FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
AVENUE FARM ROAD, SUTTON BRIDGE

FINAL REPORT

ECL1429-2/SWANN EDWARDS ARCHITECTURE

DATE SEPTEMBER 2025

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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 Mr & Mrs Grundy in respect of a development that consists of one dwelling at Avenue Farm Road, Sutton Bridge.

Prior Approval (H18/0314/25) to convert an agricultural building to form one dwelling was approved in May 2025. The proposed development will supersede the approval granted. A planning application for the proposed development is to be submitted by Swann Edwards Architecture.

The mitigation measures proposed within this Flood Risk Assessment are consistent with those recommended within the Flood Risk Assessment prepared to support the previous application.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at 185 Avenue Farm Road, Sutton Bridge, Lincolnshire, PE12 9QF. The National Grid Reference of the site is 54721/32404.

The location of the site is shown in Figure 1.

Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the northern side of Avenue Farm Road. The site is within the curtilage of an agricultural holding and consists of an agricultural building. There are two dwellings to the east of the site and there are other agricultural buildings to the east and north. The area of development is approximately 0.04 hectares.

Environment Agency LiDAR data shows that the site is flat with ground levels between +3.7m OD and +3.8m OD. The carriageway level of Avenue Farm Road adjacent to the site is +4.0m OD. The agricultural land surrounding the site is typically between +3.2m OD and +3.4m OD.

The site is in the South Holland Internal Drainage Board (IDB) District. Surface water at the site naturally drains through soakaway and hence to the IDB drain system. There is a IDB Ordinary Watercourse 100m east of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by 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 one dwelling. The dwelling will have two storeys with sleeping accommodation on the first floor. Details of the proposed development are provided in Attachment 1.

2.4 Local Development Documents

The South East Lincolnshire Local Plan 2011 – 2036, adopted in March 2019, is the Local Plan for the district. Policy 4: Approach to Flood Risk states the requirements for flood risk reduction.

The South East Lincolnshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) was prepared in June 2017.

The Joint Lincolnshire Flood Risk and Drainage Management Strategy has been prepared by Lincolnshire County Council as the Lead Local Flood Authority. The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

2.5 Flood Zones

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.

