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Flood risk, water and environment

Flood Risk Assessment AEG0928_BN18_Amberley_01

Site Address: Willow Cottage
Church Street
Amberley
West Sussex
BN18 9NF

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

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Flood risk, water and environment

Document Issue Record

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Prepared for: Viginia and Simon Airey

Reference: AEG0928_BN18_Amberley_01

Site Location: Willow Cottage, Church Street, Amberley, West Sussex, BN18 9NF

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Summary

Development Description	Existing	Proposed
Development Type	A residential dwelling	Extension to dwelling to provide greater habitable space
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Floor Level	Existing topographic levels on site range between 2.00m AOD and 9.00m AOD based on 1m LiDAR data. Existing ground floor finished floor levels (FFLs) are set at 8.07m AOD.	Finished floor level to be set no lower than existing ground floor levels in accordance with EA Standing Advice.
Level of Sleeping Accommodation	First floor	No change
Surface Water Drainage	N/A ¹	Recommended to discharge runoff as per existing. Small scale SuDS recommended.
Site Size	930m ²	No change
Development Size	N/A ¹	Minor development in terms of flood risk.
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 1 and 3	
Flood Source	Fluvial	
SFRA Available	Horsham District Council SFRA Final Report – Revised 2010	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	N/A ¹	Minor development – finished floor levels to match existing dwelling. Additional flood resilience measures to be incorporated into the dwelling.
Safe Access/Egress Route	Yes	Safe access/egress achievable during both pluvial and fluvial design events.

Flood Resilient Design	Yes	Flood resilient design in line with guidance set out in 'Improving the Flood Performance of New Buildings' (2007).
Site Drainage Plan	Yes	Recommended to discharge runoff as per existing. Small scale SuDS recommended.
Flood Warning & Evacuation Plan	Yes	Residents should sign up to the EA Flood Warning Service (Amberley on the River Arun)
Offsite Impacts	Summary	Comment
Displacement of floodwater	No	Minor developments are likely to have a negligible impact on flood risk elsewhere
Increase in surface run-off generation	No	Recommended to discharge runoff as per existing. Small scale SuDS recommended.
Impact on hydraulic performance of channels	No	Does not impact channel.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned 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 at Willow Cottage, Church Street, Amberley, West Sussex, BN18 9NF (Figure 1).

