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████████████████████
BY EMAIL

Dear Rob,

Access and Flood Risk Considerations, Various Site Opportunities, Meldreth

EAS has been appointed to review Highway Access and Flood Risk and Drainage issues associated with various potential development plots at Meldreth in South Cambridgeshire District.

The Flood Risk and Drainage Issues have been considered first by reviewing the information available from the Environment Agency and overlaying this onto detailed ordnance survey mapping. In this instance the flood risk issues are clearly defined and therefore determine which areas could be developed more readily. Highway Access layouts have then been prepared in outline to serve the potential developable areas.

The work that has been undertaken refers to the site areas A to E on the plan attached here at **Appendix A** and which was provided to EAS. It should be noted that whilst we have concentrated on areas A to E, the eastern edge of area F may be affected by virtue of potential betterments along Station Road which support development at site D/E.

Fluvial Flood Risk

The EA Flood Map for Planning shows that all sites are practically fully within Flood Zone 1, meaning a less than 1 in 1,000 annual probability of river or sea flooding. The EA Flood Map for planning is located in **Appendix B**.

Surface Water Flood Risk

There is sporadic surface water flood risk across the sites varying from 'very low' to 'medium'. A high-risk scenario indicates a greater than 1 in 30 probability of surface water flooding each year, i.e. the most frequently occurring scenario. In a high-risk scenario, apart from a minor area adjacent to the River Mel in area E, all areas are unlikely to experience surface water flooding.

A medium risk scenario indicates a probability of surface water flooding between 1 in 30 and 1 in 100 each year. In a medium risk scenario, there is a minor patch of surface water flooding in area A and the same minor area in area E. Area D is shown not to experience surface water flooding.

A low risk scenario indicates a probability of surface water flooding between 1 in 100 and 1 in 1000 each year (i.e. the least frequent but worst-case scenario). When assessing the surface water flood risk, this scenario is commonly used.

In area A, there are sporadic areas of surface water flooding which are shown to be below 300mm.

In area E, there is minor surface water flooding directly adjacent to the River Mel along the eastern boundary. The rest of area E is unlikely to experience surface water flooding.

The majority of Area D is also unlikely to experience surface water flooding however there is an area of flooding between 300mm and 900mm located along the southern perimeter of the site.

Area B is shown to be affected by surface water flooding, with depths mainly below 300mm. There is a minor area of flooding between 300mm and 900mm along the eastern perimeter of the site.

All surface water flood risk maps can be viewed in **Appendix C**.

Taking this information into account all plots seem readily developable except for plot B. This does not mean that plot B cannot be developed but it will need much more investigation to confirm. Any further investigation is likely to require a surface water model to be developed to ascertain more accurate surface water flood depths.

The surface water present in area A could be managed by raising the finished floor levels as well as directing the surface water into swales for example. This should be an acceptable method to manage the risk and development should be accepted.

Artificial Sources

The EA Flood Map for Planning shows the site is not at risk from any artificial sources of flooding.

South Cambridgeshire SFRA

Historical flood mapping within the SFRA (Figure 1402 B 3.3) shows the site has not previously experienced any historical flooding. Moreover, sewer flooding records also show the site has not previously experienced any sewer flooding.

The SUDS Infiltration Feasibility Plan 1402 C2 in the SFRA also indicates the site is located within an area with 'High Potential for Infiltration'. This also suggests that development is suitable for development and a SuDS scheme would be possible to mitigate the surface water flood risk.

Flood Risk Conclusions

Having assessed the available information, area A, D and E are deemed suitable for development. The proposed development sites are in Flood Zone 1 and have a manageable surface water flood risk. Proposals should nonetheless include flood mitigation strategies, particularly for surface water flood risk. Site B does not appear as readily suitable for residential use development given the entirety of surface water flood coverage and its restrictive size. However further evidence of flood depths via a flood model may assist with proving its viability.

The Plan attached at **Appendix D** indicates the more and less readily developable areas.

Highway Access Proposals

The results of the flood risk review have determined that sites A, D and E are suitable for development. access to sites A and D have been proposed herein. Site E would be accessed via site D. Site B has been ignored at this stage due to the surface water flood risk complexities.

Site A

For site A, a staggered ghost island has been proposed to provide suitable and safe access into the site as well as accommodating the existing Station Road Junction. The ghost island has been designed in accordance with the design guides for a 30mph speed zone, set out in Volume 6 of the DMRB Standards for Highways.

The existing carriageway would need to be widened to accommodate the addition of a right turn pocket. This has been shown on SK02 at **Appendix E** and it is considered that this can be achieved within public highway land.

It is suggested that the existing location of the 30mph commencement be moved closer to the junction with the A10 (further from the proposed access) along with the implementation of the ghost island to reduce speeds of vehicles travelling through the ghost island. This would be subject to a public consultation and Traffic Regulation Order amendment.

At this early stage a raised table has been suggested along with tactile paving at the entrance of the access into site A to provide a safer crossing point for pedestrians and cyclists who are using the existing right of way to/from Meldreth Station.

The suggested ghost island junction design will potentially aid the traffic movements into the site development. It is felt that 300 residential properties could be built off this type of junction although other consultants would need to determine development densities.

At a later stage a traffic movement survey would be required and junction model testing will need to be carried out to determine if the ghost island would prove a suitable junction form from a capacity perspective considering the existing traffic movements.

As the development may be of the order of around 100 units the wider traffic network will also need to be considered in capacity terms including the impact of any future committed development. Cambridgeshire County Council Highways should be consulted.

Site D

A simple access arrangement consisting of a 6metre carriageway with 6metre radii has been suggested for the access and egress into site D and then E. The access arrangement for site D is shown in SK01 at **Appendix F**.

A footway has been shown to provide suitable pedestrian access connections to the existing pedestrian facilities on Station Road. The footway on the opposite side of Station Road is narrow and therefore could potentially benefit by widening to 2metres to aid vulnerable users access to Meldreth Station. The widening of this footway would be carried out by utilising some of the land bordering the east of site F. This widening has also taken place to allow for a pedestrian refuge in the centre of Station Road, also shown on SK01.

When crossing the rail line the footway is particularly narrow. It may be potentially possible to install a pedestrian footbridge adjacent to the road bridge, but this would need to be in agreement with the rail authority and have landings in highway land or controlled land on either side. At this stage we have not shown this option on the access plan.