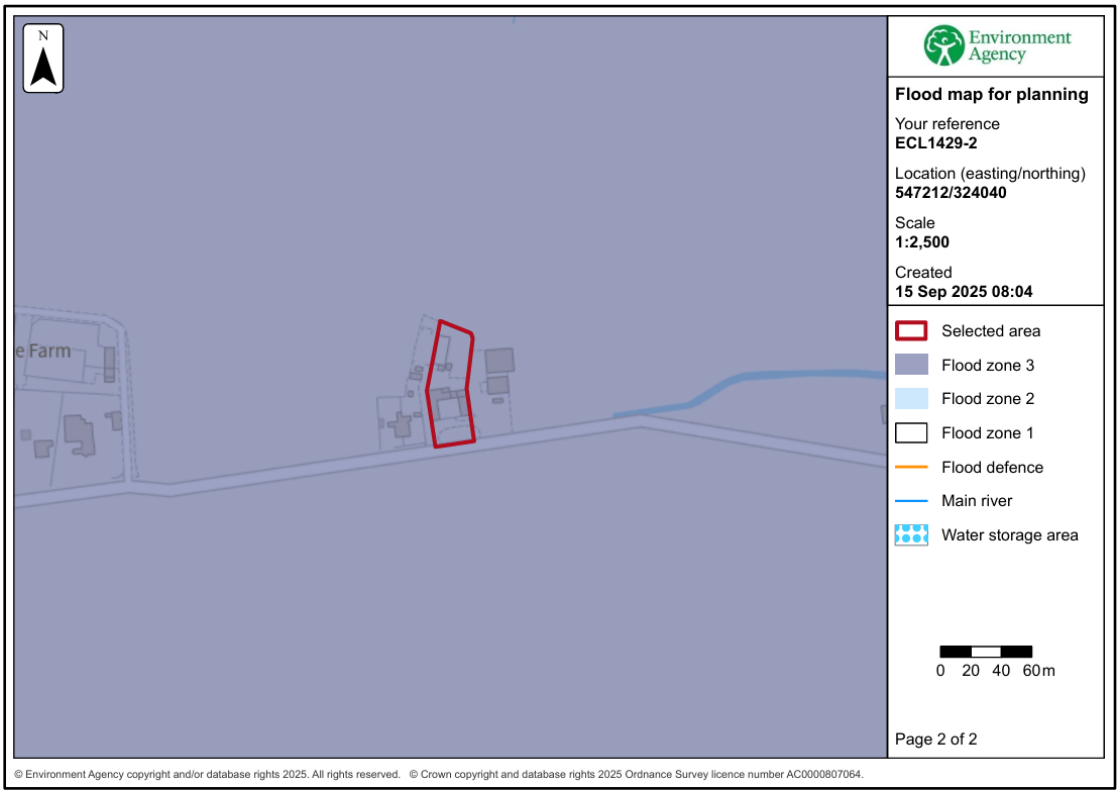


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps provide an indication of the risk from the primary sources of flooding. The details provided with these maps are summarised in Table 1. The depth of flooding identified is the maximum depth that occurs during a low chance (between 0.1% and 1% chance each year) event.

	Present Day		2050 Epoch	
	Risk of Flooding	**Depth (Low chance)**	**Risk of Flooding**	**Depth (Low chance)**
Rivers and the Sea	The site has a low chance (between 0.1% and 1% chance each year)	No data available	No data available	No data available
Surface Water	The site is outside the area with a low chance (between 0.1% and 1% chance each year)	Not at risk	The site is outside the area with a low chance (between 0.1% and 1% chance each year)	Not at risk
Reservoir	Outside of the area at risk.			

Table 1 – Environment Agency Long Term Flood Risk Maps

Table 2 shows the level of risk at the site within the South East Lincolnshire SFRA.

SFRA Map	Present Day	Year 2116
Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event	The site is in the 'Danger for Some' area	The site is in the 'Danger for Most' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal	The peak flood depth is between 0.0m and 0.25m.	The peak flood depth is between 0.5m and 1.0m.

Table 2 – Flood Risk within SFRA Maps

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 and Exception 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.

The site has permission for the conversion of the agricultural building to form one dwelling. It is considered that the permission for the change of use of the building has established the principle for a dwelling at the site. It is proposed that the dwelling that forms this application will replace the existing permission.

As the proposed development can be considered to be the same as replacement dwellings it is not necessary to apply 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 Local Plan has a target of a net increase of at least 11,681 dwellings in South Holland over the 25-year local plan period. The Plan considers this new housing is required to ensure the sustainability of the Local Plan area. The proposed development will contribute to this target.

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. In summary the site is protected to the appropriate standard and the residual risk is mitigated. The development is considered to pass the Exception Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 1.7km west of the tidal River Nene. The site is protected by the River Nene tidal defences through Sutton Bridge. The River Nene 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.

There is an extensive local drainage network managed by South Holland IDB. There is an IDB Ordinary Watercourse 100m east of the site. The site and the surrounding land are within the Westmere catchment and discharge to the tidal River Nene at the Westmere Tidal Sluice.

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 Boards assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the South Holland Internal Drainage Board and the Environment Agency are generally good.

4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 3.

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 4.5.
Tidal Flooding	The risk is assessed in Section 4.3, 4.5 and 4.6.
Reservoir Flooding	Based upon the EA maps the site is not at risk of flooding from reservoirs.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 3 – Sources of Flooding

4.3 Probability of Flooding

The probability of flooding associated with blockages in the South Holland IDB drainage system is low due to the maintenance standards achieved and managed by the IDB.

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 South Holland IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

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

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded.

4.5 Climate Change

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

The River Nene tidal defences have been designed to include an allowance for climate change. In summary the site is not at risk for the design life of the development (i.e., 100 years).

4.6 Residual Risk

There is a residual risk of flooding at the site should a breach of the tidal defences occur. The South East Lincolnshire SFRA includes maps demonstrating the residual peak depth in 2115. When climate change allowances are applied to the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200 chance each year) tidal event the peak depth at the site from direct overtopping together with breach failure is between 0.5m and 1.0m. An extract from this map is shown in Figure 3 below.

