Item	Subject
	Carriageway Width at Stop Line for External Approaches • Western Arm = 12.5m; • Eastern Arm = 12.3m; • Northern Arm = 13m • Southern Arm = 12.3m; **Circulatory Carriageway Width at Stop Line for Internal Approaches** • Western Side = 17m; • Eastern Side = 17m; • Northern Side = 11.8m; • Southern Side = 17m; **Length of External Approaches** Storage Length determined by ADC Transport Assessment. **Length of Internal Approaches** Storage Length determined by ADC Transport Assessment – Minimum 15m as per CD 116, para 4.2.2 NOTE 2.
	Lane Reduction • Western Arm = 2 lane exit not reducing; • Eastern Arm = 2 lane exit not reducing; • Northern Arm = single lane exit; • Southern Arm = 2 land exit not reducing;
	Horizontal Clearance of Signals 0.45m Minimum (CD 123, para 7.14); 0.6m on high speed approaches (TSM Chapter 6, para 3.3.3);
	Distance between Stop Line and Primary Signal 2.5m (TSM Chapter 6, para 4.2.2);
	Secondary Signal Within 50m of stop line (CD 123, para 7.2.8), located within 30° (CD 123, para 7.2.7, Fig 7.2.7);
	Maintenance Traffic signals maintenance access bay to be provided (TSM Chapter 6, Section 27.8);
	Controlled Crossings (Toucan Style) Width of Crossings Eastern Arm = 3.2m minimum (TSM Chapter 6, Section 20); Toucan on A422 Eastern Arm Exit The location of this Toucan on this exit has been determined by CD 116, para 8.2.4; Distance between Primary Signal and 1st set of Crossing Studs 0.5m (TSM Chapter 6, para 11.2.6);

Item	Subject
	Carriageway Cross Section Eastern and Western Arms Figure 2.1.1N1f: Dimensions of cross-section components for rural all-purpose roads mainline (CD 127). **NB** 1m hardstrips are not provided on approaches to the junction and also to tie in with existing carriageway cross-section; Southern and Northern Arms Figure 2.1.1N1g: Dimensions of cross-section components for urban all-purpose roads Mainline (CD 127);
5,	**3D Design Elements** The vertical alignment of Willen Road South has been designed to comply with CD 109, particularly Table 2.10:- • Design Speed = 70kph; • Desirable Minimum Crest K Value = 30; • Absolute Minimum Sag K Value = 20; • Gradient Max = 1 in 28.5 (Existing); • Gradients Min = 1 in 150; • Crossfall = 1 in 40; The vertical alignment of Willen Road has been designed to comply with CD 109, particularly Table 2.10:- • Design Speed = 70kph; • Desirable Minimum Crest K Value = 30; • Absolute Minimum Sag K Value = 20; • Gradient Max = 1 in 28.5 (Existing); • Gradients Min = 1 in 150; • Crossfall = 1 in 40; The vertical alignment of H3 Monks Way and A422 has been designed to comply with CD 109, particularly Table 2.10:- • Design Speed = 120kph; • Desirable Minimum Crest K Value = 182; • Absolute Minimum Sag K Value = 37; • Gradient Max = 1 in 36; • Gradients Min = 1 in 150; • Crossfall = 1 in 40;

Item	Subject
6,	**Collision Data** Recorded Injury Collision (RIC) data has been obtained from the CrashMap for 6½ years (2014 to 2020 up to June). Marsh End Road Roundabout Within the past 6½ years, 9 RICs (2 serious, 7 slight) have been recorded at this existing roundabout:- • A422 Approach:- o 6No collisions, 2 occurred in the wet, 1 occurred during the hours of darkness; o 3No. RICs involved Cyclists being struck by vehicles failing to Give Way; o 1No. Shunt type collision involved 2No. 50cc motorbikes at the junction; o 2No. Shunt type collision on the immediate approach; • H3 Monks Way Approach:- o 1No. Shunt type collision, occurred in the wet at the junction; • Willen Road (Southern Arm) Approach:- o 1No. Single vehicle collision (colliding with a tree); o 1No. Failed to Give Way type collision; It is considered that 9 RICs in 6½ years does not constitute a significant collision problem at these locations with the current national speed limits in place. However, it is noted that 3No. of these collisions involved Cyclists on the circulatory carriageway being struck by motorists entering the roundabout. The proposed design would look to provide facilities to reduce the likelihood of these collisions occurring. A new surface course with appropriate PSV, street lighting, along with a reduced speed limit, as well as signalising the roundabout itself, are proposals that could reduce the number of recorded collisions. This has informed the design of the junction.
7,	**Proposed Non-Motorised User facilities** Shared use footway / cycle track = 3m wide (CD 143, para E/3.5); Footway Only = 2m wide (CD 143, para E/1.2, Table E/1.2); Buffer Zone = 1m wide – (CD 143, para E/3.5.1(2) states 0.5m on roads with a speed limit of 40mph or less. There should be no street furniture or vegetation (except grass) within the separation distance.
8,	**Relation to Existing Access Points** Willen Road / Marsh End Road Priority junction with ghost island right turn land is located 330m (approx.) north of the Marsh End Road roundabout. A gated field access is located on the western side of Willen Road (North), 20m (approx.) north of the Marsh End Road roundabout. Maintenance access to the central island of the proposed signalised roundabout will be provided.

Item	Subject
	Lay-bys are provided adjacent to the H3 Monks Way approach and A422 approach, both 110m (approx.) from the Marsh End Road roundabout – refer to Section 15.
9,	**Traffic Signs** Advance Direction Signs (ADS) as well as Flag type directional signs shall be provided on the Willen Road approaches to the junction in accordance with Traffic Signs Regulations and General Directions 2016 (TRSGD) and associated Traffic Signs Manuals. These signs will incorporate existing destinations as well as signing the development. Care has been taken with the positioning, as well as 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 (CD 116, para 3.36 NOTE 2). The 'x'-heights for these directional signs will be informed by:- • The proposed 40mph speed limit being imposed by MKC for Willen Road; • 85th percentile speeds for A422 and H3 Monks Way; • as well as any further comments received from MKC; **Road Markings** The existing road markings have been provided in response to the current national speed limits. The proposed reduction in speed limit (40mph) will require all affected road markings to be amended to reflect this lower limit. All required road marking amendments have been informed by Traffic Signs Manual Chapter 5 and 6.
10,	**Road Restraint Systems (RRS)** Willen Road The existing length of Willen Road is subject to the national speed limit (60mph). The following road side hazards are present adjacent to the carriageway:- • Ditchcourses, including headwalls; • Vegetation, including large mature trees; • Sign posts, street lighting, telegraph poles and feeder pillars; • Embankments; Currently, RRS has not been provided along the length of Willen Road affected by this proposed junction. The scheme proposals will reduce the speed limit along Willen Road to 40mph. Motorists will be informed of the change to the road layout by the provision of:- • 2No. x 40mph speed terminal signs (sized in accordance with Traffic Signs Manual Chapter 3); • 40mph speed repeater signs along the length of Willen Road; • Advanced Directional Map Type Signs (ADS) which indicates the new road layout and provides warning of the proposed junction ahead; • Full and unrestricted visibility to primary traffic signals and associated stop line; • Full and unrestricted visibility on the immediate approach to the junction; • Street lighting to the appropriate illumination class along the length of Willen Road;

Item	Subject
	• New surface course with increased Polished Stone Value (PSV) on the approach to the junction and within the extent of the junction itself; • Road markings appropriate to the new reduced speed limit; It is considered by the Design Team that the above measures are sufficient to mitigate against casual and inappropriate speeding. Taking the above into account, and in accordance CD 377, para 2.2, RRS is not required along Willen Road. As the speed limit for Willen Road will be reduced to 40mph, Passively Safe Systems are not considered to be required along this section of the scheme. <u>H3 Monks Way / A422</u> The need for RRS within the verges of the eastbound and westbound approaches and exits of H3 Monks Way and A422 arms has been reviewed using the 'Road Restraint Risk Assessment Process' (RRRAP) detailed within CD 377. This process has identified that the existing trees adjacent to the verges are road side hazards where the risk of not providing a RRS is unacceptable. However, as the scheme proposals do not introduce any road side hazards which cannot be erected on passively safe systems e.g. traffic sign posts, street lighting, traffic signals (subject to detailed design), then the need to provide RRS to protect trees, as well as the lengths of RRS beyond the extents of the scheme, is considered to be the responsibility of MKC. It should be noted that the existing RRS within the central reserve of the A422 arm is being retained (but realigned). However, currently MKC have not provide any RRS within the central reserve of the H3 Monks Way. Following a meeting with MKC (dated 14th June 2018), MKC have confirmed that RRS is required within the central reserve. Stantec have updated their proposals to include RRS, from the proposed Marsh End Road Signalised Roundabout, to the existing RRS within the vicinity of the existing M1 overbridge, a length of 500m (approx.). Stantec have also reviewed the vertical profile of H3 Monks Way on the immediate approach to the proposed junction (i.e. over a distance of 1.5 x SSD), and can confirm that forward visibility of 295m (appropriate for a 120kph Design Speed) is not restricted to the 'object height' by the proposed RRS.
11,	**<u>Highway Boundary</u>** The location of the existing highway boundary has been determined using plans provided by Milton Keynes Council (MKC) which has then been transferred onto topographical survey data. The design of this signalised junction requires additional carriageway width and adjacent NMU facilities. The widening will primarily be undertaken on the western side of Willen Road so that no works encroach onto 3rd party land that is not within the control of the Developer or Highway Authority.
12,	**<u>Surface Water Drainage</u>** Refer to Technical Note TN2015/001 Rev B – 'Preliminary Surface Water Drainage Strategy'.

TECHNICAL NOTE

Item	Subject
13,	**Utilities** The affect this proposed signalised roundabout junction may have on the existing utilities within the highway is currently being determined as part of the design of the junction. Utility records indicate that the following services could be affected by the proposed junction improvements:- • Virgin Media; • Vodaphone; • BT (optic); • Anglian Water Services (Potable Water); • 1 No. 33kV Underground Cable; • 1 No. 11kV Underground Cable; Any new supplies or diversions / protection of existing utilities is to be undertaken by the Client's Utility Consultant.
14,	**Street Lighting** A Street Lighting design has been undertaken for Marsh End Road Signalised Roundabout in accordance with Milton Keynes Council's Street Lighting Specification Marsh 2016. The Street Lighting layout has been designed to Class C2 for Conflict Zones and M3 outside of conflict zones. Please refer to Street Lighting Design Drawing 38748/1300/002 Rev B for details, to be read in conjunction with Roadway Lighting Reports and Outdoor Reality Report.
15,	**Design Risks** Lay-bys Further to Section 8, there are 2No. existing lay-bys adjacent to the H3 Monks Way and A422 approaches to the junction. These existing lay-bys are affected by the proposed additional running lanes on these approaches. Following a meeting with MKC (dated 14th June 2018), MKC have confirmed that these existing lay-bys do not need to be relocated or replaced. Update to Geometric Standards Any design issues raised by the recent alterations to the DMRB Design Standards will be discussed and resolved following liaison with MKC's Highway Authority.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
38748/TN2003/001	-	03/07/18	DP	JSH	JSH	-
38748/TN2003/001	A	21/05/19	JB	JSH	JSH	-
38748/TN2003/001	B	28/07/21	JB	JSH	JSH	-

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T: +44 (0)1604 878 300

DATE:	**30 July 2020**
DESIGNER:	**Stantec**
PROJECT No:	**38748**
PROJECT NAME:	**Land at Caldecote Farm, Newport Pagnell**

Lighting designed in accordance with Milton Keynes Council Street Lighting Specification 2016.

Lighting layout designed to Class C2 for Conflict Zones and M3 for all other Roads.

Please also refer to Reality Roadway Lighting design reports and lighting design drawings: 38748/1300/001 and 38748/1300/002 for notes / design rationale & schedules relative to the design.

