Blenheim Estates

37 - 41 BRIGHTON ROAD, SHOREHAM-BY-SEA

Flood Risk Assessment

70118838
SEPTEMBER 2025

PUBLIC

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DATE: SEPTEMBER 2025

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Flood Risk Assessment

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1 INTRODUCTION

1.1 SCOPE OF REPORT

1.1.1. WSP UK Limited (WSP) has been commissioned by Blenheim Estates to conduct a Flood Risk Assessment (FRA) to support an outline planning application for the redevelopment of 37-41 Brighton Road, Shoreham-by-Sea, which will include up to 49 apartments and approximately 58 m² of retail space. The proposed development, which is residential-led and mixed-use, is situated south of Brighton Road and to the north and west of the Free Wharf Development, approximate NGR; TQ 22209 05133. The proposed development site covers an area of approximately 0.215 hectares (ha).

1.1.2. An FRA is required for the proposed development as it is classified as 'More Vulnerable' development as it is located within Flood zone 2 and 3 (as set out in the National Planning Policy Framework (NPPF))[1].

1.1.3. This FRA has been carried out with reference to the NPPF, the NPPF Planning Practice Guidance (PPG), the CIRIA Sustainable Drainage Systems (SuDS) Manual (C753, 2015) and information from the Environment Agency (EA) through site-specific consultation, along with existing publicly available information available on the Defra data platform[2].

1.1.4. The FRA sets out flood risk to the proposed development and the potential impacts of the proposed development on flood risk off-site, as defined by the planning redline boundary.

1.1.5. Recommendations have been made to ensure that the proposed development is appropriate and has no adverse impact on flood risk to the proposed development or off-site areas, either upstream or downstream of the site.

1.1.6. The FRA consists of the following:

- A description of the existing scenario and the proposed development (Sections 2 and 3)
- Planning constraints to be satisfied (Section 4)
- Previous studies and existing flood risk (Section 5 and 6)
- Flood risk mitigation and other requirements (Section 7 and 8)
- Conclusions (Section 9)

1.1.7. Supporting information and drawings can be found in the appendices to this report.

1.1.8. This version of the FRA was updated in September 2025 to address an Environment Agency (EA) objection received in July 2025. The EA objection stated that: *"the FRA fails to include details on proposed flood resistance and resilience measures and to what level they will be provided to"*. Indicative examples of flood resilient materials and design and the water level above which they would be required were agreed with the EA in August 2025 (see Appendix H) and have subsequently been incorporated into this version of the FRA, in Section 6.3.

1.1.9. WSP UK Ltd makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which is relates, and

[1] Technical Guidance to the National Planning Policy Framework

[2] Defra data services platform

bears no responsibility or liability related to its use other than as set out in the contract under which it was supplied.

1.2 INFORMATION PROVIDED

1.2.1. The following information was provided by the client, the EA and other sources for use in this study:

- Indicative layout of the proposed development (Appendix A)
- EA consultation data (Appendix B)
- Topographical survey (Appendix C)
- Adur policies map (Appendix D)

1.2.2. The following documents have been reviewed to gather information for this FRA:

- Adur and Worthing Level 1 Strategic Flood Risk Assessment (SFRA), 2024[3]
- Adur & Worthing Level 2 Strategic Flood Risk Assessment (SRFA), 2020[4]
- West Sussex Strategic Flood Risk Assessment (SFRA) Vol I, II, III and IV,2010[5]
- West Sussex Preliminary Flood Risk Assessment (PFRA), 2011[6,]
- Adur Local Plan 2017[7]
- Shoreham Harbour Flood Risk Management Guide,2015[8]
- South East River Basin District Flood Risk Management Plan 2021 to 2027, 2022[9]
- West Sussex Local Flood Risk Management Strategy Local Flood Risk Management Strategy (LFRMS)[10,] 2021-2026, 2021
- Shoreham Harbour Joint Area Action Plan, 2019[11]
- EA web-based mapping

[3] Adur and Worthing Level 1 Strategic Flood Risk Assessment (SFRA) - July 2024 (adur-worthing.gov.uk)

[4] Adur & Worthing Level 2 Strategic Flood Risk Assessment (SFRA) - site sheets - July 2020 (adur-worthing.gov.uk)

[5] West Sussex Strategic Flood Risk Assessment

[6] PFRA_West_Sussex_County_Council_2017.pdf (publishing.service.gov.uk)

[7] Adur Local Plan 2017 (adopted) - Complete document (adur-worthing.gov.uk)

[8] FRMG SPD Consultation Statement Final Sep 15.pdf (brighton-hove.gov.uk)

[9] South East river basin district flood risk management plan - GOV.UK (www.gov.uk)

[10] Local Flood Risk Management Strategy Consultation | Your Voice West Sussex

[11] Shoreham Harbour Joint Area Action Plan (JAAP) - adopted October 2019 (adur-worthing.gov.uk)

2 EXISTING SCENARIO

2.1 SITE LOCATION

2.1.1. The site is currently occupied by a single storey industrial unit with Kwik-Fit as a tenant. The postcode for the site is BN43 6RE and approximate NGR; TQ 22209 05133. The site is located to the south of Brighton Road (A259) and is surrounded by a mix of residential and commercial properties. To the east and south is the Free Wharf development that is currently under construction (AWDM/1497/17). To the west, there is a car wash facility that has right of way access at both the front and rear of the site.

2.1.2. A site location plan is shown in Figure 1 below:

Figure 1 Site Location

2.2 EXISTING TOPOGRAPHY AND HYDROLOGICAL SETTING

2.2.1. Existing ground levels surrounding the site generally lies in the range of 4.2m AOD to 4.5m AOD (See Appendix C). Figure 2 shows the elevations of the proposed development with respect to the surrounding area as per a 1m LiDAR 2022 (Light Detection and Ranging).

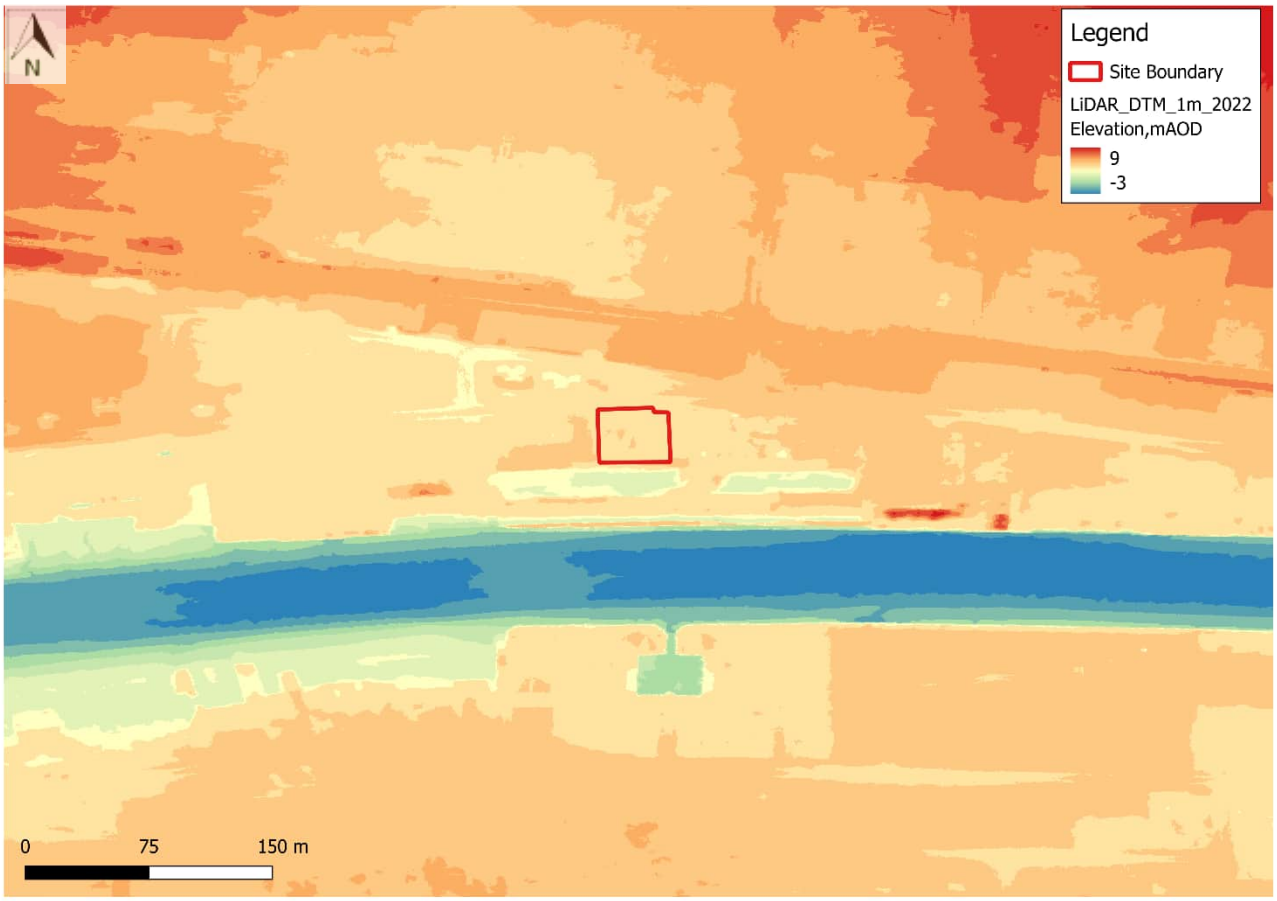


Figure 2 LiDAR Data

2.2.2. As illustrated in the EA Main River map shown in Figure 3, the River Adur is the closest main river to the proposed development. This tidally influenced river is situated 65.0m away at its closest point to the proposed development and flows from west to east, discharging into the English Channel.