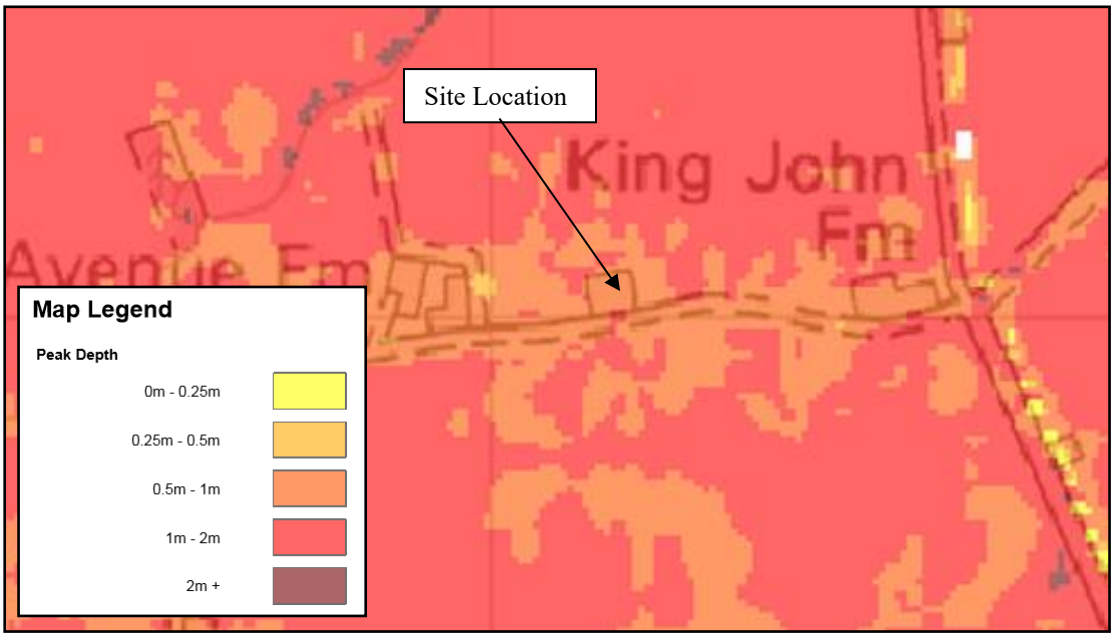


Figure 3 – SFRA 2115 Residual Peak Depth Map (0.5% annual probability)

The agricultural land surrounding the site is typically between +3.2m OD and +3.4m OD. This land is partly at risk with depths less than 1m and partly with depths greater than 1m. Based upon the topography and the extent and depths of flooding shown in Figure 3, a flood level of +4.4m OD can be estimated for the 0.5% annual probability (1 in 200 chance each year) tidal breach event.

Flood depths around the barn would be up to 0.7m.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Westmere Tidal Sluice could lead to an increased level of risk within the IDB catchment.

The probability of the site flooding from any Environment Agency system is less than 1% annual probability (1 in 100 chance each year) because of the standards of the existing flood defences. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development, it is not anticipated that the site would flood.

The SFRA considers the residual risk associated with overtopping and a breach in the defences in 2115. The flood level is estimated to be +4.4m OD which is a depth of up to 0.7m around the building.

There will be no increase in impermeable area associated with the development so there is no potential that flood risk will be increased elsewhere.

5.2 Mitigation Measures

The site has a low 'actual risk' of flooding. Based upon the information available during the preparation of this flood risk assessment it is recommended that the floor level of the dwelling is 1.0m above surrounding ground levels and there is 0.3m of flood resilient (recovery) 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 occupier of the dwelling is 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 occupier of the dwelling should register to receive flood warnings.

Should there be a failure of Westmere Tidal Sluice and conditions were such to put properties and land at risk of flooding, the Internal Drainage Board 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 development will not affect any adjoining properties or increase the flood risk elsewhere.

6.0 CONCLUSION

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

- The proposed development consists of a two storey dwelling at 185 Avenue Farm Road, Sutton Bridge.

- 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. The River Nene tidal defences provide protection during the 0.5% annual probability (1 in 200 chance each year) event. During the design life of the development, including an allowance for climate change, it is not anticipated that there would be flooding at the site.

- The maximum breach level during the 0.5% annual probability (1 in 200 chance each year) tidal event in 2115 is estimated to be +4.4m OD, a depth of up to 0.7m.