By widening the footway on Station Road and realigning the carriageway slightly to accommodate the proposed central refuge island, the kerblines have been modified creating a smoother radius for vehicles travelling northbound along Station Road towards Meldreth. This will also enhance forward visibility and safety.

Earthworks (embankment works) would be required along the boundary line of site D adjacent to Station Road and the public highway to ensure that visibility can be enhanced. As a result suitable visibility splays should be achievable in accordance with the 30mph speed limit for (non) Manual for Streets locations. We have considered the visibility splays both vertically and horizontally although the vertical assessment would need to be reviewed and proven with a topographical survey in due course to satisfy the highway authority.

It is suggested that the existing access into the industrial estate be closed off. This access is sub-standard in terms of visibility and its closure would form a valuable part of the improvement package that the new access would afford in terms of safety.

It is suggested that a traffic count be carried out to ascertain the number of vehicles travelling along Station Road as well as recording turning movements in and out of the access to the industrial estate. These can be used as an off-set for the development traffic. This can then be utilised at a later date to produce a junction model, again considering the wider traffic generation for the surrounding road networks and any future committed development and the impact it might have on the proposed junction. Cambridgeshire County Council should also be consulted.

There is a public right of way that runs through the site which provides adequate pedestrian and cycle facilities to the Meldreth Station and this of course would be utilised as part of the development site.

It is suggested that Site D will be able to accommodate of the order of 150 residential properties based on the junction proposals subject to testing and highway authority approvals.

Roundabout Option Off A10

Finally there is a potential option that should be considered which is the formation of a roundabout on the A10 between, and serving sites A and E (D would take access from E).

As the A10 is a strategic regional if not national route this would need to be proven to show benefits and for the development to make a significant contribution to housing targets (a planning policy matter rather than a highway matter).

In this instance it would be proposed that the existing ghost island access of Station Road/A10 is closed off. In general ghost islands on a high category road are considered less safe than a roundabout junction. A roundabout junction having less severe accidents than a Ghost Island Right Turn junction.

Due to the significant earthworks and likely cost of this access option it should only be considered viable with significant caution. In our opinion it is likely to be marginal whether there could be the level of development necessary to support this junction cost and this should be considered further.

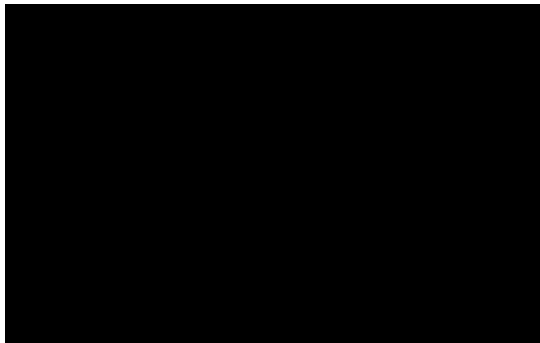
The roundabout shown has a 45m ICD (Inscribed Circle Diameter) and deflection meeting the requirements of the DMRB design standards. It is likely that the proposal would have significant traffic capacity but this would need to be checked in due course. Early consultation with CCC Highways is highway recommended.

Note that this access option would negate the need for any other access points if achievable. The layout and geometry drawings are shown at **Appendix G**.

Please note that when referring to housing unit numbers these are typical numbers that the junction style could serve and are not actual calculations based on any capacity assessment.

Should you have any questions, please do not hesitate to contact me.

