

**FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
PLASH DROVE, WISBECH ST MARY**

FINAL REPORT

ECL0391-3/SWANN EDWARDS ARCHITECTURE

DATE FEBRUARY 2024

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CONTENTS

1.0 INTRODUCTION

2.0 SITE LOCATION AND DESCRIPTION

- 2.1 Site Location
- 2.2 Existing Site
- 2.3 Proposed Development
- 2.4 Local Development Documents
- 2.5 Available Flood Risk Information

3.0 FLOOD RISK VULNERABILITY

- 3.1 The Sequential and Exception Test
- 3.2 Vulnerability Classification
- 3.3 Application of the Sequential Test and Exception Test

4.0 SITE SPECIFIC FLOOD RISK

- 4.1 Local Flood Assets
- 4.2 Sources of Flooding
- 4.3 Probability of Flooding
- 4.4 Historic Flooding
- 4.5 Climate Change
- 4.6 Residual Risk

5.0 FLOOD RISK MITIGATION

- 5.1 Summary of Risks
- 5.2 Mitigation Measures

6.0 CONCLUSIONS

ATTACHMENT 1 – Location, Site, Floor Plans and Elevations (Dwg SE-2046 SS1000C)

DISCLAIMER

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1.0 INTRODUCTION

This Flood Risk Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and supporting planning practice guidance (PPG) on Flood Risk and Coastal Change.

In areas at risk of flooding or for sites of 1 hectare or more, developers are required to undertake a site-specific Flood Risk Assessment to accompany an application for planning permission. This Flood Risk Assessment has been produced on behalf of Sims Contract Furniture Ltd in respect of a development that consists of one residential dwelling at Plash Drove, Wisbech St Mary.

A planning application for the proposed development is to be submitted by Swann Edwards Architecture.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is on Plash Drive, Wisbech St Mary, Cambridgeshire, PE13 4SP. The National Grid Reference of the site is 53899/30542.

The location of the site is shown on Figure 1.

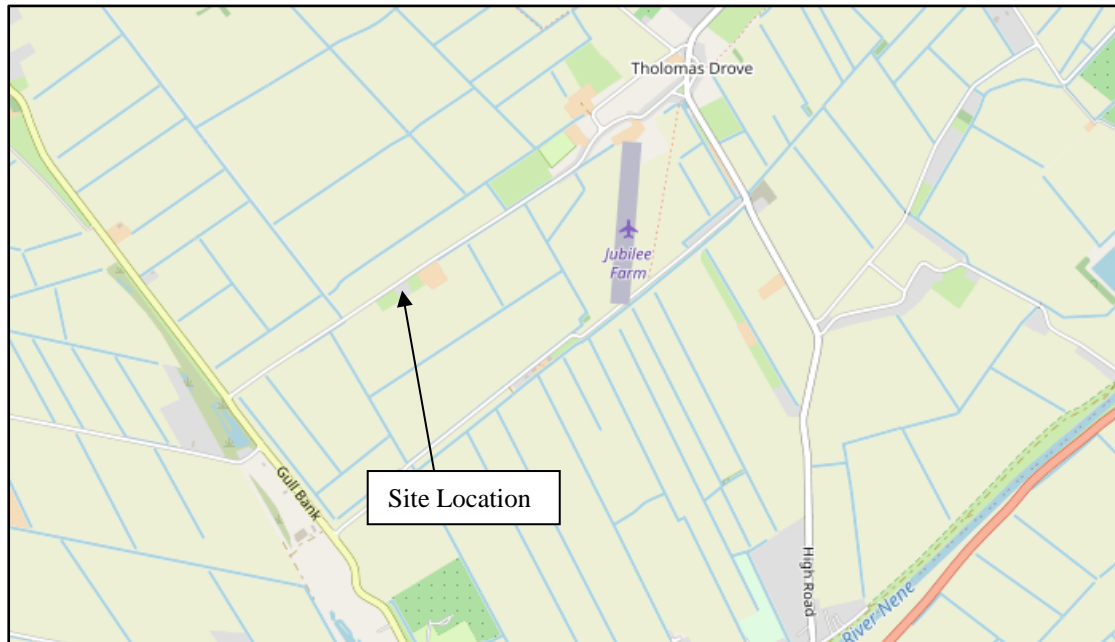


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the south eastern side of Plash Drive. The site is to the west of the existing development that consists of workshop, woodstore, and an office/display room. The area of the proposed development is 0.12 hectares.

Environment Agency LiDAR shows that Plash Drive at the entrance to the site is at a level of +1.9m OD. The central area of the site is between +1.0m OD and +1.5m OD and the agricultural land to the south of the site is at +0.7m OD.

The site is in the North Level Internal Drainage Board's (IDB) district. Surface water at the site would naturally drain through soakaway and hence to the riparian drainage network and then to the Board's main drain system. The nearest Board Drain is the Murrow Main Drain approximately 250m south west of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by West Walton Formation and Ampthill Clay Formation mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

2.3 Proposed Development

The proposed development consists of residential dwelling. The dwelling will be two storey. A site plan is provided in Attachment 1.

2.4 Local Development Documents

The Fenland Local Development Plan is the adopted Local Plan for the district. Policy LP14 for Responding to Climate Change and Managing the Risk of Flooding in Fenland states the requirements for flood risk reduction.

The Fenland Level 1 Strategic Flood Risk Assessment (SFRA) was prepared in June 2022. A Level 2 SFRA was prepared for Wisbech in 2012.

