



Flood Risk Assessment AEG11036_BN11_Worthing_01

Site Address: Fitzroy Lodge
2-4 Windsor Road
West Sussex
BN11 2LX

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



Document Issue Record

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Site Location: Fitzroy Lodge, 2-4 Windsor Road, West Sussex, BN11 2LX

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Summary

Development Description	Existing	Proposed
Development Type	25 bed care home	Change of use to a 25 bed HMO, with no external alterations
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Floor Level	LiDAR data shows the ground elevation of the site varies between approximately 5.04m AOD and 6.04m AOD	No change in external ground level. Ground floor FFLs are estimated to be at 5.78m AOD – based on Google Street View and LiDAR level.
Level of Sleeping Accommodation	Ground Floor	Ground Floor – 0.26m above the ‘design’ tidal flood level
Site Size	c.1,060m²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 3	Development is considered at Low risk from tidal, – 0.26m above the ‘design’ tidal flood level.
Flood Source	Tidal	
SFRA Available	Adur and Worthing Level 1 Strategic Flood Risk Assessment (Worthing Borough Council, 2024)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	Yes	Ground Floor is 0.26m above the ‘design’ tidal flood level
Safe Access/Egress Route	Yes	Safe access/egress is possible north from site along Windsor Road – see further details in section 5
Flood Resilient Design	Yes	Precautionary resilient measures are recommended in section 5

Flood Warning and Evacuation Plan	N/A ¹	Recommended that occupants sign up to EA Flood Warning Service for the ' <i>Solent and South Downs</i> .'
Offsite Impacts	Summary	Comment
Displacement of floodwater	None	No increase in built footprint
Increase in surface run-off generation	None	No increase in impermeable areas
Impact on hydraulic performance of channels	None	No channels within 500m of the site

¹ not required for this assessment

1. Introduction

- 1.1. Aegaea were commissioned by Nextgen Letting Ltd 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 Fitzroy Lodge, 2-4 Windsor Road, West Sussex, BN11 2LX (Figure 1).

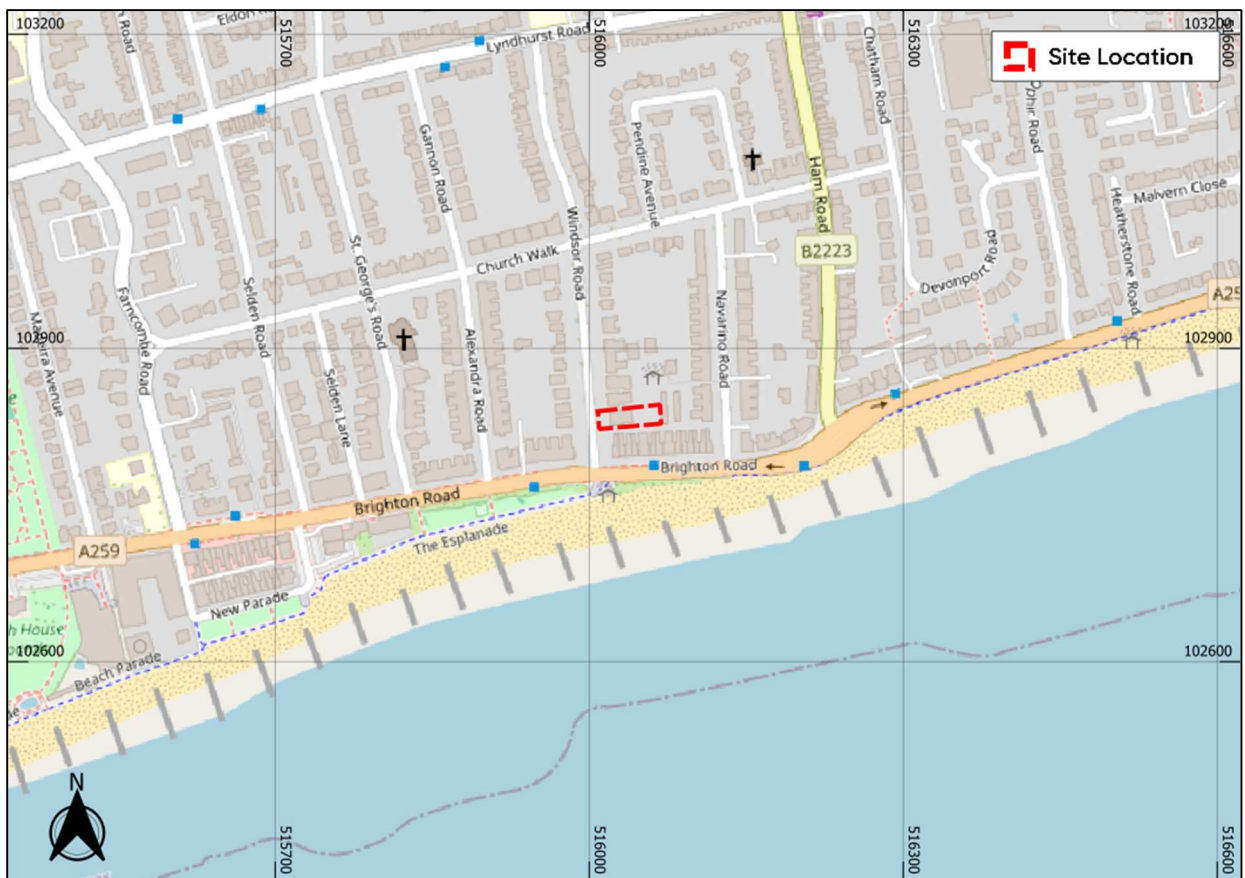


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.4. It is understood that planning permission is being sought for the change of use of an existing 25 bed care home, to a 25 bed House in Multiple Occupation (HMO), resulting in no increase in built footprint. Proposed plans are attached in Appendix A.
- 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 (Figure 2). LiDAR data shows the ground elevation of the site varies between approximately 5.04m AOD (metres Above Ordnance Datum) and 6.04m AOD. Analysis of topographic levels indicates that the site generally slopes with a fall to the east.

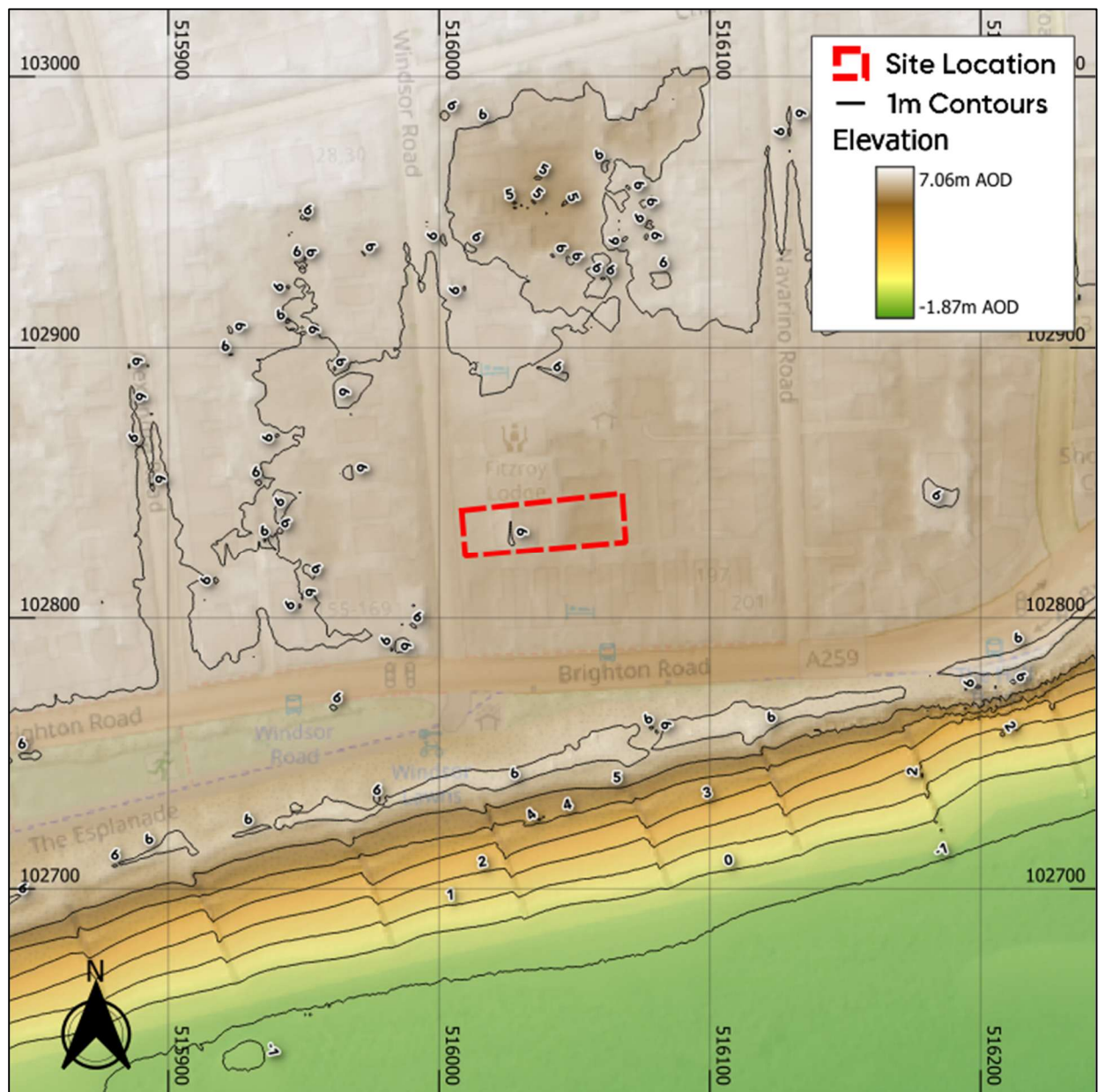


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. Based on Google Street View, it can be seen there is a slope from external ground level to an entry threshold (Finished Floor Level (FFL)) (Figure 3). Based on an assumption from Google Street View, it is estimated that the FFLs is c.150mm above external ground level.
- 1.7. Thus, based on an external ground level of 5.63m AOD, FFLs can be estimated at c.5.78m AOD.