- It is recommended that the floor level of the dwelling is 1.0m above the surrounding ground levels and there is 0.3m of flood resilient (recovery) construction above finished floor level.

- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

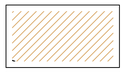
ATTACHMENT 1

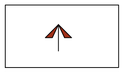
SITE AND LOCATION PLAN
(DWG SE-2231 PP1000A)

FLOOR PLANS, ELEVATION AND SECTIONS
(DWG SE-2231 PP1100A)

SITE KEY

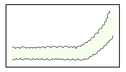
Indicates proposed building

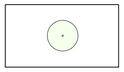

Indicates unsurveyed buildings on site


Indicates existing site access

Indicates features to be demolished

Indicates unsurveyed buildings taken from OS map


Indicates unsurveyed hedging


Indicates unsurveyed trees

Location Plan
Scale: 1:2500

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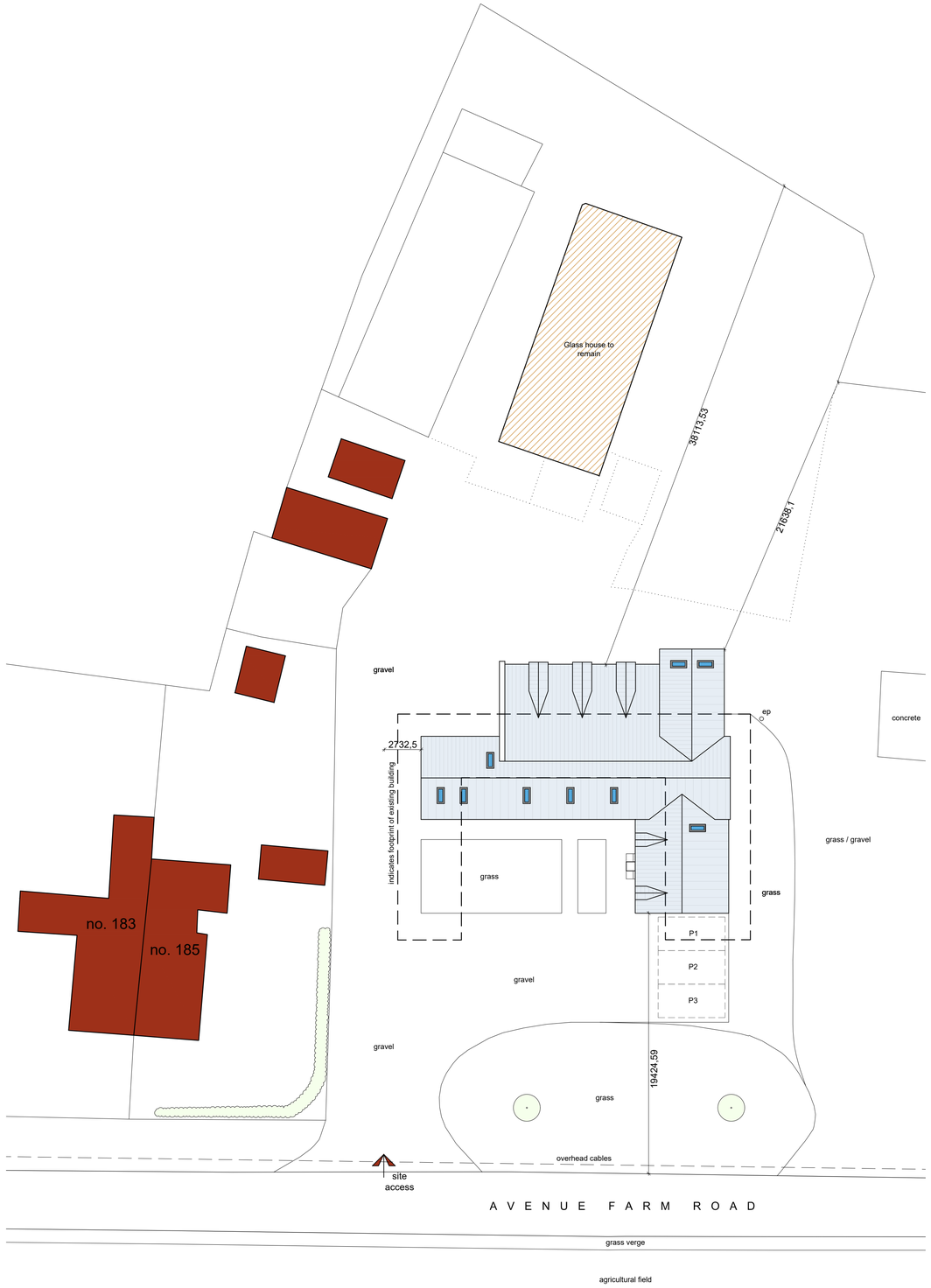
metres