Yours sincerely



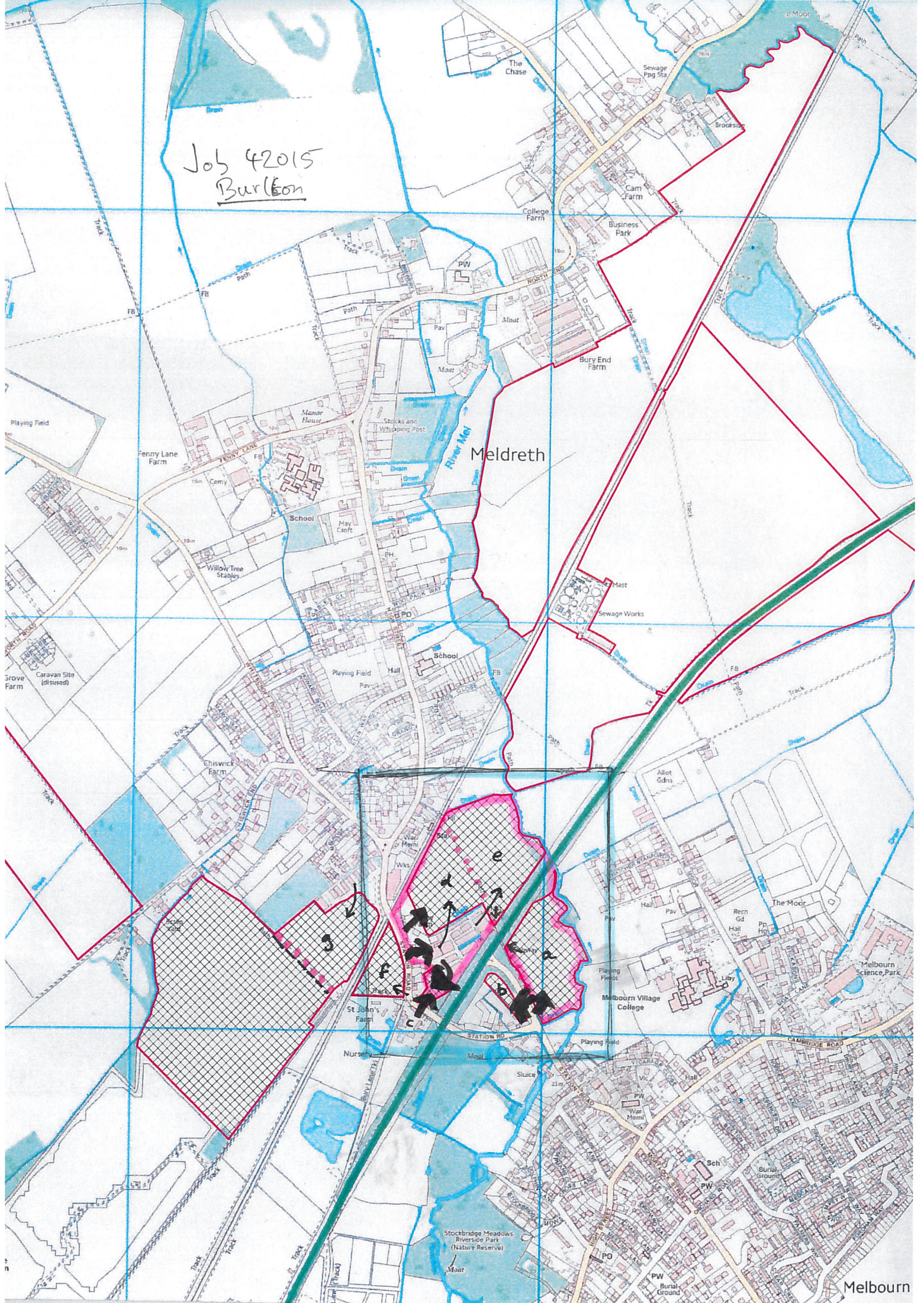
Director

Appendix A – Areas Plan provided by client
Appendix B – EA Flood Map for Planning
Appendix C- Surface Water Flood Risk Maps
Appendix D- Developable and Non-Developable Areas
Appendix E- SK02 Ghost Island Design
Appendix F- SK01 Access Arrangements
Appendix G- SK03, SK04 and SK05 Layout and Geometry Drawings

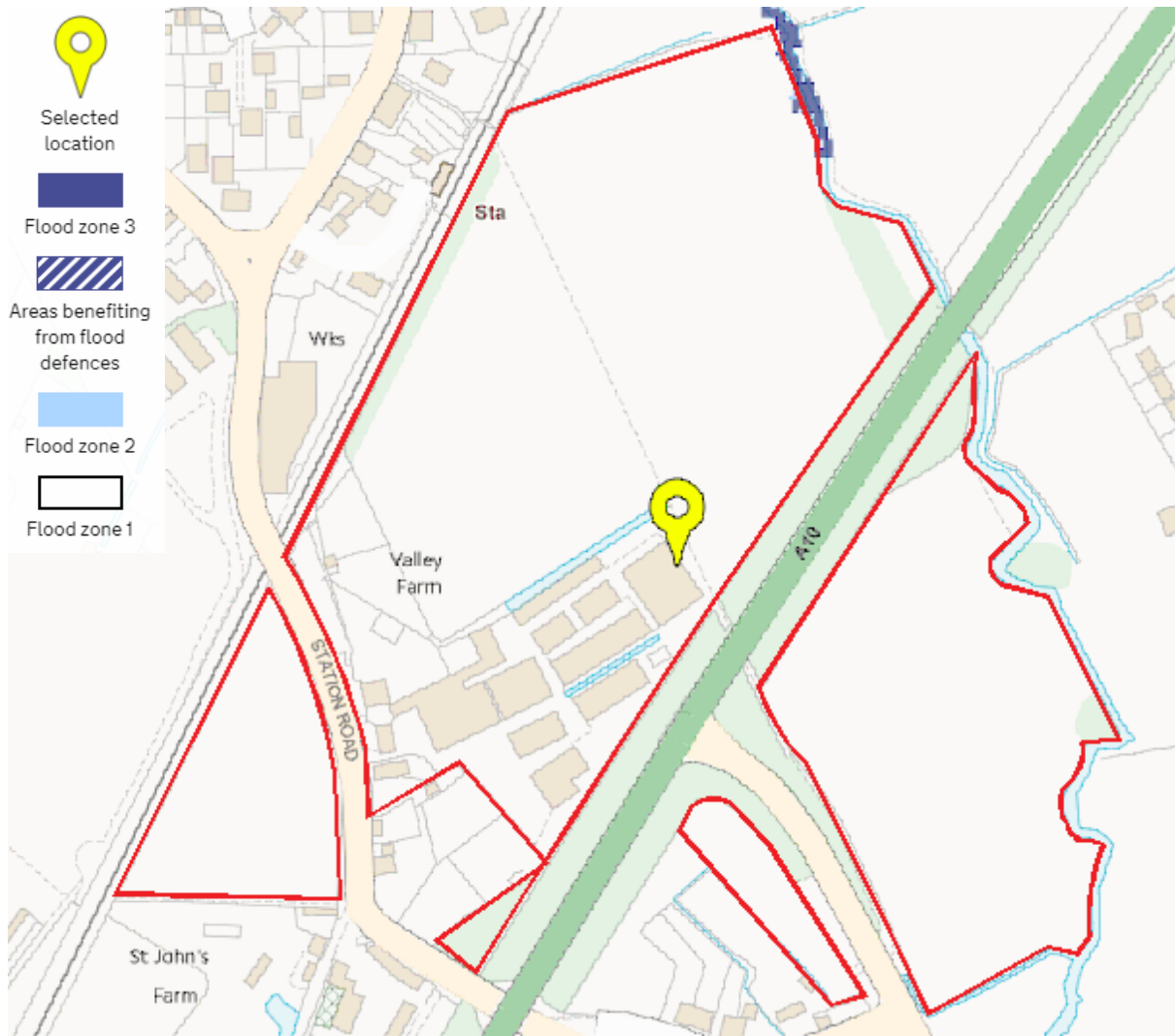
Appendix A – Areas Plan provided by client

