

**FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
SILVERS LANE, MURROW**

FINAL REPORT

ECL0990/PETER HUMPREY ARCHITECTURE

DATE MARCH 2023

ELLINGHAM CONSULTING LTD

Email: tim@ellinghamconsulting.co.uk

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

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 – Planning Drawing 1 (Dwg S6560/01C)

– Planning Drawing 2 (Dwg S6560/02B)

– Planning Drawing 3 (Dwg S6560/03)

DISCLAIMER

This document has been prepared solely as a Flood Risk Assessment in support of a planning application for a proposed residential development at Silvers Lane, Murrow. "Ellingham Consulting Ltd" accepts no responsibility or liability whatsoever for any use made of this document other than by the client Mr O Wardill for the purposes it was originally commissioned and prepared. All comments and opinions made are based upon information available to "Ellingham Consulting Ltd" during the necessary investigative process, and the conclusions and recommendations could, therefore, differ in the event of material subsequently being found erroneous, incomplete, or misleading. "Ellingham Consulting Ltd" therefore, accepts no liability should this prove to be the case.

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 O Wardill in respect of a development that consists of a replacement dwelling at Fir Trees, Silvers Lane, Murrow.

A planning application for the proposed development is to be submitted by Peter Humphrey Associates.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is at Fir Trees, Silvers Lane, Murrow, Wisbech, PE13 4JL. The National Grid Reference of the site is 53823/30803.

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 western side of Silvers Lane. The site consists of a residential dwelling and the surrounding land. The area of development is 0.5 hectares.

Environment Agency LiDAR data shows that the site is flat with a typical level of +1.5m OD. Silvers Lane alongside the site is between +1.5m OD and +1.6m 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 Board's main drain system. There is a riparian drain on the eastern boundary of the site. This watercourse discharges to Little Seadyke Drain, a North Level Board Drain, approximately 150m south 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 a replacement dwelling. The replacement dwelling will have two storeys. Details of the proposed development are shown 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.

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.

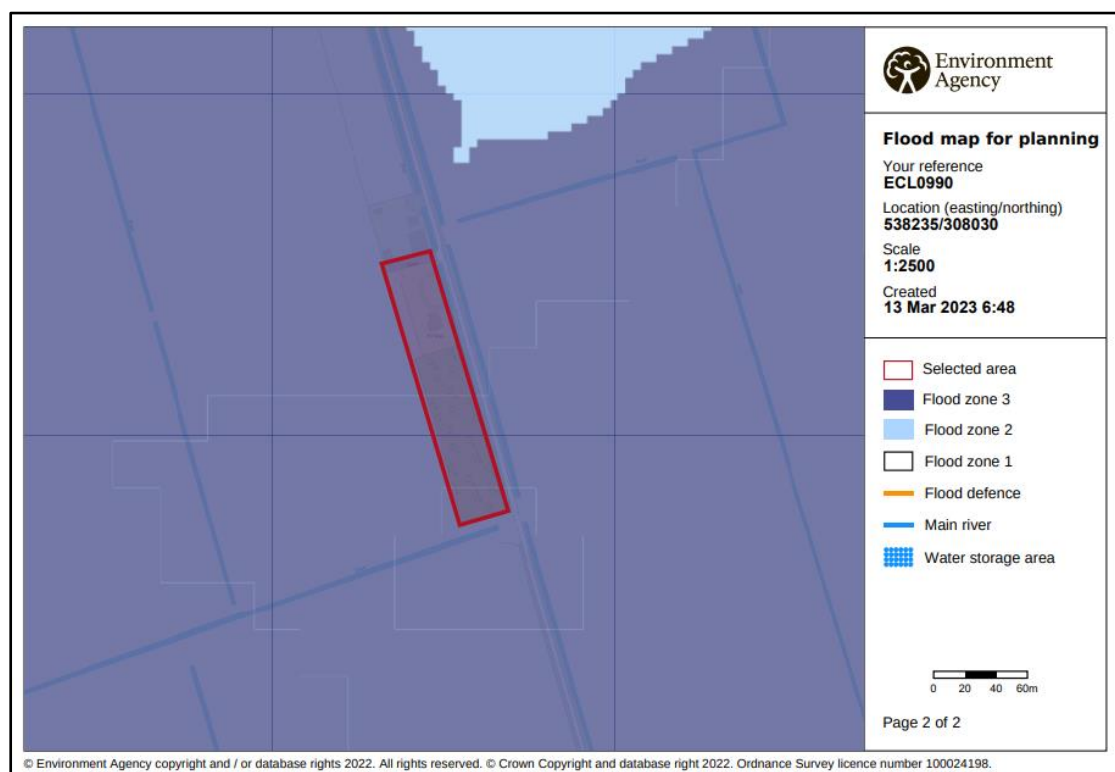


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site is in 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 site is not within an area at risk of reservoir flooding.