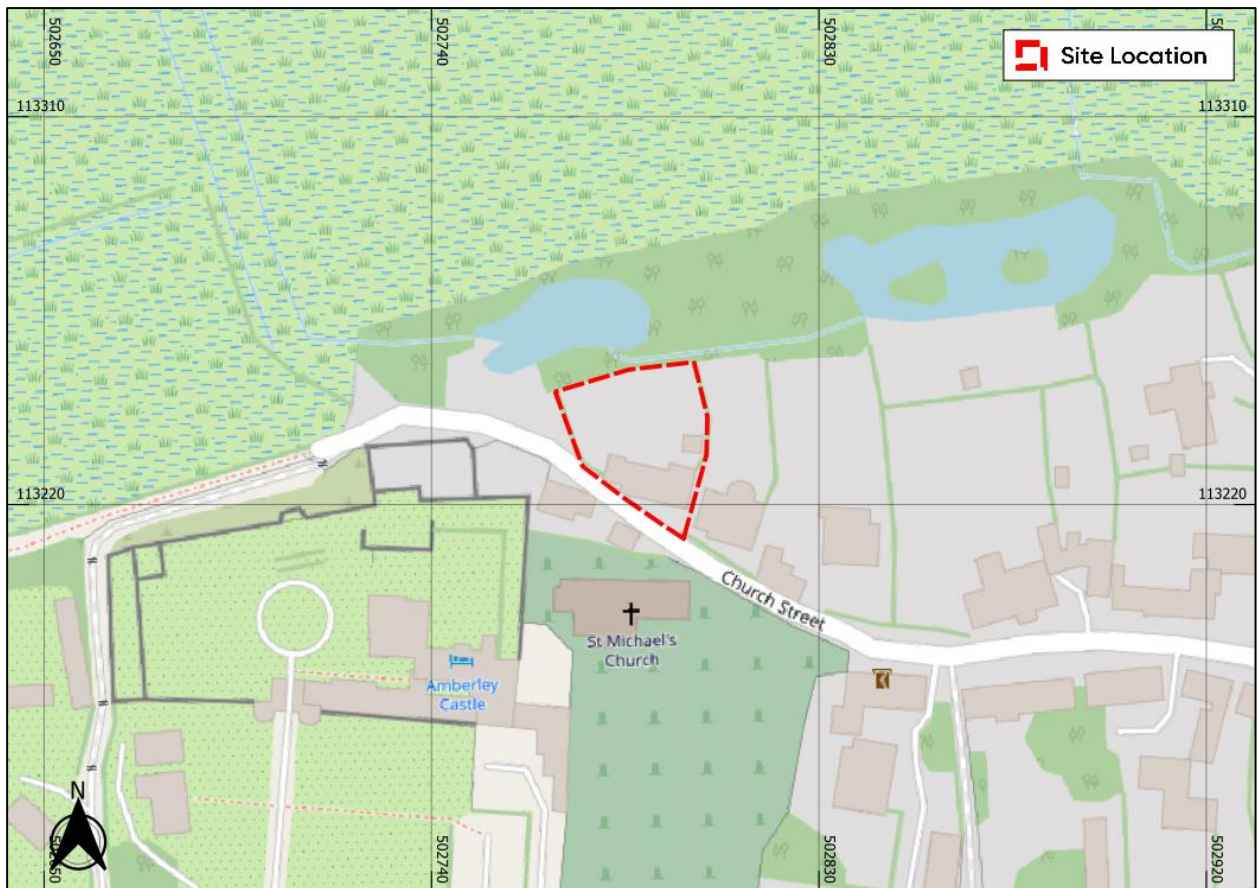


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA).
© <https://www.openstreetmap.org> and contributors)

- 1.4. The proposed development is for the construction of a small rear infill extension to the existing dwelling to provide greater habitable space.
- 1.5. In the absence of a topographical survey, Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model (1m resolution) has been utilised to review the topography of the site. Analysis of the data shows the site generally slopes from southeast to the north. Topographic levels vary from approximately 2.00m Above Ordnance Datum (AOD) to 9.00m AOD. The existing ground floor finished floor levels are set at 8.07m AOD.

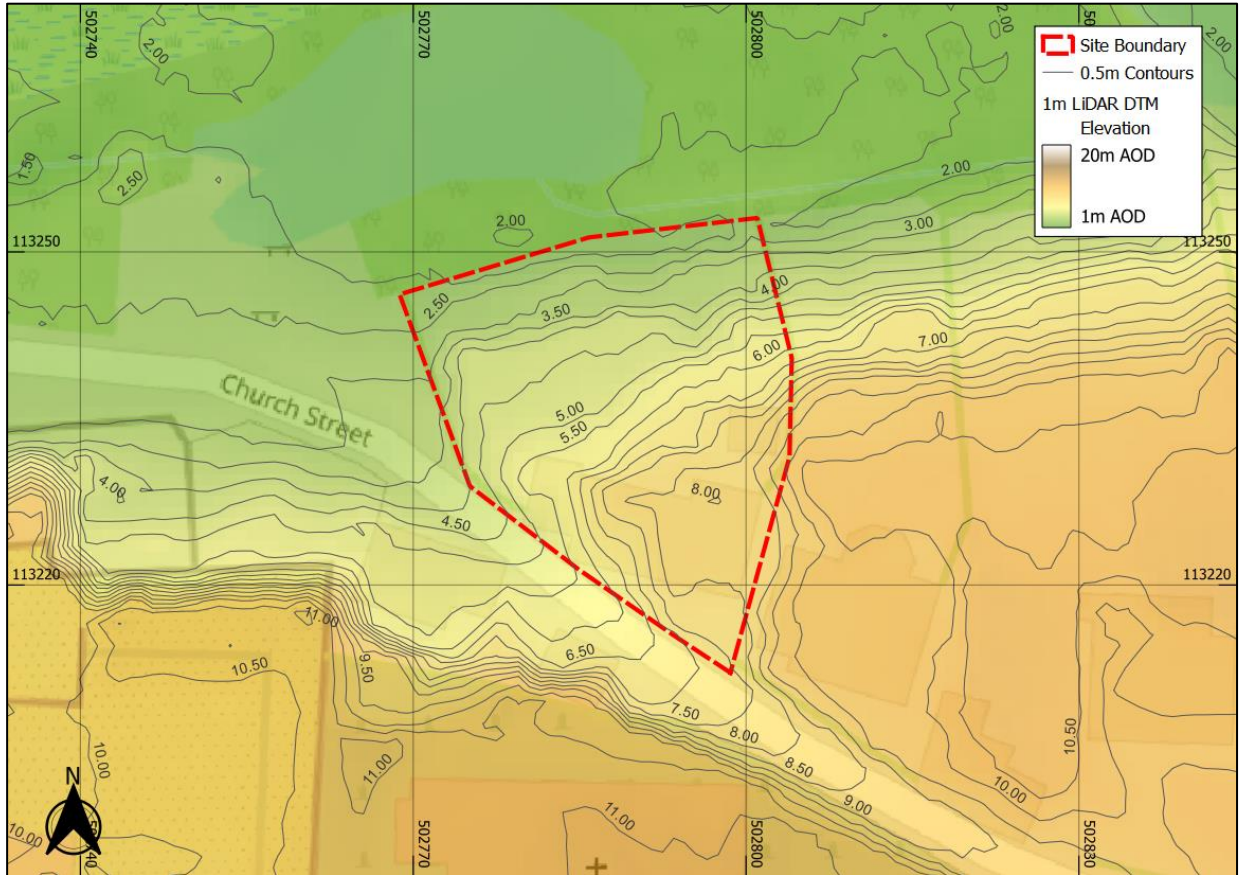


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. Horsham District Council and South Downs National Park is the Local Planning Authority (LPA) for the site, and West Sussex County Council is the designated Lead Local Flood Authority (LLFA).

