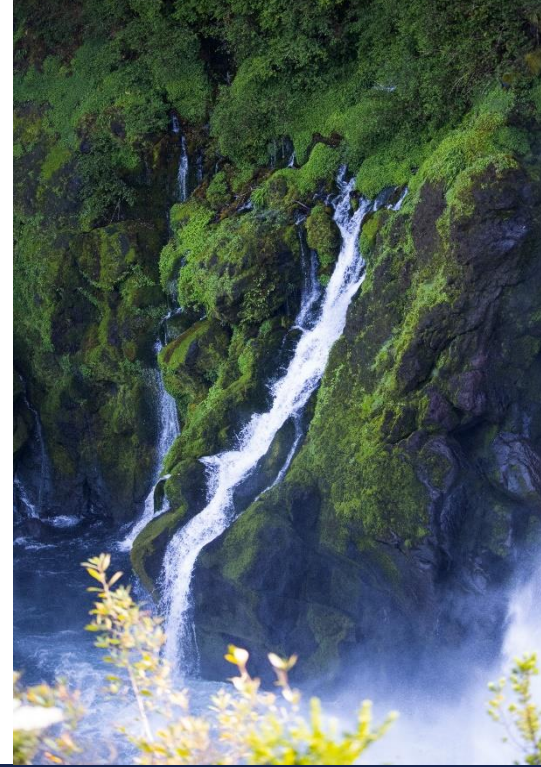




Flood Risk Assessment AEG4717_RH16_HaywardsHeath_01

Site Address: 4 Fieldway
Lindfield
Haywards Heath
West Sussex
RH16 2DD

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



Document Issue Record

Project: Flood Risk Assessment

Prepared for: Richard Peck

Reference: AEG4717_RH16_HaywardsHeath_01

Site Location: 4 Fieldway, Lindfield, Haywards Heath, West Sussex, RH16 2DD

Issue	Date	Author	Check	Auth.	Comments
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Summary

Development Description	Existing	Proposed
Development Type	A residential dwelling	Construction of an extension to the existing dwelling
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Floor Level	The EA 1m LiDAR data shows the ground elevation of the site varies between approximately 41.09m AOD and 42.55m AOD.	Finished Floor Levels (FFLs) of the new extension will be set no lower than existing floor levels in accordance with EA Standing Advice for Minor Developments.
Level of Sleeping Accommodation	TBC	TBC
Surface Water Drainage	N/A ¹	Proposed to manage runoff via existing surface water drains on site. Small scale SuDS such as rainwater planters are recommended in external areas.
Site Size	Approximately 350m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zones 1, 2, and 3	Scrase Stream
Flood Source	Fluvial	
SFRA Available	Strategic Flood Risk Assessment Level 1 (Mid Sussex District Council, 2015)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	No	Finished Floor Levels (FFLs) of the new extension will be set no lower than existing floor levels in accordance with EA Standing Advice for Minor Developments.
Safe Access/Egress Route	Yes	Proposals are considered a minor development and as such, the safe access/egress plan will not change compared to the existing.

Flood Resilient Design	Recommended	It is recommended that the proposed extension should be fitted with flood resistance and resilience measures in accordance with Improving the Flood Performance of New Buildings – Flood Resilient Construction
Site Drainage Plan	N/A ¹	Proposed to manage runoff via existing surface water drains on site. Small scale SuDS such as rainwater planters are recommended in external areas.
Flood Warning and Evacuation Plan	N/A	Recommended to sign up to the 'Lindfield on the Scrase Bridge and West Common Streams' Environment Agency (EA) flood warning service.
Offsite Impacts	Summary	Comment
Displacement of floodwater	No	Development is classified as minor development in terms of flood risk and therefore in isolation should not result in increase in flood risk elsewhere.
Increase in surface run-off generation	No	Proposed to manage runoff via existing surface water drains on site. Small scale SuDS such as rainwater planters are recommended in external areas.
Impact on hydraulic performance of channels	EA FRAP required	Given that the proposed development is <8m from an EA main river, an EA Flood Risk Activity Permit (FRAP) is likely to be required. The client should liaise with the EA in order to determine whether an FRAP will be required. Client is in discussions with structural engineer with regards to designing around the culvert.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Richard Peck 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 4 Fieldway, Lindfield, Haywards Heath, West Sussex, RH16 2DD (Figure 1).



Figure 1: Site Location (Base map and data from Google Hybrid©)

- 1.4. It is understood that the proposed development is for the construction of an extension to the existing dwelling. A copy of the development proposals is included in Appendix A of this report.

- 1.5. In the absence of a topographical survey, Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model has been used to review the topography of the site. The LiDAR data shows the ground elevation of the site varies between approximately 41.09m Above Ordnance Datum (AOD) and 42.55m AOD (Figure 2).

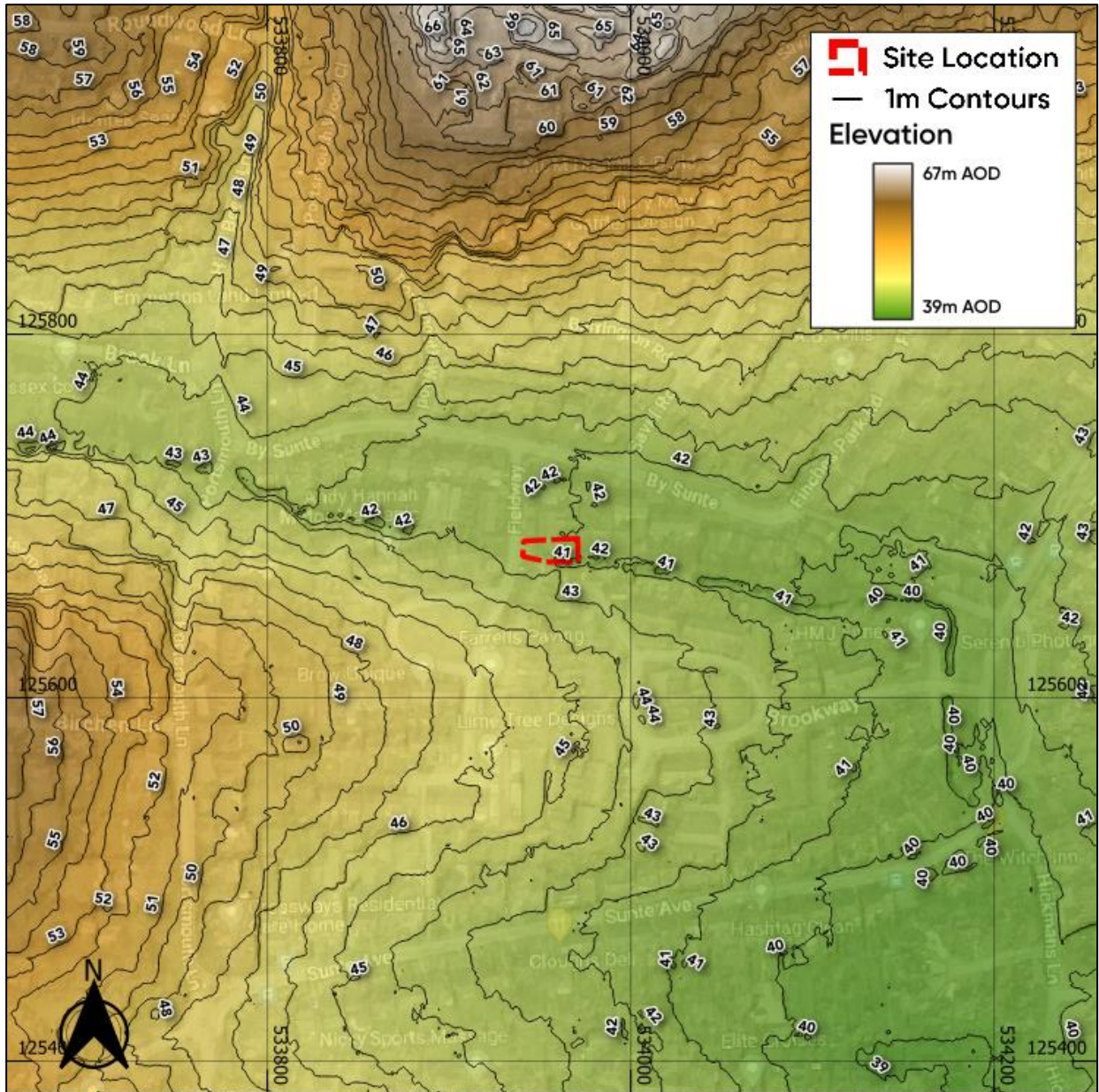


Figure 2: Site Topography (Base map and data from Google Hybrid© Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. 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

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

- *in flood zone 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*

1.8. The site is located within Flood Zone 2 and 3 and therefore an FRA is required in accordance with the NPPF.

1.9. 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) (DLUHC, 2023) which includes UK Government policy on development and flood risk states:

165. 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.