Job 42015
Burleon

Meldreth

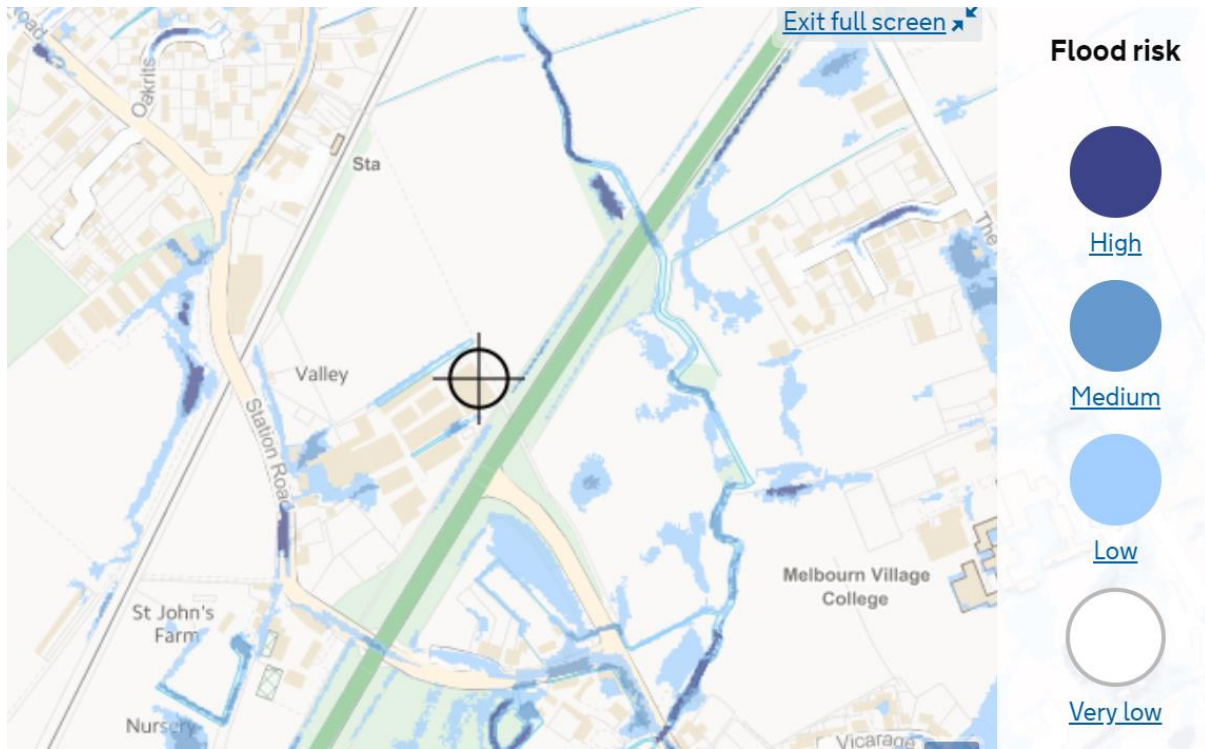


Appendix B – EA Flood Map for Planning



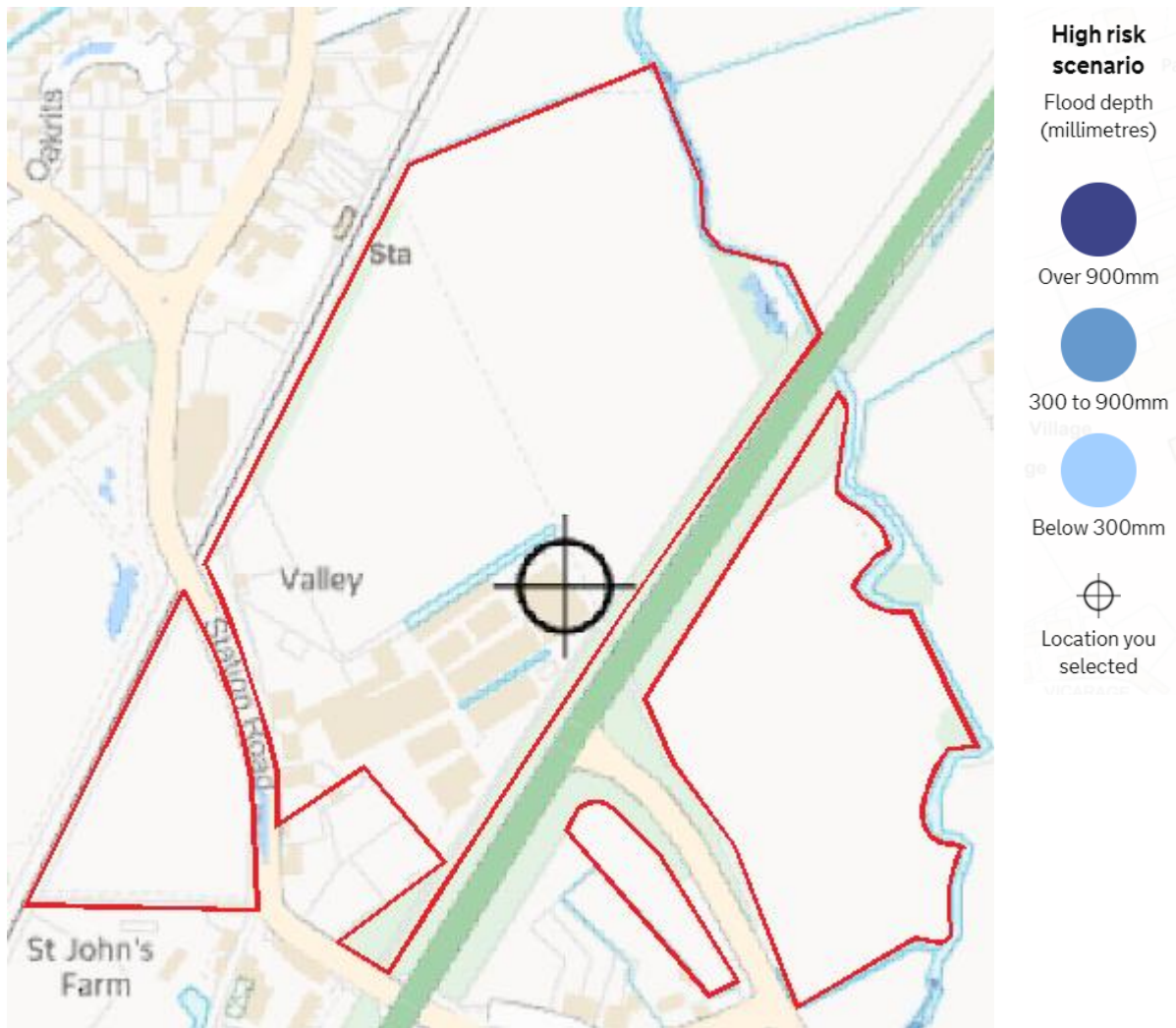
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Appendix C- Surface Water Flood Risk Maps



