

EXECUTORS OF QUEENIE DENNIS

7 SPALDING ROAD, GOSBERTON
LINCOLNSHIRE

HIGHWAY DESIGN STATEMENT

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project number: ADC1529			report reference: ADC1529 B
version	date	author	Comments
1	27/09/2017	Matt Tatler	first issue to the client team
2	04/10/2017	Matt Tatler	revised following comment
3	20/12/2017	Matt Tatler	revised and issued for submission

Introduction

1. ADC Infrastructure Limited were commissioned by Robert Doughty Consultancy Limited, on behalf of the Executors of Queenie Dennis, to provide transport advice in support of a residential development on land to the south of Spalding Road in Gosberton, Lincolnshire (**Figure 1**).



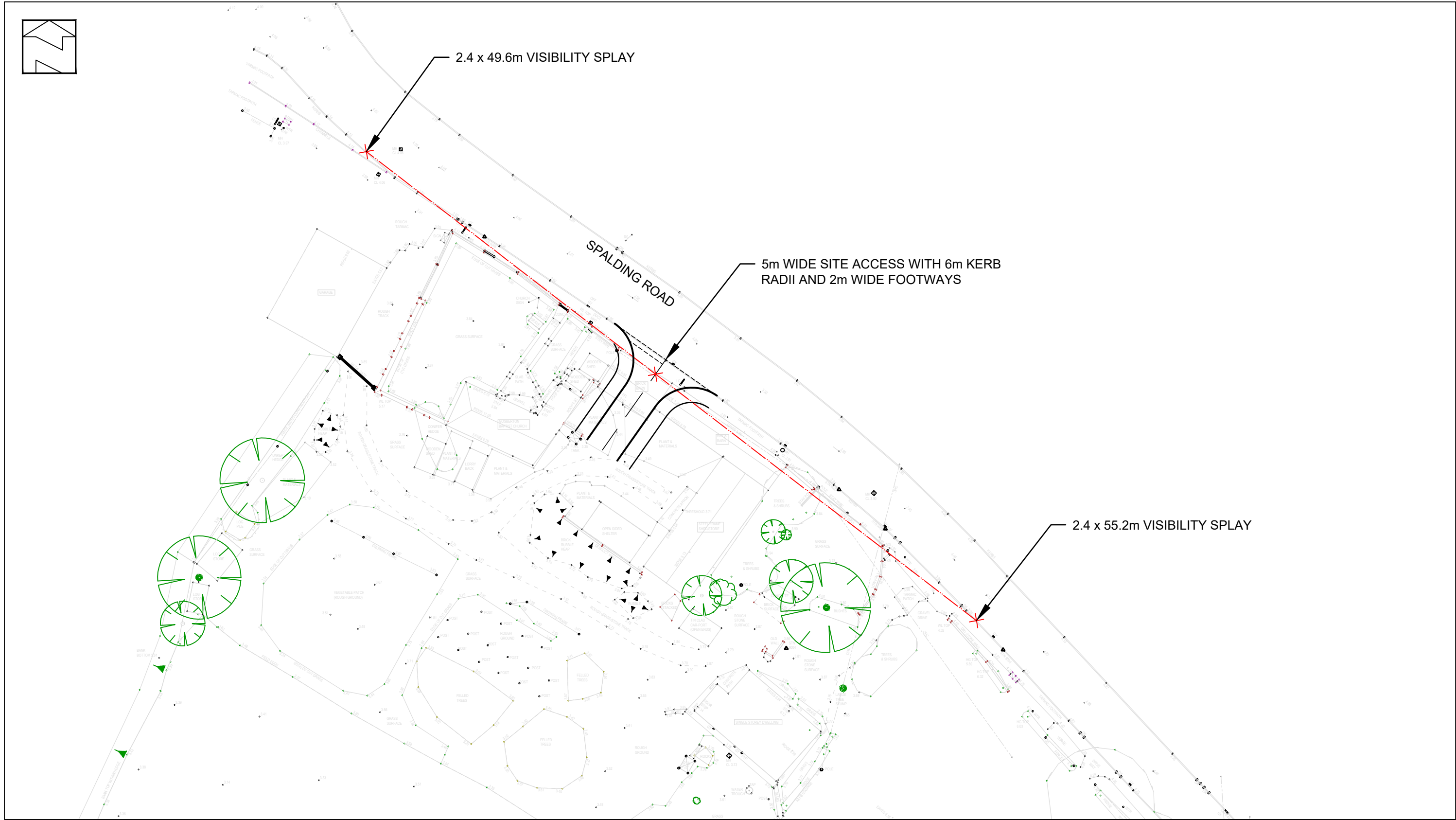
Figure 1: site location

2. To deliver the new housing, the developer will need to construct a new site access onto Spalding Road, designed in accordance with the Lincolnshire Design Guide for Residential Areas. This Highway Design Statement therefore provides a short summary of what access is required to meet the relevant standards.
3. The site is located to the south of Spalding Road and measures approximately 1.7ha, therefore could accommodate around 45-50 dwellings. In accordance with the Lincolnshire Design Guide, a residential development of up to 50 dwellings should be provided with a 5m wide carriageway, 6m kerb radii and 1.8m wide footways. The proposed site access layout is shown in **Drawing ADC1713/001/P2 in Appendix A**.
4. Spalding Road is subject to a 30mph speed limit, although the speed limit changes to 50mph just beyond the site boundary as shown on the figure above. As a result, a speed survey was undertaken on Thursday 14 September 2017 between the hours of 1030 and 1200. Over 120 vehicles were recorded, travelling in free flow conditions in each direction on the approach to the proposed site access. A copy of the analysis is in **Appendix B**.
5. The results gave the following 85th percentile wet weather speeds on Spalding Road:
 - 33.2mph in a southbound direction from Gosberton