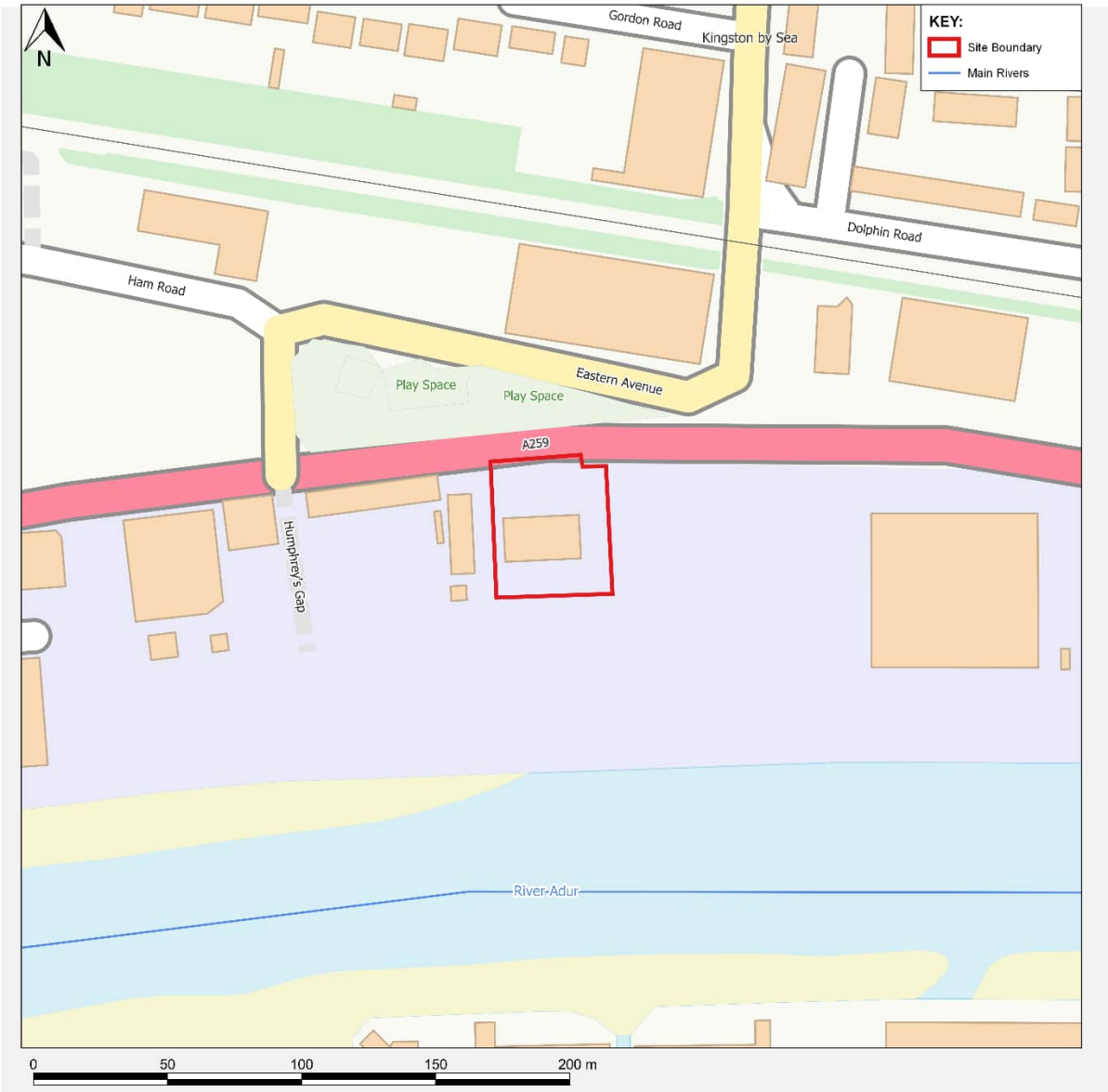


Figure 3 EA Main River Map

3 PROPOSED DEVELOPMENT SCHEME

3.1.1. The proposed development is mixed-use and will include up to 49 apartments and approximately 58m² of retail space. The scheme includes 24 parking spaces in the undercroft. The residential lobby and a commercial unit are proposed on the ground floor, with the undercroft car park located to the rear and northeast corner of the site. The established frontage along Brighton Road is enhanced by a double-height colonnade and a landscaped green strip. The building is designed with residential units located on the upper floors, with a minimum finished floor level (FFL) of 8.0m AOD. The finished floor level for the ground floor, which is designated for commercial use, is set at 4.4m AOD. Figure 4 shows the FFLs and cross section of the proposed development.

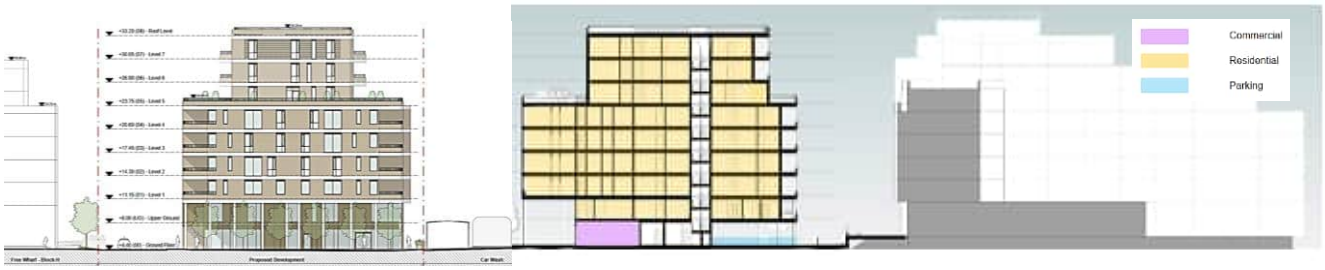


Figure 4 Floor Levels and Cross Section

3.1.2. The indicative masterplan for the site is shown in Figure 5 below and provided in Appendix A.

Figure 5 Indicative Layout (Holder Mathias)

4 NATIONAL AND LOCAL PLANNING POLICY FRAMEWORK

4.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

4.1.1. The NPPF (2024)[12] sets out the Government planning policy framework for England and how these are expected to be applied. Paragraph 159 of NPPF states that development in areas at risk of flooding should be avoided unless development is necessary. In this instance, the Proposed Development should not increase flood risk elsewhere.

4.1.2. The document states that a sequential, risk-based approach to the location of development is required in order to avoid, where possible, flood risk to people and property and manage any residual risk, taking account the impacts of climate change (CC).

4.1.3. In line with the NPPF and PPG, developments that could affect site drainage are expected to incorporate Sustainable Drainage Systems (SuDS). These systems are intended to manage surface water runoff in a manner that is proportionate to the nature and scale of the proposal. SuDS should provide multifunctional benefits, including improvements in water quality, biodiversity, and amenity. For major developments, SuDS should:

- Take account of advice from the Lead Local Flood Authority (LLFA);
- Meet appropriate minimum operational standards;
- Include maintenance arrangements to ensure long-term functionality.

4.1.4. Section 4.1 of this FRA sets out the various Flood Zones as defined in the NPPF PPG. These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of any formal flood defences. As set out in Section 5.1 of this FRA, the Proposed Development is located in Flood Zone 2 and 3.

