

Reference: 0060/OHA/01

16<sup>TH</sup> March 2020

**Offsite Highways Assessment  
Improvement Report**

Prepared for:

John Ingram  
Ingram Homes  
Unit D6  
Pinetrees Road  
Norwich  
NR7 9BB

By Email: john@ingram-homes.co.uk

Hydraulic Modelling

Infrastructure

Highways

Earthworks

Inspections

Feasibility Studies

3<sup>rd</sup> Party Reviews

**New Residential Development, Hare Road, Great Plumstead – Offsite Highway Improvement Works**

**Introduction**

Pritchard Civil Infrastructure Design Ltd has been instructed to carry out an assessment of the existing public highway issues locally around the proposed residential development along Hare Road, Great Plumstead.

Norfolk County Council Highways (NCC), provided comments (ref:20191938 Dated 23/01/20) which raised several concerns regarding the local highway network. These are:

1. Impact of the increase in vehicles trips from the proposed development on the local highway network.
2. Visibility at the junction of Hare Road and Middle Road / Church Road.
3. Accident history in the local area.
4. Width of Hare Road, along the development frontage, being sub-standard i.e. less than 5.50m in width.

**Surveys**

A site visit was conducted on 12/02/20 which confirmed the visibility issues and confirmed the current state of works on the “Phase 1” site adjacent to the proposed development along Church Road.

A speed survey was arranged, with the 7-day ATC sensors placed just north of the Hare Road / Middle Road Junction as shown below. The results of the speed survey confirmed that the average 85<sup>th</sup> percentile speed is broadly in line with the existing 30mph speed limit. A summary of the results has been attached to this report.



Hare Road ATC - Middle Road

A topographical survey was already available however it was extended / updated to include more detail around the junction in question and for the current state of construction of Phase 1.

A Stage 1 Safety Audit (RSA 1) was also instructed, by CJ Safety Audit, to look at the proposed improvement works options.

### **Engineering Assessment**

Based upon the site visit, speed survey, topographical survey and RSA 1 by CJ Safety Audit; two options for improvements works are outlined below.

#### **Option 1**

Drawing C100-Bring forward the Giveway line on Hare Road / Middle Road. The max. visibility spay has increased from 21m to 25m. The existing visibility splay is better than currently described by NCC and bringing forward the Giveway line by approx. 1.65m will improve this further. By bringing forward the Giveway line on Hare Road, the Giveway line on Low Road has been adjusted to make sure there is a minimum of a 5.5m wide carriageway.

In terms of additional impact on the road network; NCC highway's own data shows that since the construction of the NDR, traffic flows in the local area have reduced significantly. The addition of 60 vehicle trips from this development and say 60 vehicle trips from the current bungalows under construction would mainly generate traffic flows to the south towards the NDR (say 75%). This would mean that there would be 80 trips to the south and 40 trips to the north per day. Based upon these trip rates, the additional traffic flows would not bring traffic flow numbers back up to the pre-NDR construction figures.

CJ Safety Audit have performed an RSA 1 Audit on this option. The initial design has been updated to reflect the comments on the alignment of the new kerb / Giveway line at the Hare Road / Middle Road

junction after the Giveway line is brought forward. There is still an outstanding issue that the proposed maximum visibility splay is less than the speed limit and it is recommend that traffic calming / speed reduction measures are proposed. Furthermore, CJ Safety Audit have obtained accident for the area that shows that only one junction related accident was recorded in the past 10 years (in icy conditions).

### Option 2

Drawing C101-Bring forward the Giveway line on Hare Road / Middle Road. The max. visibility spay has increased from 21m to 25m. A visibility splay of 25m corresponds with a speed limit from Manual for Streets of 20mph. Therefore, it is proposed to introduce a TRO to reduce the speed through part of the village to 20mph. Speed limit signs have been proposed north and south of the development along Middle Road & Church Road. Furthermore, Speed Cushions have been proposed along Middle Road & Church Road to reinforce the 20mph speed limit around the junction in question.

In terms of additional impact on the road network; NCC highway's own data shows that since the construction of the NDR, traffic flows in the local area have reduced significantly. The addition of 60 vehicle trips from this development and say 60 vehicle trips from the current bungalows under construction would mainly generate traffic flows to the south towards the NDR (say 75%). This would mean that there would be 80 trips to the south and 40 trips to the north per day. Based upon these trip rates, the additional traffic flows would not bring traffic flow numbers back up to the pre-NDR construction figures.

CJ Safety Audit have performed an RSA 1 Audit on this option. The initial design has been updated to reflect the comments:

- On the alignment of the new kerb / Giveway line at the Hare Road / Middle Road junction after the Giveway line is brought forward.
- Extent of the proposed Traffic Calming Measures
- Design of the speed cushions

Furthermore, CJ Safety Audit have obtained accident for the area that shows that only one junction related accident was recorded in the past 10 years (in icy conditions).

### Other Items

Both options will benefit from road widening along Hare Road to give a minimum of 5.50m as shown on Drawing C102.

The NCC Highways officer, Lauren Sadd, was contacted regarding these options for comment prior to submission of the report. However, Lauren confirmed that she was unable to respond officially before the deadline of submission of this report for the Greater Norfolk Local Plan.

Both RSA 1's have been signed off as complete with all comments now satisfied where possible by the drawings provided.

## **Conclusion**

### Option 1

Due to the overall reduction in vehicle trips in the area due to the NDR, the accident record and the slight improvement in visibility that is proposed; it is considered that these improvements works will improve the situation compared with the pre- NDR condition. NCC formal comment is required.

### Option 2

Due to the overall reduction in vehicle trips in the area due to the NDR, the proposed speed limit reduction & traffic calming measures, the accident record and the slight improvement in visibility that is proposed; it is considered that these improvements works will improve the situation compared with the pre- NDR and post development condition to the required safety standard. NCC formal comment is required.

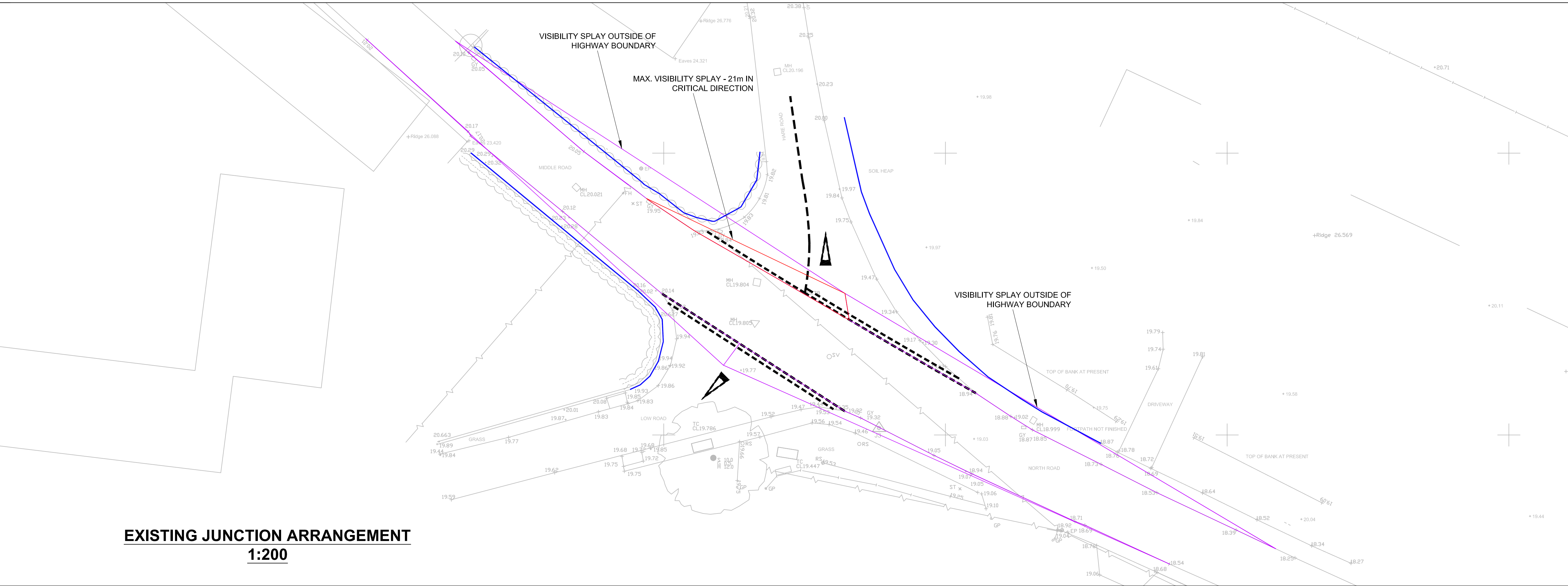
This report has been prepared by:

