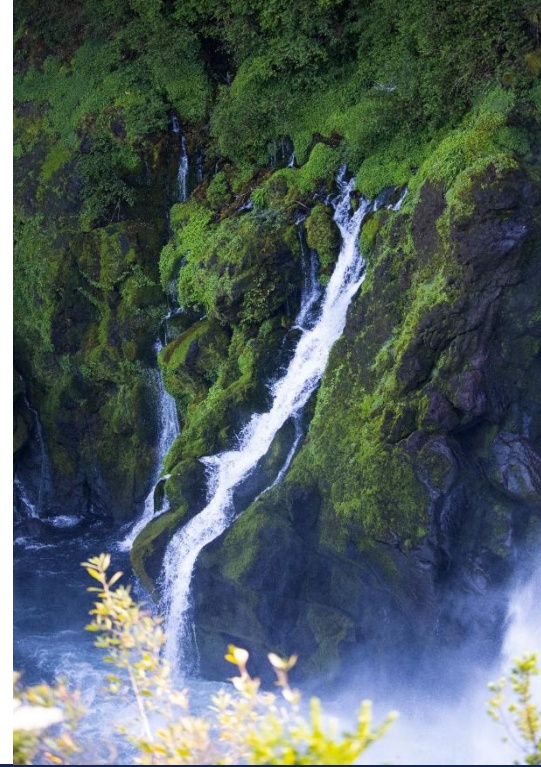




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Flood Risk Assessment AEG10640_BN6_Hassocks_01

Site Address: 1 Queens Drive
Hassocks
Mid Sussex
West Sussex
BN6 8DF

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

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water, civils and environment

Document Issue Record

Project: Flood Risk Assessment

Prepared for: Brandon Lee

Reference: AEG10640_BN6_Hassocks_01

Site Location: 1 Queens Drive, Hassocks, Mid Sussex, West Sussex, BN6 8DF

Issue	Date	Author	Check	Auth.	Comments
1	14/04/2026	Abbie Betts	ML	NB	First issue

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Summary

Development Description	Existing	Proposed
Development Type	A two-storey residential dwelling.	A rear wrap around extension, replacing a conservatory and garage. There is no proposed increase in building footprint.
EA Vulnerability Classification	More Vulnerable	No change - More Vulnerable
Ground Floor Level	Based on EA LiDAR, the estimated ground floor FFL is 39.33m AOD.	No change.
Level of Sleeping Accommodation	Sleeping accommodation is located on the first floor. The estimated first floor FFL of the existing dwelling is 42.03m AOD.	The proposed development is single storey only. No sleeping accommodation is proposed within the extension.
Surface Water Drainage	N/A ¹	To drain via the existing drainage arrangements on-site. Small scale SuDS, such as rainwater planters or water butts, could be included in external areas to provide a betterment.
Site Size	Approx. 1400m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zones 2 and 3	
Flood Source	Fluvial and Pluvial	EA fluvial modelling confirms that the site lies outside the functional floodplain (1 in 30 year event) and remains above the design 1 in 100 year plus 35% climate change flood levels. The proposed finished floor level provides approximately 0.57m freeboard above the 1 in 100 year plus climate change flood level. The site is fully within the 1 in 1000 year flood extent, where shallow ground floor flooding of approximately 0.09m is predicted. RoFSW mapping shows that only the southern perimeter of the proposed development has a high likelihood of surface water flooding. There is a low likelihood of depths exceeding 0.2m along the southern perimeter of the

SFRA Available		development, while the remainder of the site is outside all areas at risk.
	Level 1 Strategic Flood Risk Assessment (Mid Sussex District Council, 2024) and Strategic Flood Risk Assessment Level 1 (Mid Sussex District Council, 2015)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	Above the design flood level.	The proposed finished floor level provides the development with approximately 0.57m freeboard above the 1 in 100 year plus climate change flood level. The site is fully within the 1 in 1000 year flood extent, where shallow ground floor flooding of approximately 0.09m is predicted.
Safe Access/Egress Route	Yes	Given the proposals consist of a minor development, access/egress arrangements will remain as per existing situation. Safe refuge is provided on the first floor.
Flood Resilient Design	Yes	Refer to Section 5.
Site Drainage Plan	N/A ¹	To drain via the existing drainage arrangements on-site. Small scale SuDS, such as rainwater planters or water butts, could be included in external areas to provide a betterment.
Flood Warning and Evacuation Plan	N/A ¹	Recommended that occupier monitor Met Office Weather Warnings for extreme weather events.
Offsite Impacts	Summary	Comment
Displacement of floodwater	Negligible	Development is classified as minor development in terms of flood risk and therefore in isolation should not result in increase in flood risk elsewhere (Paragraph 051 of the PPG). Furthermore, there is no proposed increase to building footprint.
Increase in surface run-off generation	Negligible	To drain via the existing drainage arrangements on-site. Small scale SuDS, such as rainwater planters or water butts, could be included in

Impact on hydraulic performance of channels		external areas to provide a betterment.
	Negligible	The nearest watercourse is approx.40m from the proposed development

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Brandon Lee to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development. 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 1 Queens Drive, Hassocks, Mid Sussex, West Sussex, BN6 8DF (Figure 1). The site currently comprises of a residential dwelling in the south and garden area across the remainder of the site.

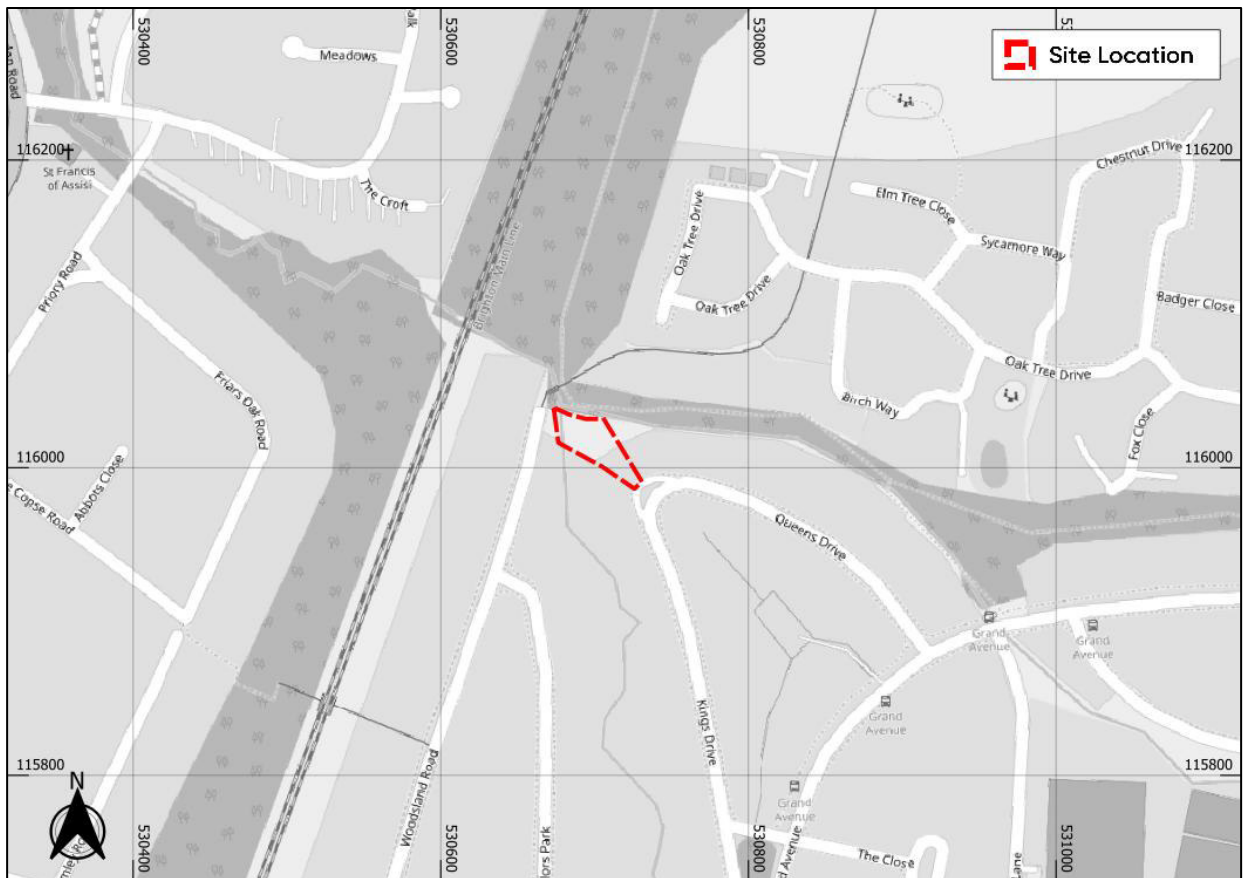


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.4. The client is seeking planning permission for a proposed rear wrap around extension, replacing a conservatory and garage. Full development proposals are provided in Appendix A.
- 1.5. In the absence of a topographical survey, Environment Agency (EA) Light Detection and Ranging (LiDAR) data Digital Terrain Model has been used to review the topography of the site.

The EA LiDAR data shows the ground elevation of the site varies between approximately 36.69m AOD in the north-west (metres Above Ordnance Datum) and 39.27m AOD in the south-east of the site. Analysis of topographic levels indicates that the site generally slopes with a fall to the north-west (Figure 2).

