1	42.7	45 30.6%
0500	351 0.4%	10.3	49.1	34.2	34.0	39.1	42.1	87 24.8%
0600	966 1.2%	14.2	52.6	33.8	33.6	37.8	40.9	194 20.1%
0700	2539 3.1%	9.8	55.4	32.4	32.2	36.0	38.5	262 10.3%
0800	4508 5.6%	10.1	58.8	31.8	31.8	34.9	37.1	255 5.7%
0900	5195 6.4%	7.1	48.3	31.3	31.1	34.4	36.5	217 4.2%
1000	6917 8.5%	10.3	49.7	30.8	30.6	33.6	35.6	145 2.1%
1100	7838 9.7%	10.1	44.5	30.7	30.6	33.6	35.3	147 1.9%
1200	7244 8.9%	6.4	49.2	30.8	30.6	33.6	35.6	158 2.2%
1300	6514 8.0%	7.7	51.4	30.9	30.9	34.0	35.8	183 2.8%
1400	6412 7.9%	8.9	57.3	30.9	30.9	33.8	36.0	178 2.8%
1500	6047 7.5%	7.9	54.7	31.3	31.1	34.2	36.5	243 4.0%
1600	5868 7.2%	10.0	51.6	31.5	31.3	34.4	36.9	297 5.1%
1700	5941 7.3%	9.7	59.4	31.8	31.5	34.7	36.9	316 5.3%
1800	4723 5.8%	12.0	57.3	32.0	31.8	34.9	37.4	283 6.0%
1900	3674 4.5%	13.6	52.7	32.5	32.2	35.8	38.3	327 8.9%
2000	2225 2.7%	12.3	52.1	32.5	32.2	35.8	38.5	219 9.8%
2100	1427 1.8%	20.1	53.1	32.3	32.0	35.8	39.1	148 10.4%
2200	1019 1.3%	20.0	52.0	33.3	32.9	37.4	40.7	181 17.8%
2300	647 0.8%	20.2	57.0	34.1	33.6	38.9	42.1	156 24.1%
----	<b>81038 100.0%</b>	<b>6.4</b>	<b>59.4</b>	<b>31.5</b>	<b>31.3</b>	<b>34.7</b>	<b>37.1</b>	<b>4305 5.3%</b>

# SSTOWE Group Ltd (Transportation Survey Services)

**Datasets:**

**Site:** Norwich Rd, Cromer, Northern Site.  
**Filename:** Ver 2 Cromer Junction Northbound.Docx  
**Survey Duration:** 00:47 01 August 2009 => 00:20 11 August 2009  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 00:47 01 August 2009 => 02:55 16 August 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 6 - 99 mph.  
**Direction:** Northbound  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 81710 / 157510 (51.88%)

## Speed Statistics by Hour

**Description:** Northern Site at junction with The Avenue  
**Filter time:** 00:47 01 August 2009 => 02:55 16 August 2009  
**Filter:** Cls(1 2 3 4 5 6 7 8 9 10 11 12 13 ) Dir(N) Sp(6,99) Headway(>0)

Vehicles = 81710

Posted speed limit = 37 mph, Exceeding = 5164 (6.32%), Mean Exceeding = 39.55 mph

Maximum = 97.3 mph, Minimum = 6.2 mph, Mean = 31.3 mph

85% Speed = 34.7 mph, 95% Speed = 37.4 mph, Median = 31.1 mph

12 mph Pace = 26 - 38, Number in Pace = 74437 (91.10%)

Variance = 16.96, Standard Deviation = 4.12 mph

**Hour Bins (Partial days)**

Time	Bin		Min	Max	Mean	Median	85%	95%	>PSL 37 mph	
0000	372	0.5%	16.9	50.9	35.1	34.4	41.2	43.6	125	33.6%
0100	205	0.3%	23.9	56.2	35.9	35.6	41.4	44.1	77	37.6%
0200	168	0.2%	14.9	57.2	36.4	35.8	42.3	45.4	68	40.5%
0300	83	0.1%	19.8	50.7	36.6	35.8	42.9	47.2	35	42.2%
0400	147	0.2%	23.0	54.0	36.2	35.6	40.7	46.3	62	42.2%
0500	352	0.4%	13.5	54.0	35.2	34.7	41.4	44.5	125	35.5%
0600	978	1.2%	9.1	50.4	34.3	34.0	38.9	42.3	259	26.5%
0700	2593	3.2%	12.9	53.5	32.2	32.2	36.7	39.4	366	14.1%
0800	4555	5.6%	6.3	52.3	31.5	31.5	34.9	37.6	317	7.0%
0900	5218	6.4%	6.3	49.3	30.8	30.9	34.2	36.7	254	4.9%
1000	6965	8.5%	6.4	64.2	30.4	30.4	33.6	35.6	166	2.4%
1100	7914	9.7%	6.3	45.4	30.4	30.4	33.6	35.3	139	1.8%
1200	7293	8.9%	6.3	50.2	30.6	30.6	33.8	35.8	200	2.7%
1300	6545	8.0%	6.5	52.5	30.8	30.6	34.0	36.2	233	3.6%
1400	6487	7.9%	7.1	97.3	30.9	30.9	34.2	36.2	224	3.5%
1500	6119	7.5%	6.2	53.4	31.2	31.1	34.4	36.7	288	4.7%
1600	5891	7.2%	6.2	52.4	31.4	31.5	34.9	37.1	337	5.7%
1700	6012	7.4%	6.6	58.9	31.6	31.5	35.1	37.4	362	6.0%
1800	4750	5.8%	6.3	55.8	31.8	31.8	35.1	37.6	317	6.7%
1900	3713	4.5%	7.4	64.6	32.4	32.2	35.8	38.5	366	9.9%
2000	2250	2.8%	12.5	52.3	32.4	32.0	36.2	39.1	266	11.8%
2100	1420	1.7%	11.1	55.4	32.7	32.4	36.7	39.8	187	13.2%
2200	1025	1.3%	15.6	57.9	33.6	33.1	38.3	41.6	211	20.6%
2300	655	0.8%	8.5	57.0	34.5	34.0	39.6	42.5	180	27.5%
----	81710	100.0%	6.2	97.3	31.3	31.1	34.7	37.4	5164	6.3%