Planning Policy and Guidance

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

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

1.8. Flood Zones in England are defined as follows:

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

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	<p>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:</p> <p>land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or</p> <p>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).</p> <p>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)</p>

- 1.9. The site is in Flood Zone 3 therefore the NPPF states that an FRA is required.
- 1.10. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:
 - Fluvial flood risk
 - Surface water flood risk
 - Risk of flooding from other sources
- 1.11. 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.

- 1.12. 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. Planning Policy

National Planning Policy Framework

- 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.
- 2.2. The National Planning Policy Framework² (NPPF) (DLUHC, 2021) which includes UK Government policy on development and flood risk states:

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

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

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

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

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

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

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

2.5. Footnote 55 of the NPPF states:

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

Local Plan

2.6. The Local Plan prepared by the Local Planning Authority, Horsham District Council, sets out the policies for development in the local area. The current local plan was adopted in 2015. Horsham are

currently in the process of updating the Local Plan, which has been delayed until later in 2023. The main policy in the Horsham adopted local plan³ relating to flood risk is replicated below:

Policy 38 - Strategic Policy: Flooding

1. Development proposals will follow a sequential approach to flood risk management, giving priority to development sites with the lowest risk of flooding and making required development safe without increasing flood risk elsewhere. Development proposals will;

a. take a sequential approach to ensure most vulnerable uses are placed in the lowest risk areas.

b. avoid the functional floodplain (Flood zone 3b) except for water-compatible uses and essential infrastructure.

c. only be acceptable in Flood Zone 2 and 3 following completion of a sequential test and exceptions test if necessary.

d. require a site-specific Flood Risk Assessments for all developments over 1 hectare in Flood Zone 1 and all proposals in Flood Zone 2 and 3. 2. Comply with the tests and recommendations set out in the Horsham District Strategic Flood Risk Assessment (SFRA).

3. Where there is the potential to increase flood risk, proposals must incorporate the use of sustainable drainage systems (SuDS) where technically feasible, or incorporate water management measures which reduce the risk of flooding and ensure flood risk is not increased elsewhere.

4. Consider the vulnerability and importance of local ecological resources such as water quality and biodiversity when determining the suitability of SuDS. New development should undertake more detailed assessments to consider the most appropriate SuDS methods for each site. Consideration should also be given to amenity value and green infrastructure.

5. Utilise drainage techniques that mimic natural drainage patterns and manage surface water as close to its source as possible will be required where technically feasible.

3 <https://www.horsham.gov.uk/planning/local-plan/read-the-current-local-plan>

6. Be in accordance with the objective of the Water Framework Directive, and accord with the findings of the Gatwick Sub Region Water Cycle Study in order to maintain water quality and water availability in rivers and wetlands and wastewater treatment requirements.

Sequential and Exception Tests

- 2.7. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.
- 2.8. The Flood Risk Vulnerability Classification table⁴ provided below in Table 2, shows which vulnerabilities are appropriate in each Flood Zone.

Table 2: Flood Risk Vulnerability Classification

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

- 2.9. The proposals fall within 'householder development' and should be considered to be a 'minor development (in terms of flood risk)'.
- 2.10. Paragraph 168 of the NPPF states that 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.

⁴ <https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2>

2.11. Therefore, the planning application submitted by the applicant is required to be accompanied by an FRA which shows that the development can be achieved in a sustainable manner, with an overall reduction of flood risk to the site and surrounding area.

3. Consultation and Review

Consultation

- 3.1. A Product 4 dataset has been requested as part of this report from the EA. However, at the time of writing no information has been provided. The FRA has been produced using the best available data in line with the recommendations set out in EA Standing Advice for Minor Developments⁵.

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, 2021)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Department for Levelling Up, Housing and Communities, 2022)
 - Geindex Onshore (British Geological Survey, 2022)
 - Local Plan (Horsham District Council, 2015)⁶
 - West Sussex Preliminary Flood Risk Assessment (West Sussex County Council, 2011)⁷

5 <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>

6 <https://www.horsham.gov.uk/planning/local-plan/read-the-current-local-plan>

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

- Horsham District Council Level 1 Strategic Flood Risk Assessment (Horsham District Council, 2010)⁸
- West Sussex Local Flood Risk Management Strategy (2013-2018) (West Sussex County Council, 2014)⁹

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 (described below) 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 2010, provides the evidence base for the Local Planning Authority Horsham 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 Horsham 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. The West Sussex County Council LFRMS is used within this report to identify any flood management infrastructure and historic incidences of flooding.

8 <https://www.horsham.gov.uk/planning/planning-policy/evidence-base/strategic-flood-risk-assessment>

9 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.
- 4.2. The site is located within Flood Zone 1 and 3 (Figure 3). Flood Zone 3 denotes a risk of flooding from fluvial sources greater than 1 in 100 (1%). A small portion of the centre of the site is located within Flood Zone 1. Flood Zone 1 denotes a risk of flooding from fluvial sources of less than 1 in 1000 (0.1%).