173. 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;*

²<https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2023

- 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.*

174. 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 59.

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

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 (eg subdivision of houses into flats) or any other development with a purpose not incidental to the enjoyment of the dwelling.*

2.4. Footnote 59 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.

2.5. 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)

- 2.6. 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.
- 2.7. 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.

- 2.8. The Planning Practice Guidance, which was substantially revised in March 2015 in relation to drainage, requires that sustainable drainage systems (SuDS) should be considered and included where practicable, in line with Defra Technical Standards³.

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 DP41 Flood Risk and Drainage outlines the requirements for new development within the area. It states:

Strategic Objectives:

1) To promote development that makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change; and 12) To support sustainable communities which are safe, healthy and inclusive.

Evidence Base: Gatwick Sub Region Water Cycle Study; Strategic Flood Risk Assessment; Water. People. Places SuDS guidance.

Proposals for development will need to follow a sequential risk-based approach, ensure development is safe across its lifetime and not increase the risk of flooding elsewhere. 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), surface water (pluvial), groundwater, infrastructure and reservoirs.

3 Technical Standards Accessed Online

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

Particular attention will be paid to those areas of the District that have experienced flooding in the past and proposals for development should seek to reduce the risk of flooding by achieving a reduction from existing run-off rates.

Sustainable Drainage Systems (SuDS) should be implemented in all new developments of 10 dwellings or more, or equivalent non-residential or mixed development²² unless demonstrated to be inappropriate, to avoid any increase in flood risk and protect surface and ground water quality. Arrangements for the long term maintenance and management of SuDS should also be identified.

For the redevelopment of brownfield sites, any surface water draining to the foul sewer must be disconnected and managed through SuDS following the remediation of any previously contaminated land.

SuDS should be sensitively designed and located to promote improved biodiversity, an enhanced landscape and good quality spaces that improve public amenities in the area, where possible.

The preferred hierarchy of managing surface water drainage from any development is:

- 1. Infiltration Measures*
- 2. Attenuation and discharge to watercourses; and if these cannot be met,*
- 3. Discharge to surface water only sewers.*

Land that is considered to be required for current and future flood management will be safeguarded from development and proposals will have regard to relevant flood risk plans and strategies.

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. Under the NPPF all new planning applications should undergo a Sequential Test accordance with paragraph 174 and footnotes 59 and 60. This test should be implemented by local planning

authorities with a view to location particularly vulnerable new developments outside of the floodplain.

2.13. Paragraph 174 of the NPPF states:

*"174. 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 59."*

2.14. As such, a site-specific Sequential Test and Exception Test for the proposed developments is not considered necessary in line with the NPPF given that the proposal is for a minor development.

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. The Environment Agency (EA) have provided Product 6 data for the Scrase Bridge Stream Model (2009), and this is 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) (Department for Levelling Up, Housing and Communities, 2023)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Department for Levelling Up, Housing and Communities, 2022)
 - Geoindex Onshore (British Geological Survey, 2023)
 - Mid Sussex District Plan 2014-2031 (Mid Sussex District Council, 2018)⁴
 - West Sussex Preliminary Flood Risk Assessment (West Sussex County Council, 2011)⁵
 - Strategic Flood Risk Assessment Level 1 (Mid Sussex District Council, 2015)⁶

⁴ <https://www.midsussex.gov.uk/media/3406/mid-sussex-district-plan.pdf>

⁵ https://www.westsussex.gov.uk/media/1626/west_sussex_pfra.pdf

⁶ <https://www.midsussex.gov.uk/media/2609/strategic-flood-risk-assessment.pdf>

- West Sussex Local Flood Risk Management Strategy (2013-2018) (West Sussex County Council, 2014)⁷

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA, published in 2011, 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 2015, 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.

⁷ https://www.westsussex.gov.uk/media/1595/local_flood_risk_management_strategy.pdf

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

- 4.2. The nearest EA Main River is the Scrase Stream which is culverted below the site. The nearest open channel of the Scrase Stream is approximately 50m west of the site. Given that the proposed development is <8m from the EA main river, an EA Flood Risk Activity Permit (FRAP) is likely to be required. The client should liaise with the EA in order to determine whether an FRAP will be required.
- 4.3. The EA have also advised that although the Main River is their responsibility, the culvert itself is likely that of the local planning authority. As such, the applicant should also contact the local highways authority to understand if this culvert is their responsibility and obtain relevant consents where required. The local authority should advise on this.
- 4.4. The client is in discussions with a structural engineer with regards to designing around the culvert and the structural integrity of the culvert – to be developed during the FRAP process.

Ordinary Watercourses

- 4.5. No ordinary watercourses could be found within 500m of the site, based on OS mapping.

EA Flood Map for Planning

- 4.6. The site is located within Flood Zones 1, 2 and 3 (Figure 3). Flood Zone 1 denotes a risk of flooding from fluvial and tidal sources less than 1 in 1,000 (0.1%) probability. Flood Zone 2 denotes a risk of flooding from fluvial sources between a 1 in 100 (1%) and 1 in 1,000 (0.1%). Flood Zone 3 denotes a risk of flooding from fluvial sources greater than 1 in 100 (1%).
- 4.7. It is noted that the Flood Zone 3 extent on site appears to be confined to the channel/ culvert of the Scrase Stream – as the river is flowing west to east at this location and thus for the Flood Zone 3 to cover the actual site above the culvert, it would need to enter the site at the northwest corner, which it does not.



Figure 3: EA Flood Map for Planning (Base map and data from Google Hybrid© Contains public sector information licensed under the Open Government Licence v3.0)

Historical Fluvial Flooding

- 4.8. There is no record of historical fluvial/tidal flooding on-site based on the EA's recorded flood outline dataset (Figure 4).