**Phil Pritchard**  
**Director**  
**MEng (Hons) CEng MICE CPEng MIEAust**  
**Pritchard Civil Infrastructure Design Ltd**

### **Attachments:**

General Site Photos  
Topographical Survey  
Speed Survey Summary  
Proposed Drawings  
Stage 1 Safety Audit - CJ Safety Audit

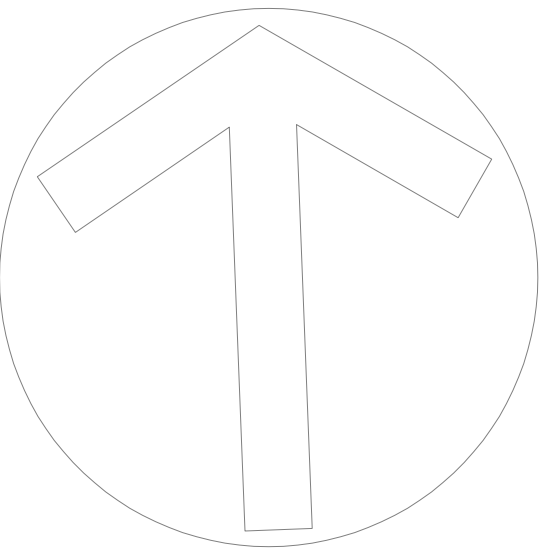




EXISTING JUNCTION ARRANGEMENT  
1:200

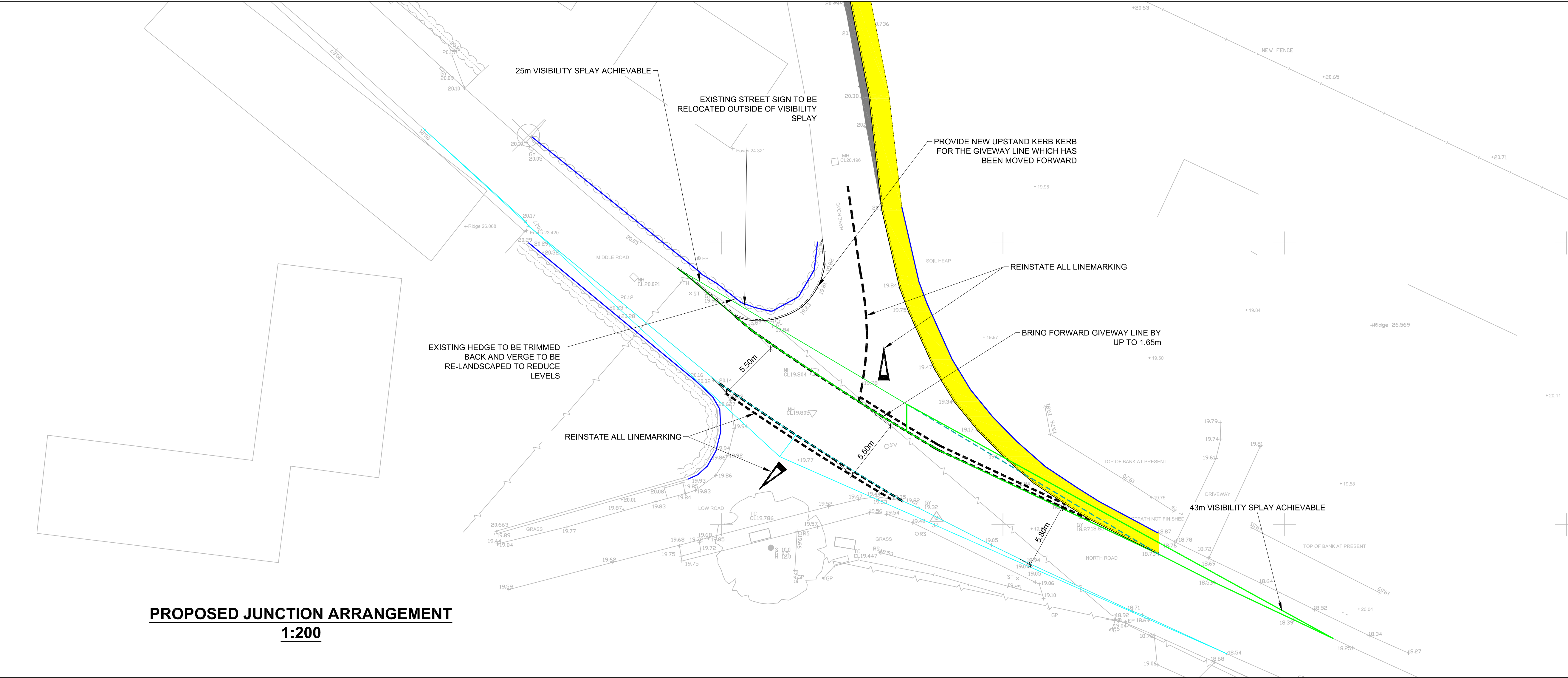
**LEGEND**

- EXISTING 43m / 30mph VISIBILITY SPLAY
- EXISTING MAX. VISIBILITY SPLAY - 21m IN CRITICAL DIRECTION
- PROPOSED MAX. VISIBILITY SPLAY - 25m IN CRITICAL DIRECTION -20mph
- PROPOSED 25m / 20mph VISIBILITY SPLAY
- PROPOSED 43m / 30mph VISIBILITY SPLAY
- HIGHWAY BOUNDARY
- NEW 1.80m WIDE ASPHALT FOOTPATH
- CARRIAGWAY WIDENING
- PRECAST CONCRETE UPSTAND KERB - EITHER HB125 OR BN25 DEPENDING ON LOCATION OF VEHICLE CROSSOVER ACCESS'
- PRECAST CONCRETE EDGING KERB



**PRELIMINARY DRAWING:**

**THIS DRAWING IS FOR PRELIMINARY PURPOSES ONLY AND MUST NOT BE READ AS A CONSTRUCTION ISSUE. THE DESIGN IS NOT FIXED AND DESIGN CHANGES ARE LIKELY**



PROPOSED JUNCTION ARRANGEMENT  
1:200

P3	15/03/20	UPDATED FOR ROAD SAFETY AUDIT COMMENTS	PP	PP
P2	10/03/20	PRELIMINARY	PP	PP
P1	08/03/20	PRELIMINARY	PP	PP
Rev	Date	Description	By	Check