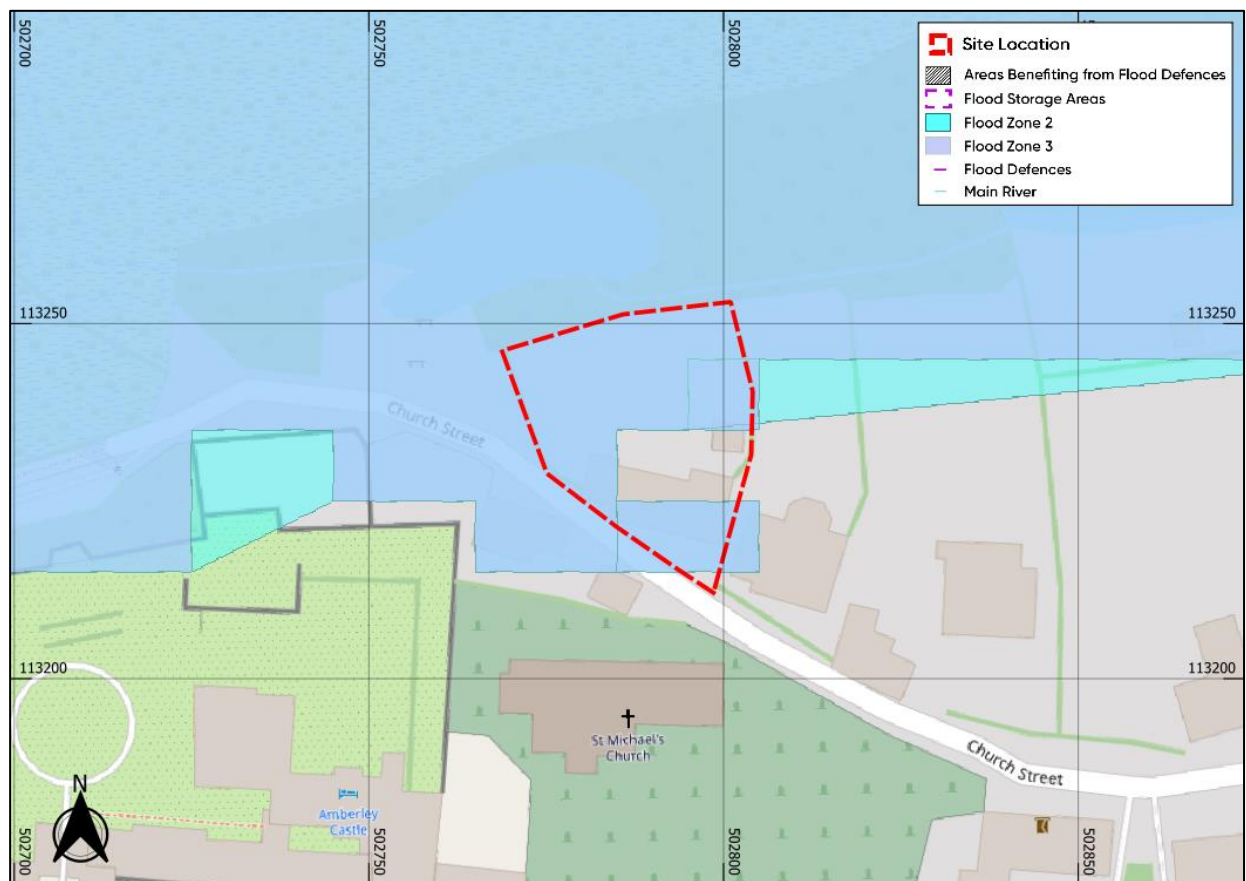


Figure 3: Flood Zone Map (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.3. The closest EA main river to the site is the River Arun, located approximately 500m to the north of the site. A number of smaller ordinary watercourses and ditches form part of Amberley Swamp which is located to the north of the site, between the northern site boundary and the River Arun.

- 4.4. The EA Historic Flood Map (Figure 4) shows that the site itself has not experienced any historic flooding in the past. However, two events have been recorded in close proximity to the site (across the Amberley Swamp area). The events are recorded as occurring as a result of overtopping of defences in February 1974 and winter 2014.
- 4.5. The highest level ever recorded at the River Arun at Pulborough Swan Bridge was 4.78m AOD, reached on Tuesday 24th December 2013. A simple level for level comparison of topographic data and the recorded flood level shows that some lower parts of the rear garden may have flooded in this event. However, the finished floor level of the existing house is set at 8.07m AOD, approximately 3.29m above the highest recorded level.