The Cambridgeshire Flood and Water Supplementary Planning Document has been prepared by Cambridgeshire County Council (as the Lead Local Flood Authority) in conjunction with the other Cambridgeshire local planning authorities and other relevant stakeholders to support the implementation of flood risk and water related policies.

2.5 Available Flood Risk Information

An extract from the Environment Agency Flood Map for Planning is shown in Figure 2. The site is located within Flood Zone 3, an area with a high probability of flooding.

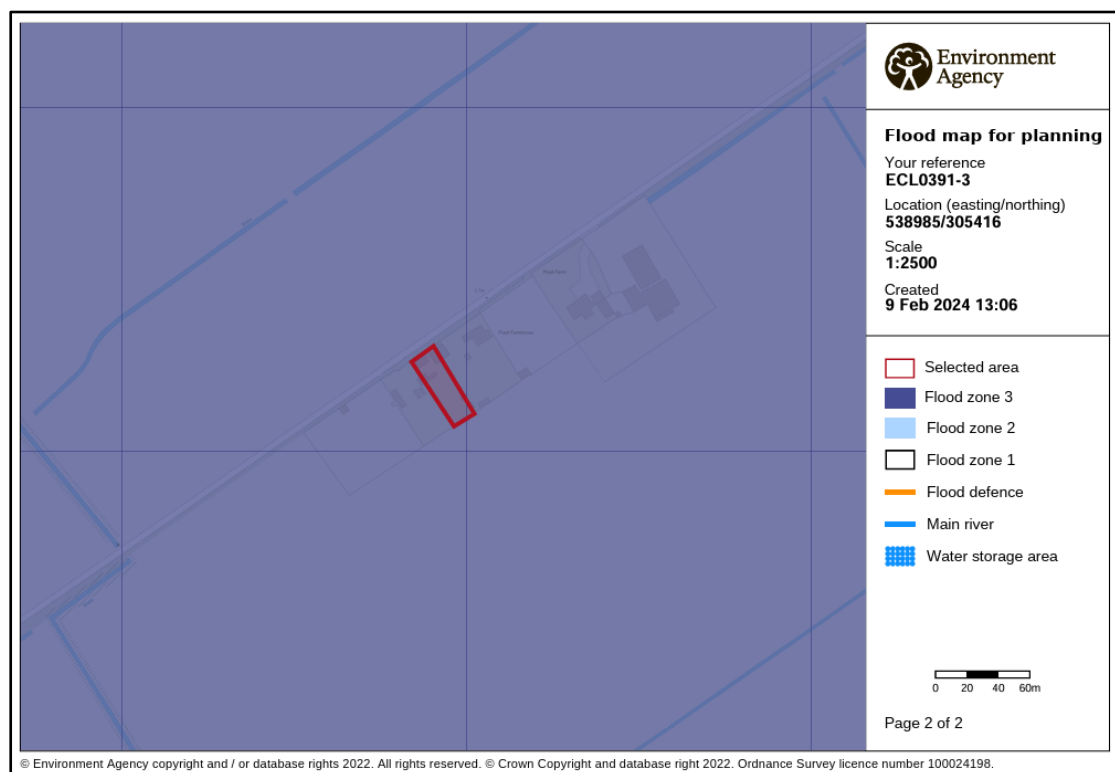


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site is within an area with a medium risk of flooding from rivers or the sea (annual probability between 1% and 3.3%);
- the site has a very low risk of surface water flooding (annual probability less than 0.1%); and
- the land to the south west of the site is at risk of reservoir flooding however the site is not at risk of reservoir flooding.

A request was made to the Environment Agency for Flood Risk Assessment Data. This has been used to assess the residual risk to the site.

3.0 FLOOD RISK VULNERABILITY

3.1 The Sequential and Exception Test

The NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding.

The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

3.2 Vulnerability Classification

Table 2 of the PPG Flood Risk and Coastal Change categorises different types of uses and development according to their vulnerability to flood risk. The proposed development is covered by the description of buildings used for dwellings and is classified as 'More Vulnerable'.

Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'. The site is in Flood Zone 3 and the development is 'More Vulnerable' therefore it is necessary to complete the Exception Test.

PPG Flood Risk and Coastal Change defines that the lifetime of the development in terms of flood risk and coastal change is 100 years.

3.3 Application of the Sequential Test

It is for the Local Planning Authority, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

Large parts of Fenland District in the area around the River Nene lie in Flood Zone 3. As such there are limited opportunities to undertake the development at an alternative site with a lower flood risk. The site is protected by the River Nene tidal defences which were not considered during the preparation of the Environment Agency Flood Maps.

The proposed dwelling is to be tied to the business based at the site. The need for a dwelling on site reflects the recent expansion of the business and also the requirement for a security presence to be on site. The development is considered to pass the Sequential Test.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

The Fenland Local Plan defines the housing distribution for new dwellings across the District. Within the district there is a target of 11,000 new dwellings over the period from 2011 to 2031. The proposed development will contribute to this target and support the rural economy.

Section 5 of this Flood Risk Assessment describes the flood mitigation measures and the management of the residual risks, demonstrating that this development will be safe and not increase flood risk elsewhere. The development is considered to pass the Exception Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is approximately 2.0km north west of the River Nene tidal defences at Guyhirn. The tidal defence at that location consists of a flood embankment at a level of +6.30m OD. This defence is the responsibility of the Environment Agency.

There is a long-term strategy for the maintenance of the Environment Agency defences which is reviewed and updated periodically.