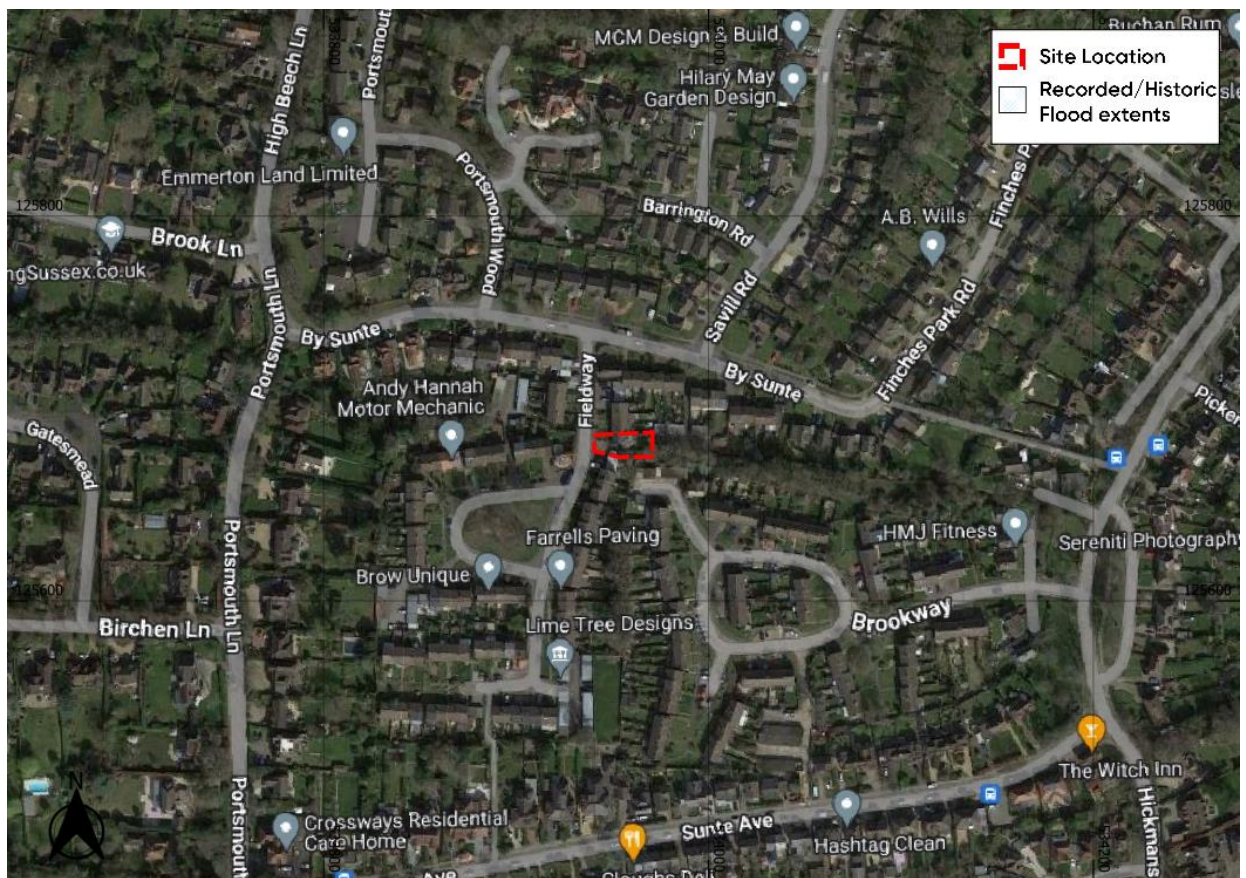


Figure 4: EA Historic Flood Mapping (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

Scrase Bridge Stream Model (2009)

- 4.9. Aegaea have been provided a copy of the Scrase Bridge Stream Model (2009) flood model. It is understood that this is the best available modelled flood data for this area.
- 4.10. It is noted that the Scrase Bridge Stream Model (2009), provided by the EA, did not display the depths/ levels data correctly due to the data being corrupted. However, given the nature of the development (minor extension) the extents are considered appropriate to use to understand the risk to the site from fluvial sources.

Present Day

- 4.11. The 1 in 30 year flood data was not provided in the Scrase Bridge Stream Model (2009) model, so the 1 in 20 year and 1 in 50 year have been used.
- 4.12. Analysis of the modelled 1 in 20 year and 1 in 50 year flood extent indicate that the site is affected in both events and the proposed development footprint is affected In the 1 in 50 year extent

when considering a birds eye view (Figure 5). However, due the Scrase Stream being culverted under the site, and the river flowing from the west to the east, it can be considered that the flood extents observed in these events, represents the flood water exiting the culvert and travelling away from the site, and would not affect the ground level areas of the site (if the site were to be affected in the modelled 1 in 50 year event, it would be from overland flow over Fieldway, which is not observed in the EA model).

- 4.13. It is noted that there is an abrupt end to the model and the water does not flow over the site. As such it can be considered that the proposed footprint is not affected in these events and the development would not be considered to be in Flood Zone 3b. Dry access/egress on Feildway should be achievable in these events.



Figure 5: EA Modelled 1 in 20 Year and 1 in 50 Year Flood Extents (Base map and data from Google © Contains public sector information licensed under the Open Government Licence v3.0)

- 4.14. Analysis of the modelled 1 in 100 year flood extent also shows the flood water existing the culvert and travelling away from the site (Figure 6). The northwest boundary of the site is affected in this event however, it is noted that the flood water does not flow across the site. As such, it can be

considered that the proposed footprint is not affected in this event. Dry access/egress on Feildway should be achievable in these events.



Figure 6: EA Modelled 1 in 100 Year Flood Extents (Base map and data from Google © Contains public sector information licensed under the Open Government Licence v3.0)

Climate Change

- 4.15. The site is located in the Adur and Ouse Management Catchment, which has updated central peak flow river allowances of: 16% for the 2020s, 18% for the 2050s, and 37% for the 2080s. As the development consists of a 'More Vulnerable' use, the peak flow allowance of 37% for the 2080s would be required for fluvial flood flows.
- 4.16. It is noted that, the Scrase Bridge Stream Model (2009) model does not contain the 37% Climate Change allowance. The Scrase Bridge Stream Model (2009) only contains the 20% Climate Change allowance. As such, both the 1 in 100 +20%CC and 1 in 1000 year extent (adopting a conservative approach) has been used to understand the future risk to the site.

- 4.17. Analysis of the 1 in 100 +20%CC and 1 in 1000 year extents shows that the flood water does flow over the site from Fieldway, having spilled out of bank upstream of the highway (Figure 7). As such, it can be considered that the proposed footprint is affected in these events. Safe access/egress could be affected in the 1 in 1000 year event meaning refuge should be taken on site at the highest possible floor in this event.



Figure 7: EA Modelled 1 in 100 +20%CC Year and 1 in 1000 Year Flood Extents (Base map and data from Google © Contains public sector information licensed under the Open Government Licence v3.0)

Summary

- 4.18. The site is located within Flood Zones 1, 2 and 3. The proposed development is considered to not be flooded in the 1 in 20, 1 in 50, and 1 in 100 year events due to the flood water exiting the culvert and travelling away from the site.
- 4.19. During the modelled 1 in 100 +20%CC and 1 in 1000 year events, the proposed development is affected by the flood extents. As such, mitigation measures will be recommended in Section 5 of this report.

- 4.20. Given the nature of the development (minor extension) the extents are considered appropriate to use to understand the risk to the site from fluvial sources and this provides enough information to recommended mitigation measures.
- 4.21. It is noted that, safe access/egress may be affected in the modelled 1 in 1000 year (in the absence of a 1 in 100 year 37%CC) 'design' event and refuge should be taken on site, however the proposal is for a minor development, and as such, the access/egress arrangement would not differ from the existing scenario.

Tidal

- 4.22. 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.
- 4.23. 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. The risk of flooding from tidal sources is considered low.

Canals

- 4.24. 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.
- 4.25. No CRT canals were detected within 1km of the site.
- 4.26. The risk of flooding to this site from canals is considered to be low.

Pluvial

- 4.27. 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.
- 4.28. Annual surface water flood risk is labelled by the EA as:
- 'High Risk'; >3.3% AEP (annual probability greater than 1 in 30).
 - 'Medium Risk'; 1.1% to 3.3% AEP (annual probability between 1 in 100 and 1 in 30).

- 'Low Risk'; 0.1% to 1% AEP (annual probability between 1 in 1000 and 1 in 100).
- 'Very Low Risk'; <0.1% AEP (annual probability less than 1 in 1000).

4.29. Examination of the EA's Flood Risk from Surface Water mapping for High Risk, Medium Risk, and Low Risk AEP flood events shows the site and its immediate vicinity is at risk of flooding in 'Medium' and 'Low' surface water flood events (Figure 8).