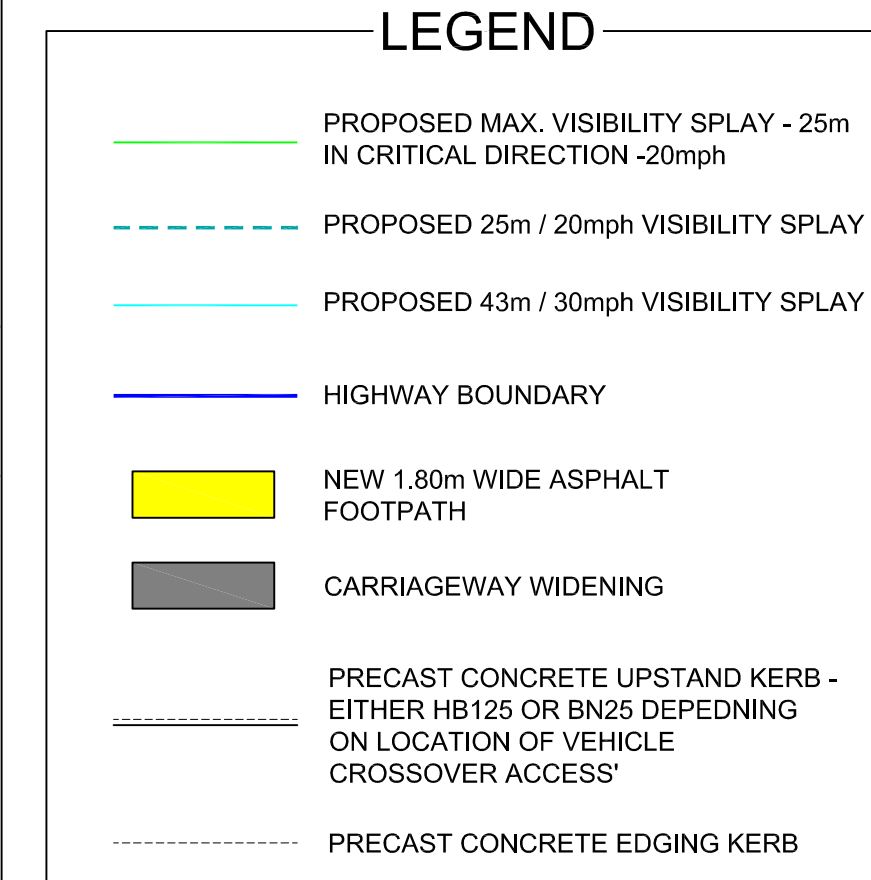
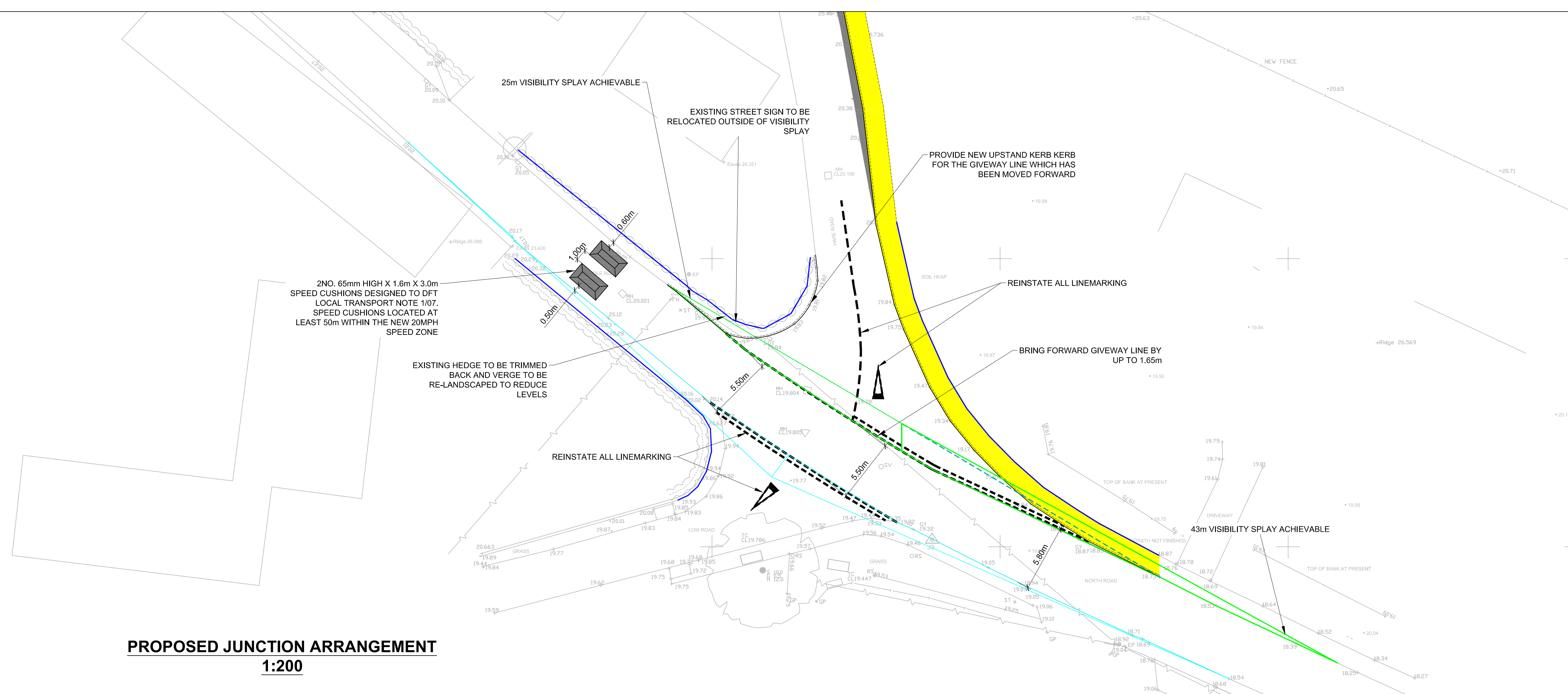
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Client	INGRAM HOMES LTD		
Project	GREAT PLUMSTEAD PHASE 2 HARE ROAD, NR13 5DD		
Title	HARE ROAD JUNCTION IMPROVEMENT WORKS OPTION 1		
Scale @ A1	AS SHOWN	Status	PRELIMINARY



Date	Job Number	By	Checked By
FEBRUARY 2020	0060	PP	PP
Drawing No. C-100		Revision P3	





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P2	10/03/20	PRELIMINARY	PP	PP
P1	08/03/20	PRELIMINARY	PP	PP
Rev	Date	Description	Bv	Ch