Outdoor Lighting Report

PREPARED BY:

Stantec
11 Prospect Court
Courteenhall Road
Blisworth
Northampton
NN7 3DG
Phone 01604878300
Website: https://www.stantec.com/uk/offices/northampton-uk

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1	487526.00	242514.00	170.00	80.00	1.24	1.48
2	Grid 2	487685.41	242635.54	50.00	374.00	1.47	1.50
3	Grid 3	487686.00	242550.00	115.00	85.00	1.49	1.49
4	Grid 4	487794.00	242579.00	150.00	80.00	1.49	1.48
5	Grid 5	487712.01	242397.34	56.00	160.00	1.47	1.50
6	Grid 6	487683.73	242331.35	80.00	65.00	1.48	1.48
7	Grid 7	487772.19	241997.74	48.00	345.00	1.50	1.49
8	Grid 8	487771.70	241738.17	60.00	275.00	1.46	1.49
9	Grid 9	487713.00	242586.00	70.00	374.00	1.49	1.50
10	Grid 10	487755.00	242304.00	100.00	300.00	1.49	1.50
11	Grid 11	487732.05	242041.92	100.00	350.00	1.49	1.50
12	Grid 12	487775.71	241748.22	30.00	310.00	1.43	1.50
13	Grid 13	487618.20	242941.52	54.00	65.00	1.46	1.48

Luminaires

Luminaire A Data

Supplier	Holophane Europe
Type	VMX.L114.V3.F4Q1
Lamp(s)	LED C.11000LM - 4000K
Lamp Flux (klm)	12.32
File Name	VMX.L114.V3.F4Q1.IES
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	461.8, 69.9, 0.0
No. in Project	62

Luminaire B Data

Supplier	Holophane Europe
Type	VMX.L154.V4.X2L2
Lamp(s)	LED C.15000LM - 4000K
Lamp Flux (klm)	15.53
File Name	VMX.L154.V4.X2L2.IES
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	739.3, 67.4, 0.0
No. in Project	12

Luminaire C Data

Supplier	Holophane Europe
Type	VMX.L234.V8.D4D4
Lamp(s)	LED C.23000LM - 4000K
Lamp Flux (klm)	23.09
File Name	VMX.L234.V8.D4D4.IES
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	715.0, 302.4, 0.5
No. in Project	10

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	487761.07	242323.21	12.00	190.00	0.00	0.00	1.00			
2	A	487731.59	242318.12	12.00	10.00	0.00	0.00	1.00			
3	A	487770.96	242287.95	12.00	190.00	0.00	0.00	1.00			
4	A	487736.75	242294.64	12.00	10.00	0.00	0.00	1.00			
5	A	487706.72	242372.86	12.00	306.00	0.00	0.00	1.00			
6	A	487727.15	242343.20	12.00	10.00	0.00	0.00	1.00			
7	A	487756.85	242347.23	12.00	190.00	0.00	0.00	1.00			
8	A	487772.48	242258.80	12.00	190.00	0.00	0.00	1.00			
9	A	487746.14	242256.45	12.00	10.00	0.00	0.00	1.00			
10	A	487755.90	242222.39	12.00	10.00	0.00	0.00	1.00			
11	A	487797.84	242101.04	12.00	190.00	0.00	0.00	1.00			
12	A	487716.44	242353.51	12.00	88.00	0.00	0.00	1.00			
13	A	487768.95	242311.34	12.00	276.00	0.00	0.00	1.00			
14	A	487747.33	242414.88	12.00	191.00	0.00	0.00	1.00			
15	A	487719.67	242411.32	12.00	4.00	0.00	0.00	1.00			
16	A	487715.80	242443.01	12.00	8.00	0.00	0.00	1.00			
17	A	487738.65	242540.23	12.00	165.00	0.00	0.00	1.00			
18	A	487701.06	242542.58	12.00	10.00	0.00	0.00	1.00			
19	A	487737.68	242477.06	12.00	190.00	0.00	0.00	1.00			
20	A	487711.90	242473.18	12.00	10.00	0.00	0.00	1.00			
21	A	487742.38	242446.31	12.00	189.00	0.00	0.00	1.00			
22	C	487677.04	242570.86	12.00	78.00	0.00	0.00	1.00			
23	A	487733.79	242507.93	12.00	180.00	0.00	0.00	1.00			
24	A	487706.83	242505.25	12.00	10.00	0.00	0.00	1.00			
25	C	487676.93	242595.87	12.00	10.00	0.00	0.00	1.00			
26	C	487683.89	242622.87	12.00	315.00	0.00	0.00	1.00			
27	C	487704.60	242631.73	12.00	290.00	0.00	0.00	1.00			
28	C	487731.41	242638.07	12.00	250.00	0.00	0.00	1.00			
29	C	487771.81	242634.28	12.00	285.00	0.00	0.00	1.00			
30	C	487754.08	242604.20	12.00	190.00	0.00	0.00	1.00			
31	C	487788.20	242600.28	12.00	119.00	0.00	0.00	1.00			
32	C	487755.89	242571.32	12.00	140.00	0.00	0.00	1.00			
33	C	487724.37	242562.31	12.00	98.00	0.00	0.00	1.00			
34	B	487634.41	242573.52	12.00	95.00	0.00	0.00	1.00			
35	B	487638.04	242602.74	12.00	285.00	0.00	0.00	1.00			
36	B	487826.28	242618.58	12.00	115.00	0.00	0.00	1.00			

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Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
37	B	487815.56	242645.39	12.00	285.00	0.00	0.00	1.00			
38	A	487790.73	242069.31	12.00	10.00	0.00	0.00	1.00			
39	A	487764.74	242186.55	12.00	15.00	0.00	0.00	1.00			
40	A	487782.35	242189.51	12.00	190.00	0.00	0.00	1.00			
41	A	487787.56	242160.41	12.00	190.00	0.00	0.00	1.00			
42	A	487779.09	242128.22	12.00	12.00	0.00	0.00	1.00			
43	A	487808.86	242033.85	12.00	190.00	0.00	0.00	1.00			
44	A	487803.18	241946.96	12.00	0.00	0.00	0.00	1.00			
45	A	487816.15	241918.54	12.00	180.00	0.00	0.00	1.00			
46	A	487775.10	242231.23	12.00	195.00	0.00	0.00	1.00			
47	A	487799.36	242004.42	12.00	5.00	0.00	0.00	1.00			
48	A	487813.91	241978.76	12.00	185.00	0.00	0.00	1.00			
49	A	487801.78	241888.29	12.00	357.00	0.00	0.00	1.00			
50	A	487814.13	241859.81	12.00	180.00	0.00	0.00	1.00			
51	A	487797.50	241791.57	12.00	355.00	0.00	0.00	1.00			
52	A	487794.70	241776.38	12.00	342.00	0.00	0.00	1.00			
53	A	487826.82	241745.16	12.00	215.00	0.00	0.00	1.00			
54	A	487782.99	241751.49	12.00	300.00	0.00	0.00	1.00			
55	A	487814.93	241765.34	12.00	205.00	0.00	0.00	1.00			
56	A	487688.93	242687.29	12.00	10.00	0.00	0.00	1.00			
57	A	487680.31	242736.61	12.00	10.00	0.00	0.00	1.00			
58	A	487670.56	242789.49	12.00	10.00	0.00	0.00	1.00			
59	A	487658.65	242845.48	12.00	15.00	0.00	0.00	1.00			
60	A	487638.06	242919.62	12.00	15.00	0.00	0.00	1.00			
61	A	487629.65	242948.17	12.00	15.00	0.00	0.00	1.00			
62	A	487660.31	242947.32	12.00	170.00	0.00	0.00	1.00			
63	A	487666.66	242876.76	12.00	190.00	0.00	0.00	1.00			
64	A	487700.21	242714.48	12.00	190.00	0.00	0.00	1.00			
65	A	487678.21	242825.08	12.00	190.00	0.00	0.00	1.00			
66	A	487710.93	242671.62	12.00	191.00	0.00	0.00	1.00			
67	A	487695.37	242646.39	12.00	350.00	0.00	0.00	1.00			
68	A	487691.69	242763.81	12.00	190.00	0.00	0.00	1.00			
69	A	487644.57	242900.74	12.00	15.00	0.00	0.00	1.00			
70	B	487861.63	242657.29	12.00	290.00	0.00	0.00	1.00			
71	B	487867.48	242632.33	12.00	105.00	0.00	0.00	1.00			
72	B	487908.06	242669.04	12.00	285.00	0.00	0.00	1.00			

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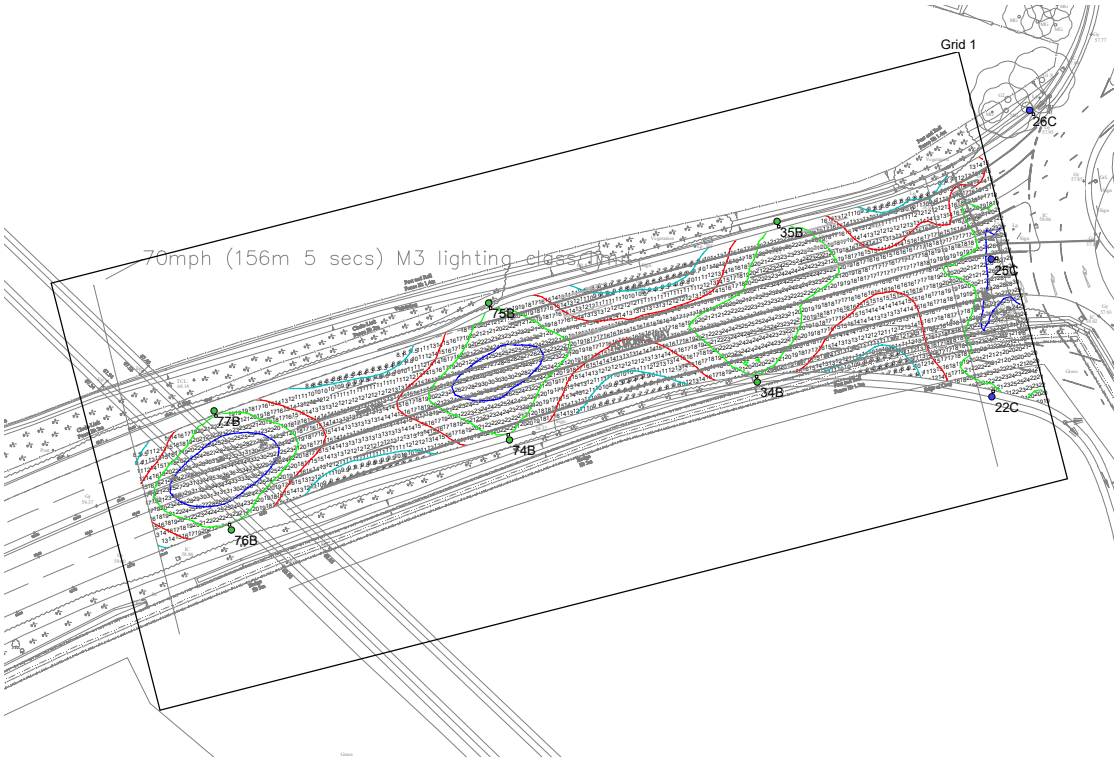
Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
73	B	487913.34	242647.40	12.00	105.00	0.00	0.00	1.00			
74	B	487589.47	242563.00	12.00	105.00	0.00	0.00	1.00			
75	B	487585.66	242587.90	12.00	290.00	0.00	0.00	1.00			
76	B	487538.95	242546.70	12.00	110.00	0.00	0.00	1.00			
77	B	487535.80	242568.34	12.00	290.00	0.00	0.00	1.00			
78	A	487647.54	242981.38	12.00	270.00	0.00	0.00	1.00			
79	A	487663.20	243000.73	12.00	345.00	0.00	0.00	1.00			
80	A	487668.49	242974.69	12.00	150.00	0.00	0.00	1.00			
81	A	487674.68	243030.21	12.00	340.00	0.00	0.00	1.00			
82	A	487717.92	242387.85	12.00	344.00	0.00	0.00	1.00			
83	A	487751.52	242387.63	12.00	185.00	0.00	0.00	1.00			
84	A	487754.58	242367.91	12.00	185.00	0.00	0.00	1.00			

Horizontal Illuminance (lux)

Grid 1

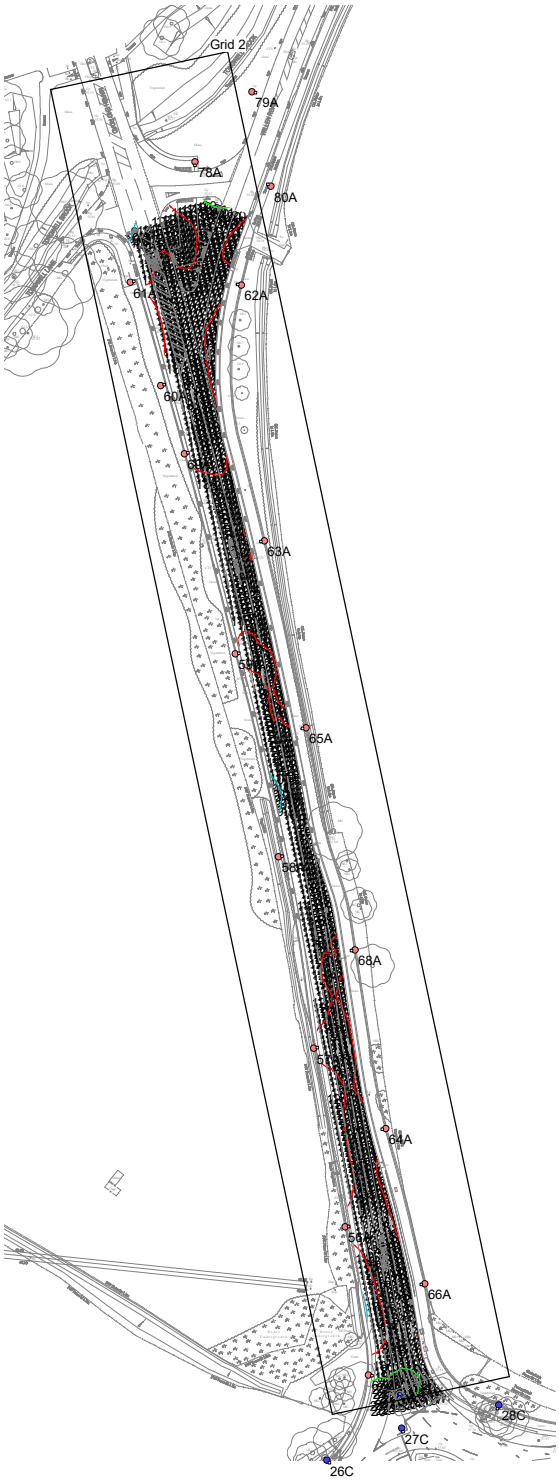


Results

Eav	17.66
Emin	7.06
Emax	36.31
Emin/Emax	0.19
Emin/Eav	0.40

Horizontal Illuminance (lux)