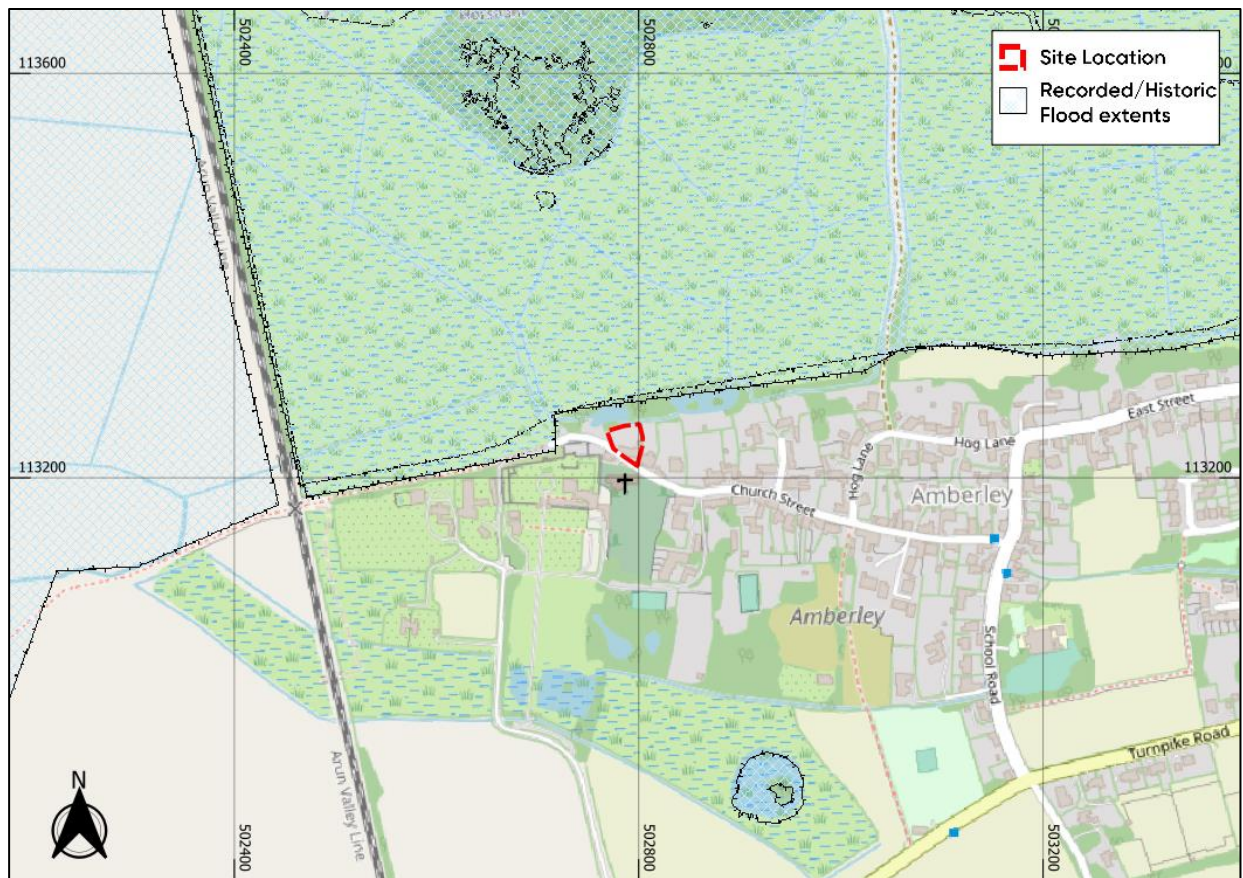


Figure 4: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.6. Overall, given the finished floor levels of the existing dwelling are significantly higher than the surrounding topographic levels, the risk of flooding is considered low to moderate.

Tidal

- 4.7. 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 riverbank or river defences when tide levels are high.
- 4.8. 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 low.

Canals

- 4.9. 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.
- 4.10. Canals were not detected within 1000m of the site, so should pose no risk.

Pluvial Flood Risk

- 4.11. 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.
- 4.12. The EA online 'Flood Risk from Surface Water' Map indicates (Figure 5) that the site and proposed development location is located within a 'very low' risk area of flooding. There is a small area of 'low', 'medium' and 'high' risk to the north of the site, however this is likely associated with the topographically lower areas of the pond/waterbody. The following definitions of the annual surface water flood risk labels are given by the EA:
- 'High Risk'; >3.3% AEP (annual probability greater than 1 in 30).
 - 'Medium Risk'; 3.3% to 1.1% AEP (annual probability between 1 in 30 and 1 in 100).
 - 'Low Risk'; 1% to 0.1% AEP (annual probability between 1 in 100 and 1 in 1000).
 - 'Very Low Risk'; <0.1% AEP (annual probability less than 1 in 1000).

