



Flood Risk Assessment

AE0310_PO7_Havant_01

aegea

Flood risk, water and environment

Site Address: 110 Sunnymead Drive
Waterlooville
Havant
Hampshire
PO7 6BX

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

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Flood risk, water and environment

Document Issue Record

Project: Flood Risk Assessment

Prepared for: Oliver Falconer

Reference: 493_PO_Havant_01

Site Location: 110 Sunnymead Drive, Waterloooville, Havant, Hampshire, PO7 6BX

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Summary

Development Description	Existing	Proposed
Development Type	Single storey dwelling	Construction of single storey extension to provide greater habitable space. Approximate 13m ² increase in footprint
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Level	Approximately 40.14m AOD to 40.69m AOD (based on EA 1m LIDAR)	FFLs of proposed extension to be set no lower than FFLs of existing dwelling in line with EA Standing Advice for Minor Developments
Level of Sleeping Accommodation	Ground Floor	Ground Floor
Impermeable Surface Area	N/A ¹	Negligible change – proposed extension to be atop existing hardstanding based on aerial imagery
Surface Water Drainage	N/A ¹	Runoff could be discharged via existing system as proposal is Minor Development. Betterment could be provided through provision of small-scale SuDS such as water butts or rainwater planters
Site Size	Approximately 545m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 2	
Flood Source	Fluvial and Pluvial	
SFRA Available	Partnership for Urban South Hampshire (PUSH) SFRA (2016) Web Mapping	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	No	FFLs of proposed extension to be set no lower than FFLs of existing dwelling in line with EA Standing Advice for Minor Developments
Safe Access/Egress Route	N/A ¹	Proposal is extension to the existing dwelling and thus access/ egress arrangements would not differ from existing
Flood Resilient Design	Yes	Section 5 of this report. Extension should be constructed in flood resilient manner in line with CLG 2007 Report Improving Flood Performance of New Buildings
Site Drainage Plan	N/A ¹	N/A ¹
Flood Warning & Evacuation Plan	N/A ¹	Runoff could be discharged via existing system as proposal is Minor Development. Betterment could be provided through provision of small scale SuDS such as water butts or rainwater planters
Offsite Impacts	Summary	Comment
Displacement of floodwater	Negligible	Proposal is Minor Development which may not result in significant impact of floodplain storage in isolation in accordance with paragraph D47 of the Flood Risk and Coastal Change PPG
Increase in surface run off generation	Negligible	Runoff could be discharged via existing system as proposal is Minor Development. Betterment could be provided through provision of small-scale SuDS such as water butts or rainwater planters
Impact on hydraulic performance of channels	None	No Change

¹ not required for this assessment ² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Oliver Falconer to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development of a single storey side extension to the existing single storey dwelling. This FRA has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.2. This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is 110 Sunnymead Drive, Waterlooville, Havant, Hampshire, PO7 6BX (Figure 1).



Figure 1: Site Location

- 1.4. The existing site comprises a residential dwelling. It is understood that the proposed development is for the construction of a single storey side extension to the existing single storey dwelling.

- 1.5. The proposed increase in footprint would be approximately 13m². The proposed extension could therefore be considered a Minor Development/ householder extension in accordance with the EA standing advice.
- 1.6. In the absence of a topographical survey, Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model (1m resolution) has been utilised to review the topography of the site. Analysis of EA LiDAR indicates that topographic levels on site vary between approximately 40.14m Above Ordinance Datum and 40.69m AOD (Figure 2).

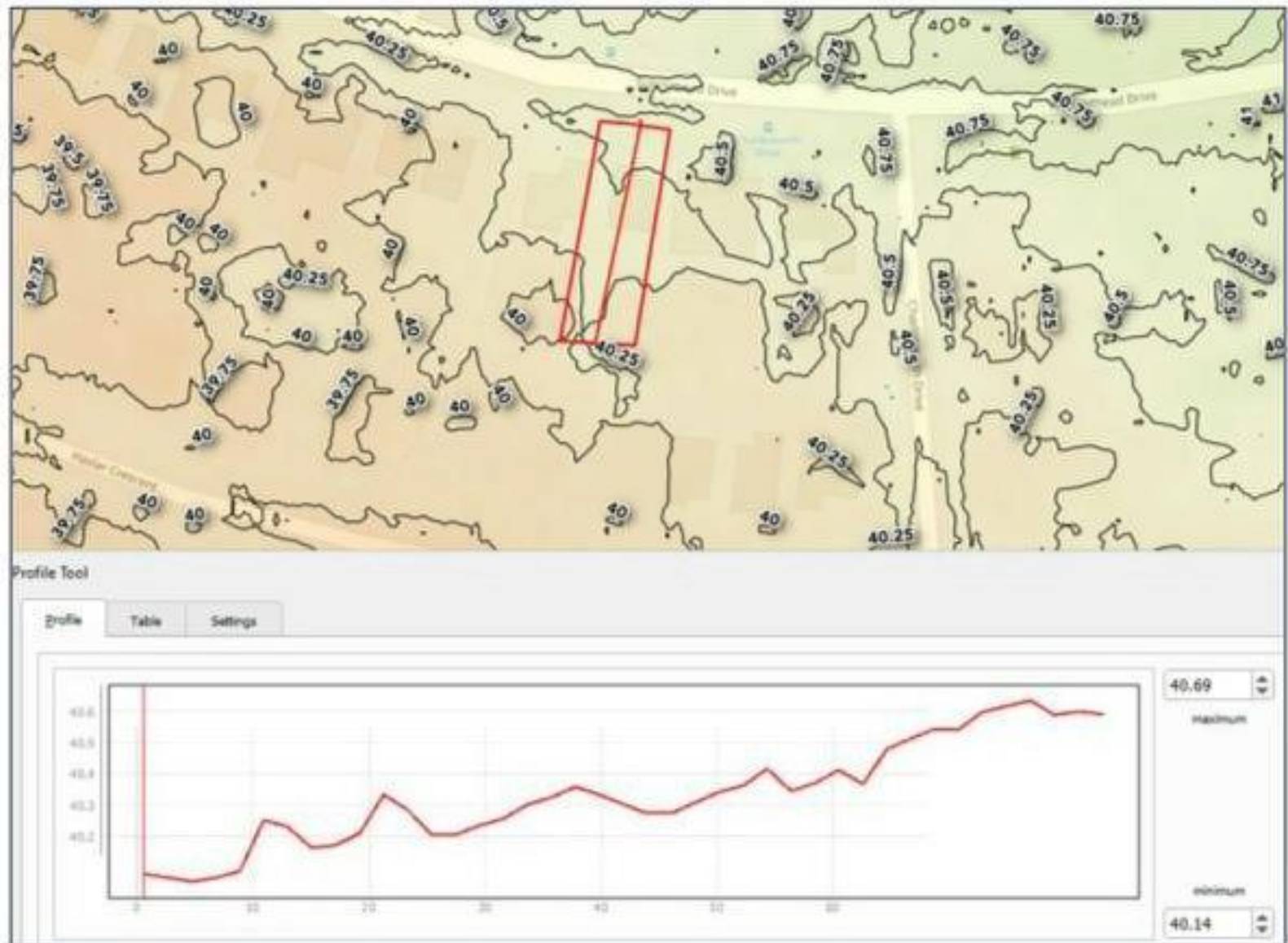


Figure 2: Site Topography

- 1.7. Havant Borough Council is the Local Planning Authority (LPA) for the site, while Hampshire County Council is the designated Lead Local Flood Authority (LLFA) for the site. The site sits within the Environment Agency's (EA) Solent and South Downs region.

Planning Policy and Guidance

1.8. UK government planning guidance states¹ that an FRA is required for sites which are:

- *In Flood Zone 2 or 3 including minor development and change of use,*
- *More than 1 hectare in Flood Zone 1,*
- *Less than 1 ha in Flood Zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than river and the sea (for example surface water drains or reservoirs),*
- *In an area within Flood Zone 1 which has critical drainage problems as notified by the Environment Agency.*

1.9. The site is located within Flood Zone 2 according to the EA Flood Map for Planning and thus an FRA is required to support the planning application.

1.10. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:

- Fluvial flood risk
- Surface water flood risk
- Risk of flooding from other sources.

¹ <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment>

2. National Planning Policy Framework

- 2.1. The potential consequences of inappropriate development in a flood risk area for occupiers, either of the development or elsewhere, pose significant risks in terms of personal safety and damage to property. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. The following section summarises the key policies and guidance relevant to the proposed development.
- 2.2. The National Planning Policy Framework² (NPPF) (DCLG, 2021) includes Government policy on development and flood risk stating that:

"159. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

167. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) any residual risk can be safely managed; and*

² <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated July 2021

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

168. Applications for some minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 55. "

2.3. Footnote 55 of the NPPF states:

"A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."

2.4. Flood Zones in England are defined in Table 1³ as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zone 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)

³ <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in her Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)
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Table 1: Flood Zone Definitions

- 2.5. An FRA should be appropriate to the scale, nature and location of the development and should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.
- 2.6. An assessment of any hydrological impacts should be assessed including an assessment of impacts on surface water runoff and impacts to the drainage network to demonstrate how flood risk to others will be managed following development and taking climate change into account.