Grid 2



Results

Eav	15.17
Emin	7.93
Emax	25.14
Emin/Emax	0.32
Emin/Eav	0.52

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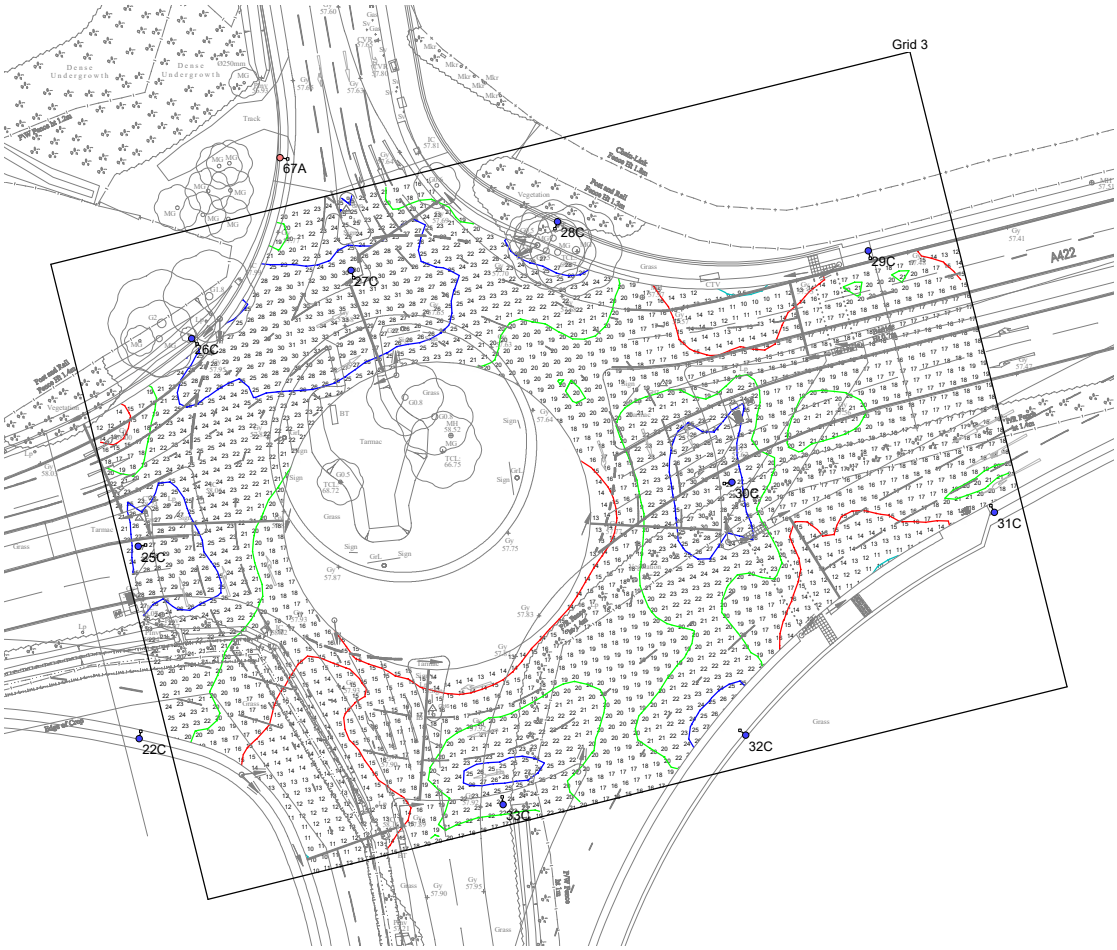
Horizontal Illuminance (lux)

Grid 3



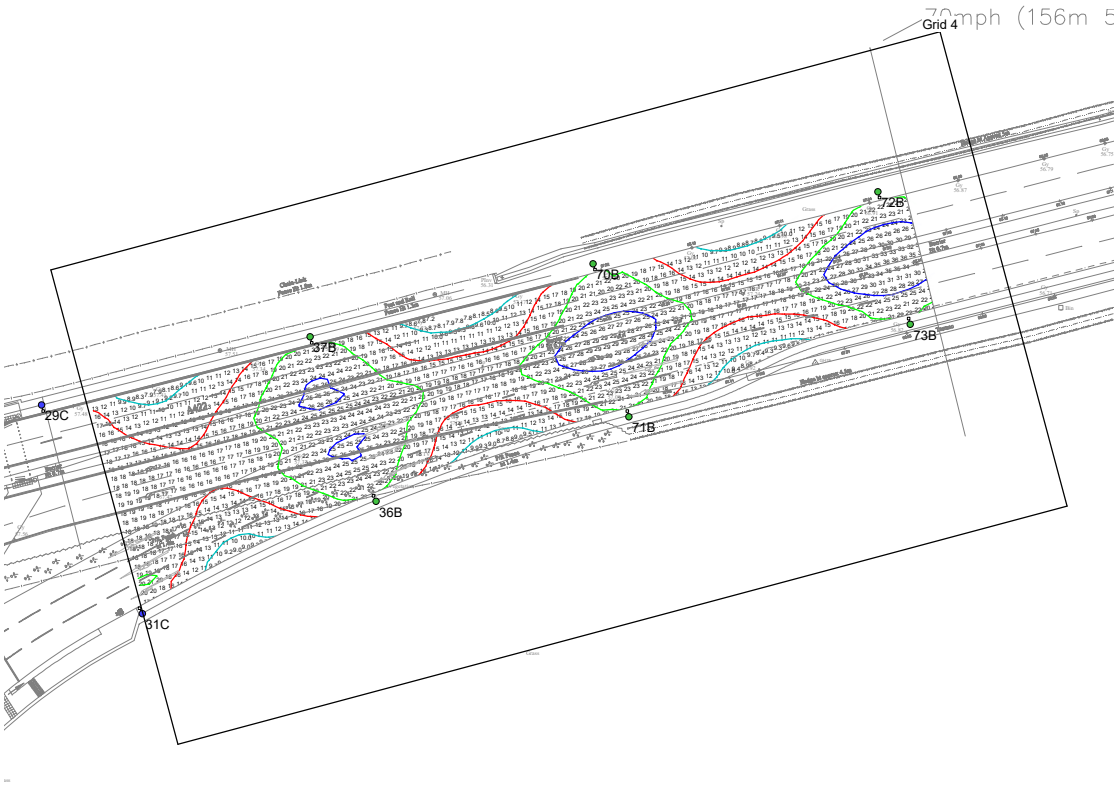
Results

Eav	20.05
Emin	9.47
Emax	34.69
Emin/Emax	0.27
Emin/Eav	0.47

774697569

Horizontal Illuminance (lux)

Grid 4



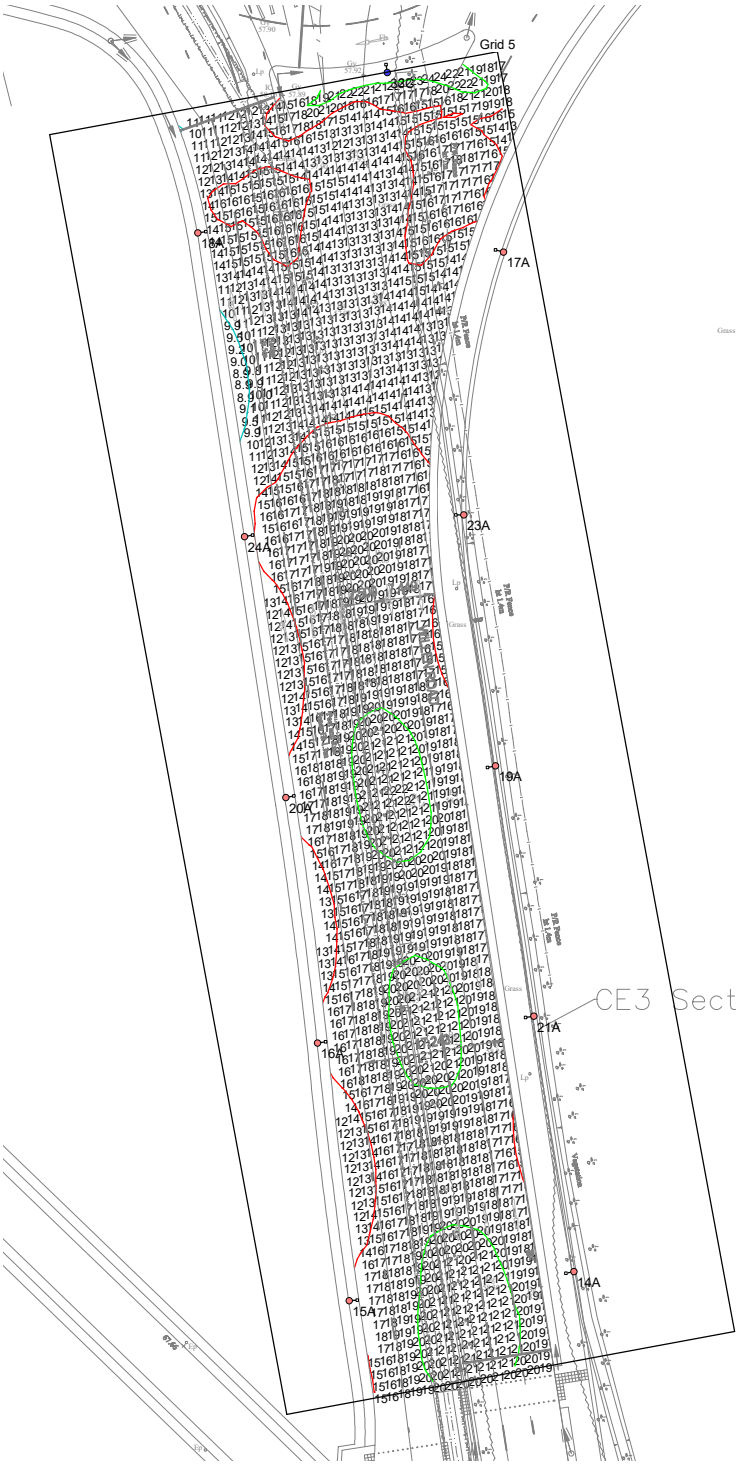
Results

Eav	18.14
Emin	7.19
Emax	35.80
Emin/Emax	0.20
Emin/Eav	0.40

774697569

Horizontal Illuminance (lux)

Grid 5



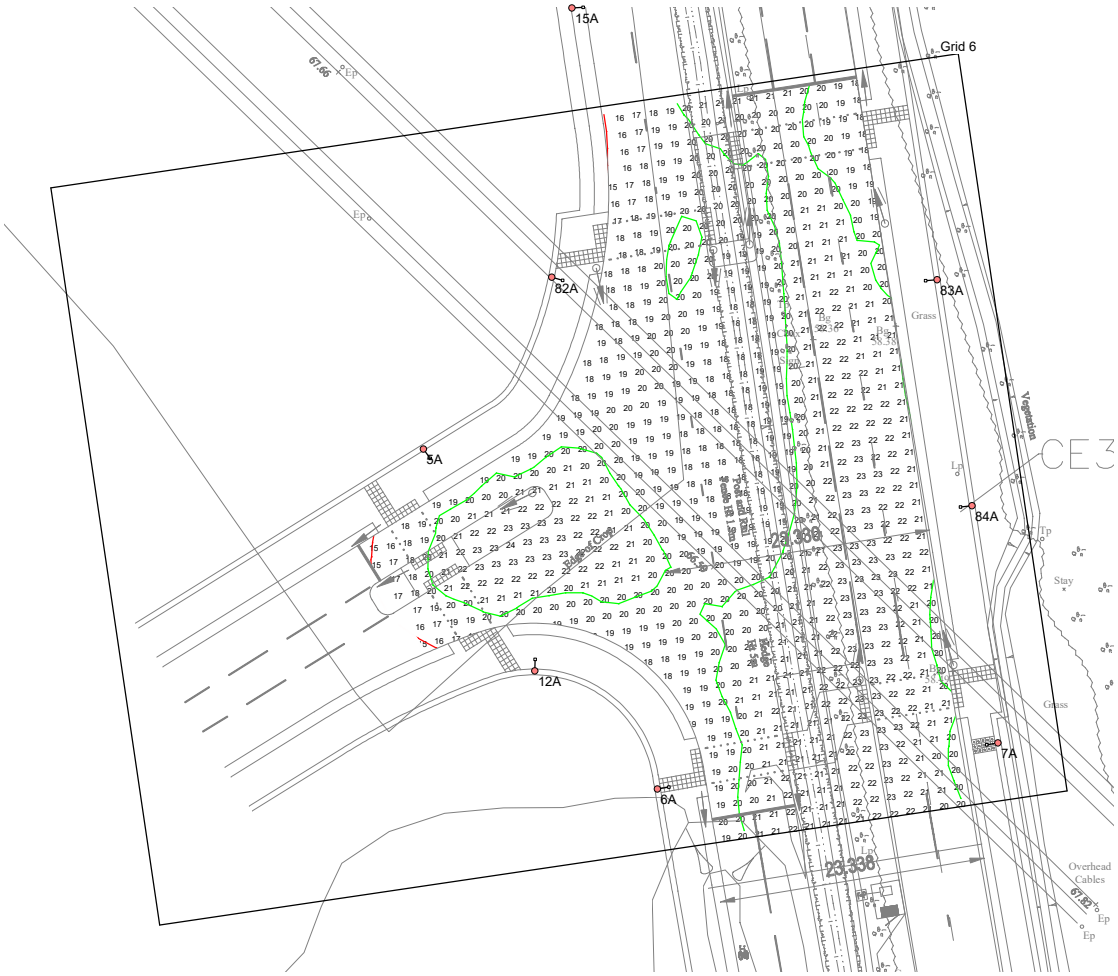
Results

Eav	16.65
Emin	8.85
Emax	23.98
Emin/Emax	0.37
Emin/Eav	0.53

774697569

Horizontal Illuminance (lux)