FLOOD ZONE DEFINITION

4.1.5. The EA defines four separate Flood Zones and an 'Areas Benefitting from Defences' (ABD) zone, these are listed below.

Flood Zone 1 – Low Probability

4.1.6. This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%) in any year.

Flood Zone 2 – Medium Probability

4.1.7. This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.

Flood Zone 3a – High Probability

4.1.8. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

[12] National Planning Policy Framework

Flood Zone 3b – Functional Floodplain

4.1.9. This zone comprises land where water has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances but land which would flood with an annual probability of 1 in 30 (3.33%) or more frequent in any year should provide a starting point for consideration.

AREA BENEFITING FROM DEFENCES

4.1.10. These are areas that benefit from the presence of existing flood defences in either a 1 in 100 (1%) annual probability river flood even or a 1 in 200 (0.5 %) annual probability sea flood event. If the defences were not there, these areas would flood in a 1 in 100 (1%) / 1 in 200 (0.5%) or larger flood event.

FLOOD RISK VULNERABILITY

4.1.11. Flood risk vulnerability is split into five classifications in the NPPF PPG[13]. The NPPF PPG details residential developments as 'More Vulnerable' and commercial developments as 'Less Vulnerable'.

4.1.12. The residential units of the proposed development are located on the first floor (FFL of 8.0m AOD) and the commercial units are located on the ground floor (FFL of 4.4m AOD) and are more susceptible to flooding as discussed in subsequent chapters.

APPROPRIATE DEVELOPMENT

4.1.13. The requirements for determining whether a development is appropriate in terms of vulnerability and Flood Zone compatibility is set out in **Table 1**.

Table 1 NPPF Flood Risk Vulnerability and Flood Zone 'incompatibility'

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

[13] National Planning Policy Framework - Annex 3: Flood risk vulnerability classification - Guidance - GOV.UK

	Zone 3b	Exception Test required	x	x	x	✓

Key:

✓ Exception test is not required

X Development should not be permitted

EXCEPTION TEST

4.1.14. In order to pass the Exception Test set out in the NPPF:

1. It must be demonstrated that the development provides benefits to the community that outweigh flood risk, informed by the SFRA referenced in this FRA, and

2. A site-specific flood risk assessment must demonstrate that 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.

4.1.15. The proposed development comprises the following uses and vulnerability classes:

- More vulnerable: Residential units.
- Less vulnerable: Commercial units.

4.1.16. The site is primarily situated in Flood Zone 2 and partially extends into Flood Zone 3 and considering that a 'more vulnerable' classified development is proposed, it is necessary to conduct the Exception Test.

4.1.17. The proposed development site lies within the Adur District Council Local Plan allocation under Policy 8 and CA7. The 'Sequential and Exception Test for the Proposed Submission Adur Local Plan 2014' by Adur District Council sets out the Sequential and Exception test for the allocation in the local plan. It is concluded that the Shoreham Harbour allocation **passes** the sequential test.

4.1.18. The details provided within this FRA address the second part of the Exception Test and demonstrate that the site is safe for its lifetime. In conclusion, the provided information confirms that the **Exception Test has been passed,** and the proposed redevelopment is appropriate, with respect to managing flood risk.

4.2 LOCAL PLANNING POLICY

ADUR LOCAL PLAN 2017

4.2.1. The Adur Local Plan[14], developed by Adur and Worthing Councils provides a strategy for development in Adur up to 2032. It seeks to achieve a balance in meeting needs for development – such as housing, employment, retail and community facilities, while striving to protect and enhance the character and features of Adur which so many people value, such as its open spaces, landscape and historic features.

[14] Adur Local Plan 2017 - Adur & Worthing Councils

4.2.2. The Local Plan will play an important part in facilitating the regeneration of Adur, through indicating key sites and strategic locations for new development and facilitating the delivery of appropriate infrastructure. The Plan sets out a vision and strategy and looks at the planning issues the area is facing and proposes policies for addressing them.

4.2.3. The Local Plan will be the 'umbrella' for all subsequent policy and guidance documents to be produced as part of the new Local Development Framework (LDF). The Council's programme for preparing these is contained within the Local Development Scheme.

4.2.4. Development proposals will be assessed as to whether they comply with the NPPF, NPPG, and relevant development plan policies (which include the Local Plan and relevant minerals and waste policies) as well as for the contribution they make to delivering the vision and objectives of the Local Plan.

4.2.5. The Policy 8 of Adur Policy Plan is for Shoreham Harbour Regeneration Area. Shoreham Harbour Regeneration Area (as shown on the Policies Map (Appendix D)) is identified as a broad location for change. Adur District Council will work in partnership with Brighton & Hove City council, West Sussex County Council and Shoreham Port Authority to support the regeneration of the area.

4.2.6. The regeneration partnership aims to prepare a Joint Area Action Plan (JAAP) for the regeneration area. The plan is intended to jointly be adopted by Adur, Brighton & Hove and West Sussex County Councils.

SHOREHAM HARBOUR JOINT AREA ACTION PLAN (JAAP)

4.2.7. The Shoreham Harbour Joint Area Action Plan (JAAP)[15] is a strategy for the regeneration of Shoreham Harbour and surrounding areas. It includes proposals and policies for new housing and employment generating floor-space; and for upgraded flood defences, recreational and community facilities, sustainable travel, environmental and green infrastructure improvements.

4.2.8. An area action plan is a type of local plan for an area of significant change. The JAAP sets a planning policy framework to guide development and investment decisions within the Shoreham Harbour Regeneration Area up to 2032. The plan builds on and complements the Adur Local Plan (2017) and the Brighton & Hove City Plan Part One (2016). Planning applications within the regeneration area must comply with the strategy and policies in the JAAP, as well as the relevant local plans, unless material considerations indicate otherwise.

4.2.9. The plan was adopted by Adur District Council, Brighton & Hove City Council and West Sussex County Council in October 2019. It contains:

- a long-term vision, objectives and strategy for the Shoreham Harbour Regeneration Area
- themed area-wide policies on climate change, energy and sustainable building, Shoreham Port, economy and employment, housing and community, sustainable travel, flood risk and sustainable drainage, natural environment, biodiversity and green infrastructure, recreation and leisure, place making and design quality
- proposals for seven-character areas, including four allocations for new development
- an outline of how the Shoreham Harbour Regeneration Project will be delivered, monitored and implemented.

[15] Joint Area Action Plan (JAAP) - Adur & Worthing Councils

4.2.10. Figure 6 shows the location of the Shoreham Harbour Regeneration Area.

Figure 6 Location of Shoreham Harbour[16]

Flood risk and sustainable drainage

4.2.11. Objective 6 of JAAP is to reduce the risk of flooding and adapt to climate change and to ensure that development avoids and reduces the risks from flooding and impacts on coastal processes and that risks are not increased elsewhere as a result. To ensure that appropriate and comprehensive flood infrastructure is delivered. To ensure surface water run-off and water pollution have been reduced by the introduction of sustainable drainage systems. The Local plans should direct development away from areas at high risk of flooding.

4.2.12. This is determined through the Sequential Test, and if necessary, the Exception Test. Both Adur and Brighton & Hove councils have carried out sequential and exceptions tests for the regeneration area. These have found the wider sustainability benefits of development at Shoreham Harbour outweigh the flood risk. Development must be safe, without increasing the flood risk elsewhere.