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 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 proposed development is a replacement dwelling and therefore it is not necessary to apply the Sequential Test to the development.

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

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 4.5km north west of the River Nene tidal defences. 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 150m south of the site. The extensive local drainage network drains by gravity in a northerly direction to the North Level Main Drain approximately 2km north west 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

The following potential sources of flooding have been identified:

- blockages to the local drainage network in the vicinity of the site;
- an event in the local drainage network that exceeds the standard of protection;
- failure of Tydd Pumping Station; and
- overtopping and/or breaching of the River Nene tidal defences.

Based upon the Environment Agency Long Term Flood Risk the site has a very low risk of surface water flooding. As such surface water flooding has not been considered further in this assessment.

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.

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.

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

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. The hazard maps show that the floodwater which is to the south east of the site does not extend to the site. The site is not at risk during a breach of the tidal defences.

The primary residual risk to the site is during an exceedance event.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. 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.

The development increases the impermeable area and therefore has the potential to increase flood risk elsewhere.

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 dwelling 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 user of the site is sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency provides a Flood Warning Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high. In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding.

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 utilising temporary pumping equipment.

It is recommended that surface water run-off is managed so that water from the site will not increase the flood risk elsewhere.

6.0 CONCLUSIONS

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

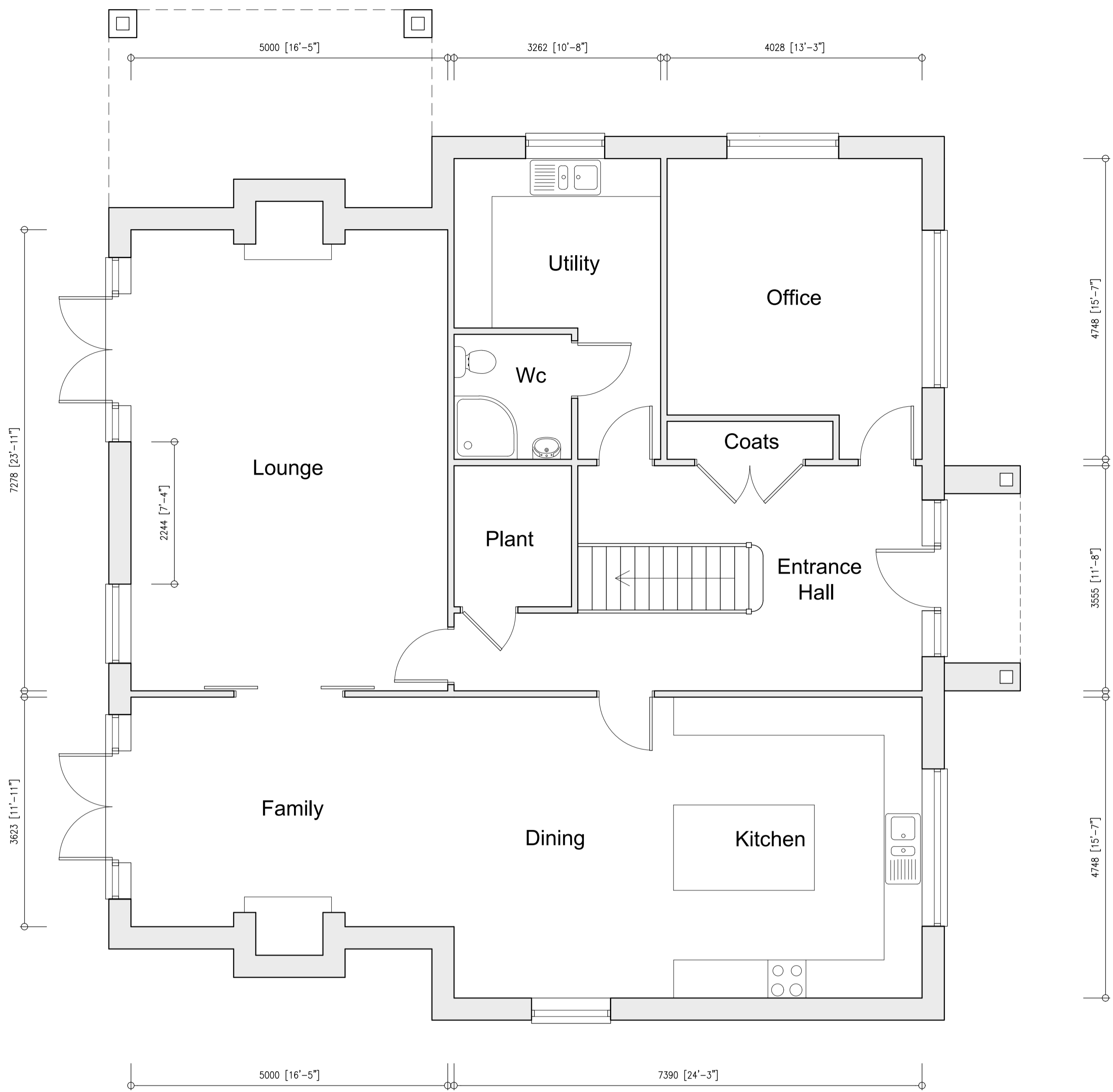
- The proposed development consists of a 2 storey replacement dwelling at Fir Trees, Silvers Lane, Murrow.
- The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard 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 site benefits from defences on the River Nene that provide protection during the 0.5% annual probability (1 in 200 chance each year) event including climate change.
- It is recommended that the floor level is 0.3m above surrounding 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