Grid 6

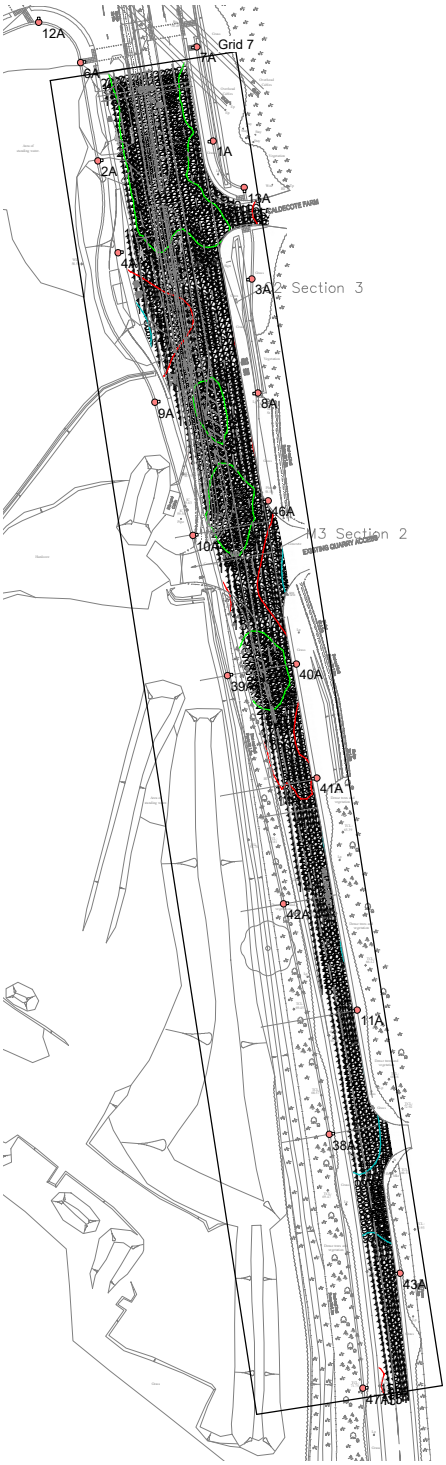


Results

Eav	20.21
Emin	14.67
Emax	23.55
Emin/Emax	0.62
Emin/Eav	0.73

Horizontal Illuminance (lux)

Grid 7



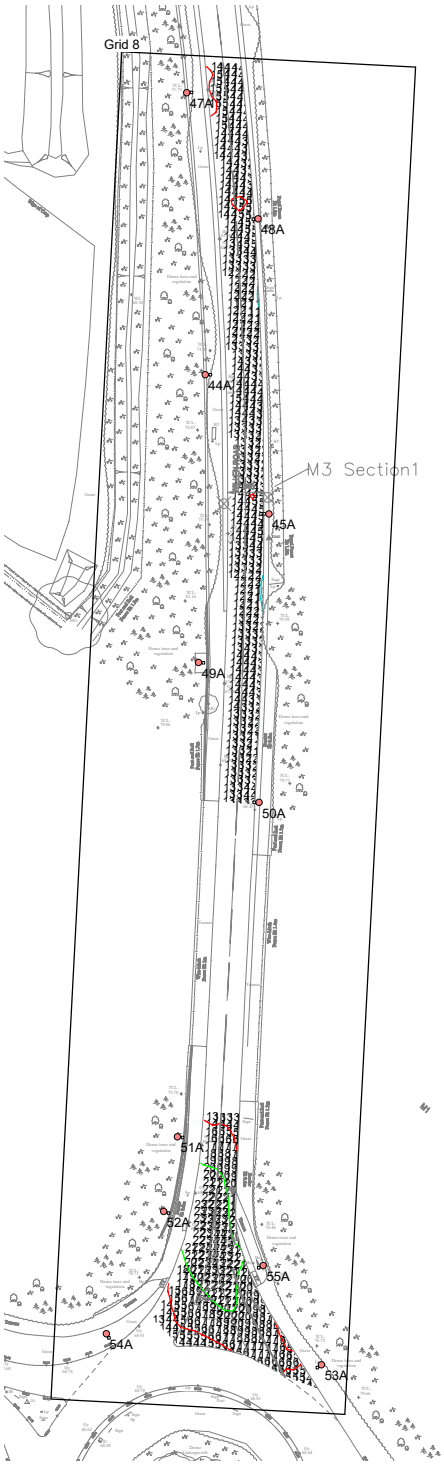
Results

Eav	16.81
Emin	7.29
Emax	24.34
Emin/Emax	0.30
Emin/Eav	0.43

774697569

Horizontal Illuminance (lux)

Grid 8



Results

Eav	15.05
Emin	9.82
Emax	24.12
Emin/Emax	0.41
Emin/Eav	0.65

774697569

Horizontal Illuminance (lux)

Grid 9

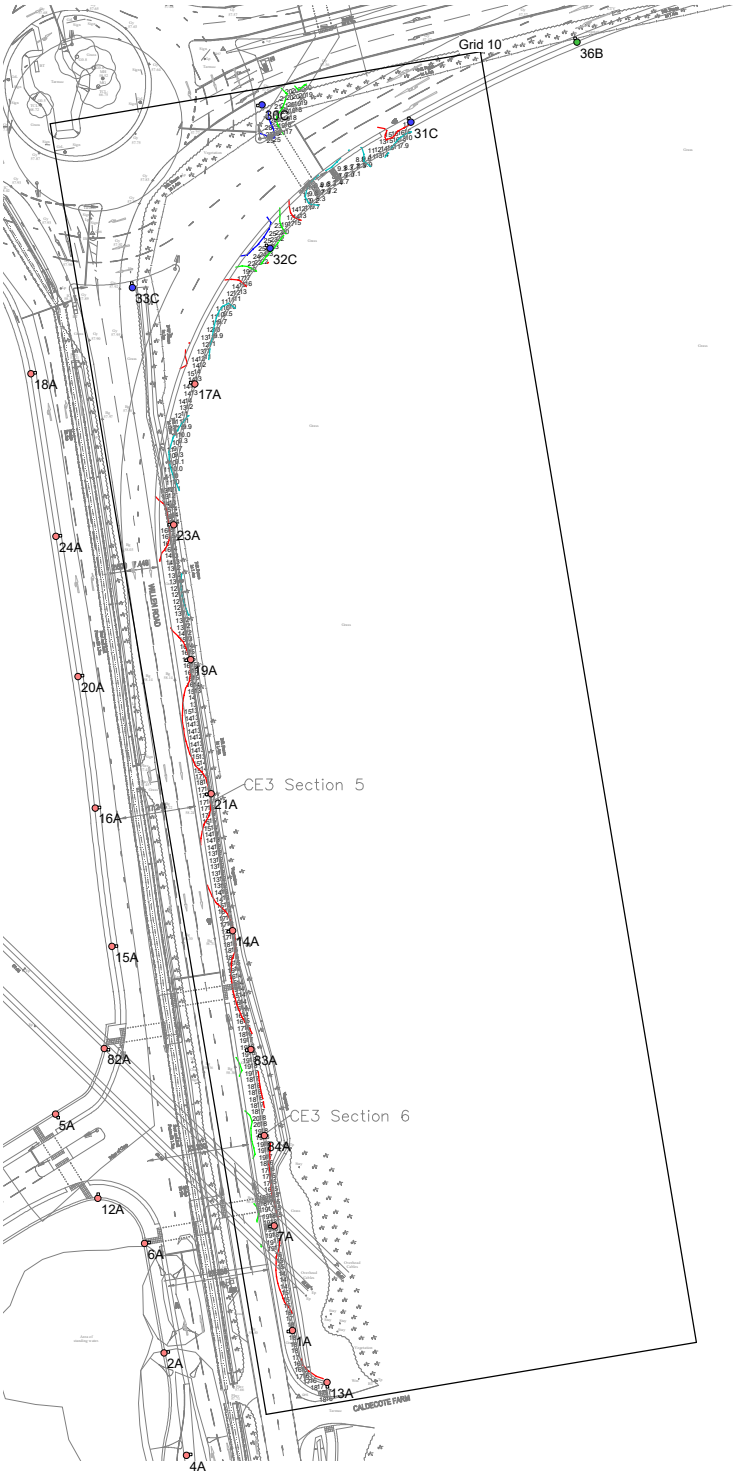
Results

Eav	13.87
Emin	7.45
Emax	27.84
Emin/Emax	0.27
Emin/Eav	0.54

774697569

Horizontal Illuminance (lux)

Grid 10



Results

Eav	15.06
Emin	6.69
Emax	27.55
Emin/Emax	0.24
Emin/Eav	0.44

774697569

Horizontal Illuminance (lux)

Grid 11

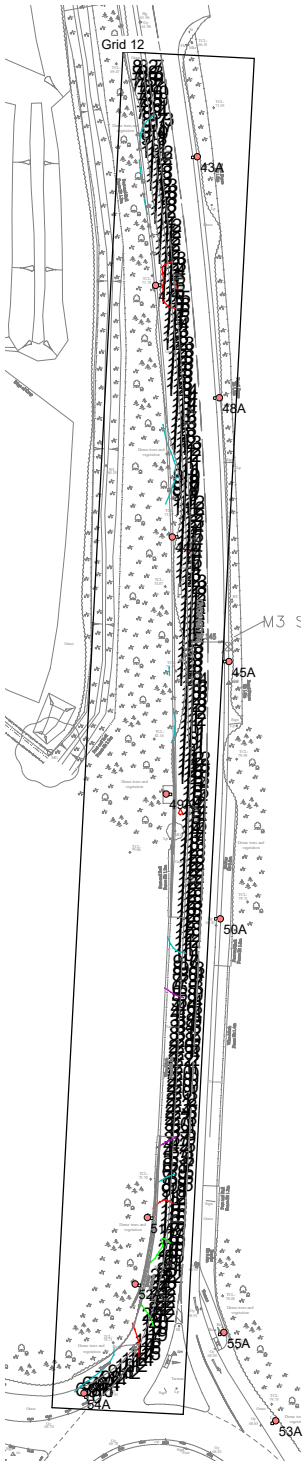
Results

Eav	14.13
Emin	3.87
Emax	20.78
Emin/Emax	0.19
Emin/Eav	0.27

774697569

Horizontal Illuminance (lux)

Grid 12



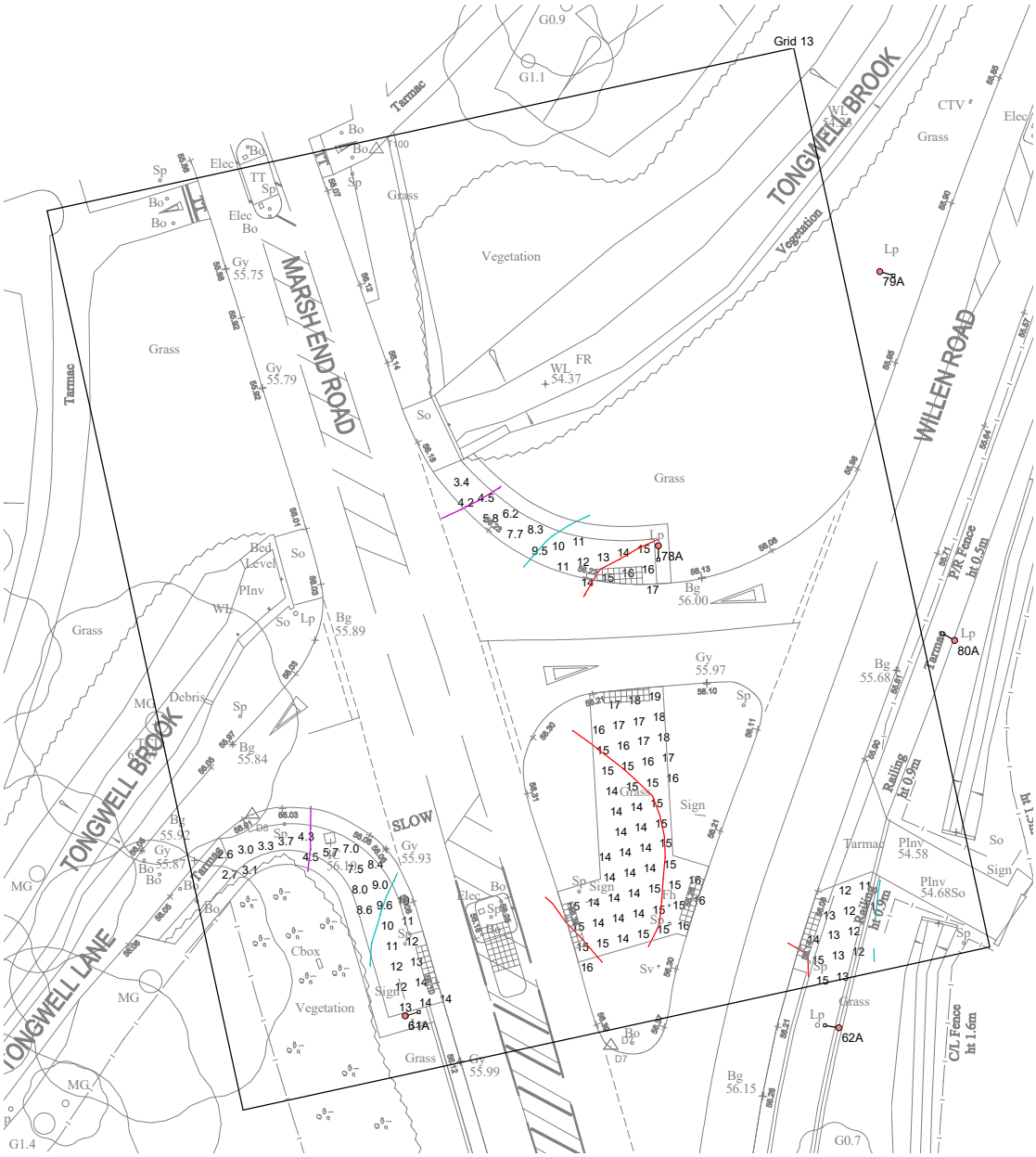
Results

Eav	11.53
Emin	1.95
Emax	22.76
Emin/Emax	0.09
Emin/Eav	0.17

774697569

Horizontal Illuminance (lux)