Proposed Plan

4.2.13. This plan splits the regeneration area into seven character areas. These are shown in Figure 7. The areas are:

- CA1: South Quayside
- CA2: Aldrington Basin
- CA3: North Quayside and South Portslade
- CA4: Portslade and Southwick Beaches
- CA5: Fishersgate and Southwick
- CA6: Harbour Mouth
- CA7: Western Harbour Arm

[16] Shoreham Harbour Joint Area Action Plan (JAAP) - adopted October 2019 (adur-worthing.gov.uk)

4.2.14. The Proposed Development falls in the allocated areas of Western Harbour Arm.

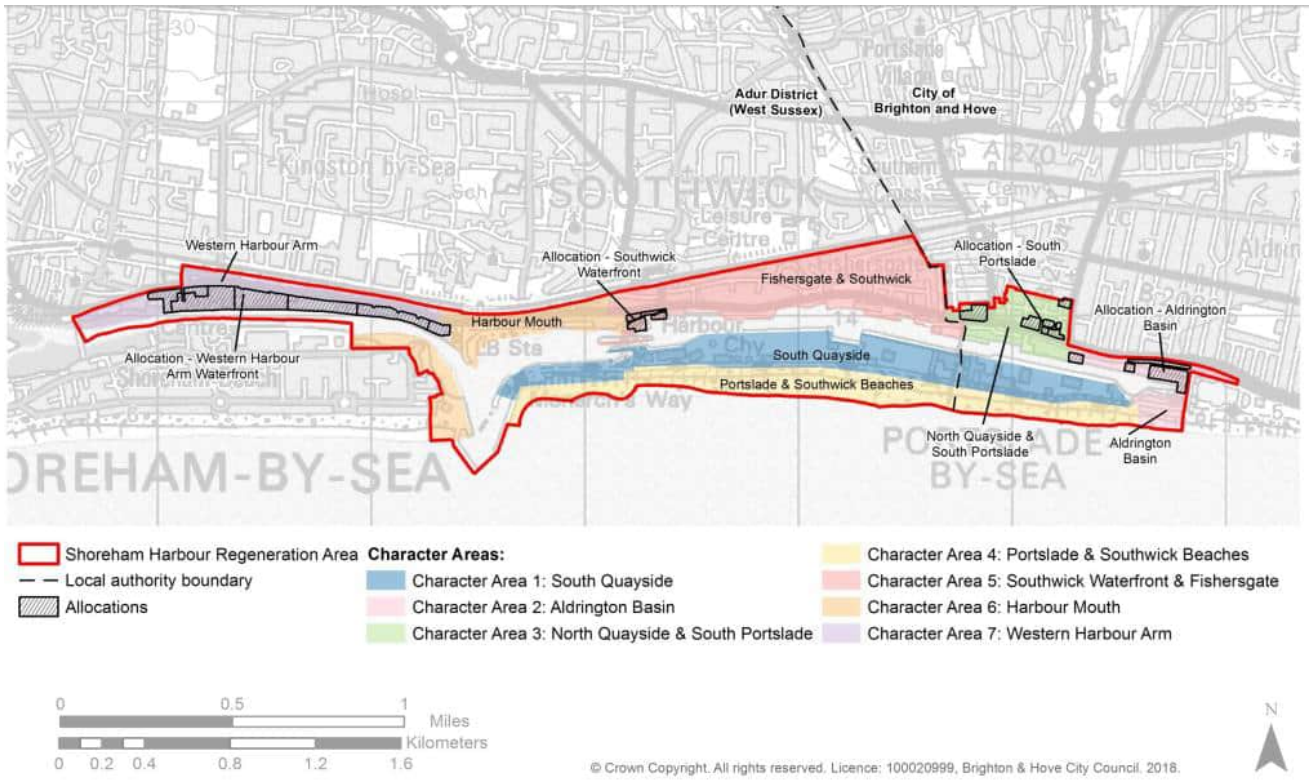


Figure 7 Character Areas[17]

Western Harbour Arm

4.2.15. Western Harbour Arm is on the northern bank of the River Adur between the Harbour Mouth and the historic centre of Shoreham-by-Sea. The area is highly constrained by Brighton Road (A259) and the railway. The Western Harbour Arm is the principal approach to Shoreham-by-Sea from the east. To the north of the railway line, the area is abutted by residential neighbourhoods and a large industrial estate.

4.2.16. Currently the Western Harbour Arm is mostly an employment area. Western Harbour Arm Waterfront is allocated for new mixed-use development. It includes an allocation for proposed development at Western Harbour Arm Waterfront. This will deliver a minimum of 1,100 new homes and 12,000m^2 employment generating floor-space.

4.2.17. New flood defences will be built. A new waterfront route will improve connections for pedestrians and cyclists between Shoreham-by-Sea town centre and Kingston Beach. Habitats and biodiversity will be created and protected. Figure 8 shows the layout of allocations in western harbour arm.

4.2.18. There are a number of potential sources of flooding which will be a key consideration in planning for the future of this area. Sites along the Western Harbour Arm are vulnerable to surface water, fluvial, and, most significantly, tidal flooding, meaning that any new residential development would need to be lifted up above likely flood levels. Development will need to be protected through flood defence

[17] Shoreham Harbour Joint Area Action Plan (JAAP) - adopted October 2019 (adur-worthing.gov.uk)

provision and will need to be safe for the intended building lifetime taking into account climate change and sea level rise.

4.2.19. The Adur and Worthing Councils' Strategic Flood Risk Assessment (SFRA) identifies several sites in this area as Tidal Flood Zone 2, 3a and Non-functional Flood Zone 3b. This latter category recognises that some sites have the same risk of flooding as Flood Zone 3a but do not have a significant storage or conveyance potential which materially impacts flood risk elsewhere.

4.2.20. The partnership has worked closely with the Environment Agency to develop a comprehensive vision for an upgraded flood defence network to protect a redeveloped Western Harbour Arm.

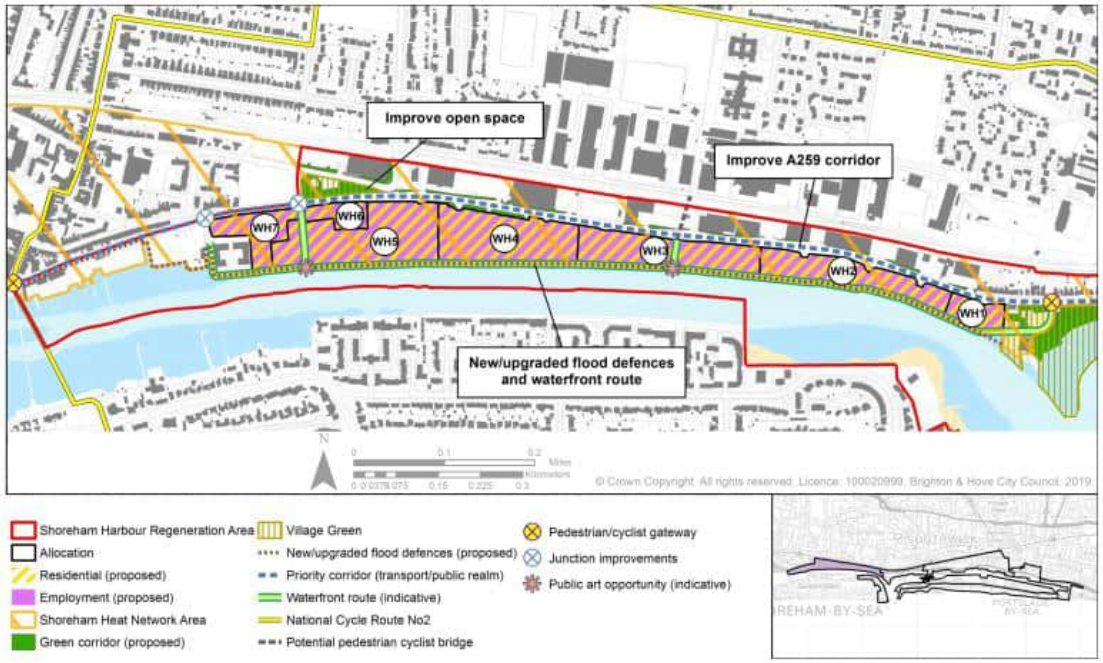


Figure 8 Western Harbour Arm[18]

4.2.21. As per JAAP, the proposed development falls in the area allocated for mixed use development in Western Harbour Arm. The area is susceptible to various sources of flooding. A new and upgraded flood defence is planned to be developed in the area to protect it against tidal flooding from River Adur.

ADUR AND WORTHING LEVEL 1 STRATEGIC FLOOD RISK ASSESSMENT 2024

4.2.22. This report[19] only considered the Local Plan areas of Adur District Council and Worthing Borough Council and does not include the South Downs National Park authoritative area in the north of Adur and Worthing.

4.2.23. The report has been prepared to provide comprehensive and supporting evidence to inform future updates to the Adur Local Plan that was adopted in 2017. The Worthing Local Plan was adopted in 2023.

[18] Shoreham Harbour Joint Area Action Plan (JAAP) - adopted October 2019 (adur-worthing.gov.uk)

[19] Adur and Worthing Level 1 Strategic Flood Risk Assessment (SFRA) - July 2024

4.2.24. The SFRA gives the following outputs:

- Assessment of all potential sources of flooding
- Assessment of the potential impact of climate change on flood risk
- An assessment of surface water management issues and the application of Sustainable Drainage Systems (SuDS)
- A review and update of any new and amended data sources (e.g. Catchment Flood Management Plans, Preliminary Flood Risk Assessment, Updated Flood Maps and modelling, etc)
- Recommendations of the criteria that should be used to assess future development proposals and the development of a Sequential Test and sequential approach to flood risk
- Guidance for developers including requirements for site-specific flood risk assessments
- Mapping of location and extent of functional floodplain
- Mapping areas at risk from other sources including surface water, sewer, ground water and reservoirs
- Mapping areas covered by an existing flood alert / warning
- Identification of opportunities to reduce flood risk
- High-level screening of proposed development sites against flood risk information
- Identification of flood defence infrastructure.