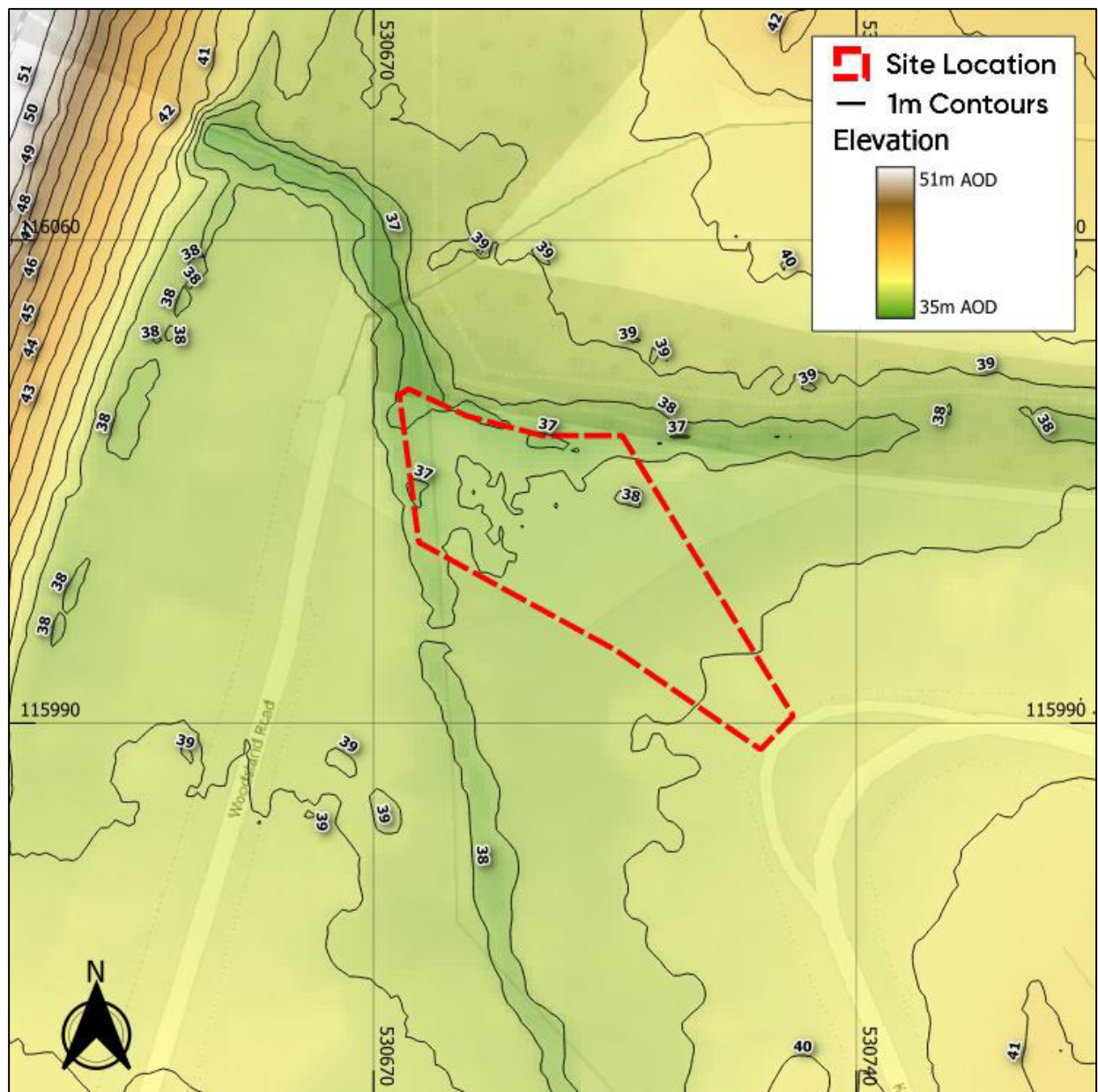


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. In the absence of detailed topographic survey information for the site, the finished floor level (FFL) of the proposed development has been estimated using EA LiDAR data. The external ground level immediately outside the front entrance to the property is approximately 39.18m AOD. In accordance with typical building practice, finished floor levels are generally set a minimum of 150mm above adjacent ground levels. On this basis, the estimated ground floor FFL is 39.33m AOD.
- 1.7. Furthermore, based on standard construction practice, the vertical distance between ground floor and first floor levels is typically assumed to be approximately 2.7m. Therefore, the estimated first floor FFL of the existing dwelling is 42.03m AOD.

- 1.8. Mid Sussex District Council is the Local Planning Authority (LPA) for the site and West Sussex County Council is the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Solent and South Downs region.

Planning Policy and Guidance

- 1.9. UK government planning guidance states¹ that an FRA is required for developments which are:

- *in flood zones 2 or 3 including minor development and change of use*
- *more than 1 hectare (ha) 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 rivers and the sea (for example surface water drains, reservoirs)*
- *in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency*

- 1.10. The site is located in Flood Zone 3 and Flood Zone 2, therefore an FRA is required, according to UK government planning guidance.

- 1.11. 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/tidal 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. Planning Policy

- 2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. 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. This section summarises the key policies and guidance relevant to the proposed development.

National Planning Policy Framework (NPPF)

- 2.2. The National Planning Policy Framework² (NPPF) (MHCLG, 2024) which includes UK Government policy on development and flood risk states:

170. 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.

181. 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*
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

176. Applications for some minor development and changes of use should also not be subject to the sequential test, nor the exception test [set out below], but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.

- 2.3. Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

² <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2024

Minor development means:

- *minor non-residential extensions (industrial/commercial/leisure etc): extensions with a floorspace not in excess of 250 square metres.*
- *alterations: development that does not increase the size of buildings, e.g. alterations to external appearance.*
- ***householder development: for example, sheds, garages, games rooms etc within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling (e.g. subdivision of houses into flats) or any other development with a purpose not incidental to the enjoyment of the dwelling.***

2.4. As such, the proposal would be considered a Minor Development under the PPG.

2.5. Footnote 63 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.

2.6. Flood Zones in England are defined 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 (all land outside Zones 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.
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.
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or

land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).

Local planning authorities should identify in their 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)

- 2.7. An FRA should be appropriate to the scale, nature, and location of the development. It 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.
- 2.8. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account.

Local Plan

- 2.9. The Local Plan prepared by the Local Planning Authority, Mid Sussex District Council, sets out the policies for development in the local area.
- 2.10. Policy DPS4.1 Flood Risk and Sustainable Drainage: Flood Risk outlines the requirements for new development within the area. It states:

Proposals for development will need to follow a sequential risk-based approach directing development away from areas at highest risk (whether existing or future risk), ensure development is safe across its lifetime and not increase the risk of flooding elsewhere.

All development should consider flood risk in line with national guidance at the time of assessment, including the need to consider and assess flood risk from all sources consistently.

Environment Agency or site-specific flood mapping and the District Council's Strategic Flood Risk Assessment (SFRA) should be used to identify areas at present and future flood risk from a range of sources including fluvial (rivers and streams), pluvial (surface water), groundwater, infrastructure and reservoirs.

The cumulative impacts of all sources of flooding should be considered. Where possible, development proposals should reduce overall flood risk. Particular attention will be paid to those areas of the district that have experienced flooding in the past. Development proposals must, where required by national policy, be accompanied by a site-specific flood risk assessment.

Development in areas of flood risk will, where relevant, be required to meet national sequential and exceptional tests.

Development classified as 'Highly vulnerable' will not be permitted within areas at 1:100 or greater flood extents now or in the future (flood zone 3a, 3b and equivalent).

Development classified as 'more vulnerable' will not be permitted within areas of 1:30 flood extents now or in the future (flood zone 3b and equivalent).

Where flood management and mitigations are proposed to be utilised within a development, soft flood management methods are preferred over hard engineered solutions.

Sequential and Exception Tests

- 2.11. 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.
- 2.12. The client is seeking planning permission for a proposed rear wrap around extension, replacing an existing conservatory and garage.
- 2.13. As per paragraph 176 of the NPPF:

*Applications for some **minor development** and changes of use should not be subject to the sequential exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.*

- 2.14. As such, given the development is classified as a minor development, it is not required to be subject to the sequential or exception test.

Summary

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

3. Consultation and Review

Consultation

- 3.1. Aegaea requested a copy of the EA's Hassocks Modelling & Mapping Study (2013), which was received in April 2026 and is further discussed in Section 4 of this report.

Documents and Online Mapping

- 3.2. 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.
- 3.3. The following sources of information have been reviewed for this assessment:
- Flood Map for Planning on the Environment Agency website <https://flood-map-for-planning.service.gov.uk/>
 - Long Term Flood Risk Information on the Environment Agency website <https://www.gov.uk/check-long-term-flood-risk>
 - National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2024)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Ministry of Housing, Communities and Local Government, 2022)
 - Geoindex Onshore (British Geological Survey, 2024)
 - Mid Sussex District Plan 2021 - 2039 (Submission Draft)³, and Mid Sussex District Plan 2014-2031 (Mid Sussex District Council, 2018)⁴
 - Preliminary Flood Risk Assessment Addendum (West Sussex County Council, 2017)⁵ and West Sussex Preliminary Flood Risk Assessment (West Sussex County Council, 2011)⁶
 - Level 1 Strategic Flood Risk Assessment (Mid Sussex District Council, 2024)⁷
 - Local Flood Risk Management Strategy: 2025 - 2030 (West Sussex County Council, 2025)⁸

³ <https://www.midsussex.gov.uk/media/10644/submission-district-plan-2021-2039.pdf>

⁴ <https://www.midsussex.gov.uk/media/1523/mid-sussex-district-plan-2014-2031.pdf>

⁵ <https://www.westsussex.gov.uk/media/2843/pfra-addendum-2017.pdf>

⁶ <https://www.westsussex.gov.uk/media/2842/preliminary-flood-risk-assessment-2011.pdf>

⁷ <https://www.midsussex.gov.uk/media/12345/level-1-sfra-2024.pdf>

⁸ <https://yourvoice.westsussex.gov.uk/35679/widgets/113695/documents/81113>

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA and addendum, published in 2011 and 2017, is a high-level appraisal of flood risk across Lead Local Flood Authority West Sussex County Council. The flood risk from all sources, including fluvial, surface water, groundwater, and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy is produced.
- 3.5. The PFRA summarises historical flood incidents in West Sussex County Council. The site is not recorded as having been affected by any flood event.

Strategic Flood Risk Assessment (SFRA)

- 3.6. The SFRA, published in 2024, provides the evidence base for the Local Planning Authority Mid Sussex District Council Local Plan and guidance for consideration when determining planning applications. The SFRA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.
- 3.7. The SFRA mapping provided by Mid Sussex District Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

Local Flood Risk Management Strategy (LFRMS)

- 3.8. The Local Flood Risk Management Strategy sets out roles and responsibilities for flood risk management, assesses the risk of flooding in the area, where funding can be found to manage flood risk, and the policies, objectives, and actions of the Lead Local Flood Authority.
- 3.9. The West Sussex County Council LFRMS is used within this report to identify any flood management infrastructure and historical incidences of flooding.

4. Sources of Flood Risk

Fluvial

- 4.1. 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.

Main Rivers Ordinary Watercourses

- 4.2. An unnamed tributary of the Herrings Stream, classified as an ordinary watercourse, flows through the western part of the site, approximately 42m from the proposed development. This tributary joins the Herrings Stream to the north-west of the site. The Herrings Stream then continues downstream, becoming designated as a Main River approximately 500m north-west of the site.

EA Flood Map for Planning

- 4.3. According to the EA Flood Map for Planning, the proposed development is located predominantly in Flood Zone 2, defined as land with a medium probability of flooding, meaning it has a between 1 in 1000 and 1 in 100 annual likelihood of fluvial flooding (0.1% to 1% probability each year) (Figure 3).
- 4.4. A small area in the north-west of the proposed development footprint is within Flood Zone 3. Flood Zone 3 is defined as land with a high probability of flooding, meaning it has a greater than 1 in 100 annual likelihood of fluvial flooding (1% probability each year).