Grid 13



Results

Eav	12.50
Emin	2.61
Emax	18.52
Emin/Emax	0.14
Emin/Eav	0.21

774697569

now part of

Caldecote Farm, Newport Pagnell

Stage 1 Road Safety Audit

On behalf of **Segro Newport Pagnell Ltd**

Project Ref: 38748/2022 | Rev: - | Date: 10th August 2018

Office Address: 11 Prospect Court, Courteenhall Road, Blisworth, Northampton NN7 3DG
T: +44 (0)1604 878300 E: northampton@peterbrett.com

Document Control Sheet

Project Name: **Caldecote Farm, Newport Pagnell**
Project Ref: **38748/2022**
Report Title: **Stage 1 Road Safety Audit**
Doc Ref: **001**
Date: **10th August 2018**

	Name	Position	Signature	Date
Prepared by:	Philip Edwards	Principal Engineer	[redacted]	10th August 2018
Reviewed by:	Bryn Kemp	Principal Engineer		10th August 2018
Approved by:	Steve Hagreen	Associate		10th August 2018
For and on behalf of Peter Brett As				

Revision	Date	Description	Prepared	Reviewed	Approved

Contents

1 Introduction

1.1 Peter Brett Associates LLP have been commissioned by Segro Newport Pagnell Ltd to undertake a Stage 1 Road Safety Audit (RSA) on the proposed Highway Works associated with the commercial development of land off Willen Road, Newport Pagnell.

1.2 The proposed Highway Works are as follows.

Willen Road / Development Access Signalised Junction

- New 4 arm signalised junction is to be provided on Willen Road with associated maintenance access bay.
- Includes provisions for pedestrians and cyclists to access the development via off carriageway shared use footway / cycle track, referred to as a 'Redway' in Milton Keynes.
- The new 'Redway' facility is also to be provided north and south along the length of Willen Road.
- 2No. Toucan style controlled crossings.
- The junction will incorporate 2No. new bus stops required to serve the development.

Willen Road / H3 Monks Way / A422 Signalised Roundabout Junction

- An existing 4 arm roundabout is to be increased in size and signalised, and provided with 2No. associated maintenance access bays.
- Includes a 'Redway' on the eastern side of the junction with 2No. Toucan style controlled crossings across the A442.

1.3 Willen Road in the vicinity of the proposed development access is a single carriageway all-purpose road, with verges along both sides. The road is lit, but subject to the national speed limit. There are no footways. Approximately 60m south of the proposed signalised junction, on the eastern side of Willen Road, there is an access to sand and gravel quarry. This was observed to be in use by large vehicles. There are existing bus stops on both sides of the road approximately 200m south of the proposed signalised junction.

At the Willen Road / A422 / H3 Monks Way Marsh End Road roundabout, the A422 and H3 Monks Way are all-purpose dual carriageways, with verges along both sides. The roads are lit, but subject to the national speed limit. There are no footways.

Just south of the junction of Willen Road and March End Road, which is at the edge of the existing urban development of Newport Pagnell, the speed limit changes from national speed limit to 30mph.

1.4 The RSA Team Membership was as follows:-

RSA Team Leader:-

Philip Edwards	Peter Brett Associates LLP, Northampton BSc(Hons).

RSA Team Member:-

Bryn Kemp	Peter Brett Associates LLP, Ashford – Principal Engineer MCIHT, MSoRSA Certificate of Competency in Road Safety Audit

The RSA Team are independent of the Design Team.

1.5 The RSA took place during July 2018. The RSA Team visited the site on 23rd July 2018 between 14:30 and 16:00. The weather during the site visit was hot and dry.

1.6 During the site visit 3No. cyclists and no pedestrians were observed using Willen Road south of the Marsh End Road Roundabout. No pedestrians or cyclists were observed using the A422.

1.7 The terms of reference of the RSA are as described in HD 19/15, and the RSA Brief dated 10th July 2018 which required the following exceptions:-

- Mandatory Item 2.59 – The RSA Report will be finalised and issued to the Design Team in order to prepare the RSA Response Report. MKC will not be issued the RSA Report in draft;

- Mandatory Item 3.3 – The RSA Response Report will be prepared and finalised by the Design Team and issued to MKC. MKC will not be issued the RSA Response Report in draft;

Following the completion of the RSA Report and the RSA Response Report, both documents will be issued to MKC.

1.8 The RSA comprises of an examination of the documents listed in Appendix A. The RSA Brief issued to the RSA Team states that no formal Departure from Standards document has been identified.

1.9 1 No. strategic decision has been stated within the approved RSA Brief (reference Item 7.1):-

- MKC have indicated that in order to promote the signalised junction serving the development, the speed limit on Willen Road would need to be reduced from national speed limit (60mph) to 40mph. A Traffic Regulation Order will be required to impose any reduction to the existing speed limit.

Therefore, in accordance with mandatory item 2.21 of HD 19/15, this RSA Report does not provide recommendations which require major changes to the above Strategic Decision. The RSA Team consider that this proposed change in speed limit to 40mph is appropriate as part of the scheme.

1.10 The RSA Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.11 Recorded Injury Collision (RIC) data for 4 years, 2014 to 2017, provided by the Design Team has been reviewed. It is noted that 3No collisions have involved cyclists on the eastern side of the Marsh End Road roundabout circulatory carriageway being struck by a vehicle. The scheme proposals to provide a Toucan crossing of the A422 should mitigate this hazard. The collision records did not indicate any other particular collision problem in the vicinity of the proposed scheme.

1.12 Problems identified in the report are indicated by location and are shown on the site reference plans in Appendix B.

2 Items Raised from this Stage 1 Road Safety Audit

2.1 Problem

Location - Willen Road Signalised Junction

Summary - Direction Signage Requirements may not be achievable – insufficient driver information and potential vehicle impact with signs

It is noted from the Design Statement (TN2003/001) that it is proposed to provide Advance Direction Signs (ADS) and Flag direction signs relating to the proposed traffic signal junction on Willen Road. The location for one ADS is indicated for northbound traffic approximately 60m from the traffic signal stop line. This location is after the carriageway has already widened from 1 to 3 lanes, and not sufficiently in advance of the junction to inform drivers. No other ADS or direction signs are indicated on the drawings.

The existing verges of Willen Road are heavily vegetated, and it is proposed that there will be a 3m wide Redway. Therefore, it cannot be assumed that the necessary signs can accommodated and adequate visibility can be achieved without difficulty.

In view of the 3 lane approaches to the junction along Willen Road, clear signage will be needed in advance of the junction such that drivers will position themselves in the correct lane. Otherwise there is a risk of late and unexpected lane changes, which may result in collisions between vehicles approaching the junction.

Recommendation

The proposed signing for the junction should be determined in more detail before the preliminary design is completed. Locations and sign widths should be investigated to ensure that adequate advance direction signage can be achieved with suitable lateral clearance from the edge of the carriageway, and with the appropriate mounting heights in relation to the proposed cycle route.

2.2 Problem

Location - Willen Road Signalised Junction, northbound approach

Summary - Development of right turning lane – potential side swipe collisions associated with lane changes

On the northbound approach to Willen Road traffic signals, the carriageway widens from a single northbound lane to 3 lanes. The road markings indicated will tend to encourage a large proportion of traffic to approach the junction in the offside lane. But this lane is intended to just serve right turning traffic, for which numbers are expected to be low. Vehicles may naturally tend to enter the right turning lane and then have to change lanes for the ahead movement, which will introduce un-necessary conflict and increase the risk of collision.

Recommendation

The layout of road markings on the northbound approach should be amended such that most traffic naturally enters the ahead lanes and the right turning lane is developed nearer to the stop line.

2.3 Problem

Location	-	Willen Road Signalised Junction, northbound approach
Summary	-	No provision for existing sand and gravel works – potential conflict with turning vehicles

The proposals do not indicate any provision for the existing access to Caldecote Farm Sand and Gravel Works. Large vehicles use this access and currently all turning movements are permitted. The proposals will see Willen Road widened to 5 traffic lanes (3 northbound and 2 southbound) with central ghost-island hatching. There is no provision within the hatching for right turning vehicles to access to the sand and gravel works.

It is not clear how the scheme will accommodate vehicles turning right into and out from the sand and gravel works access. There will be conflict and risk of collision between right turning vehicles at the sand and gravel works and other traffic using the multiple lanes on Willen Road.

Willen Road – Large vehicle exiting from the sand and gravel works

Recommendation

The scheme proposals should recognise the existing access which is used by large / heavy vehicles. It is recommended that, in association with Problem 2.2 above, the sand and gravel works access is provided with a right turn lane or becomes left in / left out, with vehicles being able to U-turn at the Tongwell and the Marsh End Road roundabouts.

2.4 Problem

Location	-	Willen Road Signalised Junction, bus stops
Summary	-	Location of bus stops may cause confusion to drivers following buses leading to shunt type collisions

It is proposed to locate on-line northbound and southbound bus stops for Willen Road, in advance of the stop line of the traffic signals.

The close proximity of the bus stops, to the stop line (20 to 30m) may cause some confusion. For a bus signalling left and slowing to use the bus stop, a following vehicle may assume that the bus is intending to turn left at the traffic signals. The following vehicle may then have to stop suddenly and there may be a risk of shunt type collisions. Also, when a bus is stationary at the bus stop, there is not sufficient space for a left turning vehicle to pass the bus and re-enter the nearside lane before the traffic signals. There is also the risk that a stationary bus will mask the primary signal for approaching traffic.

Recommendation

The bus stop locations should be reviewed to avoid the hazards described above. For example, the northbound stop location could be positioned downstream of the junction.

2.5 Problem

Location	-	Willen Road Signalised Junction
Summary	-	Lack of clarity for separately phased manoeuvres leading to vehicle to vehicle conflicts

It is proposed that right turns from Willen Road southbound (phase b) and Willen Road northbound (phase d) are separately phased from the ahead and left turn movements on these arms. It is not clear from the preliminary design that the location of the secondary signal heads will clear enough to approaching drivers, especially given that these are 3-lane approaches. There is a risk of drivers responding to the wrong traffic signal and in the case of right-turning traffic, turning across the path of oncoming vehicles.

Recommendation

The detailed design should ensure that signal heads are positioned to ensure that they are not misinterpreted and indicative arrows are used as appropriate.

2.6 Problem

Location	-	Willen Road Signalised Junction, development access road
Summary	-	Side road layout - increased vehicle to vehicle conflict

The proposed on-site layout indicates a left / right staggered junction and a sharp bend within approximately 30 to 50m from the traffic signal junction with Willen Road. This gives rise to a generally increased level of conflict and complicated vehicle manoeuvres, which may lead to collisions between vehicles:-

- There is a right turn lane from the development access road into a development parcel to the south. The right turn lane may be confused as a right turn lane on the approach to the traffic signals;
- Vehicles queuing from the traffic signals may obstruct these side road accesses / junctions;
- The access to the development parcel to the north is on the inside of a bend where visibility may be restricted, especially considering drivers of vans and lorries whose “over-the shoulder” visibility is blocked;
- The geometry of this access also appears tight and may not be suitable to accommodate large vehicles turning;

Recommendation

The internal layout should be amended to provide increased separation between the Willen Road traffic signal junction and the on-site accesses. On-site access roads should be subject to their own road safety audit.