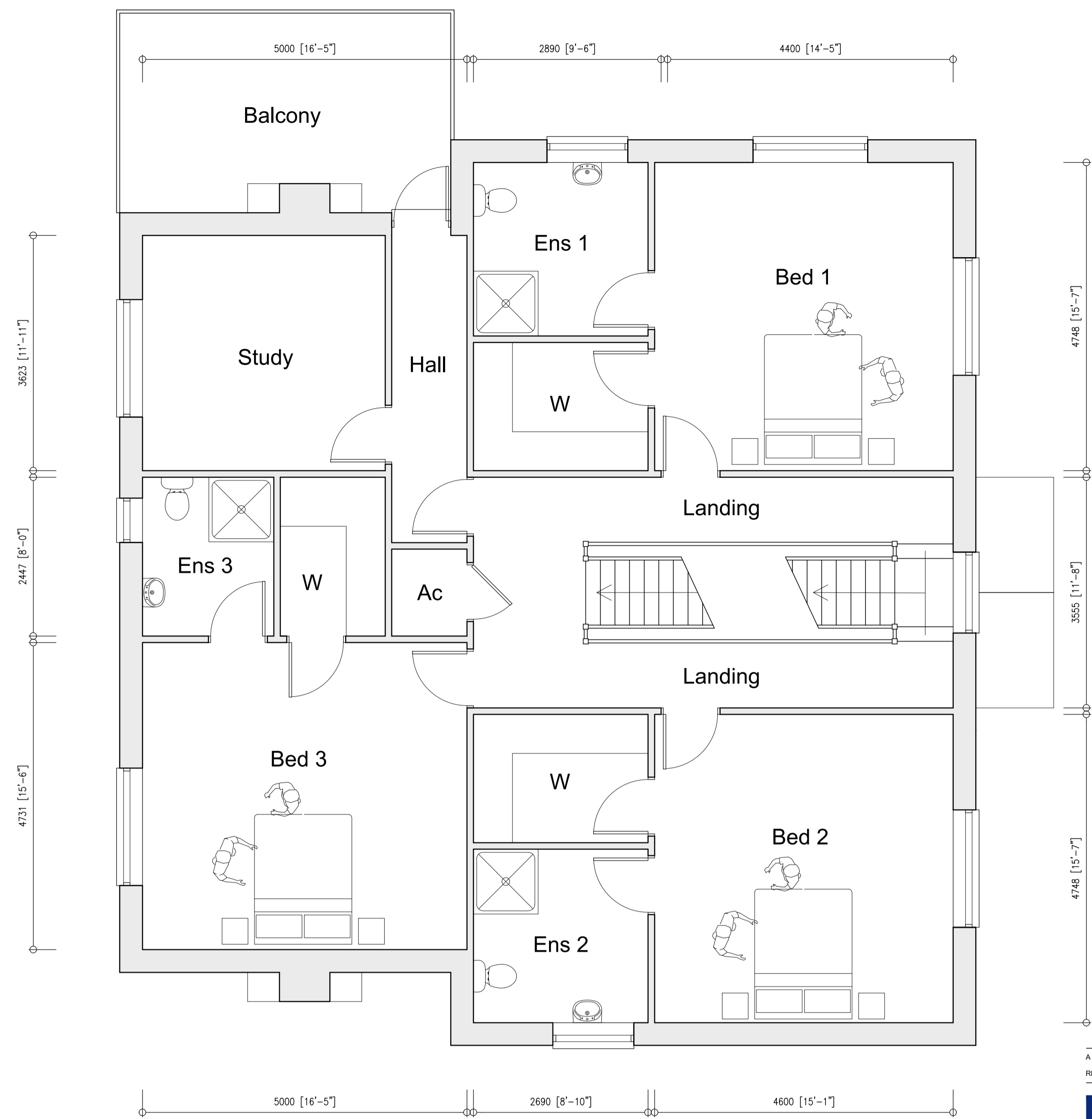
PLANNING DRAWING 1 (Dwg S6560/01C)