Sequential and Exception Tests

- 2.7. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.
- 2.8. Paragraph 168 of the 2021 NPPF states that:

*168. Applications for some **minor development** and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 55. "*

- 2.9. As such, as the proposal is for a Minor Development, the application should not be subject to the Sequential or Exception Tests.

Table 2: Flood Risk Vulnerability Classification Table

Flood Risk Vulnerability Classification

Flood Zones	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	x	Exception Test required	✓	✓
Zone 3b	Exception Test required	x	x	x	✓

Summary

2.10. This flood risk assessment has been prepared with due consideration to the above local and national policy.

3. Consultation and Review

Sources of Information

Consultation

- 3.1. A Product 4 data request was submitted to the EA on 13/01/2022. A response to this consultation is outstanding at time of writing.
- 3.2. These will be included within Appendix B upon receipt.

Documents

- 3.3. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.4. The following sources of information have been reviewed for this assessment:
 - The Interactive Flood Risk Mapping available on the Environment Agency (EA) website⁴.
 - The National Planning Policy Framework (NPPF) technical guide (Communities and Local Government, 2019).
 - British Geological Survey - Geology of Britain Viewer (British Geological Society, 2017).
 - Partnership for Urban South Hampshire Strategic Flood Risk Assessment Web Mapping ⁵ (2016).

⁴ Environment Agency, Flood Map for Planning, <https://flood-map-for-planning.service.gov.uk/>, 2017

⁵ Partnership for Urban South Hampshire Strategic Flood Risk Assessment Web Mapping (2016).

<https://pcc.dynamicmaps.co.uk/MapThatPublic/Default.aspx>

4. Sources of Flood Risk

Main Rivers

- 4.1. The nearest Main River to the site is the Potwell Trib which is located approximately 550m southwest of the site. The Potwell Trib flows southwest away from the site at this location, and appears to emerge at this location 550m southwest of the site. The course of the Potwell Trib upstream of this (and potentially close to the site) is not mapped however it is presumed to be culverted until this point.

Ordinary Watercourses

- 4.2. There are no other watercourses in the vicinity of the site.

Fluvial and Tidal Flood Risk

- 4.3. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.
- 4.4. The site is located within Flood Zone 2 (Figure 3). Flood Zone 2 denotes a risk of flooding from fluvial sources between 1 in 100 years and 1 in 1000 years.



Figure 3: EA Flood Mapping for Planning

- 4.5. The Potwell Trib is fluvial at this location and thus the risk of flooding from tidal sources could be considered low.

- 4.6. Given that the Potwell Trib is culverted and only emerges 550m southwest of the site, the risk of flooding in this area may be the result of pluvial sources rather than fluvial, and thus the risk of flooding from fluvial sources could be considered low.
- 4.7. Furthermore, the proposal is a Minor Development, and can adhere to the EA Standing Advice for Minor Developments. The Finished Floor Levels (FFLs) of the proposed extension will be set no lower than those of the existing dwelling. Furthermore, the extension should be constructed in a flood resilient manner in accordance with the CLG Report, *Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007)*.

Historic Flooding

- 4.8. The Environment Agency's Historic Flood Map dataset indicates that the nearest recorded fluvial or tidal flood event was recorded approximately 1.3km from the site.
- 4.9. As such, given that the nearest watercourse is culverted and the Flood Zone 2 extent is not derived from historic extents, the risk of flooding to this area may be more pluvial influenced rather than fluvial.

Coastal Flooding

- 4.10. The site is not at risk of coastal flooding.

Canals

- 4.11. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders and boreholes and manages water levels by transferring it within the canal system.
- 4.12. Water in a canal is typically maintained at predetermined levels by control weirs. When rainfall or other water enters the canal, the water level rises and flows out over the weir. If the level continues rising it will reach the level of the storm weirs. The control weirs and storm weirs are normally designed to take the water that legally enters the canal under normal conditions. However, it is possible for unexpected water to enter the canal or for the weirs to become obstructed. In such instances the increased water levels could result in water overtopping the towpath and flowing onto the surrounding land.
- 4.13. Flooding can also occur where a canal is impounded above surrounding ground levels and the retaining structure fails.

- 4.14. There are no canals within the vicinity of the site and thus the risk of flooding from this source could be considered low.

Pluvial Flood Risk

- 4.15. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 4.16. The EA Long Term Flood Risk Maps indicate that the site is within an area of low risk of surface water flooding (Figure 4).



Figure 4: EA Surface Water Flood Risk Mapping

- 4.17. The EA Risk of Flooding from Surface Water (RoFSW) dataset indicates that the site could remain unaffected in the 1:30 year (3.3%) and 1:100 year (1%) events (Figures 5 and 6).
- 4.18. However, the RoFSW indicates that the site could be affected in the 1:1000 year event with flood depths of 300mm to 600mm in places (Figure 7). Although, the extension itself would remain unaffected in the 1:1000 year event based on the RoFSW dataset. .



Figure 5: 1:30 Year Pluvial Flood Depths (Sources: Bing Aerial, EA RoFSW)



Figure 6: 1:100 Year Pluvial Flood Depths (Sources: Bing Aerial, EA RoFSW)

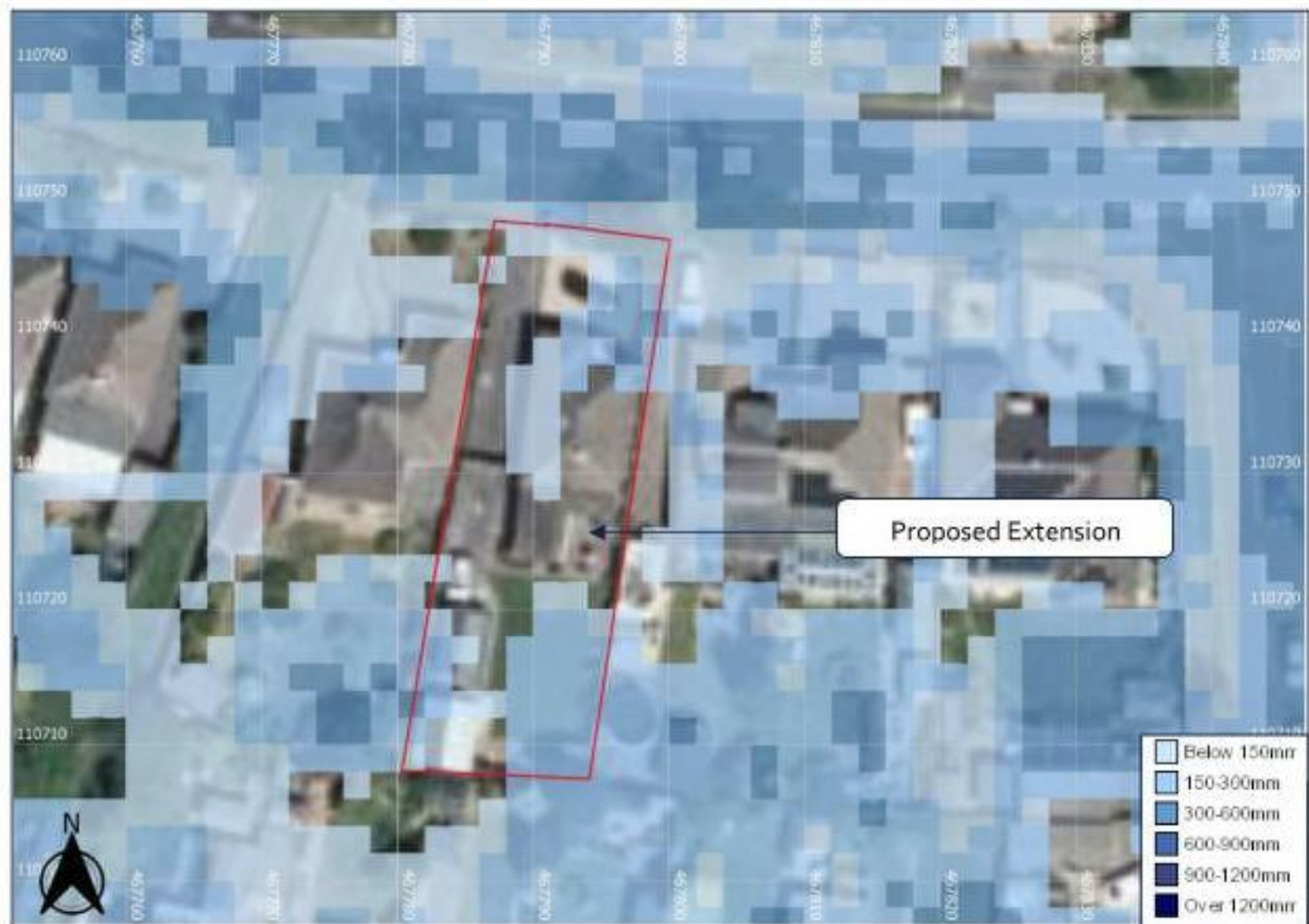


Figure 7: 1:1000 Year Pluvial Flood Depths (Sources: Bing Aerial, EA RoFSW)

- 4.19. As such, the risk of flooding from pluvial sources to the proposed development could be considered low.
- 4.20. Furthermore, the proposal is a Minor Development, and can adhere to the EA Standing Advice for Minor Developments. The Finished Floor Levels (FFLs) of the proposed extension will be set no lower than those of the existing dwelling. Furthermore, the extension should be constructed in a flood resilient manner in accordance with the CLG Report, *Improving the Flood Performance of New Buildings - Flood Resilient Construction* (2007).