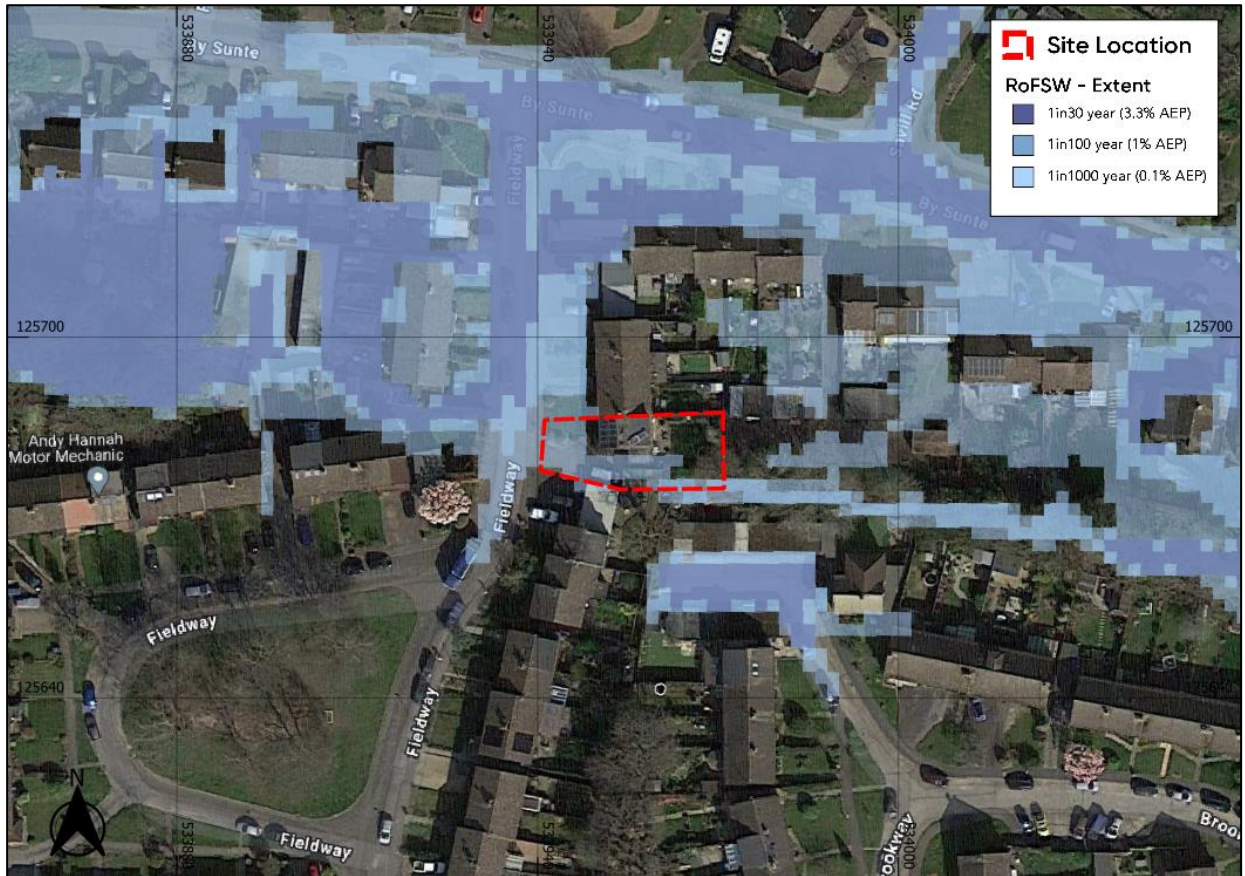


Figure 8: EA Surface Water Flood Risk Mapping (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

4.30. As can be seen in Figure 9, during the modelled 1 in 30 year probability event, surface water flooding does not affect the site. Flooding is present north of the site on Fieldway Road, however dry access/egress can be achieved south on Fieldway Road.



Figure 9: EA Surface Water Flood Risk Mapping 1 in 30 Year Depth (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

- 4.31. As can be seen in Figure 10, during the modelled 1 in 100 year probability event, surface water flood depths of between 150mm and 600mm are present on the southeast boundary of the site (within the channel of the Scrase Stream). It is noted that the proposed development footprint is not affected in this event. Flooding is present north of the site on Fieldway Road, however safe access/egress can be achieved south on Fieldway Road, along a footpath and onto Sunte Avenue. The hazard rating on Sunte Avenue is Low meaning safe access/egress should be possible (Figure 11).



Figure 10: EA Surface Water Flood Risk Mapping 1 in 100 Year Depth (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

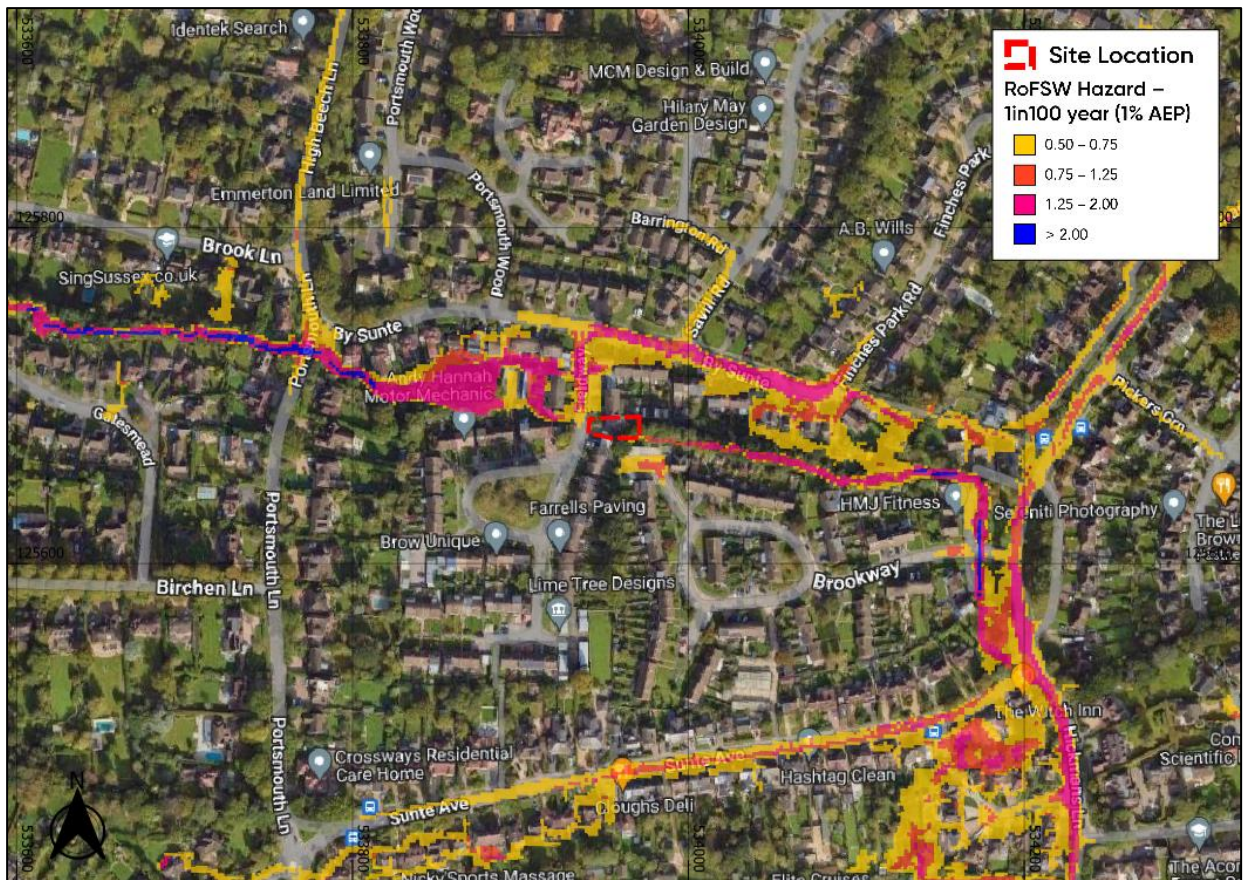


Figure 11: EA Surface Water Flood Risk Mapping 1 in 100 Year Hazard (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

- 4.32. As can be seen in Figure 12, during the modelled 1 in 1000 year probability event, surface water flood depths of between 150mm and 1200mm are present in the south and west of the site. The proposed development footprint is affected by flood depths of between 150mm to 600mm. The hazard rating on Fieldway Road is high, meaning safe access/egress may not be possible in this event. If safe access/egress cannot be achieved, then refuge should be taken on site at the highest possible floor.