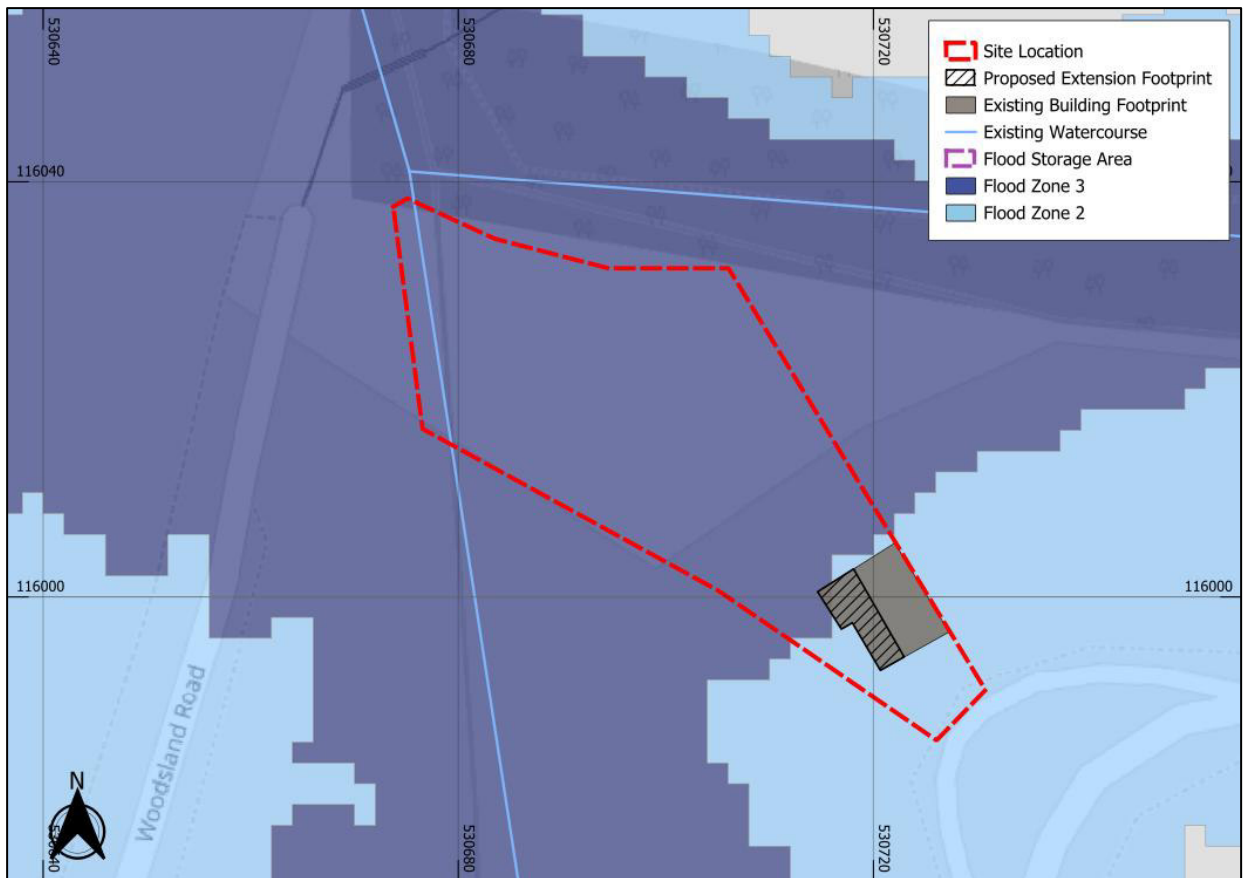


Figure 3: EA Flood Map for Planning (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0

Historical Fluvial Flooding

- 4.5. According to the EA's Historic Flood Map and Recorded Flood Outlines dataset, the site has not been impacted by a fluvial flood event (Figure 4).

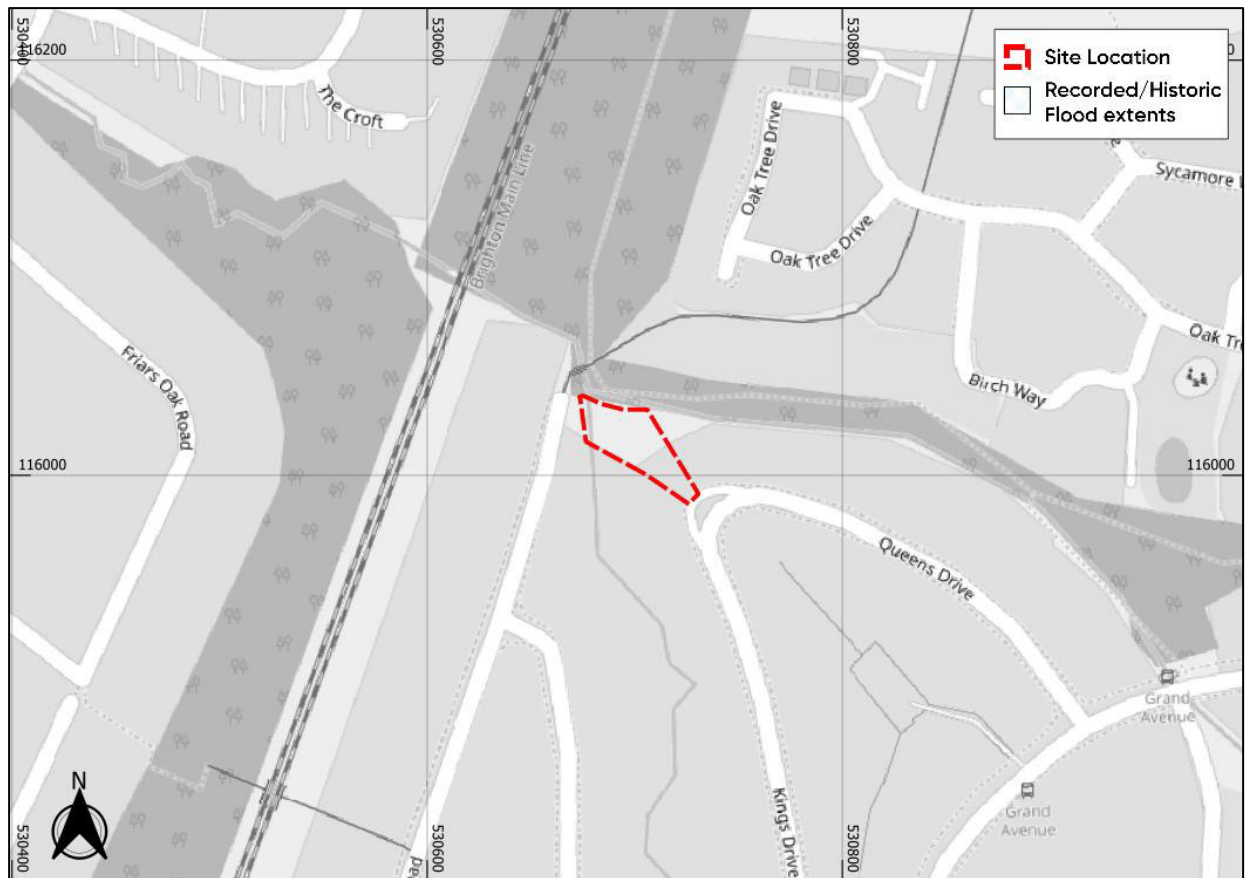


Figure 4: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Hassocks Modelling Study (2013)

- 4.6. The EA have provided the Hassocks Modelling Study (2013). The model assesses an undefended scenario only, as no formal flood defences are present within the study area.
- 4.7. Simulations therefore represent the undefended case and cover the 50%, 20%, 10%, 5%, 3.33%, 2%, 1.33%, 1%, 0.5% and 0.1% AEP events. Updated EA climate change guidance (post-2016) introduced revised peak river flow allowances, which were updated in the study. For the Adur and Ouse Management Catchment, this includes central and upper allowance scenarios of approximately +35%, +45% and +105%.
- 4.8. The EA's peak river flow data for this catchment indicates a central allowance of 37% for the 2080s, therefore the 1 in 100 year +35% climate change scenario has been analysed below as the design flood event.

Present Day Scenarios

- 4.9. Based on the Hassocks modelling study, the proposed development lies outside of the flood extent for the 1 in 30 year event, which is used to define the functional floodplain (Flood Zone

3b) (Figure 5). The proposed development is therefore not located within the functional floodplain.

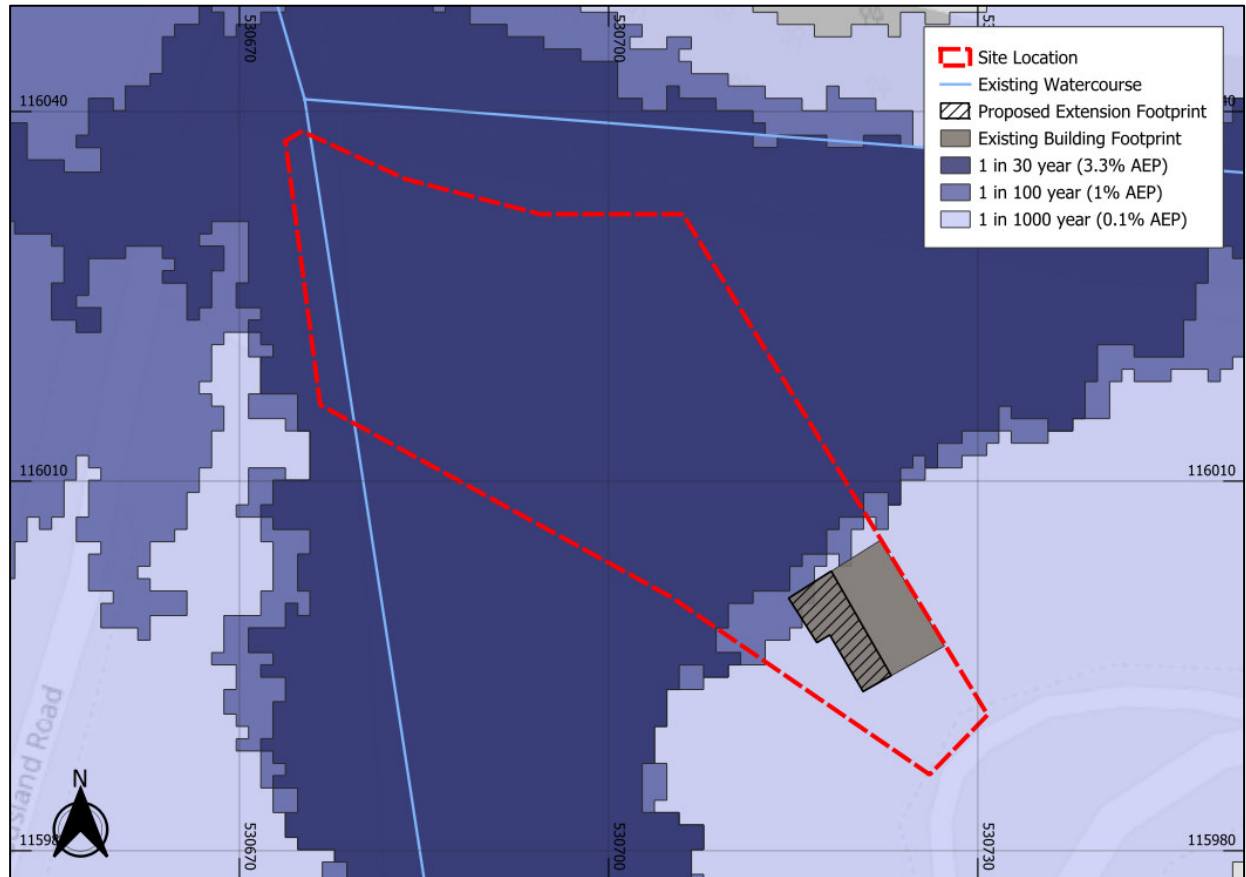


Figure 5: Modelled present day flood extents for present day scenarios. (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.10. The north-western corner of the proposed development is shown to be marginally affected by the 1 in 100 year present day flood event. Furthermore, the entire site, including the existing building and the proposed development, lies within the extent of the 1 in 1000 year flood event. Flood levels and estimated depths are provided in Table 2.