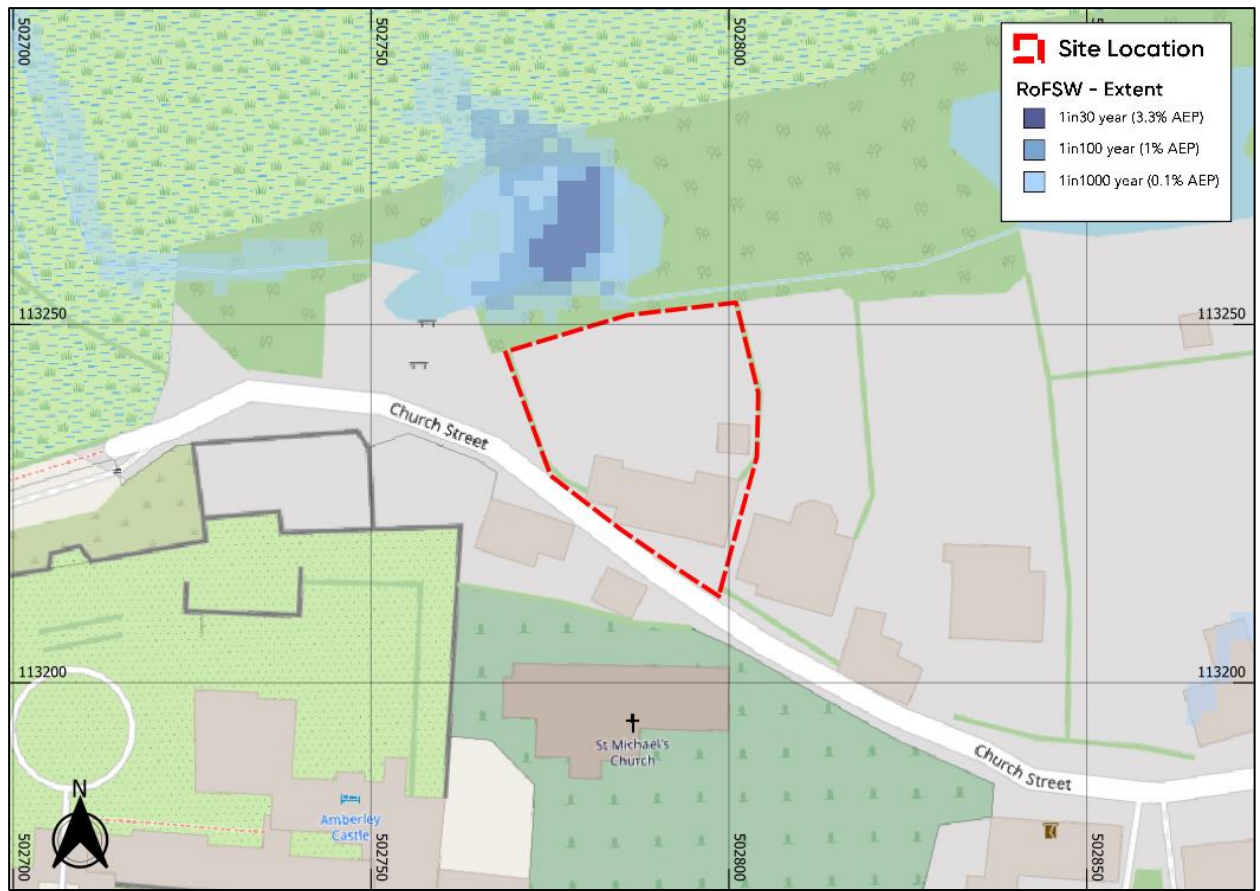


Figure 5: EA Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.13. Given the site is not located within an area of 'high', 'medium' or 'low' surface water flood risk, no flood depths have been recorded on site, or on the surrounding roads, during the modelled 1 in 30 year (3.3% AEP) scenario, the 1 in 100 (1% AEP) scenario or the 1 in 1000 (0.1% AEP) scenario. The 'low' risk scenario is shown in Figure 6.