Site Plan
Scale: 1:200

0 2 4 6 8
metres

General Notes
1. All dimensions are shown in 'mm' unless otherwise stated.
2. The contractor, sub-contractors and suppliers must verify all dimensions on site prior to the commencement of any work.
3. This drawing is to be read in conjunction with all relevant engineers and specialist sub-contractors drawings and specifications.
4. Any discrepancies are to be brought to the designers attention.

Revisions

A	Oct 2025	Client name revised.

Status
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Job Title
Proposed Dwelling
185 Avenue Farm Road,
Sutton Bridge, For:
Mr & Mrs Grundy

Date: August 2025
Drawn by: CW
Checked by: MC

Drawing Title
Planning Drawing
Site and Location Plan

Job No.: SE-2231
Sheet Size: A1
Dwg No.: PP1000
Revision: A

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General Notes
1. All dimensions are shown in 'mm' unless otherwise stated.
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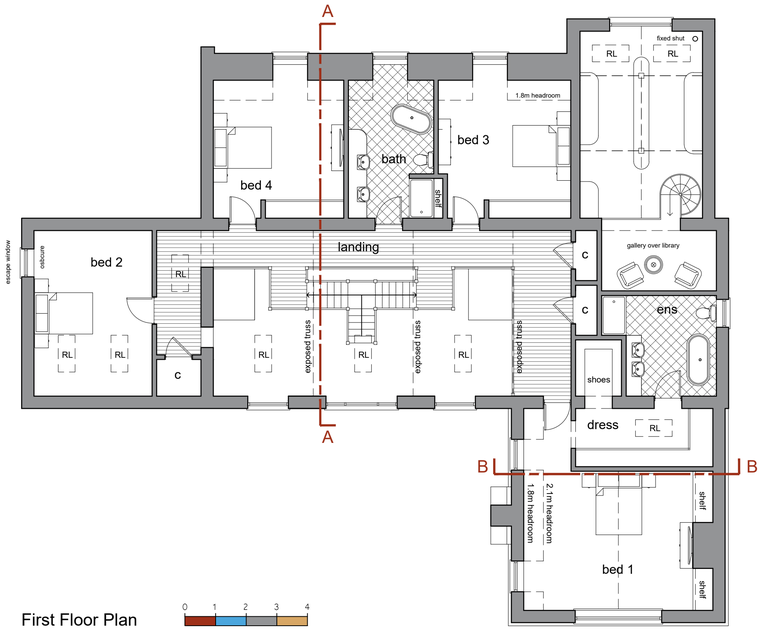

First Floor Plan
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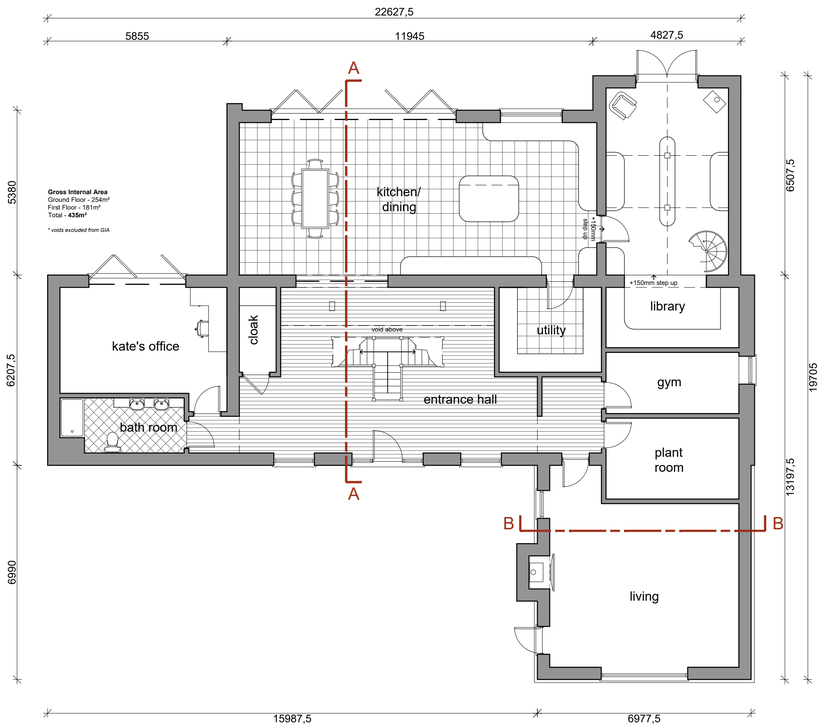
metres