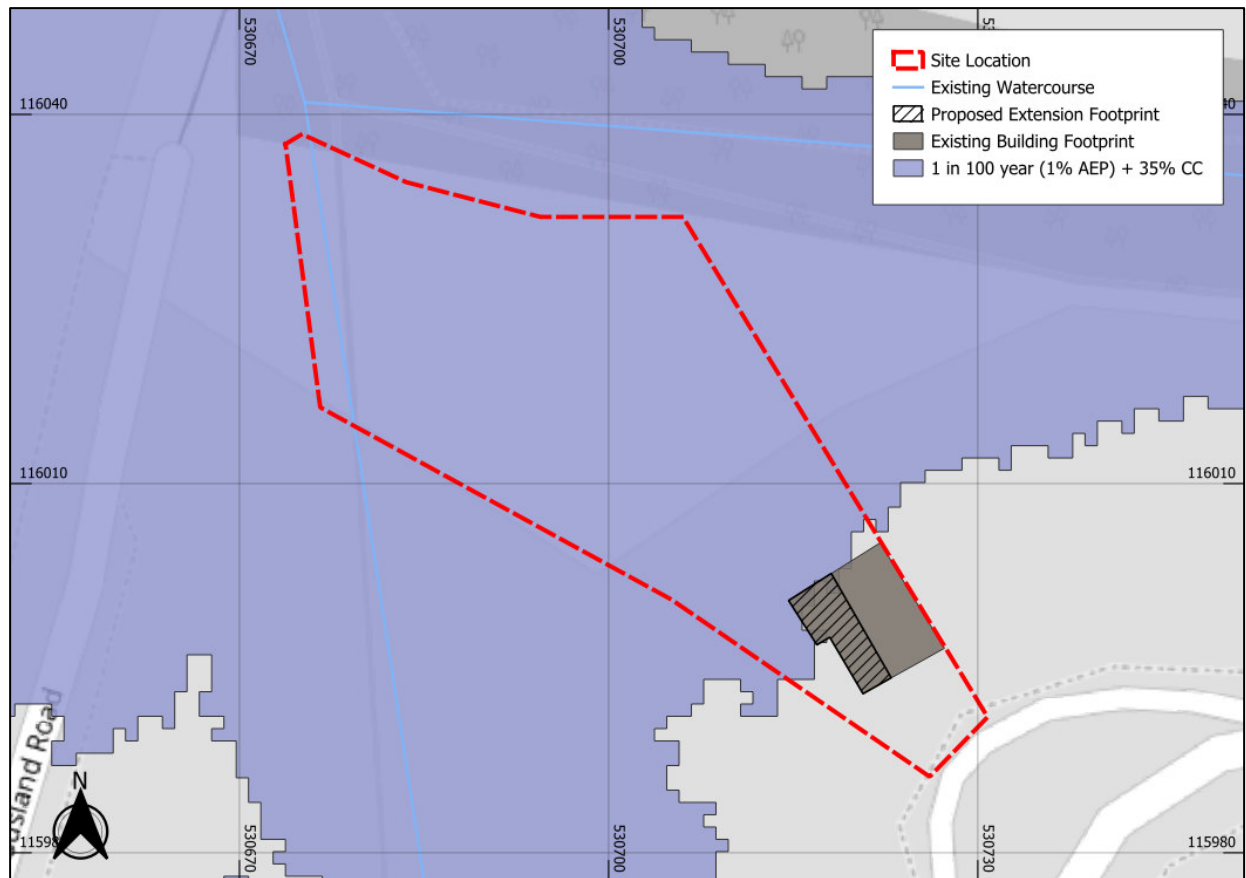
Table 2: Hassocks Modelling Study – Fluvial Flood Levels and Depths

	Modelled Scenarios			
Flood Levels and Depths	1 in 30 year (3.33% AEP)	1 in 100 year (1% AEP)	1 in 100 year (1% AEP) + 35% CC	1 in 1000 year (0.1% AEP)
Site Flood Level (m AOD)	38.40	38.59	38.76	39.42
Flood Depth (m) (FFL - 39.33m AOD)	Not affected (0.93m freeboard)	Not affected (0.74m freeboard)	Not affected (0.57m freeboard)	0.09

- 4.11. As discussed in Section 1, the ground floor FFL of the proposed extension is approximately 39.33m AOD. Based on the modelled fluvial flood levels from the Hassocks modelling study, the proposed development is situated outside of the 1 in 30 year and above the 1 in 100 year flood events.
- 4.12. During the 1 in 1000 year event, a maximum flood level of approximately 39.42m AOD is predicted across the footprint of the proposed development, resulting in shallow ground floor flood depths of approximately 0.09m. It should be noted that flooding associated with the 1 in 1000 year event represents a residual flood risk, characterised by a very low annual probability and occurring beyond the typical design standard for residential development.

Climate Change Scenario

- 4.13. Based on the modelled flood extents from the Hassocks modelling study, the northern and north-western perimeters of the proposed extension lie within the 1 in 100 year plus 35% climate change flood extent (Figure 6). The predicted maximum flood level on site during this event is approximately 38.76m AOD (Table 2).



- 4.14. Given that the finished floor level (FFL) of the proposed development is approximately 39.33m AOD, this provides a freeboard of approximately 0.57m. The proposed extension therefore benefits from approximately 0.57m of freeboard above the design 1 in 100 year plus climate change flood level.

Fluvial Summary

- 4.15. According to the EA Flood Map for Planning, the development is located predominantly within Flood Zone 2, with a small area in the north-west falling within Flood Zone 3.
- 4.16. Modelling from the Hassocks Study (2013) confirms that the site lies outside the functional floodplain (1 in 30 year event) and remains above both the 1 in 100 year and 1 in 100 year plus 35% climate change flood levels. The proposed finished floor level provides approximately 0.57m freeboard above the 1 in 100 year plus climate change flood level.
- 4.17. The site is fully within the 1 in 1000 year flood extent, where shallow flooding of approximately 0.09m is predicted, representing a low-probability residual risk.
- 4.18. Based on the information reviewed, the proposed development is considered to be at low risk of fluvial flooding.

Tidal

- 4.19. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high.
- 4.20. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change.
- 4.21. Therefore, the risk of flooding from tidal sources is considered to be low.

Canals

- 4.22. 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.
- 4.23. According to CRT⁹ mapping, there are no CRT maintained canals within 1km of the site.
- 4.24. The risk of flooding to this site from canals is considered to be low.

Pluvial

- 4.25. The National Flood Risk Assessment (NaFRA2) has updated the Risk of Flooding from Surface Water (RoFSW) products, which shows the likelihood of flooding from surface water to areas of land. The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through normal drainage systems or soak into the ground but lies in or flows over the ground instead. It includes information about flooding extents and depths, including the potential impact of climate change on flood risk based on the latest UK climate projections (UKCP18).
- 4.26. Risk is displayed as one of three likelihood categories:
- High - greater than or equal to 1 in 30 (3.3%) likelihood of flooding in any year.
 - Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) likelihood of flooding in any given year.
 - Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) likelihood of flooding in any given year.
- 4.27. The RoFSW depth mapping shows the annual likelihood of flooding (based on the three risk categories listed above) beyond a specific depth, for depths at the following intervals from 20cm

⁹ <https://canalrivertrust.org.uk/canals-and-rivers>

to 120cm. The maps provide information on flood depths to show the likelihood that different depths of flooding could be reached or exceeded¹⁰ :

- 0.2m, 0.3m, 0.6m, 0.9m, 1.2m

- 4.28. Review of present day and climate change extents are similar; thus the 'worst-case' scenario climate change extents and modelling have been assessed below.
- 4.29. Examination of the EA's climate change RoFSW mapping indicates that the majority of the proposed development is located outside areas with a high, medium, and low likelihood of surface water (Figure 6). The southern perimeter of the proposed extension within an area with a high likelihood of surface water flooding (Figure 6).

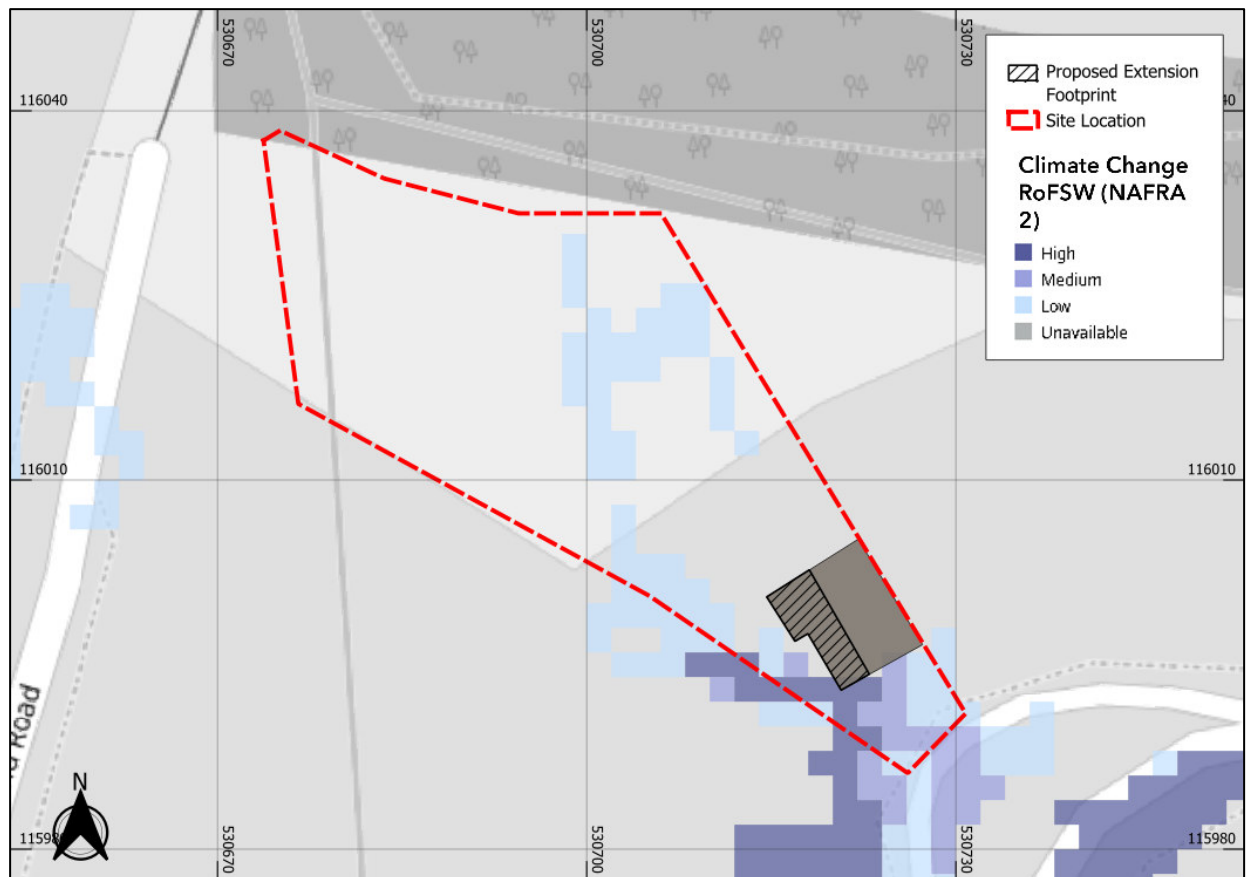


Figure 6: EA Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.30. Analysis of the surface water flood depth interval mapping (0.2m, 0.3m, 0.6m, 0.9m and 1.2m) indicates that the southern perimeter of the proposed development lies within an area with a low likelihood of flood depths exceeding 0.2m (Figure 7)