Figure 3: Entry threshold into Fitzroy Lodge, 2-4 Windsor Road, West Sussex, BN11 2LX (Google Street View)

- 1.8. Worthing Borough 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 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),*

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

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 within Flood Zone 3. Therefore, an FRA will be required.

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

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 objective of Chapter 18 (Managing flood risk and coastal change) is stated as:

The objective of the policies in this chapter is to minimise risks to development arising from all sources of flooding and coastal change, taking into account the impacts of climate change, by steering development away from areas of risk, ensuring that development will be safe for its lifetime without increasing flood risk elsewhere, and incorporating sustainable drainage systems where appropriate.

Plan-making policies

F1: Assessing flood risk for plan-making

1. In order to manage development in ways which minimise the risk of flooding to people and property, development plans should:

- a. Be informed by an up-to-date strategic flood risk assessment which considers current and future flood risk from all sources, including cumulative impacts in, or affecting, areas susceptible to flooding; and*
- b. Take account of advice from the Environment Agency and other relevant flood risk management authorities, such as Lead Local Flood Authorities and internal drainage boards, about levels of risk, options for mitigation, and the implications for development in the plan area.*

F2: Planning for effective flood risk management

1. Development plans should take a risk-based approach when identifying suitable locations for development, taking into account all sources of flood risk and the

current and future impacts of climate change. They should do this, and manage any residual risk, by:

- a. Applying the sequential test in policy F5 and, where relevant, policy F6;*
- b. Safeguarding land that is, or is likely to be, required for current or future flood management;*
- c. Using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and*
- d. Where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.*

National decision-making policies

F4: Assessing flood risk for decision-making

1. To inform the assessment of flood risk and, where relevant, appropriate mitigation, a site-specific flood risk assessment should accompany all development proposals in Flood Zones 2, 3a, and 3b as defined in Annex F, table 1.

2. In Flood Zone 1, a site-specific flood risk assessment should inform and accompany all development proposals involving:

- a. Sites of one hectare or more;*
- b. Land which has been identified by the Environment Agency as having critical drainage problems; and*
- c. Land identified in a strategic flood risk assessment or the Flood Map for Planning as being at risk of flooding from any source, whether now or in the future.*

3. Site-specific flood risk assessments should be appropriate to the scale, nature, and location of development and should, where relevant, support an assessment of whether a development proposal satisfies the sequential and exception tests set out in policies F5 and F6.

F7: Ensuring development is safe from flooding

1. Development proposals should not present a risk from flooding to potential occupiers, users, or visitors, and should not increase flood risk elsewhere.

2. Where development is proposed in a location known to be at risk from any form of flooding, now or in the future, it should be refused unless:

a. Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons which justify a different arrangement;

b. The development will be safe throughout its lifetime taking account of the vulnerability of its users;

c. Any residual risk can be safely managed, and safe access and escape routes are included where appropriate, as part of an agreed emergency plan;

d. 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; and

e. It can be demonstrated that flood risk will not be increased elsewhere.

2.3. 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)

- 2.4. 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.
- 2.5. 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

- 2.6. The Local Plan prepared by the Local Planning Authority, Worthing Borough Council, sets out the policies for development in the local area.
- 2.7. Policy DM20 Flood Risk and Sustainable Drainage outlines the requirements for new development within the area. It states:

a) The Council will work with relevant bodies to ensure that flood risk in Worthing is managed and reduced. Development should be directed away from areas of highest risk of flooding from any source and opportunities should be taken to reduce flooding through sustainable drainage systems and natural flood management to deliver multi-functional benefits for people and wildlife.

Flood Risk Assessment

b) A site specific Flood Risk Assessment must be submitted with planning applications for:

- sites of 1 hectare or greater in Flood Zone 1;*
- all new development (including minor development and change of use) in Flood Zones 2 and 3;*
- development that would introduce a more vulnerable class on land at increased flood risk in future or subject to other sources of flooding identified by the Strategic Flood Risk Assessment.*

c) The Flood Risk Assessment should be proportionate to the degree of flood risk and appropriate to the scale, nature and location of development. It will need to demonstrate that:

- the site has passed the sequential test (this has already been undertaken for all sites allocated in the Local Plan) and within the site the most vulnerable development is located in areas at lowest flood risk from any source unless there are overriding reasons for not doing so;*

- *Where required by national policy, demonstrate both parts of the exception test have been passed: the development would provide wider sustainability benefits to the community that outweigh the flood risk; and the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*
- *current and future flooding from all sources including in-combination and cumulative effects, and any residual risk can be safely managed;*
- *ensure safe access and egress to and from the development, where necessary as part of an agreed flood warning and evacuation plan;*
- *development will not increase flood risk elsewhere, and where possible will reduce the overall level of flood risk; and*
- *development should be appropriately flood resistant and resilient so in the event of a flood it can be quickly brought back into use without significant refurbishment.*

Sequential and Exception Tests

- 2.8. 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.
- 2.9. Under the NPPF all new planning applications should undergo a Sequential Test in accordance with Policy F5. This test should be implemented by local planning authorities with a view to take a risk-based approach when identifying suitable locations for development, taking into account all sources of flood risk and the current and future impacts of climate change.
- 2.10. Policy F5(2) of the NPPF states:

2. The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, other than for:

- a. Sites allocated in the development plan which were subject to the sequential test during plan preparation;*
- b. Sites where a site-specific flood risk assessment demonstrates clearly that:*

i. No built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk); or

ii. Where the site would be at risk of surface water flooding only, the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development without increasing flood risk elsewhere in accordance with policy F7.

c. For the following types of development:

i. Householder development;

ii. Small non-residential extensions (with a footprint of less than 250m²); and

iii. Changes of use, other than changes of use to a caravan, camping or chalet site, or to a mobile home or park home site.

2.11. Furthermore, Policy F6(2) of the NPPF states:

2. The application of the exception test should be informed by a site-specific flood risk assessment. The exception test does not need to be applied:

a. To those forms of development, or in those circumstances, where the sequential test is not required, as set out in policy F5; or

2.12. Given the proposed development constitutes a 'change of use' in terms of flood risk, neither the Sequential nor Exception Tests are applicable in this instance in accordance with Policy F5(2ciii) and F6(2a) of the NPPF.

Summary

2.13. 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 EA have previously provided Product 6 modelled outputs from their Arun Coastal (2012) model which is considered the most appropriate data to fully assess the flood risk to the site and proposed change of use in 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, 2026)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Ministry of Housing, Communities and Local Government, 2022)
 - Geoindex Onshore (British Geological Survey, 2024)
 - Local Plan 2020-2036 (Worthing Borough Council, 2023)²

² <https://www.adur-worthing.gov.uk/media/Media,169486,smxx.pdf>

- Preliminary Flood Risk Assessment Addendum (West Sussex County Council, 2017)³ and West Sussex Preliminary Flood Risk Assessment (West Sussex County Council, 2011)⁴
- Adur and Worthing Level 1 Strategic Flood Risk Assessment (Worthing Borough Council, 2024)⁵
- Local Flood Risk Management Strategy: 2025 - 2030 (West Sussex County Council, 2025)⁶

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA, published in 2011 and 2017 (addendum), 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 Worthing Borough 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 Worthing Borough Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/698548/PFRA_West_Sussex_County_Council_2017.pdf