Reservoirs

- 4.21. The EA Risk from Reservoir Map demonstrates that the site is outside flood extents in the event of reservoir flooding.

Groundwater

- 4.22. Groundwater flooding occurs in areas where underlying geology is permeable, and water can rise within the strata sufficiently to breach the surface.
- 4.23. The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is London Clay comprising clay, silt and sand. The British Geological Survey (BGS) Geology of Britain Viewer indicates that there are no superficial deposits underlying the site.
- 4.24. The PUSH SFRA (2016) mapping indicates that the site is within an area with low bedrock permeability.
- 4.25. Furthermore, the SFRA (2016) indicates that the nearest recorded groundwater flooding incident was located approximately 1.3km northwest of the site, in Anmore.
- 4.26. As such, the risk of flooding from groundwater sources could be considered low.

Surface and Foul Sewer Flooding

- 4.27. The PUSH SFRA (2016) mapping indicates that the nearest observed flooding incident based on Southern Water records was located approximately 580m north of the site, on Chaplains Avenue. Incidents were also recorded on Linda Grove approximately 1km northeast of the site.
- 4.28. As such, no records could be found to indicate sewer flooding at or in the immediate vicinity of the site.
- 4.29. The risk of flooding from sewers could be considered low.

5. Flood Risk Mitigation

Fluvial and Tidal

- 5.1. The site is in Flood Zone 2 (medium risk of flooding from fluvial sources). No site-specific modelled flood data was available at the time of writing.
- 5.2. Given that the Potwell Trib is culverted and only emerges 550m southwest of the site, the risk of flooding in this area may be the result of pluvial sources rather than fluvial, and thus the risk of flooding from fluvial sources could be considered low.
- 5.3. The proposal is a Minor Development and can adhere to the EA Standing Advice for Minor Developments. The Finished Floor Levels (FFLs) of the proposed extension will be set no lower than those of the existing dwelling. Furthermore, the extension should be constructed in a flood resilient manner in accordance with the CLG Report, *Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007)* including measures such as the below
 - Solid (i.e. concrete floors) with waterproof screed.
 - Raised wiring and power outlets at ground level.
 - Units to be raised on legs above plinth.
 - Waterproof plasterboard used at ground floor.
 - Air brick covers to be installed.
 - Damp Proof Membranes (d.p.m.) should be included in any design to minimise the passage of water through ground floors.
 - Patio doors may be susceptible to ingress of flood water. Any PVC window/door sills should be adequately sealed. Double glazing should be used to provide resistance against external flood water pressure. Of concern would be excessive water pressure on the glazing of patio doors.

Pluvial

- 5.4. The site could remain unaffected in the 1:30 year and 1:100 year pluvial events, but could be partially affected in the 1:1000 year event. Although, the extension itself would remain unaffected in the 1:1000 year event based on the RoFSW dataset.

- 5.5. Therefore, no mitigation strategies are required bar those that are already to be implemented based on fluvial flood risk.

Reservoirs, Groundwater and Sewers

- 5.6. Flood risk from other sources could be considered low, therefore mitigation is not proposed.

Impact on Flood Risk Elsewhere

- 5.7. The proposed development is for the construction of an extension to the existing dwelling on site. As such, the proposal constitutes a Minor Development under the NPPF.

- 5.8. Paragraph 047 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

Minor developments are unlikely to raise significant flood risk issues unless:

- they would have an adverse effect on a watercourse, floodplain or its flood defences;
- they would impede access to flood defence and management facilities, or;
- where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.

- 5.9. As such, the proposed development in isolation should have a negligible impact on flood risk elsewhere.

6. Conclusions

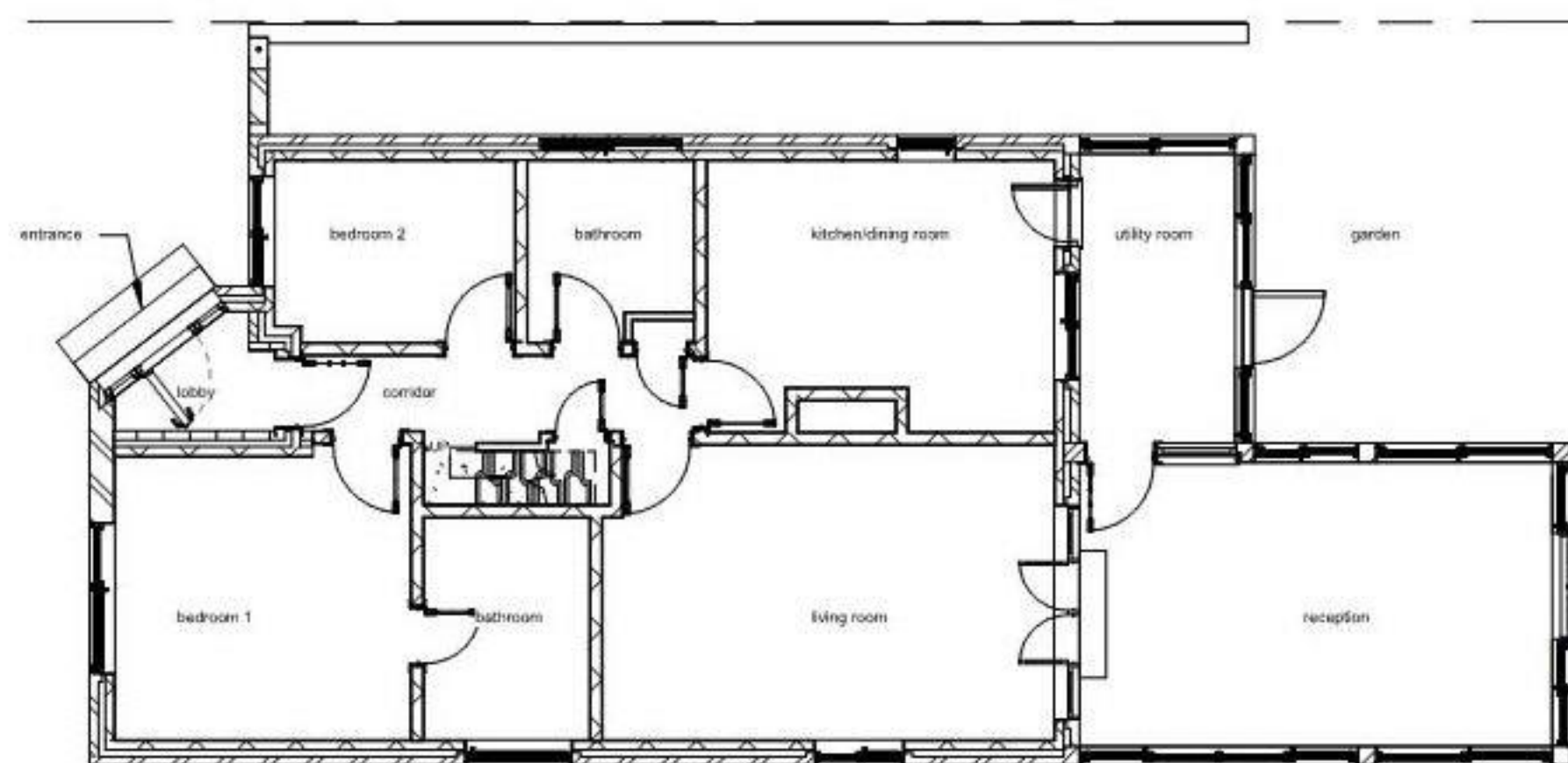
- 6.1. This FRA has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at 110 Sunnymead Drive, Waterlooville, Havant, Hampshire, PO7 6BX. It has been written to support a planning application and has been prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.

Source of Flooding	Flood Risk Summary
Fluvial (and Canals)	The site is located in Flood Zone 2 (medium risk of flooding from fluvial sources). No site-specific modelled flood data was available at the time of writing. Given that the Potwell Trib is culverted and only emerges 550m southwest of the site, and given that the Flood Zone 2 extent does not appear to be derived from recorded flood outlines, the risk of flooding in this area may be the result of pluvial sources rather than fluvial, and thus the risk of flooding from fluvial sources could be considered low
Pluvial	The site could remain unaffected in the 1:30 year and 1:100 year pluvial events, but could be partially affected in the 1:1000 year event. Although, the extension itself would remain unaffected in the 1:1000 year event based on the RoFSW dataset.
Reservoirs Groundwater Sewers	The site could be considered to be at low risk from other sources.