¹⁰ <https://www.gov.uk/government/publications/flood-risk-maps-for-surface-water-how-to-use-the-map/risk-of-flooding-from-surface-water-understanding-and-using-the-map>

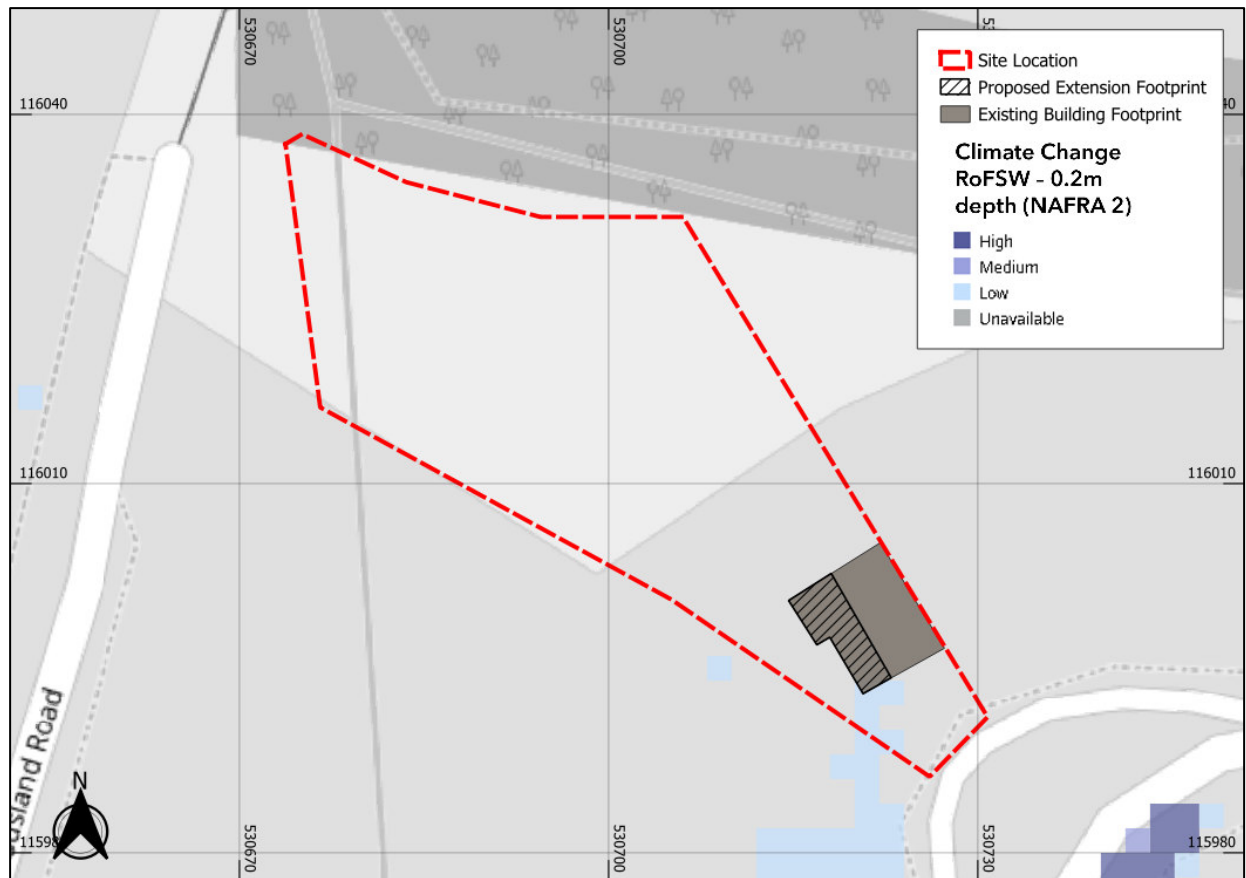


Figure 7: EA Surface Water Flood Risk Mapping – Climate Change (0.2m Depth Interval) (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.31. The remainder of the proposed development and the wider site are located outside areas identified as having a high, medium, or low likelihood of flood depths exceeding 0.3m.
- 4.32. An indicative surface water flood level has been derived based on the average ground elevations within the area identified as being at risk of surface water flooding. The southern perimeter of the proposed extension is shown to lie within the low likelihood extent for flood depths exceeding 0.2m, which corresponds to depths between approximately 0.2m and 0.3m during higher magnitude events. However, as this represents a low probability scenario, it is unlikely that flood depths would exceed 0.2m at this location. Accordingly, a conservative maximum flood depth of 0.2m has been applied, resulting in an indicative surface water flood level of approximately 39.31m AOD.
- 4.33. This is marginally below the proposed finished floor level of approximately 39.33m AOD, and therefore it is not anticipated that the proposed extension will be impacted by surface water flooding.

Pluvial Flood Risk Summary

- 4.34. RoFSW mapping, with climate change, from the EA shows that the majority of the proposed development lies outside areas of high, medium, and low surface water flood risk, with only the southern perimeter intersecting an area of higher risk. Flood depth mapping further indicates

that this area is associated with a low likelihood of depths exceeding 0.2m during higher magnitude events, while the remainder of the site is outside all areas at risk of surface water flooding exceeding 0.3m. The proposed development is located approximately 0.02m above the estimated conservative surface water level.

- 4.35. Based on the information reviewed, the proposed development is considered to be at low risk of flooding from surface water.

Reservoirs

- 4.36. Large waterbodies or reservoirs that have walls built above the surrounding ground level pose a risk of flooding. Walls could fail due to old age, accident, or because excess flood water has been added to the reservoir. Although a breach is unlikely the consequences would be significant, leading to rapid inundation of the downstream floodplain.
- 4.37. According to the EA's Flood Risk from Reservoirs mapping the site is outside modelled flood extents in the event of reservoir flooding (Figure 9).

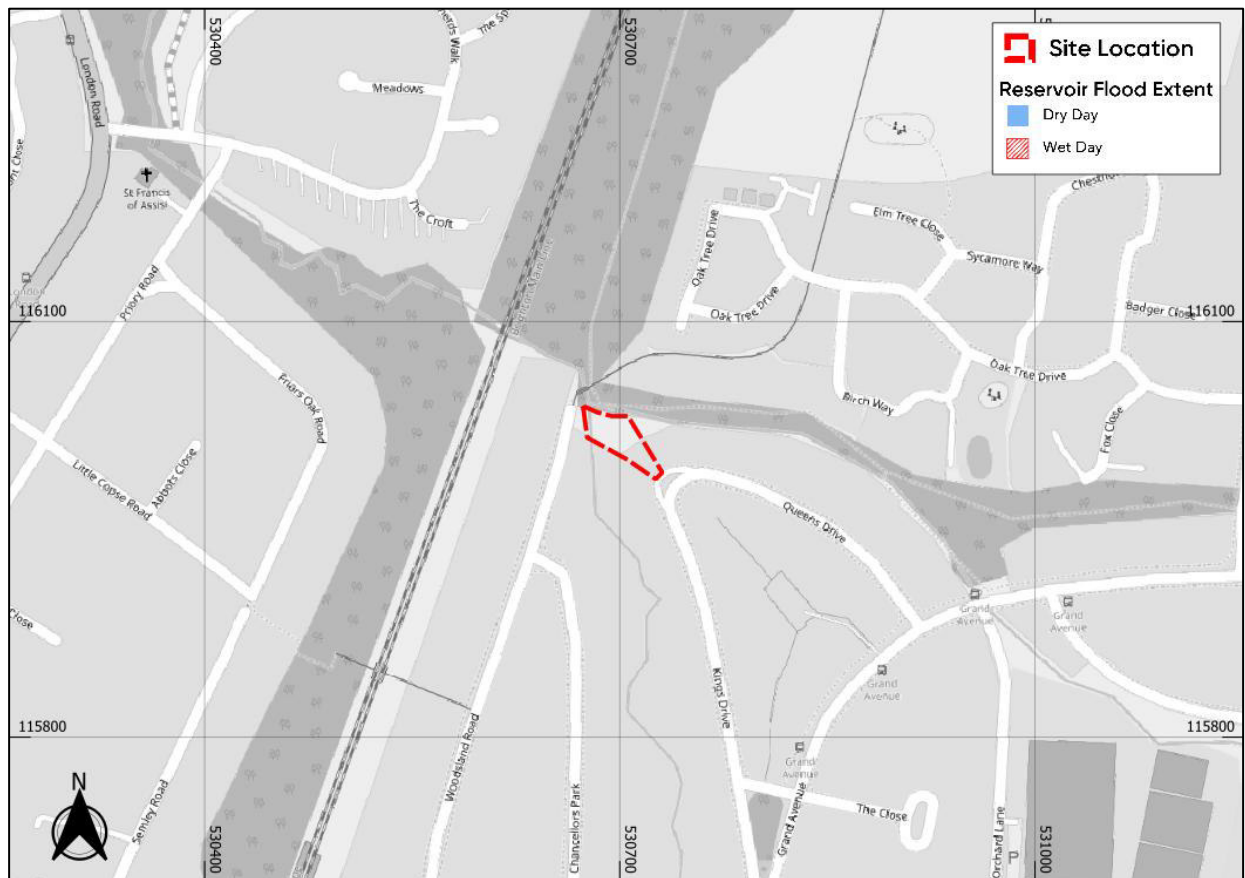


Figure 9: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). ©<https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.38. The site has not been flagged as being at risk of flooding following a reservoir failure, therefore the site is considered to be at low risk from reservoir flooding.