SHOREHAM HARBOUR FLOOD RISK MANAGEMENT GUIDE SUPPLEMENTARY PLANNING DOCUMENT 2015

4.2.25. The Supplementary Planning Document (SPD)[20] was published in September 2015 and sits alongside, and forms part of the evidence base for the JAAP. The SPD identifies the requirements for new and improved flood defences and flood adaptation measures within the JAAP area. The SPD aims to aid developers of sites promoted through the JAAP to deliver a higher level of flood defence and mitigation measures than currently exists. The SPD helps developers to demonstrate, through the planning process, that new development will be safe for its lifetime; that flood risk has not been increased elsewhere because of the new development; and that wherever possible, flood risk overall has been reduced.

4.2.26. The SPD provides design principles and the vision for the local area, and states the following:

4.2.27. “For the Western Harbour Arm, new flood defences will be required to protect the site from flooding. The design height for the new flood defence will need to protect the development for its anticipated lifetime. The predicted flood level for a 0.5% event in 2115 is 5.08m Above Ordnance Datum (AOD), based on UK Climate Projections (UKCP) 09. (Page 28, 7.3.1.)

4.2.28. Minimum freeboard allowances of 150mm for hard defences (defences not subject to settlement e.g. walls) and 300mm for soft defences (defences subject to settlement e.g. embankments) are recommended. Consequently, the defence design levels required for new flood defences are as follows:5.25m AOD for hard defences; 5.40m AOD for soft defences.

4.2.29. For sites where existing defences / land raising do not meet the defence heights outlined above, developers will be required to deliver flood defences or land raising to this height to meet this standard of protection. (Page 30, 7.3.3 to 7.3.4.)

[20] Shoreham Harbour - Flood Risk Management Guide - Technical Annex

4.2.30. In relation to finish floor levels, early engagement with the Environment Agency is recommended. Finished floor levels should be based on the Environment Agency document: Climate change Allowances for Planners, but as a minimum, for residential use should be set at 5.77m AOD and 4.94m AOD for commercial (page 30, 7.3.6)".

WEST SUSSEX COUNTY COUNCIL LOCAL FLOOD RISK MANAGEMENT STRATEGY 2014

4.2.31. The West Sussex County Council LFRMS[21] was published in May 2014.

4.2.32. The strategy sets out a series of objectives to ensure the successful delivery of the strategy across the authority:

"Objective 1: Understand the areas that flood

Objective 2: Manage the flood risk in West Sussex

Objective 3: Enable people, communities, business, and public bodies to work together

Objective 4: Put communities at the heart of what we do and help West Sussex residents during flood events and recover as quickly as possible after incidents."

4.2.33. The LFRMS shows Shoreman and Lancing are listed as a 'priority wet spot'. Wet spots have been classified as areas where a significant number (generally greater than ten properties and/or businesses) of adjacent properties may be susceptible to flooding.

River Adur Catchment Flood Management Plan

4.2.34. The River Adur CFMP was published in December 2009. CFMPs help us to understand the scale and extent of flooding now and in the future and set policies for managing flood risk within the catchment.

4.2.35. For Shoreham and Adur Estuary the vision and preferred policy is:

"Policy option 4: Areas of low, moderate, and high flood risk where we are already managing existing flood risk effectively. This policy also supports the regeneration proposals for Shoreham, although it must be stressed that future development and regeneration needs to comply with all relevant planning policy guidance."

[21] Local Flood Risk Management Strategy

5 EXISTING FLOOD RISK

5.1 HISTORIC FLOOD RISK

5.1.1. Figure 9[22] below shows the Recorded Flood Outlines which shows all EA records of historic flooding from rivers, the sea, groundwater and surface water. The outline shown in Figure 9 is the August 1992 tidal flooding event which was caused by the overtopping of defences.

5.1.2. Appendix E shows the recorded historic flood points and historic flood events provided by WSCC and the Environment Agency respectively. WSCC data only includes flood events prior to 2020. Not all the historic data provided had a source of flooding and was therefore classified as 'Unknown'. Additionally, not all the data provided had dates or a description of flooding recorded.

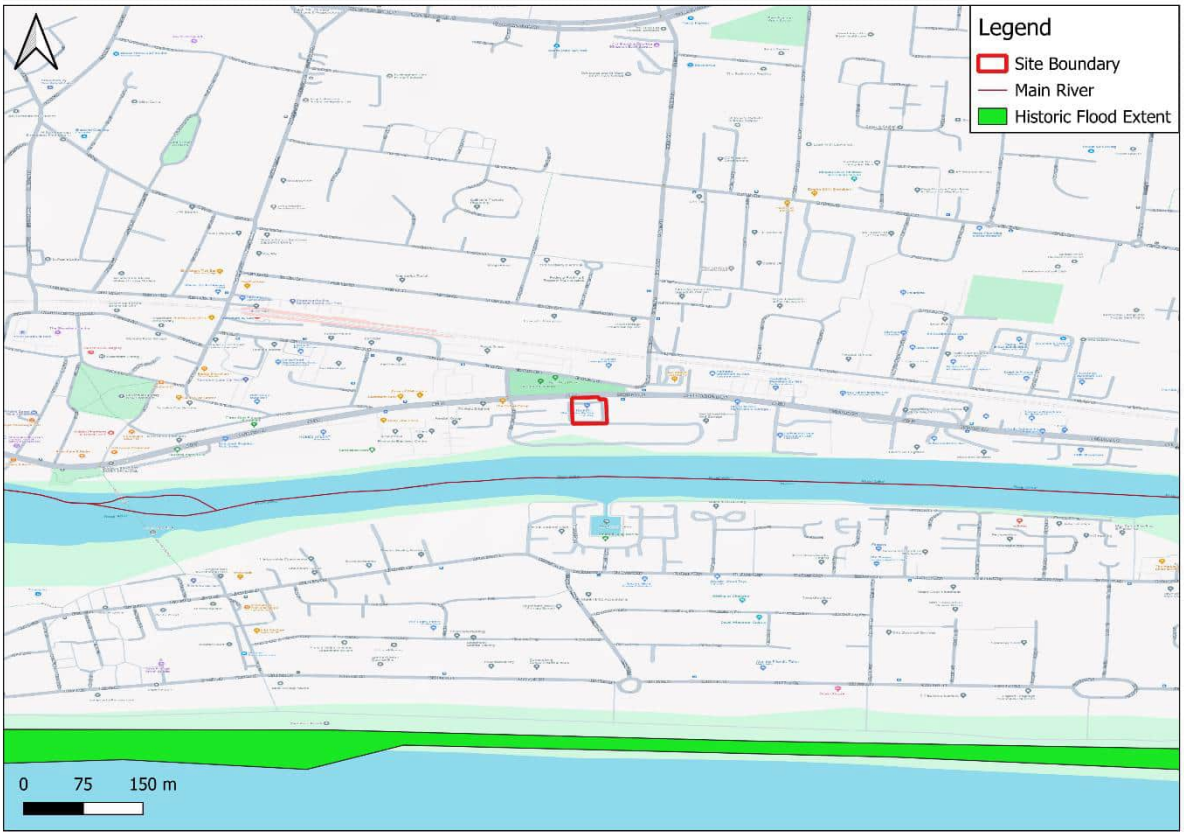


Figure 9 Historic Flood Map

5.2 FLOOD RISK FROM RIVERS AND SEA/TIDAL

5.2.1. Fluvial Flood Risk is defined by three distinct Flood Zones that are used to inform proposed developments.

5.2.2. The Flood Zones defined by the EA are as follows:

- Flood Zones 1 is land having a less than 1 in 1,000 annual probability of river or sea flooding;

[22] Recorded Flood Outlines - data.gov.uk

- Flood Zone 2 is land having between a 1 in 100 and 1 in 1,000 annual probability of flooding from rivers, or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding;
- Flood Zone 3 is land having a 1 in 100 or greater annual probability of flooding from rivers, or a 1 in 200 or greater annual probability of sea flooding.

5.2.3. The EA Flood Map for Planning, shown in Figure 10 shows that the proposed development red line boundary is partially within Flood Zone 3 associated with flooding from the River Adur (which is within the tidal limits of the site). The majority of the site and the proposed development features are located in Flood Zone 2. Therefore, the south-eastern edge of the Proposed Development is at **high risk** of tidal flooding. Further, the site is located within EA Warning Area; Shoreham Harbour Flood Warning Area (See Figure 11).