# SSTOWE Group Ltd (Transportation Survey Services)

**Datasets:**

**Site:** Norwich Rd, Cromer, Northern Site.  
**Filename:** Ver 2 Cromer Junction Southbound.Docx  
**Survey Duration:** 00:47 01 August 2009 => 00:20 11 August 2009  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 00:47 01 August 2009 => 02:55 16 August 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 6 - 99 mph.  
**Direction:** Southbound  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 75704 / 157510 (48.06%)

## Speed Statistics by Hour

**Description:** Northern Site at junction with The Avenue  
**Filter time:** 00:47 01 August 2009 => 02:55 16 August 2009  
**Filter:** Cls(1 2 3 4 5 6 7 8 9 10 11 12 13 ) Dir(S) Sp(6,99) Headway(>0)

Vehicles = 75704

Posted speed limit = 37 mph, Exceeding = 10567 (13.96%), Mean Exceeding = 39.66 mph

Maximum = 71.7 mph, Minimum = 6.4 mph, Mean = 32.9 mph

85% Speed = 36.7 mph, 95% Speed = 39.6 mph, Median = 32.7 mph

12 mph Pace = 27 - 39, Number in Pace = 67272 (88.86%)

Variance = 18.65, Standard Deviation = 4.32 mph

**Hour Bins (Partial days)**

Time	Bin	Min	Max	Mean	Median	85%	95%	>PSL 37 mph
0000	426 0.6%	19.8	52.9	35.2	34.9	40.3	42.9	154 36.2%
0100	241 0.3%	11.9	61.1	36.1	35.3	42.3	46.5	95 39.4%
0200	103 0.1%	24.6	54.6	37.3	37.8	43.4	45.4	54 52.4%
0300	61 0.1%	24.5	49.4	38.5	38.7	44.3	46.8	38 62.3%
0400	133 0.2%	22.2	51.8	38.4	38.5	42.9	45.0	82 61.7%
0500	391 0.5%	14.2	50.9	37.0	36.7	42.3	45.4	189 48.3%
0600	1316 1.7%	18.9	59.4	36.2	36.0	40.7	43.6	564 42.9%
0700	2245 3.0%	12.4	63.3	35.2	35.1	39.6	42.7	734 32.7%
0800	2740 3.6%	11.9	49.9	33.7	33.6	37.6	40.7	535 19.5%
0900	4081 5.4%	7.8	57.2	32.3	32.2	36.0	38.7	425 10.4%
1000	5253 6.9%	7.8	54.9	31.8	31.8	35.6	37.8	433 8.2%
1100	5646 7.5%	7.0	59.9	32.0	32.0	35.8	38.3	518 9.2%
1200	5387 7.1%	6.6	71.7	32.3	32.2	36.2	38.9	642 11.9%
1300	5062 6.7%	9.4	55.9	32.6	32.4	36.2	38.7	571 11.3%
1400	5445 7.2%	6.4	55.0	32.6	32.4	36.2	38.7	618 11.3%
1500	6091 8.0%	8.0	56.9	32.4	32.4	36.0	38.7	657 10.8%
1600	6842 9.0%	6.7	54.7	32.6	32.4	36.2	38.5	722 10.6%
1700	6870 9.1%	6.9	55.1	32.8	32.9	36.2	38.7	812 11.8%
1800	5067 6.7%	6.4	59.8	33.1	32.9	36.9	39.4	739 14.6%
1900	3796 5.0%	12.7	55.0	33.5	33.3	37.4	40.3	649 17.1%
2000	3035 4.0%	10.9	56.5	33.2	32.9	36.9	40.5	471 15.5%
2100	2551 3.4%	10.7	55.1	33.2	32.7	37.1	40.3	405 15.9%
2200	2042 2.7%	11.3	55.5	32.4	31.8	36.2	39.8	255 12.5%
2300	880 1.2%	10.6	61.3	34.1	33.6	38.7	42.3	205 23.3%
----	75704 100.0%	6.4	71.7	32.9	32.7	36.7	39.6	10567 14.0%