Groundwater

- 4.39. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 4.40. The British Geological Survey's (BGS) mapping shows no superficial deposits underlying the site. The bedrock deposits underlying the site are defined as Lower Greensand Group, comprising silty sandstone. There are no historical BGS boreholes within 100m of the site, in similar geology.
- 4.41. According to the 2024 SFRA, groundwater flooding in Hassocks is associated with the underlying permeable geology of the South Downs, where prolonged periods of rainfall can lead to elevated groundwater levels and localised emergence at the surface. While more localised and less predictable than other sources, groundwater flooding is recognised as a contributing factor to flood risk within the area.
- 4.42. The 2024 SFRA does not identify or describe any specific historic groundwater flooding events within the study area. However, the earlier 2015 Mid Sussex SFRA has been reviewed, which indicates that approximately 0.164 km² of the district is affected by groundwater flooding, representing around 0.049% of the total area, suggesting that the spatial extent of groundwater flood risk across the district is negligible.
- 4.43. Furthermore, the development proposals do not include any proposed basements, which are more vulnerable to groundwater ingress.
- 4.44. Based on the information reviewed, the risk from groundwater to the development is considered to be low.

Sewers

- 4.45. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.46. The 2024 Strategic Flood Risk Assessment (SFRA) identifies sewer flooding as a potential source of flood risk based on records provided by sewerage undertakers; however, no specific historic sewer flooding events are described within Hassocks.
- 4.47. The SFRA presents Southern Water historic sewer flooding records (DG5 data) as external and internal incidents, and the site is not located within an area identified as having been impacted by either external or internal sewer flooding (Figure 10).

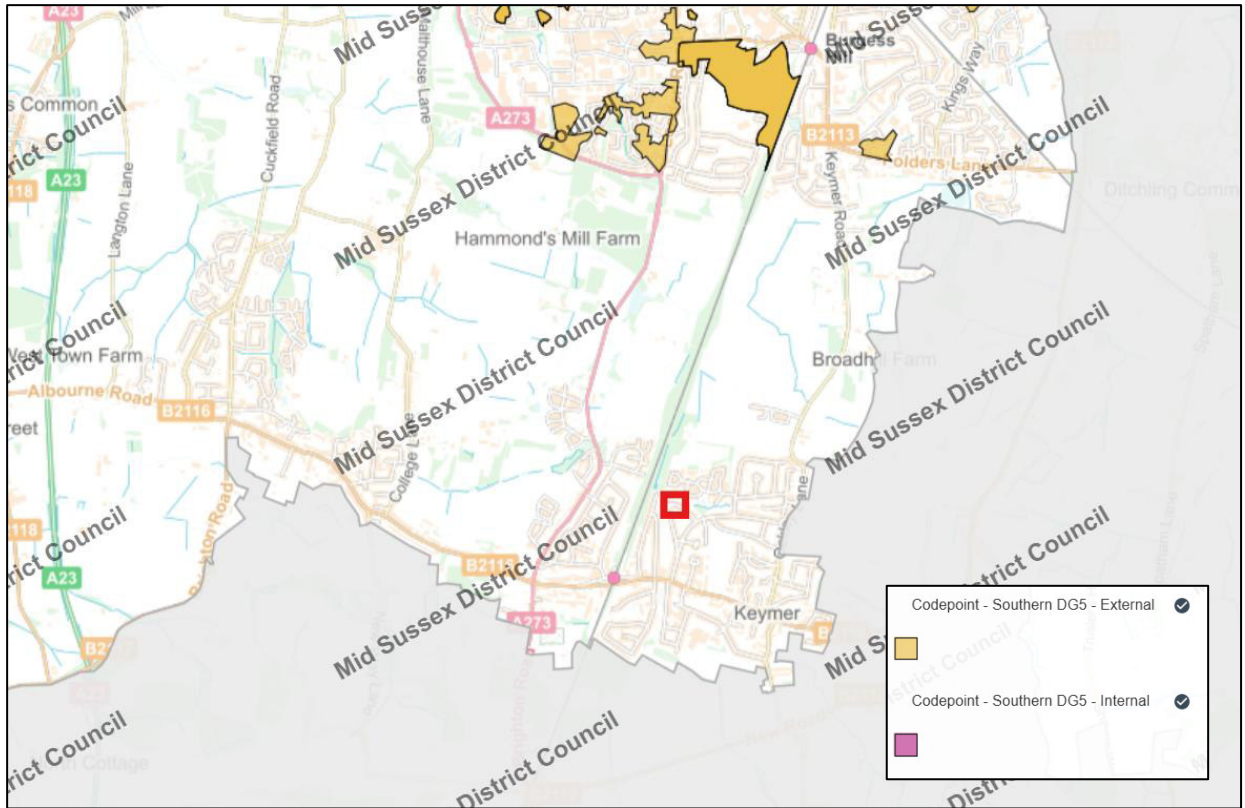


Figure 10: Mid Sussex SFRA (2024) – Southern Water DG5 records

- 4.48. Based on the information reviews, the proposed site is considered to be at low risk of flooding from sewers.

5. Flood Risk Mitigation

Fluvial

- 5.1. According to the EA Flood Map for Planning, the development is located predominantly within Flood Zone 2, with a small area in the north-west falling within Flood Zone 3.
- 5.2. Modelling from the Hassocks Study (2013) confirms that the site lies outside the functional floodplain (1 in 30 year event) and remains above both the 1 in 100 year and 1 in 100 year plus 35% climate change flood levels. The proposed finished floor level provides approximately 0.57m freeboard above the 1 in 100 year plus climate change flood level.
- 5.3. The site is fully within the residual 1 in 1000 year flood extent, where shallow ground floor flooding of approximately 0.09m is predicted.
- 5.4. No sleeping accommodation is proposed within the proposed extension, with all sleeping accommodation remaining at first floor level within the existing dwelling.
- 5.5. Given the proposals are identified as a Minor Development in line with the NPPG, raising the FFLs of the proposed development is not considered feasible as level access should be maintained throughout the property.
- 5.6. Therefore, it is recommended that appropriate flood resilience measures should be incorporated as a part of the development proposal in accordance with the CLG Report, Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007)¹¹. The following mitigation measures have been recommended.

- *Raised wiring and power outlets at ground floor level should be raised as high as possible above FFLs of the proposed development.*
- *Units within the proposed development to be raised on legs above plinth and not sit directly onto the flooring.*
- *Non-return valves should be installed around the property. Maintenance of these valves is important to ensure their continued effectiveness so should be maintained in line with manufactures recommendations*
- *Any external cladding and internal finishes should be water-resistant; sacrificial linings can be used where appropriate to minimize flood damage.*
- *Insulation to be low adsorption board or semi rigid self-draining wool bats.*
- *Ground floor construction and finishes should incorporate flood-resilient materials that can be easily cleaned and dried following a flood event, such as*

¹¹ https://assets.publishing.service.gov.uk/media/602d673ee90e0709e8d085d8/Improving_the_Flood_Resilience_of_Buildings_Through_Improved_Materials__Methods_and_Details_Technical_Report.pdf

solid floors with water-resistant finishes (e.g. tiles) and removable floor coverings, together with water-resistant or sacrificial skirting boards.

Pluvial, Tidal, Canals, Reservoirs, Groundwater and Sewers

- 5.7. Flood risk from all other sources is considered to be low and mitigation is not required.

Increase to Flood Risk Elsewhere

- 5.8. The proposed development is for the construction of an extension to the existing dwelling on site. The client is seeking planning permission for a proposed rear wrap around extension, replacing an old conservatory. As such, the proposal constitutes a Minor Development under the NPPF.

- 5.9. Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

Minor developments are unlikely to raise significant flood 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.*

- 5.10. Furthermore, there is no proposed increase to the building footprint. Therefore, in isolation, the development would not increase flood risk elsewhere. As such, the proposed development in isolation should have a negligible impact on flood risk elsewhere.

Safe Access and Egress and Safe Refuge

- 5.11. The proposed development comprises a minor development under the NPPF and associated Planning Practice Guidance, as it involves an extension to an existing residential property without an increase to FFLs. As a result, existing access and egress arrangements will remain unchanged.
- 5.12. Notwithstanding this residual risk, all sleeping accommodation is located at first-floor level, with the first-floor finished floor level estimated to be approximately 3.27m above the design fluvial flood level, providing a suitable dry refuge within the property in the event that safe access and egress cannot be maintained.

Flood Warnings and Weather Warnings

- 5.13. The site is in the Environment Agency 'The River Adur and tributaries from Burgess Hill to Henfield' flood warning service area. This service allows residents to register an address along with contact details so that, in the event of a flood being forecast, they are sent an alert. As a further precaution and risk reduction, the occupants of the site should sign up.

- 5.14. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide occupants with time to take necessary action, e.g. communication of the risk of flooding to occupants etc, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding.
- 5.15. Furthermore, as a further precaution, the occupant of the dwelling should monitor Met Office Weather Warnings to be prepared for extreme weather events
- 5.16. The Met Office issues weather warnings up to 5 days in advance, through the national Severe Weather Warning Service, when severe weather has the potential to bring impacts to the UK. It is also possible to stay up to date with weather warnings through the Met Office app (available on both Apple or Android devices), social media e.g. X and Facebook or email alerts.

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 1 Queens Drive, Hassocks, Mid Sussex, West Sussex, BN6 8DF. It has been written to support a planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Fluvial	According to the EA Flood Map for Planning, the development is located predominantly within Flood Zone 2, with a small area in the north-west falling within Flood Zone 3. Modelling from the Hassocks Study (2013) confirms that the site lies outside the functional floodplain (1 in 30 year event) and remains above the design 1 in 100 year plus 35% climate change flood levels. The site is fully within the residual 1 in 1000 year flood extent, where shallow ground floor flooding of approximately 0.09m is predicted. Mitigation measures are provided in Section 5.
Pluvial Tidal Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from all other analysed sources of flooding.