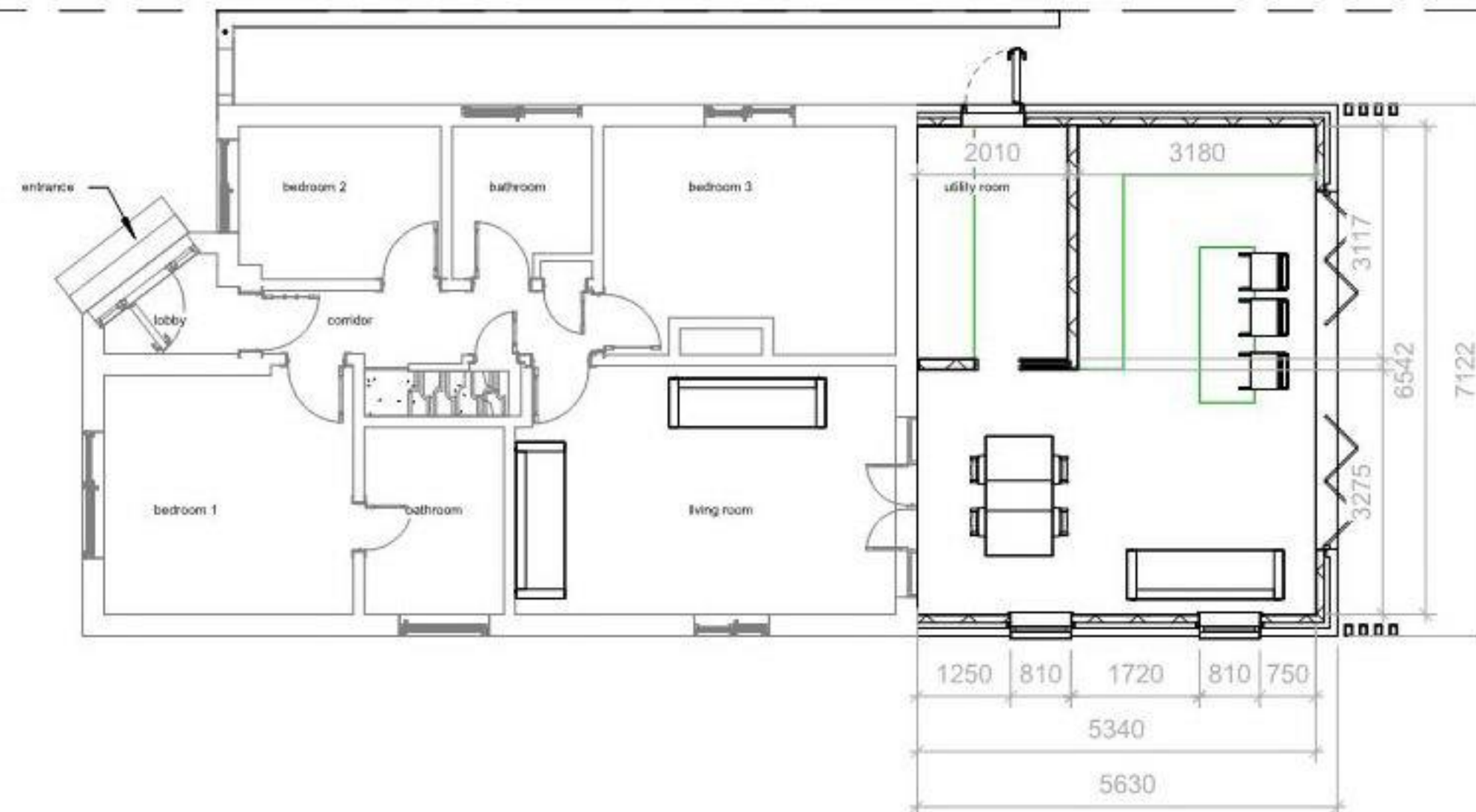
- 6.3. The following conclusions can be drawn from this level 1 FRA:
- This FRA has identified no prohibitive constraints in developing the proposed site for the proposed usage.
 - The proposal is a Minor Development and can adhere to the EA Standing Advice for Minor Developments.

- The proposed development would remain unaffected in the 1:1000 year pluvial event based on the RoFSW dataset.
- 6.4. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals



Existing Ground Floor



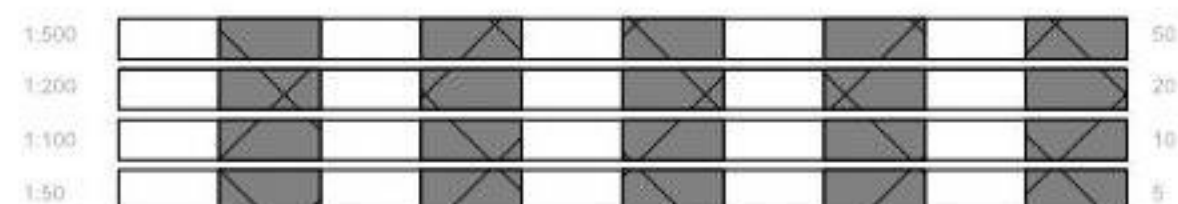
Proposed Ground Floor

1.500																50
1.200																20
1.100																10
1.50																5



Location Plan

1:1250



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Block Plan

1:500



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PROJECT

110 Sunnymead Drive

SHEET

Site Plan

CLIENT

Falconer

Date

Issue Date

Scale (to A3)