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Client

INGRAM HOMES LTD

Project  
GREAT PLUMSTEAD  
PHASE 2  
HARE ROAD, NR13 5DD

Title

HARE ROAD  
JUNCTION IMPROVEMENT WORKS  
OPTION 2

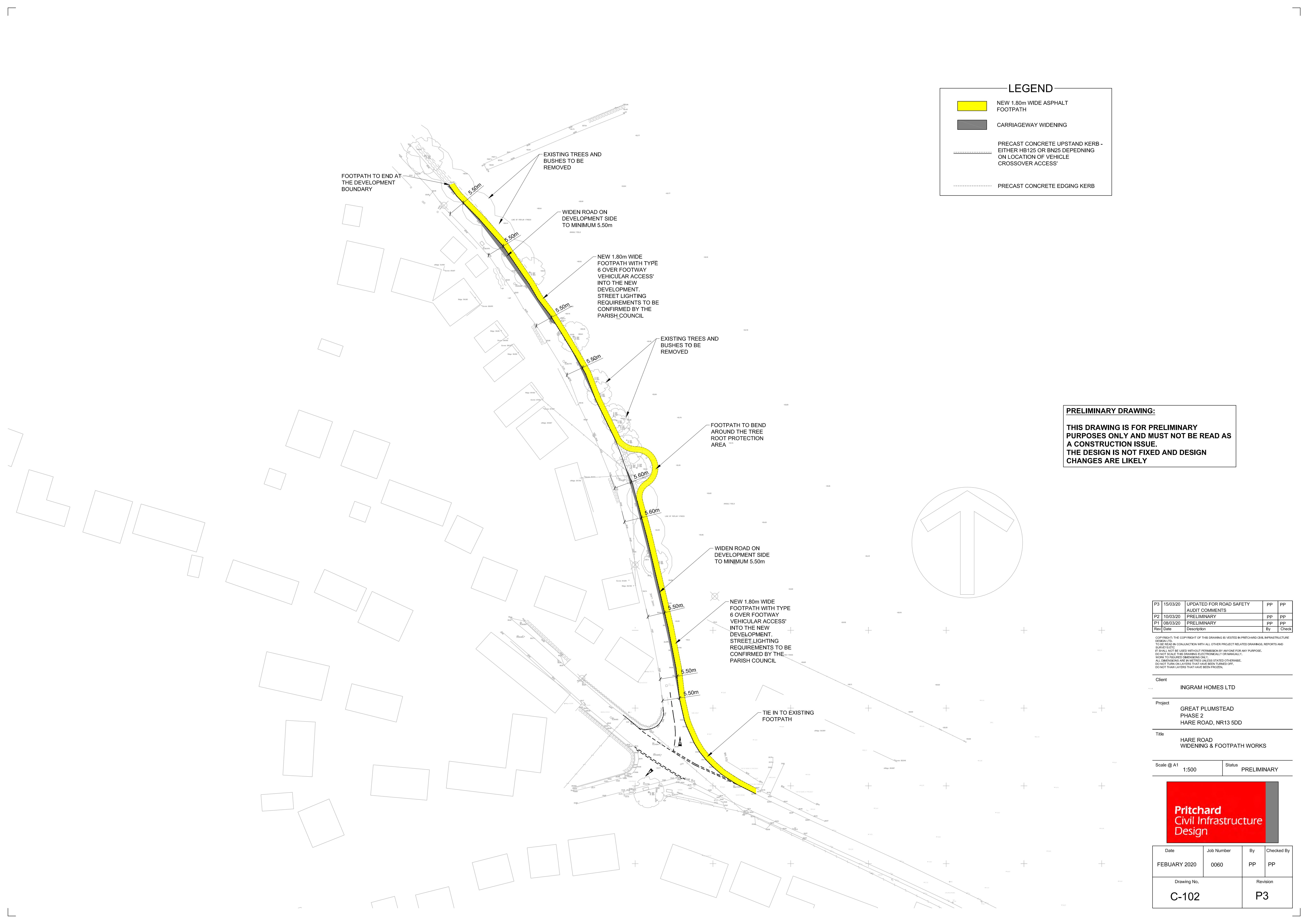
Scale @ A1	AS SHOWN	Status	PRELIMINARY
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Date	Job Number	By	Checked
FEBRUARY 2020	0060	PP	PP

Drawing No.	Revision
C-101	P4





LEGEND

NEW 1.80m WIDE ASPHALT FOOTPATH

CARRIAGEWAY WIDENING

PRECAST CONCRETE UPSTAND KERB - EITHER HB125 OR BN25 DEPENDING ON LOCATION OF VEHICLE CROSSOVER ACCESS'

PRECAST CONCRETE EDGING KERB

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Rev	Date	Description	By	Check

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Client	INGRAM HOMES LTD		
Project	GREAT PLUMSTEAD PHASE 2 HARE ROAD, NR13 5DD		
Title	HARE ROAD WIDENING & FOOTPATH WORKS		
Scale @ A1	1:500	Status	PRELIMINARY



Date	Job Number	By	Checked By
FEBRUARY 2020	0060	PP	PP
Drawing No.		Revision	
C-102		P3	



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22.6500		
J5	629936.598	310297.654
21.8610		
M2	629900.367	
	629911.866	

NOTE: ALL KERR LEVELS ARE CHANNEL LEVELS

FENCE TYPES					
B/W	Barbed Wire	CP	Chestnut Paling	P/S	Palisade
C/B	Close Boarded	IR	Iron Railing	P/W	Post & Wire
C/I	Corrugated Iron	IW	Interwoven		
C/L	Chainlink	RR	Rail & Rail		

### LEGEND

AV	Air Vents	MP	Master		
BS	Bullard	MR	Marine		
BU	Buoy	MS	Master Name Plate		Starting
CB	Cable Box	CH	Overhead		
CC	Control	CM	Control Cable		
CL	Cable Control	M	Mark		
CLC	Control Cable	P	Pressure Filter		
CTV	Cable Television	PM	Parking Meter		
CS	Cable Service	PS	Pressure Switch		
DO	Down Pipe	RS	Road Signs		
DS	Down Spout	S	Stop		
ELC	Electricity	SC	Ship Clock		
EP	Electricity Pole	SL	Shower Liner		
ER	Earth Earth	ST	Stop Tap		
FF	Flow Meter	SV	Shower Valve		
FM	Flow Meter	TAR	Tar		
FP	Flow Pipe	TEL	Telephone Call		
GP	Gas Pipe	TL	Traffic Lights		
GS	Gas Stop	TV	Television		
I	Inspection Cover	UT	Under Tap		
J	Joint	VP	Vent Pipe		
JS	Joint Section	W	Water		
KC	Kitchen	WM	Water Meter		
L	Letter Box				
LF	Low Floor				



OH Deckers

Cartoon Character

Drawn by:- MK      Surveyed by:- MK      Checked by:- PR

Date: February 2020

**Scale:-** 1:200

Drawing Number: ALS7008/200/06

Topographical

**Client:** Building plans LTD

**Project:** Great Plumstead,  
Church road

Surveyed By: [Signature] [Signature] [Signature]

Surveyed By: **ALS**

Bowthorpe Hall,  
Bowthorpe Hall Road  
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Fax: (01603) 734798  
e-mail: mail@ais-survey  
Website: www.ais-surveys







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FENCE TYPES			
BW	Barbed Wire	CP	Chestnut Paling
CB	Close Boarded	IR	Iron Railing
CI	Corrugated Iron	IW	Interveneen
CS	Chainlink	DR	Drift & Rail
PB	Palisade		
PW	Post & Wire		

### LEGEND

[illegible]

Drawn by:- MK      Surveyed by:- MK      Checked by:- PR

Date: November 2019

**Scale:-** 1:200

Drawing Number: **ALS7008/200/08**  
Topographical

**Client:** Building plans LTD

**Project:** Great Plumstead,  
Church road

Surgeon's Dis-

**Surveyed By-**

**ALS**  
EST 1976

**Anglia Land Surveys**

Bowthorpe Hall,  
Bowthorpe Hall Road,  
Norwich, NR5 9AA

Tel: (01603) 749600  
Fax: (01603) 734798  
e-mail: mail@als-surveys.com  
Website: www.als-surveys.com

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C/B	Close Boarded	I/R	Iron Railing
C/I	Corrugated Iron	I/W	Intersoven
C/L	Chainlink	P/B	Post & Rail
		P/S	Palisade
		P/W	Post & Wire

### LEGEND

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Drawn by:- MK      Surveyed by:- MK      Checked by:- PR

Date: November 2019

**Scale:-** 1:200

Drawing Number: ALS7008/200/05  
Topographical

**Client:** Building plans LTD

**Project:** Great Plumstead,  
Church road

Surveyed By:

**Surveying Specialists**

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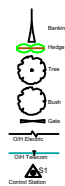
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CI	Corrugated Iron	IW	Intersoven		
CL	Chain-link	RR	Rail & Rail		

LEGEND

AV	Audio	MN	Manhole
BS	Bolt	MK	Marker
BR	Brass	MS	MS Street Name Plate
CB	Cable	OW	Overhead
CHY	Chow	OSB	Ordinance Bench
CL	Clear		
CONC	Concrete	P	Post or Pole
TV	Cable Television	PM	Parking Meter
DR	Drain	PS	Parking Sign
DP	Drop Pipe	RS	Red Sign
DR	Drain	RL	Reel Level
ELC	Electricity Pole	SC	Stop Clock
EL	Electricity Pole	SL	Strip Level
FR	Flow	ST	Stop Tap
FB	Flow Board	SV	Shut Valve
FN	Flow	SW	Switch
FP	Flag Pole	TCS	Telephone Cable
GY	Gully		
GP	Gully Post	TL	Traffic Light
GV	Gully	TP	Telephone Pole
GC	Gully Cover	UL	Under to Lift
I	Invert Level	UN	Unable to lift
JB	Junction Box	VL	Water Level
LD	Lead	WM	Water Meter
W	Water	WO	Water Out