- 6.3. 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.
- 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

LOCATION PLAN - 1-1250

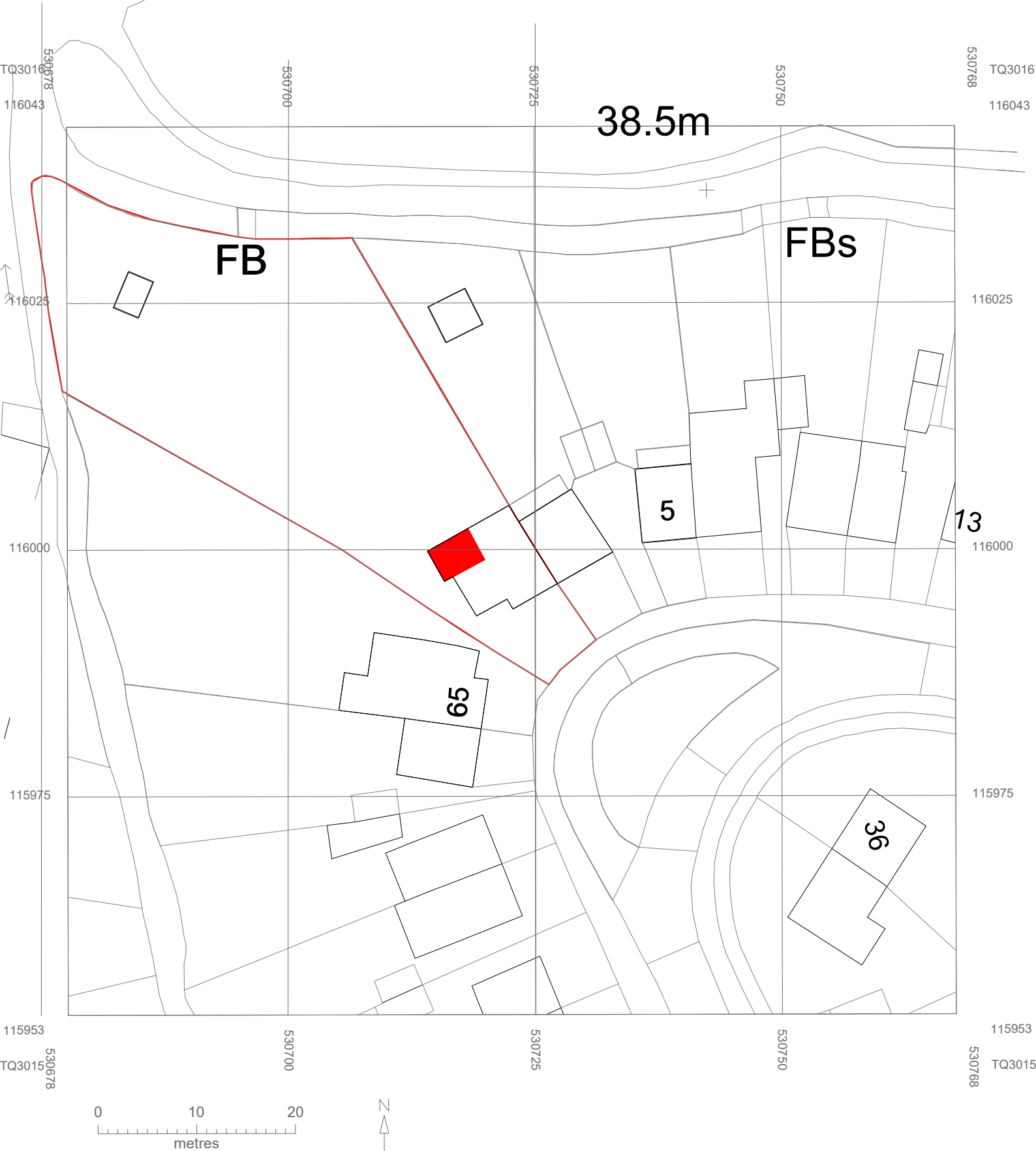


Client - Vanessa Baker

Address - 1 Queens Drive,
Hassocks,
BN6 8DF



SITE PLAN - 1-500



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Client - Vanessa Baker

Address - 1 Queens Drive,
Hassocks,
BN6 8DF

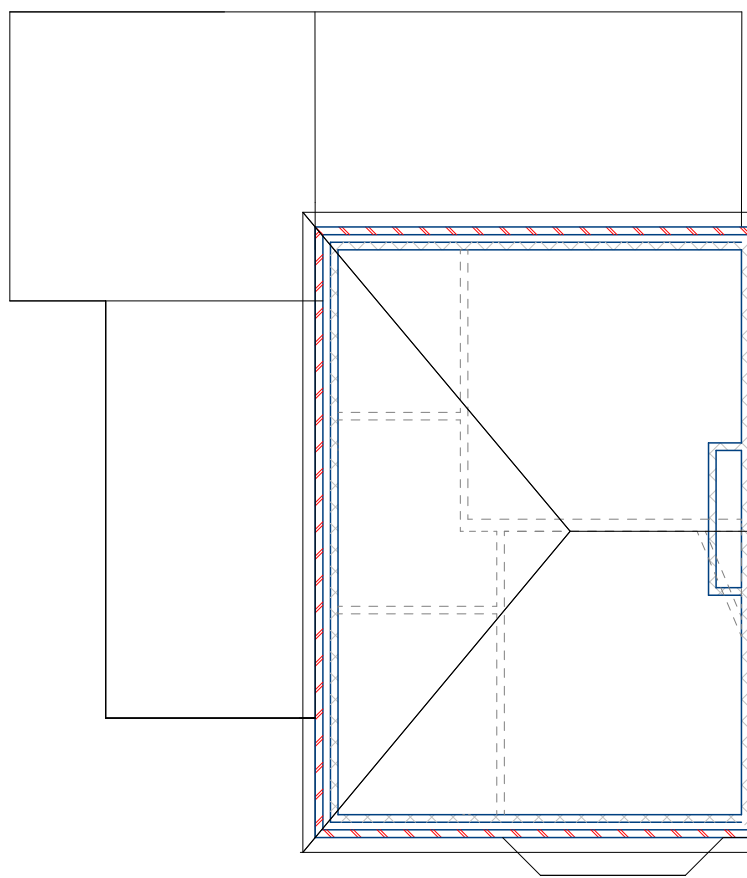
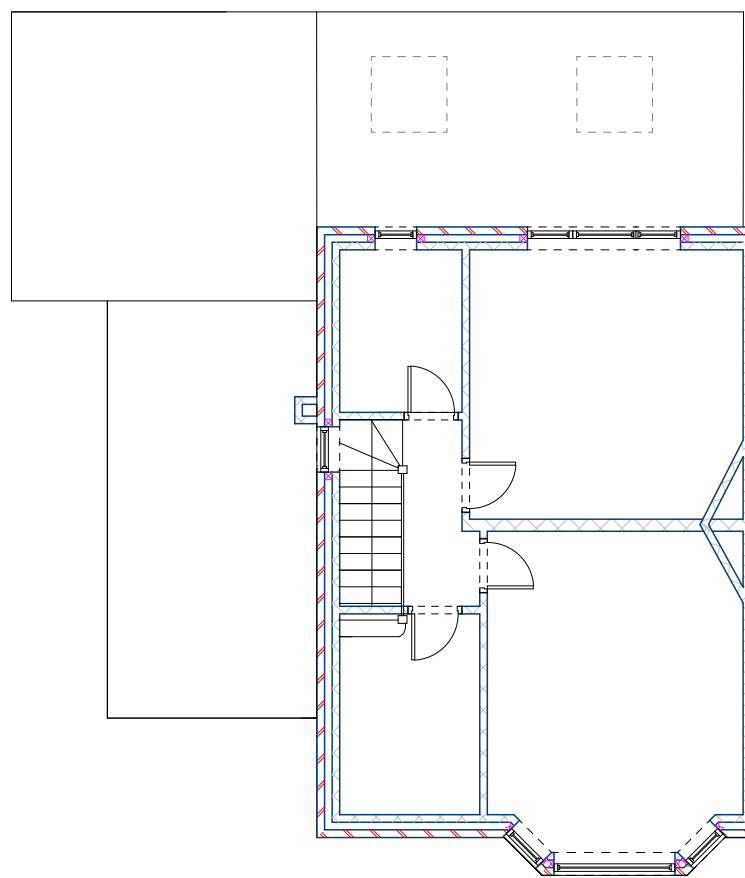
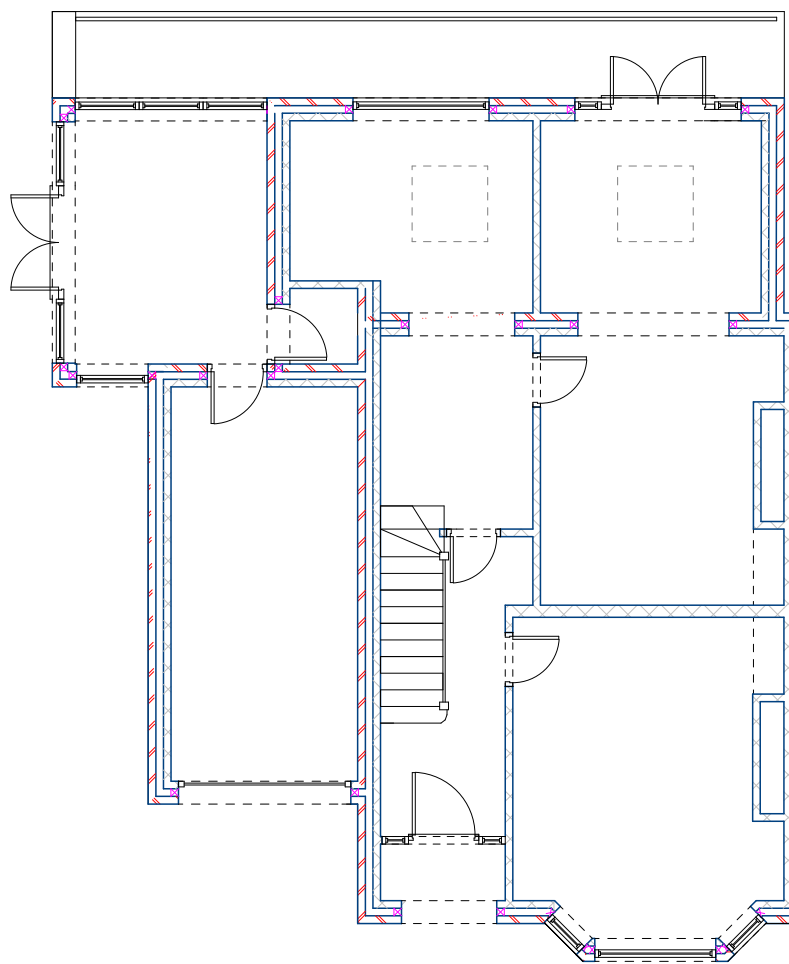