⁴ https://www.westsussex.gov.uk/media/1626/west_sussex_pfra.pdf

⁵ <https://www.adur-worthing.gov.uk/media/Media,171789,smxx.pdf>

⁶ https://www.westsussex.gov.uk/media/zxfdrox1/westsussex_lfrms.pdf

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

Tidal

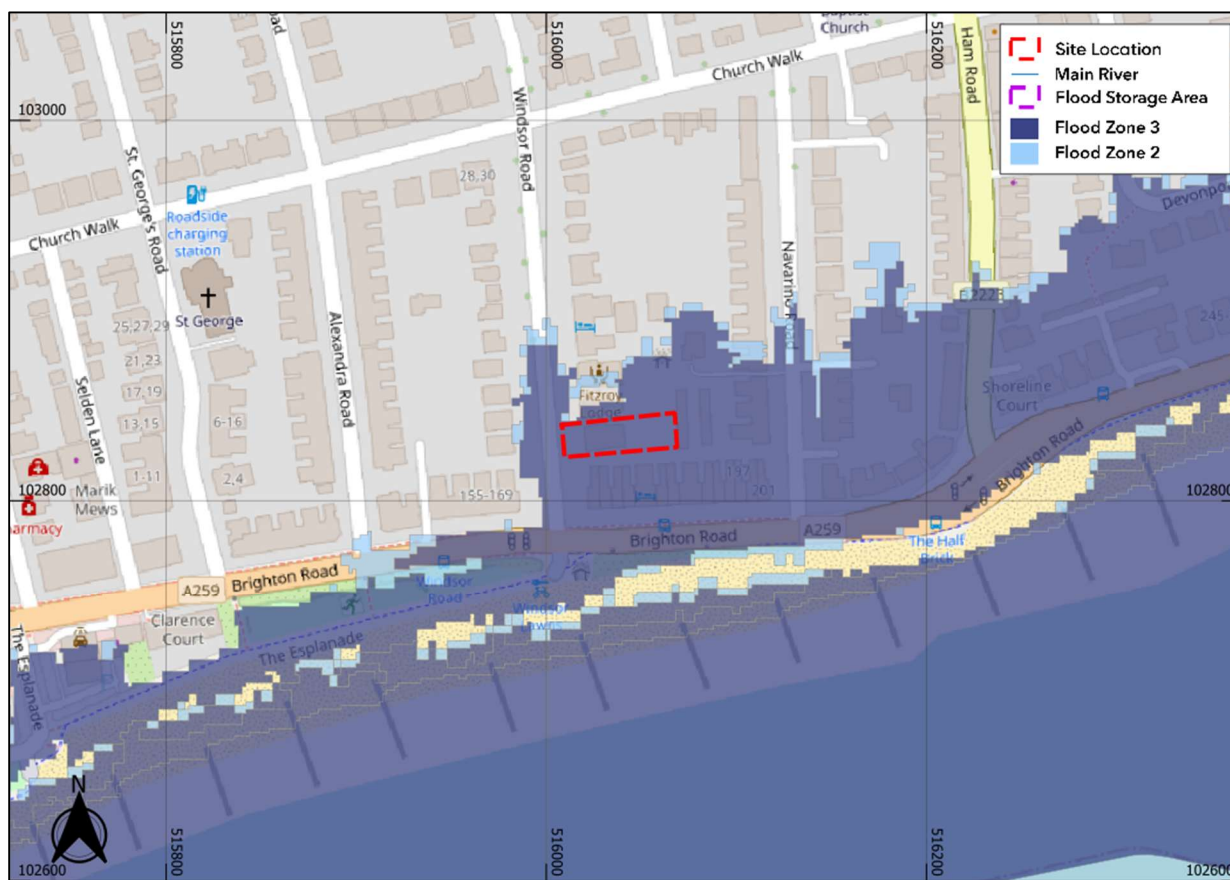
- 4.1. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high.

Hydrological Environment

- 4.2. The coastline is located c.100m south of the site.
- 4.3. There is no watercourse within 500m of the site, as per OS mapping.

EA Flood Map for Planning

- 4.4. The entirety of the site is situated within Flood Zone 3 as per the EA Flood Map for Planning (Figure 4). Flood Zone 3 denotes land having a 1 in 200 or greater annual probability of sea flooding.
- 4.5. Further interrogation of the Flood Zone 3 extent shows that the extent is derived from sea / tidal models only.



Historical Fluvial Flooding

- 4.6. According to the EA Recorded and Historical Flood Mapping, there has been no recorded historical flood events on or in the vicinity of the site (Figure 5).

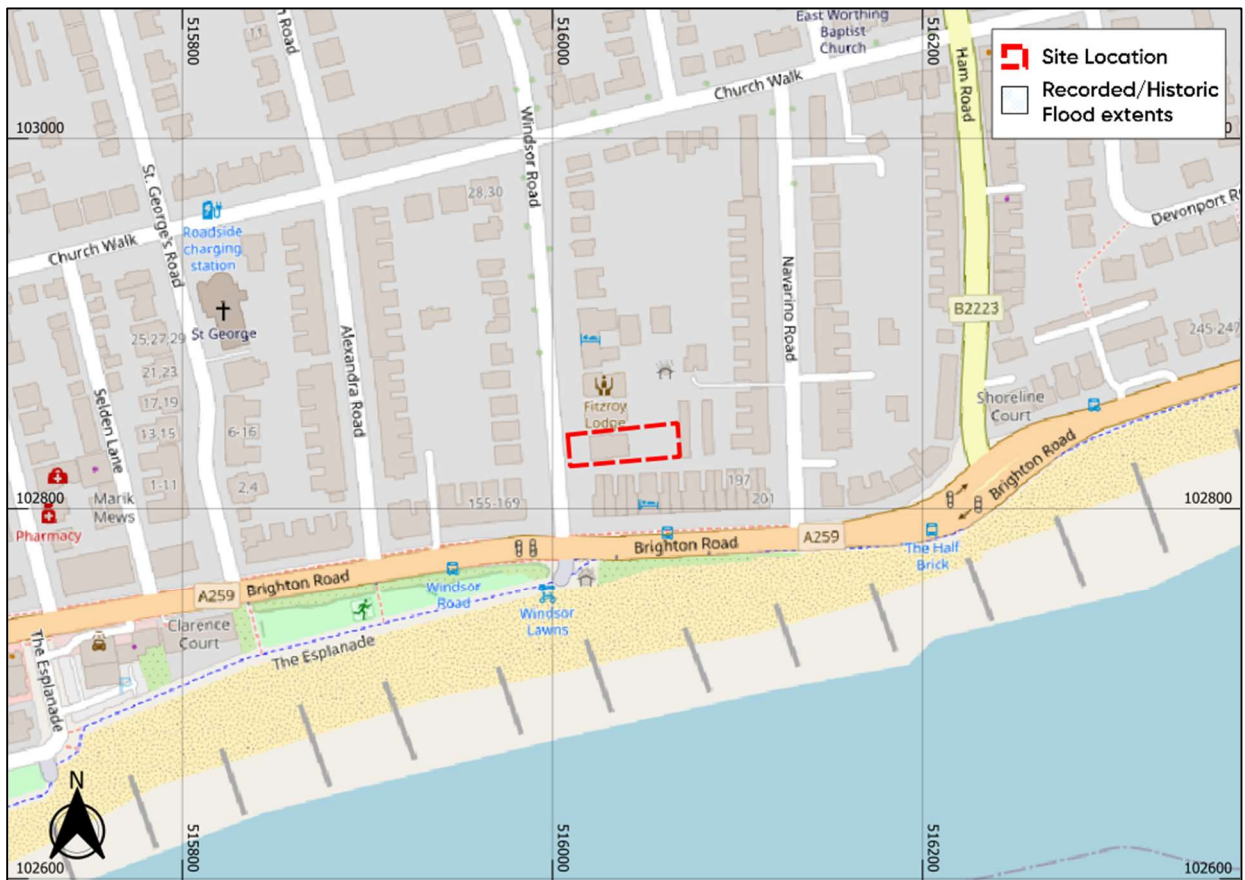


Figure 5: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Flood Defences

- 4.7. Based on the EA's AIMS flood defence dataset⁷, there are no defences within close proximity to the site (c.500m).
- 4.8. However, c.1.5km east of the site are formal defences, classified as a beach, which would have been accounted for within the Arun Coastal model. Therefore, the defended scenarios will be assessed within this FRA to present the 'actual' risk to the site.

⁷ <https://environment.data.gov.uk/dataset/8e5be50f-d465-11e4-ba9a-f0def148f590>

EA Modelled Data

- 4.9. The EA have previously provided Product 6 modelled outputs from their Arun Coastal (2012) model which is considered the most appropriate data to fully assess the flood risk to the site and proposed change of use in this report.
- 4.10. Modelled flood depth grids as part of the P6 data will be used to assess risk posed to the site. Flood level grids were not provided as part of the P6 data.

Present Day Scenarios

- 4.11. The 1in30year is classified at the 'Functional Floodplain' i.e. Flood Zone 3b, however the 1in30year scenario was not run as part of the Arun Coastal (2012) model, the next available scenario ran was the 1in75year, which will be used as an overestimation for Flood Zone 3b extent.
- 4.12. During the 1in75year scenario, the site is shown to be impacted and the rear of the building proposed for change of use. Depths are estimated to reach 0.34m at the rear of the building footprint.
- 4.13. Based on an external ground level to the rear of the building of 5.16m AOD, a 1in20year flood level of 5.55m AOD can be estimated. Given the FFL of the building is estimated at 5.78m AOD, FFLs are 0.28m above the 1in75year scenario, in turn above Flood Zone 3b proxy.