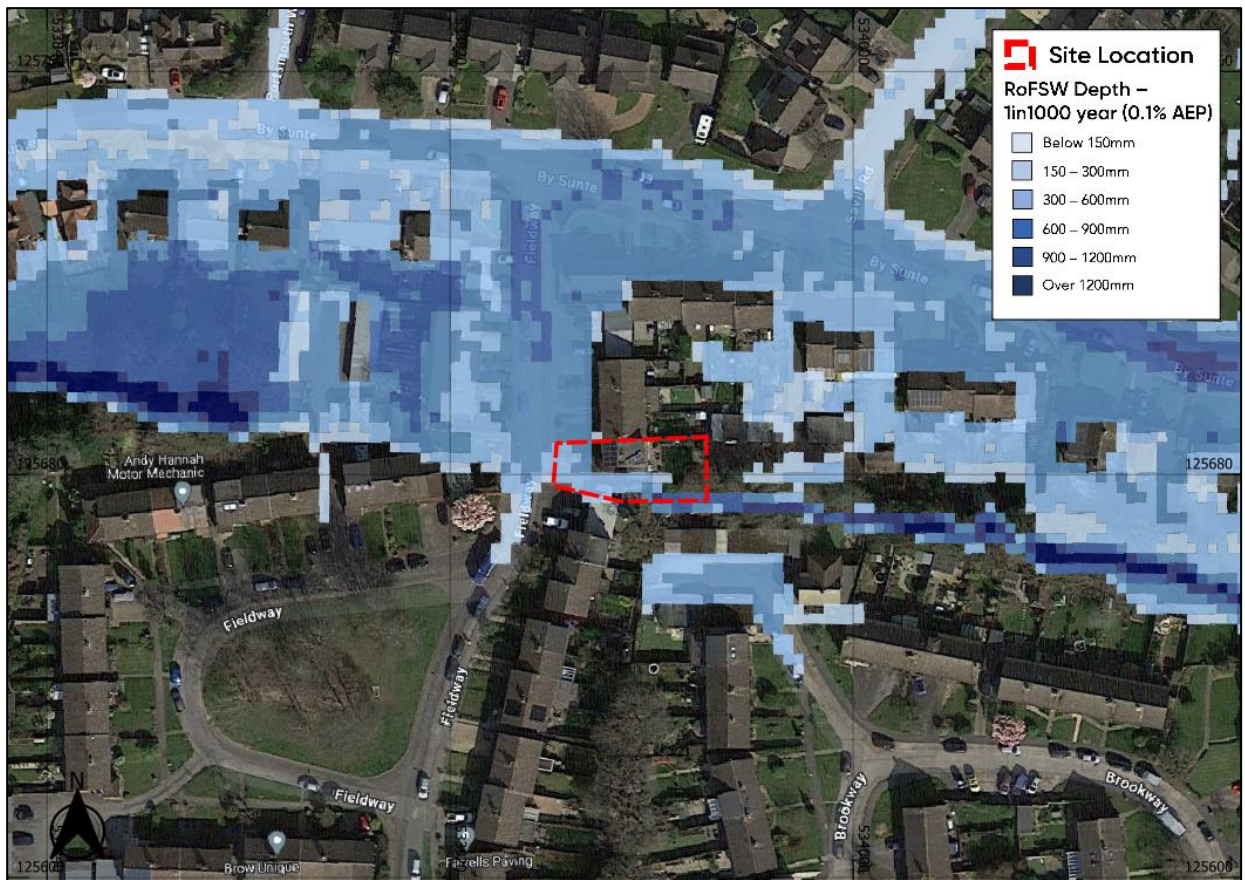


Figure 12: EA Surface Water Flood Risk Mapping 1 in 1000 Year Depth (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)



Figure 13: EA Surface Water Flood Risk Mapping 1 in 1000 Year Hazard (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

- 4.33. As such the risk to the proposed development from surface water flooding can be considered low.
- 4.34. It is noted that, due to the extension being classed as a minor development, access/egress arrangements will remain the same as the existing.

Reservoirs

- 4.35. 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.
- 4.36. According to the EA's Flood Risk from Reservoirs mapping the site is outside flood extents in the event of reservoir flooding (Figure 14).



Figure 14: EA Reservoir Flood Risk Mapping (Base map and data from Google Hybrid© Contains public sector information licensed under the Open Government Licence v3.0)

4.37. The site has not been flagged as being at risk of flooding following a reservoir failure.

Groundwater

4.38. Groundwater flooding occurs in areas where underlying geology is permeable, and water can rise within the strata sufficiently to breach the surface.

4.39. The British Geological Survey's (BGS) mapping shows superficial deposits of Alluvium comprised of clay, silt, sand, and gravel underlying the site. The bedrock underlying the site is Upper Tunbridge Wells Sand comprised of sandstone and siltstone, imbedded.

4.40. No Historical BGS boreholes were recorded within the vicinity of the site (500m radius).

4.41. The SFRA states:

Only a limited number of historical flood records, where the cause had been documented as groundwater flooding, were obtained.

4.42. The SFRA also details the following on groundwater flooding within the area of Haywards Heath:

*Land in this location overlies a minor aquifer and therefore **high groundwater vulnerability** will need to be addressed in any SuDS design.*

4.43. The development does not include any subterranean elements. As such, the risk from groundwater to the proposed development is considered to be low.

Sewers

4.44. 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.

Information with historic flood incident data was received by West Sussex County Council in January and February 2011 as part of their Local Drainage Asset Survey and other flood incident data shared by local groups. This data identified incidents in Bolney, Burgess Hill, Cuckfield, Fulking, Horsted Keynes, Poynings, Turners Hill, Twineham and West Hoathly.

4.45. There is no evidence to suggest that the site has been affected by sewer flooding incidents.

4.46. The development is therefore considered to be at low risk of flooding from sewers.

5. Flood Risk Mitigation

Fluvial

- 5.1. The site is located within Flood Zones 1, 2 and 3. The proposed development is considered to not be flooded in the 1 in 20, 1 in 50, and 1 in 100 year events due to the flood water existing the culvert and travelling away from the site.
- 5.2. During the 1 in 100 +20%CC and 1 in 1000 year events, the proposed development is affected by the flood extents. As such, mitigation measures will be recommended.
- 5.3. Given the nature of the development (minor extension) the extents are considered appropriate to use to understand the risk to the site from fluvial sources and this provides enough information to recommended mitigation measures.
- 5.4. It is recommended that the proposed extension should be fitted with flood resistance and resilience measures in accordance with *Improving the Flood Performance of New Buildings – Flood Resilient Construction*⁸. The following measures are recommended where practical:
- *Water resistant internal render and floor screed.*
 - *Damp proof membranes should be included within the design of the dwelling to minimise the passage of water through ground floors. Damp proof membranes to be incorporated into the ground floor to at least 300mm above threshold level.*
 - *Non-return valves should be installed on all new drainage.*
 - *All new plumbing insulation to be of closed cell design.*
- 5.5. Furthermore, given that the proposed extensions are extensions to the existing dwelling and is therefore considered Minor Development, they should adhere to the EA Standing Advice: finished floor levels of the proposed extension are to match the existing finished floor levels.

⁸ https://assets.publishing.service.gov.uk/media/602d673ee90e0709e8d085d8/Improving_the_Flood_Resilience_of_Buildings_Through_Improved_Materials_Methods_and_Details_Technical_Report.pdf

- 5.6. It is noted that, safe access/egress may be affected in the modelled 1 in 100 +37%CC 'design' event and refuge should be taken on site, however the proposal is for a minor development, and as such, the access/egress arrangement would not differ from the existing scenario.
- 5.7. The nearest EA Main River is the Scrase Stream which is culverted below the site. Given that the proposed development is <8m from the EA main river, an EA Flood Risk Activity Permit (FRAP) is likely to be required. The client should liaise with the EA in order to determine whether an FRAP will be required.
- 5.8. The EA have also advised that although the Main River is their responsibility, the culvert itself is likely that of the local planning authority. As such, the applicant should also contact the local highways authority to understand if this culvert is their responsibility and obtain relevant consents where required. The local authority should advise on this.
- 5.9. The client is in discussions with a structural engineer with regards to designing around the culvert and the structural integrity of the culvert – to be developed during the FRAP process.