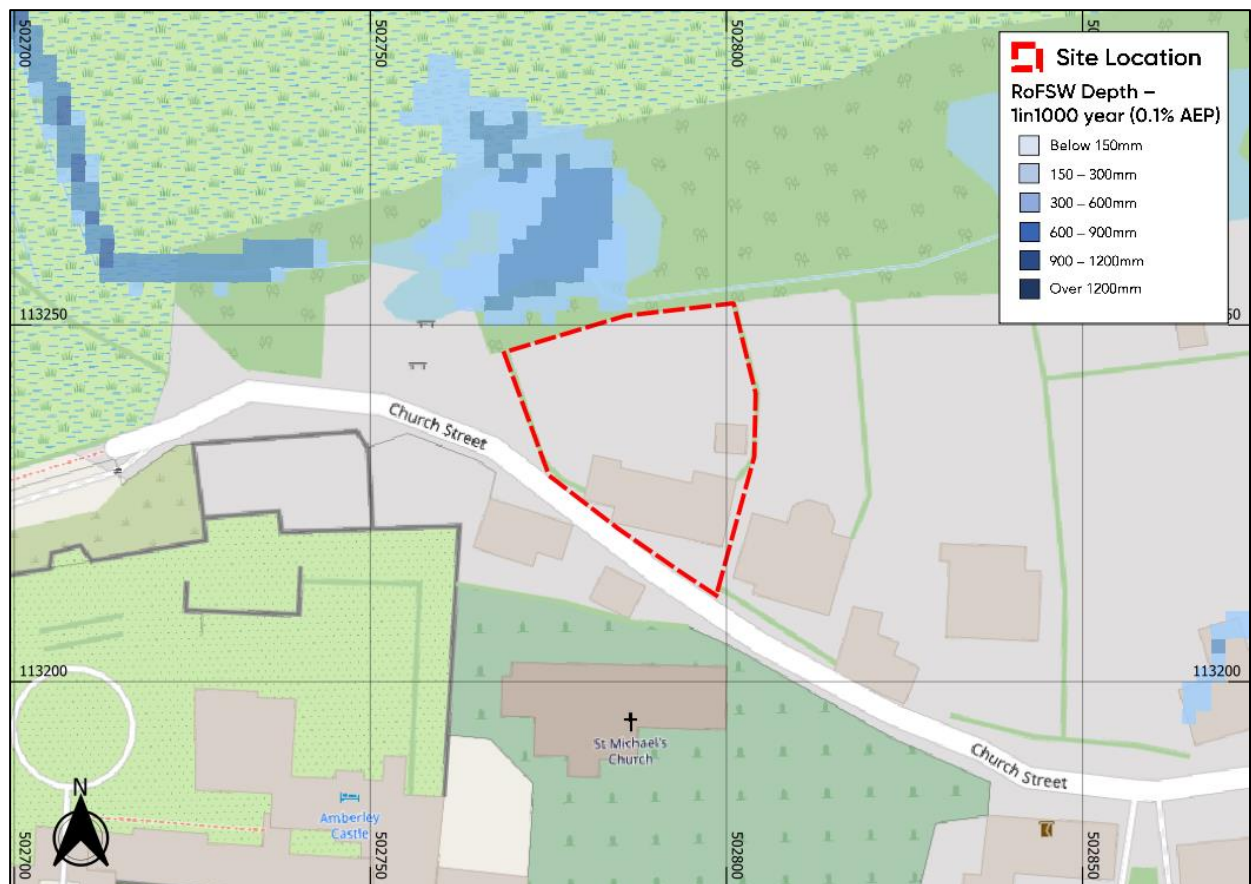


Figure 6: EA 'Flood Risk from Surface Water' mapping showing depth of flooding for a low-risk scenario (0.1% AEP) (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.14. The Horsham SFRA has provided historic flood locations caused by surface water flooding which shows the site has no recorded incidents of flooding.
- 4.15. Overall, the risk of flooding from pluvial sources is considered to be low.

Reservoirs

- 4.16. Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 4.17. According to the EA's Flood Risk from Reservoirs mapping the site is outside flood extents in the event of reservoir flooding (Figure 7). Therefore, the risk of flooding is considered to be low.