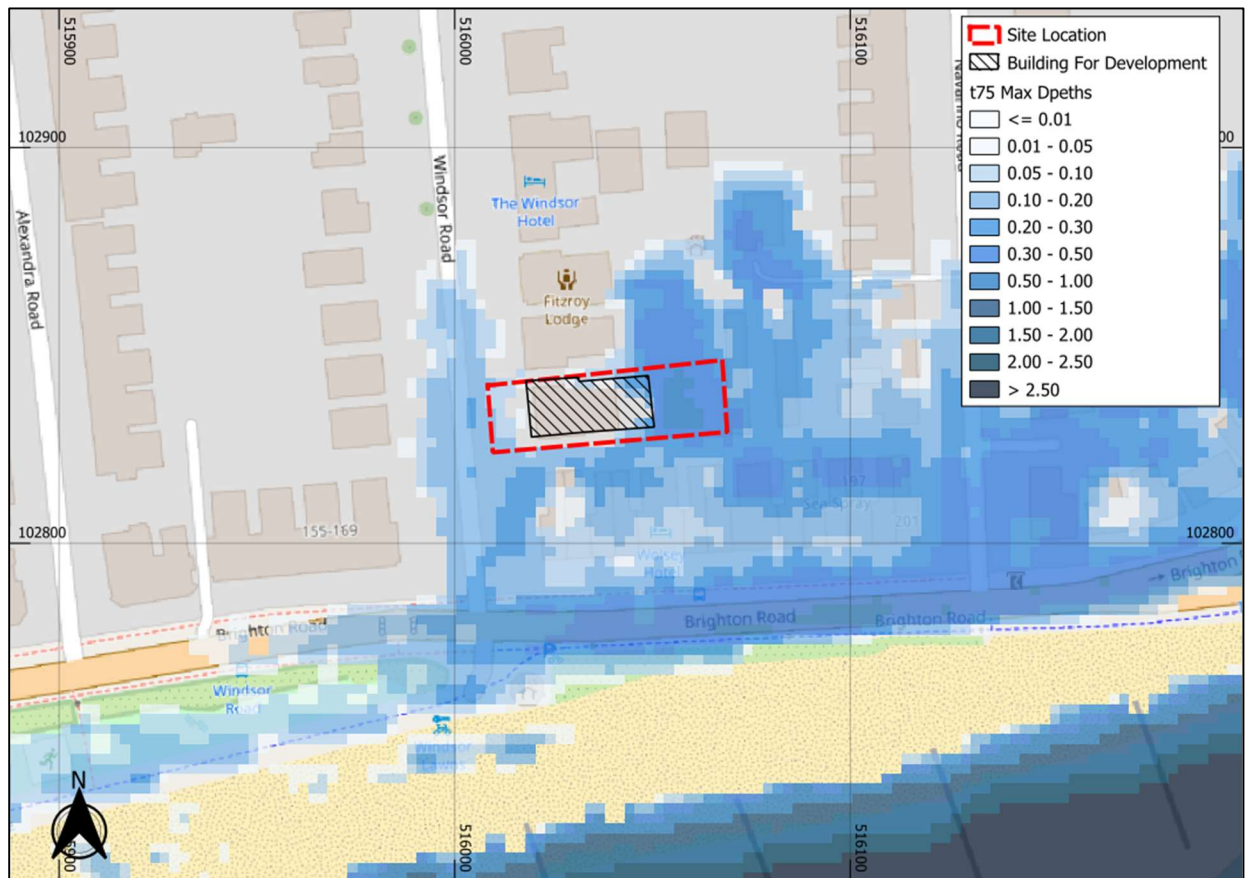


Figure 6: Arun Coastal (2012) model 1in75 Flood Depths (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.14. During the 1in200year scenario, the building proposed for change of use is impacted to the rear and northern elevation. Depths are estimated to reach 0.38m at the building footprint.
- 4.15. Taking maximum depth and external ground level (5.16m AOD), a 1in200year flood level of 5.54m AOD can be estimated. Based on estimated FFLs of 5.78m AOD, internal area of the building is estimated to be c.0.24m above flood level.

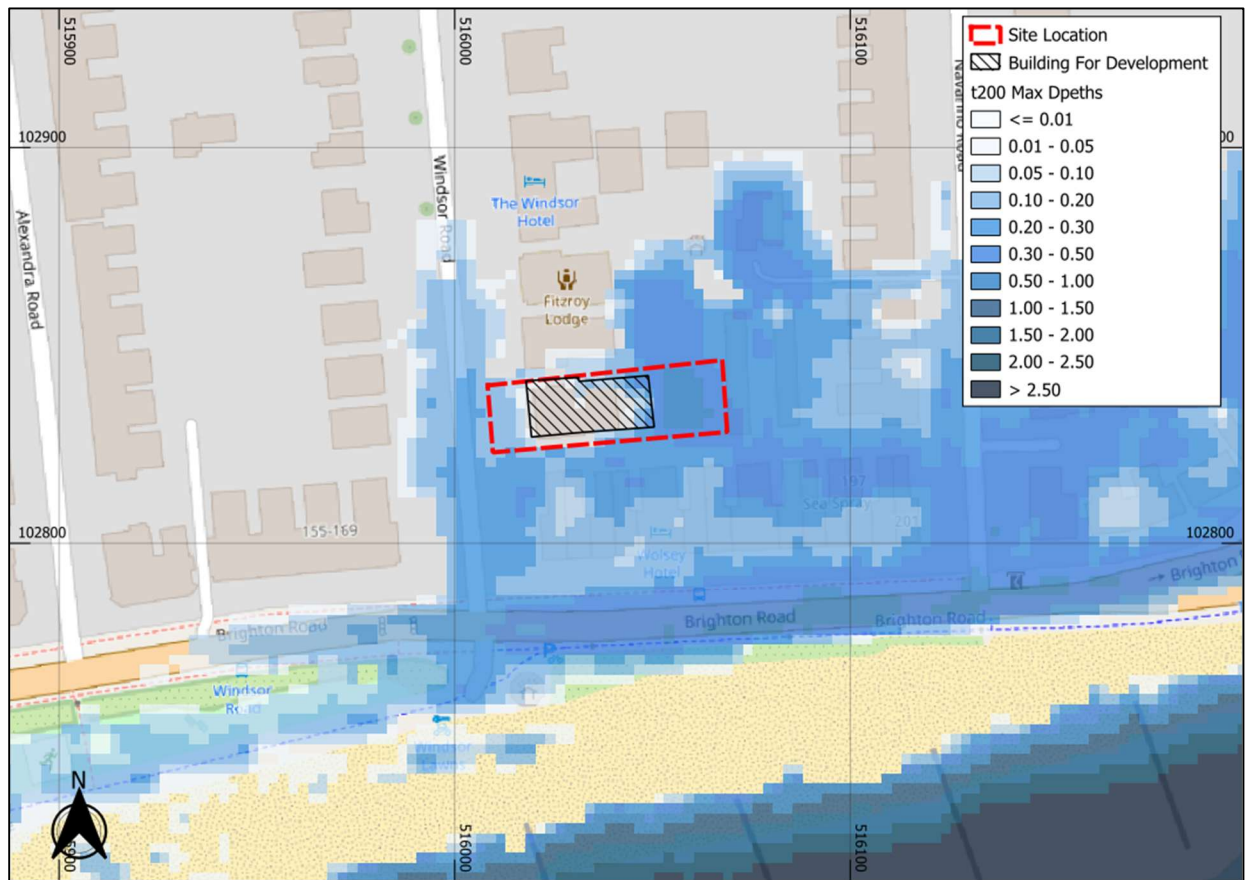


Figure 7: Arun Coastal (2012) model 1in200 Flood Depths (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.16. In the 1in1000year scenario, the worst-case scenario, maximum depths impacting the building footprint for change of use are estimated at 0.44m or a flood level of 5.60m AOD. FFLs (5.78m AOD) are c.0.18m above flood level.