As

Drawn by

SW

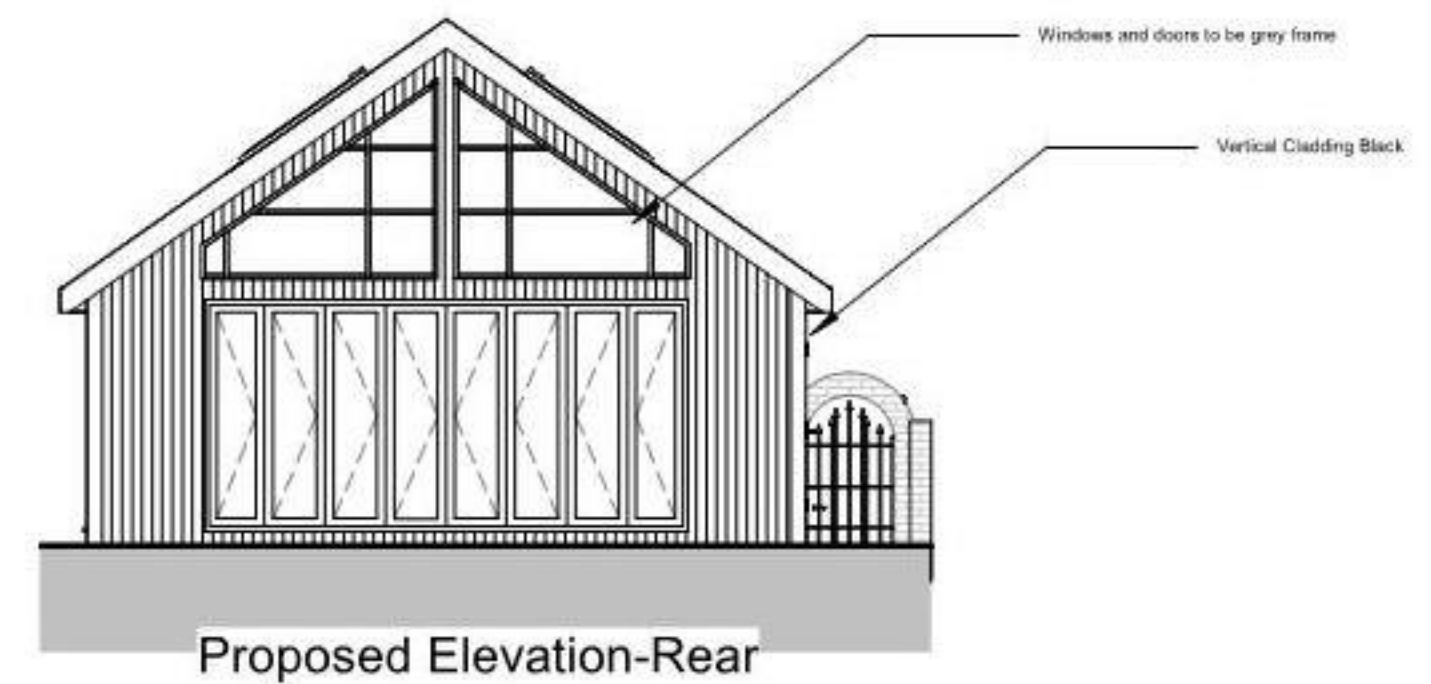
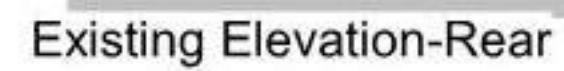
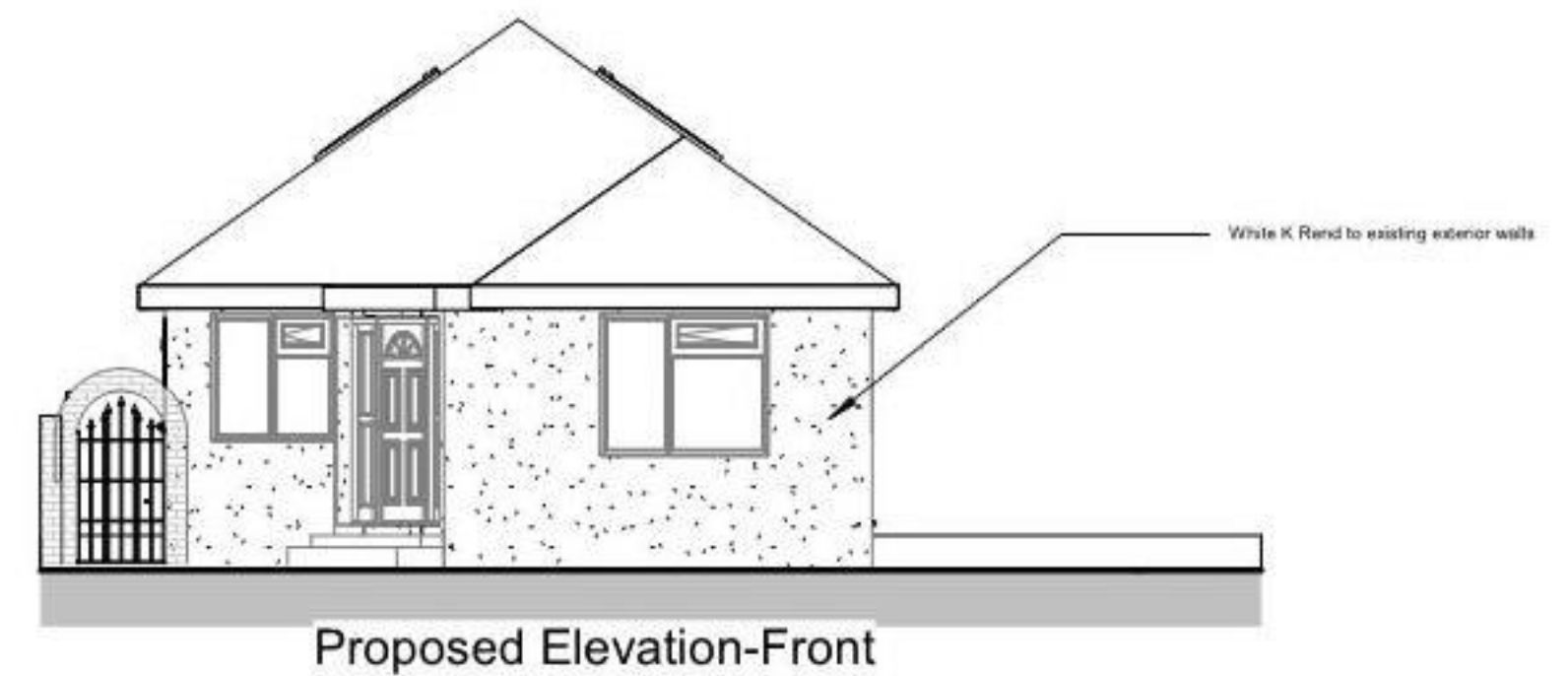
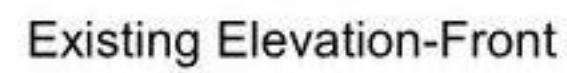
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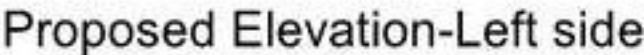
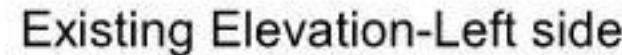
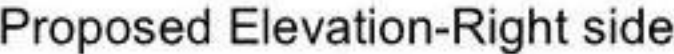
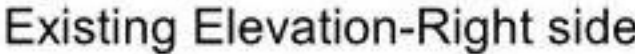
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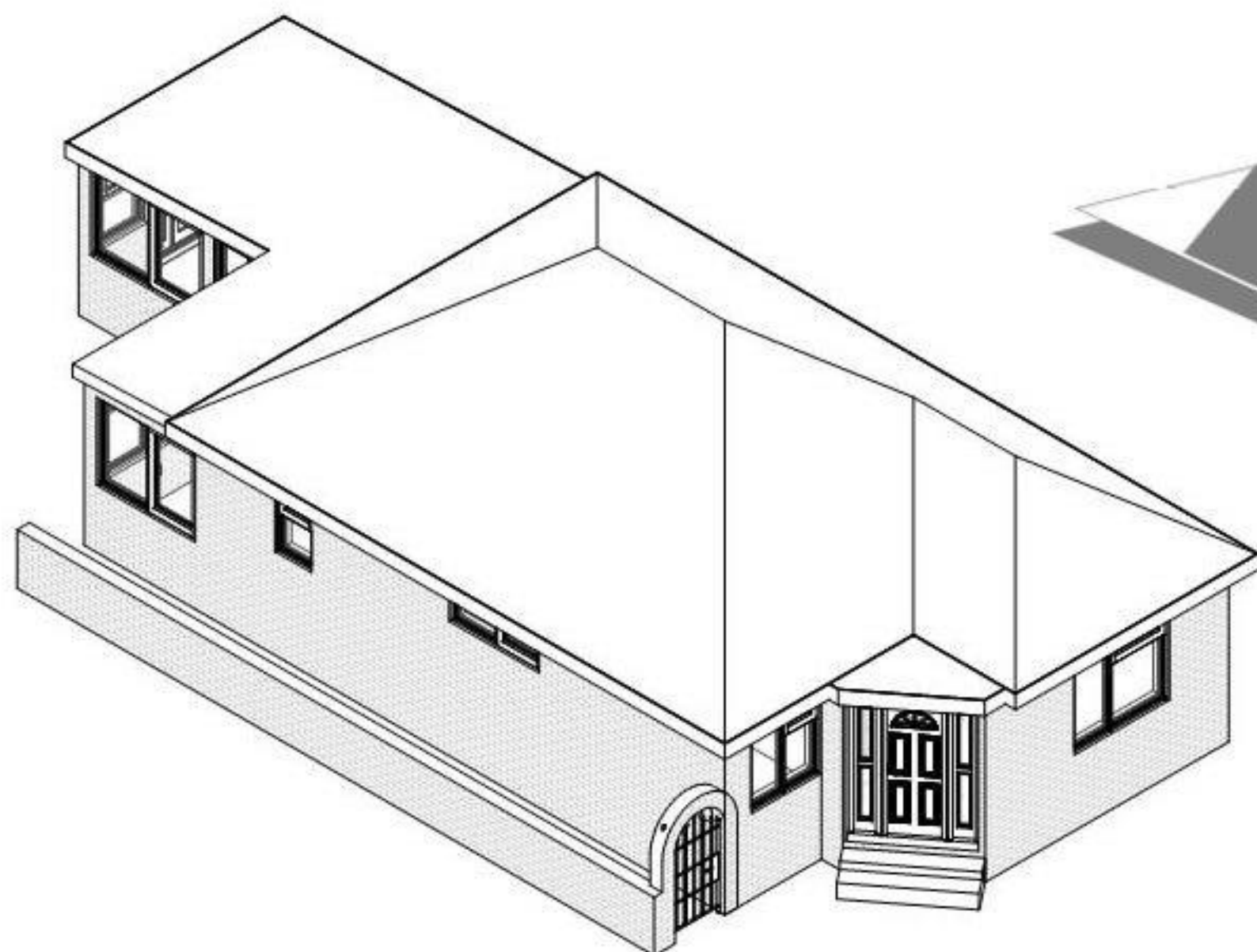
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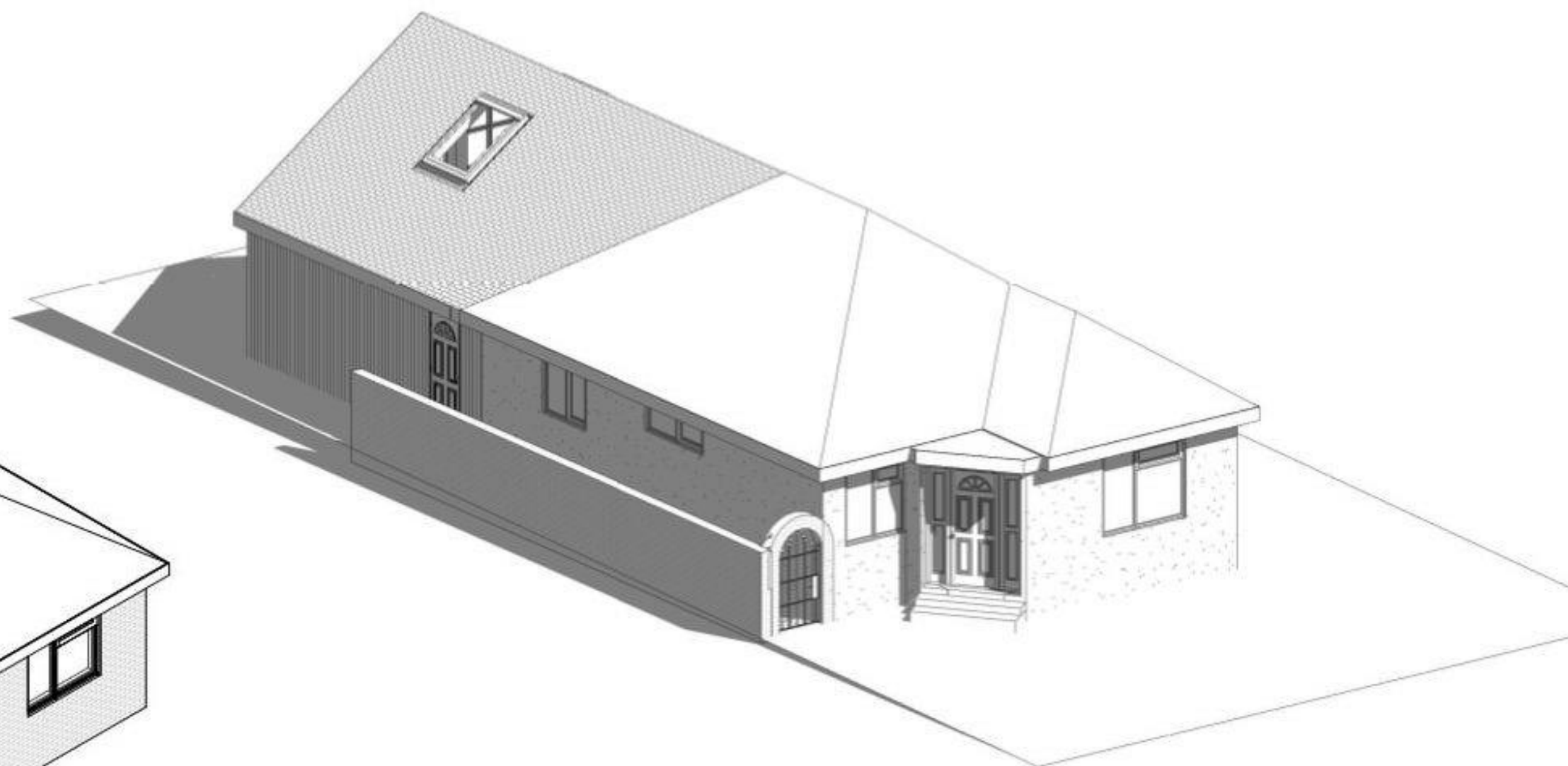