Drawn by:- JB      Surveyed by:- JB      Checked by:- E

Date: June 2015

**Scale:-** 1:200

Drawing Number: ALS7008/200/02  
Topographical

**Client:** Building plans LTD

**Project:** Great Plumstead,  
Church road

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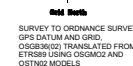
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CI	Corrugated Iron	IW	Intersown		
CS	Chainlink	RT	Rail & Rail		

LEGEND					
AV	Air Valve	MR	Mixer		
BS	Ball	MRK	Marker		
CB	Control Box	MP	Motor Name Plate		Banking
CS	Cable	OH	Overhead		
CH	Chimney	OSM	Overhead Switch		
CM	Conduit	OSM	Overhead Switch		
CONC	Concrete	P	Pipe		Hedge
CTV	Cable TV	PM	Parking Meter		
CR	Crane	RF	Radio Frequency		
CR-Dr	Crane Drive	RP	Rolling Eye		Roller Pipe
DR	Drain	S	Sign		
ELC	Electricity	SAP	Safety		
EL	Electricity	SC	Steel		
EL-El	Electricity	SL	Steel Lintel		
EL-EL	Electricity	ST	Steel		
FB	Flow Board	SV	Steam Valve		Steam Wash
FI	Fire	T&E	Telephone		
FP	Flag Pole	TGB	Telephone Cabinet		Gate
CF	Flag				
GP	Gas				
GP	Gas				
IM	Insulation	TV	Television		
IC	Inspection Cover	TL	Telephone Line		
UTL	Underground	UL	Underground		
JS	Joint Box	VP	Vent Pipe		
WC	Water	WC	Water Closet		
LS	Letter Box	WM	Water Meter		
WC	Water Closet	WC	Water Closet		

Drawn by:- JB      Surveyed by:- JB      Checked by:- DD

Date: June 2015

Scale:- 1:200

Drawing Number: ALS7008/200/03

**Client:** Building plans LTD

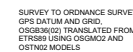
<b>Project:</b>	<b>Great Plumstead, Church road</b>
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Surveyed By:   



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		P/S	Palisade
		P/W	Post & Wire

### LEGEND

[illegible]

Drawn by:- JB      Surveyed by:- JB      Checked by:- DO

Date: June 2015

**Scale:-** 1:200

Drawing Number: **ALS7008/200/04**  
Topographical

**Client:** Building plans LTD

**Project:** Great Plumstead,  
Church road

Surgeon's Dis-

**Surveyed By-**

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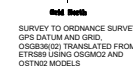
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CL	Chainlink	PR	Post & Rail		

AV	Any Value	MM	Master	
BL	Boiler	MK	Marker	
BS	Burner	MS	Mount Name Plate	Banking
CB	Cabin	OH	Overhead	
CV	Cable	OSM	Overhead Switch	
CL	CL Cover	P	Panel	
CTV	Cable Television	PM	Parking Meter	
CP	Cup	PS	Pressure Switch	
CR	Cup Rack	PS	Pressure Sign	
CS	Cupboard	R	Rail	
ELC	Electricity	SC	Stop Cook	
EP	Electricity Pole	SP	Stairs Landing	
ES	Electric Switch	ST	Street Lamp	
FB	Flow Board	ST	Stairs Valve	Brush
FI	Fire Incident	TN	Tank	
FP	Flag Pole	TGB	Telephone Call	Gate
GF	Gate			
GP	Gate Post	TL	Train Lights	
TS	TV	TP	Telephone Pole	
IC	Inspection Cover	TV	Television Box	
LC	Ladder	UL	Under Lamp	
JS	Joint Box	VP	Vent Pipe	
WC	Water Closet	W	Water	
LB	Ladder	WM	Water Meter	
WC	Water Closet	WO	Water Out	

Hedge

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Drawn by:- JB      Surveyed by:- JB      Checked by:- DD

Date:	June 2015
Scale:-	1:200
Drawing Number:	ALS7008/200/08 Topographical
Client:	Building plans LTD
Project:	Great Plumstead, Church road

**Surveyed By-**

**ALS**  
EST 1976

**Anglia Land Surveys**

Bowthorpe Hall,  
Bowthorpe Road,  
Netel, NRS 9AA

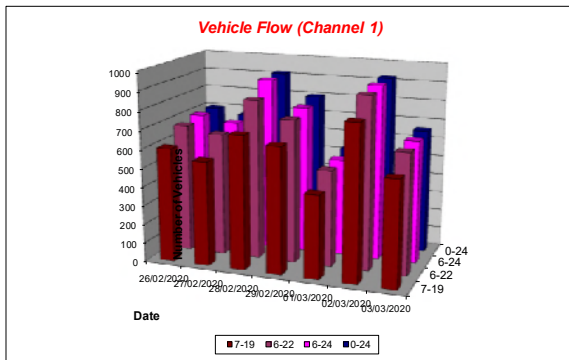
Tel: (01603) 749600  
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Website: [www.als-surveys.com](http://www.als-surveys.com)

 QJM  
SURVEYORS  
REGISTERED SURVEYORS

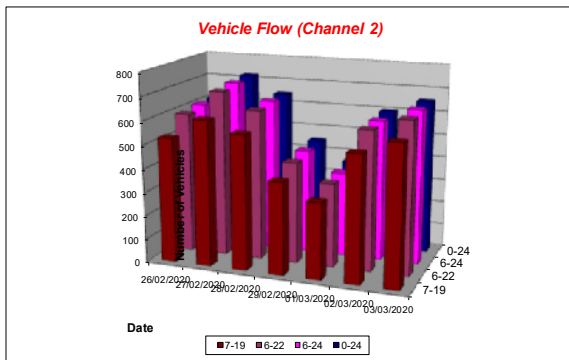


## Great Plumstead ATC, Middle Road

Channel 1 - Southeastbound								Vehicle Flow		Week 1	
Hr Ending	26/02/2020 Wednesday	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	5 Day Ave	7 Day Ave		
1	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0	0		
5	0	0	0	0	0	0	0	0	0		
6	3	2	3	2	2	5	4	3	3		
7	10	9	16	4	8	11	17	13	11		
8	30	15	28	13	0	33	27	27	21		
9	41	37	71	25	8	73	72	59	47		
10	25	33	34	44	20	74	47	43	40		
11	24	31	60	59	37	36	42	43	44		
12	40	41	44	69	33	63	40	49	50		
13	37	42	32	90	41	58	44	43	49		
14	37	32	56	64	62	70	27	44	50		
15	63	45	46	74	45	77	35	53	55		
16	66	51	77	60	45	81	42	63	60		
17	70	64	71	58	44	65	50	64	60		
18	111	94	104	59	57	89	67	93	83		
19	57	64	78	46	24	71	62	66	57		
20	37	42	54	47	27	43	26	40	39		
21	18	21	43	21	19	26	20	26	24		
22	11	26	24	20	16	13	17	16	18		
23	14	18	55	16	5	11	10	22	18		
24	4	2	17	8	2	3	2	6	5		
7-19	601	549	701	661	436	810	555	643	616		
6-22	677	647	838	753	506	903	635	740	706		
5-24	658	689	818	737	513	819	617	767	732		
0-24	699	672	915	799	528	923	658	773	742		