PLANNING DRAWING 2 (Dwg S6560/02B)

PLANNING DRAWING 3 (Dwg S6560/03)



Proposed Ground Floor Plan 1:50



Proposed First Floor Plan 1:50

A-
REVISIONS



PETER HUMPHREY ASSOCIATES

ADDRESS: 2 CHAPEL ROAD, WISBECH, CAMBS, PE13 1RG.

TELEPHONE: 01945 466966
E-MAIL: info@peterhumphrey.co.uk
WEB: www.peterhumphrey.co.uk

CLIENT
MR O WARDILL

PROJECT
PROPOSED REPLACEMENT DWELLING

SITE
FIR TREES
SILVERS LANE
PARSON DROVE
CAMBS
PE13 4JL

DRAWING
PLANNING DRAWING 1

JOB NO. 6560/01C	PAPER SIZE A1	DATE AUG 2022
---------------------	------------------	------------------

Notes:
This drawing is the permission of Peter Humphrey Associates Ltd. and may not be resued, loaned or copied in whole or part without written consent.

All dimensions shown on the drawing are in millimeters unless stated otherwise. If the drawing is received electronically (PDF) it is the recipient's responsibility to ensure it is printed to the correct paper size. All dimensions to be checked on site prior to commencing work and any discrepancies to be highlighted immediately.

The Construction (Design and Management) Regulations 2015:
Peter Humphrey Associates' form of appointment with the client confirms whether the agent is appointed as 'Designer' or 'Principal Designer' under these regulations. Nevertheless, the design phase has been carried out with due consideration for the safety during construction, occupation and maintenance of the finished project. No extraordinary hazards or risks were identified outside of the routine construction operations that would not already be apparent to a competent contractor.



