

Babergh and Mid Suffolk District Councils
Endeavour House
8 Russell Road
Ipswich
IP1 2BX

SVH/CES/28574

22 September 2022

For the attention of Philip Isbell

Dear Sirs,

Flood Risk Statement – Revision 0

Erection of 3bay cart lodge with annexed accommodation over ancillary to host dwelling (following demolition of existing garage)

Meadowside, 3 Upper Street, Brome and Oakley, Suffolk, IP21 4AX

This Flood Risk Statement (FRS), has been prepared in response to correspondence from Mid Suffolk Council indicating that there is a risk of surface water flooding at the above site.

The proposed development is for the demolition of the existing garage on-site, which will be replaced with a cart lodge, with a first-floor annex, refer to Drawing No.'s H056/002 & 100 in the **Drawings Appendix** detailing the existing and proposed site layout. The western and central bays will be open sided on the southern elevation to enable vehicle parking, with the eastern bay being utilised for a garden store. The first-floor annex will be accessible via an external staircase located on the eastern elevation. Access to the garage/cart lodge will remain as existing, although the driveway and parking will be extended to suit the replacement building.

Ground contours have been produced for the site and surrounding area using digital terrain model (DTM) LiDAR data obtained from the Environment Agency to determine the existing site levels, refer to Drawing No. 28574/801 in the **Drawings Appendix**. The levels relate to OSGB'36 British National Grid with elevations recorded Above Ordnance Datum (AOD).

Ground levels vary across the site from 40.20m AOD in the east, to 40.60m AOD in the north-east, with levels at the location of the cart lodge to be approximately 40.50m AOD.

The proposed development could be at possible risk from the following sources of flooding:

- Fluvial/ tidal flooding;
- Groundwater flooding;
- Pluvial flooding, and
- Flooding from reservoirs.

Fluvial/Tidal Flooding

The Environment Agency's Flood Map for Planning and the SFRA indicates that the site is not located in an area of flood risk as the proposed development is located within fluvial and tidal Flood Zone 1, refer to Drawing No. 28574/820 in the **Drawings Appendix** and **Appendix A**. Flood Zone 1 has less than 0.1% chance of flooding at a location in any one given year.

Groundwater Flooding

The SFRA includes groundwater flood risk based upon the JBA Groundwater Flood Map, which provides a detailed assessment of the risk of groundwater emergence in a 1 in 100-year event at a 5m resolution. This shows the site to have a negligible risk from groundwater flooding due to the nature of the local geological deposits as shown in **Appendix A**.

Whilst it is not anticipated that groundwater will be a source of flooding to ensure that groundwater does not influence the surface water drainage system, the following design criteria should be adhered to in accordance with C753 The SuDS Manual.

- Where infiltration drainage is utilised, there should be in excess of 1.0m minimum height difference between the base of a soakaway/infiltration basin and the groundwater; and/or
- Where attenuation drainage is utilised, and extends to depths where groundwater may be present the attenuation storage structures should be lined to prevent groundwater ingress. Measures should be utilised to prevent floatation or structural design risks to tanks or impermeable liners.

Pluvial Flooding

In 2013 the Environment Agency, working with the Lead Local Flood Authority produced the updated Flood Map for Surface Water (uFMfSW), it should be noted that subsequently the name of this dataset was revised to the Risk of Flooding for Surface Water (RoFfSW). The RoFfSW assessed flooding scenarios as a result of rainfall during the 3.3%, 1.0%, and 0.1% AEP flood events. This produced the following data for each scenario;

- Extent;
- Depth;
- Velocity (including flow direction at maximum velocity), and
- Hazard (as a function of depth and velocity).

The extent of flooding is expressed and defined as follows;

- **Very Low Risk:** This area has a chance of flooding of less than 1 in 1000 in any one given year (i.e., a 0.1% AEP of flooding).
- **Low Risk:** This area has a 1 in 1000 chance of flooding in any one given year (i.e., a 0.1% AEP).
- **Medium Risk:** This area has a 1 in 100 chance of flooding in any one given year (i.e., a 1.0% AEP).

- **High Risk:** This area has a 1 in 30 chance of flooding in any one given year (i.e., a 3.3% AEP of flooding).

The flood hazard is calculated through a combination of flood depth, velocity, and the presence of debris during a specified flood event. The RoFFSW dataset refers to a numerical value which relates to the danger classifications detailed within the R&D Technical Report FD2320/TR2, and the Supplementary Note on Flood Ratings and Thresholds, a summary of this is included in **Table 1** below.

Hazard Value	Degree of Flood Hazard	Danger	Description
<0.75	Low	Caution	Shallow flooding water or deep standing water.
0.75 – 1.25	Moderate	Dangerous for some	Deep or fast flowing floodwater. Danger includes children, the elderly and the infirm.
1.25 - 2.0	Significant	Dangerous for most people	Deep fast flowing floodwater. Danger includes the general public.
>2.0	Extreme	Dangerous for all	Deep or fast flowing floodwater. Danger includes emergency services.

Table 1 Flood hazard danger classifications.

Table 13.1 (refer to **Table 2** below) in the R&D Technical Report FD2320/TR2 is accepted by the Environment Agency as a standard to define the danger to people, based upon the depth and velocity of floodwater. The Danger Classifications are defined in **Table 1** above.

Table 2 details that access through less than 0.30m of floodwater at less than 1.00m/s is not considered a danger to any, in accordance with R&D Technical Report FD2320/TR2, however caution should be given during a flood event. Should floodwaters exceed this depth or velocity, residents should avoid walking through the floodwater, as it could have the potential to be dangerous.

Velocity (m/s)	Depth of flooding											
	0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.00												
0.10												
0.25												
0.50												
1.00												
1.50												
2.00												
2.50												
3.00												
3.50												
4.00												
4.50												
5.00												

Key:

- Danger for some
- Danger for most
- Danger for all

Table 2 R&D Technical Report FD2320/TR2, danger to people for different combinations of depth and velocity.

The RoFFSW dataset available through Open Government Data has been reviewed to establish the risk of surface water flooding. Refer to Drawing No.'s 28574/821, and 825 to 830 in the **Drawings Appendix** for further details on the flood extent, depth, velocity, and hazard during the 3.3%, 1.0%, and 0.1% AEP flood events. The extent of flooding shown on the RoFFSW dataset, reflects the SFRA surface water flooding map, refer to **Appendix A**.

During the 3.3% AEP flood event, no surface water flooding is identified on-site.

During the 1.0% AEP flood event, an area of surface water ponding is shown to occur in the north-west of the site, but does not ingress into the footprint of the cart lodge, or abut it.

During the extreme 0.1% AEP flood event, flooding is shown to occur in the northern area of site, with it marginally ingressing into the footprint of the cart lodge. Given the nature of the cart lodge, during this extreme flood event, the floodwater would be able to flow into the garage due to its open nature, mimicking the existing, and therefore not increasing the risk of surface water flooding on or off-site.

The annex is located on the first floor as such will be significantly higher than the maximum flood depth of 0.3m that is shown to abut the structure during the extreme flood event.

Access to the annex is achievable during the 3.3% and 1.0% AEP flood events, although during the 1.0% AEP flood event access will need to be gained to the cart lodge by passing the eastern elevation of Meadowside, which will be across dry land.

It should be noted that **Table 2** in R&D Technical Report FD2320/TR2, details that access through less than 0.30m of floodwater at less than 1.00m/s is not considered a danger to any, in accordance with R&D Technical Report FD2320/TR2. However, where floodwater exceeds this depth and/or velocity, residents should avoid walking through the floodwater, as it is considered to be dangerous for some.

During the extreme flood event access to the annex might be more restrictive however the hazard maps show that a route from the annex through to the south of the site can be achieved in an emergency scenario, through limited depth and velocity floodwaters, that are show to have a low hazard rating, however extreme caution should be given.

Should anyone be in the annex during the extreme event, they may choose to stay within it, as it provides safe dry refuge during this event, and wait until the flood water abates. Given the nature of surface water flooding, this is likely to subside within a fairly short time frame.

FD2320/TR2, Flood Risk Assessment Guidance for New Development details that cars will stop and/or float in water as shallow as 0.5m, whilst some emergency vehicles may cope in water of 1.0m. For example, a fire engine remains controllable in depths of 0.5m up to a flow velocity of 5 m/s, due to high-level air intakes/exhausts. FD2321/TR2 goes on to identify that fire engines become unstable in 0.9m in static water. Based upon the maximum depth along the drive being 0.6m during the extreme 0.1% AEP flood event, emergency services should be able to access the development if required.

In order to know when the above flood events are likely to occur, the residents of Meadowside should register to receive Severe Weather Warnings from the Met Office. This will enable the residents to receive advanced warning of an extreme rainfall event, allowing them time to prepare for it.

Severe weather warnings are available in a number of ways, including radio, television, the Met Office website, social media, smart phone apps, RSS, and via email alerts. Details on signing up to the email alert service are available on the Met Office webpage 'Guide to Email Alert Service' <https://www.metoffice.gov.uk/about-us/guide-to-emails>.

On receipt of severe weather warnings residents may then choose to locate their vehicles along the southern extent of the drive that is outside of the area shown to be impacted during a flood event.

Non-return valves should be considered in the drainage system, and special consideration given to the foundations to reduce the risk of pluvial flooding.

Flooding from Reservoirs

The Environment Agency's Risk of Flooding from Reservoirs dataset available through Open Government Data, details the extent of reservoir flooding during a wet day, dry day, and fluvial contribution event. This shows that the site is not located in an area that is at risk of reservoir flooding, refer to Drawing No. 28574/831 in the **Drawings Appendix** for further details.

Based upon the provision of the above, and the enclosed information, we trust this will enable the planning application to be validated. Should you have any queries regarding this please do not hesitate to contact us.