Channel 2 - Northwestbound								Vehicle Flow		Week 1	
Hr Ending	26/02/2020 Wednesday	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	5 Day Ave	7 Day Ave		
1	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0		
4	1	0	0	3	1	0	1	1	1		
5	0	0	0	1	1	0	0	0	0		
6	2	3	1	1	1	2	1	2	2		
7	16	21	11	5	7	14	8	14	12		
8	49	41	65	14	7	39	50	49	38		
9	78	80	78	32	16	64	86	73	59		
10	47	64	51	42	33	54	61	55	50		
11	32	57	56	41	40	43	39	45	44		
12	44	41	49	48	41	38	41	43	43		
13	25	46	42	35	37	40	38	38	38		
14	34	61	53	32	26	50	57	51	45		
15	31	58	47	30	48	56	62	51	47		
16	40	49	26	32	16	32	49	39	35		
17	48	42	38	29	20	39	44	42	37		
18	58	47	35	31	24	35	54	46	41		
19	42	28	28	22	12	41	25	33	28		
20	28	32	25	18	9	24	27	27	23		
21	19	14	20	11	12	16	14	17	15		
22	5	21	9	6	6	4	6	9	8		
23	10	6	11	10	3	4	6	7	7		
24	2	5	0	3	1	1	3	2	2		
7-19	528	614	568	388	320	531	586	565	505		
6-22	590	702	633	459	334	593	641	632	563		
5-24	608	713	644	491	358	644	654	642	573		
0-24	611	719	647	449	370	599	654	646	578		



## Great Plumstead ATC, Middle Road

Channel 1 - Southeastbound								Average Speed		Week 1	
Hr Ending	26/02/2020 Wednesday	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	5 Day Ave	7 Day Ave		
1	-	-	-	-	-	-	-	-	-		
2	-	-	-	-	-	-	-	-	-		
3	-	-	-	-	-	-	-	-	-		
4	-	-	-	-	-	-	-	-	-		
5	-	-	-	-	-	-	-	-	-		
6	29.2	29.1	27.3	16.9	23.6	26.5	23.2	23.6	23.2		
7	28.5	29.2	27.3	27.6	26.7	26.8	26.2	26.8	26.2		
8	28.4	29.7	26.5	26.2	27.0	27.0	27.0	27.0	27.0		
9	27.4	27.3	28.0	26.0	26.1	28.0	27.8	27.8	27.8		
10	27.9	27.5	28.1	25.7	25.8	26.6	27.9	27.9	27.9		
11	27.3	28.1	27.0	26.9	25.5	27.5	27.6	27.6	27.6		
12	28.3	27.1	27.0	26.8	27.2	27.7	28.3	28.3	28.3		
13	27.2	26.9	27.2	26.4	27.0	28.0	27.9	27.9	27.9		
14	27.1	27.8	26.8	26.2	26.6	27.2	28.3	28.3	28.3		
15	27.9	27.5	28.0	28.1	27.4	27.9	28.9	28.9	28.9		
16	28.0	27.4	27.9	26.5	25.9	27.3	26.7	26.7	26.7		
17	28.0	27.5	27.8	27.1	26.8	28.0	28.8	28.8	28.8		
18	27.6	27.4	27.3	26.3	27.0	27.6	27.3	27.3	27.3		
19	26.5	27.5	27.6	25.2	24.5	27.6	27.0	27.0	27.0		
20	26.5	28.0	27.7	25.5	27.3	28.2	28.4	28.4	28.4		
21	26.8	28.2	26.8	26.4	27.1	27.2	27.8	27.8	27.8		
22	27.8	26.9	28.4	25.3	25.8	27.9	29.1	29.1	29.1		
23	26.1	27.7	27.8	28.1	27.3	26.7	27.9	27.9	27.9		
24	23.9	31.9	28.1	27.3	22.4	27.6	24.9	24.9	24.9		
7-19	27.5	27.5	27.0	26.9	28.6	27.6	27.9	27.9	27.9		
6-22	27.5	27.5	27.5	26.1	24.5	27.5	26.8	26.8	26.8		
0-24	27.6	27.6	27.5	26.3	26.5	27.5	27.7	27.7	27.7		
								Average		27.3	

Channel 1 - Southeastbound					85th Percentile		
	26/02/2020	27/02/2020	28/02/2020	29/02/2020	01/03/2020	02/03/2020	03/03/2020
Hr Ending	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
1	-	-	38.1	26.8	29.6	-	29.2
2	-	31.7	-	29.4	30.9	-	27.7
3	-	-	-	23.6	24.9	-	-
4	-	-	-	-	-	-	-
5	-	-	-	31.4	-	-	30.3
6	30.1	30.3	19.8	24.5	31.7	26.7	31.7
7	32.6	32.1	32.1	30.7	30.9	31.4	31.3
8	30.4	34.1	29.9	30.9	-	30.9	32.1
9	33.4	32.2	33.2	30.4	30.4	32.8	33.4
10	33.6	33.1	32.9	32.7	30.7	31.3	32.2
11	32.0	33.2	31.1	31.9	30.9	31.8	32.6
12	33.6	33.4	33.0	31.5	31.5	32.7	33.3
13	32.4	31.5	31.9	31.5	32.8	33.7	32.8
14	31.8	30.6	32.1	30.7	31.1	33.3	31.6
15	33.4	32.8	33.0	31.5	33.9	33.3	33.3
16	32.7	31.2	32.1	31.2	32.9	32.9	31.3
17	32.8	32.5	32.9	31.6	32.4	33.0	34.6
18	31.7	31.6	33.1	31.6	31.6	31.9	32.6
19	31.9	33.2	32.1	30.8	30.7	32.5	32.5
20	31.7	32.8	32.2	31.6	33.2	32.4	32.2
21	31.9	33.1	31.5	30.8	34.1	31.5	31.8
22	32.7	31.5	33.2	30.1	31.3	30.7	32.7
23	32.8	31.4	32.9	31.6	29.6	31.5	31.5
24	27.4	32.5	32.9	31.6	-	27.8	30.4
10-12	32.4	33.4	32.5	31.9	31.2	32.4	33.2
14-18	33.1	32.4	32.9	31.8	32.9	32.4	32.9
0-24	32.6	32.8	32.5	31.6	32.0	32.5	32.6
					85th Value 32.4		



**C J Safety Audit**

**HARE ROAD DEVELOPMENT  
GREAT PLUMSTEAD, NORFOLK  
HIGHWAY WORKS (OPTION 1)**

**STAGE 1 ROAD SAFETY AUDIT**

**REPORT REF: PCID02/NGC/RSA1  
March 2020**

Report prepared for: Pritchard Civil Infrastructure Design Ltd  
9 Stevenson Road  
Wroxham  
Norwich  
NR12 8FE

## Project Information:

<b>Client</b>	Pritchard Civil Infrastructure Design Ltd on behalf of Ingram Homes Ltd
<b>Client Ref</b>	0060
<b>Title</b>	Hare Road Development, Plumstead, Norfolk: Highway Works (Option 1)
<b>Report author</b>	N G Calder BSc(Hons) CEng MICE MCIHT MSoRSA

## Report Status:

<b>Issue</b>	<b>Status</b>	<b>Purpose</b>	<b>Date</b>
1	Signed	Client issue	15/03/20

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Disclaimer: C J Safety Audit accepts no responsibility to any third parties to whom the information contained in this report is made known.