Tidal, Canals, Pluvial, Reservoirs, Groundwater, and Sewer

- 5.10. Flood risk from other sources is considered to be low, therefore mitigation is not required.

Increase to Flood Risk Elsewhere

- 5.11. It is understood that the proposed development is for the construction of an extension to the existing dwelling. As such, the proposal constitutes a Minor Development under the NPPF.
- 5.12. 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.*

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

Flood Warnings

- 5.14. The site is in the Environment Agency 'Lindfield on the Scrase Bridge and West Common Streams' flood warning service area. This service allows site owners 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 owner of the site should sign up.
- 5.15. 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 and the mounting of site-specific flood defences.

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 4 Fieldway, Lindfield, Haywards Heath, West Sussex, RH16 2DD. 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	The site is located within Flood Zones 1, 2 and 3. The proposed development is considered to not be flooded in the 1 in 20, 1 in 50, and 1 in 100 year events due to the flood water existing the culvert and travelling away from the site. During the 1 in 100 +20%CC and 1 in 1000 year events, the proposed development is affected by the flood extents. As such, mitigation measures will be recommended. It is recommended that the proposed extension should be fitted with flood resistance and resilience measures in accordance with <i>Improving the Flood Performance of New Buildings – Flood Resilient Construction</i>. Furthermore, given that the proposed extensions are extensions to the existing dwelling and is therefore considered Minor Development, they should adhere to the EA Standing Advice: finished floor levels of the proposed extension are to match the existing finished floor levels.
Tidal Canals Pluvial Reservoirs Groundwater Sewers	The site is considered to be at low risk from these sources.

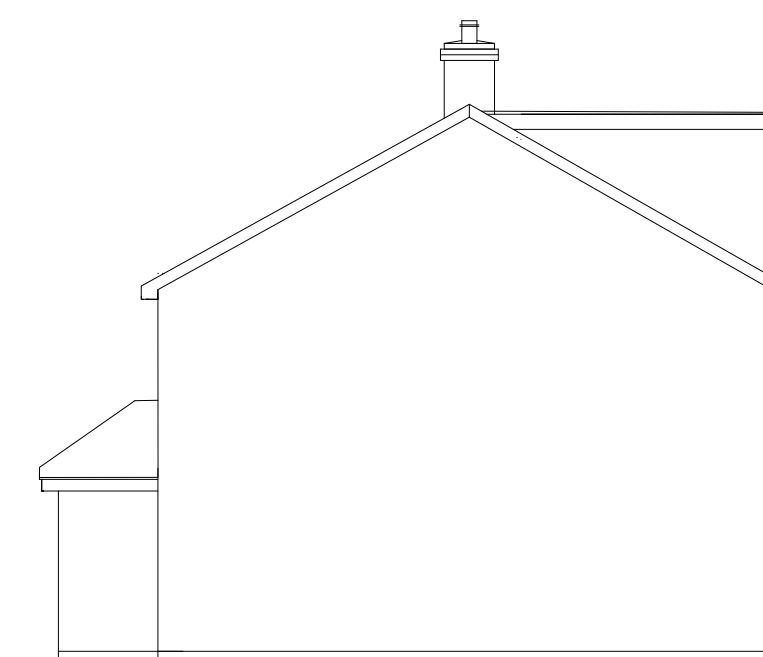
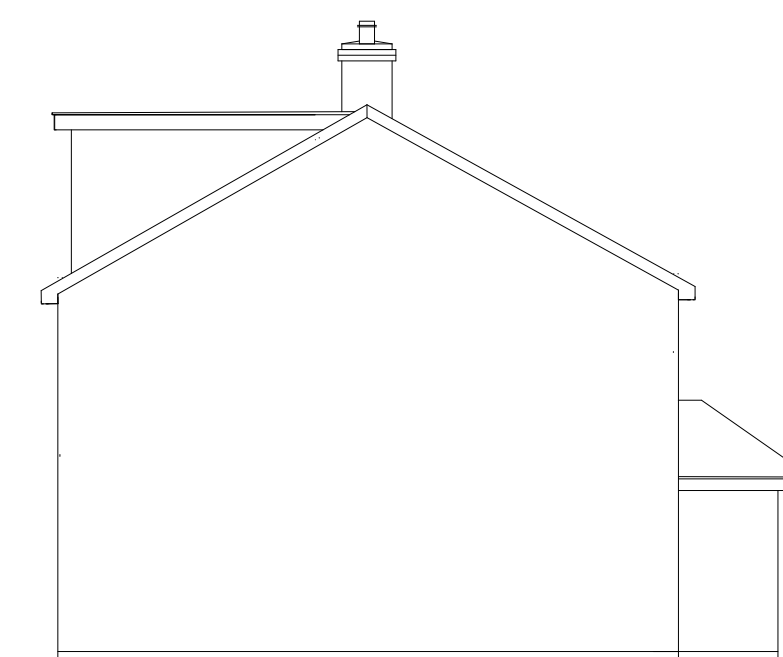
- 6.3. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.
- 6.4. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals

Planning Drawings

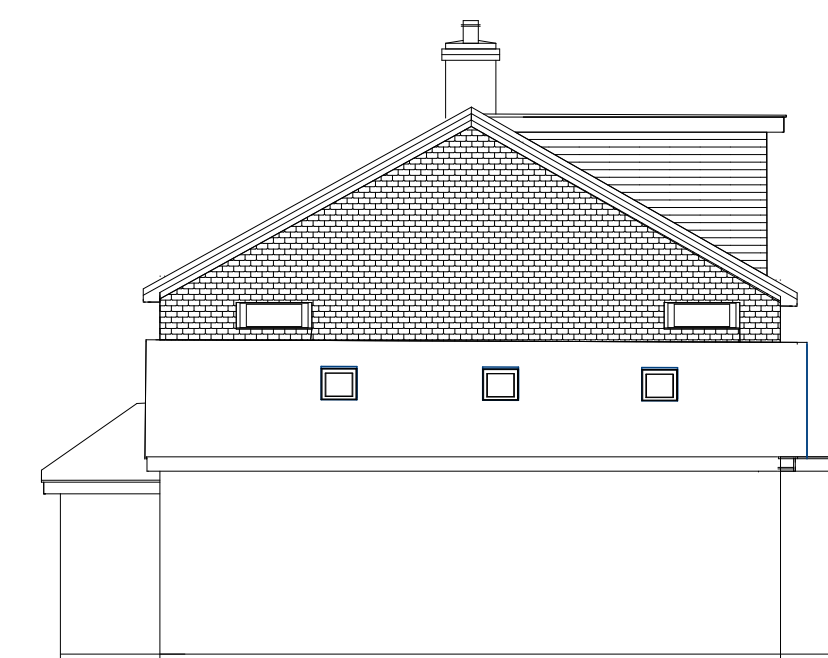
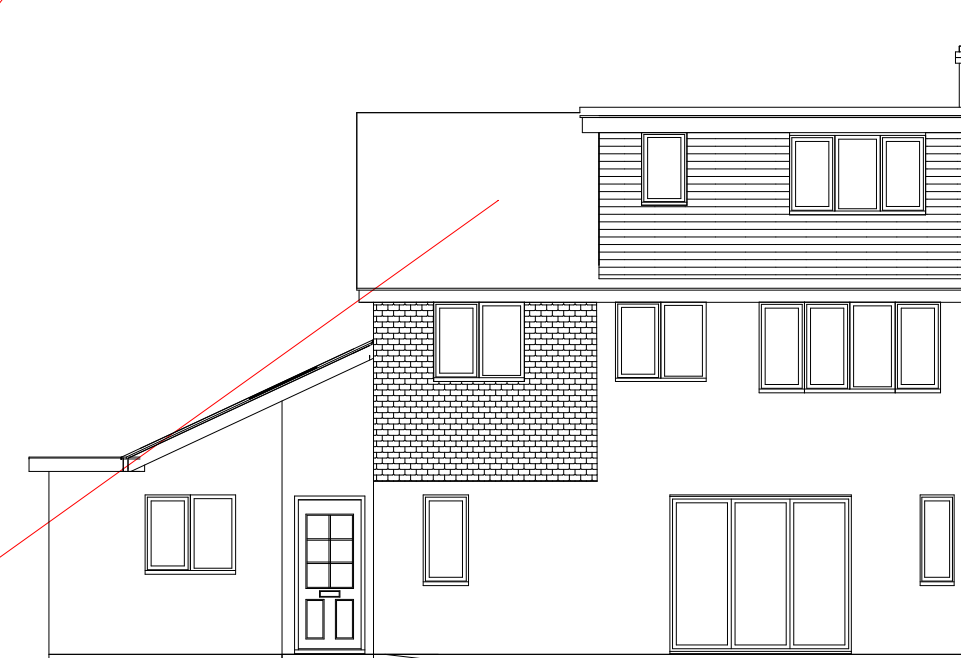
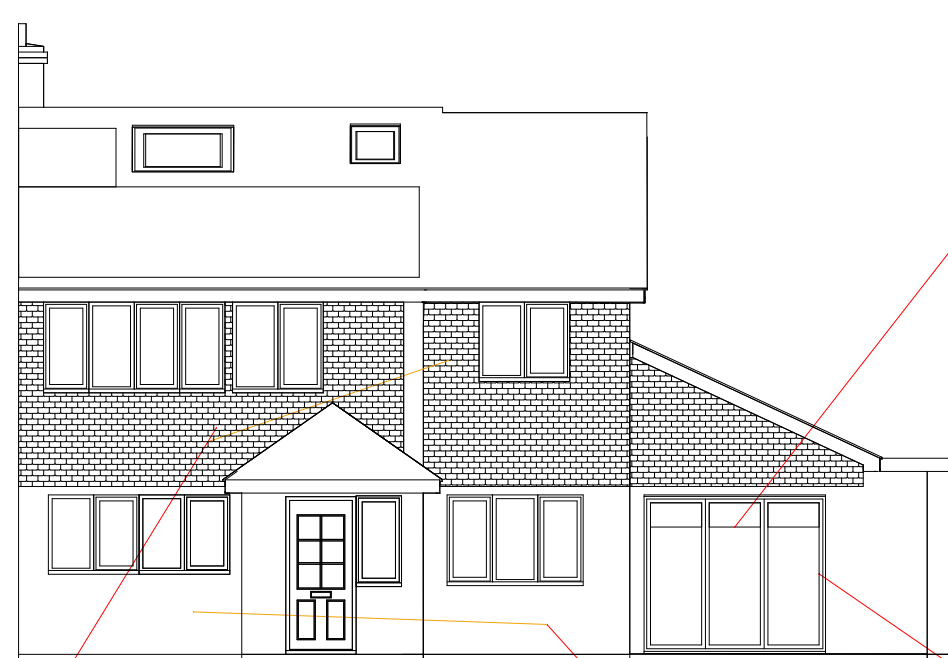
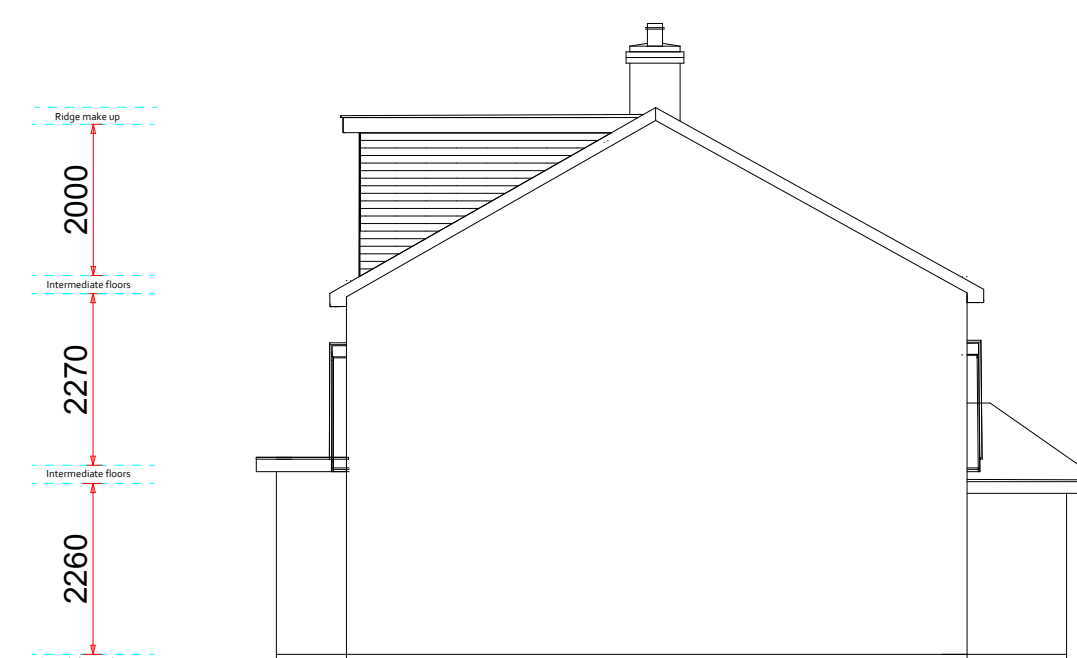
Elevations Existing

Scale 1 : 100



Elevations Proposed

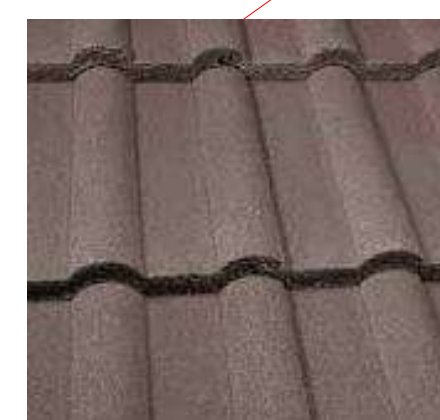
Scale 1 : 100



Materials Schedule



Roof cladding match



Roof tile Match



Brickwork shell match



All windows & doors
anthracite grey

Photographic Survey



Concept



Client - Richard Peck

Address - 4 Fieldway,
Lindfield,
Haywards Heath
RH16 2DD

Page Size - A1

2000mm



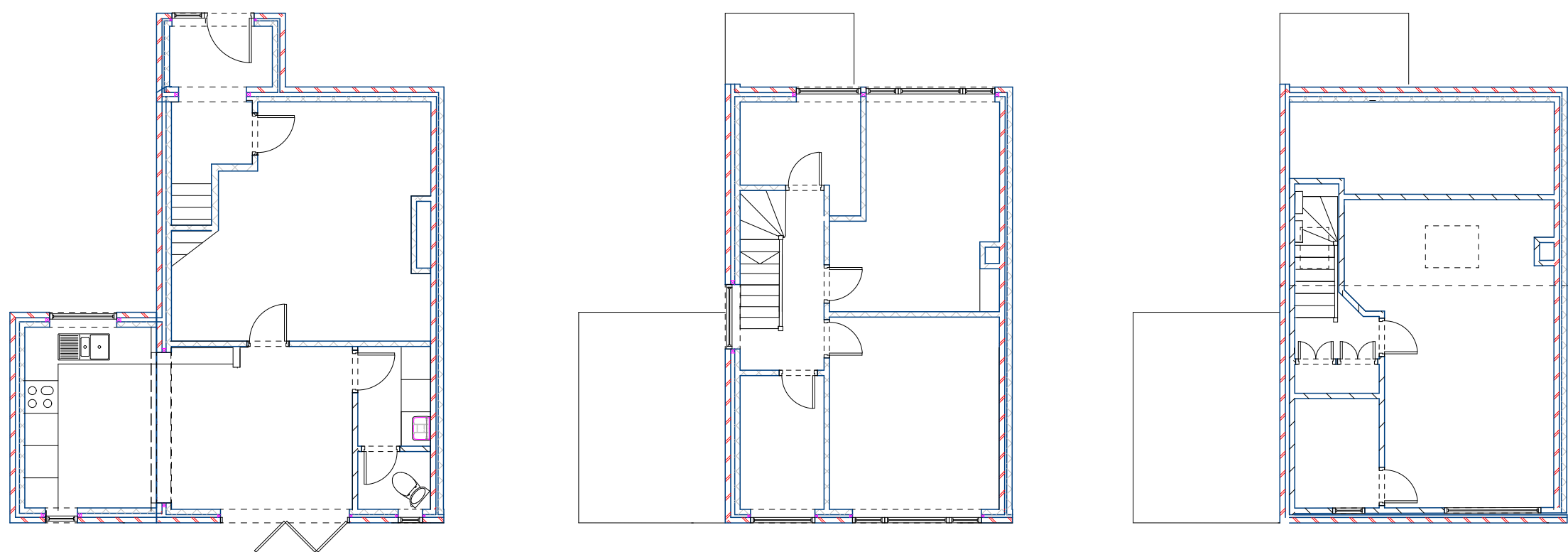
1. All Dimensions In Millimetres Unless Otherwise Stated
2. New Roof Tiles to match existing in type ,colour & face
3. New facing brickwork to match existing
4. The requirements of the party wall act should be observed
- 5.No part of the existing extension ,including Foundations and gutters, should encroach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