Yours faithfully,

Sally Hare B.Sc (Hons) CSci MEnvSc, MCIWEM
Director - Environmental
For and on behalf of Plandescil Ltd

Enclosures:

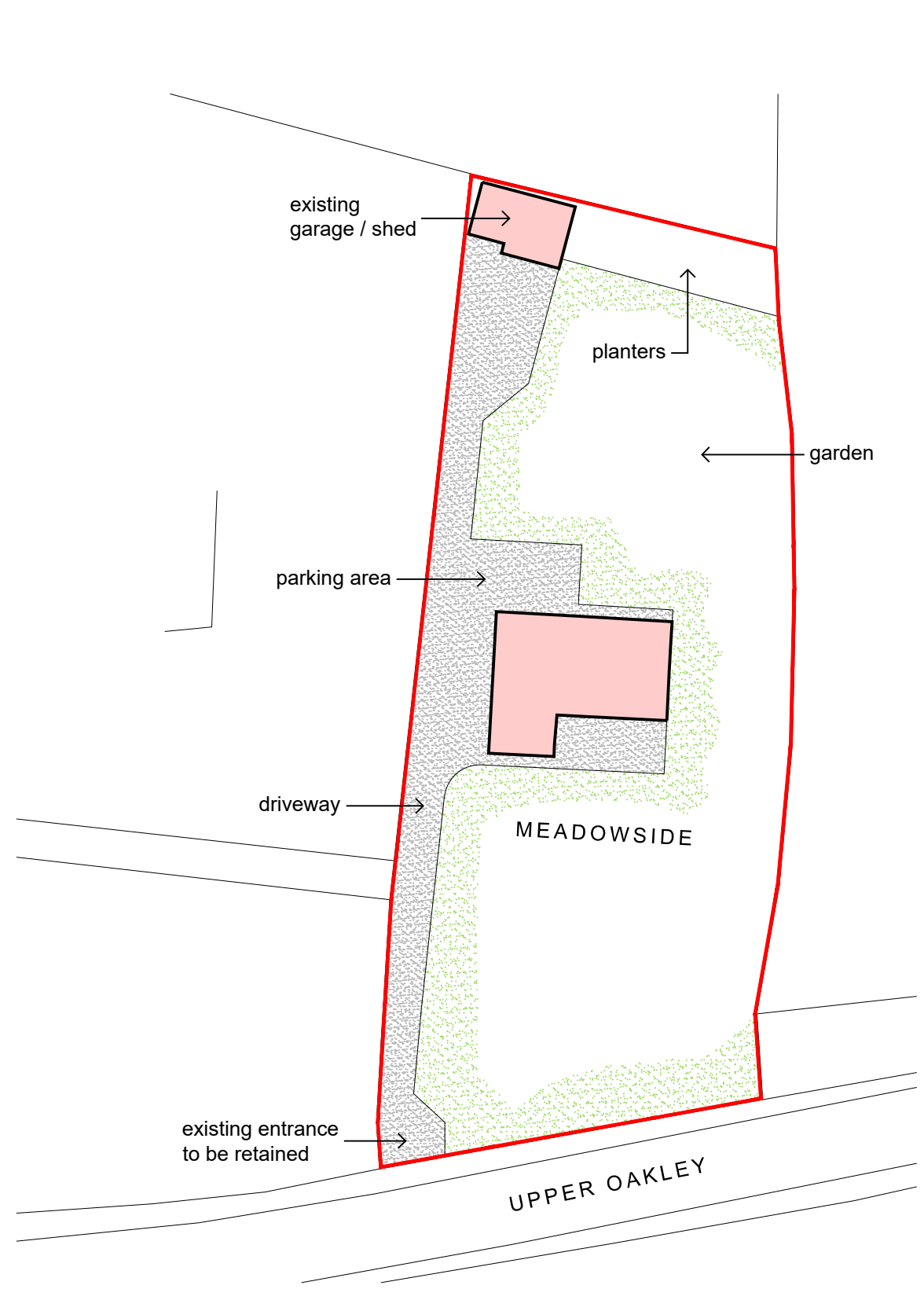
Drawing Appendix:

Drawing No. H056/002 – Planning Existing and Proposed Block Plan
 Drawing No. H056/100 – Planning Proposed Floor Plans and Elevations
 Drawing No. 28574/801 – Site Plan including Existing Levels
 Drawing No. 28574/820 – Fluvial & Tidal Flooding Map – Extent
 Drawing No. 28574/821 – Surface Water Flooding Map – Extent 3.3%, 1.0%, & 0.1% AEP
 Drawing No. 28574/825 – Surface Water Flooding Map – Depths During 1.0% AEP
 Drawing No. 28574/826 – Surface Water Flooding Map – Velocity During 1.0% AEP
 Drawing No. 28574/827 – Surface Water Flooding Map – Hazard During 1.0% AEP
 Drawing No. 28574/828 – Surface Water Flooding Map – Depths During 0.1% AEP
 Drawing No. 28574/829 – Surface Water Flooding Map – Velocity During 0.1% AEP
 Drawing No. 28574/830 – Surface Water Flooding Map – Hazard During 0.1% AEP
 Drawing No. 28574/831 – Reservoir Flood Extent

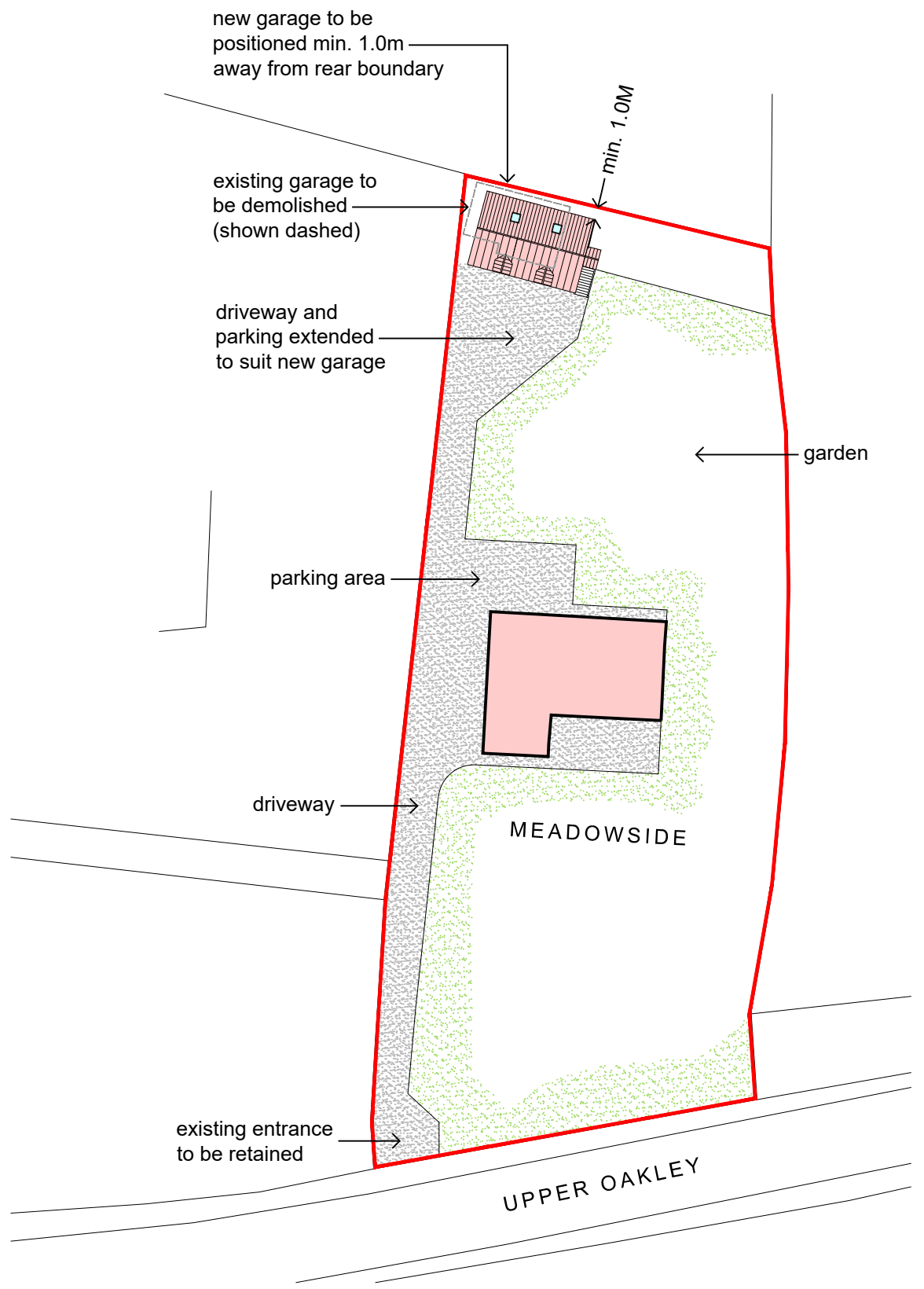
Appendix A: SFRA Level 1 Map Extract

DRAWINGS APPENDIX

- GENERAL NOTES**
1. This drawing is to be read in conjunction with all relevant drawings, details, sketches, reports, calculations and specifications.
 2. Do NOT scale from this drawing, if dimensions are not clear, contact the Engineer for verification.
 3. All building setting out and dimensions to be coordinated and checked by Contractor on site prior to construction.
 4. ALA Ltd to be immediately notified of any suspected omissions and/or discrepancies.



Existing Block Plan
(1:500 Scale)



Proposed Block Plan
(1:500 Scale)

PRELIMINARY ISSUE

0	07.09.22	First Issue: PRELIMINARY	DJR
Rev:	Date:	Description:	By:

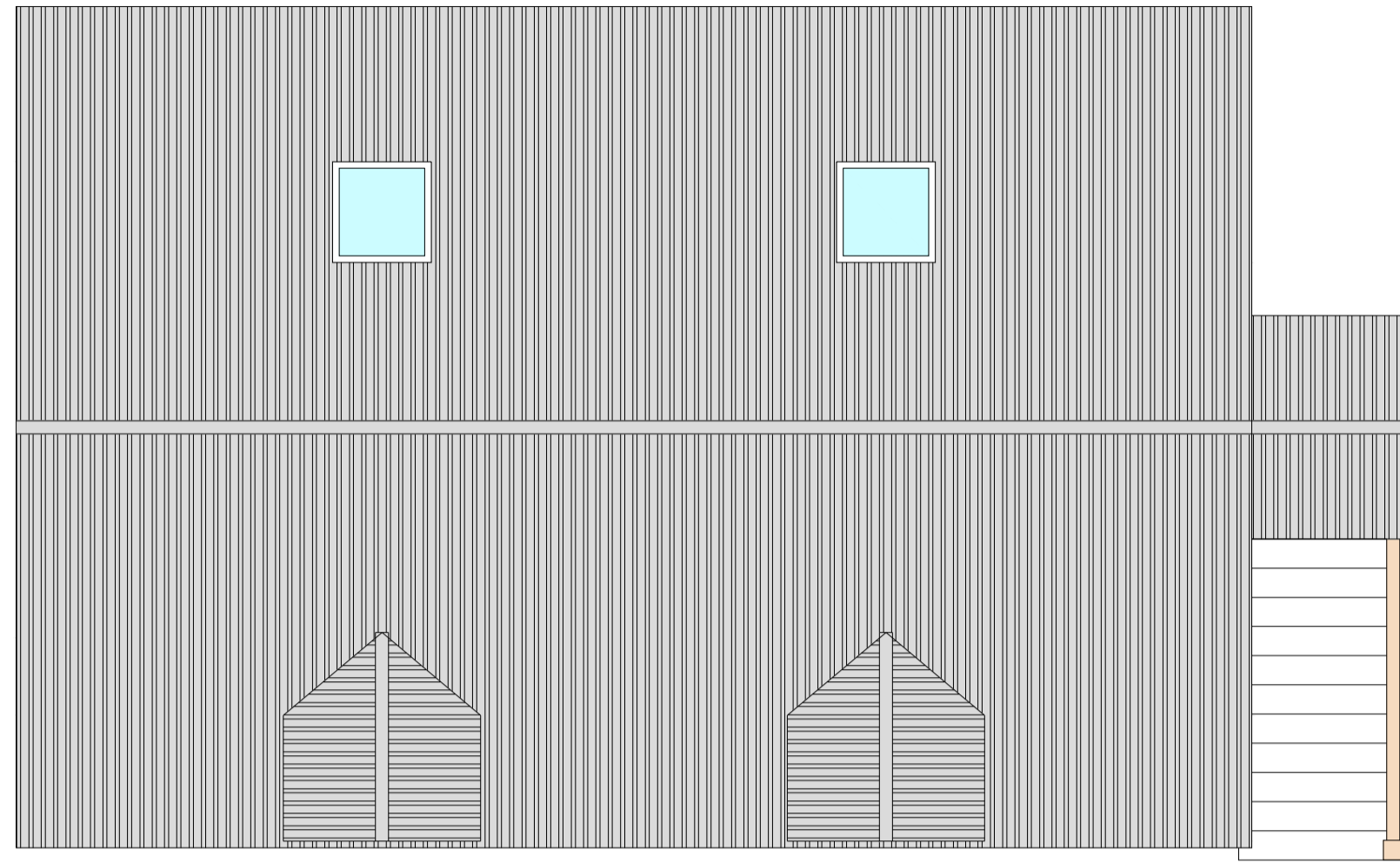
ASHLEY ARGENT ASSOCIATES LTD
BUILDING DESIGN AND CONSULTING ENGINEERS
THE STUDIO, FAIR GREEN, DISS, NORFOLK, IP22 4HX
DESIGN@ALALTD.CO.UK
01273 859608

