FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
NEW ROAD, SUTTON BRIDGE

FINAL REPORT

ECL1276/G R MERCHANT

DATE MAY 2024

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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 G R Merchant in respect of a development that consists of a change of use of an agricultural building to form one dwelling at New Road, Sutton Bridge.

A planning application for the proposed development is to be submitted by G R Merchant.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located to the rear of 210 New Road, Sutton Bridge, Lincolnshire, PE12 9QE. The National Grid Reference of the site is 54811/32323.

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 eastern side of New Road and set to the rear of the dwelling at 210 New Road. The site consists of an agricultural building and the surrounding land. The site is surrounded by agricultural land. The area of development is approximately 0.04 hectares.

A topographic survey of the site has been undertaken and spot levels are shown in Attachment 1. Ground levels around the perimeter of the building range between +3.39m OD and +3.71m OD. The site access slopes from +3.9m OD at New Road to +3.5m 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 an IDB High Priority Watercourse 100m south of the site and another on the western side of New Road adjacent to 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 the change of use of an agricultural building to for a dwelling. The dwelling will be single storey. The site plan is shown in Attachment 2.

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.

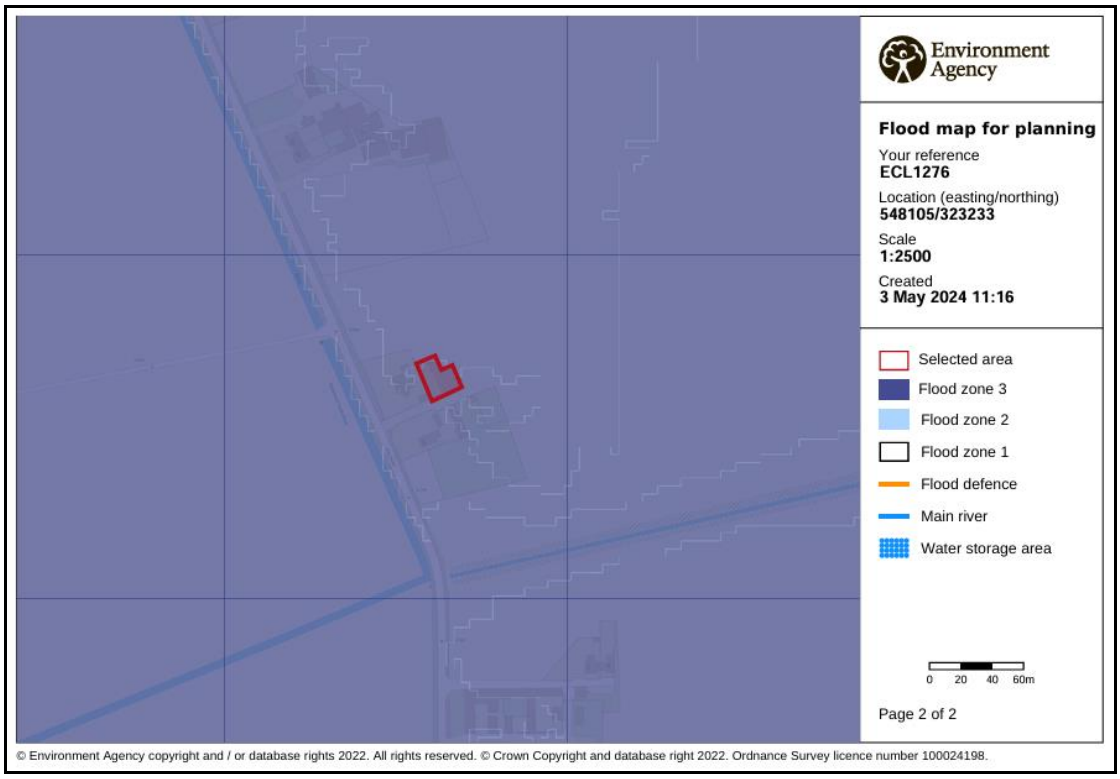


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

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

Table 1 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 All' area	The site is in the 'Danger for All' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal	The peak flood depth is between 0.25m and 0.5m.	The peak flood depth is between 0.5m and 1.0m.

Table 1 – 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.

Paragraph 033 of planning practice guidance (PPG) on Flood Risk and Coastal Change states that 'The Sequential Test does not need to be applied for applications for Change of Use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site)'.