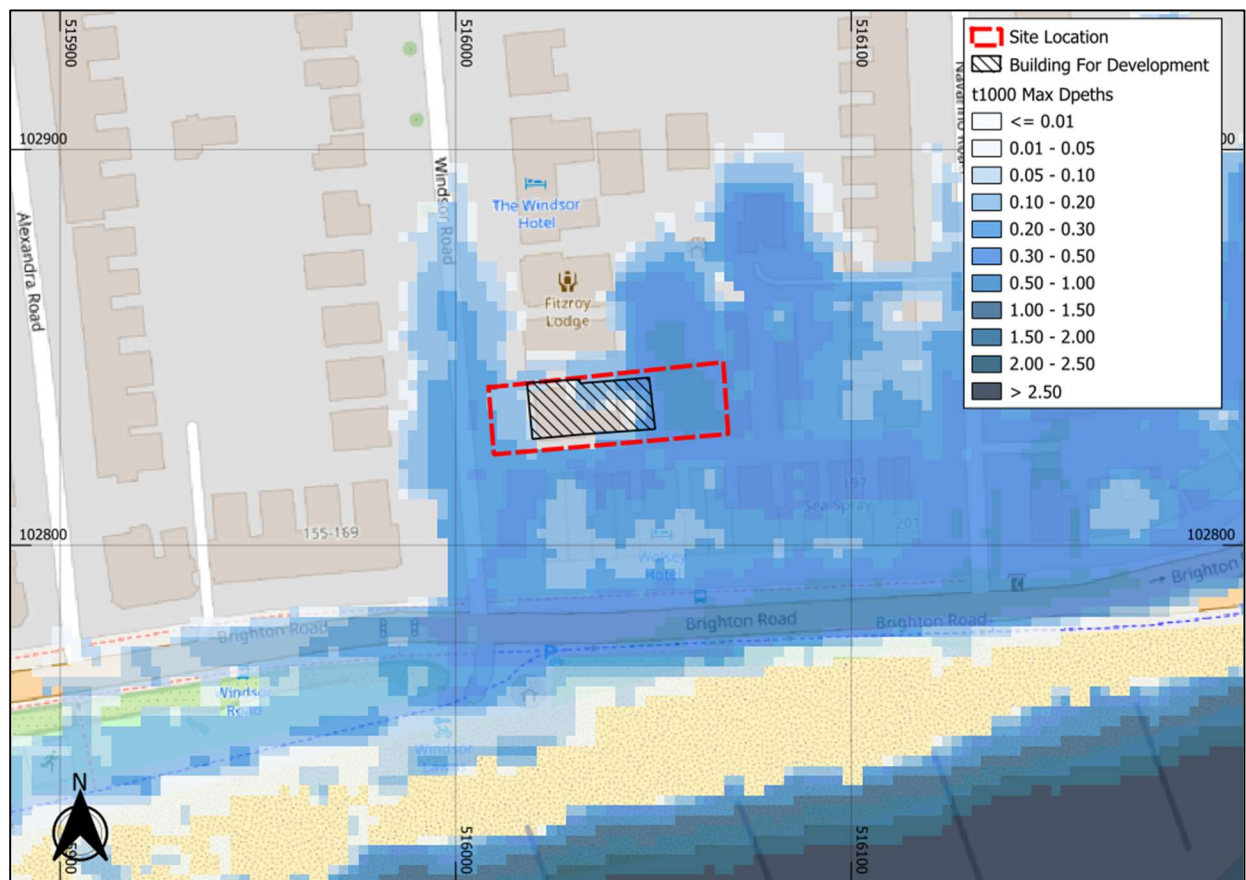


Figure 8: Arun Coastal (2012) model 1in1000 Flood Depths (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Climate Change Scenario

- 4.17. As part of the Arun Coastal (2012) model, the 1in200year 2070 and 2115 scenario was ran.
- 4.18. Based on latest guidance, the 2126 scenario is required for residential development (100 year lifetime). As no 2126 model output is available, the rate of sea level rise between the 2012 baseline (0.38m) and 2115 epoch (0.40m) has been extrapolated to 2126, calculations were as follows:
 - 2012 baseline: 0.38m
 - 2115 (modelled epoch): 0.40m
 - Rate: $0.02\text{m} / 103 \text{ years} \approx 0.000194 \text{ m/yr}$
 - 2126 (114 years from baseline): $0.38 + (0.000194 \times 114) \approx 0.40\text{m}$

- 4.19. Given a negligible increase between the 2115 and the projected 2126 figure, the 2115 scenario has been adopted as a robust proxy for 2126, representing the best available modelled data for the site.
- 4.20. During the 1in200year 2115 scenario, the maximum depth within the footprint of the building is estimated at 0.40m (Figure 9).
- 4.21. Given maximum depth, an estimated flood level of 5.56m AOD can be assumed. FFLs (5.78m AOD) are c.0.22m above flood level.

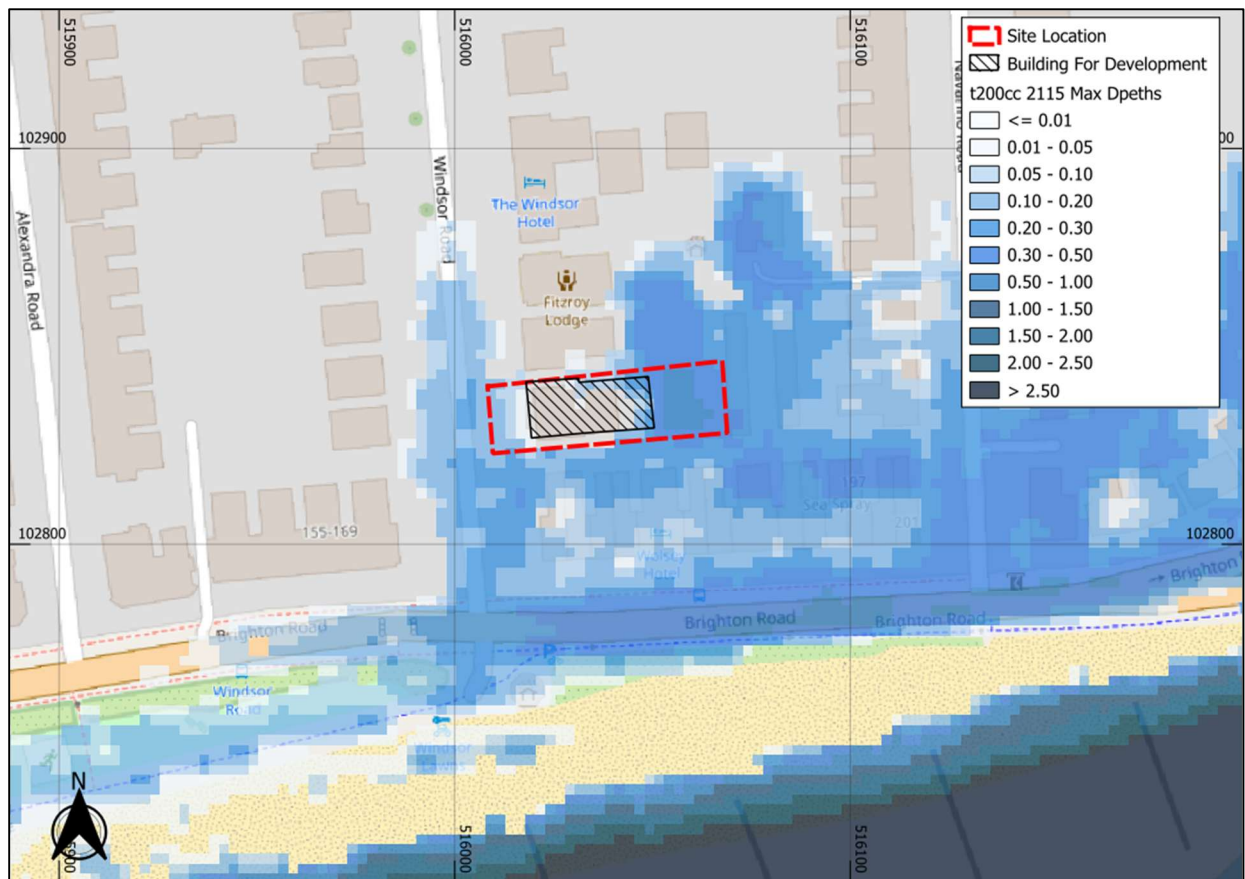


Figure 9: Arun Coastal (2012) model 1in200CC 2115 Flood Depths (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Undefended Scenarios

- 4.22. Based on modelled extents from the Arun Coastal (2012) model, the site is not impacted in the modelled undefended scenarios.

- 4.23. It is noted that the defended scenario unexpectedly projects a larger flood extent than the undefended model; this likely an artefact of the modelling and the site's proximity to the coast.



Figure 10: Arun Coastal (2012) model undefended extents

Tidal Risk Summary

- 4.24. Based on the 'design' event (1in200year 2115), the FFLs of the building proposed for development are shown to be c.0.22m above the flood level and c.0.18m above the worst case scenario 1in1000year event. Based on the assessment of the modelled data provided the tidal flood risk to the internal areas (above FFLs) proposed for change of use are considered to be low.
- 4.25. All ground floor proposed HMO units will be above the design flood level, it is noted that the existing use is a care home, with ground floor sleeping. Thus, the development will see no increase in vulnerability and flood risk to the occupants and resilient mitigation measures will be discussed in section 5, along with access/egress arrangements to reduce any residual risk.

Fluvial

- 4.26. The site is at risk of flooding from tidal sources rather than fluvial sources based on the EA Flood Map for Planning and there are no other mapped watercourses in the vicinity of the site.
- 4.27. As such, the risk of flooding from fluvial sources is considered to be low.

Canals

- 4.28. 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.
- 4.29. According to CRT mapping⁸ there are no canals identified within 750m of the site.
- 4.30. The risk of flooding to this site from canals is considered to be low.