Client:	Mr & Mrs Atha
Project:	Proposed Cart Lodge Meadowside, 3 Upper Street, Oakley, Diss, IP21 4AX
Drawing Title:	PLANNING Existing and Proposed Block Plan
Drawn:	Checked:
Dave Rogers	Tom Kerry
Scale:	Date:
1:500 @ A3	September 22
Job No:	Drawing No:
H056 / 002	/ 0

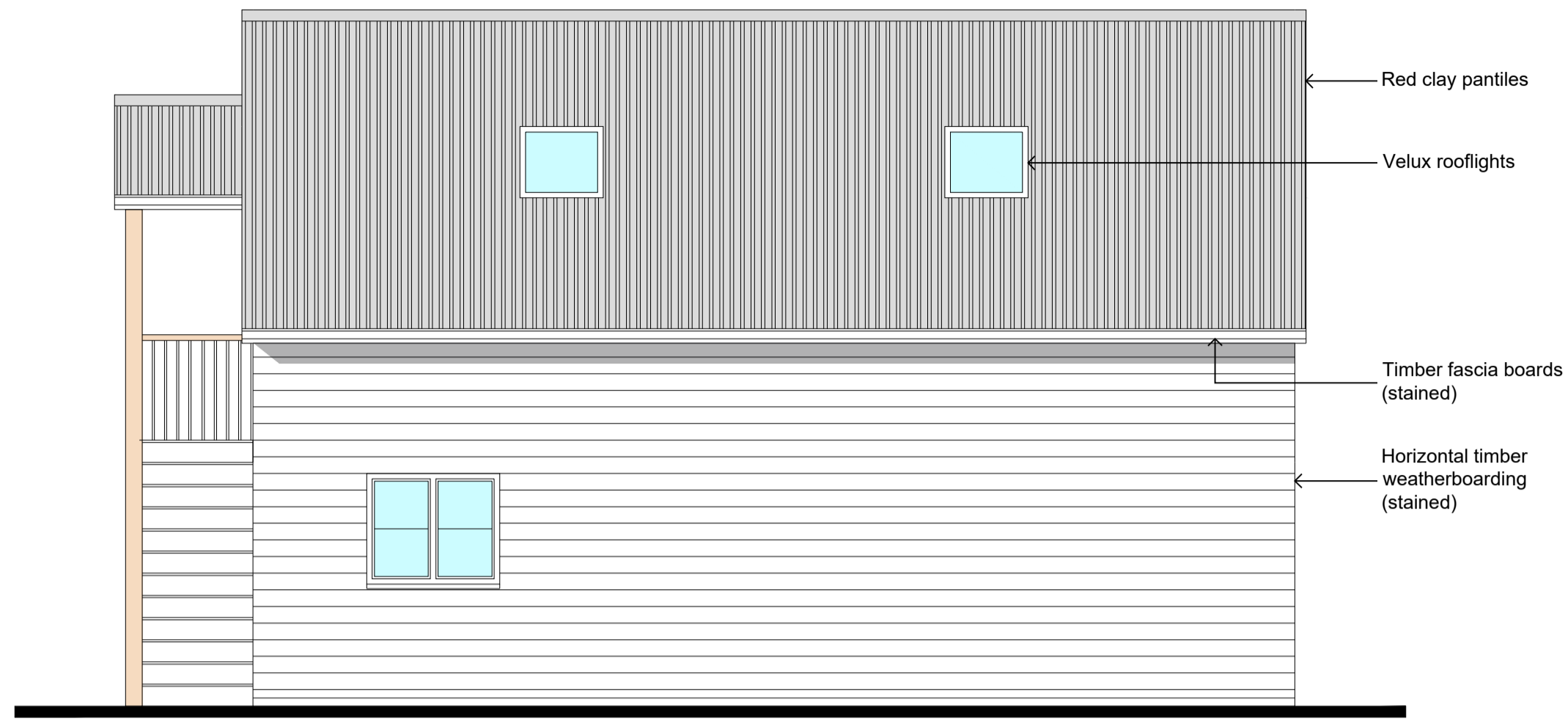
Meadowside, 3 Upper Street, Oakley

GENERAL NOTES

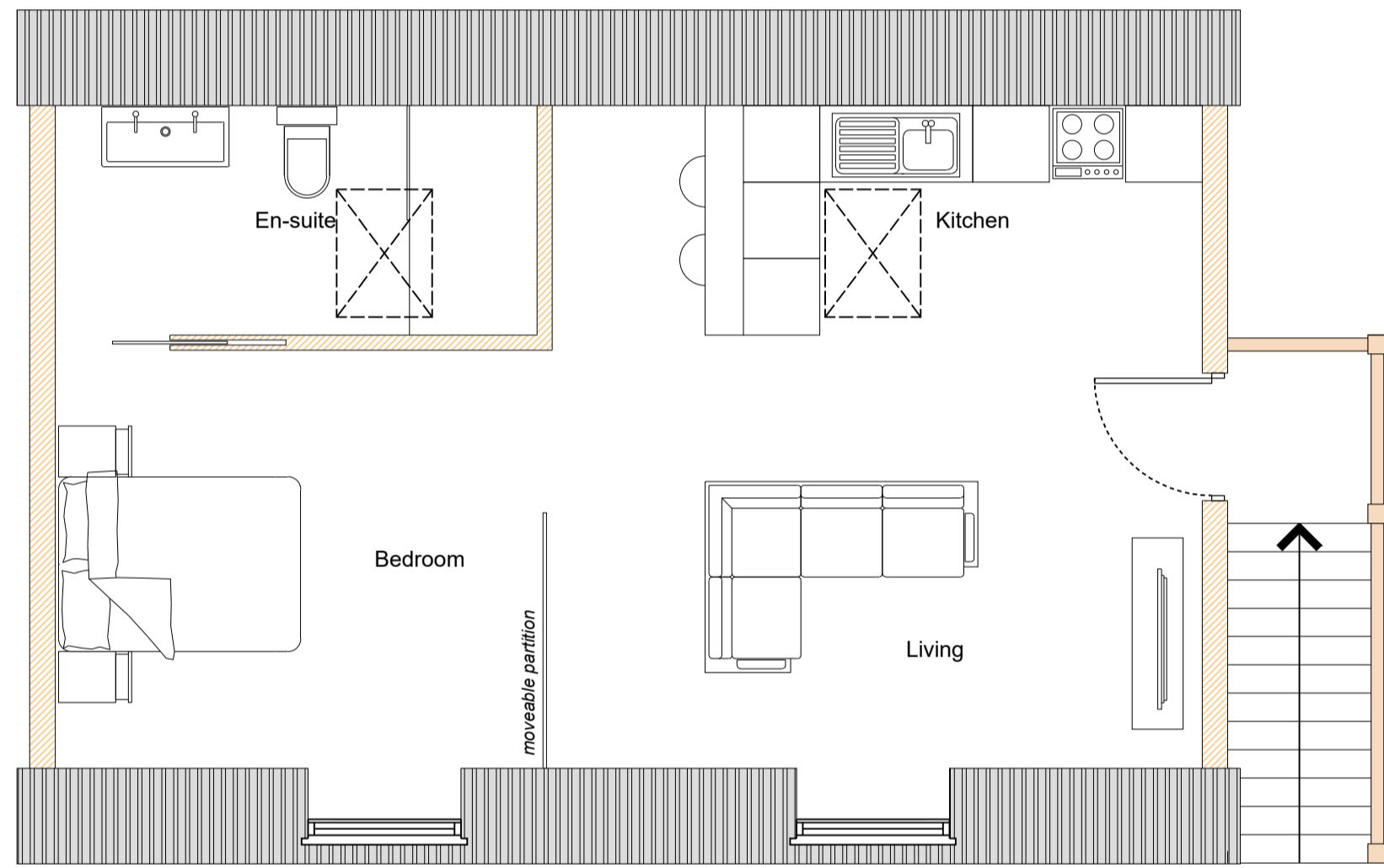
1. This drawing is to be read in conjunction with all relevant drawings, details, sketches, reports, calculations and specifications.
2. Do NOT scale from this drawing, if dimensions are not clear, contact the Engineer for verification.
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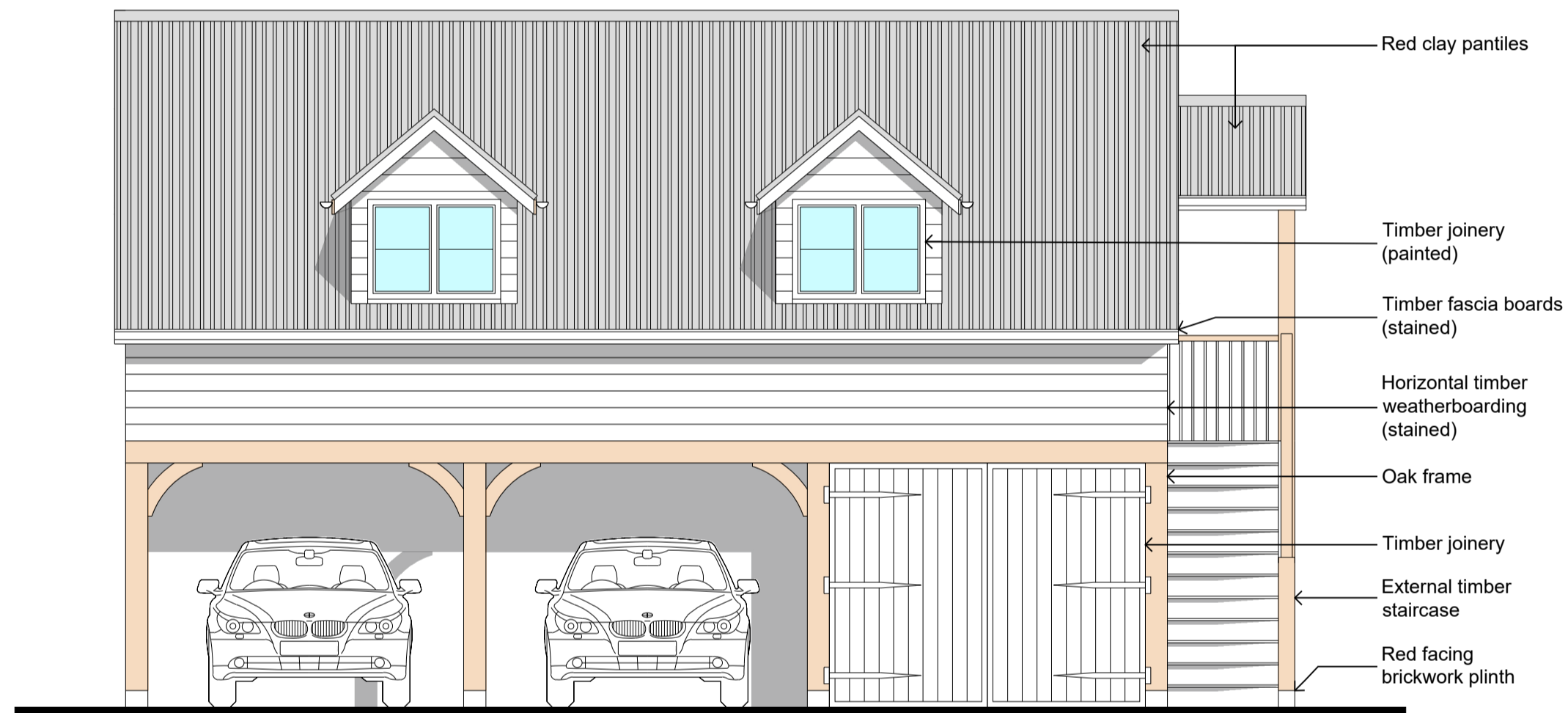
Proposed Roof Plan
(1:50 Scale)