The site is in the North Level Internal Drainage Board's (IDB) district with the nearest Board Drain located 250m south west of the site. The extensive local drainage network drains by gravity in a northerly direction to the North Level Main Drain approximately 4.5km north of the site. The North Level Main Drain discharges into the tidal River Nene at the Tydd Pumping Station.

During the operation and maintenance of its pumping stations, associated structures, and channel systems, the IDB seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Board's assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the North Level IDB and the Environment Agency's defences are generally good.

4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 1.

Source of Flooding	Level of Risk
Drainage Network Flooding	The risk is assessed in Section 4.3.
Surface Water Flooding	Based upon the EA maps the risk is very low.
Fluvial Flooding	The risk is assessed in Section 4.3 and Section 4.5.
Tidal Flooding	The risk is assessed in Section 4.3 and Section 4.5.
Reservoir Flooding	The residual risk associated with a breach of defences is considered in Section 4.6.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 1 – Sources of Flooding

4.3 Probability of Flooding

The probability of flooding associated with blockages within the IDB drainage system is low due to the maintenance standards already achieved and managed by the IDB. Failure of Tydd Pumping Station could lead to an increased level of risk within the IDB catchment.

Through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 years and 1 in 100 years, respectively. The risk associated with flood events that exceed the standard of protection provided is lowered due to the North Level IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The River Nene tidal defences provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event and the 0.5% annual probability (1 in 200 chance each year) tidal event.

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded. The site did not flood during the major tidal surge events of February 1978 and December 2013. The more recent tidal surge of 5 December 2013 reached a level of +6.10m OD at Wisbech Town Bridge.

4.5 Climate Change

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network and flood levels in the River Nene.

The River Nene tidal defences provide protection during the 0.5% annual probability (1 in 200 chance each year) event inclusive of the effects of climate change.

The Cradge Bank between the tidal River Nene and the Whittlesey Washes is at a level of +4.5m OD. Water levels in the tidal River Nene above +4.5m OD will be discharged into the Whittlesey Washes. Consequently, the tide level in the River Nene is highly unlikely to exceed the defence level of +6.3m OD.

In summary the existing systems and defences are appropriate for the design life of the development (i.e. 100 years).

4.6 Residual Risk

There is a residual risk to the land north of the River Nene should there be a breach of the tidal defences. The Environment Agency Flood Hazard Mapping considers multiple breaches to the tidal defences during the 0.5% annual probability (1 in 200 chance each year) event in 2115. An extract from the map is shown in Figure 3. The proposed dwellings will be in an area with a maximum depth between 0.0m and 0.25m.

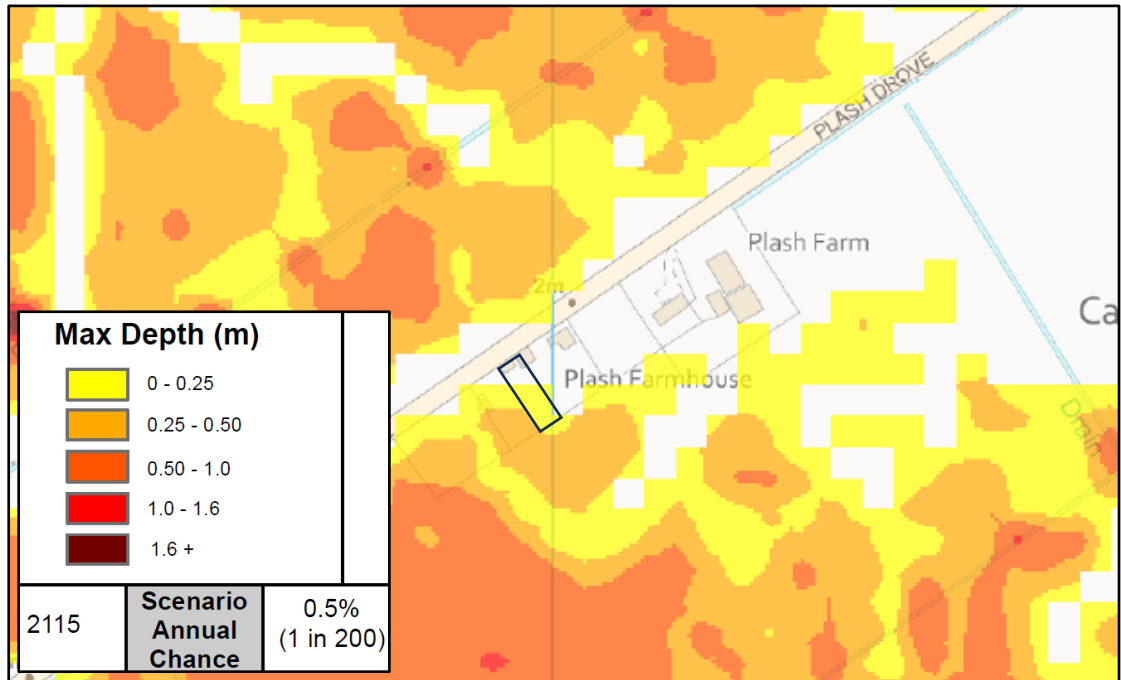


Figure 3 – Breach Depth Mapping 0.5% annual probability (1 in 200) – 2115

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low due to the standard provided by the IDB. Failure of the Tydd Pumping Station could increase the level of risk at the site.

The probability of the site flooding from any Environment Agency system is less than 0.5% annual probability (1 in 200 chance each year) because of the standards of the existing flood defence systems. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development the site is not at risk during the 0.5% annual probability (1 in 200 chance each year) event. In the event of a tidal breach the flood depth at the site is estimated to be up to 0.25m.