Proposed Front Elevation (Facing Drive) 1:100



Proposed Side Elevation 1:100



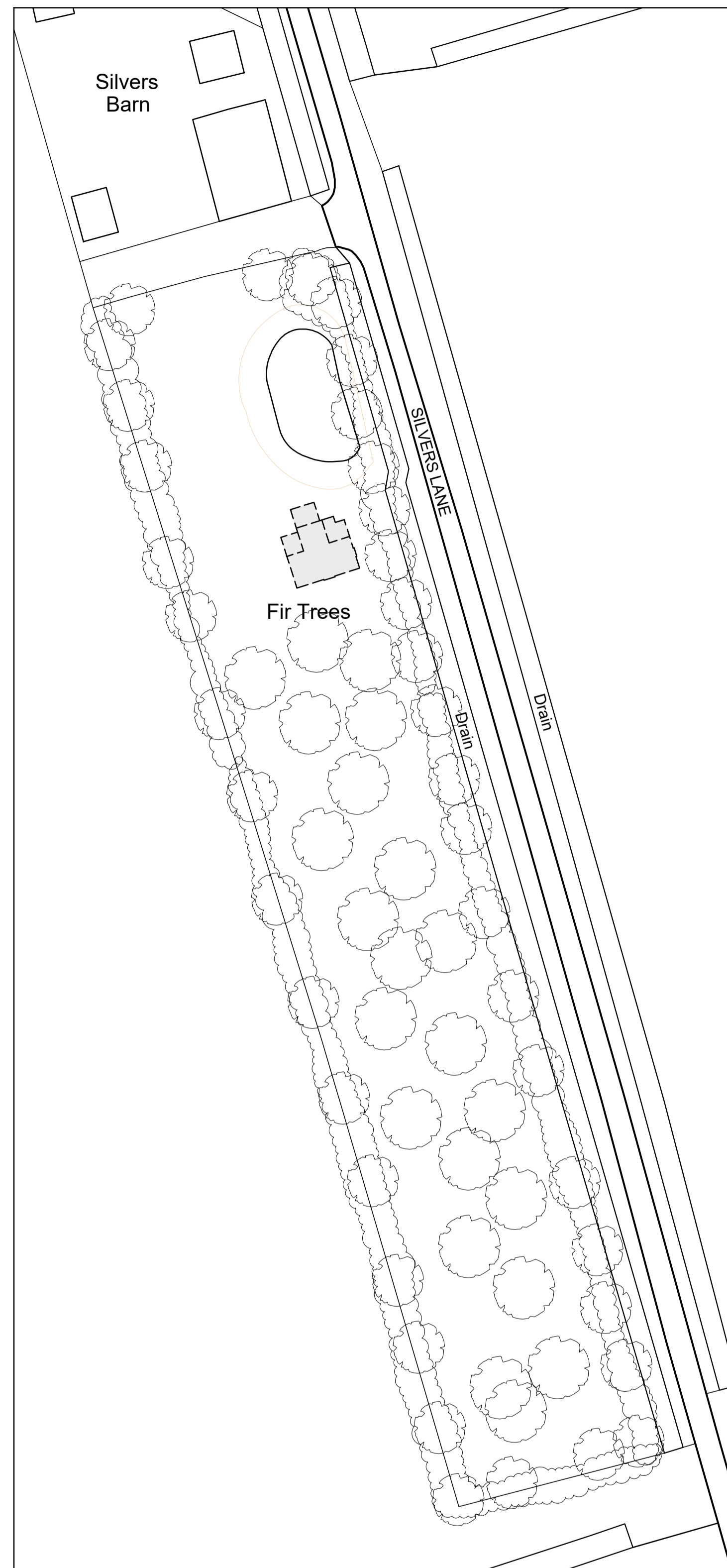
Proposed Rear Elevation 1:100



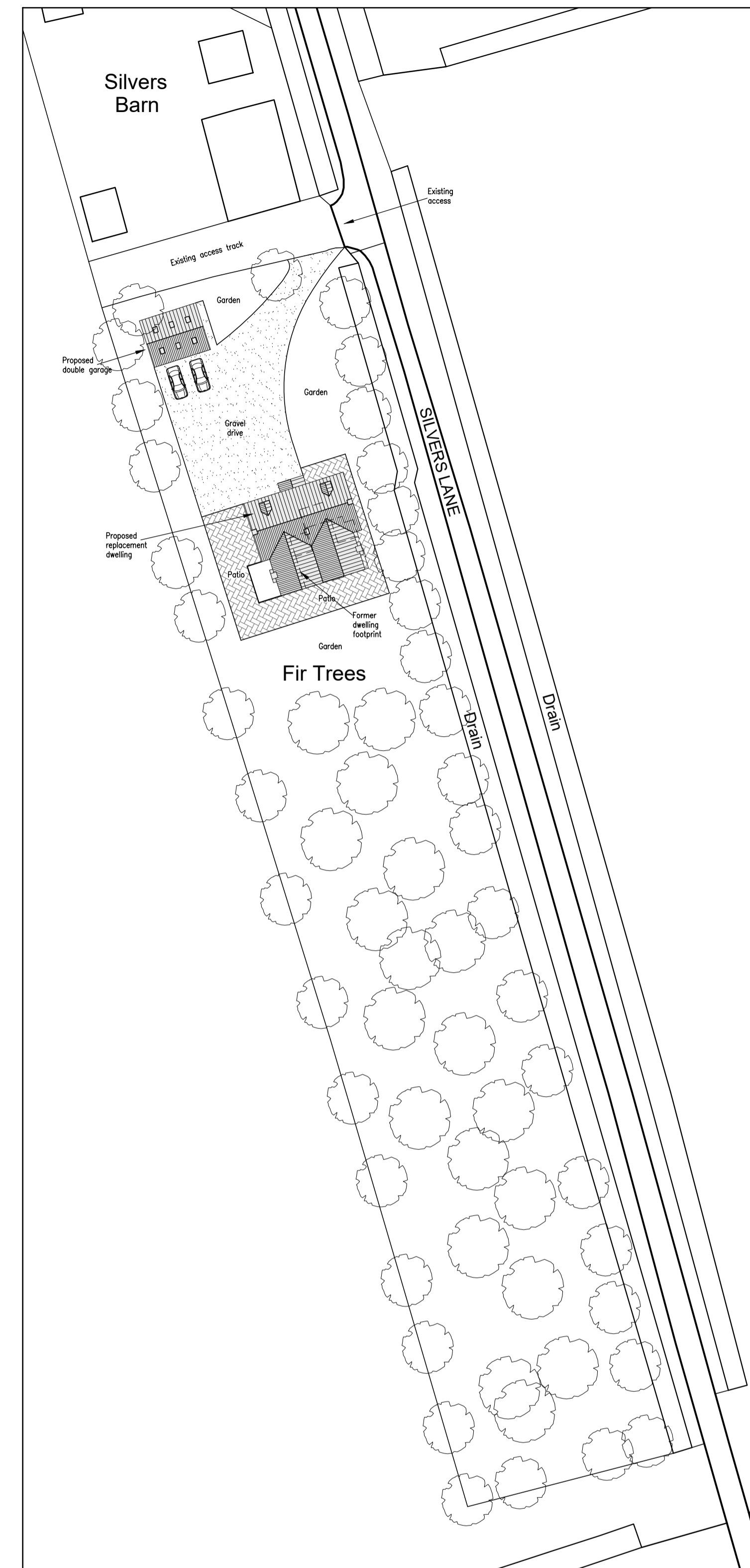
Proposed Side Elevation 1:100



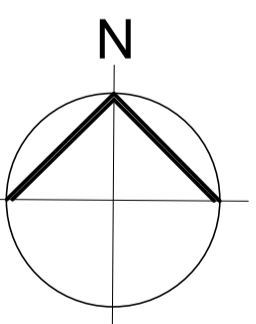
Proposed Second Floor Plan 1:50



Existing Site Plan 1:500



Proposed Site Plan 1:200



A -

REVISIONS	PAPER SIZE	DATE
6560/02B	A1	AUG 2022

Notes:
 This drawing is the permission of Peter Humphrey Associates Ltd. and may not be reused, loaned or copied in whole or part without written consent.
 All dimensions shown on the drawing are in millimeters unless stated otherwise. If the drawing is received electronically (PDF) it is the recipient's responsibility to ensure it is printed to the correct paper size. All dimensions to be checked on site prior to commencing work and any discrepancies to be highlighted immediately.