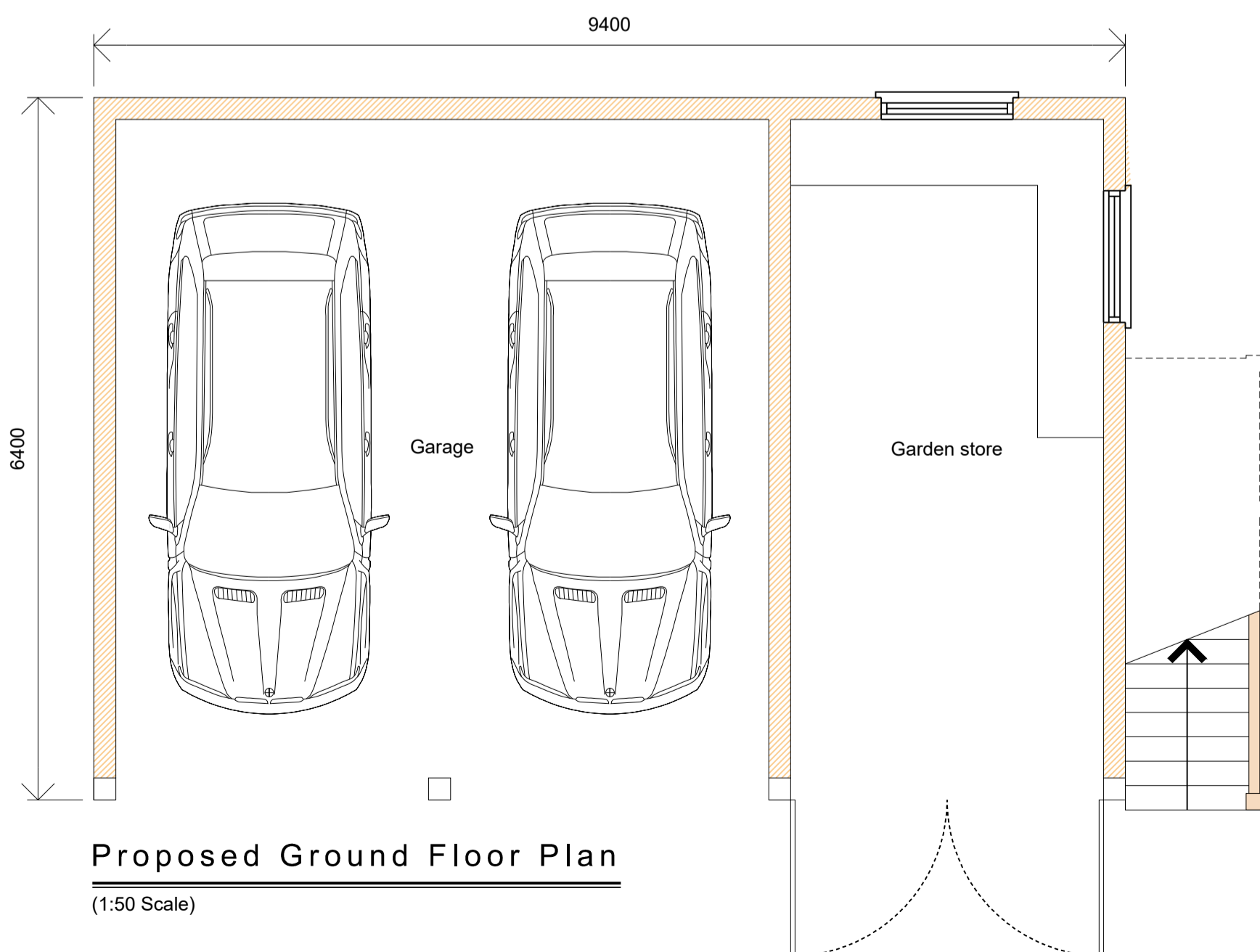
Proposed North Elevation
(1:50 Scale)



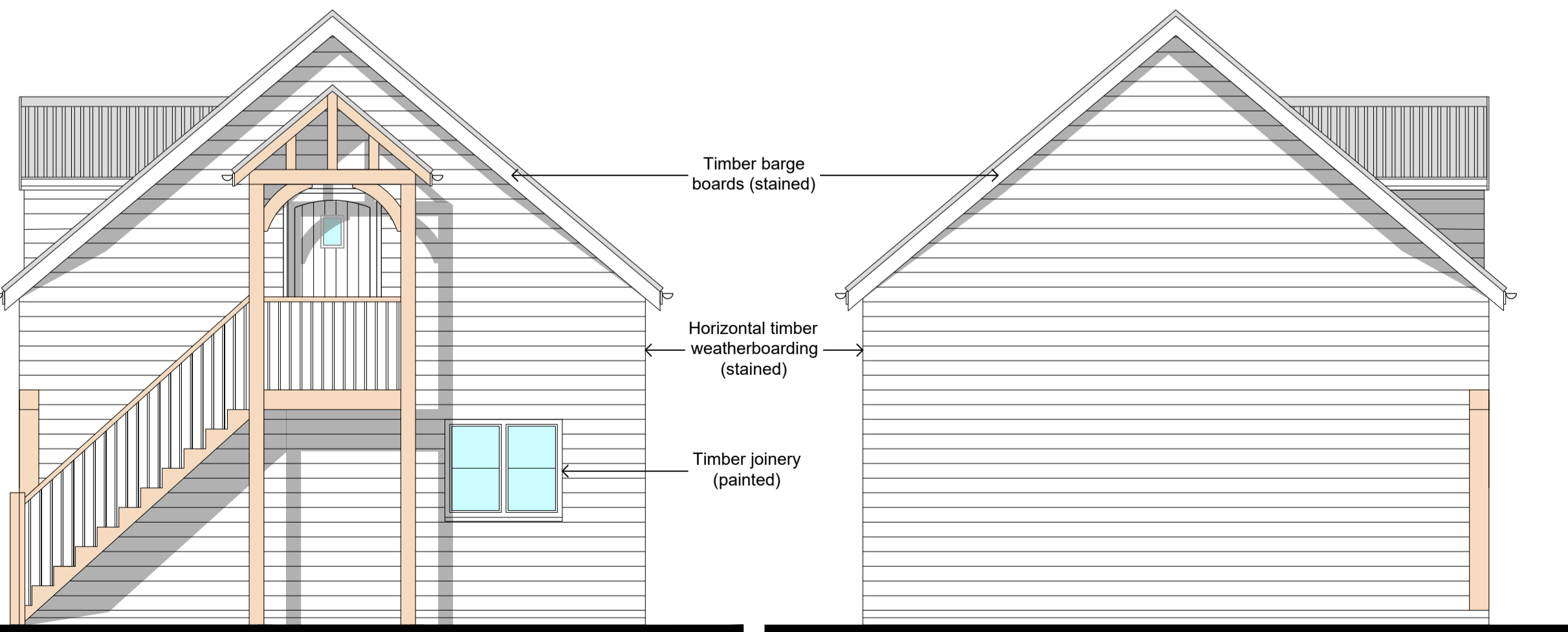
Proposed First Floor Plan
(1:50 Scale)



Proposed South Elevation
(1:50 Scale)



Proposed Ground Floor Plan
(1:50 Scale)