2.7 Problem

Location	-	Marsh End Road roundabout
Summary	-	Road markings may not correctly guide circulating vehicles leading to side swipe collisions

The proposed lane markings at signalised Marsh End Road roundabout do not guide vehicles in the offside right turn lanes into an appropriate lane to exit from the junction at the next node. The “tracer” road markings of some of the ahead lanes guides vehicles to continue circulating to the right. There may be conflict and side swipe collisions between vehicles circulating the junction in adjacent lanes. This is a particular problem for southbound traffic entering the roundabout from Willen Road turning right H3 Monks Way

Recommendation

Road markings should be reviewed to ensure they provide correct guidance for the intended paths of vehicles using each lane.

2.8 Problem

Location - Marsh End Road roundabout

Summary - Coordination of traffic signal phases not clear

The stage diagram for Marsh End Road roundabout traffic signals just provides the staging for each node. However, it does not indicate how each node will be coordinated / linked with the other nodes, including the Toucan crossing on the A422 eastbound exit. In some locations, it is possible that a driver may see traffic signals relating to more than one phase which may be showing different aspects. Drivers may be confused and fail to stop at a stop line when required, or may stop unexpectedly when not required to do so.

Recommendation

The configuration of the traffic signals should be developed in more detail. When there is an understanding of how the nodes may be linked, the design should be reviewed to ensure that drivers will have clear sight of the relevant traffic signals, and that misleading signals are relocated, or masked.

2.9 Problem

Location - Marsh End Road Roundabout

Summary - Limited provision for cyclists to access and exit Redway

The scheme provides an off carriageway shared footway / cycle track Redway along Willen Road which is accessible for cyclists at the south and north of the scheme. However, at the Marsh End Road roundabout, there is no provision for cyclists on the A422 / H3 Monks Way to leave the carriageway and joint the Redway. Cyclists may remain on the carriageway where they will be at increased risk of being struck by a vehicle.

Conversely, there appears to be no provision for cyclists to leave the Redway and safely join the carriageway e.g. no facility for cyclists to access H3 Monks Way westbound from the Redway.

Recommendation

Ensure cyclists can enter / exit the Redway at the earliest opportunity from A422 / H3 Monks Way and reinforce the intended route for cyclists with the provision of appropriate signing.

2.10 Problem

Location - Marsh End Road roundabout

Summary - Proposed alignment of Road Restraint System may not provide protection to vulnerable users within the central reserve

It is proposed to provide a new section of Road Restraint System in the central reserve of A422, east of the Marsh End Road roundabout, tying into the existing safety fencing. However, the alignment indicated would not provide any protection to the footway / cycle track Redway within the central reserve, and it may tend to redirect any errant vehicle towards the Redway. This would increase the risk of a pedestrian or cyclist being struck by a vehicle.

Recommendation

The proposed Road Restraint System should be aligned to provide more protection to the Redway within the central reserve.

2.11 Problem

Location - Willen Road / Marsh End Road junction

Summary - Location of 30mph speed limit and signage conflicts with Unclear / disjointed cycle facilities potential vehicle/cycle conflicts

At the junction of Willen Road and Marsh End Road, the proposed Redway will have a crossing points of Marsh End Road and Willen Road. These crossing points coincide with the start / finish of the existing 30mph speed limit for traffic entering Newport Pagnell. Vehicles may not have reduced speed at the location of the crossing points and so pedestrians and cyclists may be at increased risk of injury if struck by a vehicle. Also, the sign posts associated with the speed limit signage at the crossing points may impede pedestrians and cyclists and could partially restrict intervisibility with approaching vehicles.

Recommendation

In conjunction with providing a 40mph speed limit on Willen Road, the 30mph speed limit should start further south, possible coinciding with the “Welcome to Newport Pagnell” sign such that the existing junction and proposed crossing points are entirely within the 30mph speed limit.

2.12 Problem

Location	-	Willen Road / Marsh End Road junction
Summary	-	Visibility to crossing point restricted - potential pedestrian / cycle and vehicle conflicts

It is proposed to provide new sections of Redway at the Willen Road / Marsh End Road junction. This includes an uncontrolled crossing of the short link on the northern side of the junction in the fork of the 2 roads. The proposed crossing point is obscured by vegetation which is growing along the Tongwell Brook. A pedestrian or cyclist crossing the carriageway may be unsighted and struck by a vehicle turning left from Marsh End Road.

Recommendation

Vegetation should be removed to improve visibility at this location.

2.13 Problem

Location	-	Marsh End Road / Tongwell Lane junction
Summary	-	Unclear / disjointed cycle facilities - potential pedestrian / cycle and vehicle conflicts

At the junction of Willen Road and Marsh End Road, the proposed Redway will have a crossing point of Marsh End Road, connecting with Tongwell Lane (Tongwell Lane having a prohibition of motor vehicle sign and bollards to prevent vehicular access). The existing road layout includes a junction bellmouth for Tongwell lane, which is redundant, but its appearance “invites” drivers to turn in potentially leading to vehicular conflict with pedestrians and cyclists.

Recommendation

Clearly define the route at the entrance of Tongwell Lane for cyclists reducing the redundant bellmouth junction potentially providing a vehicle crossover for access.

3 Road Safety Audit Team Statement

We certify that this Road Safety Audit has been undertaken in accordance with HD 19/15, with the exceptions as detailed in Section 1 of this report.

RSA Team Leader:

Name:	Philip Edwards	Signed: [redacted]
Position:	Principal Engineer BSc (Hons)	Date: 10th August 2018
Organisation:	Peter Brett Associates LLP	
Address:	11 Prospect Court Courteenhall Road Blisworth Northamptonshire	

RSA Team Member:

Name:	Bryn Kemp	Signed: [redacted]
Position:	Principal Engineer MCIHT Certificate of Competency in Road Safety Audit	Date: 10th August 2018
Organisation:	Peter Brett Associates LLP	
Address:	Calgarth House 39/41 Bank Street Ashford Kent T23 1DQ Courteenhall Road Blisworth Northamptonshire NN7 3DG	

Appendix A

Appendix A

Information Utilised in this Stage 1 Road Safety Audit:-

Documents

- Stage 1 RSA Brief;
- TN2003/001 – 'Design Statement – Willen Road / Development Access Signalised Junction;
- TN2003/002 – 'Design Statement – Willen Road / H3 Monks Way / A422 Signalised Roundabout Junction';
- Caldecote Farm, Newport Pagnell – Walking, Cycling & Horse-Riding Assessment Report – Dated 25th June 2018;
- Speed survey was undertaken from 30th October to 8th November 2017;
- Collision Data
- ADC Transport Assessment – July 2018;
- ADC Framework Travel Plan – July 2018;

Drawings

- 38748/100/004 Rev A – 'Location Plan';
- 38748/100/007 – 'Proposed Site Access Signalised Junction General Arrangement';
- 38748/100/008 – 'Proposed Marsh End Signalised Roundabout General Arrangement';
- 38748/100/015 – 'Proposed Highway Cross Sections';
- 38748/100/016 – 'Proposed Highway Longitudinal Sections';
- 38748/100/017 – 'Swept Path Analysis (Sheet 1 of 2)';
- 38748/100/018 – 'Swept Path Analysis (Sheet 2 of 2)';
- 38748/500/001 – 'Proposed Highway Drainage Pond Option 1';
- 38748/1300/001 – 'Street Lighting (Sheet 1 of 2)'
- 38748/1300/002 – 'Street Lighting (Sheet 2 of 2)'

Appendix B

Site Reference Plans

Figure 1 & Figure 2

FOR CONTINUATION REFER TO DRAWING 38748/100/008

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

ADVANCE DIRECTIONAL SIGN TO BE ERECTED IN ORDER TO PROVIDE MOTORIST WITH AWARENESS OF THE GEOMETRIC LAYOUT OF THE PROPOSED JUNCTION AND DEVELOPMENT ACCESS

2.4

2m WIDE VERGE TO ACCOMMODATE PROPOSED UTILITIES

7.3m WIDE CARRIAGEWAY

PROPOSED BUS STOP AS PER HIGHWAY GUIDE FOR MILTON KEYNES, BUS STOP SCHEME LAYOUT SS2

OFFLINE REDWAY FORMING A 'FLOATING BUS STOP'

2.6

PROPOSED 2m WIDE FOOTWAY

2.5

PROPOSED TRAFFIC SIGNAL MAINTENANCE ACCESS BAY FORMED USING PERMEABLE PAVING

ON SITE ROAD LAYOUT TAKEN FROM PHP DRAWING 4179-SK015-P25 - 'PROPOSED MASTER PLAN INDICATIVE FOR ZONE 2'

2.4

GRASSED VERGE

2.3

PROPOSED BUS STOP AS PER HIGHWAY GUIDE FOR MILTON KEYNES, BUS STOP SCHEME LAYOUT SS2

OFFLINE REDWAY FORMING A 'FLOATING BUS STOP'

ADVANCE DIRECTIONAL SIGN TO BE ERECTED IN ORDER TO PROVIDE MOTORIST WITH AWARENESS OF THE GEOMETRIC LAYOUT OF THE PROPOSED JUNCTION AND DEVELOPMENT ACCESS

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

2.2

WILLEN ROAD

2.1 PROVISION OF ADS - SIGNS

FOR CONTINUATION REFER RIGHT

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

EXISTING LIGHTING COLUMN TO BE RELOCATED OUTSIDE OF PROPOSED FOOTWAY / CYCLE TRACK AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

WILLEN ROAD

WILLEN ROAD

FOR CONTINUATION REFER LEFT

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

EXISTING LIGHTING COLUMN TO BE RELOCATED OUTSIDE OF PROPOSED FOOTWAY / CYCLE TRACK AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

WILLEN ROAD

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH NO BUFFER ZONE ACROSS EXISTING OVERBRIDGE

NEW ROAD RESTRAINT SYSTEM ALIGNED AND EXTENDED TO ACCOMMODATE SHARED USE FOOTWAY / CYCLE TRACK

M1

EXISTING BRIDGE PARAPET HEIGHT 1m. DESIRABLE MINIMUM FOR CYCLE USE 1.4m AS PER IAN 195/16, TABLE 2.5.6. NEW 1.4m HIGH BRIDGE PARAPET TO BE PROVIDED. THESE WORKS MAY REQUIRE AN AIP (APPROVAL IN PRINCIPLE)

EXISTING POST AND RAIL FENCE TO BE RELOCATED OUTSIDE OF THE WORKING WIDTH OF THE NEW ROAD RESTRAINT SYSTEM WHERE POSSIBLE

NEW ROAD RESTRAINT SYSTEM ALIGNED AND EXTENDED TO ACCOMMODATE SHARED USE FOOTWAY / CYCLE TRACK

EXISTING FINGER POST SIGN TO BE RELOCATED AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK TIES INTO EXISTING REDWAY NETWORK

69.2m

DANSTEED ROAD

Tongwell Roundabout

TONGWELL ROUNDABOUT

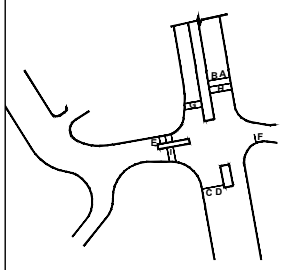
68.3m

Subway

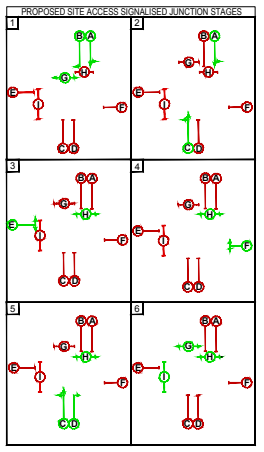
DANSTEED WAY

Travellers Site

PROPOSED SIGNALISED SITE ACCESS JUNCTION STAGING



PROPOSED SITE ACCESS SIGNALISED JUNCTION STAGES



KEY:-

- PLANNING BOUNDARY
- HIGHWAYS ENGLAND HIGHWAY BOUNDARY
- MILTON KEYNES COUNCIL HIGHWAY BOUNDARY
- PROPOSED FULL HEIGHT SAFETY BARRIER
- PROPOSED ROAD RESTRAINT TERMINAL
- PROPOSED TRAFFIC SIGNALS
- SIGNAL CONTROL BOX
- JUNCTION INTERVISIBILITY ZONE
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 45m SSD - DESIGN SPEED 40kph

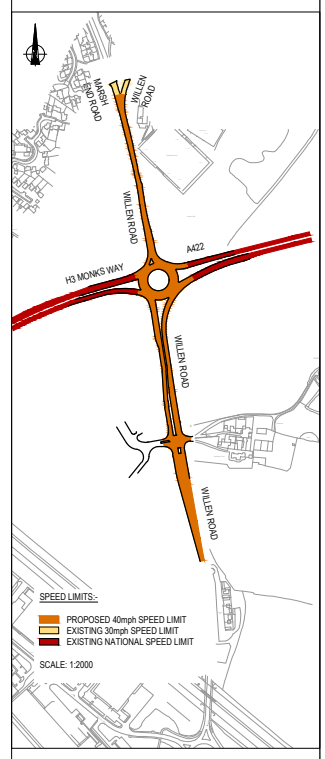
NOTES:-

1. ALIGNMENT OF MILTON KEYNES COUNCIL HIGHWAY BOUNDARY BASED ON HIGHWAY BOUNDARY INFORMATION PROVIDED BY MILTON KEYNES COUNCIL INTERPOLATED AND ALIGNED TO PHYSICAL FEATURES ON THE TOPOGRAPHICAL SURVEY. HIGHWAYS ENGLAND HIGHWAY BOUNDARY BASED ON HIGHWAYS ENGLAND GIS OPEN DATA DATED 28.10.2016.
2. MKC'S DRAFT 'A HIGHWAY GUIDE FOR MILTON KEYNES' DOCUMENT, FIG 1 - 'HIGHWAY NETWORK PLAN' AND TABLE 3.12 - 'TABLE OF LAYOUT STANDARDS' INDICATE THAT THE DESIGN STANDARDS FOR WILLEN ROAD SHOULD BE BASED ON THE DESIGN MANUAL FOR ROADS AND BRIDGES DESIGN STANDARDS.
3. EXISTING POSTED SPEED LIMIT OF WILLEN ROAD IS NATIONAL SPEED LIMIT (60mph). MKC HAVE CONFIRMED THAT A TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT TO 40mph. THEREFORE, THE DESIGN SPEED FOR THIS JUNCTION WILL BE 70kph.
4. THE DESIGN OF THE SIGNALISED JUNCTION HAS BEEN BASED ON ADC INFRASTRUCTURE LINSIG MODEL - '180213 PROPOSED ACCESS AND MITIGATION.lsg3x'.
5. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH:-
   - PBA TECHNICAL NOTE TN2003/001 - 'WILLEN ROAD, SIGNALISED JUNCTION DEVELOPMENT ACCESS';

DESIGN RISK

TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT OF WILLEN ROAD AND REINFORCE THE 70kph DESIGN SPEED. A TRO MAY NOT BE GRANTED, AND THIS PROCESS IS SEPARATE TO THE PLANNING PROCESS.