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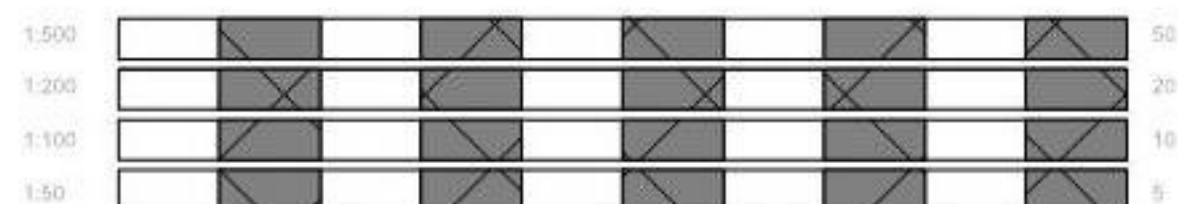


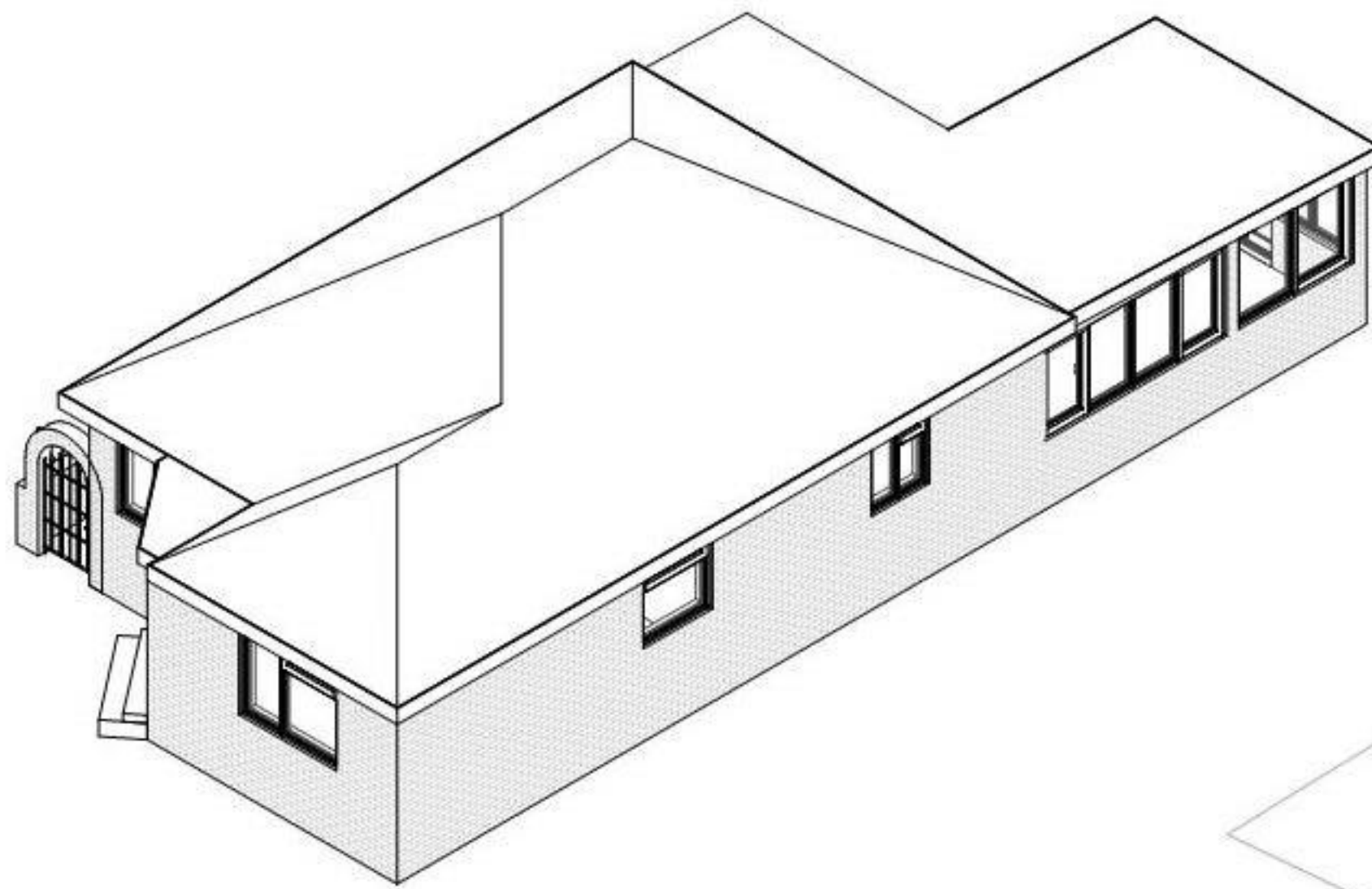


Existing 3D 1

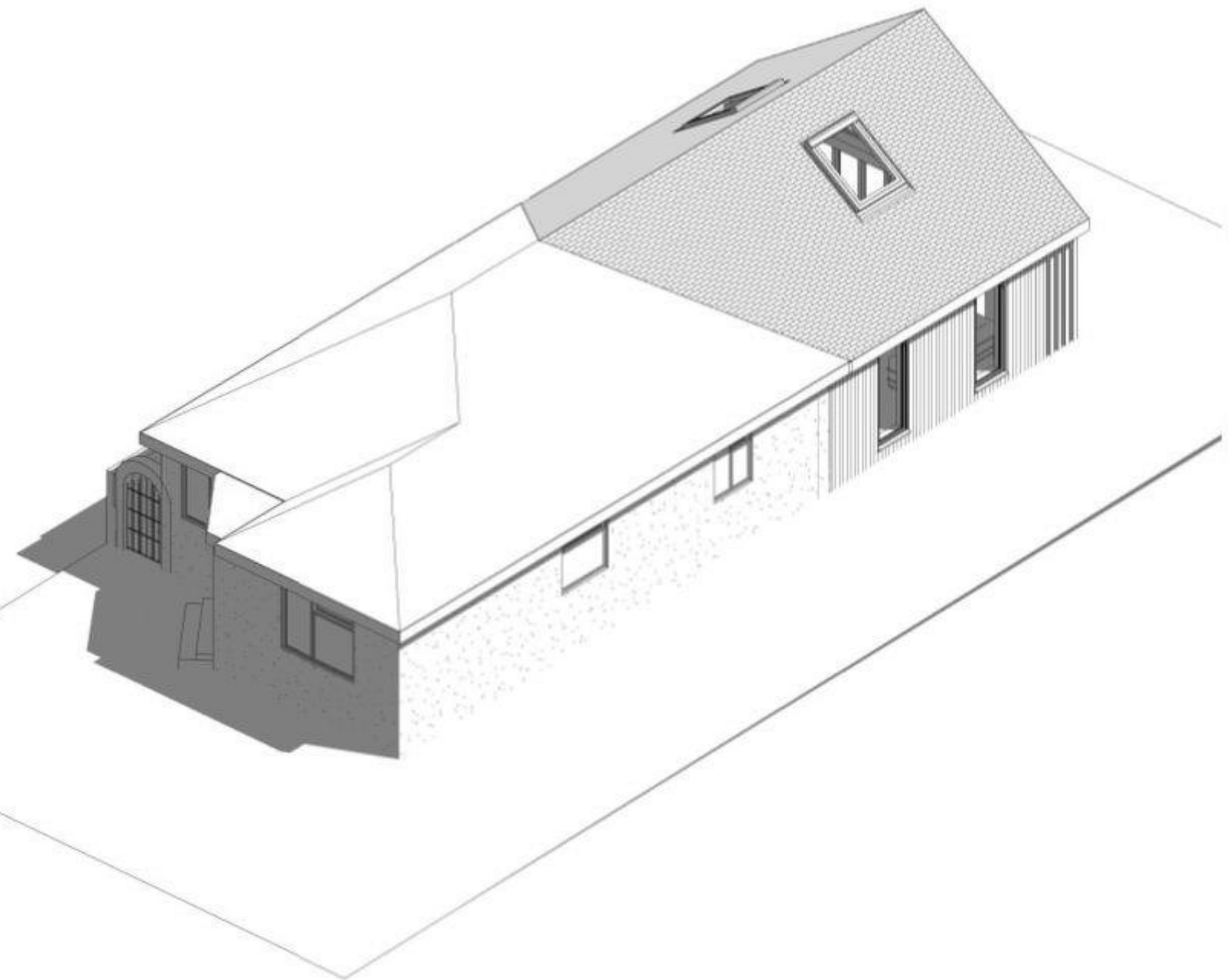


Proposed 3D 1





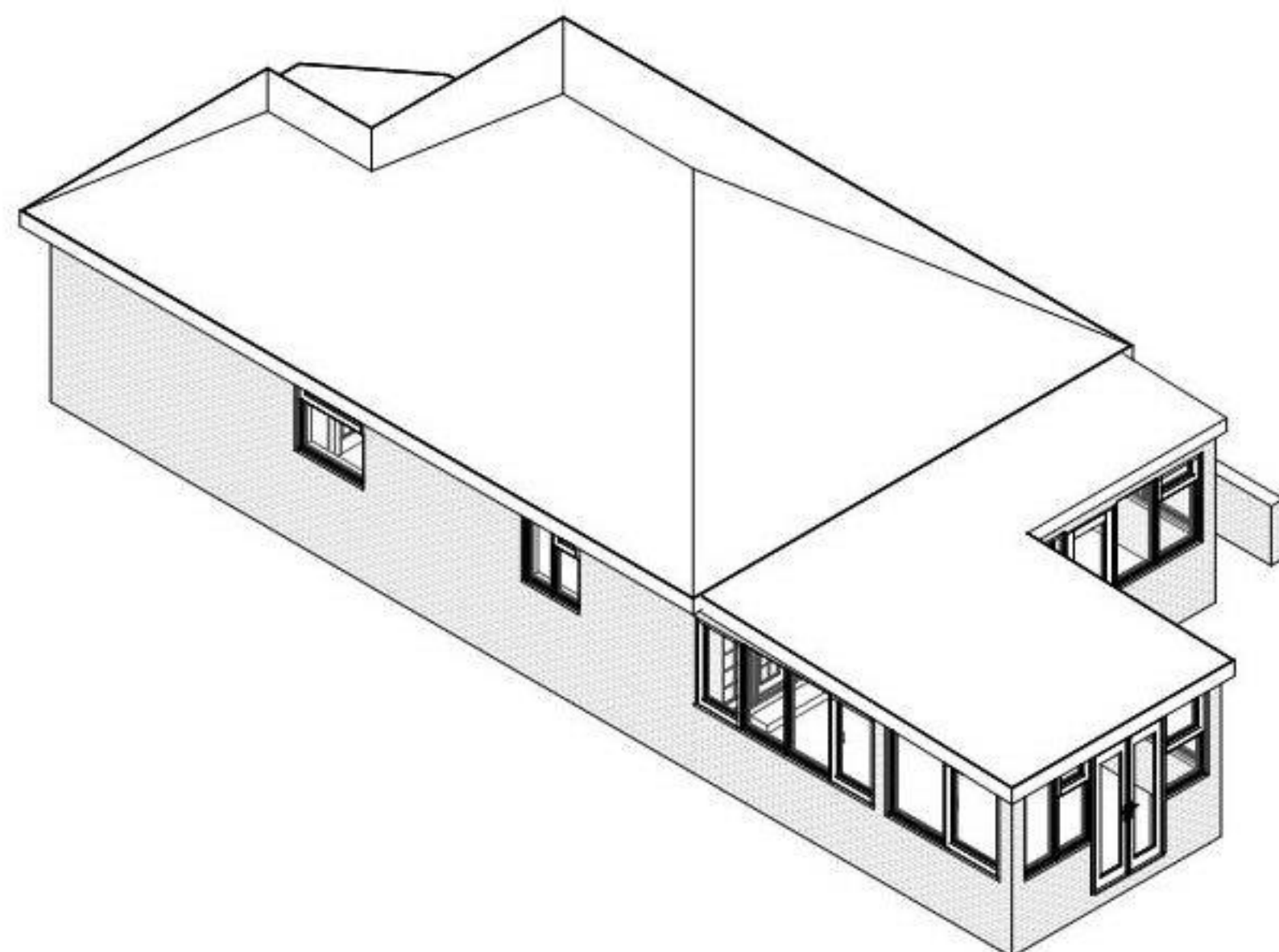
Existing 3D 2