Ground Floor Plan
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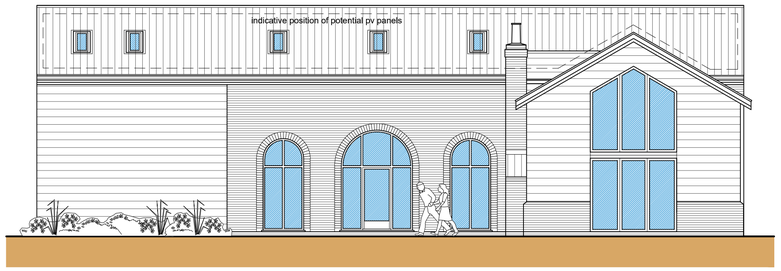
metres



Front Elevation (S)
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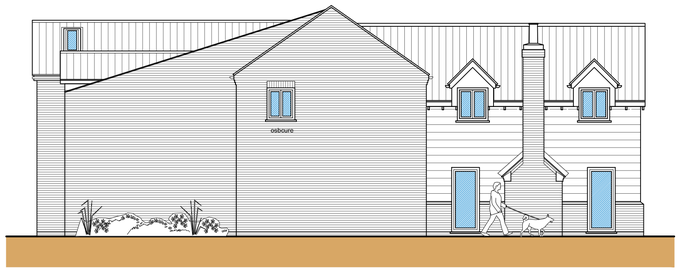
metres



Side Elevation (W)
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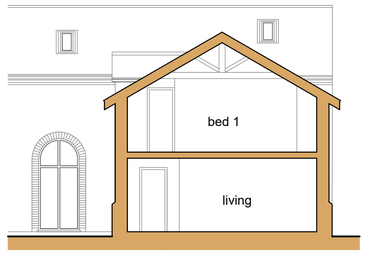
metres



Section B-B
Scale: 1:100
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metres

Rear Elevation (N)
Scale: 1:100
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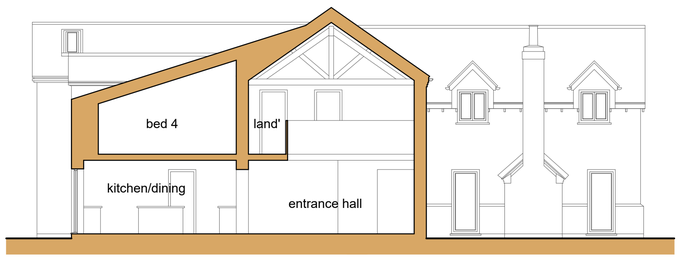
metres

Side Elevation (E)
Scale: 1:100
0 1 2 3 4
metres



Section A-A
Scale: 1:100
0 1 2 3 4
metres

ELEVATION KEY

- Indicates proposed brickwork
- Indicates proposed roof tiling
- Indicates proposed vertical cladding
- Indicates proposed glazing

Revisions

A	Oct 2025	Client name revised.

Status
PLANNING

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Job Title
Proposed Dwelling
185 Avenue Farm Road,
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Planning Drawings
Floor Plans, Elevations
and Sections

Date: August 2025	Drawn by: CW
	Checked by: MC
Job No.: SE-2231	Sheet Size: A1
Dwg No.: PP1100	Revision: A

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