Pluvial

- 4.31. 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.

EA Flood Map for Planning – Surface Water Spatial Planning

- 4.32. The EA Flood Map for Planning Service in relation to Surface Water was published in May 2026. The Surface Water Spatial Planning Extents and Depths have been used within this FRA to assess the surface water flood risk to the site and proposed development. These datasets show the extent of land at risk of flooding from surface water to a defined annual exceedance probability (AEP) or chance of flooding each year, taking into account the possible effects of climate change.
- 4.33. These datasets include the following scenarios:
- 0.1% AEP (1 in 1000); 1% AEP (1 in 100) and 3.3% AEP (1 in 30)
- 4.34. Alongside the following depth bands:

⁸ <https://canalrivertrust.org.uk/canals-and-rivers>

- Up to 150mm; 150 – 300mm; 300 – 600mm; 600 – 900mm; 900 – 1200mm; 1200 – 2300mm and over 2300mm.

- 4.35. Alongside the present day scenarios, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5.
- 4.36. The 'Upper End' for the 2070s epoch (2061-2125) has been used for the climate change scenarios. The EA have selected long-term epochs appropriate to support long-term planning and development decisions.
- 4.37. To provide a 'worst case' assessment, the climate change scenarios have been assessed below.
- 4.38. According to the EA's 'Flood Map for Planning - Surface Water Spatial Planning' dataset with an allowance for climate change (CC), the proposed development remains unaffected in the climate change 1 in 30 year, design 1 in 100 year and 1 in 1000 year scenarios (Figure 11).
- 4.39. The building proposed for change of use at the centre of the site is shown to be outside the 1in30year CC extent. Yet the 1in100year CC and the 1in1000 CC (worst case scenario) impact the northern and southern elevations, respectively. As such the 1in100 CC depths on site have been analysed further.

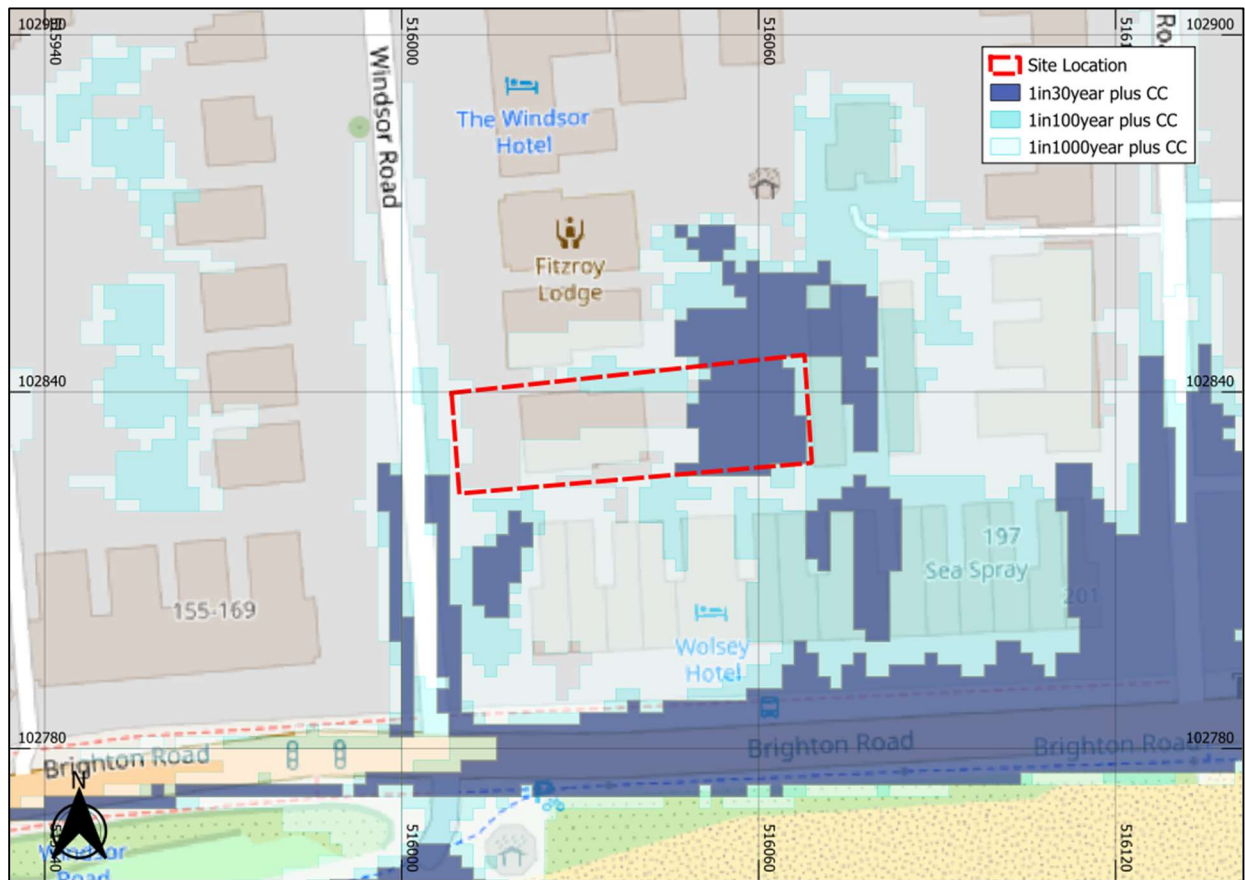


Figure 11: EA's 'Flood Map for Planning - Surface Water Spatial Planning' dataset – climate change extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.40. During the 'design' 1in100year plus climate change, the depth mapping shows the majority of the building outside depth extents. Part of the northern and eastern elevations of the building are shown to experience depths between <150mm and 150mm-300mm.
- 4.41. A maximum surface water depth at the rear of the building would result in a pluvial flood level of 5.46m AOD ($5.16 + 0.3$). Therefore, FFLs are estimated to be 0.32m above the design pluvial flood level.

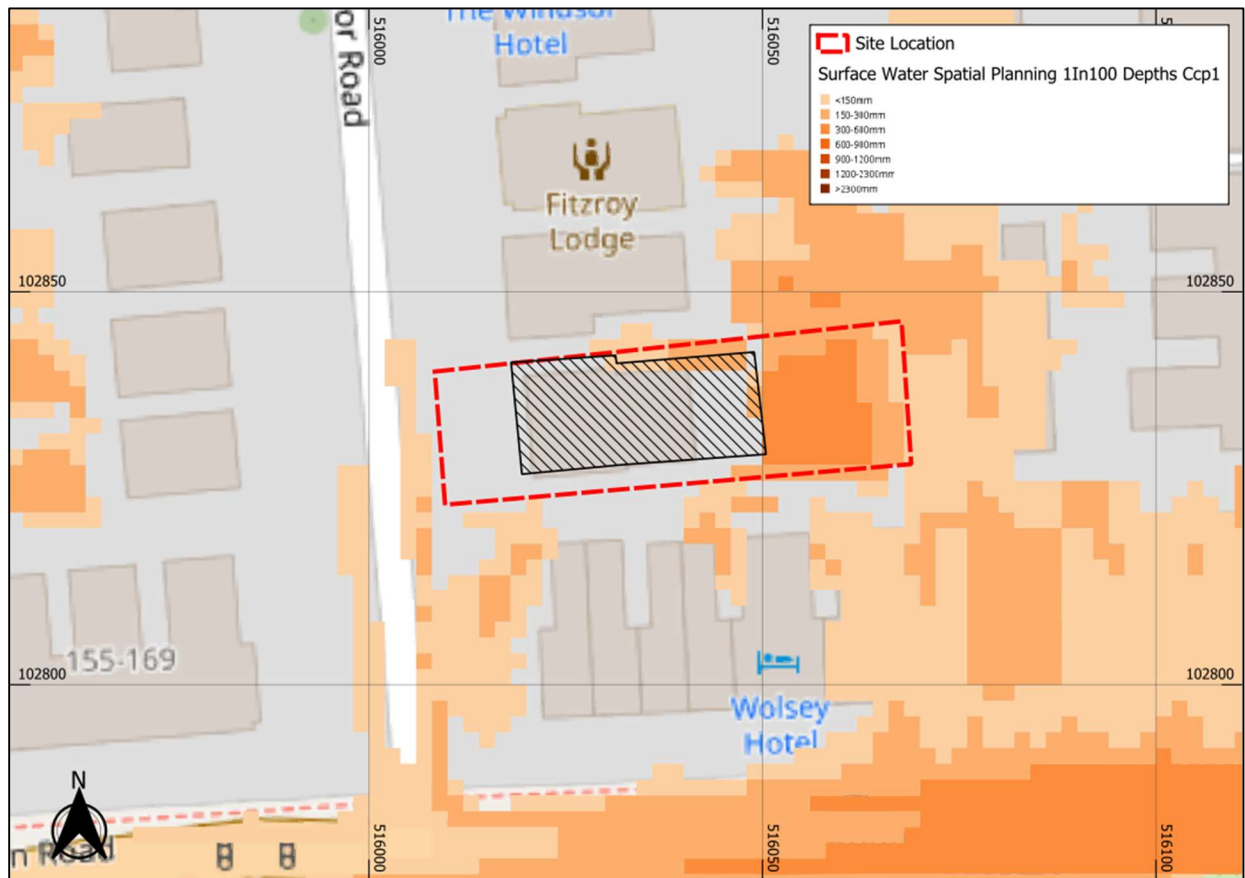


Figure 12: EA's 'Flood Map for Planning - Surface Water Spatial Planning' dataset – climate change extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.42. Based on the analysis above, the building proposed for change of use is considered to be at a low risk of pluvial flooding.