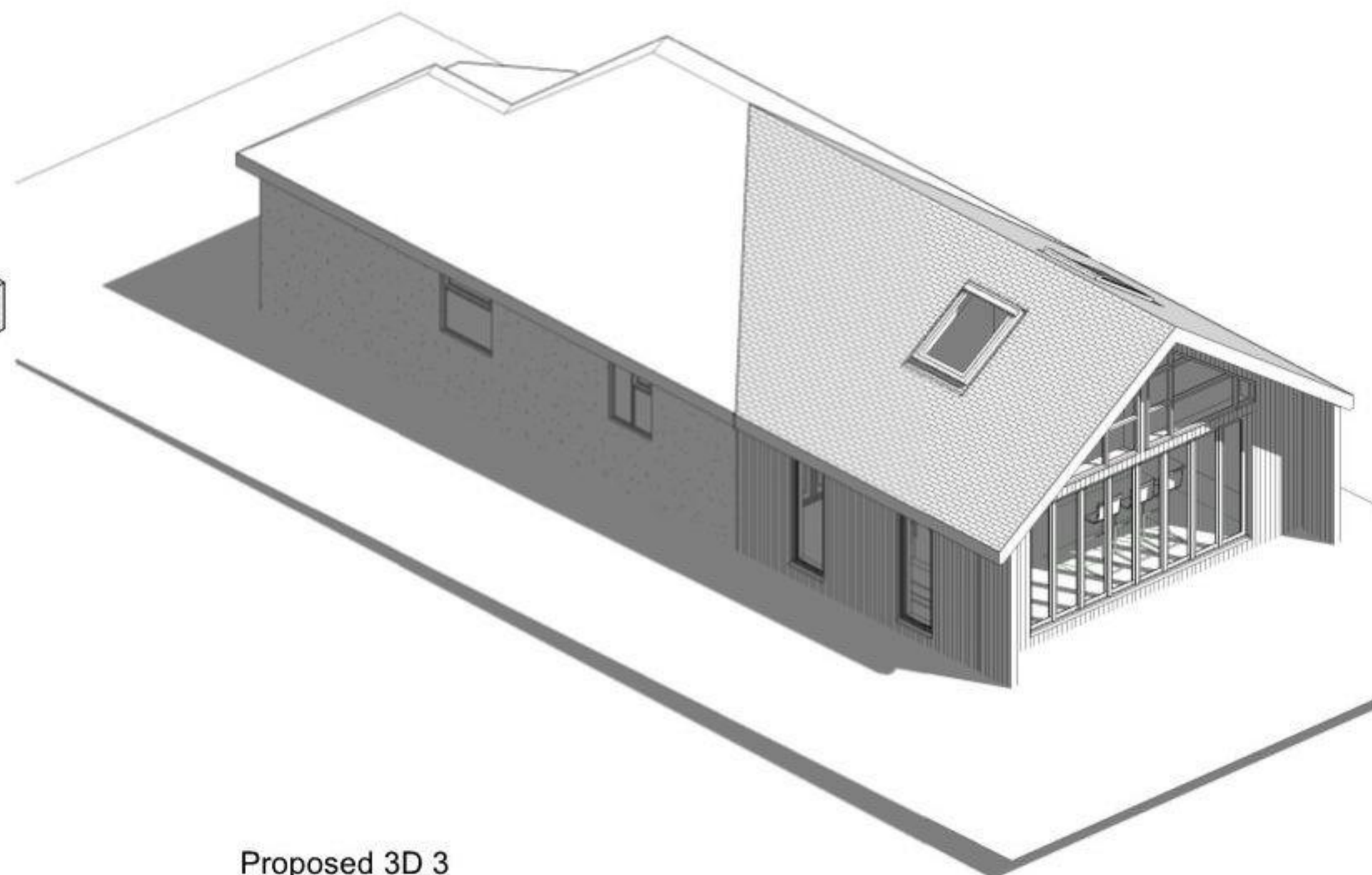
Proposed 3D 2

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1:100		10
1:50		5

PROJECT	110 Sunnymead Drive			
	CLIENT Falconer			
SHEET	Date	Issue Date	Scale 1/60 (A3)	
	3D 2			
Drawn by	SW	DRAWING NUMBER		REV
Checked by	SR	P 6		