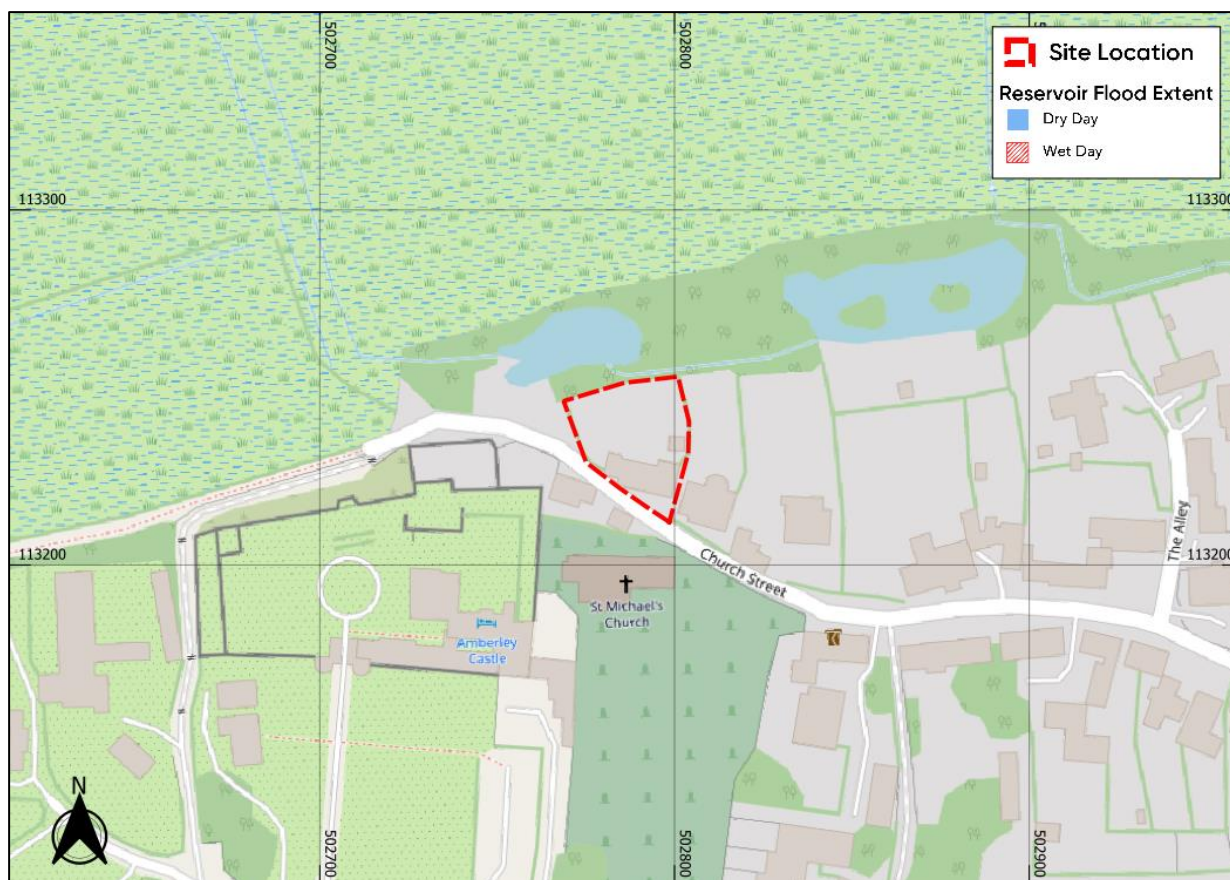


Figure 7: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Groundwater

- 4.18. Groundwater flooding occurs in areas where underlying geology is permeable, and water can rise within the strata sufficiently to breach the surface.
- 4.19. The British Geological Survey's (BGS) mapping shows permeable superficial deposits of Alluvium comprising clay, silt, sand and gravel underlying the site. The bedrock underlying the site is Upper Greensand Formation comprising Calcareous sandstone and siltstone.
- 4.20. The SFRA states that there are no records of groundwater flooding within the study area. However, the chalk areas to the south of the study area are classified as major aquifers with a high permeability. Many of the streams overlying this area are predominantly fed by groundwater and are dry for parts of the year.
- 4.21. As the proposed development is situated approximately 3m above the lowest topographic levels on site, the risk of flooding from groundwater is considered to be relatively low.

Sewer Flooding

- 4.22. Surface water sewers can be a cause of flooding where the drainage network has become overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.23. The SFRA provides mapping of historical sewer flood incident records. No historical sewer surcharging incidents have been recorded in the vicinity of the site.
- 4.24. The development is therefore considered to be at low risk of flooding from sewers. However, it is recommended that non-return valves are fitted to any new sewer connections to minimise the risk of internal sewer flooding.

5. Flood Risk Mitigation

Fluvial

- 5.1. According to national guidelines residential use is considered appropriate for location within Flood Zone 3. Flood risk mitigation measures may be considered due to the residual risk of flooding.
- 5.2. The development should comply with relevant EA Standing Advice (Minor Developments Standing Advice) which requires that 'floor levels are either no lower than existing floor levels or 300mm above the estimated flood level. You will also need to use flood resistant materials up to at least 300mm above the estimated flood level.'
- 5.3. The proposed extension should be constructed in a flood resilient manner, in accordance with DCLG Report *Improving the Flood Performance of New Buildings Flood Resilient Construction (2007)* (standards for the installation and retrofit of resistance measures are available in British Standard 851188-1:2019+A1:2021). The following mitigation measures are recommended:
 - Finished floor levels of the proposed extension are to be set no lower than existing finished floor levels.
 - Damp proof membranes should be included within the design of the dwelling to minimise the passage of water through ground floors. Impermeable polythene membranes should be at least 1200 gauge to minimise ripping. Effective methods of joining membrane sections are overlaps of 300mm, and also taping (mastic tape with an overlap of 50mm minimum).
 - Cavity insulation should preferably incorporate rigid closed cell materials as these retain integrity and have low moisture take-up.
 - Non-return valve fitted to any new sewer connections.

Pluvial, Reservoirs, Groundwater and Sewers

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

Increase to Flood Risk Elsewhere

- 5.5. The proposed development is for the construction of an extension to the existing dwelling on site. Construction of a small rear infill extension to an existing dwelling to provide greater habitable space. As such, the proposal constitutes a Minor Development under the NPPF.
- 5.6. Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

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

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

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

EA Flood Warning Service

5.8. As a further precaution and risk reduction, the owner of the site should sign up the EA flood warning service (Amberley on the River Arun). This service allows site owners to register an address, which is at risk of flooding, along with contact details so that in the event of a flood being forecast, the site owner will be sent an alert directly to their chosen method of contact.

5.9. 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 site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants/employees 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 Willow Cottage, Church Street, Amberley, West Sussex, BN18 9NF. It has been written to support a planning application and has been prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.

Source of Flooding	Flood Risk Summary
Fluvial	<p>The site is located within Flood Zone 1 and 3, the proposed vulnerability according to government guidelines (“More Vulnerable”), is considered appropriate for the Flood Zone.</p> <p>At the time of writing, no detailed EA flood data had been received. However, the proposal can adhere to the EA Standing Advice for Minor Developments.</p> <p>The EA Historic Flood Map shows that the site has not experienced flooding in the past, however, the surrounding area may have been affected during events in February 1974 and winter 2014.</p> <p>Overall, the risk of flooding is considered to be low to moderate from this source.</p>
Pluvial Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from other sources.

- 6.3. The following conclusions can be drawn from this level 1 FRA:
- This FRA has identified no prohibitive constraints in developing the proposed site for the proposed usage.

- The Site is in Flood Zone 1 and 3 and therefore at low to moderate risk of flooding from fluvial sources, however the post-development use is to be “more vulnerable” which is deemed appropriate for location within this Flood Zone, according to national guidelines.
- The development will comply with relevant EA Standing Advice (Minor Developments Standing Advice) which requires that floor levels are no lower than existing floor levels.
- General waterproofing measures are recommended, where possible, in accordance with the DCLG Report ‘Improving the Flood Performance of New Buildings - Flood Resilient Construction’ (2007).
- Residents should sign up to the EA Flood Warning and Met Office Service and formalise a flood plan/evacuation procedures.

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