Reservoirs

- 4.43. 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.
- 4.44. According to the EA's Flood Risk from Reservoirs mapping the site is outside modelled flood extents in the event of reservoir flooding (Figure 13).

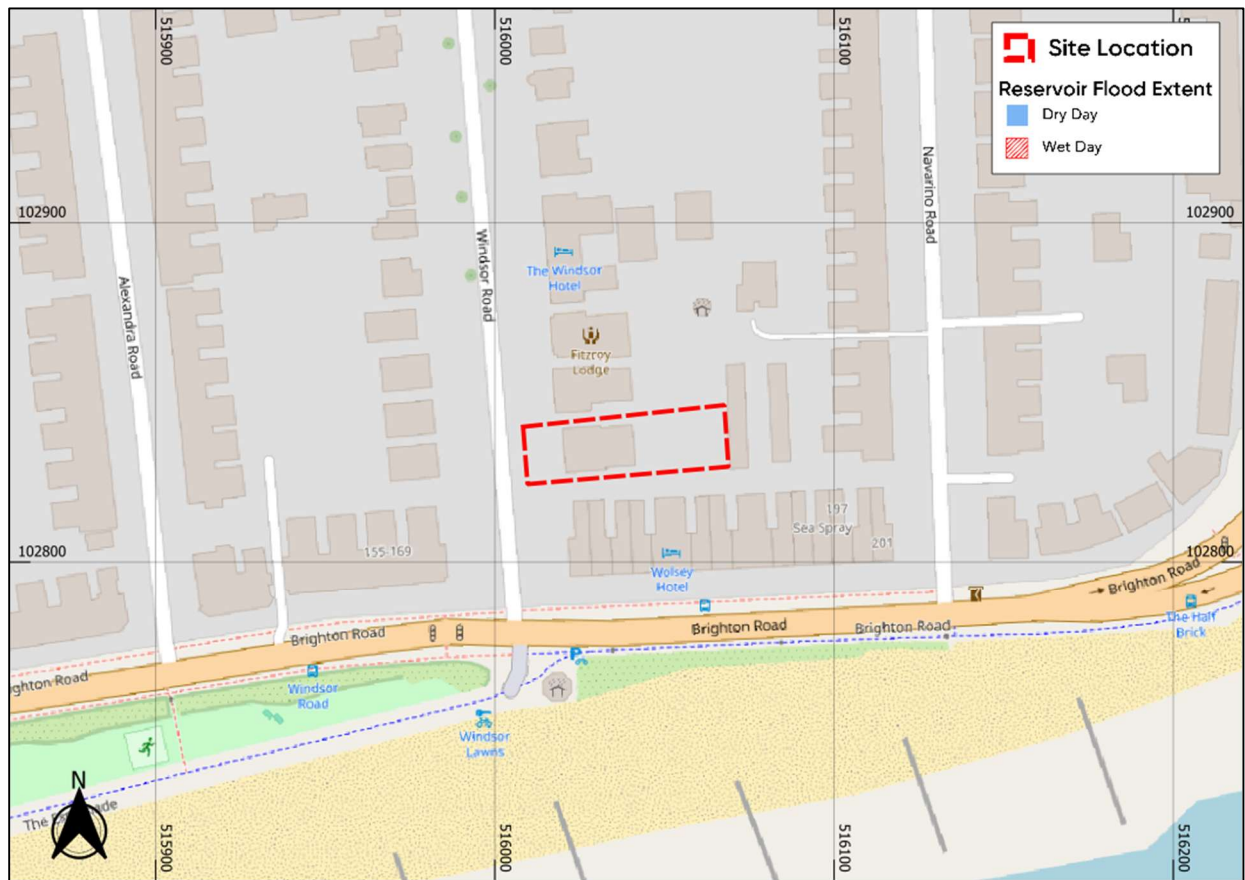


Figure 13: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). ©<https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

4.45. Therefore, the site is at a low risk of flooding following a reservoir failure.

Groundwater

- 4.46. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 4.47. The British Geological Survey's (BGS) mapping shows superficial deposits of River Terrace Deposits (Undifferentiated) comprised of sand, silt and clay underlying the site. The bedrock underlying the site mapped as Lewes Nodular Chalk Formation.
- 4.48. There are no historical BGS boreholes within the vicinity (c.200m) of the site.
- 4.49. The SFRA (2024) presents JBA Groundwater Flood Map product at the national scale. The 5m resolution JBA Groundwater map involves simulating groundwater levels for a range of return periods (including 75, 100 and 200- years). Groundwater levels are then compared to ground

surface levels to determine the head difference in metres. The site is within an area where ground water levels are estimated to be 'between 0.5m and 5m below the ground surface' (Figure 14).

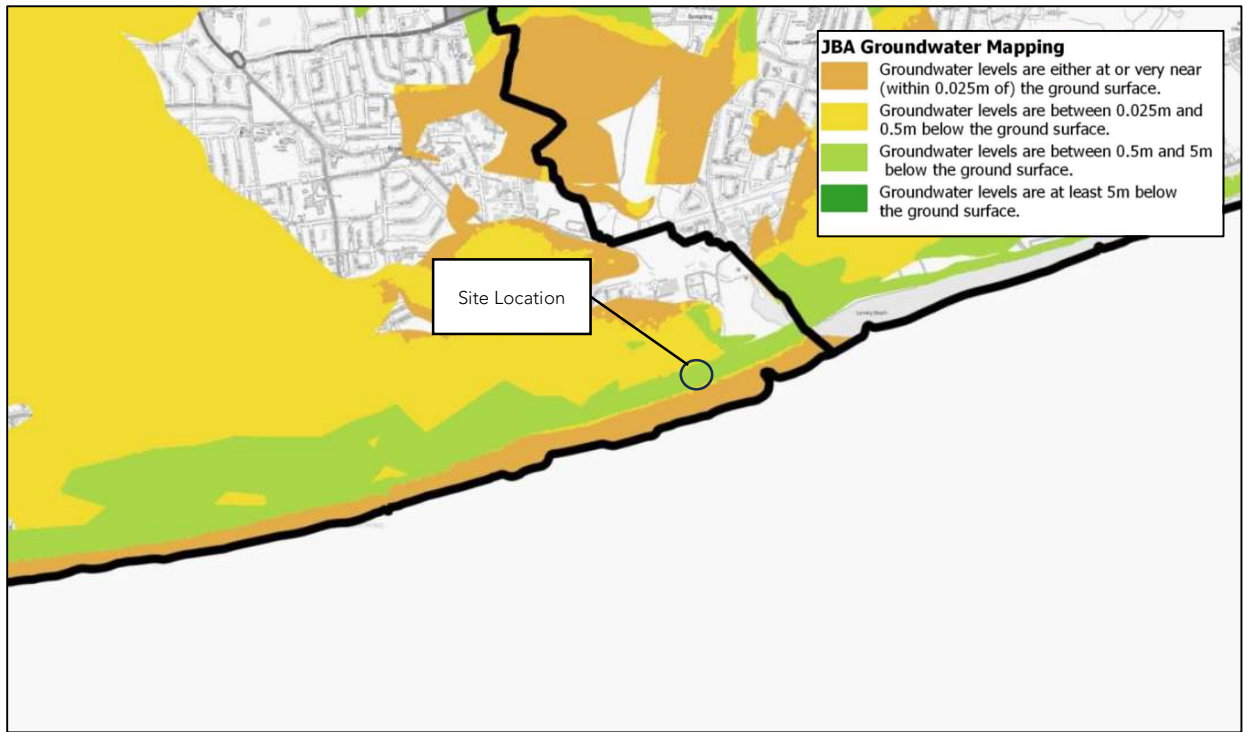


Figure 14: JBA Groundwater Mapping (Adur and Worthing Level 1 Strategic Flood Risk Assessment (Worthing Borough Council, 2024)

- 4.50. As the existing building does not include any subterrain levels, nor any change to the foundations or fabric of the existing building the risk from groundwater to the development is considered to be low.

Sewers

- 4.51. 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.
- 4.52. It is noted that the SFRA (2024) references a table showing Sewer Incident Report Form database for Adur District and Worthing Borough SFRA areas.
- 4.53. Within the sites 5-figure post code area (BN11 2), there has been 25 recorded sewer flood incidents. There is no evidence to suggest that these incidents have impacted the site. Given

the wide area a 5-figure post code area covers there is no evidence to suggest the site was impacted.