The Construction (Design and Management) Regulations 2015:
 Peter Humphrey Associates' form of appointment with the client confirms whether the agent is appointed as 'Designer' or 'Principal Designer' under these regulations. Nevertheless, the design phase has been carried out with due consideration for the safety during construction, occupation and maintenance of the finished project. No extraordinary hazards or risks were identified outside of the routine construction operations that would not already been apparent to a competent contractor.

CLIENT
MR O WARDILL

PROJECT
PROPOSED REPLACEMENT DWELLING

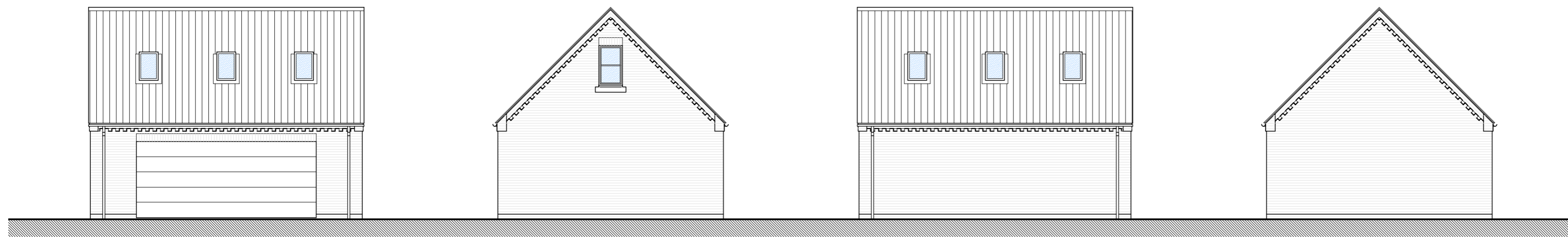
SITE
**FIR TREES
 SILVERS LANE
 PARSON DROVE
 CAMBS
 PE13 4JL**

DRAWING
PLANNING DRAWING 2

PETER HUMPHREY ASSOCIATES

ADDRESS: 2 CHAPEL ROAD, WISBECH, CAMBS, PE13 1RG.