Paragraph 048 of the PPG states that 'A Change of Use may involve an increase in flood risk if the vulnerability classification of the development is changed. In such cases, the applicant will need to show in their flood risk assessment that future users of the development will not be placed in danger from flood hazards throughout its lifetime.' The mitigation measures proposed in Section 5.2 of this flood risk assessment are such that risks to future users are mitigated.

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 600m 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 High Priority Watercourse 100m south 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 2.

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 2 – 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.

The proposed development is for a single storey dwelling and therefore the finished floor level needs to consider the 0.1% annual probability (1 in 1000 chance each year) event in 2115. An extract from this map is shown in Figure 3 below.



Figure 3 – SFRA 2115 Residual Peak Depth Map (0.1% annual probability)

Figure 3 shows that the building that will be the subject of the change of use is partly in an area with flood depths between 0.5m and 1.0m and partly in an area with flood depths between 1.0m and 2.0m.

Based upon the topographic survey and the extent and depths of flooding shown in Figure 3, a flood level of +4.5m OD can be estimated for the 0.1% annual probability (1 in 1000 chance each year) tidal event. Flood depths around the barn would be between 0.8m and 1.1m.

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 at the site.

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 +4.5m OD which is a depth of 0.8m to 1.1m 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 finished floor level of the dwelling is not less than +4.5m OD (0.8m -1.1m above surrounding ground level) and there is 0.3m of flood resilient construction above finished floor level.

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 the change of use of an agricultural building to form a single storey dwelling on land to the rear of 210 New 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 0.1% annual probability (1 in 200 chance each year) tidal event in 2115 is estimated to be +4.5m OD.

- It is recommended that the finished floor level of the dwelling is not less than +4.5m OD with 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

TOPOGRAPHIC SURVEY
(Dwg 10159-1)

North.
(Indicative)

548050E
548075E
548100E
548125E
323250N
323225N
323200N

10159-5
548043.614
323260.144
3.910

10159-1
548063.036
323200.635
3.817

10159-2
548134.135
323230.531
3.822

10159-3
548140.688
323228.154
4.912

10159-4
548105.117
323221.869
3.501

ARABLE
GRASS
SHED
ROOF 5.51
BRICK
FFL 3.50
RIDGE 7.42
EAVE 5.87
BARN
FFL 3.78
RIDGE 8.77
EAVE 6.73
CONCRETE
No210
RIDGE 10.17
EAVE 5.91
RIDGE 6.96
EAVE 5.94
RIDGE 10.20
SUMMER HOUSE
ROOF 6.03
No206
RIDGE 10.20
EAVE 5.86
OUT BUILDING
ROOF 5.90
EAVE 7.16
BUILDING
EAVE 6.06
CARAVAN
TRACK
GRASS
FIELD LEVELS
NEW ROAD
GATE
TREE CANOPY
BUSH
HEDGE
BUSHES
MULTI-BOLES
CONIFER
WALL
POST
TP
BT
SV
PRF
DP
RP
BF
TB
RB

G0.30 S1.30 H3.00
G1.20 S4.00 H5.00
G1.20 S4.30 H5.00
G1.20 S3.50 H8.00
G1.50 S4.00 H8.00
G0.45 S1.00 H4.00
G0.30 S1.50 H4.00
G0.90 S5.10 H8.00
G0.75 S1.50 H3.00
G1.50 S5.50 H9.00
G1.30 S5.00 H7.00

DRAWING KEY

STANDARD BOUNDARIES
FENCE, BF, CLF, CHESTN, PWF, BARBED WIRE, EF, HEDGE, RAIL, POST & WIRE, GF, GATEPOST, W, IRON RAILING, GATE, POST, PT

SURFACES
ROAD EDGE (NON KERBED), FOOTPATH, DROP KERB, KERB OUTLET, TK TRACK, KERB

FEATURES
BW BRICK WALL, SW STONE WALL, CW CONCRETE WALL, BLW BLOCK WALL, RW RETAINING WALL, SHED, GROUND LEVEL IS 5.55M ABOVE O.D., SURVEY STATION, TREE GIRTH CIRCUM 0.5M ABOVE GROUND, HEDGE DIM, SPECIES ASH, STUMP GIRTH TO SCALE

HEDGE
FOLIAGE OUTLINE
BANK(S)