The proposed arrangement increases the impermeable area and there is an increased volume of surface water that has the potential to increase flood risk.

5.2 Mitigation Measures

Based upon the information available during the preparation of this Flood Risk Assessment it is recommended that the floor level of the dwellings should be 0.3m above surrounding ground level. There should be 0.3m of flood resilient construction above finished floor level.

The risk of flooding is lowered as the proposed dwelling has 2 storeys with all sleeping accommodation on the first floor.

The developer should ensure that the eventual occupiers of the dwellings are sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency operates a flood warning system for properties at risk of flooding to enable householders to protect life or take actions to manage the effect of flooding on property. Floodline Warnings Service is a national system run by the Environment Agency for broadcasting flooding warnings. The occupiers of the dwellings should register to receive flood warnings.

During an extreme event it is anticipated that sufficient time would be available to take precautionary actions to limit the potential impact of flooding. In the event of a flood, safe egress from the site would be to the north on Murrow Bank to Parson Drove in Flood Zone 1.

Failure of Tydd Pumping Station may occur due to long term mechanical breakdown or power supply being disrupted. However, in these circumstances, if conditions were such to put properties and land at risk of flooding, the IDB would take emergency action to maintain the drainage level of service by using temporary pumping equipment.

It is recommended that surface water run-off is managed so that stormwater from the site will not affect any adjoining properties or increase the flood risk elsewhere.

6.0 CONCLUSIONS

As a result of the assessment, the following conclusions have been reached.

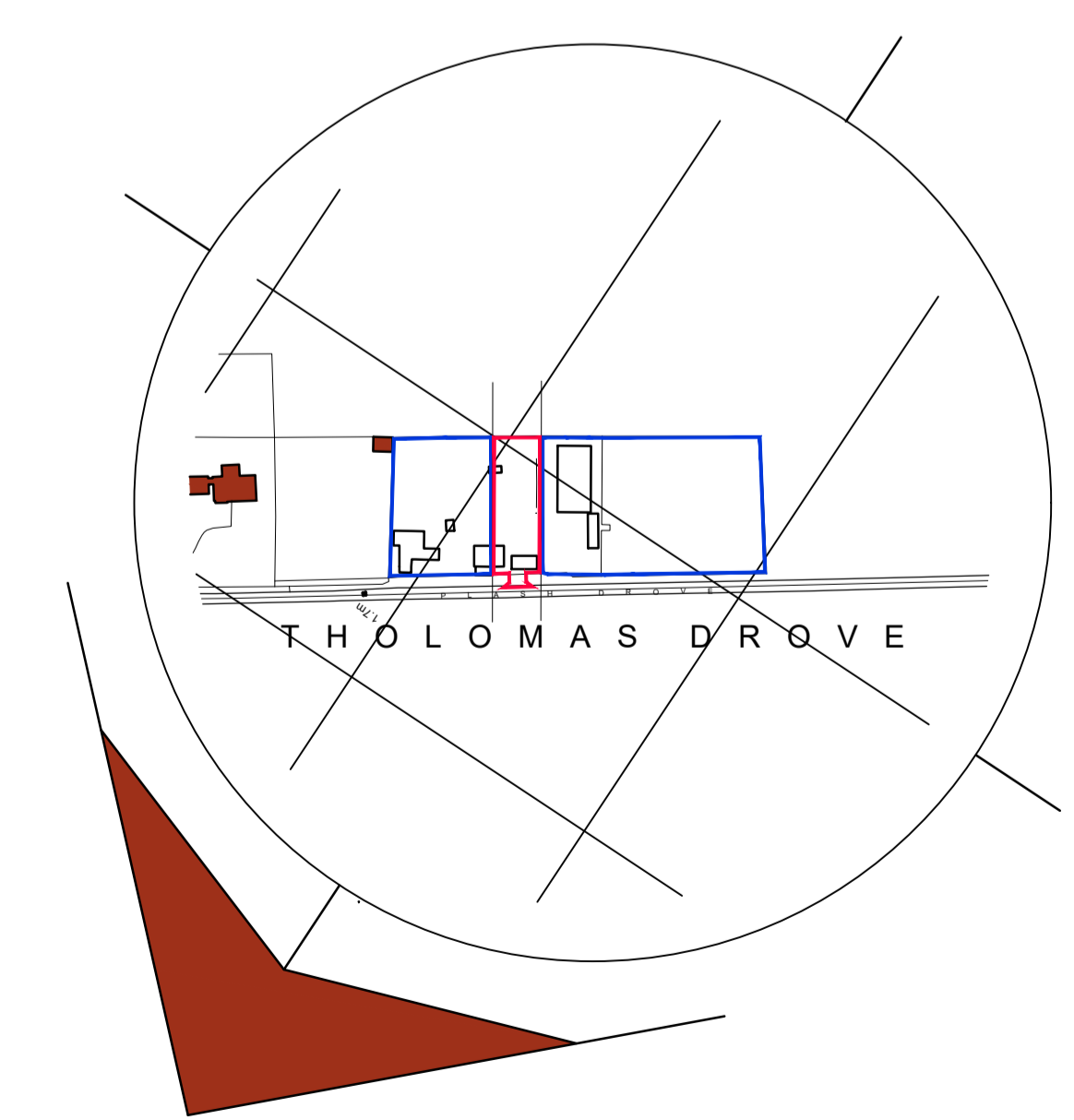
- The proposed development consists of one 2 storey dwelling at Plash Drove, Wisbech St Mary.
- The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years, respectively.
- The proposed development is in Flood Zone 3 and benefits from defences on the tidal River Nene that provide protection during the 0.5% annual probability (1 in 200 chance each year) event including climate change.
- In the event of breach the site is at risk with depths between 0.0m and 0.25m.
- It is recommended that the finished floor level of the dwellings is 0.3m above ground level and there is 0.3m of flood resilient construction above finished floor level.
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