TELEPHONE: 01945 466966
 E-MAIL: info@peterhumphrey.co.uk
 WEB: www.peterhumphrey.co.uk

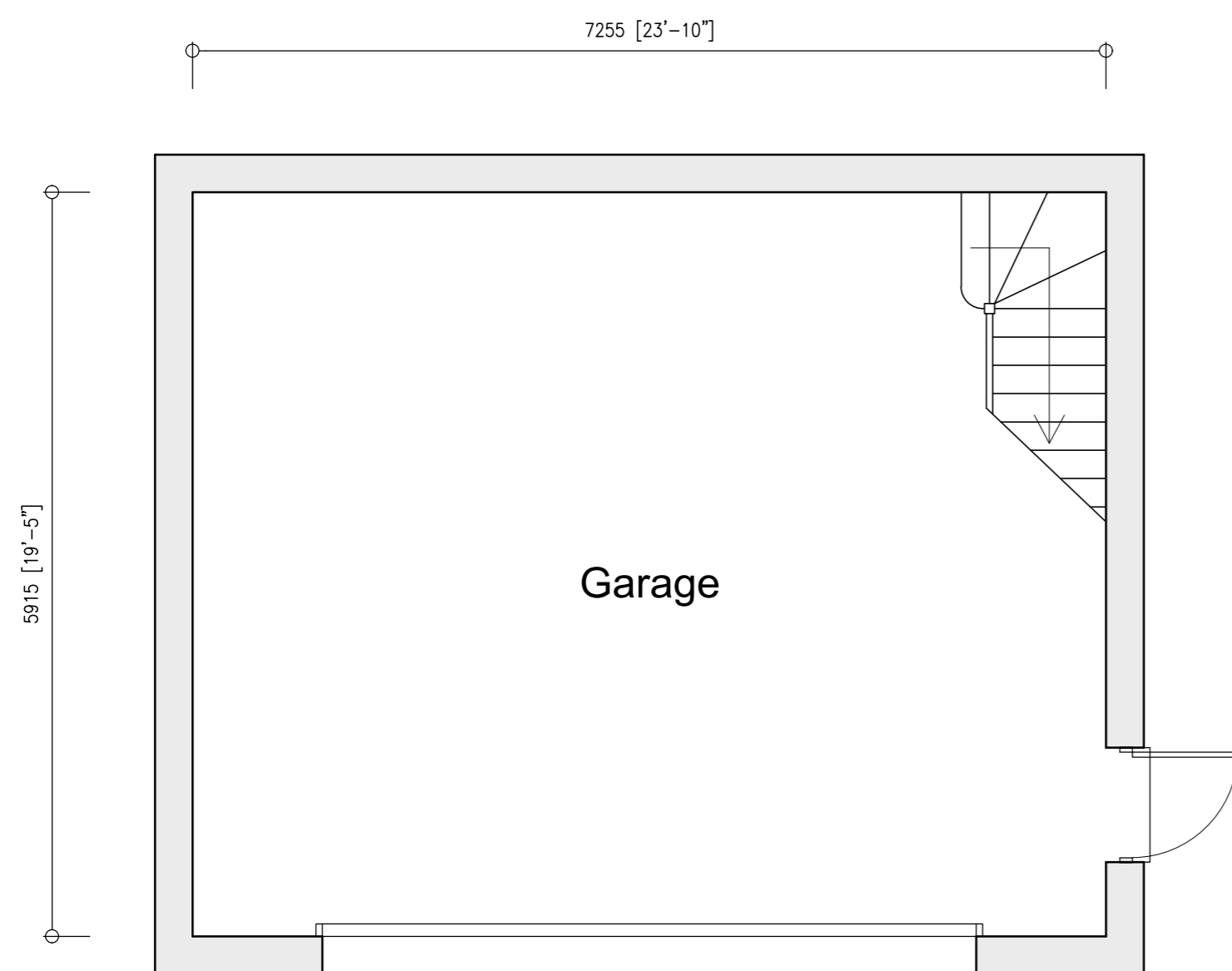


Proposed Front Elevation 1:100

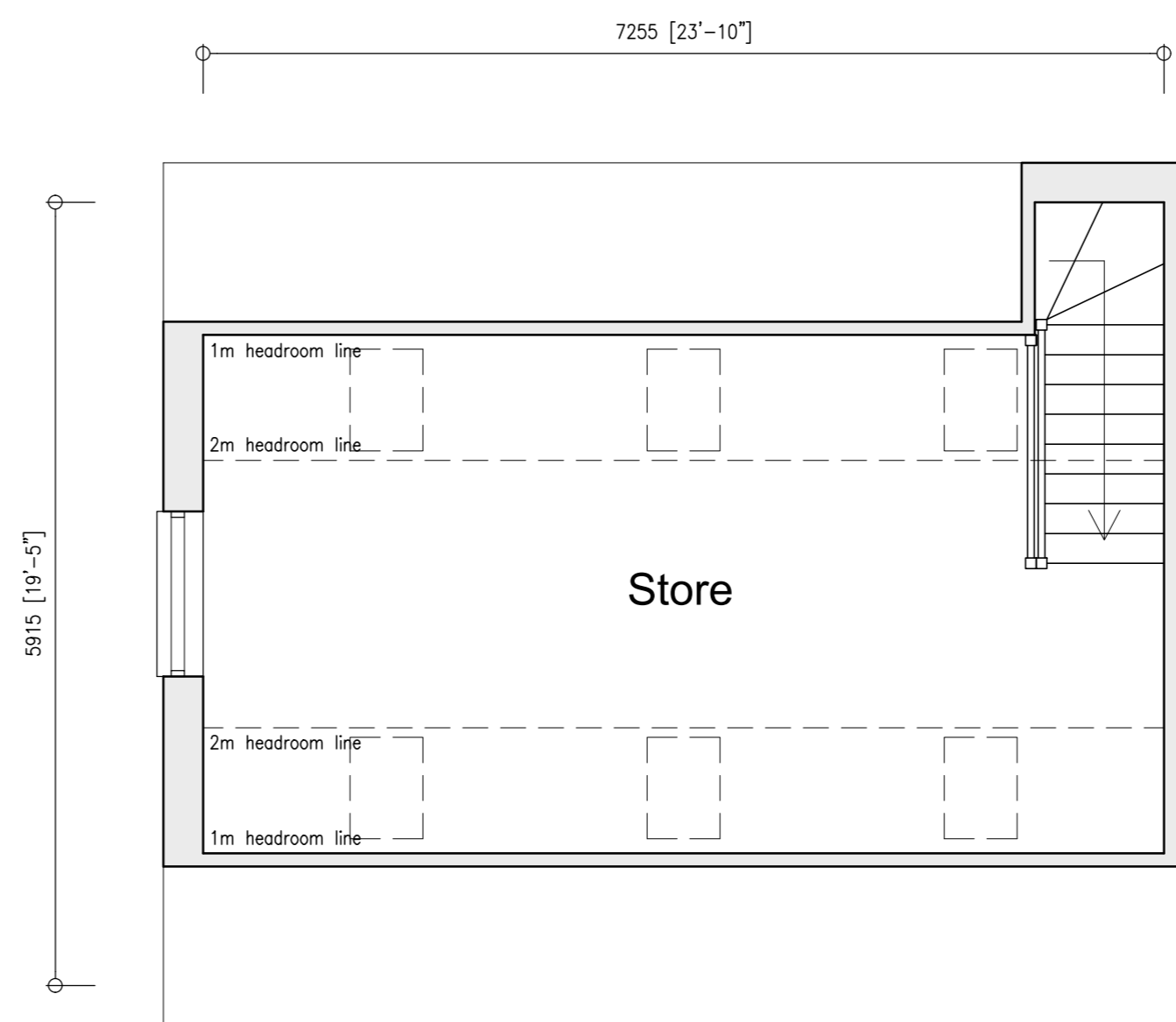
Proposed Side Elevation 1:100

Proposed Rear Elevation 1:100

Proposed Side Elevation 1:100



Proposed Garage Ground Floor Plan 1:50



Proposed Garage First Floor Plan 1:50

A -
REVISIONS



PETER HUMPHREY ASSOCIATES

ADDRESS: 2 CHAPEL ROAD, WISBECH, CAMBS, PE13 1RG.

TELEPHONE: 01945 466966
E-MAIL: info@peterhumphrey.co.uk
WEB: www.peterhumphrey.co.uk

CLIENT

MR O WARDILL

PROJECT

PROPOSED REPLACEMENT DWELLING

SITE

FIR TREES
SILVERS LANE
PARSON DROVE
CAMBS
PE13 4JL

DRAWING

PLANNING DRAWING 3

JOB NO.	PAPER SIZE	DATE
6560/03	A2	AUG 2022

Notes:
This drawing is the permission of Peter Humphrey Associates Ltd. and may not be reissued, loaned or copied in whole or part without written consent.

All dimensions shown on the drawing are in millimeters unless stated otherwise. If the drawing is received electronically (PDF) it is the recipient's responsibility to ensure it is printed to the correct paper size. All dimensions to be checked on site prior to commencing work and any discrepancies to be highlighted immediately.

The Construction (Design and Management) Regulations 2015:
Peter Humphrey Associates' form of appointment with the client confirms whether the agent is appointed as 'Designer' or 'Principal Designer' under these regulations. Nevertheless, the design phase has been carried out with due consideration for the safety during construction, occupation and maintenance of the finished project. No extraordinary hazards or risks were identified outside of the routine construction operations that would not already been apparent to a competent contractor.