## 1. Introduction

- 1.1 This report has been produced as a result of a Stage 1 Road Safety Audit (RSA) carried out at the request of Pritchard Civil Infrastructure Design Ltd on behalf of Ingram Homes Ltd. The audit brief was supplied by P Pritchard.
- 1.2 The RSA Team membership was as follows:-
- N G Calder    BSc(Hons) CEng MICE MCIHT MSoRSA  
Principal Road Safety Consultant  
CJ Safety Audit
- J M Jones    IEng MCIHT FIHE MSoRSA  
Principal Road Safety Consultant  
CJ Safety Audit
- 1.3 The RSA was undertaken in March 2020 and comprised an examination of the documents provided by the client (see Appendix A) together with a site visit on 11 March 2020 between the hours of 14:00 and 14:45. The weather was bright and the road surface dry. Traffic flows were light and generally free-flowing (although speeds were constrained by HGV unloading for the adjacent construction site).
- 1.4 The terms of reference of the RSA are as described in GG 119 *Road Safety Audit*. The audit 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 design to any other criteria.
- 1.5 The scheme arises from proposed development of 10 dwellings fronting Hare Road, a C-class road within the village Great Plumstead. The audited scheme comprises modifications to the Hare Rd/Middle Rd junction, together with footway provision and regularising of carriageway width along the Hare Rd frontage.
- 1.6 The auditors have reviewed the 5-year police road accident record (2014-2018) on [crashmap.co.uk](http://crashmap.co.uk). During this period there have been two recorded accidents in the vicinity of the scheme:-
- one (slight) occurred at the Hare Rd/Middle Rd junction involving side impact between two cars on an icy road surface.
  - The other (serious) occurred on Hare Rd involving a car reversing into a pedestrian.
- There are no accidents in the previous 5 years.
- 1.7 A problem location plan has been included in Appendix B to the report.
- 1.8 Issues that are beyond the scope of the audited scheme or not directly related to road safety have been included as General Remarks in Appendix C to the report.

## 2. Items Raised at Previous Road Safety Audits

The auditors are not aware of any previous audits of these proposals.

## 3. Items Raised at this Stage 1 Road Safety Audit

### General

- 3.1 No comment

### Road Alignment

- 3.2 No comment

### Junctions

- 3.3 Problem

Location: Hare Rd/Middle Rd/Church Rd junction  
Summary: failure-to-give-way collisions

From Hare Road, existing visibility to the right is substandard, although the Auditors note the low accident record suggesting that the risk of injury is low. Despite the scheme offering some improvement to visibility to offset increased traffic from the development, it would remain sub-standard. Recorded approach speeds are slightly in excess of the 30mph speed limit and concerns therefore remain over the potential for failure-to-give-way collisions.

#### Recommendation

If visibility cannot be improved further, speed reduction measures are recommended on the priority road approach in order to mitigate this risk.

### Non-Motorised Users

- 3.4 No comment

### Signing and Lighting

- 3.5 No comment

## 4. Audit Team Statement

We certify that this audit has been carried out in accordance with Road Safety Audit Standard GG 119.

### Audit Team Leader

Nevil Calder  
Member of the Society of Road Safety Auditors (MSoRSA)  
Principal Road Safety Consultant  
CJ Safety Audit

Signed:

Date: 15 March 2020

### Audit Team Members

Malcolm Jones  
Member of the Society of Road Safety Auditors (MSoRSA)  
Principal Road Safety Consultant  
CJ Safety Audit

Signed:

Date: 15 March 2020

### C J Safety Audit

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w: [www.cjsafetyaudit.co.uk](http://www.cjsafetyaudit.co.uk)



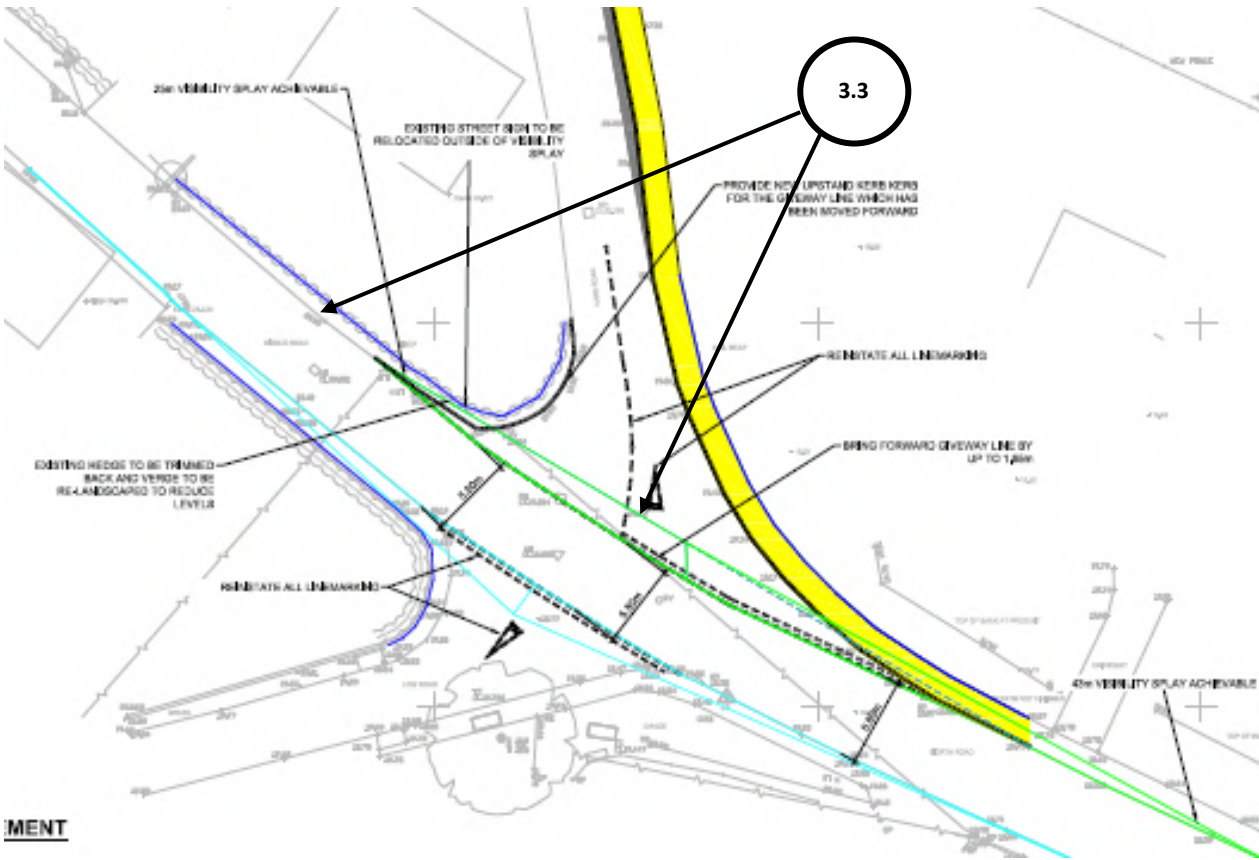
## APPENDIX A - Audit Submission Documents

The following documents were submitted for this road safety audit:-

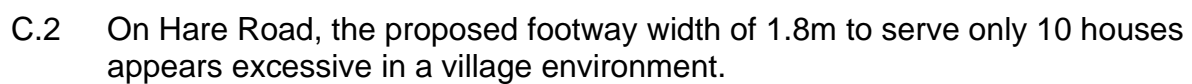
Drg no 0060 - C100 Rev P2	1:200	Junction Improvement Works Option 1
Drg no 0060 – C102 Rev P2	1:500	Hare Road Widening & Footpath Works
Drg no 3383.0919B – 1	1:200	Phase 2 residential Development
ATC Speed data		
Background information - Highway Authority letter 23 Jan 2020		
5yr Accident Data (2014 – 2018) from <a href="http://crashmap.co.uk">crashmap.co.uk</a>		

No departures from standard were advised.