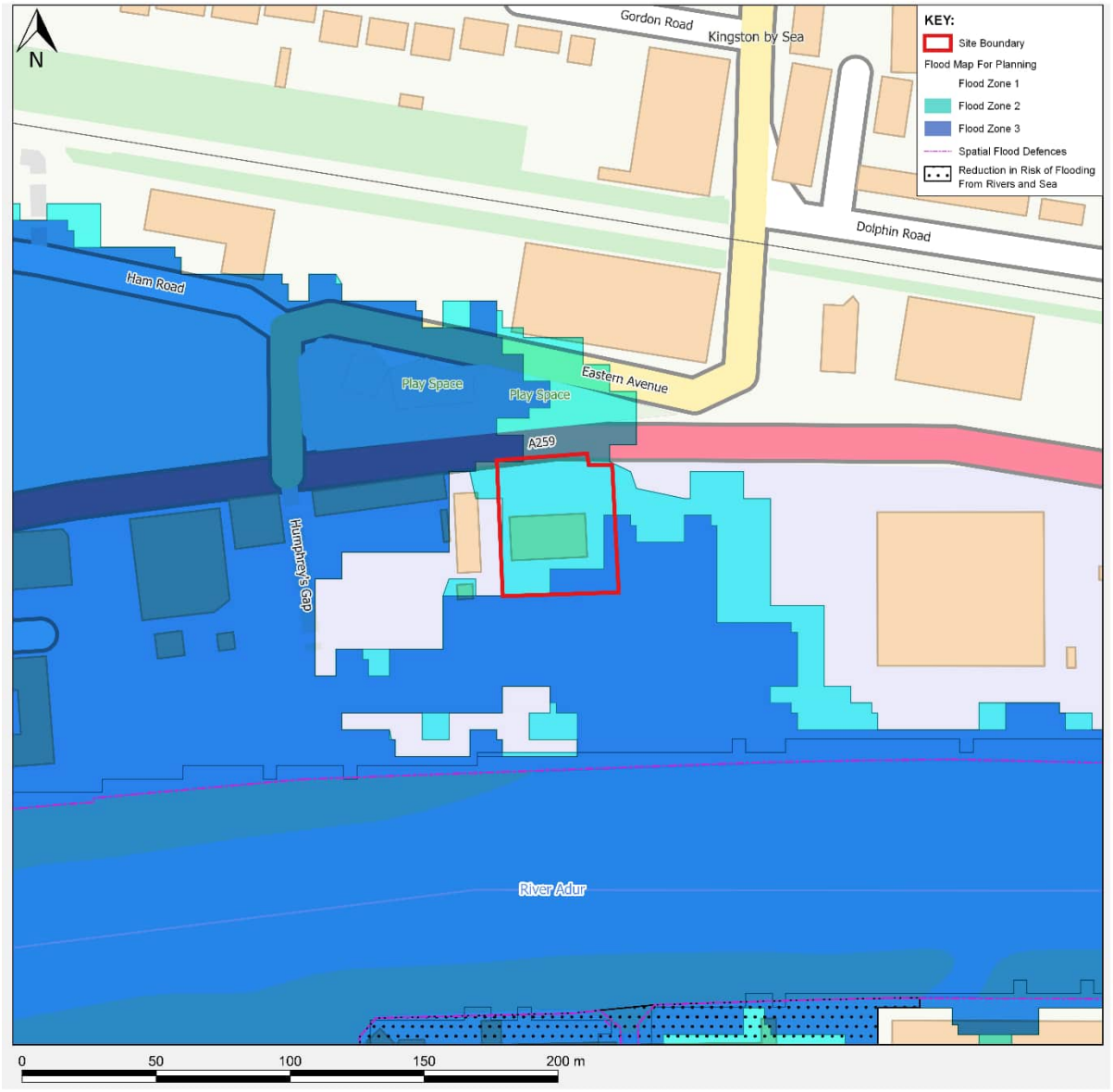


Figure 10 Environment Agency Flood Map for Planning (Rivers and Sea)

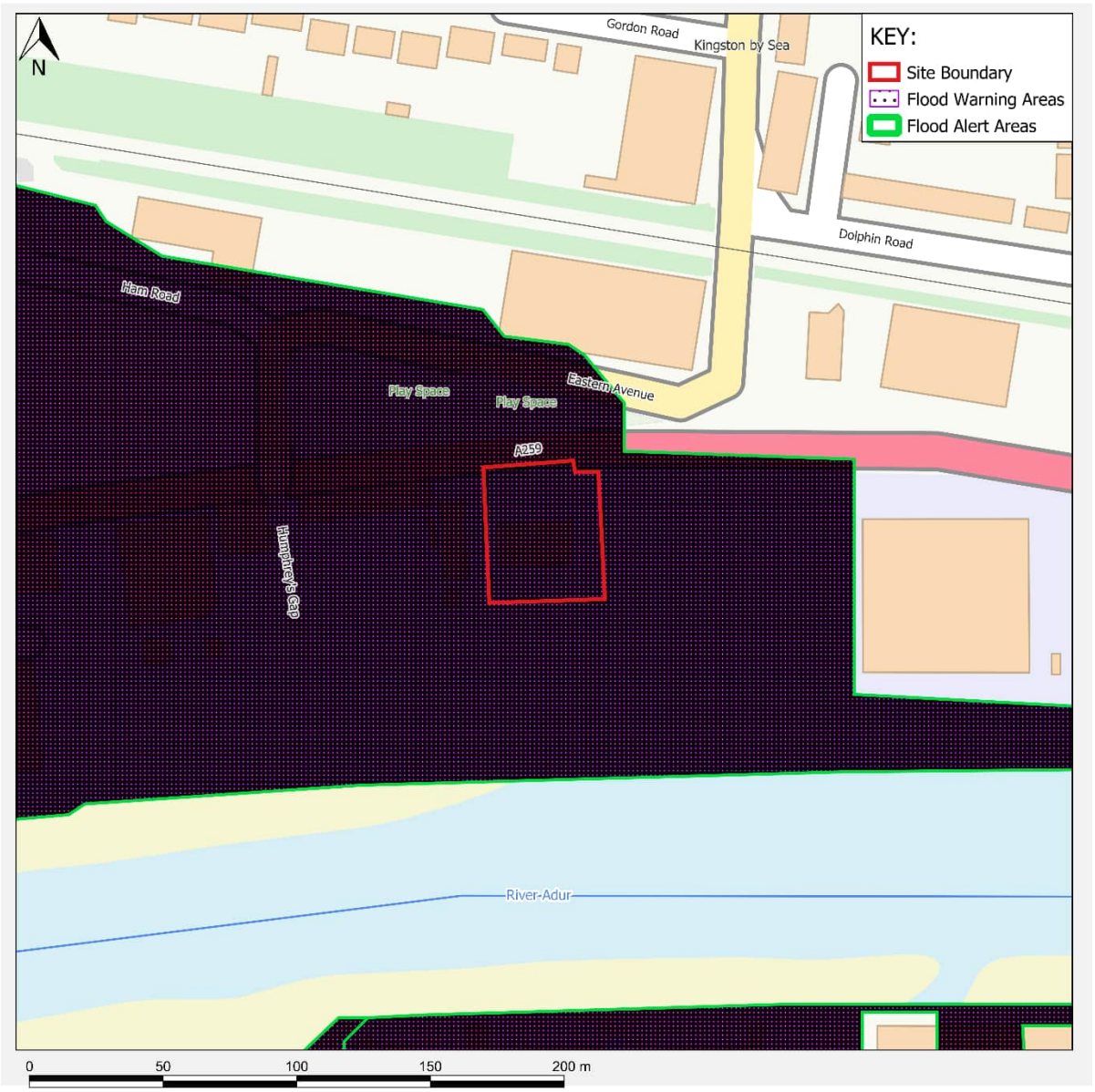


Figure 11 Flood Warning and Alert Areas

5.2.4. The Shoreham Harbour Flood Risk Management Guide Supplementary Planning Document (SPD) mandates the implementation of new flood defences to safeguard the development throughout its anticipated lifespan. These defences must be designed to withstand predicted flood levels for a 0.5% event in the 2115 climate change epoch, incorporating necessary freeboard allowances. Nearby sites, the Frost site (AWDM/1473/21) and Free Wharf (AWDM/1497/17), have established flood defences at a height of 5.6m AOD to protect properties from flooding originating from the River Adur.