 - 35.7mph in a northbound direction towards GosbertonThe recorded speeds are therefore below the 50mph speed limit.

6. As a result, the appropriate visibility splays in accordance with Manual for Streets are:
 - 49.6 metres to the north for vehicles travelling from Gosberton
 - 55.2 metres to the south for vehicles travelling towards Gosberton.These distances include an additional 2.4m to account for bonnet length. **Drawing ADC1713/001/P1** shows that the required visibility splays are achievable in both directions.
7. Service vehicles would be able to enter, manoeuvre and exit the development via Spalding Road in a forward gear, with the provision of an appropriate turning heads designed in accordance with the Lincolnshire Design Guide.
8. Overall, a safe and suitable access, designed to relevant standards could be provided to the proposed residential development. As a result, the access proposals should be acceptable to Lincolnshire County Council.

APPENDIX A

ACCESS JUNCTION LAYOUT DRAWING ADC1713/001/P3



			Project: Proposed Residential Development Spalding Road, Gosberton	Client: Executors of Queenie Dennis	ADC INFRASTRUCTURE		
P3	Revised Labels	04/10/17	Title: Proposed Access Junction Layout		Drg Size:	Scale:	Date:
P2	Revised Topo	20/09/17			A3	1:500	14/09/2017
P1	Preliminary Issue	14/09/17			Drg No:	Rev:	
Rev	Description	Date			ADC1713/001		P3

APPENDIX B

SPEED SURVEY RESULTS

observed speed mph x	no. of readings f	fx	fx ²
<10	0	N/A	N/A
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	0	0	0
20	2	40	800
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	5	125	3125
26	6	156	4056
27	14	378	10206
28	14	392	10976
29	14	406	11774
30	13	390	11700
31	12	372	11532
32	12	384	12288
33	5	165	5445
34	4	136	4624
35	6	210	7350
36	4	144	5184
37	4	148	5476
38	6	228	8664
39	5	195	7605
40	3	120	4800
41	1	41	1681
42	2	84	3528
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
Total Σ	133	4132	131138

SPEED READINGS

location: **Spalding Road**
direction: **From Gosberton**
day: **Thursday**
date: **#####**
time: **1030 to 1200**
weather: **Dry**