THE 'SITE ACCESS SIGNALISED JUNCTION' WOULD REQUIRE INDUCTIVE LOOPS ON THE NORTHERN, SOUTHERN AND WESTERN ARMS. MICROWAVE VEHICLE DETECTORS (MVD) COULD BE USED ON THE EASTERN ARM. PLEASE NOTE THAT DUE TO THE PROPOSED LAYOUT OF THE WESTERN DEVELOPMENT ARM I.E. CURVED ACCESS ROAD, WITH T-JUNCTIONS AND ASSOCIATED RIGHT TURN LANES IN CLOSE PROXIMITY TO THE SIGNALLED JUNCTION, IT WOULD NOT BE APPROPRIATE FOR MVD TO BE USED. INDUCTION LOOPS, EXTENDING NO MORE THAN 80m INTO THE DEVELOPMENT ACCESS, WOULD NEED TO BE USED. LIAISON HAS BEEN UNDERTAKEN WITH MKC WHO HAVE AGREED THAT THESE LOOPS CAN BE LOCATED BEYOND THE EXTENT OF THE PROPOSED HIGHWAY BOUNDARY.



Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status: ROAD SAFETY AUDIT

LAND AT CALDECOTE FARM
NEWPORT PAGNELL
STAGE 1 SAFETY AUDIT
SITE REFERENCE PLAN

Client: SEGRO NEWPORT PAGNELL LTD

Date of 1st Issue	Designed	Drawn
03.08.2018	-	ST
A0 Scale	Checked	Approved
1:500	PE	PE
Drawing Number		Revision
FIGURE 1		-

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2.7 ROUNDABOUT ROAD MARKINGS

2.8 COORDINATION OF TRAFFIC SIGNAL PHASES

2.9 ACCESS TO REDWAY FROM A422 / H3 MONKS WAY

KEY:-

- PLANNING BOUNDARY
- MILTON KEYNES COUNCIL HIGHWAY BOUNDARY
- PROPOSED FULL HEIGHT SAFETY BARRIER
- PROPOSED ROAD RESTRAINT TERMINAL
- PROPOSED TRAFFIC SIGNALS
- SIGNAL CONTROL BOX
- JUNCTION INTERVISIBILITY ZONE
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 295m SSD - DESIGN SPEED 120kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 295m SSD - DESIGN SPEED 120kph

NOTES:-

1. ALIGNMENT OF MILTON KEYNES COUNCIL HIGHWAY BOUNDARY BASED ON HIGHWAY BOUNDARY INFORMATION PROVIDED BY MILTON KEYNES COUNCIL INTERPOLATED AND ALIGNED TO PHYSICAL FEATURES ON THE TOPOGRAPHICAL SURVEY. HIGHWAYS ENGLAND HIGHWAY BOUNDARY BASED ON HIGHWAYS ENGLAND GIS OPEN DATA DATED 28.10.2016.
2. MKC'S DRAFT 'A HIGHWAY GUIDE FOR MILTON KEYNES' DOCUMENT, FIG 1 - 'HIGHWAY NETWORK PLAN' AND TABLE 3.12 - 'TABLE OF LAYOUT STANDARDS' INDICATE THAT THE DESIGN STANDARDS FOR WILLEN ROAD SHOULD BE BASED ON THE DESIGN MANUAL FOR ROADS AND BRIDGES DESIGN STANDARDS.
3. EXISTING POSTED SPEED LIMIT OF WILLEN ROAD AND MONKS WAY IS NATIONAL SPEED LIMIT (60mph). MKC HAVE CONFIRMED THAT A TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT TO 40mph ON APPROACH TO THE ROUNDABOUT. THEREFORE, THE DESIGN SPEED FOR THIS JUNCTION WILL BE 70kph.
4. THE DESIGN OF THE SIGNALISED ROUNDABOUT HAS BEEN BASED ON ADC INFRASTRUCTURE LINSIG MODEL - '180213 PROPOSED ACCESS AND MITIGATION.lsg3x'.
5. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH:-
   - PBA TECHNICAL NOTE TN2003/002 - 'A422, SIGNALISED ROUNDABOUT';

DESIGN RISK

TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT ON APPROACH TO MARSH END ROUNDABOUT FROM MONKS WAY WESTBOUND AND EASTBOUND AND REINFORCE THE 70kph DESIGN SPEED. A TRO MAY NOT BE GRANTED, AND THIS PROCESS IS SEPARATE TO THE PLANNING PROCESS.

THE EXISTING LAY-BYS ADJACENT TO H3 MONKS WAY AND THE A422 ARE BEING AFFECTED BY THE SCHEME PROPOSALS. LIAISON HAS BEEN UNDERTAKEN WITH MKC WHO HAVE CONFIRMED THAT THESE LAY-BYS DO NOT NEED TO BE RELOCATED OR REINSTATED ELSEWHERE.

THE EXISTING CROSS SECTION OF H3 MONKS WAY DOES NOT PROVIDE ROAD RESTRAINT SYSTEMS (RRS) WITHIN THE CENTRAL RESERVE. THE PROPOSED PRELIMINARY DESIGN MAINTAINS THE MINIMUM WIDTH OF THE EXISTING CENTRAL RESERVE. LIAISON HAS BEEN UNDERTAKEN WITH MKC WHO HAVE CONFIRMED THAT RRS WILL NEED TO BE PROVIDED WITHIN THE CENTRAL RESERVE OF H3 MONKS WAY. OUR REVIEW OF STOPPING SIGHT DISTANCE (295m) ON THE IMMEDIATE APPROACH TO THE PROPOSED JUNCTION (i.e. 1.5 x 295m) CONFIRMS SSD WOULD NOT BE RESTRICTED, MEASURED TO THE 'OBJECT HEIGHT', DUE TO THE HEIGHT OF THE PROPOSED RRS.

PROPOSED UNCONTROLLED CROSSING TO CONNECT FOOTWAY / CYCLE TRACK TO EXISTING SHARED USE FOOTWAY / CYCLE TRACK

PROPOSED UNCONTROLLED CROSSING TO CONNECT FOOTWAY / CYCLE TRACK TO EXISTING TRAFFIC FREE ROUTE 'TONGWELL LANE' WITH CONNECTIONS TO WIDER REDWAY NETWORK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE NARROWS TO CONNECT WITH EXISTING SHARED USE FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 0.75m WIDE BUFFER ZONE FORMED WITH ROAD MARKING

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE (MINIMUM) BUFFER ZONE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

NEW ROAD RESTRAINT SYSTEM ALIGNED TO SUIT NEW CENTRAL RESERVE ALIGNMENT AND TIED INTO EXISTING ROAD RESTRAINT SYSTEM

NEW ROAD RESTRAINT SYSTEM ALIGNED TO SUIT NEW CENTRAL RESERVE LAYOUT AND TIED INTO EXISTING ROAD RESTRAINT SYSTEM AT M1 OVERBRIDGE TO THE WEST

EXISTING LAY-BY TO BE REMOVED

1m WIDE VERGE

2.5m WIDE VERGE

0.5m WIDE VERGE

WILLEN ROAD SPORTS GROUND

Cricket Field

TONGWELL BROOK

TONGWELL LANE

MARSH ROAD

WILLEN ROAD

H3 MONKS WAY

A422

2.10

2.11

2.12

2.13

FOR CONTINUATION SEE INSET 1

INSET 1

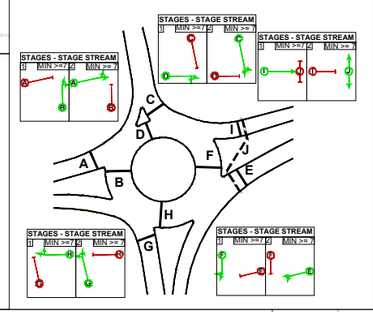
FOR CONTINUATION SEE RIGHT

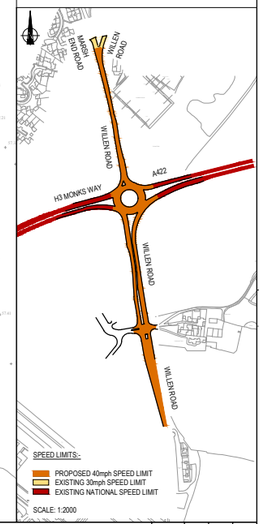
FOR CONTINUATION SEE BELOW

FOR CONTINUATION SEE ABOVE

FOR CONTINUATION REFER TO DRAWING 38748/100/007

PROPOSED MARSH END SIGNALISED ROUNDABOUT STAGES





SPEED LIMITS:-

- PROPOSED 40mph SPEED LIMIT
- EXISTING 30mph SPEED LIMIT
- EXISTING NATIONAL SPEED LIMIT

SCALE: 1:2000

Mark	Revision	Date	Drawn	Chkd	Appd

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UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

ROAD SAFETY AUDIT

LAND AT CALDECOTE FARM
NEWPORT PAGNELL
STAGE 1 SAFETY AUDIT
SITE REFERENCE PLAN

Client

SEGRO
NEWPORT PAGNELL
LTD

Date of 1st Issue	Designed	Drawn
03.08.2018	-	ST
A0 Scale	Checked	Approved
1:500 & 1:2000	PE	PE

Drawing Number: FIGURE 2

Revision: -

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Caldecote Farm, Newport Pagnell

Stage 1 Road Safety Audit Response Report

On behalf of **Segro Newport Pagnell Ltd**

Project Ref: 38748/2005 | Rev - | Date: 21st May 2019

Office Address: 11 Prospect Court, Courteenhall Road, Blisworth, Northampton NN7 3DG
T: 01604 878 300 E: northamptonusers@peterbrett.com

Document Control Sheet

Project Name: **Caldecote Farm, Newport Pagnell**

Project Ref: **38748/2005**

Report Title: **Stage 1 Road Safety Audit Response Report**

Doc Ref: **001**

Date: **21st May 2019**

	Name	Position	Signature	Date
Prepared by:	Dean Lucas	Engineer	*D Lucas*	21st May 2019
Reviewed by:	J Horne	Associate	[redacted]	21st May 2019
Approved by:	J Horne	Associate		21st May 2019
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved

Contents

Appendices

Appendix A – Site Reference Plans;

1 Introduction

1.1 This Road Safety Audit (RSA) Response Report relates to the Stage 1 RSA Report on the Proposed signalised junction, and associated infrastructure, including Non-Motorised User (NMU) facilities, to provide access to proposed commercial development. Proposed signalised roundabout junction, and associated infrastructure, including NMU facilities, required to accommodate the likely increase in traffic flows generated by a proposed commercial development. The RSA Brief comprised of a set of drawings and document assembled by the Design Team for the scheme and approved by Milton Keynes Highways. The RSA Report was prepared and issued by the RSA Team Leader, Philip Edwards of Peter Brett Associates LLP.

1.2 The scheme comprises of:-

- Willen Road / Development Access Signalised Junction;
- Willen Road / H3 Monks Way / A422 Signalised Roundabout Junction;
- Associated Non-Motorised User facilities to serve the development.

1.3 The Design Team have carefully considered the problems and recommendations in the Stage 1 RSA Report undertaken in August 2018. This Stage 1 RSA was undertaken in accordance with HD 19/15 – 'Road Safety Audit', which was the current Standard at the time. Therefore, this RSA Response Report has also been prepared in accordance to HD 19/15, rather than subsequently released GG 119 and GG 119 Rev 1. The RSA Team examined and reported only on the road safety implications of the scheme as presented and have not examined or verified the compliance of the design to any other criteria. This RSA Response Report includes all of the problems and recommendations raised by the RSA Team, as well as the Design Team's response to these issues.