**LOCATION PLAN, FLOOR PLANS AND ELEVATIONS
(Dwg SE-2046 SS1000C)**



Site Plan
Scale: 1:200



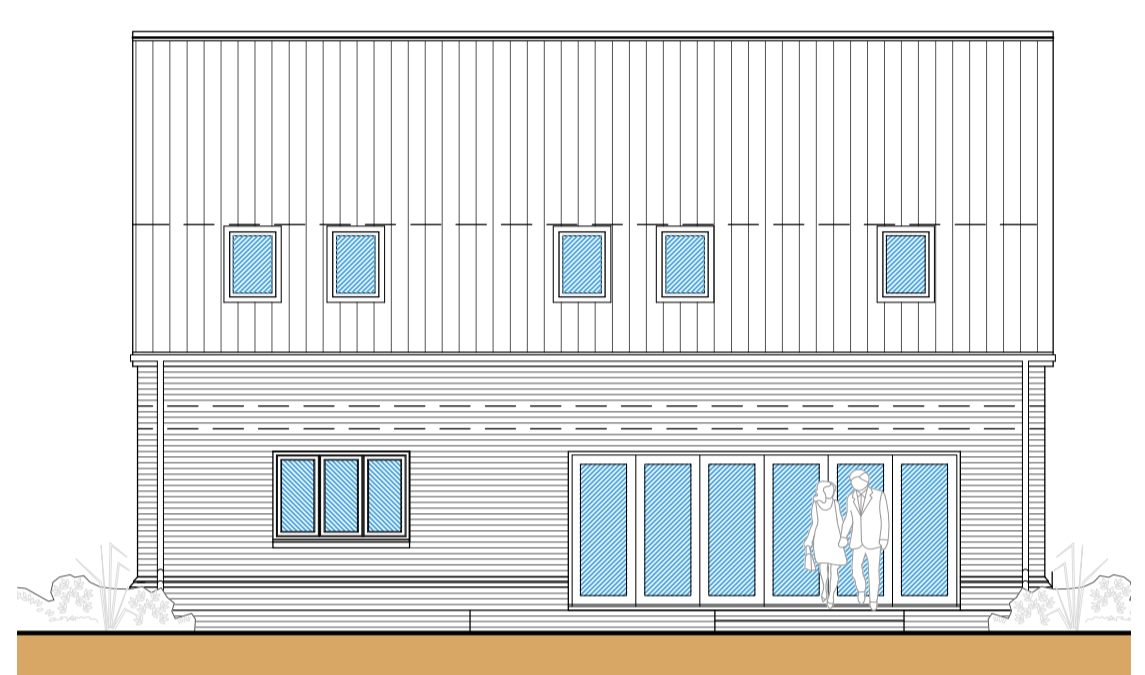
Location Plan
Scale: 1:2500

SITE PLAN KEY

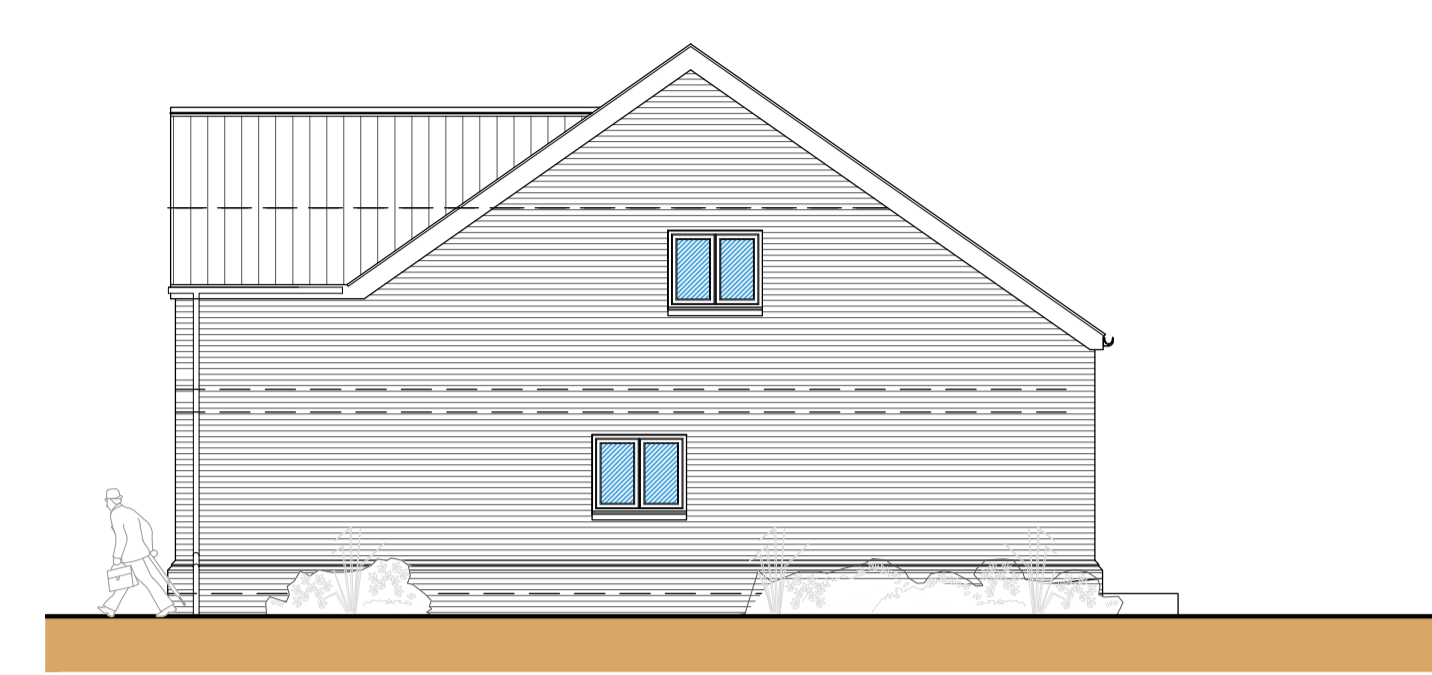
- Indicates proposed dwelling
- Indicates trees and hedges surveyed
- Indicates existing hedges
- Indicates grass
- Indicates to be removed
- Indicates neighboring properties (from ordinance survey location plan)
- Indicates drive and parking
- Indicates proposed access to Cambs CC highways specification