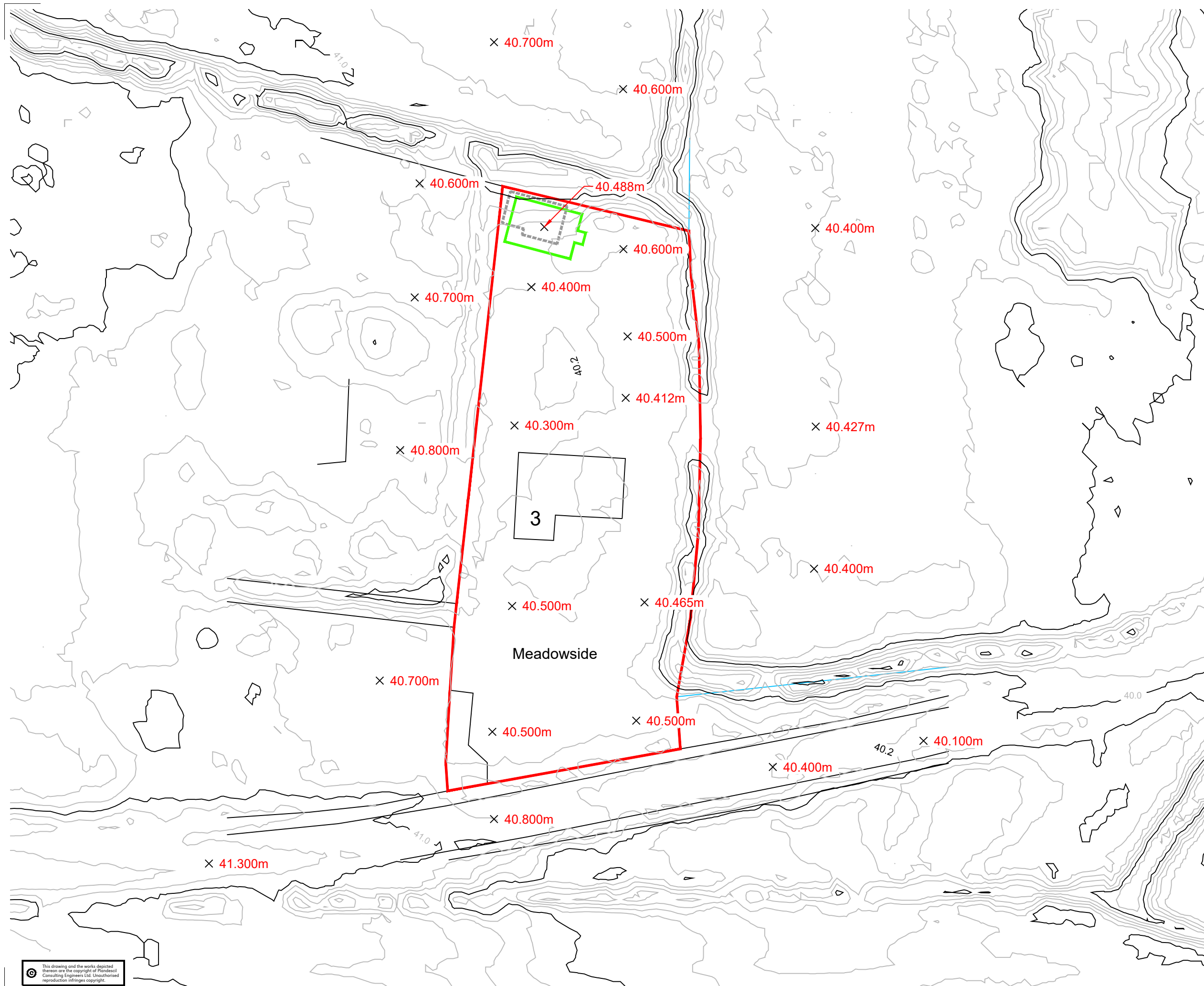
Proposed East Elevation
(1:50 Scale)

Proposed West Elevation
(1:50 Scale)

PRELIMINARY
ISSUE

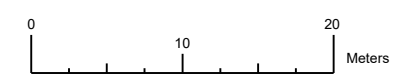
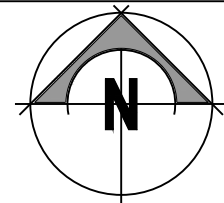
A	08-09-22	Planning Issue	DJR
Rev:	07-09-22	First Issue: PRELIMINARY	JD
	Date:	Description:	By:
ALA LTD			
ASHLEY LARGENT ASSOCIATES			
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DESIGN@ALATO.CO.UK			
01379 658606			
Client: Mr & Mrs Atha			
Project: Proposed Cart Lodge			
Meadowside, 3 Upper street,			
Oakley, Diss, IP21 4AX			
Drawing Title: PLANNING			
Proposed Floor Plans and			
Elevations			
Drawn:	Checked:		
Joshua Denmark	Dave Rogers		
Scale:	Date:		
1:50 @ A1	September 2022		
Job No:	Drawing No:	Rev:	
H056	/ 100	/ A	

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- GENERAL NOTES:**
1. All dimensions noted are in metres unless stated otherwise.
 2. All levels to be above Ordnance Survey Datum defined levels (A.O.Dm) unless noted otherwise.
 3. Do not scale from this drawing, if dimensions are not clear ask.
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 6. This drawing is to be read in conjunction with all other relevant documents relating to the project.
 7. All setting out to be coordinated by the Contractor and to be checked onsite prior to construction.
 8. This drawing is based on 1m DTM Environment Agency Geomatics Survey Data available under the Open Government Licence v3.0.

Features Key	
Site Boundary	
Existing Garage (demolished)	
Proposed Garage	
Ground Level (1m LIDAR data)	x 39.272m



FOR PLANNING

Rev	Date	Rev By	Chkd	Description
0	22/09/22	MJH		First Issue

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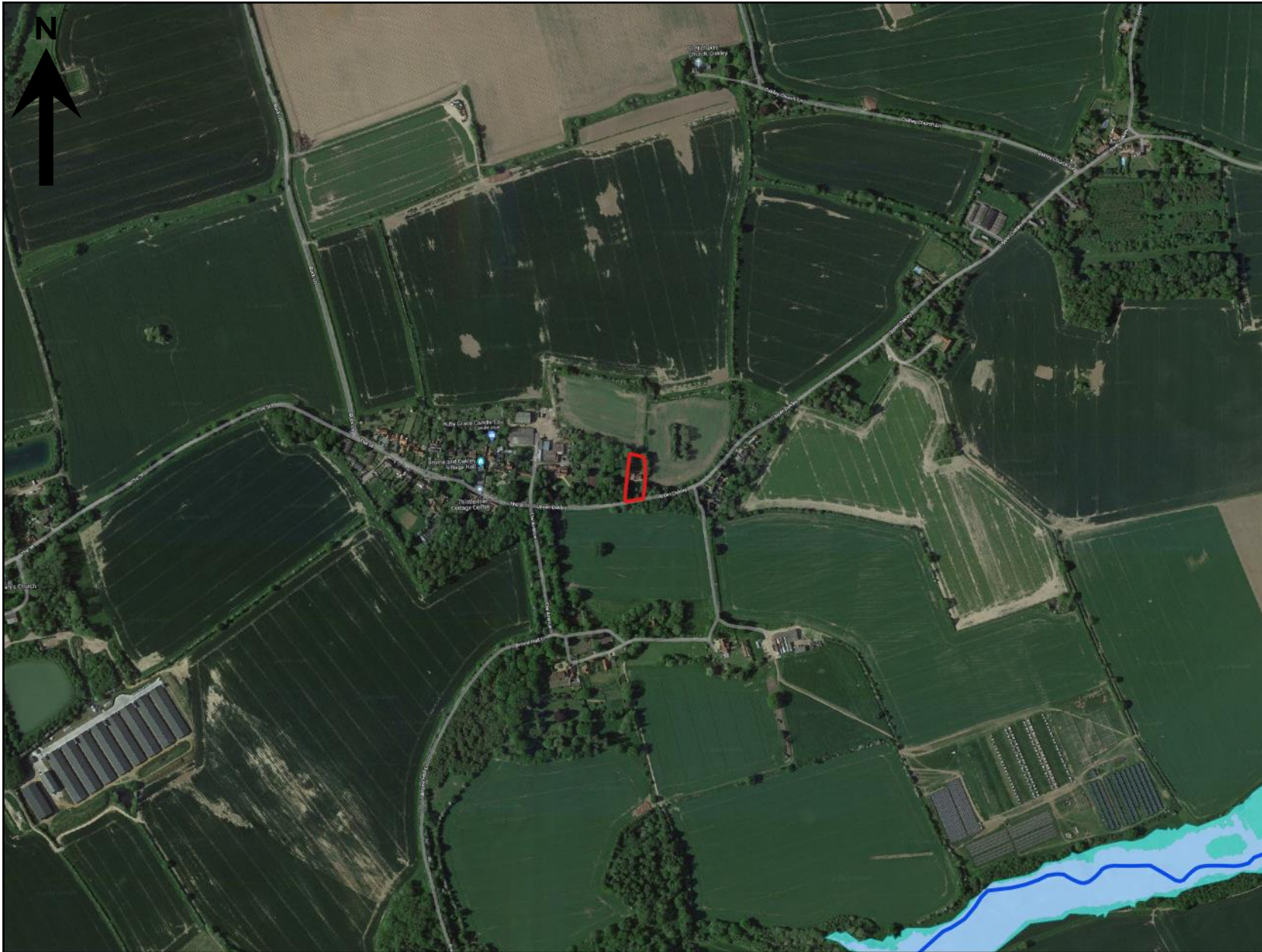
civil / structural / environmental / surveying

Client
Mr & Mrs Atha

Project
**Meadside, 3 Upper Street,
Oakley, Suffolk,
IP21 4AX**

Drawing Title
**Site Plan including
Existing Levels**

Scale	U.N.O.	Date	Drawn By
(A3) 1:500		Sept 2022	MJH
Drawing No.	28574/801	Rev	0



Legend

- Site Boundary
- Main River
- Flood Zone 1 (less than 0.1% annual probability of flooding)
- Flood Zone 2 (0.1% annual probability of flooding)
- Flood Zone 3 (1.0% annual probability of flooding)
- Areas Benefitting from Defences

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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[civil](#) / [structural](#) / [environmental](#) / [surveying](#)

Client
Mr & Mrs Atha

Project
**Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX**

Drawing Title
**Fluvial & Tidal Flooding Map –
Extent**

Scale	U.N.O.	Date	Drawn By
N.T.S	(A4)	September 2022	SVH
Drawing No.	28574/820	Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend

- Site Boundary
- Existing garage
- Proposed cart lodge
- Less than 0.1% AEP (Very Low Risk)
- Extent of 0.1% AEP (Low Risk)
- Extent of 1.0% AEP (Medium Risk)
- Extent of 3.3% AEP (High Risk)

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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Client
Mr & Mrs Atha

Project
**Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX**

Drawing Title
**Surface Water Flooding Map -
Extent 3.3%, 1.0%, & 0.1% AEP**

Scale	U.N.O.	Date	September 2022	Drawn By	SVH
Drawing No.	28574/821			Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend	
	Site Boundary
	Existing garage
	Proposed cart lodge
	Below 0.15m
	0.15 - 0.30m
	0.30 - 0.60m
	0.60 - 0.90m
	0.90 - 1.20m
	Over 1.20m

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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Client
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Project
Proposed Cart Lodge
Meadowside, 3 Upper Street
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IP21 4AX

Drawing Title
Surface Water Flooding Map -
Depths During 1.0% AEP

Scale	U.N.O.	Date	September 2022	Drawn By	SVH
Drawing No.	28574/825			Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend

- Site Boundary
- - - Existing garage
- - - Proposed cart lodge
- Less than 0.25 m/s
- 0.25 - 0.50 m/s
- 0.50 - 1.00 m/s
- 1.00 - 2.00 m/s
- Over 2.00 m/s
- Flow direction

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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Client
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Project
Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX

Drawing Title
Surface Water Flooding Map -
Velocity During 1.0% AEP

Scale	U.N.O.	Date	Drawn By
N.T.S (A4)		September 2022	SVH
Drawing No.	28574/826	Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend

	Site Boundary
	Existing garage
	Proposed cart lodge
	0.50 - 0.75
	0.75 - 1.25
	1.25 - 2.00
	>2.00

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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Client
Mr & Mrs Atha

Project
Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX

Drawing Title
Surface Water Flooding Map -
Hazard During 1.0% AEP

Scale	U.N.O.	Date	September 2022	Drawn By	SVH
Drawing No.	28574/827			Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend

- Site Boundary
- - - Existing garage
- - - Proposed cart lodge
- Below 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- Over 1.20m

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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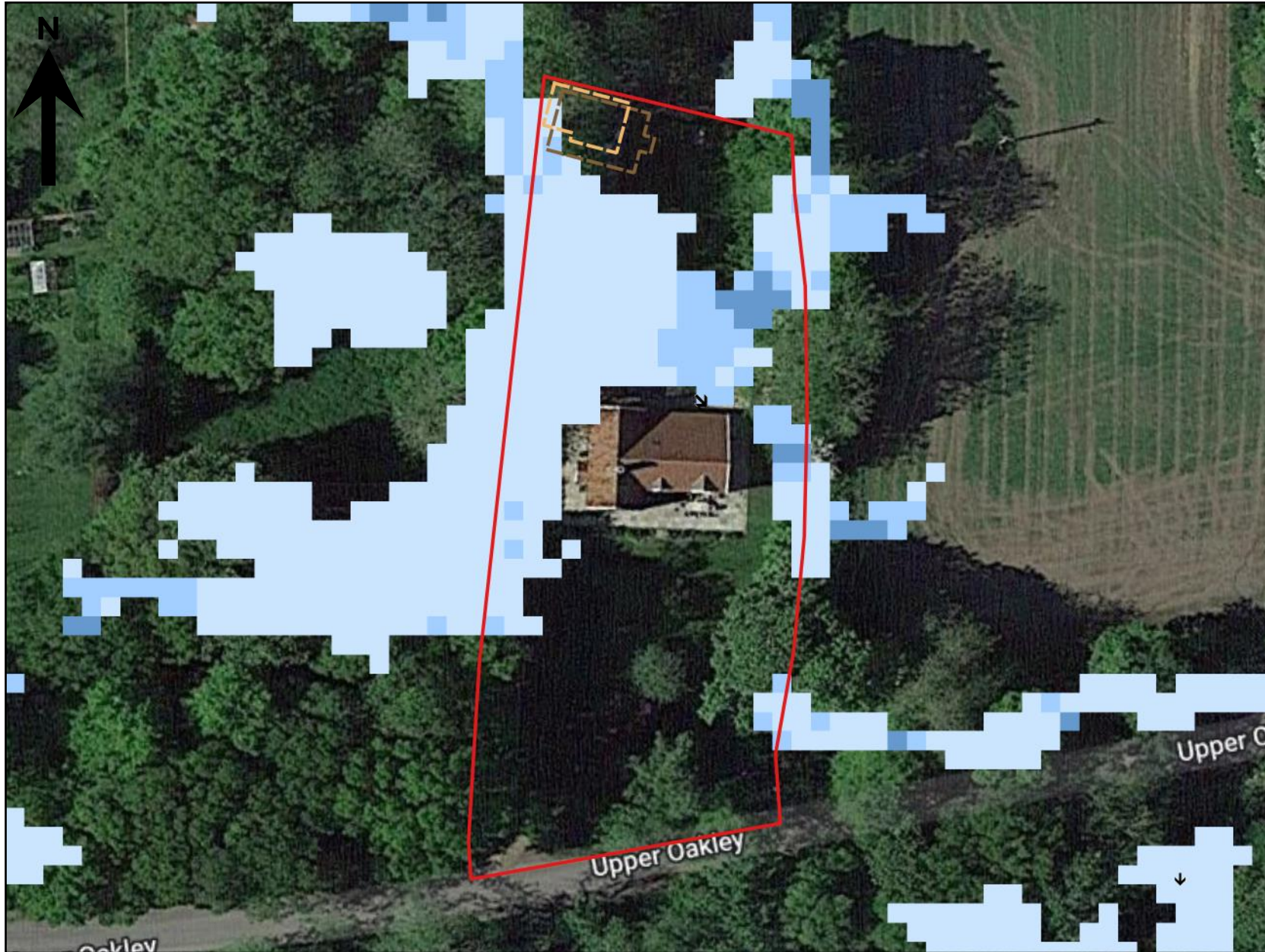
Client
Mr & Mrs Atha

Project
**Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX**

Drawing Title
**Surface Water Flooding Map -
Depths During 0.1% AEP**

Scale	U.N.O.	Date	September 2022	Drawn By	SVH
Drawing No.	28574/828			Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend

- Site Boundary
- - - Existing garage
- - - Proposed cart lodge
- Less than 0.25 m/s
- 0.25 - 0.50 m/s
- 0.50 - 1.00 m/s
- 1.00 - 2.00 m/s
- Over 2.00 m/s
- ↙ Flow direction

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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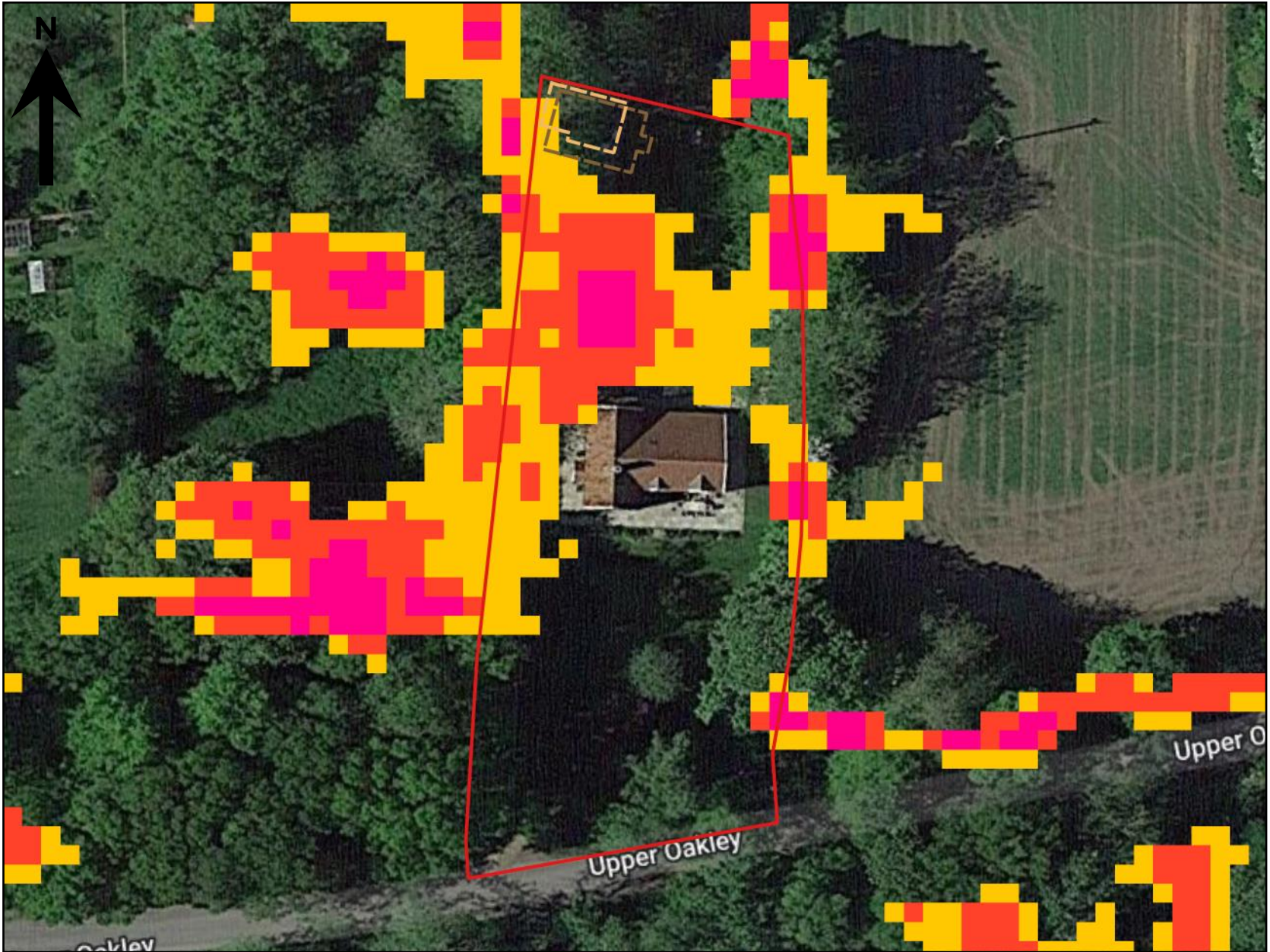
Client
Mr & Mrs Atha








Project
Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX

Drawing Title
Surface Water Flooding Map -
Velocity During 0.1% AEP

Scale	U.N.O.	Date	Drawn By
N.T.S (A4)		September 2022	SVH
Drawing No.			Rev
28574/829			0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset. (Contains public sector information licensed under the Open Government Licence v3.0.)



Legend	
	Site Boundary
	Existing garage
	Proposed cart lodge
	0.50 - 0.75
	0.75 - 1.25
	1.25 - 2.00
	>2.00

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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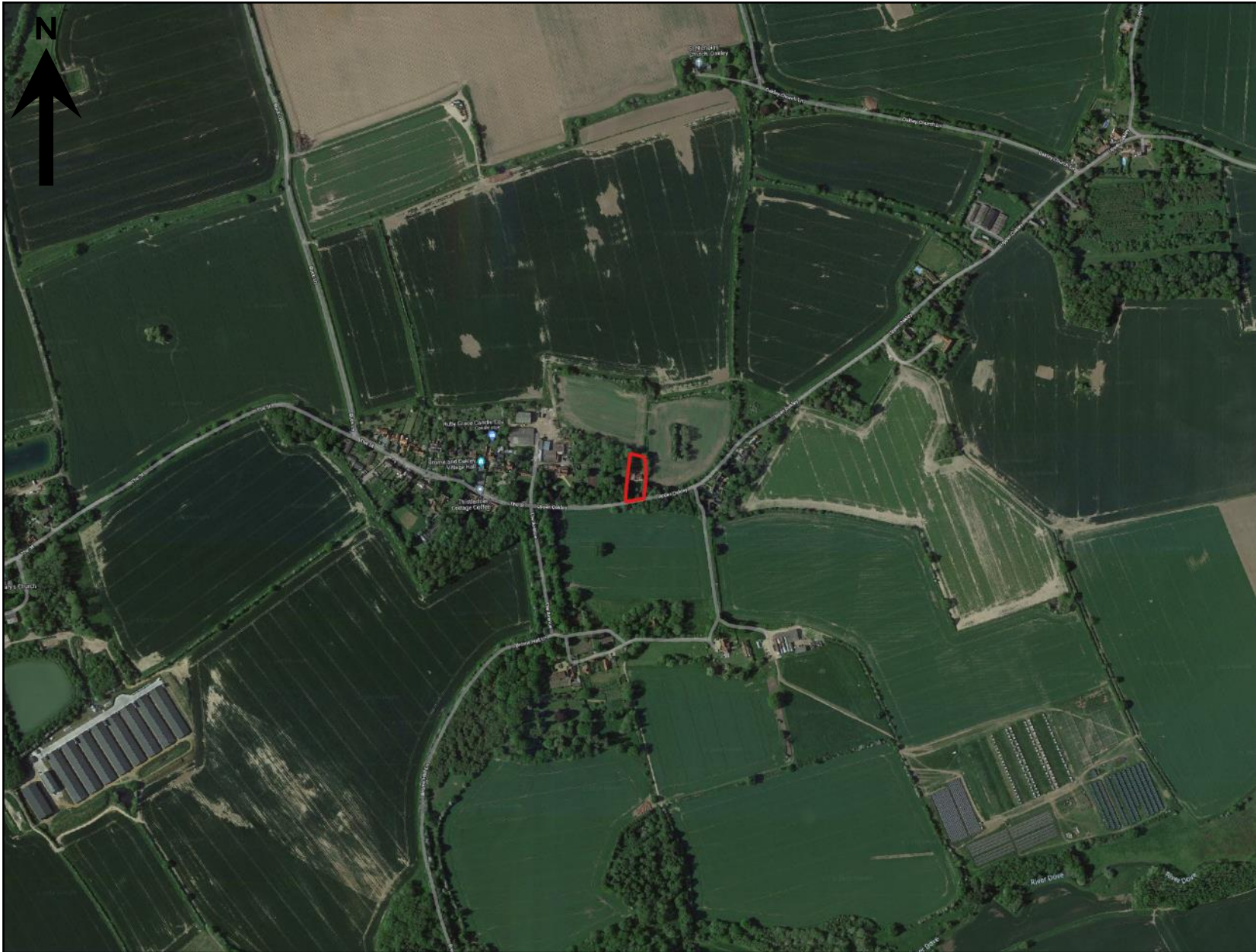
Client
Mr & Mrs Atha