Planning Drawings

Rear side extension - Layout drawings

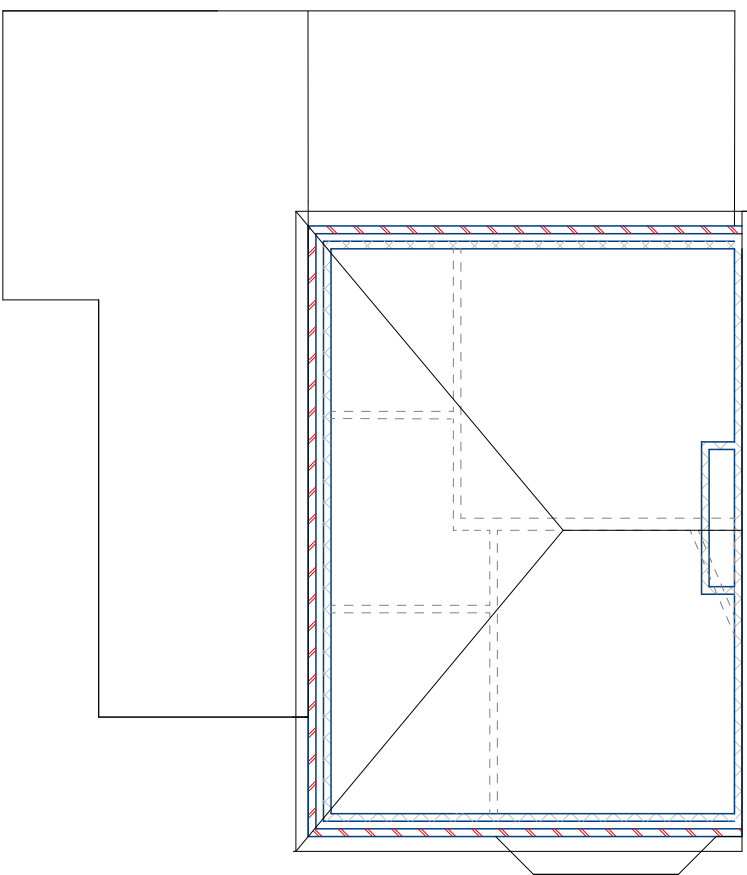
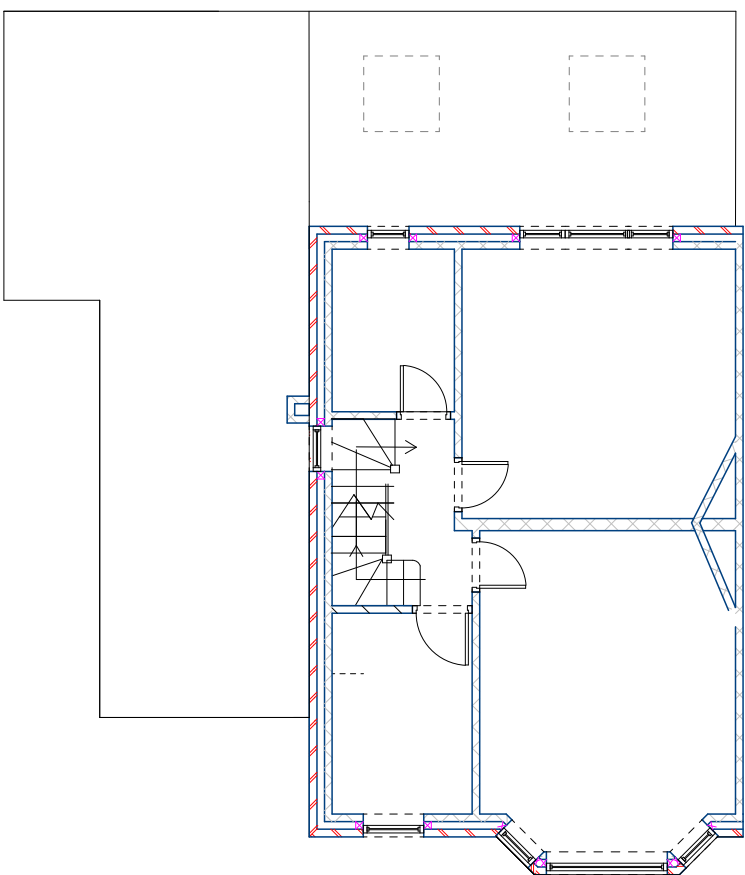
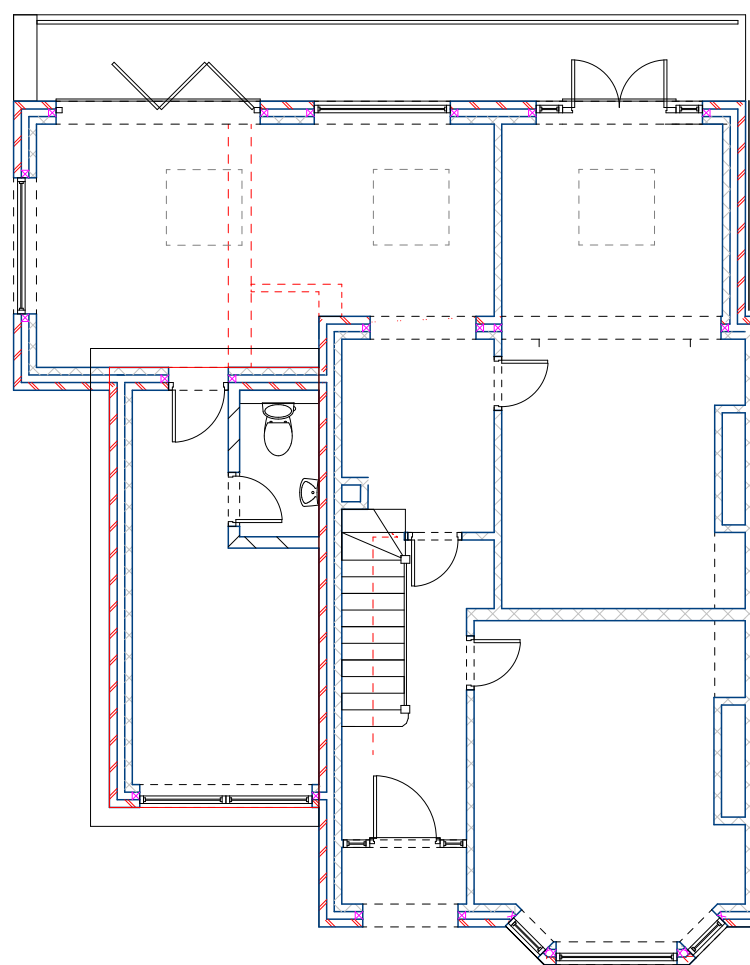
Existing Layout

Scale 1 : 100 2000mm



Proposed Layout

Scale 1 : 100 2000mm



- 1. All Dimensions In Millimetres Unless Otherwise Stated
- 2. New Roof Tiles to match existing in type ,colour & face
- 3. New facing brickwork to match existing
- 4. The requirements of the party wall act should be observed
- 5.No part of the proposed extension ,including Foundations and gutters, should encroach the property boundary

Photographic Survey



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The information provided is either for client information, planning consideration or shows compliance under the building regulations. It does not purport to provide all the information necessary to carry out construction works and could be subject to variation in detail.

ALL MEASUREMENTS TO BE CHECKED ON SITE NOTE. FITMENT SUPPLIERS SHOULD TAKE SITE MEASUREMENTS

Prior to commencement of work on site, dimensions and particulars should be checked and any discrepancies reported immediately to Jones projects Architectural DO NOT SCALE.

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Address - 1 Queens Drive,
Hassocks,
BN6 8DF

Page Size - A1 2000mm

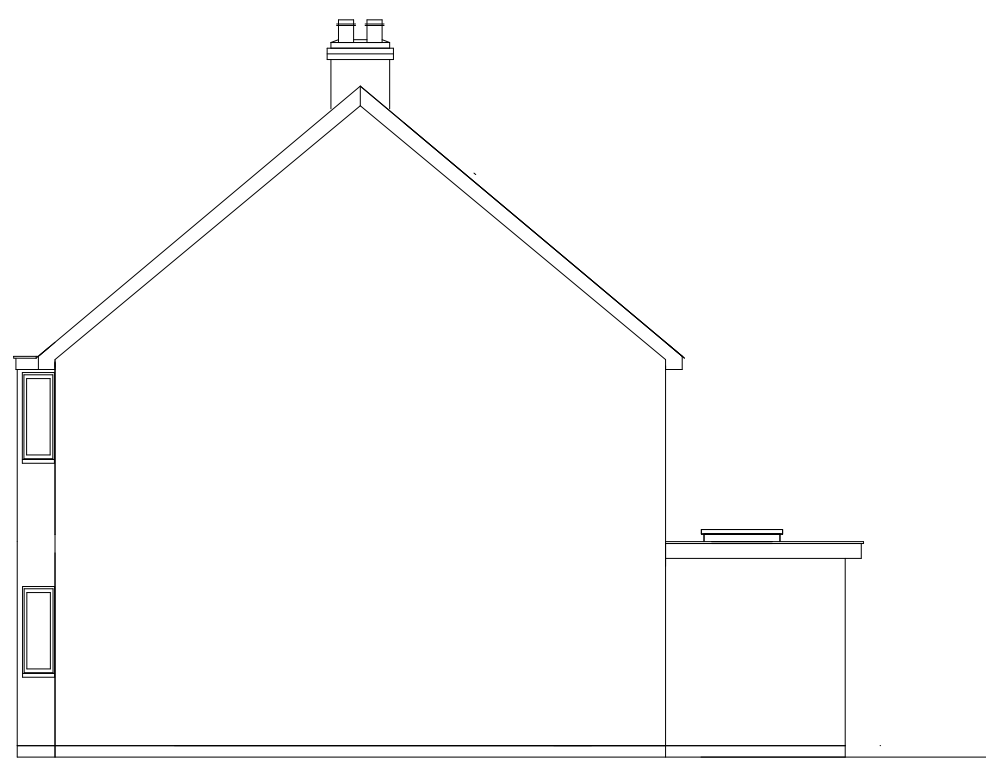


Planning Drawings

Rear side extension - Elevation drawings

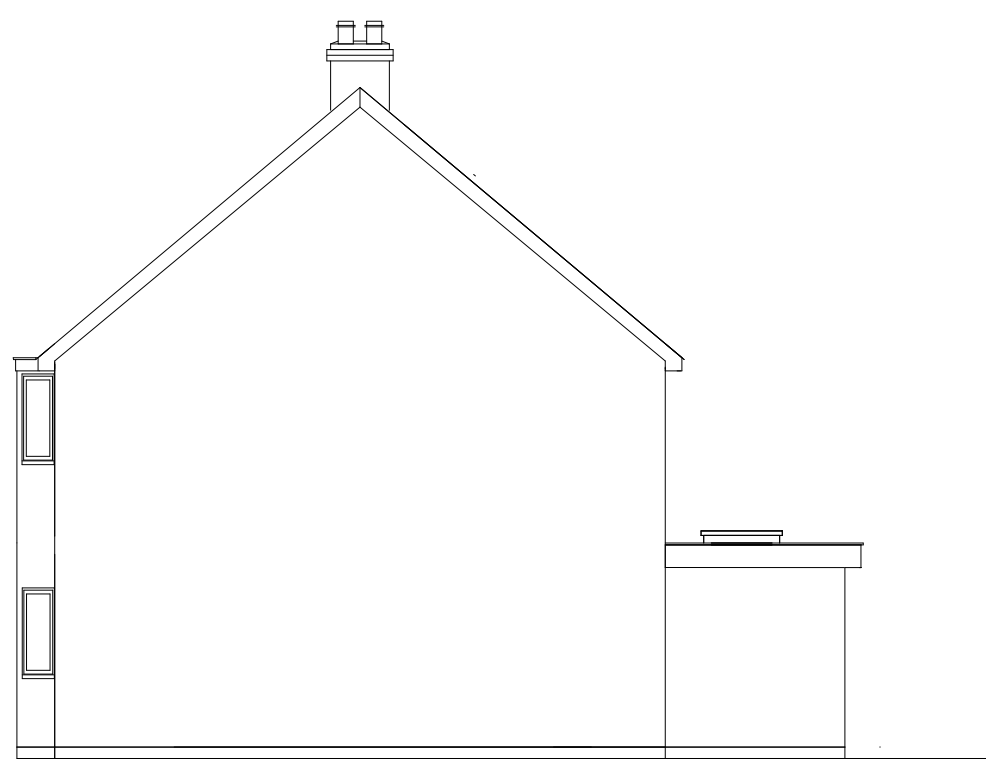
Elevations Existing

Scale 1 : 100 2000mm



Elevations Proposed

Scale 1 : 100 2000mm



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