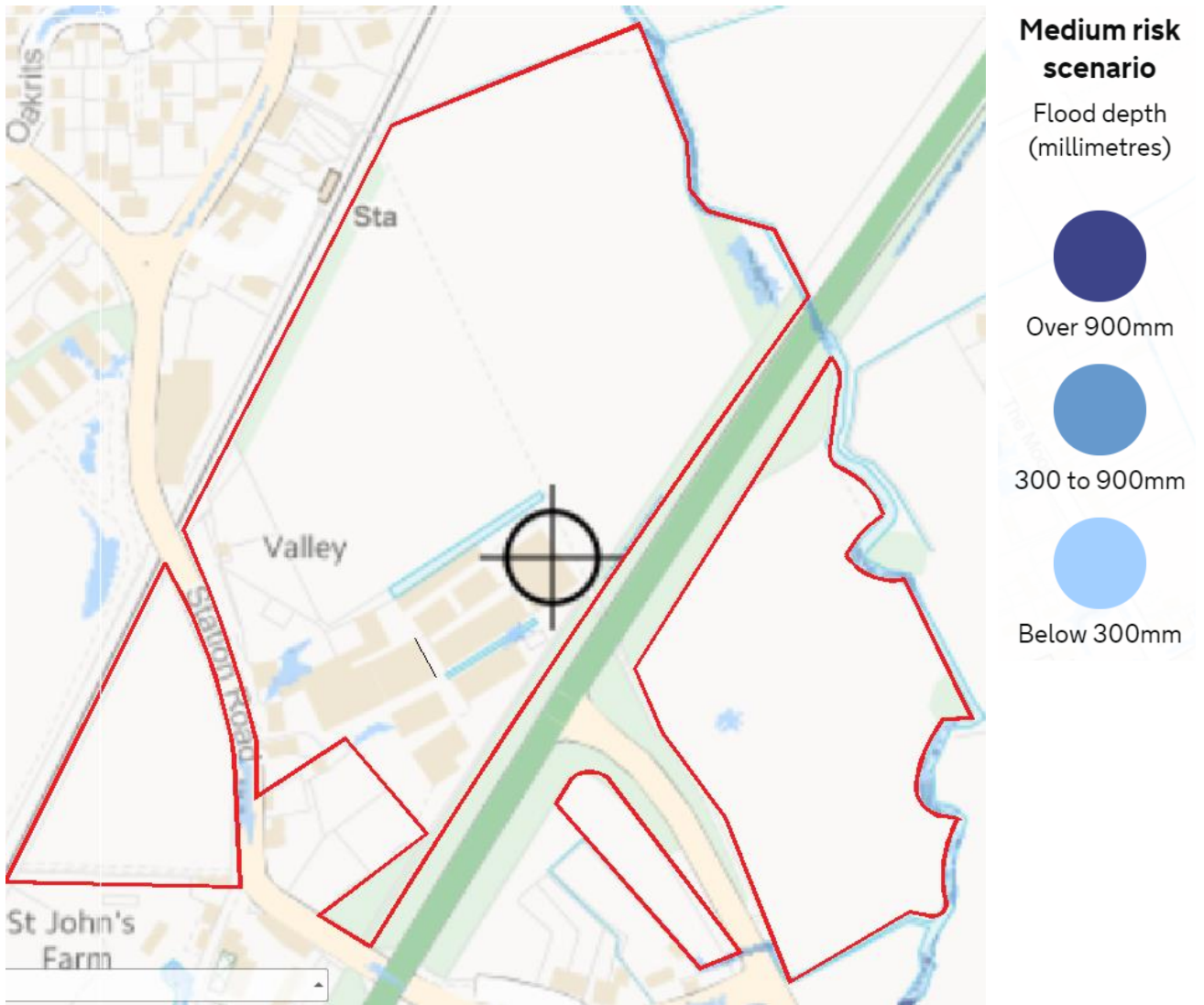
Extract from EA Flood Map for Planning- Surface Water Flood Risk

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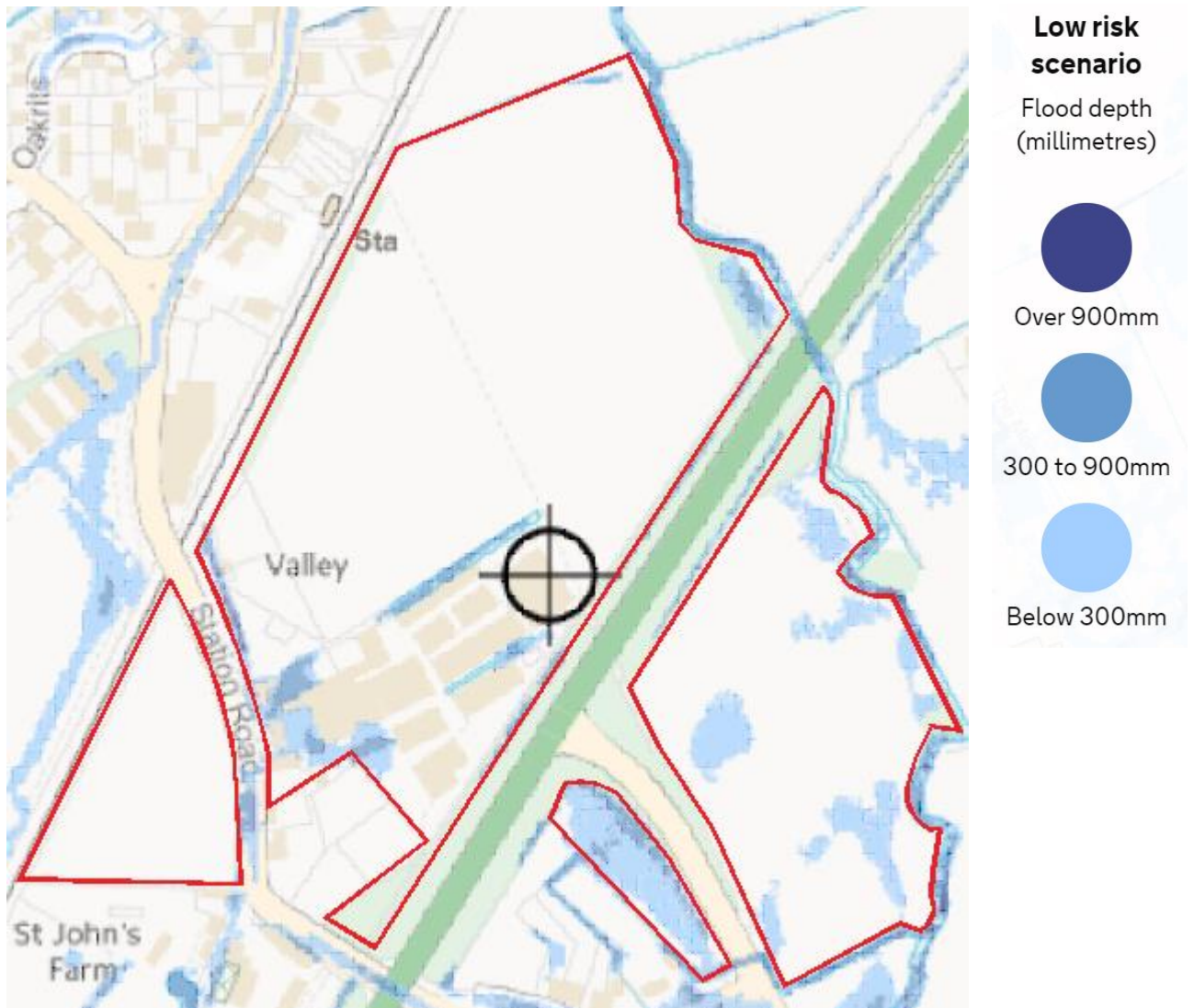
Extract from EA Flood Map for Planning- Surface Water Flood Risk