Planning Drawings

Photographic Survey

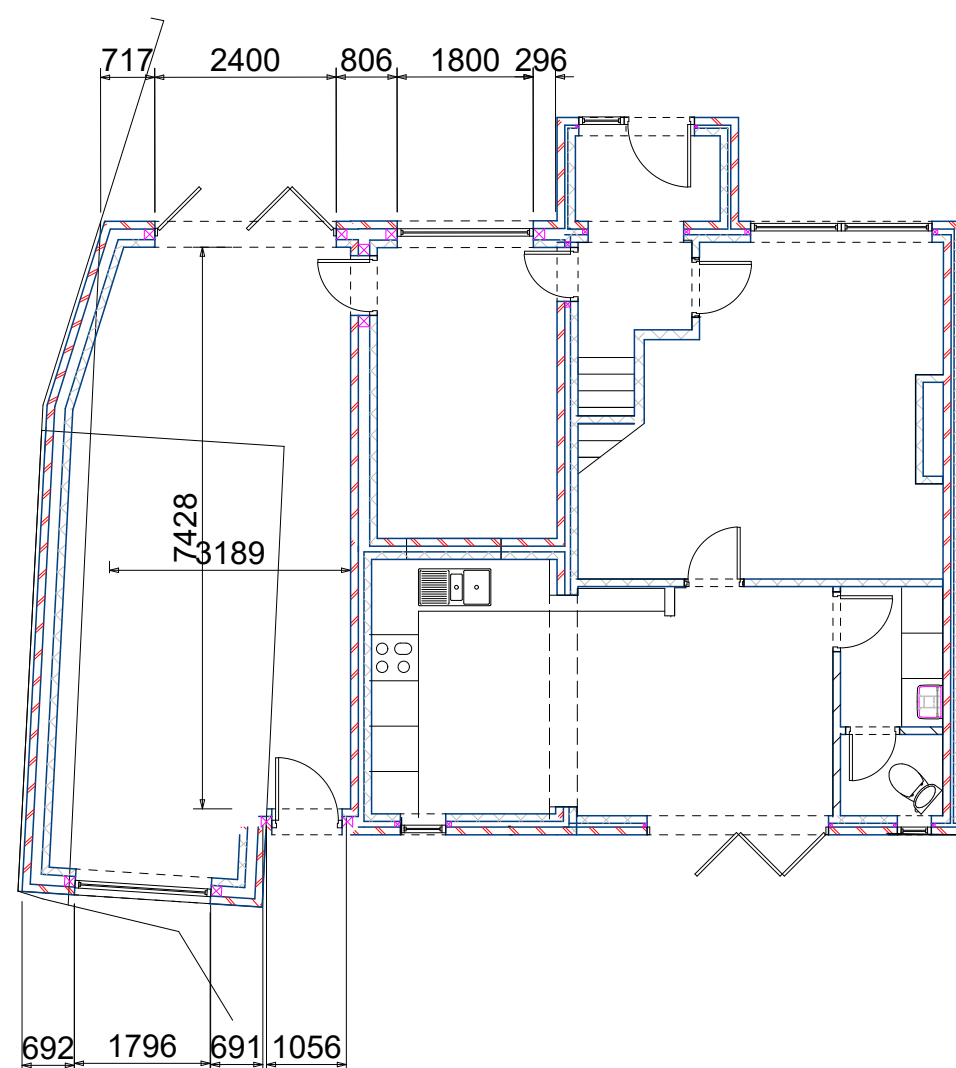
Existing Layout

Scale 1 : 100 2000mm

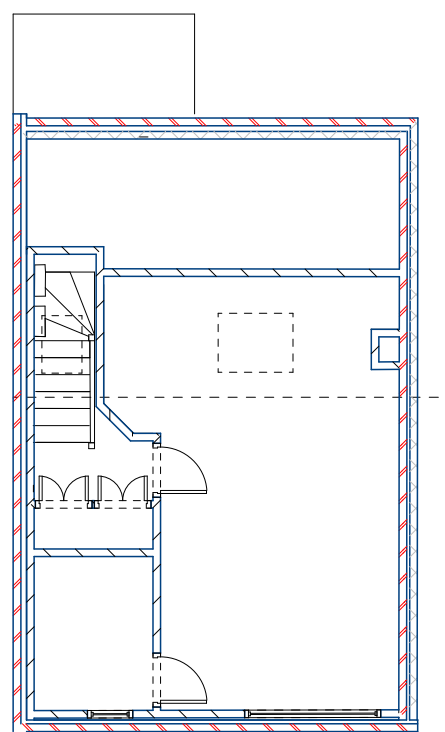
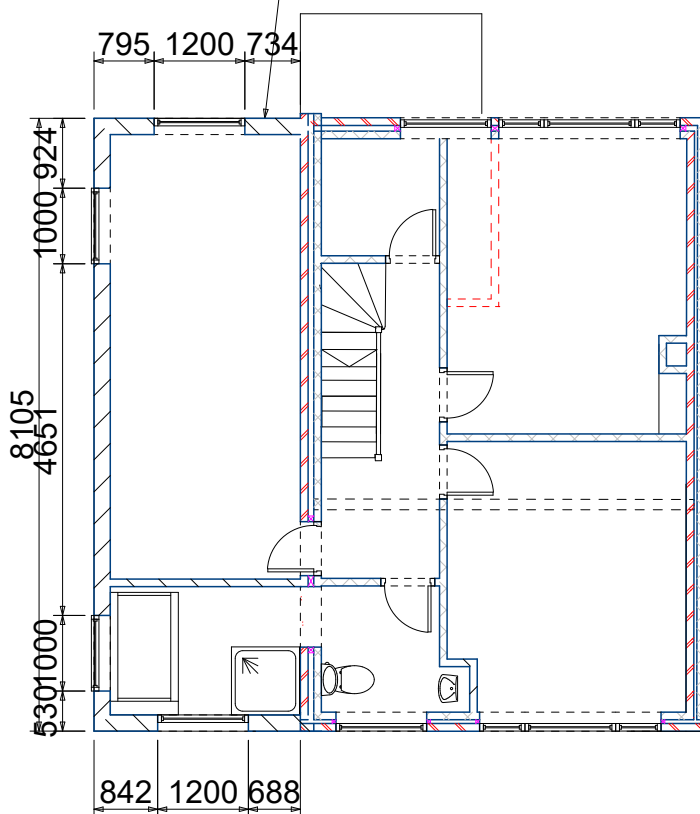


Proposed Layout

Scale 1 : 100 2000mm



1st floor timber structure



Client - Richard Peck

Address - 4 Fieldway,
Lindfield,
Haywards Heath
RH16 2DD

Page Size - A1 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 existing extension ,including Foundations and gutters, should encroach the property boundary