Project
Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX

Drawing Title
Surface Water Flooding Map -
Hazard During 0.1% AEP

Scale	U.N.O.	Date	September 2022	Drawn By	SVH
Drawing No.	28574/830			Rev	0

Source: Google Maps and Data.gov.uk, based upon the Environment Agency's Flood Map for Planning dataset.
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Legend

- Site Boundary
- Dry Day Flood Extent
- Wet Day Flood Extent
- Fluvial Contribution Flood Extent

Rev	Date	Rev By	Chkd	Description
0	22.09.22	-	MJH	First Issue

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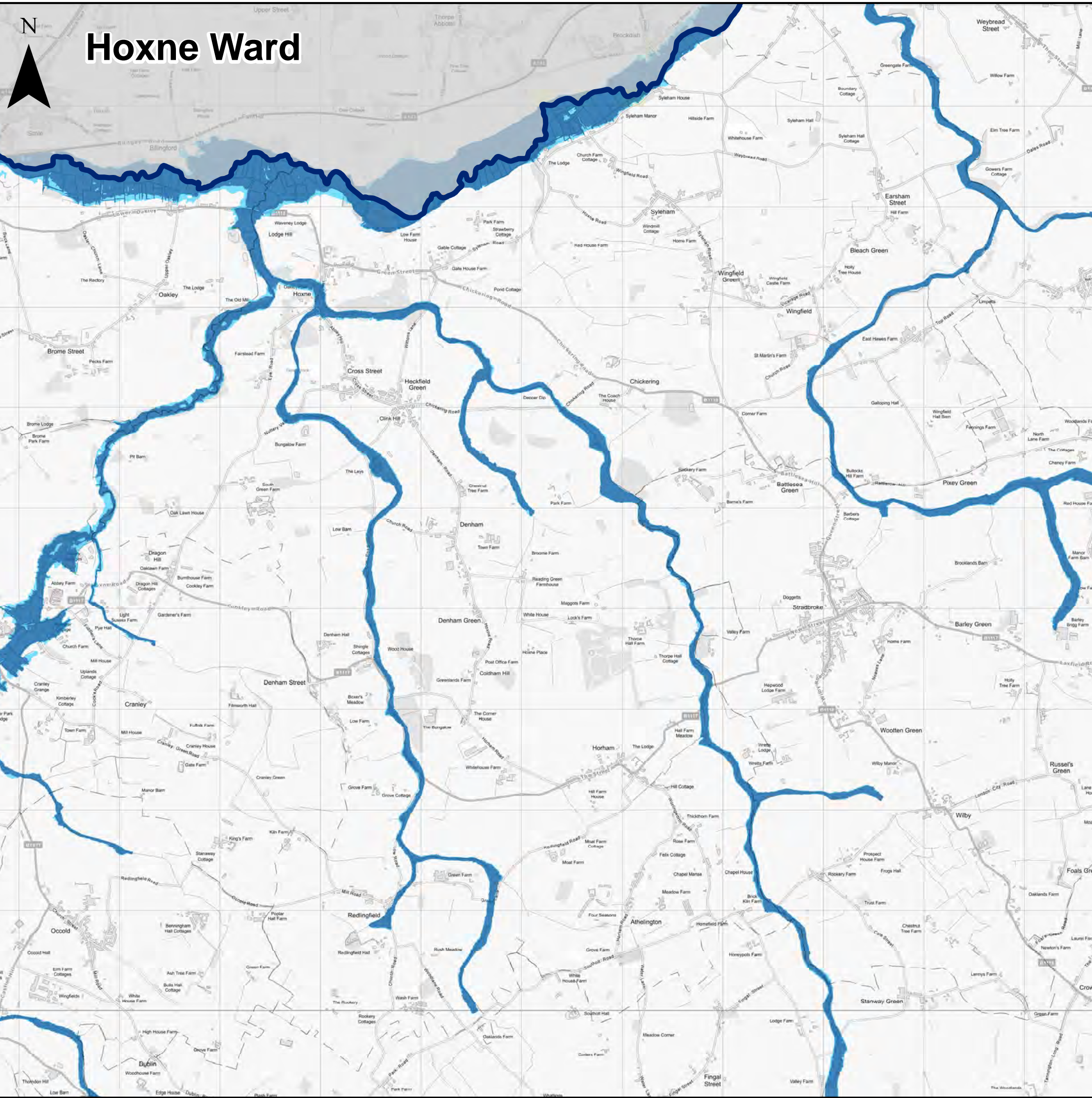
Project
**Proposed Cart Lodge
Meadowside, 3 Upper Street
Oakley, Suffolk
IP21 4AX**

Drawing Title
Reservoir Flood Extent

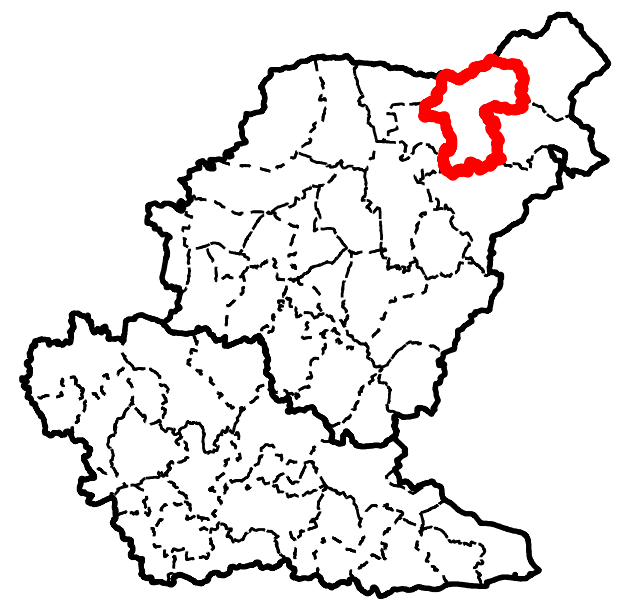
Scale	U.N.O.	Date	Drawn By
N.T.S	(A4)	September 2022	SVH
Drawing No.	28574/831	Rev	0

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APPENDIX A



Hoxne Ward



Legend

-  Babergh District
-  Mid Suffolk District
-  Ward Boundary
-  Areas Benefiting from Flood Defences
-  Flood Zone 3a
-  Flood Zone 2

Flood Zone 2 comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (0.1%-1%) or between 1 in 200 and 1 in 1000 annual probability of sea flooding (0.1%-0.5%) in any year.

Flood Zone 3a comprises land assessed as having a greater than 1 in 100 annual probability of river flooding (>1.0%) or a greater than 1 in 200 annual probability of flooding from the sea (>0.5%) in any year.

The areas benefiting from defences shows those areas that benefit from the presence of defences in a 1 in 100 (1%) chance of flooding each year from rivers; or 1 in 200 (0.5 %) chance of flooding each year from the sea.