5.2.5. Therefore, it can be concluded that the Proposed Development is susceptible to flooding from rivers and the sea. Based on the web-based EA Flood Map for Planning, the level of flood risk from rivers and the sea is considered to be **medium to high**.

5.3 ESTIMATED FLUVIAL FLOOD RISK

5.3.1. Detailed flood modelling information for the proposed development was received from the EA through consultation (see Appendix B).

5.3.2. WSP consulted with the EA during August 2024 to procure all available flood risk information to the Proposed Development. Products 4 (detailed flood maps), 5 (reports, including modelling and hydrology) and 6 (model output data) were sought for the Kwik-Fit site. The EA provided the formal response and issued all available datasets (P4, P5, P6 and P7) to WSP. This data is from their Arun to Adur Coastal Tuflow Model completed in 2012 and updated Adur Tidal Wall Scheme Modelling in 2018. EA data is given under the caveat that the models may not include the latest flood risk climate change allowances, and we have to consider this data and factor new allowances to demonstrate that the development will be safe from flooding for their lifetime.

5.3.3. The flood risk analysis from the EA response and available datasets are discussed in detail within the subsequent sections, under the respective flooding mechanisms.

FLOOD LEVEL REVIEW (EA P4, 2024)

5.3.4. The EA Product 4 contained details of different scenarios modelled and included the following:

- Outline maps showing the area at risk from flooding in different modelled scenarios
- Map(s) showing the modelled water levels for two return periods and flood extents across two future epochs
- Table(s) of sample points with water levels for two return periods across two future epochs

5.3.5. The EA data provided included 7 modelling node locations (Figure 12) that lie within the site boundary and provides the 0.5% modelled flood level for the tidal defended and undefended scenarios, as shown in the Table 2 and Table 3 below. A conservative approach has been considered by selecting the water level of **5.39m AOD** at Node 7 for 0.5% (2115 epoch) event for the undefended scenario. This water level has been considered as the probable flood level at the proposed development as per the latest available EA modelling data.

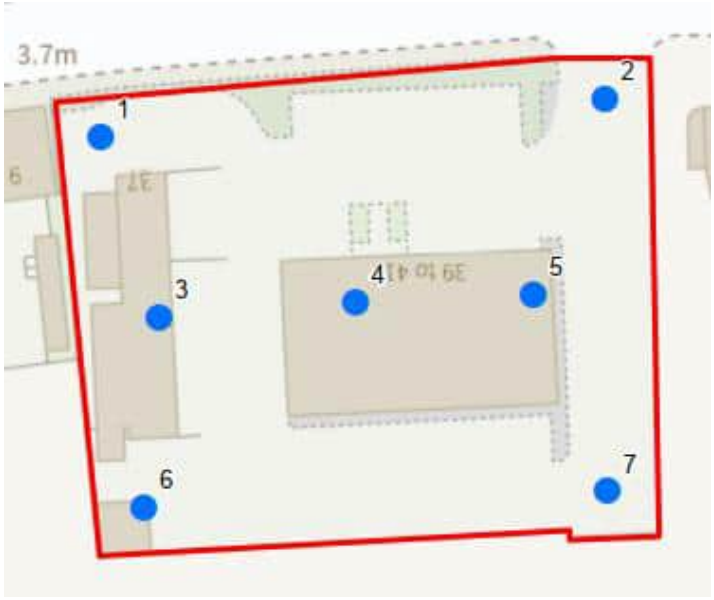


Figure 12 Node Locations

Table 2 Water Levels at Node locations for Undefended Scenario (Table extract from EA P4, 2024)

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	522178	105131	-	-	5.39	-
2	522230	105134	-	4.79	5.39	4.48
3	522184	105112	-	4.79	5.39	-
4	522205	105114	-	4.79	5.39	4.48
5	522223	105114	-	4.79	5.39	4.48
6	522182	105092	-	4.79	5.39	4.48
7	522231	105094	4.24	4.79	5.39	4.48

Table 3 Water Levels at Node locations for Defended Scenario (Table extract from EA P4, 2024)

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2067)	0.5% (2117)
1	522178	105131	4.26	4.57	4.93
2	522230	105134	-	4.57	4.93
3	522184	105112	-	-	4.93
4	522205	105114	-	4.57	4.93
5	522223	105114	-	4.57	4.93
6	522182	105092	-	-	4.94
7	522231	105094	4.30	4.57	4.94

FLOOD LEVEL REVIEW (EA P6, 2024)

5.3.6. The EA P6 model outputs (2024) included modelled flood outlines for a range of return periods:

- 20% annual probability (5yr);

- 5% annual probability (20yr);
- 1.33% annual probability (75yr);
- 0.5% annual probability (200yr);
- 0.1% annual probability (1000yr).

5.3.7. The EA P4 grid data contained water levels and depth data at the proposed scheme and its vicinity. Figure 13 shows the Flood Extents and Water Levels for 0.5% Defended and Undefended Scenarios. The maximum water level of 0.5% event inside the Red Line Boundary (RLB) for both defended and undefended scenarios is **4.24m AOD**. Figure 14 shows the Flood Extents and Water Levels for 0.5% Defended and Undefended Scenarios for the 2115 climate change epoch. The maximum water level of the 0.5% (2115) inside the Red Line Boundary (RLB) for defended and undefended scenarios are **5.1m AOD** and **5.39m AOD** respectively.

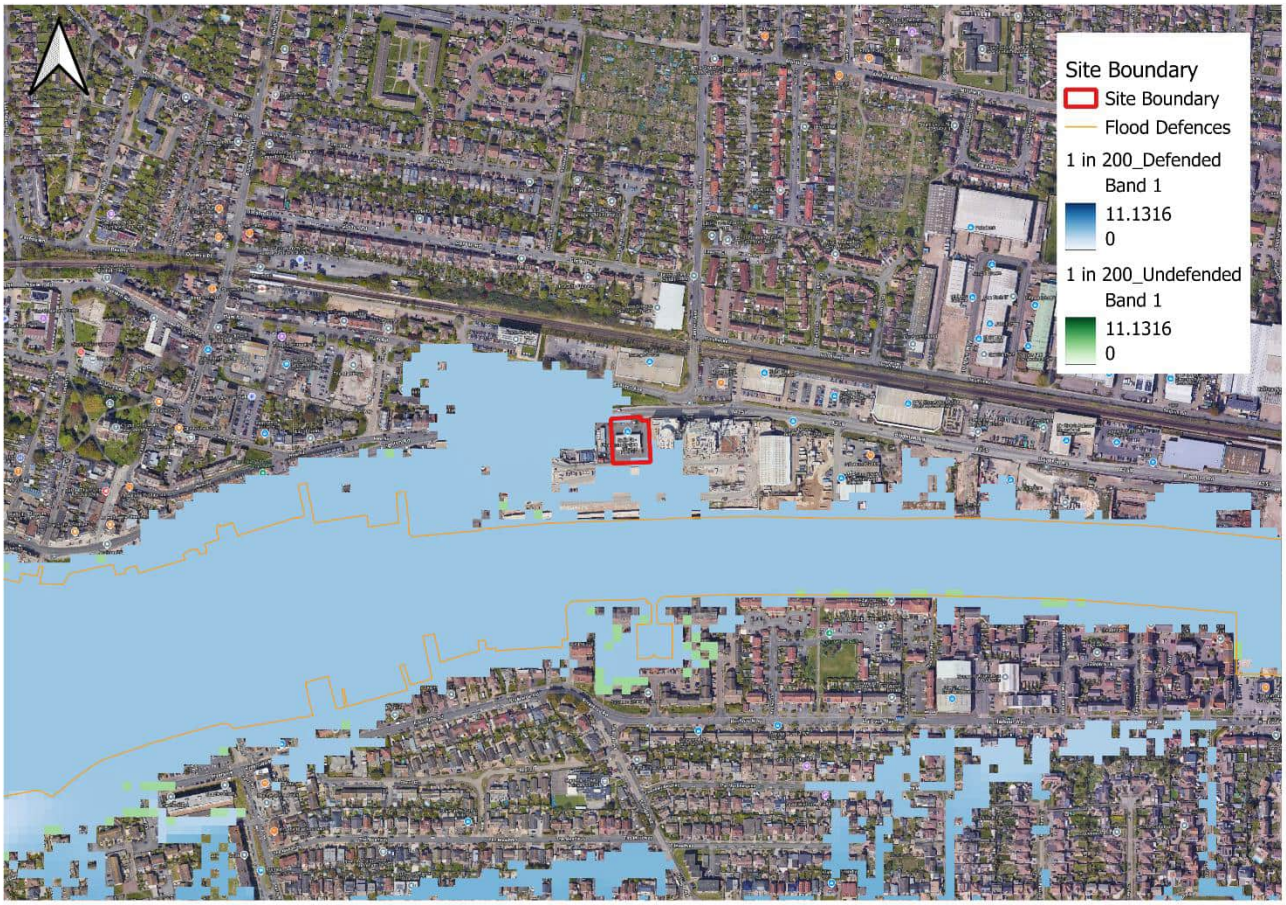


Figure 13 Flood Extents and Water Levels for 0.5% Defended and Undefended Scenarios