STREET SERVICES
LP LAMPPOST, NPL NAME SIGN/PLATE, MS MILE STONE, TS TRAFFIC SIGNAL, RS ROAD SIGN, BCN BELISHA BEACON, BD BOLLARD, HR HAND RAIL, CB CRASH BARRIER, BENCH, BS BUS STOP
MHS MANHOLES, BT BRITISH TELECOM, ST STREET, BT MANHOLE, BTJB BT JUNCTION BOX, BTP BT TELEGRAPH POLE, CP ELECTRICITY PILLAR, EP ELECTRICITY POLE, ELMH ELECTRICITY MANHOLE, ER EARTH ROD, FH FIRE HYDRANT, FHP FIRE HYDRANT M/POST, VC WATER STOP, VCP WATER STOP M/POST, SV STOP VALVE, SVMP STOP VALVE M/POST, MTR METER, UGS UNDERGROUND SERVICE, TSCB TRAFFIC SIGNAL CNTL BOX
MHS MANHOLES, UNKT UNKNOWN, SOCKET, GP GRATEPIT, VP VENT PIPE, RE RODDING EYE, CVL COVER LEVEL, FL FLOOR LEVEL, IL INVERT LEVEL, GULLY

The depiction of a wall, fence or hedge does not necessarily represent a legal boundary. It is the clients responsibility to confirm legal boundaries with the vendor.

Unless previously agreed, all services existing on site have been surveyed apart from where access is restricted by vehicles or other significant obstructions.

If applicable, manhole covers will be lifted unless this significantly obstructs the flow of traffic or vehicular access.
Manhole will not be lifted if this were to present any health & Safety risk to staff or the public. Irreplaceable or cracked covers will not be lifted. All pipe directions are indicative only and have not been proved unless specifically instructed. For safety reasons, pipe sizes and directions are estimated from above ground and are therefore approximate values.

All drawing units, levels and dimensions are in metres, unless otherwise stated.

The data used for the computation of the horizontal and vertical control for this survey was recorded using our survey grade GNSS receivers.
This data was provided by Leica Geosystems Smartnet RTK correction service.
Therefore primary survey control is based on OSGB36(15)

A scale factor of 1 has been applied to this survey which has been based on station 10159-2 and referenced to station 10159-1 and therfore should be treated as arbitrary.

Plotting on paper may lead to a variety of scaling risks/errors due to paper stretching or inaccurate plotter settings etc.
Therefore any dimensions scaled from a paper reproduction of this survey should be treated with caution.
This drawing must be used in conjunction with all other relevant documentation.

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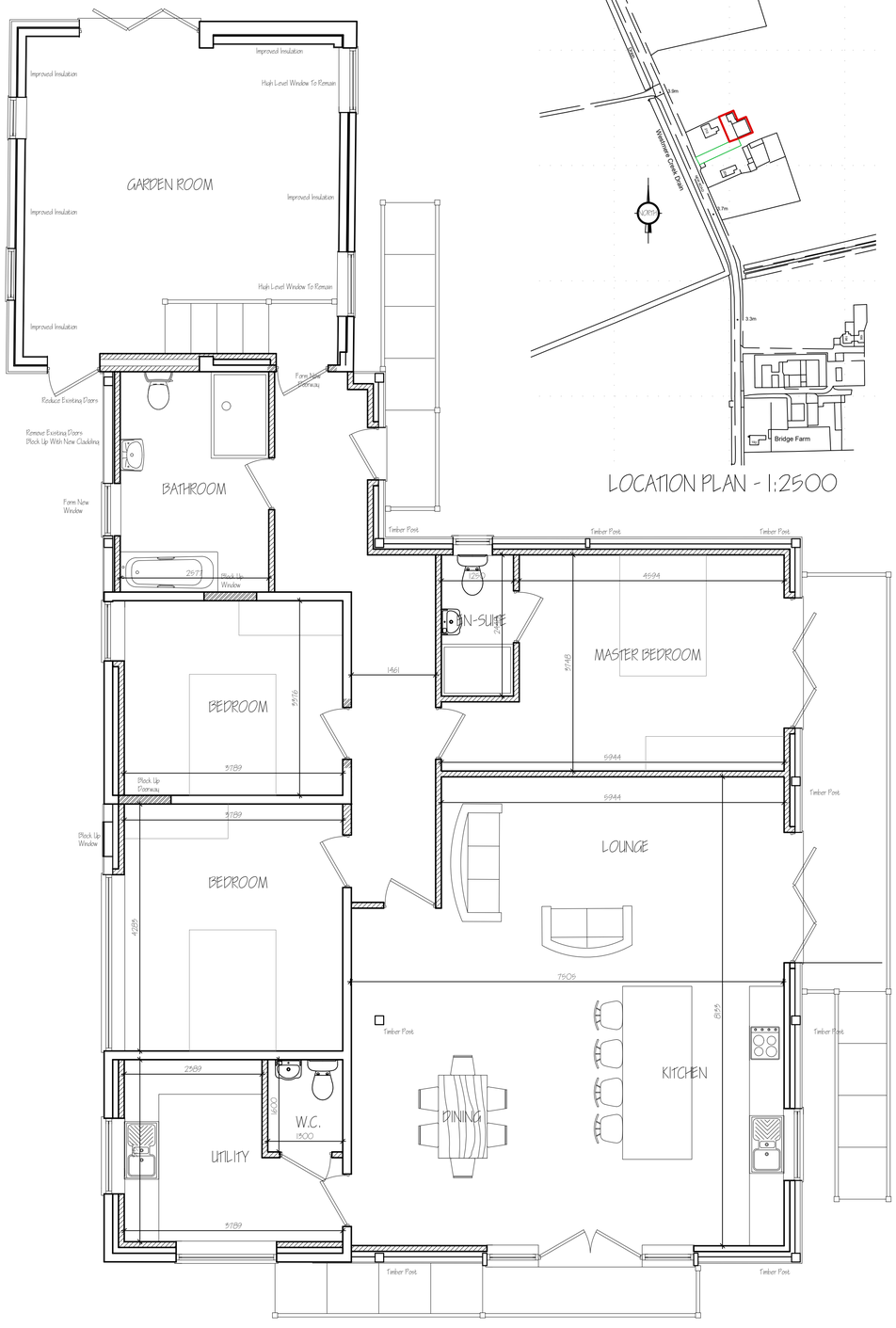
REVISIONS/UPDATES & ASSOCIATED DETAILS			
Dwg No	Details	By	Date
XXXX	XXXXXXXXXXX	XX	XXXXXX