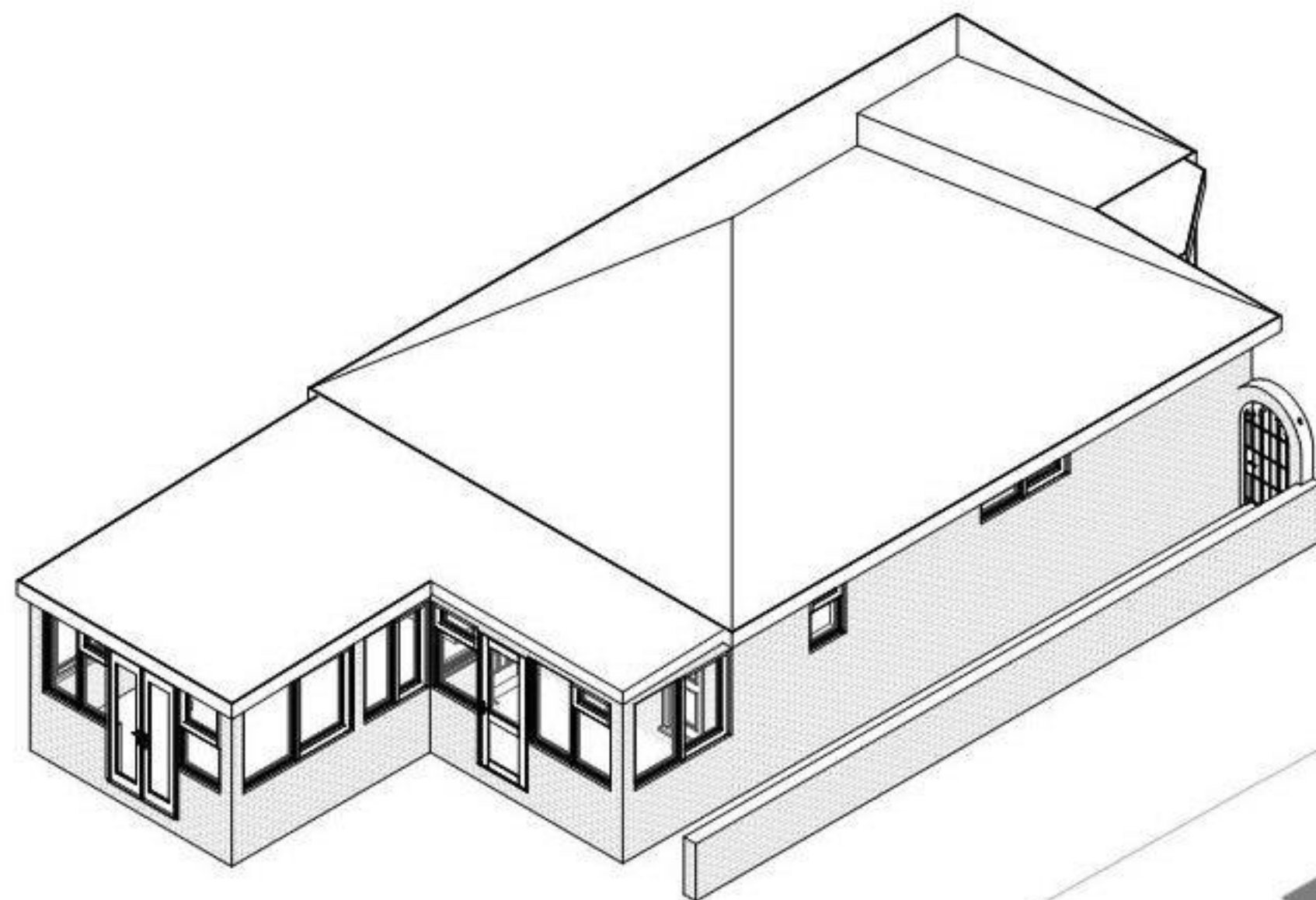
Existing 3D 3



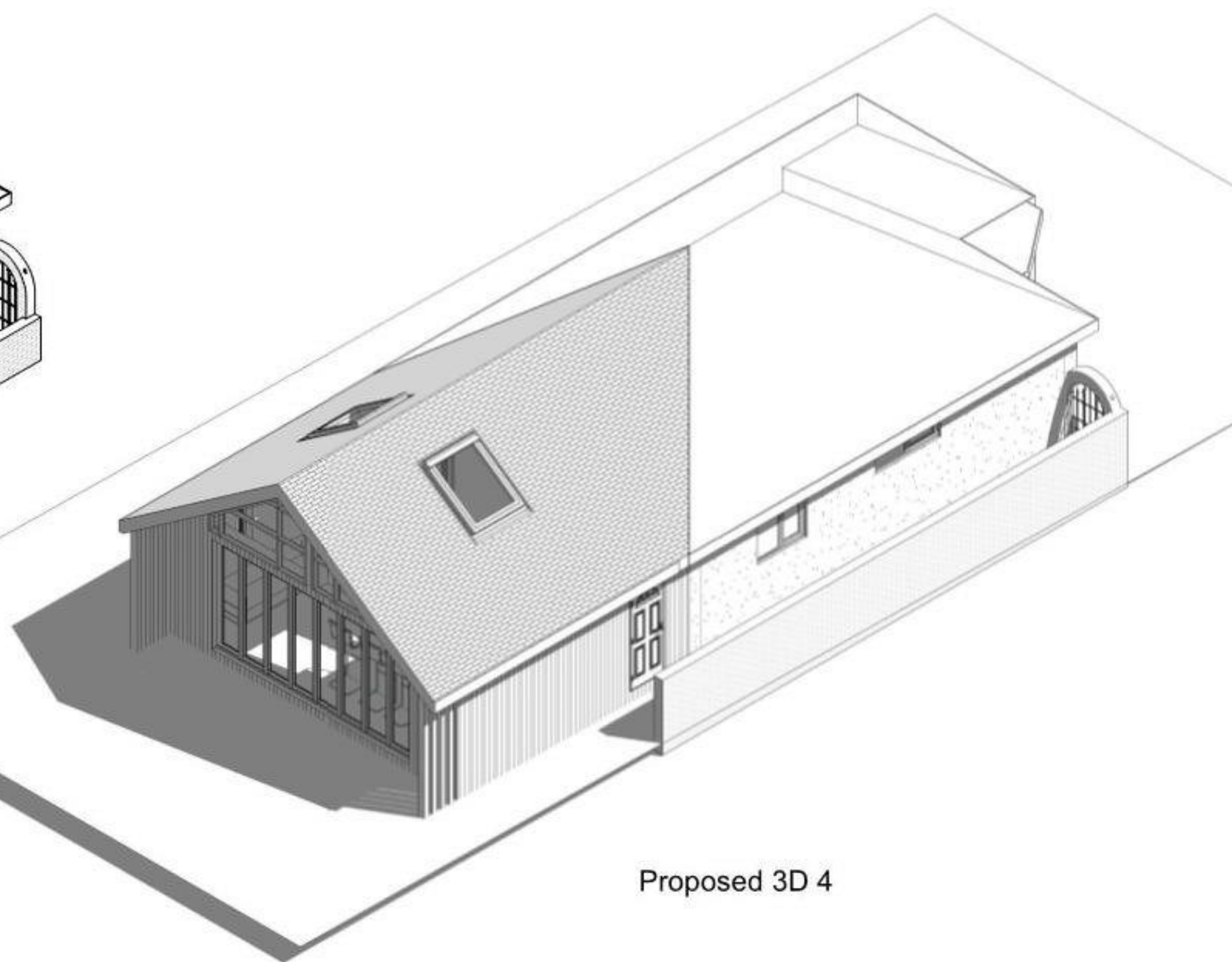
Proposed 3D 3

1:500		50
1:200		20
1:100		10
1:50		5

PROJECT	110 Sunnymead Drive		CLIENT		Falconer		
SHEET	3D 3		Date	Issue Date	Scale (to A3)		
			Drawn by	SW	DRAWING NUMBER		REV
			Checked by	SR	P 7		



Existing 3D 4



Proposed 3D 4

1:500		50
1:200		20
1:100		10
1:50		5