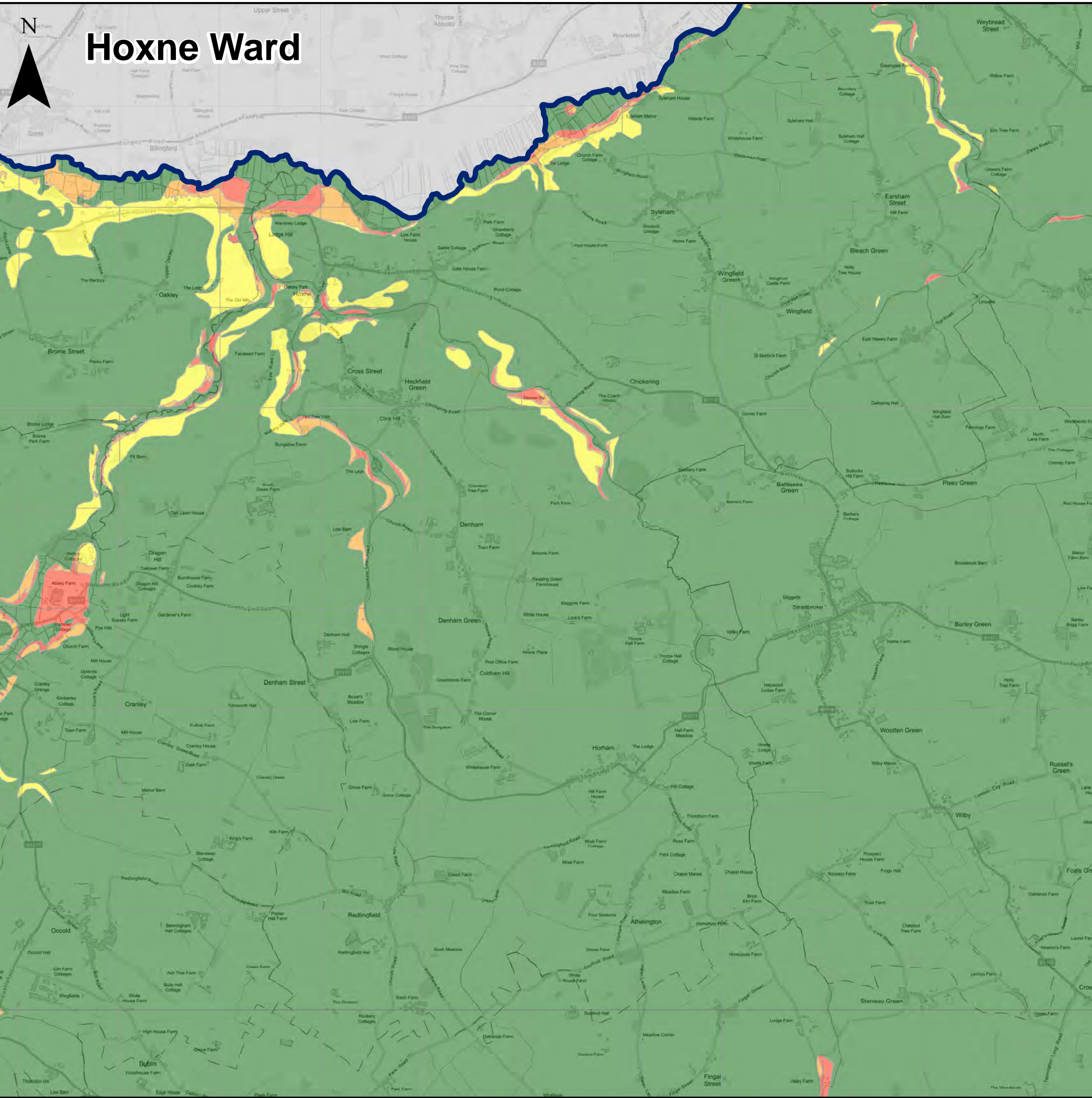


Appendix B - EA Flood Zones

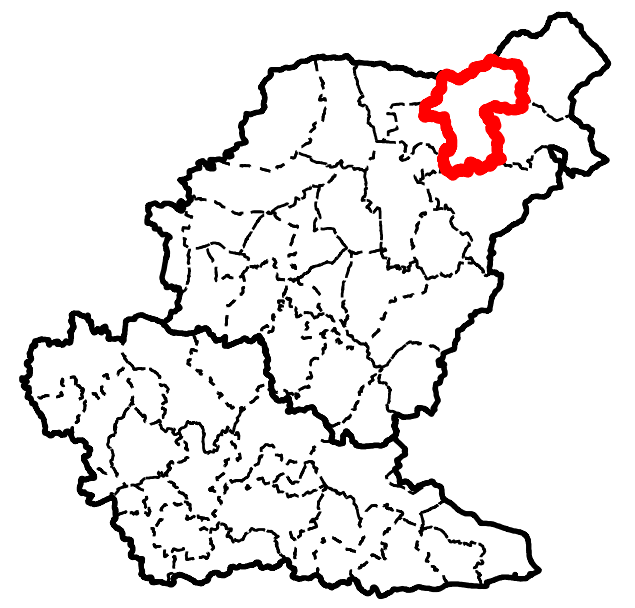
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Hoxne Ward



Legend

-  Babergh District
-  Mid Suffolk District
-  Ward Boundary
-  This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits
-  Flooding from groundwater is not likely
-  There is a risk of flooding to subsurface assets but surface manifestation of groundwater is unlikely
-  Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally
-  Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots

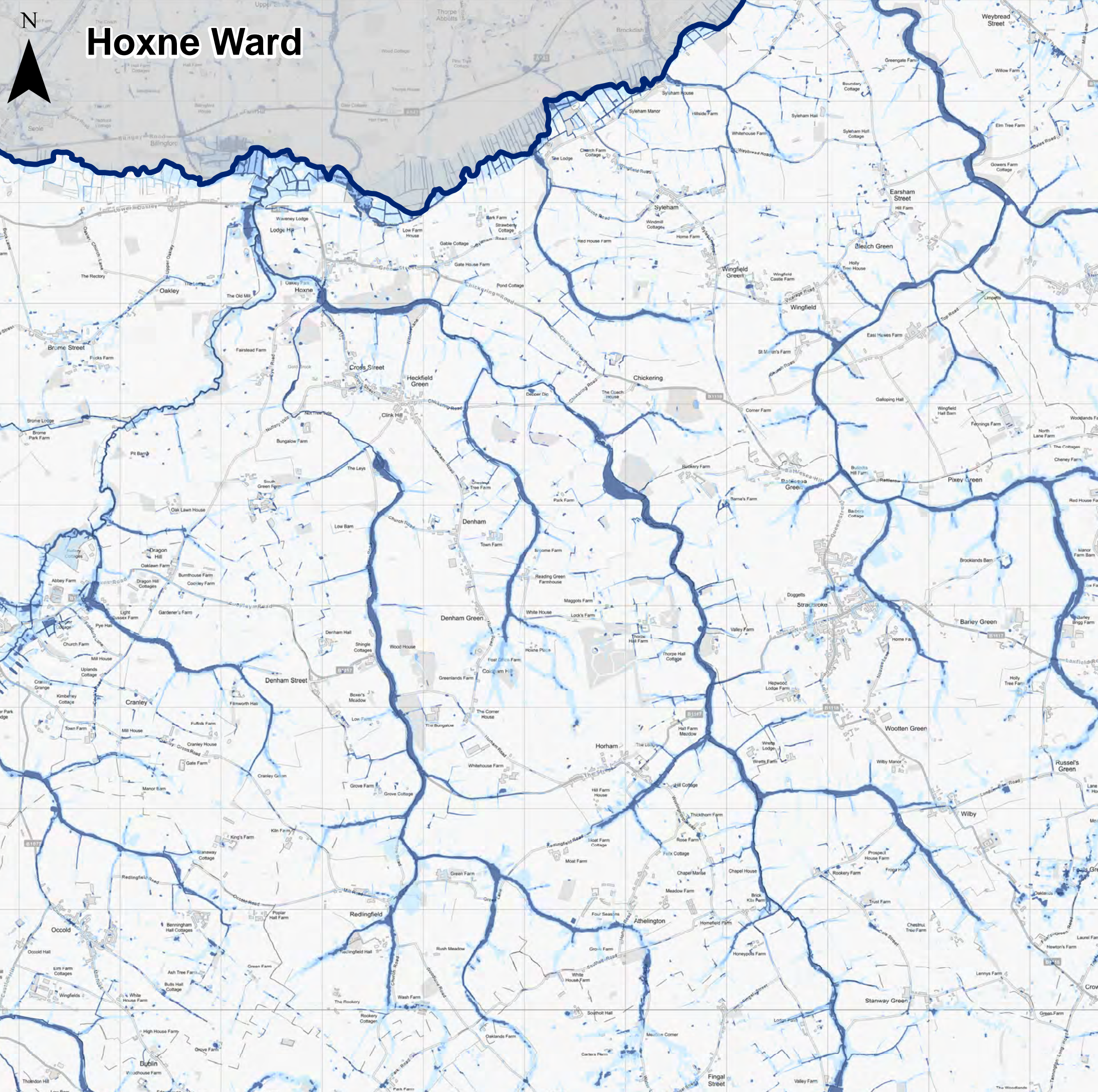


Appendix G - JBA Groundwater Map

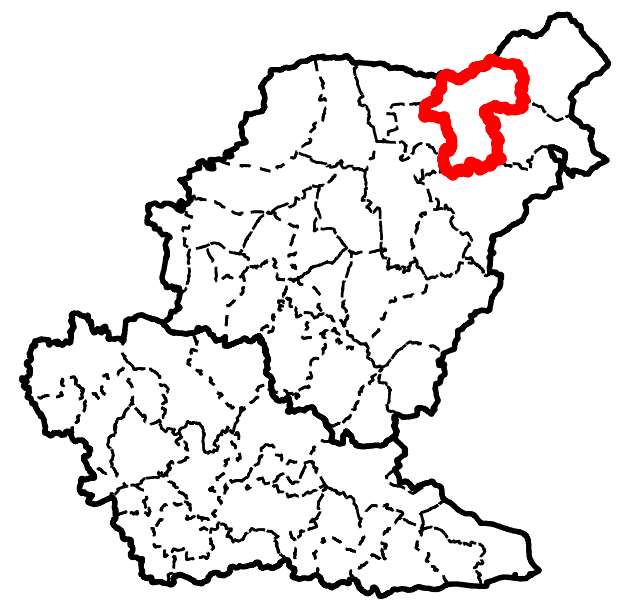
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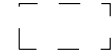


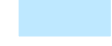




Hoxne Ward



Legend

-  Babergh District
-  Mid Suffolk District
-  Ward Boundary
-  ROFSW 30yr
-  RoFSW 100yr
-  ROFSW 1000yr

The Risk of Flooding from Surface Water Map (RoFSW) shows the flooding that takes place from the surface runoff generated by rainwater (including snow and other precipitation) which:

- a) is on the surface of the ground (whether or not it is moving), and
- b) has not yet entered a watercourse, drainage system or public sewer.

The RoFSW map will pick out natural drainage channels, rivers, low areas in the floodplain and flow paths between buildings but it will only indicate flooding caused by local rainfall.

Note: The RoFSW map shows predictions of flooded areas but does not show whether individual properties will be affected by surface water flooding or have been affected in the past. The RoFSW map should not be used to predict if individual properties will flood.



Appendix A - RoFSW

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civil engineering and building



- Industrial, Commercial, Agricultural and Domestic building design
- Foundation Design and ground improvements
- Highway Engineering including PDS/Civil 3D
- Retaining walls
- Sheet Piling
- Infrastructure planning and design
- Design of sustainable drainage system (SUDS)
- Soakaway design
- Architectural design of industrial buildings
- Planning and building regulation applications
- 3D conceptual models
- Renewable Energy Civil Engineering design and project management
- Anaerobic Digestion and Waste to Energy Project design and detail

environmental engineering



- Contaminated Land investigations (intrusive & non-intrusive)
- Land remediation verification
- Environmental impact assessments (EIA)
- Flood Risk Assessments
- Water supply, treatment, storage and distribution
- Foul and surface water & effluent/leachate drainage design
- Drainage network modelling
- 1D & 2D flood modelling
- Hydraulic river modelling
- Flood Alleviation
- Breach & overtopping analysis
- Reservoir flood inundation modelling
- Consent to discharge applications
- Landscaping design
- Tree surveys
- Environmental Permits

structural engineering



- Structural calculations for Commercial, Agricultural and Domestic building design
- Structural design using steel, stainless & carbon steel, concrete, timber, alloys and masonry
- Maritime and Hydraulic structures
- Structural surveys and structural suitability surveys
- Structural failure studies
- Subsidence claims
- Temporary works design
- 3D Finite Element Analysis
- Structural monitoring
- Structural enhancement/remedial work
- Historic building advice
- 3D Revit & Level 2 BIM structural design & modelling

surveying land and buildings



- Geomatic / topographical site surveys
- Building, Road, and Earthworks Setting out
- Engineering Setting out
- Establish precise site survey control
- 3D digital terrain modelling
- Volumetric analysis
- Site area computations
- Flood risk surveys using GPS active network
- Measured building floor plans and elevation surveys
- Land transfer plans to Land Registry requirements
- Drainage network surveys
- Assistance/Expert witness in land boundary disputes
- Deterioration monitoring
- Preparation of asset plans
- As built record surveys

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