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THE SURVEY PEOPLE
www.ratcliffandsurveys.co.uk ~ info@rlesurveys.co.uk ~ Tel: 01733 269782

JOB TITLE	REAR OF 210 NEW RD
SHEET SIZE & SCALE	A0 @ 1:100
DATE SURVEYED	19/01/2024
DRAWING NUMBER	10159-1
DRAWN BY	PB
CLIENT	G R MERCHANT

ATTACHMENT 2

PROPOSED SITE PLAN, FLOOR PLAN AND ELEVATIONS (DWG 4238-24 02)

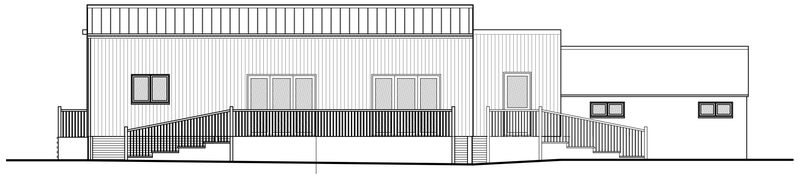


GROUND FLOOR PLAN

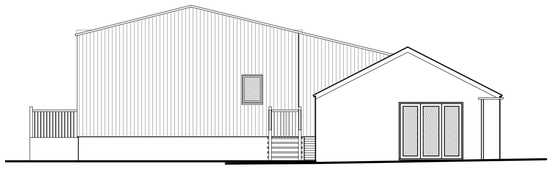
LOCATION PLAN - 1:2500



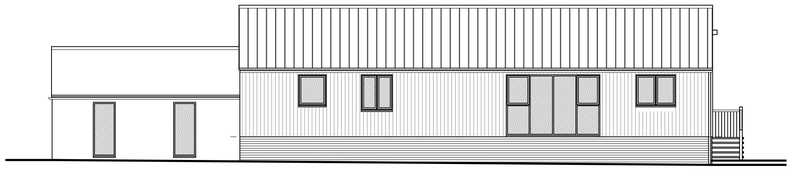
SOUTH ELEVATION



EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION



SITE PLAN - 1:250

ref:	revision	date

G. R. MERCHANT LTD.

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Project
CLASS Q APPLICATION
REAR OF 210 NEW ROAD
SUTTON BRIDGE
SPALDING, LINCS., PE12 9QE

Client
S.KING

Drawing
FLOOR PLAN - PROPOSED
ELEVATIONS - PROPOSED
SITE PLAN - PROPOSED

Job Ref.	Drawing No.
4238 -24	02
Date	**Drawn**
MARCH 2024	SLB

Scales
1:50 & 1:100 (Unless Otherwise Stated)

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