APPENDIX B – Problem Location Plan



C.1 Minor realignment of the proposed kerbing on the NW corner of the junction is suggested (in red below) to better guide south-eastbound traffic and deter it from overrunning the proposed give way line position





**C J Safety Audit**

**HARE ROAD DEVELOPMENT  
GREAT PLUMSTEAD, NORFOLK  
HIGHWAY WORKS (OPTION 2)**

**STAGE 1 ROAD SAFETY AUDIT**

**REPORT REF: PCID02/NGC/RSA1  
March 2020**

Report prepared for: Pritchard Civil Infrastructure Design Ltd  
9 Stevenson Road  
Wroxham  
Norwich  
NR12 8FE



## Project Information:

<b>Client</b>	Pritchard Civil Infrastructure Design Ltd on behalf of Ingram Homes Ltd
<b>Client Ref</b>	0060
<b>Title</b>	Hare Road Development, Plumstead, Norfolk: Highway Works (Option 2)
<b>Report author</b>	N G Calder BSc(Hons) CEng MICE MCIHT MSoRSA

## Report Status:

<b>Issue</b>	<b>Status</b>	<b>Purpose</b>	<b>Date</b>
1	Signed	Client issue	15/03/20

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- 1.5 The scheme arises from proposed development of 10 dwellings fronting Hare Road, a C-class road within the village Great Plumstead. The audited scheme comprises modifications to the Hare Rd/Middle Rd junction, together with footway provision and regularising of carriageway width along the Hare Rd frontage. Traffic calming and a 20mph speed limit are also proposed on Middle Rd/Church Rd
- 1.6 The auditors have reviewed the 5-year police road accident record (2014-2018) on [crashmap.co.uk](http://crashmap.co.uk). During this period there have been two recorded accidents in the vicinity of the scheme:-
- one (slight) occurred at the Hare Rd/Middle Rd junction involving side impact between two cars on an icy road surface.
  - The other (serious) occurred on Hare Rd involving a car reversing into a pedestrian.
- There are no accidents in the previous 5 years.
- 1.7 A problem location plan has been included in Appendix B to the report.
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## 2. Items Raised at Previous Road Safety Audits

The auditors are not aware of any previous audits of these proposals.

## 3. Items Raised at this Stage 1 Road Safety Audit

### General

- 3.1 No comment

### Road Alignment

- 3.2 Problem

Location: Church Rd

Summary: loss of control collisions

At the south-eastern end, the Auditors note that proposed speed cushions are located only just within the proposed 20mph limit. This may result in north-westbound drivers meeting these cushions at higher than desirable speed, with risk of loss of control.

#### Recommendation

It is recommended that the cushions are located approx. 50m within the 20mph limit. It is further recommended that spacing of traffic calming features within the 20mph should be around 100m to reduce the tendency to speed up between them (not all features need be physical - some could be roundel markings).

- 3.3 Problem

Location: Middle Rd/Church Rd

Summary: head-on/sideswipe collisions

The proposed lateral spacing between the speed cushions raises concern that opposing vehicles attempting to straddle them may conflict, resulting in glancing head-on collisions.

#### Recommendation

A minimum lateral spacing of 1.0m is recommended between cushions. If this cannot be achieved then full-width round-topped humps may be preferable since HGV/bus flows appear relatively low.

### Junctions

- 3.4 No comment

### **Non-Motorised Users**

3.5 No comment

### **Signing and Lighting**

3.6 No comment

## 4. Audit Team Statement

We certify that this audit has been carried out in accordance with Road Safety Audit Standard GG 119.

### Audit Team Leader

Nevil Calder  
Member of the Society of Road Safety Auditors (MSoRSA)  
Principal Road Safety Consultant  
CJ Safety Audit

Signed:

Date: 15 March 2020

### Audit Team Members

Malcolm Jones  
Member of the Society of Road Safety Auditors (MSoRSA)  
Principal Road Safety Consultant  
CJ Safety Audit

Signed:

Date: 15 March 2020

### C J Safety Audit

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w: [www.cjsafetyaudit.co.uk](http://www.cjsafetyaudit.co.uk)



## APPENDIX A - Audit Submission Documents

The following documents were submitted for this road safety audit:-

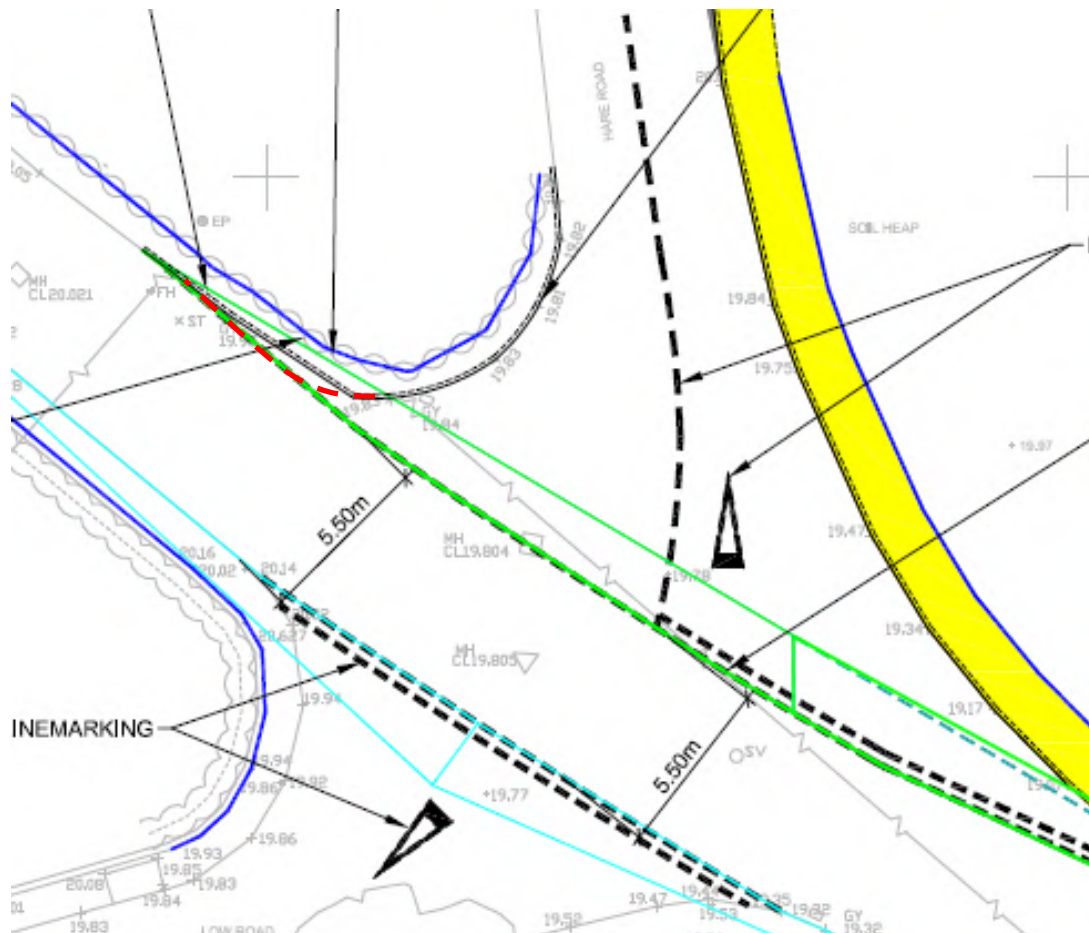
Drg no 0060 - C101 Rev P2	1:200	Junction Improvement Works Option 2
Drg no 0060 – C102 Rev P2	1:500	Hare Road Widening & Footpath Works
Drg no 3383.0919B – 1	1:200	Phase 2 residential Development
ATC Speed data		
Background information - Highway Authority letter 23 Jan 2020		
5yr Accident Data (2014 – 2018) from crashmap.co.uk		

No departures from standard were advised.

[illegible]

## APPENDIX C – General Remarks

- C.1 Minor realignment of the proposed kerbing on the NW corner of the junction is suggested (in red below) to better guide south-eastbound traffic and deter it from overrunning the new give way line position



- C.2 On Hare Road, the proposed footway width of 1.8m to serve only 10 houses appears excessive in a village environment.