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Extract from EA Flood Map for Planning- Surface Water Flood Risk

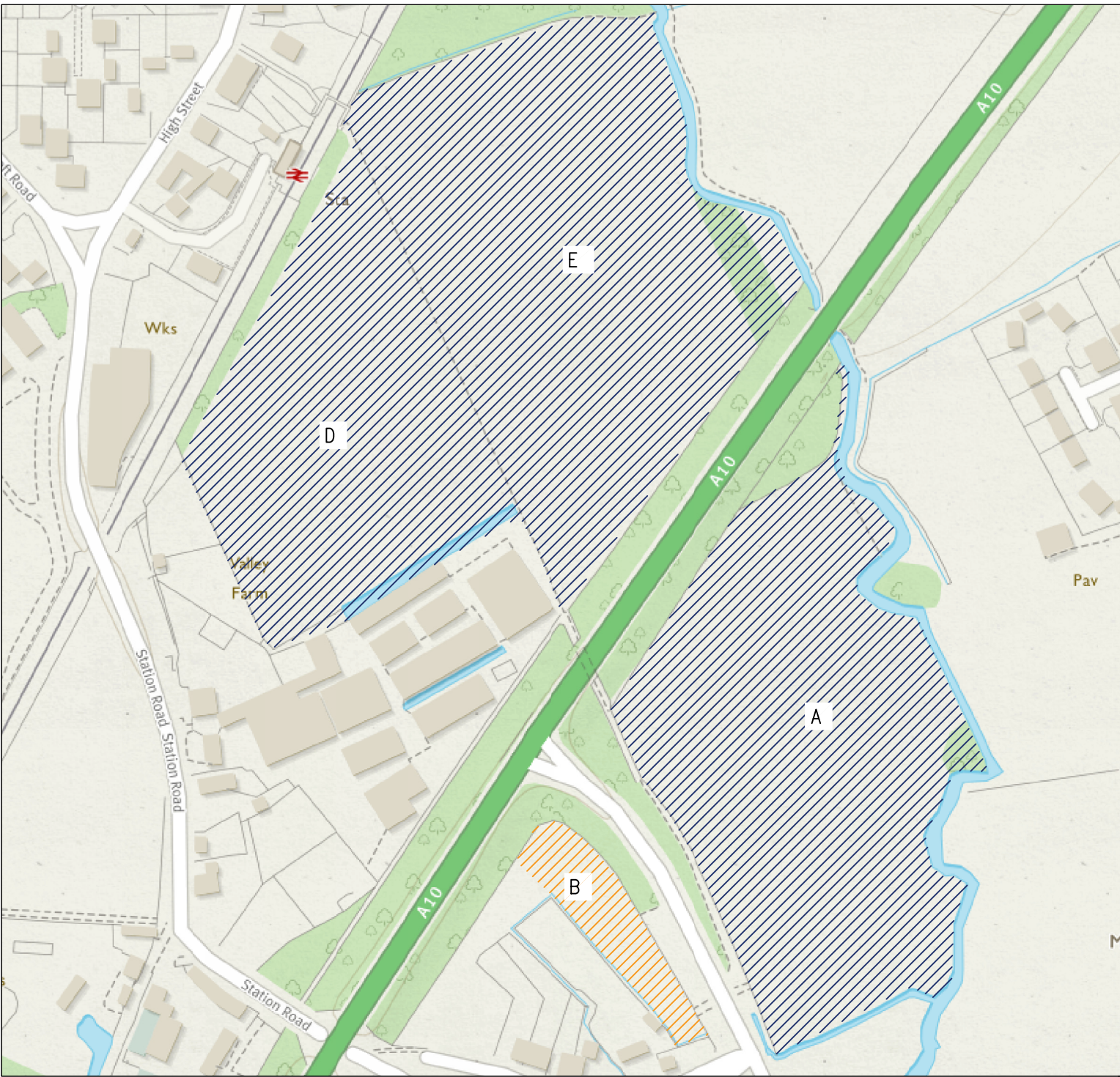
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Extract from EA Flood Map for Planning- Surface Water Flood Risk

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Appendix D- Developable and Non-Developable Areas



KEY

-  AREA SUITABLE FOR DEVELOPMENT
-  AREA POTENTIALLY SUITABLE FOR DEVELOPMENT SUBJECT TO FURTHER INVESTIGATION

REV	DATE	BY	DESCRIPTION	CHK	APD
DRAWING STATUS:					



Unit 23, The Maltings, Stanstead Abbots, Hertfordshire, SG12 8HG
 Tel: 01920 871777
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CLIENT:

ARCHITECT:

PROJECT:

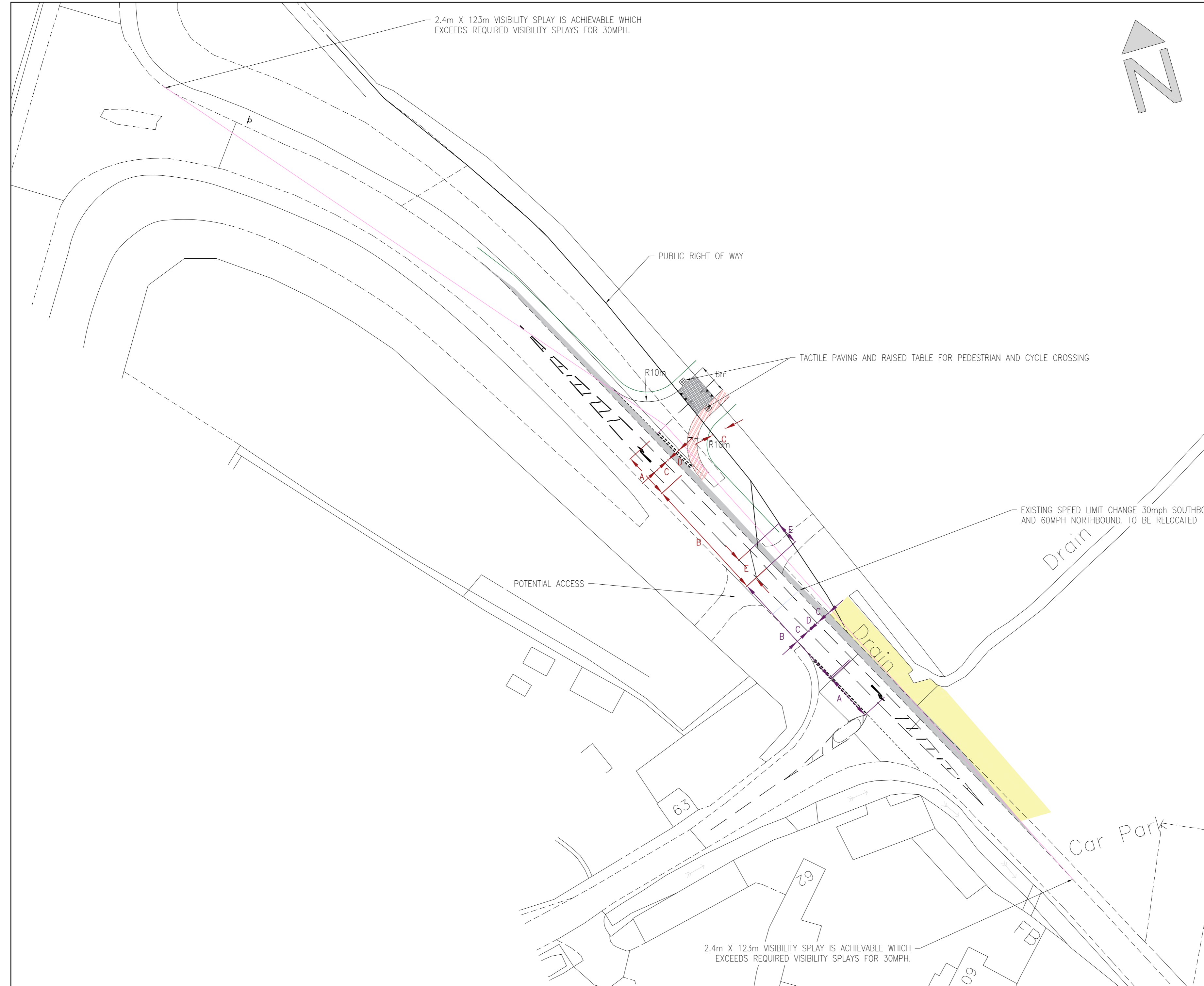
**BURLTON SITES, MELDRETH
 SOUTH CAMBS**

TITLE:
**PROPOSED AREAS SUITABLE FOR
 DEVELOPMENT**

SCALE © A4: NTS	DESIGN—DRAWN: RC	DATE: 14/05/2018
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PROJECT No: 1713	DRAWING No: FIGURE 001
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Appendix E- SK02 Ghost Island Design



2.4m X 123m VISIBILITY SPLAY IS ACHIEVABLE WHICH EXCEEDS REQUIRED VISIBILITY SPLAYS FOR 30MPH.

2.4m X 123m VISIBILITY SPLAY IS ACHIEVABLE WHICH EXCEEDS REQUIRED VISIBILITY SPLAYS FOR 30MPH.

- KEY:
- CARRIAGEWAY TO BE WIDENED
 - 2m FOOTWAY
 - POTENTIAL INCREASED EMBANKMENT WIDTH
 - POTENTIAL RELOCATED 30MPH SPEED LIMIT SIGN
 - PRESUMED HIGHWAY BOUNDARY BASED ON CAMBRIDGESHIRE COUNTY COUNCIL MY MAPS <https://my.cambridgeshire.gov.uk/mycambridgeshire.aspx>

- GHOST ISLAND MEASUREMENTS
- | | | |
|---------|----------|----------------|
| A = 10m | A = 10m | |
| B = 25m | B = 25m | 1 IN 20 TAPERS |
| C = 3m | C = 3m | |
| D = 3m | D = 2.5m | |
| E = 5m | E = 5m | |

REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS:



Unit 23, The Mallings, Stanstead Abbots, Hertfordshire, SG12 8HG
Tel: 01920 671777
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CLIENT:

ARCHITECT:

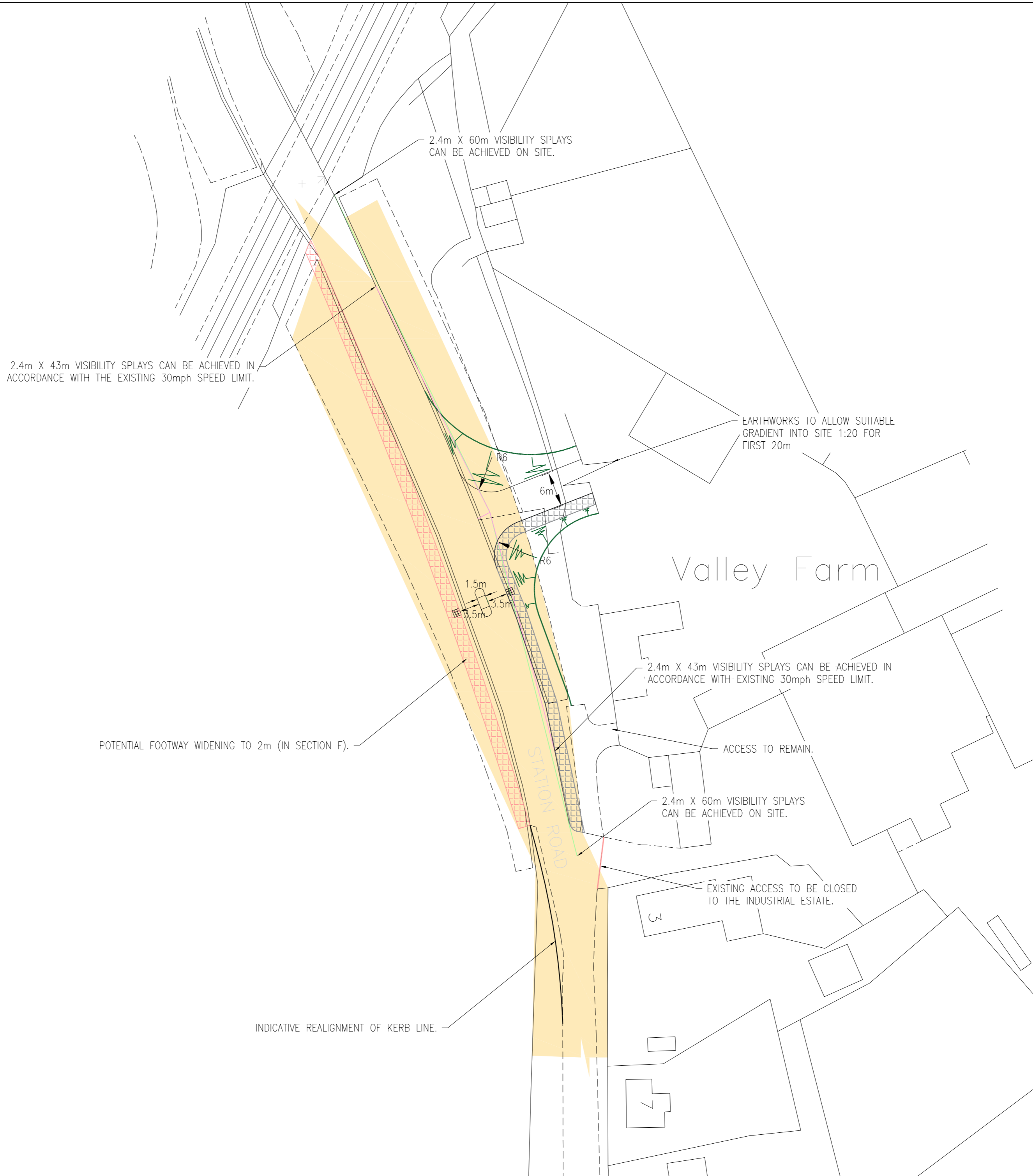
PROJECT:
STATION ROAD, MELDRETH




TITLE:
GHOST ISLAND DESIGN

SCALE @ A2: 1:500	DESIGN-DRAWN: EC	DATE: 11/05/2018
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PROJECT No: SK02	DRAWING No: 1713
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Appendix F- SK01 Access Arrangements



- KEY:
-  INDICATIVE EMBANKMENT WORKS. EXTEND SUBJECT TO DETAILED DESIGN
 -  PRESUMED HIGHWAY BOUNDARY BASED ON CAMBRIDGESHIRE COUNTY COUNCIL MY MAPS <https://my.cambridgeshire.gov.uk/mycambridgeshire.aspx>
 -  2m FOOTWAY TO LINK TO RIGHT OF WAY INTO STATION

REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS:



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Tel: 01920 871777
www.eastp.co.uk

CLIENT:

ARCHITECT:

PROJECT:
STATION ROAD, MELDRETH

TITLE:
ACCESS ARRANGEMENT AND VISIBILITY

SCALE @ A2: 1:500	DESIGN-DRAWN: EC	DATE: 09/05/2018
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PROJECT No: 1713	DRAWING No: SK01
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Appendix G- SK03, SK04 and SK05 Layout and Geometry Drawings

EARTHWORKS TO ALLOW
SUITABLE GRADIENT INTO
SITE 1:20 FOR FIRST 20m

CLOSE UP EXISTING JUNCTION TO
IMPROVE SAFETY AS REMOVES
RIGHT TURN MANOEUVRES

EARTHWORKS TO ALLOW
SUITABLE GRADIENT INTO
SITE 1:20 FOR FIRST 20m



KEY:					
		INDICATIVE EMBANKMENT WORKS. EXTENT SUBJECT TO DETAILED DESIGN			
REV	DATE	BY	DESCRIPTION	CHK	APD
DRAWING STATUS:					
 Unit 23, The Maltings, Stanstead Abbots, Hertfordshire, SG12 8HG Tel: 01920 871777 www.eastp.co.uk					
CLIENT:					
ARCHITECT:					
PROJECT:					
STATION ROAD, MELDRETH					
TITLE:					
INDICATIVE ROUNDABOUT DESIGN FOR A10 AND CONNECTION TO STATION ROAD					
SCALE @ A2: 1:500		DESIGN-DRAWN: EC		DATE: 16/05/2018	
PROJECT No: 1713		DRAWING No: SK05			

ARM 1

R99

Mast

ay

ARM 2

R98

Mast

ay

ARM 3


R76

ARM 4

R100

Mast

Subway


REV	DATE	BY	DESCRIPTION	CHK	APP
DRAWING STATUS:					
 Unit 23, The Maltings, Stanstead Abbots, Hertfordshire, SG12 8HG Tel: 01920 871777 www.eostp.co.uk					
CLIENT:					
ARCHITECT:					
PROJECT:					
STATION ROAD, MELDRETH					
TITLE:					
DEFLECTION FOR THE INDICATIVE ROUNDABOUT ON THE A10					
SCALE @ A1:	DESIGN-DRAWING:	DATE:			
1:500	EC	16/05/2018			
PROJECT No:	DRAWING No:				
1713	SK04				

EARTHWORKS TO ALLOW
SUITABLE GRADIENT INTO
SITE 1:20 FOR FIRST 20m

CLOSE UP EXISTING JUNCTION TO
IMPROVE SAFETY AS REMOVES
RIGHT TURN MANOEUVRES

EARTHWORKS TO ALLOW
SUITABLE GRADIENT INTO
SITE 1:20 FOR FIRST 20m



KEY:					
		INDICATIVE EMBANKMENT WORKS. EXTENT SUBJECT TO DETAILED DESIGN			
REV	DATE	BY	DESCRIPTION	CHK	APD
DRAWING STATUS:					
 Unit 23, The Maltings, Stanstead Abbots, Hertfordshire, SG12 8HG Tel: 01920 871777 www.eastp.co.uk					
CLIENT:					
ARCHITECT:					
PROJECT:					
STATION ROAD, MELDRETH					
TITLE:					
INDICATIVE ROUNDABOUT DESIGN FOR A10 AND CONNECTION TO STATION ROAD					
SCALE @ A2: 1:500		DESIGN-DRAWN: EC		DATE: 16/05/2018	
PROJECT No: 1713		DRAWING No: SK05			