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

5. Flood Risk Mitigation

Tidal

- 5.1. Based on the 'design' event (1in200year 2115), the FFLs of the building proposed for development are shown to be c.0.22m above the flood level and c.0.18m above the worst case scenario 1in1000year event. Based on the assessment of the modelled data provided the tidal flood risk to the internal areas (above FFLs) proposed for change of use are considered to be low.
- 5.2. As a precautionary measure, mitigation measures will be recommended to protect against the residual risk.
- 5.3. Within the building where possible, in accordance with the CLG Report, *Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007)*⁹ including measures such as the below.

- *Raising electrical sockets and units, minimum of 300mm above the predicted flood level – 5.82m AOD*
- *Wetproofing wall and floor furnishings using materials such as tiles and paint.*
- *Air brick covers to be installed (if applicable).*
- *Seal entry points with mortar/silicon.*
- *All plumbing insulation to be of closed-cell design;*
- *Non-return valves should be installed on the new drainage systems throughout the new development. It is also recommended that these valves are retrofitted on to any reused existing sewer connections to prevent backflow of diluted sewage. Maintenance of these valves is important to ensure their continued effectiveness so should be maintained in line with manufactures recommendations.*

⁹ https://assets.publishing.service.gov.uk/media/602d673ee90e0709e8d085d8/Improving_the_Flood_Resilience_of_Buildings_Through_Improved_Materials_Methods_and_Details_Technical_Report.pdf

- *Any Windows and patio doors to be replaced are vulnerable to flood water and similar measures to those used for doors should be taken. Special care should be taken to ensure adequate sealing of any PVC window/door sills to the fabric of the house. Of concern would be excessive water pressure on the glazing of patio doors. Double glazing conforming to the relevant standards would, in principle, adequately resist the pressures generated by flood waters.*

Increase to Flood Risk Elsewhere

- 5.4. The proposed development is for a change of use with no alternation/increase to build footprint; therefore the proposed development will not result in the increased flood risk elsewhere.

Access/ Egress and Flood Warning

- 5.5. The safest access/egress route has been determined based on hazard grids provided as part of the Arun Coastal (2012) model during the 1in200year 2115 scenario (Figure 15).
- 5.6. In the event of a flood warning being issued occupants and site users should exit the site onto Windsor Road and head north towards Church Walk road. From here wider access can be made outside the flood extent to required services and overnight accommodation. This route is considered safe, based on the FD2321 hazard classification table¹⁰ ratings of less than 0.75 are considered safe in term of access/egress, shown in Figure 15.
- 5.7. Furthermore, given the nature of tidal flooding depends on meteorological conditions which can be predicted in advance, and more than 12 hours' notice can be provided to occupants of the site.

¹⁰ https://assets.publishing.service.gov.uk/media/602d04a98fa8f5037d371a08/FLOOD_HAZARD_RATINGS_AND_THRESHOLDS_explanatory_note.pdf

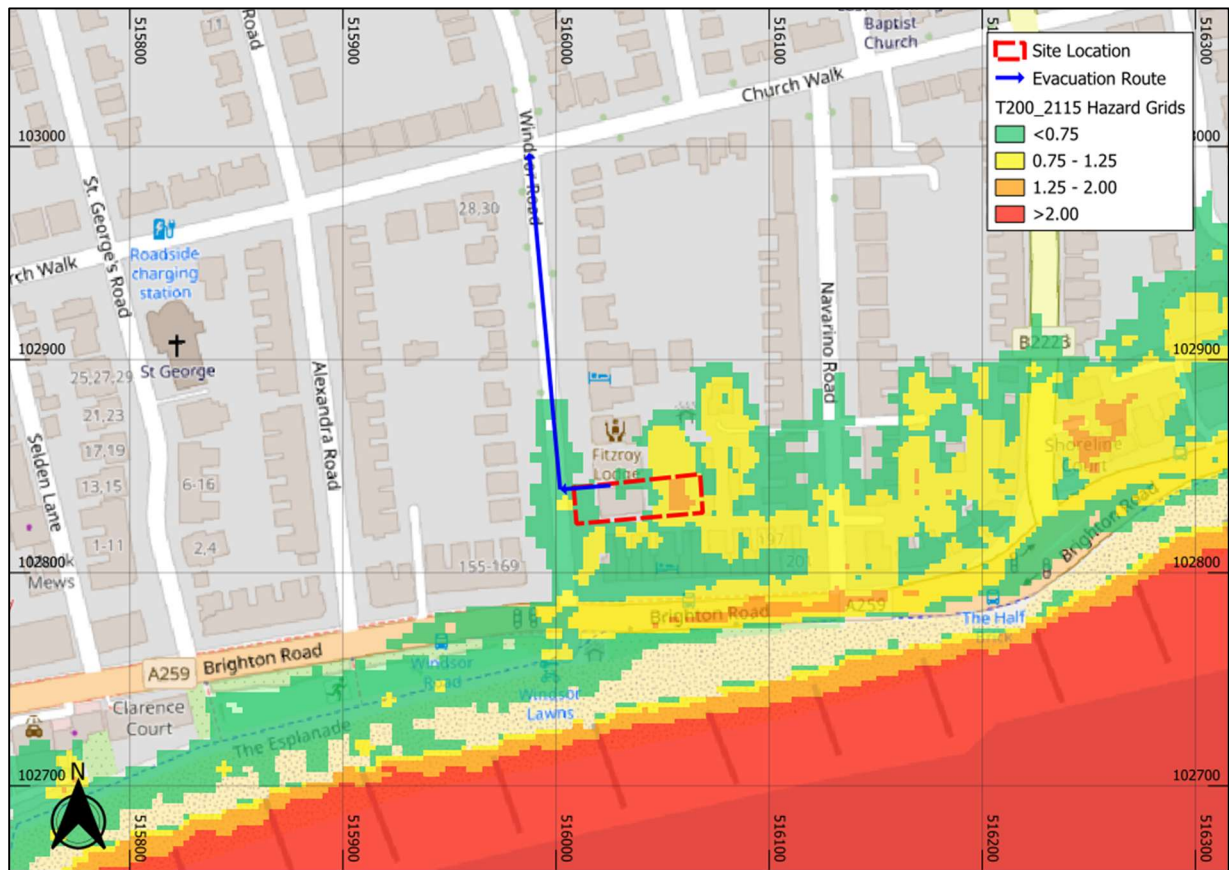


Figure 15: EA Flood Map for Planning showing Evacuation route (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 5.8. However, it is extremely important to note that prior evacuation should be sought before flooding occurs. Do not wait for flooding to occur to react. It should be reiterated that prior evacuation is the preferred option and safe refuge on site should only be sought in the very worst-case scenario where flooding occurred, and the refuge on site is to mitigate the risk to life.

Safe Refuge

- 5.9. Once residents have followed the proposed evacuation route, they should seek alternative accommodation arrangements (in Flood Zone 1).
- 5.10. If possible, seek accommodation with nearby relatives or friends. Alternatively, evacuees seek accommodation in nearby holiday lets or hotels.
- 5.11. If safe egress from site is not possible then safe refuge could be sought at the ground floor which is above design flood level.

EA Flood Warnings

- 5.12. All Occupants should sign up to the EA Flood Warning Service for the '*Solent and South Downs*'¹¹.
- 5.13. This service allows occupants 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 future residents will be sent an alert directly to their chosen method of contact. All occupants should sign up to this and make this service available to all future occupants where applicable.
- 5.14. The EA aim to provide a minimum of 6 hours of lead time for Flood Warnings in tidal areas. The Flood Alert stage is used to warn of the possibility of flooding. It is issued earlier than a flood warning, to give advance notice of the possibility of flooding. The EA aims to provide between 2 and 12 hours lead time between a Flood Alert being issued and possible flooding occurring.
- 5.15. As such it would be expected that should the service function as intended, a Flood Alert would be issued between 2 and 12 hours before flooding, and a Warning issued up to 6 hours in advance. This means that prior evacuation of the site before flooding should be achievable with adequate warning.
- 5.16. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides occupants some notice before a flood event. Flood alerts and warnings provide future residents with time to take necessary action, e.g. communication of the risk of flooding to future residents and neighbours etc, evacuation of occupants offsite or to a safe level, and removal of valuable items out of reach of flooding.

¹¹ <https://check-for-flooding.service.gov.uk/alerts-and-warnings>

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 Fitzroy Lodge, 2-4 Windsor Road, West Sussex, BN11 2LX. 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
Tidal	Based on the 'design' event (1in200year 2115), the FFLs of the building proposed for development are shown to be c.0.22m above the flood level and c.0.18m above the worst case scenario 1in1000year event. Given the assessment of the modelled data provided the tidal flood risk to the internal areas (above FFLs) proposed for change of use are considered to be low. Resilient mitigation measures have been recommended to reduce the residual risk to the development, along with access/egress arrangements.
Fluvial Pluvial Reservoirs Groundwater Sewers Canals	The development is considered to be at low risk from other analysed 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