1.4 Key Personnel

Overseeing Organisation
Milton Keynes Highways (MKC) – Kevan Paradine (Senior Road Safety Engineer)

Road Safety Audit Team
RSA Team Leader – Philip Edwards (Peter Brett Associates LLP – Principal Engineer)
RSA Team Member – Bryn Kemp (Peter Brett Associates LLP – Principal Technician)

Design Organisation
Design Team Leader – James Horne (Peter Brett Associates LLP – Principal Engineer)

1.5 This report lists the problems identified by the Stage 1 RSA. The responses from the Design Team are shown in bold typeface.

1.6 Problems identified in this report are indicated by location and are shown on the site reference plans in Appendix A

2 Designer's Response to the Items Raised from this Stage 1 Road Safety Audit

2.1 Problem

Location	-	Willen Road Signalised Junction
Summary	-	Direction Signage Requirements may not be achievable – insufficient driver information and potential vehicle impact with signs

It is noted from the Design Statement (TN2003/001) that it is proposed to provide Advance Direction Signs (ADS) and Flag direction signs relating to the proposed traffic signal junction on Willen Road. The location for one ADS is indicated for northbound traffic approximately 60m from the traffic signal stop line. This location is after the carriageway has already widened from 1 to 3 lanes, and not sufficiently in advance of the junction to inform drivers. No other ADS or direction signs are indicated on the drawings.

The existing verges of Willen Road are heavily vegetated, and it is proposed that there will be a 3m wide Redway. Therefore, it cannot be assumed that the necessary signs can accommodated and adequate visibility can be achieved without difficulty.

In view of the 3 lane approaches to the junction along Willen Road, clear signage will be needed in advance of the junction such that drivers will position themselves in the correct lane. Otherwise there is a risk of late and unexpected lane changes, which may result in collisions between vehicles approaching the junction.

Recommendation

The proposed signing for the junction should be determined in more detail before the preliminary design is completed. Locations and sign widths should be investigated to ensure that adequate advance direction signage can be achieved with suitable lateral clearance from the edge of the carriageway, and with the appropriate mounting heights in relation to the proposed cycle route.

Design Team Response
We have reviewed the potential sizes of the Advanced and Flag type Directional Signs and can confirm that:-

- **These signs can be located within the proposed and existing highway boundary;**
- **Provided with appropriate lateral clearance from the kerbline or footway / cycle track;**
- **Positioned to ensure unrestricted visibility is provided to the sign plates;**
- **This review has been based on an 85th percentile approach speed between 30 to 40mph and in line with the design guidance provided by Appendix A of LTN 1/94 – 'The Design and Use of Directional Informatory Signs';**

2.2 Problem

Location	-	Willen Road Signalised Junction, northbound approach
Summary	-	Development of right turning lane – potential side swipe collisions associated with lane changes

On the northbound approach to Willen Road traffic signals, the carriageway widens from a single northbound lane to 3 lanes. The road markings indicated will tend to encourage a large proportion of traffic to approach the junction in the offside lane. But this lane is intended to just serve right turning traffic, for which numbers are expected to be low. Vehicles may naturally tend to enter the right turning lane and then have to change lanes for the ahead movement, which will introduce un-necessary conflict and increase the risk of collision.

Recommendation

The layout of road markings on the northbound approach should be amended such that most traffic naturally enters the ahead lanes and the right turning lane is developed nearer to the stop line.

Design Team Response

In response to other external factors, the proposed junction has now been relocated further north and has become a 3-arm signalised junction. The existing Caldecote Farm development, and the Sand and Gravel Quarry, are now to be served by Left In / Left Out (LILO) junctions. This design change has also removed the road safety problem identified above.

2.3 Problem

Location	-	Willen Road Signalised Junction, northbound approach
Summary	-	No provision for existing sand and gravel works – potential conflict with turning vehicles

The proposals do not indicate any provision for the existing access to Caldecote Farm Sand and Gravel Works. Large vehicles use this access and currently all turning movements are permitted. The proposals will see Willen Road widened to 5 traffic lanes (3 northbound and 2 southbound) with central ghost-island hatching. There is no provision within the hatching for right turning vehicles to access to the sand and gravel works.

It is not clear how the scheme will accommodate vehicles turning right into and out from the sand and gravel works access. There will be conflict and risk of collision between right turning vehicles at the sand and gravel works and other traffic using the multiple lanes on Willen Road.

Willen Road – Large vehicle exiting from the sand and gravel works

Recommendation

The scheme proposals should recognise the existing access which is used by large / heavy vehicles. It is recommended that, in association with Problem 2.2 above, the sand and gravel works access is provided with a right turn lane or becomes left in / left out, with vehicles being able to U-turn at the Tongwell and the Marsh End Road roundabouts.

Design Team Response

As detailed in the response to Problem 2.2, the scheme proposals have been updated to indicate the existing Quarry access being upgraded to provide a LILO style junction. However, this upgraded junction will only be provided if the remaining lifespan of the Sand and Gravel Quarry extends beyond the construction period of the development.

2.4 Problem

Location	-	Willen Road Signalised Junction, bus stops
Summary	-	Location of bus stops may cause confusion to drivers following buses leading to shunt type collisions

It is proposed to locate on-line northbound and southbound bus stops for Willen Road, in advance of the stop line of the traffic signals.

The close proximity of the bus stops, to the stop line (20 to 30m) may cause some confusion. For a bus signalling left and slowing to use the bus stop, a following vehicle may assume that the bus is intending to turn left at the traffic signals. The following vehicle may then have to stop suddenly and there may be a risk of shunt type collisions. Also, when a bus is stationary at the bus stop, there is not sufficient space for a left turning vehicle to pass the bus and re-enter the nearside lane before the traffic signals. There is also the risk that a stationary bus will mask the primary signal for approaching traffic.

Recommendation

The bus stop locations should be reviewed to avoid the hazards described above. For example, the northbound stop location could be positioned downstream of the junction.

Design Team Response
With the proposed junction moved further north, we have been able to provide the following:-

Northbound Bus Stop
- **This Bus Stop has remained upstream of the junction, but is now being provided with an off carriageway lay-by in order to retained 2No. northbound running lanes;**

Southbound Bus Stop
- **Bus Stop has been relocated 80m (approx.) downstream of the junction;**
- **An off carriageway lay-by style Bus Stop is now being proposed in order to retained 2No. southbound running lanes;**

2.5 Problem

Location	-	Willen Road Signalised Junction
Summary	-	Lack of clarity for separately phased manoeuvres leading to vehicle to vehicle conflicts

It is proposed that right turns from Willen Road southbound (phase b) and Willen Road northbound (phase d) are separately phased from the ahead and left turn movements on these arms. It is not clear from the preliminary design that the location of the secondary signal heads will clear enough to approaching drivers, especially given that these are 3-lane approaches. There is a risk of drivers responding to the wrong traffic signal and in the case of right-turning traffic, turning across the path of oncoming vehicles.

Recommendation

The detailed design should ensure that signal heads are positioned to ensure that they are not misinterpreted and indicative arrows are used as appropriate.

Design Team Response

The proposed junction is now a 3-arm signalised junction rather than a 4-arm i.e. a simpler layout. However, during the detailed design stage, appropriate positioning, additional cowling, indicative arrows, etc. will be detailed in order to mitigate against potential misinterpretation.

2.6 Problem

Location - Willen Road Signalised Junction, development access road

Summary - Side road layout - increased vehicle to vehicle conflict

The proposed on-site layout indicates a left / right staggered junction and a sharp bend within approximately 30 to 50m from the traffic signal junction with Willen Road. This gives rise to a generally increased level of conflict and complicated vehicle manoeuvres, which may lead to collisions between vehicles:-

- There is a right turn lane from the development access road into a development parcel to the south. The right turn lane may be confused as a right turn lane on the approach to the traffic signals;
- Vehicles queuing from the traffic signals may obstruct these side road accesses / junctions;
- The access to the development parcel to the north is on the inside of a bend where visibility may be restricted, especially considering drivers of vans and lorries whose "over-the shoulder" visibility is blocked;
- The geometry of this access also appears tight and may not be suitable to accommodate large vehicles turning;

Recommendation

The internal layout should be amended to provide increased separation between the Willen Road traffic signal junction and the on-site accesses. On-site access roads should be subject to their own road safety audit.

Design Team Response

The internal road layout of the development site has been updated in response to the 3-arm signalised junction. This has increased the separation between internal and external junction.

2.7 Problem

Location	-	Marsh End Road roundabout
Summary	-	Road markings may not correctly guide circulating vehicles leading to side swipe collisions

The proposed lane markings at signalised Marsh End Road roundabout do not guide vehicles in the offside right turn lanes into an appropriate lane to exit from the junction at the next node. The “tracer” road markings of some of the ahead lanes guides vehicles to continue circulating to the right. There may be conflict and side swipe collisions between vehicles circulating the junction in adjacent lanes. This is a particular problem for southbound traffic entering the roundabout from Willen Road turning right H3 Monks Way.

Recommendation

Road markings should be reviewed to ensure they provide correct guidance for the intended paths of vehicles using each lane.

Design Team Response
The road markings and lane destination arrows on the approaches and circulatory carriageway have been amended in response to the above road safety issue.

2.8 Problem

Location - Marsh End Road roundabout

Summary - Coordination of traffic signal phases not clear

The stage diagram for Marsh End Road roundabout traffic signals just provides the staging for each node. However, it does not indicate how each node will be coordinated / linked with the other nodes, including the Toucan crossing on the A422 eastbound exit. In some locations, it is possible that a driver may see traffic signals relating to more than one phase which may be showing different aspects. Drivers may be confused and fail to stop at a stop line when required, or may stop unexpectedly when not required to do so.

Recommendation

The configuration of the traffic signals should be developed in more detail. When there is an understanding of how the nodes may be linked, the design should be reviewed to ensure that drivers will have clear sight of the relevant traffic signals, and that misleading signals are relocated, or masked.

Design Team Response
Similar to Problem 2.5, during the detailed design stage, appropriate positioning, additional cowling, indicative arrows, etc. will be detailed in order to mitigate against potential misinterpretation.

2.9 Problem

Location - Marsh End Road Roundabout

Summary - Limited provision for cyclists to access and exit Redway

The scheme provides an off carriageway shared footway / cycle track Redway along Willen Road which is accessible for cyclists at the south and north of the scheme. However, at the Marsh End Road roundabout, there is no provision for cyclists on the A422 / H3 Monks Way to leave the carriageway and joint the Redway. Cyclists may remain on the carriageway where they will be at increased risk of being struck by a vehicle.

Conversely, there appears to be no provision for cyclists to leave the Redway and safely join the carriageway e.g. no facility for cyclists to access H3 Monks Way westbound from the Redway.

Recommendation

Ensure cyclists can enter / exit the Redway at the earliest opportunity from A422 / H3 Monks Way and reinforce the intended route for cyclists with the provision of appropriate signing.

Design Team Response
As detailed within the Walking, Cycling, & Horse-Riding Assessment (provided within the design package submitted to the RSA Team), the scheme proposals are to provide pedestrian / cyclist links:-

- **From Milton Keynes to the proposed development; and**
- **From Newport Pagnell to the proposed development;**
- **Including improvements to existing Non-Motorised User (NMU) facilities;**

There are currently no cycle facilities on the H3 Monks Way and the A422 dual carriageways. Any cyclist currently using these high speed roads is likely to be a confident and experienced cyclist, who would prefer to remain in the carriageway rather than use off carriageway facilities. Therefore, the scheme proposals have not catered for these approaches. Notwithstanding the above, we have updated the scheme proposals to provide a cycle exit accessing the proposed Redway on the westbound A422 approach (prior to the Toucan crossing).

2.10 Problem

Location	-	Marsh End Road roundabout
Summary	-	Proposed alignment of Road Restraint System may not provide protection to vulnerable users within the central reserve

It is proposed to provide a new section of Road Restraint System in the central reserve of A422, east of the Marsh End Road roundabout, tying into the existing safety fencing. However, the alignment indicated would not provide any protection to the footway / cycle track Redway within the central reserve, and it may tend to redirect any errant vehicle towards the Redway. This would increase the risk of a pedestrian or cyclist being struck by a vehicle.

Recommendation

The proposed Road Restraint System should be aligned to provide more protection to the Redway within the central reserve.

Design Team Response
The proposed Road Restraint System has been realigned to offer more protection to the footway / cycle track within the central reserve from A422 Westbound traffic.

2.11 Problem

Location	-	Willen Road / Marsh End Road junction
Summary	-	Location of 30mph speed limit and signage conflicts with Unclear / disjointed cycle facilities potential vehicle / cycle conflicts

At the junction of Willen Road and Marsh End Road, the proposed Redway will have a crossing points of Marsh End Road and Willen Road. These crossing points coincide with the start / finish of the existing 30mph speed limit for traffic entering Newport Pagnell. Vehicles may not have reduced speed at the location of the crossing points and so pedestrians and cyclists may be at increased risk of injury if struck by a vehicle. Also, the sign posts associated with the speed limit signage at the crossing points may impede pedestrians and cyclists and could partially restrict intervisibility with approaching vehicles.

Recommendation

In conjunction with providing a 40mph speed limit on Willen Road, the 30mph speed limit should start further south, possible coinciding with the “Welcome to Newport Pagnell” sign such that the existing junction and proposed crossing points are entirely within the 30mph speed limit.

Design Team Response

We have amended the proposed speed limit alteration in response to the above recommendation. However, any alterations to the speed limits will be subject to liaison and agreement with MKC. Therefore, any update to the scheme proposals will be on this basis.