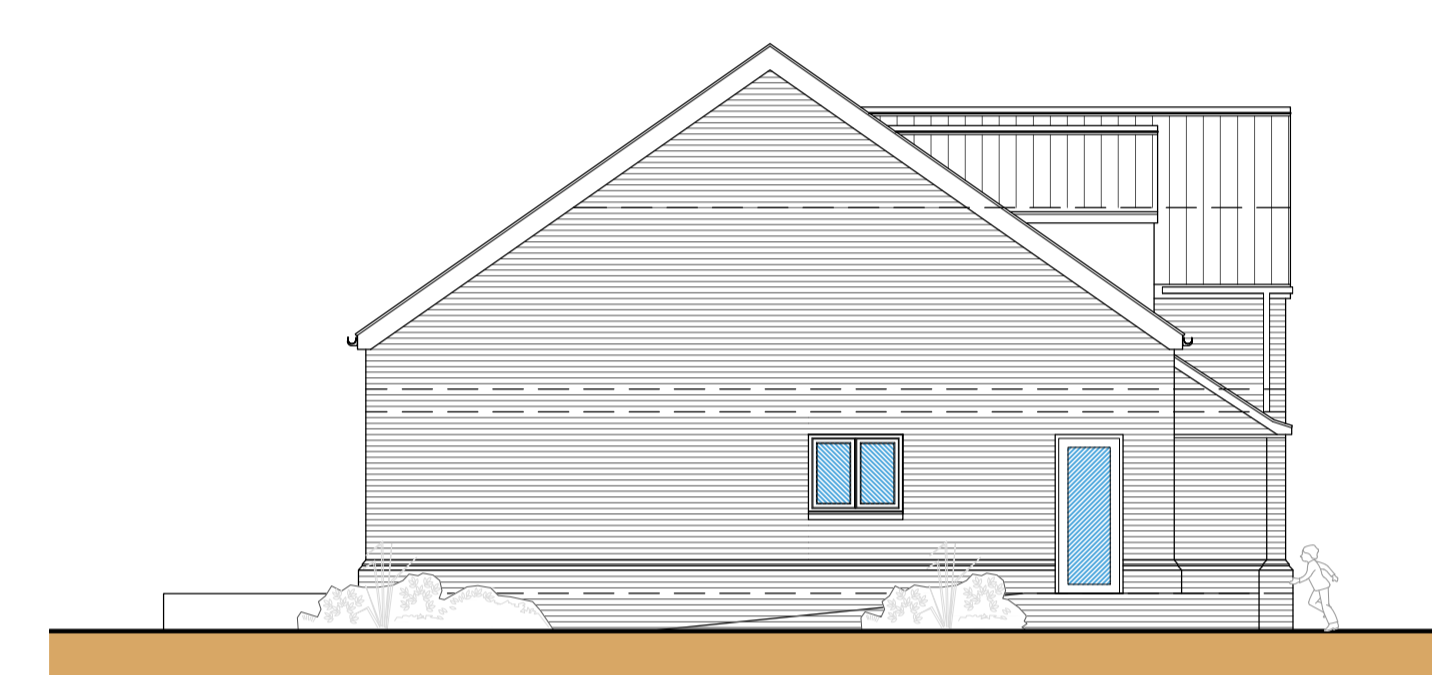
Front Elevation
Scale: 1:100



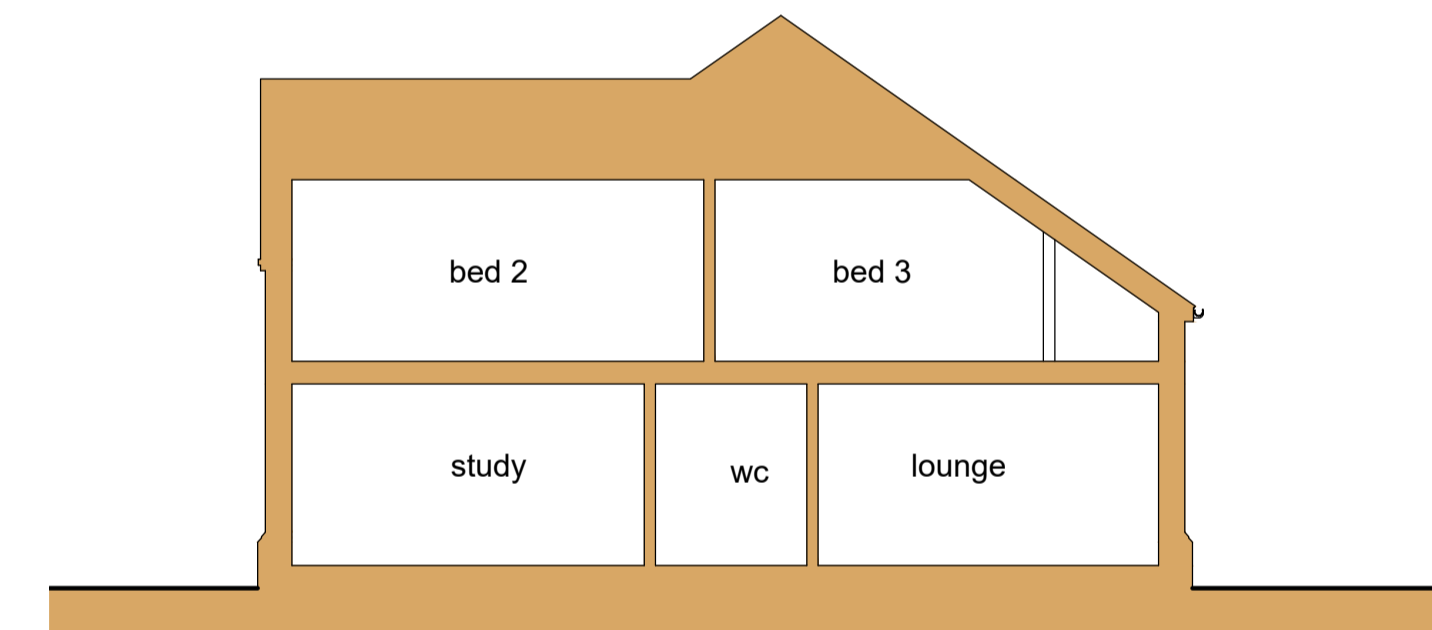
Rear Elevation
Scale: 1:100



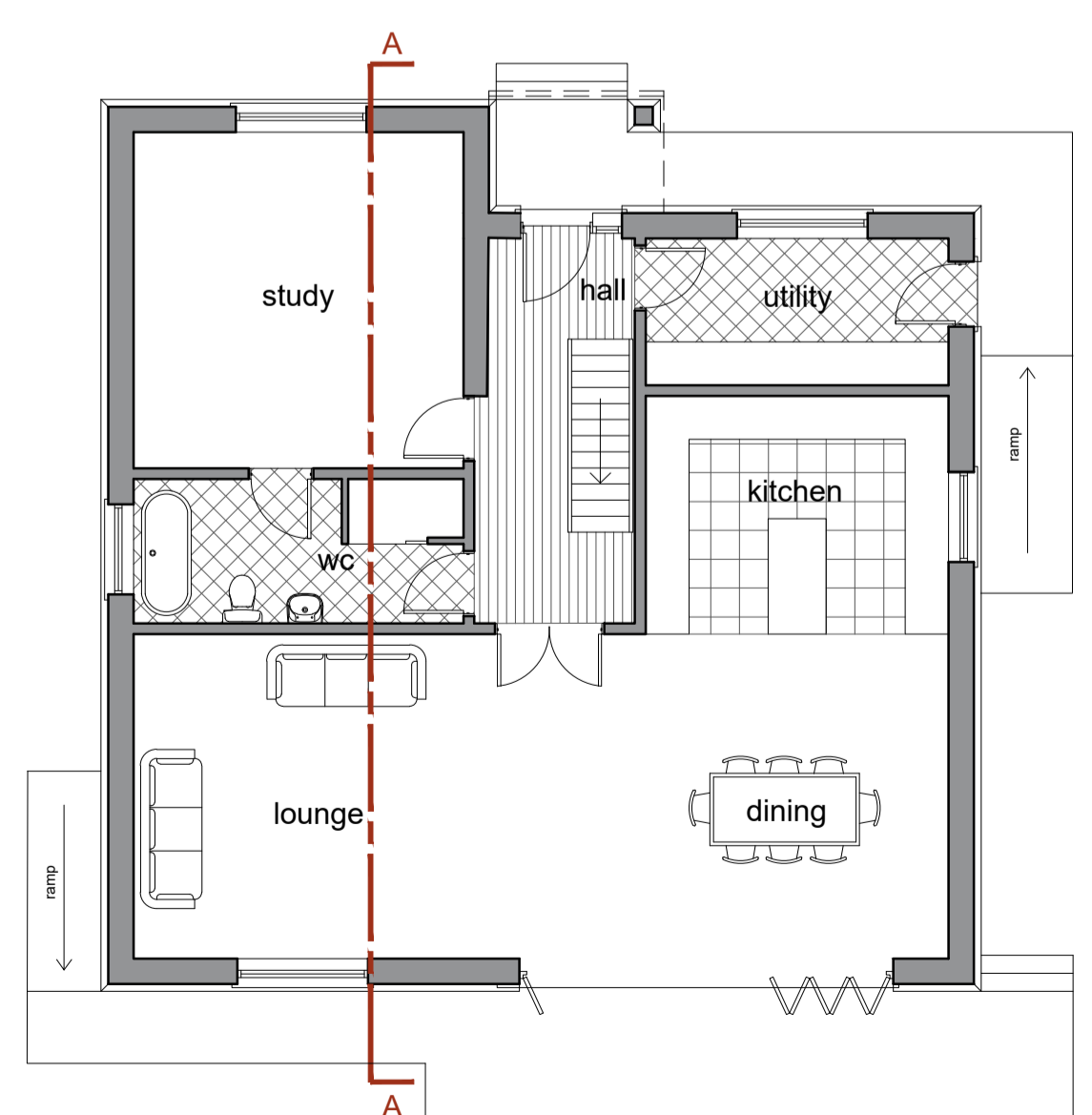
Side Elevation
Scale: 1:100



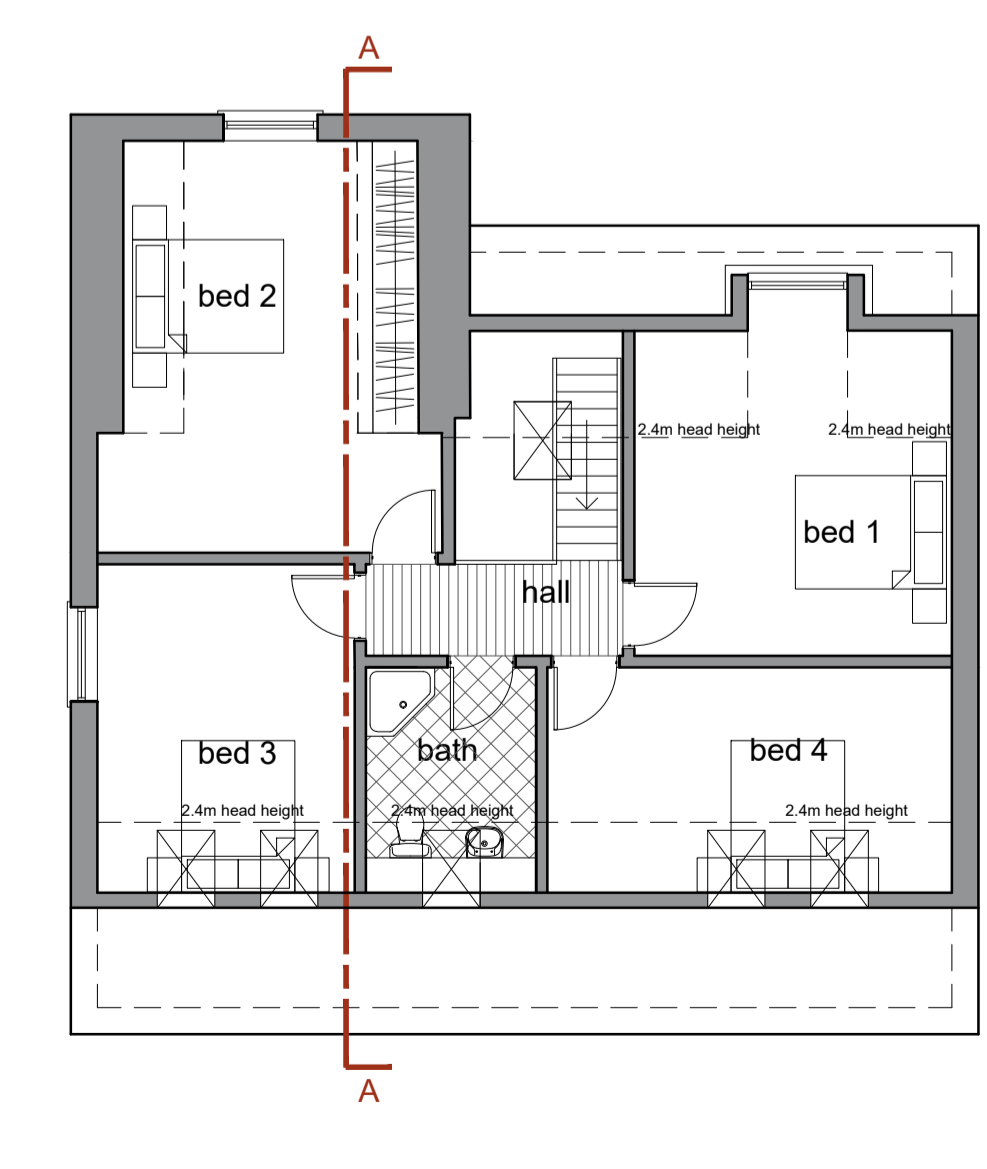
Side Elevation
Scale: 1:100



Section A-A
Scale: 1:100



Ground Floor Plan
Scale: 1:100



First Floor Plan
Scale: 1:100

- General Notes**
1. This drawing shall not be scaled, figured dimensions only to be used.
 2. All dimensions are shown in 'mm' unless otherwise stated.
 3. The contractor, sub-contractors and suppliers must verify all dimensions on site prior to the commencement of any work.
 4. This drawing is to be read in conjunction with all relevant engineers and specialist sub-contractors drawings and specifications.
 5. Any discrepancies are to be brought to the designers attention.

MATERIALS KEY

- Hatch indicates brickwork - Michelmersh Facing Brick Freshfield Lane 1st Quality
- Hatch indicates roof tiles - Marley Thru-tone Fibre Cement Slate
- UPVC Windows and doors

Revisions

A	Feb 2024	amended to show ramps
B	Feb 2024	Amended to show FRA levels
C	Feb 2024	Site Plan amended

Status
FOR APPROVAL

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Job Title Proposed Dwelling Sims Contract Furniture Plash Drive, Tholomas Drove Wisbech, Cambs, PE13 4SP	Date January 2023	Drawn by AK Checked by GE
Drawing Title Planning Drawings Location, Site, and Floor Plans and Elevations	Job No. SE:2046 Dwg No. PP1000	Sheet Size A1 Revision C