SUMMARY

mean 31.1 mph 50.1 kph
85%ile 35.6 mph 57.5 kph
wet 85%ile 33.2 mph 53.5 kph

mean speed

$$\bar{x} = \frac{\sum fx}{\sum f} = 31.1 \text{ mph}$$

standard deviation

$$S_x = \sqrt{\frac{1}{\sum f - 1} \times \left[\sum fx^2 - \frac{(\sum fx)^2}{\sum f} \right]} = 4.6 \text{ mph}$$

85th percentile dry weather spot speed

$$\bar{x} + S_x = 35.65 \text{ mph}$$

85th percentile wet weather journey speed

$$\bar{x} + S_x \cdot -2.478 = 33.2 \text{ mph}$$

Error (E)

$$E = (S * K) / N^{0.5} \quad \pm 0.8 \text{ mph}$$

where:

K is a constant (=1.96 for 95% confidence)

S is standard deviation (mph)

N (= f) is number of readings

observed speed mph x	no. of readings f	fx	fx ²
<10	0	N/A	N/A
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	3	60	1200
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0
26	6	156	4056
27	4	108	2916
28	6	168	4704
29	9	261	7569
30	8	240	7200
31	11	341	10571
32	14	448	14336
33	11	363	11979
34	5	170	5780
35	10	350	12250
36	9	324	11664
37	11	407	15059
38	6	228	8664
39	1	39	1521
40	0	0	0
41	2	82	3362
42	1	42	1764
43	2	86	3698
44	2	88	3872
45	2	90	4050
46	1	46	2116
47	1	47	2209
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
Total Σ	125	4144	140540

SPEED READINGS

location: **Spalding Road**
direction: **From Gosberton**
day: **Thursday**
date: **#####**
time: **1030 to 1200**
weather: **Dry**

SUMMARY

mean 33.2 mph 53.5 kph
85%ile 38.2 mph 61.7 kph
wet 85%ile 35.7 mph 57.7 kph

Mean speed

$$\bar{x} = \frac{\sum fx}{\sum f} = 33.2 \text{ mph}$$

standard deviation

$$s_x = \sqrt{\frac{1}{\sum f - 1} \left[\sum fx^2 - \frac{(\sum fx)^2}{\sum f} \right]} = 5.0 \text{ mph}$$

85th percentile dry weather spot speed

$$\bar{x} + S_x = 38.20 \text{ mph}$$

85th percentile wet weather journey speed

$$\bar{x} + S_x - 2.478 = 35.7 \text{ mph}$$

Error (E)

$$E = (S * K) / N^{0.5} \quad +/- \quad 0.9 \text{ mph}$$

where:

K is a constant (=1.96 for 95% confidence)

S is standard deviation (mph)

N (= f) is number of readings

GENERAL

stopping sight distance (SSD) = $Vt + V^2/2(d+0.1a)$

where:

V = speed (m/s)

t = reaction time (seconds)

d = deceleration (m/s^2)

a = longitudinal gradient (%) (+ for upgrades and - for downgrades)

SITE SPECIFIC - FROM GOSBERTON

recorded speed (V) = **33.2** mph
53.4 kph
14.8 m/s

longitudinal gradient (a) **0**

	t	d	SSD (m)	+2.4m bonnet length
Highway Code	0.70	6.57	27.2	29.6
MfS - light vehicles	1.50	4.41	47.2	49.6
MfS - HGVs	1.50	3.68	52.2	54.6
MfS - buses	1.50	3.68	52.2	54.6
DMRB desirable minimum	2.00	2.45	74.6	77.0
DMRB absolute minimum	2.00	3.68	59.6	62.0

SITE SPECIFIC - TO GOSBERTON

recorded speed (V) = **35.7** mph
57.5 kph
16.0 m/s

longitudinal gradient (a) **0**

	t	d	SSD (m)	+2.4m bonnet length
Highway Code	0.70	6.57	30.6	33.0
MfS - light vehicles	1.50	4.41	52.8	55.2
MfS - HGVs	1.50	3.68	58.6	61.0
MfS - buses	1.50	3.68	58.5	60.9
DMRB desirable minimum	2.00	2.45	83.9	86.3
DMRB absolute minimum	2.00	3.68	66.5	68.9