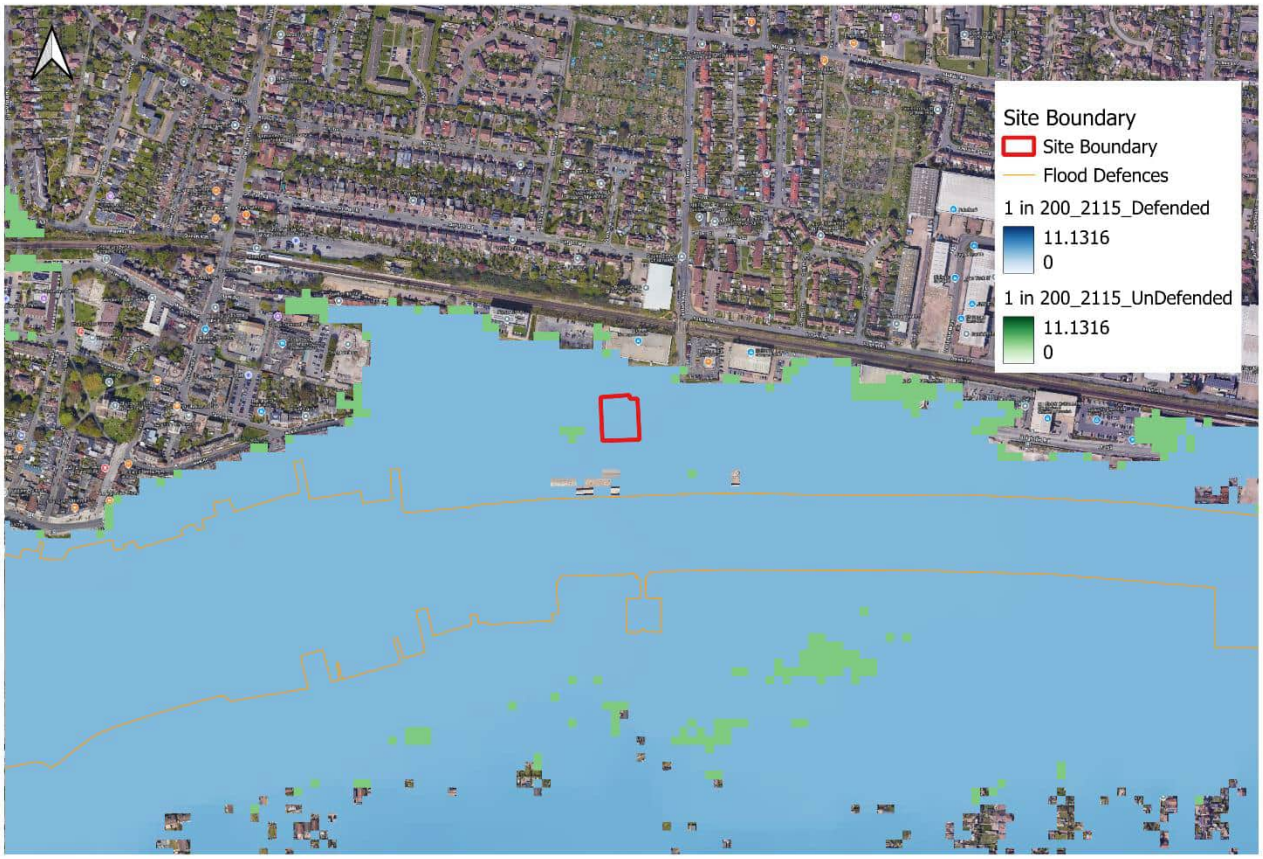


Figure 14 Flood Extents and Water Levels for 0.5% Defended and Undefended Scenarios for 2115

5.3.8. Table 4 shows the comparison of water levels from EA P4 and P6 datasets. The higher of the available water levels has been considered since it is a conservative approach to inform the design of the proposed development.

Table 4 Maximum water levels (m AOD) from EA P4 and P6 datasets

Return Period	EA P4	EA P6
0.5% (defended)	**4.30**	4.24
0.5% (undefended)	4.24	4.24
0.5% 2115 CC (defended)	4.93	5.10
0.5% 2115 CC (undefended)	**5.39**	**5.39**

5.3.9. The design event for the proposed development is the 0.5% probable flood level plus climate change allowance. However, this data was provided by the Environment Agency with the note that the climate change scenarios used for modelling are not based on the latest climate change guidance. The latest climate change guidance and allowances for the proposed development are discussed in next section.

IMPACT OF CLIMATE CHANGE

5.3.10. In considering flood risk to the site, it is necessary to fully consider the potential impacts of latest climate change allowances for the lifetime of the development.

5.3.11. In February 2016 the EA released guidance on the application of climate change allowances in flood risk assessments and it was updated in December 2019 to reflect up to date information on climate change allowances from the latest climate change projects.

5.3.12. Table 1[23] in the guidance provides a range of allowances for areas of the coastline and various epoch for sea level rise.

5.3.13. The sea level allowances table provides a range of allowances based on percentile (i.e. the degree of certainty of an event occurring, based on the range of climate change scenarios assessed through scientific investigations). The provided allowances are also subject to the river basin district of the site.

5.3.14. The conditions at the site and consequent sea level allowances to be considered as part of the FRA are as detailed in Table 5. The total sea level rise for each epoch is in brackets.

5.3.15. The site of interest lies in the south east area, for which the "upper end" climate change allowance is a 1.6m cumulative increase to the year 2125.

5.3.16. A pre-application consultation with the EA in November 2024 was held, in which the EA advised that the lifetime of the development should be assumed to be 60 years, and therefore the 2115 CC epoch should be used. The EA also advised that the Undefended water levels may be considered for calculation of design flood levels.

5.3.17. The Environment Agency's latest modelled 0.5% probability design flood level excluding climate change is 4.24m AOD (Tidal Undefended, EA P4).

5.3.18. Using the latest climate change allowances for the "upper end" scenario (an additional 1.6 m cumulative rise in sea level to 2125), we estimate a design flood level of **5.84m** AOD.

Table 5 Sea Level Allowances

Area of England	Allowance	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (metres)
South east	Higher central	5.7 (200)	8.7 (261)	11.6 (348)	13.1 (393)	1.20
South east	Upper end	6.9 (242)	11.3 (339)	15.8 (474)	18.2 (546)	1.60

SHOREHAM HARBOUR JOINT AREA ACTION PLAN

5.3.19. As per Shoreham Harbour Joint Area Action Plan October 2019,

- Residential development proposals must protect against a breach scenario through the application of an appropriate finished floor level of **5.77m AOD**.
- Non-residential development proposals must be designed to be safe for the proposed lifetime of the development, assumed to be at least a 60 year period from the date of receiving planning permission, unless otherwise agreed with the Local Planning Authority.

[23] Flood risk assessments: climate change allowances - GOV.UK

SUMMARY

5.3.20. As a conservative approach, the minimum finished floor level for residential unit is considered as 5.84m AOD. The minimum finished floor level for commercial unit is considered as 5.39m AOD, which equates to a 0.5% probable flood level (2115 epoch) which is a conservative estimate since commercial units have a 60 year design life. These floor levels were established in agreement with the Pre application meeting with EA on November 25, 2024 (See Appendix F).

5.4 FLOOD RISK FROM SURFACE WATER

5.4.1. The EA's flood map for planning from surface water (shown in Figure 15) identifies the risk of surface water flooding to the Proposed Development. Table 6 gives the definition of the surface water flood risk bands. Figure 15 indicates that the some of the areas surrounding the Proposed Development is at low, medium and high risk of surface water flooding with reducing extents from low to high risk. The mapping indicates that Brighton Road to the north west of the Proposed Development is also at **low to medium** risk of surface water flooding.

Table 6 Surface water flood risk probability bands

Probability band	Annual Exceedance Probability
Low risk	1% - 0.1% surface water flooding
Medium risk	3.3-1% surface water flooding
High risk	>3.3% surface water flooding

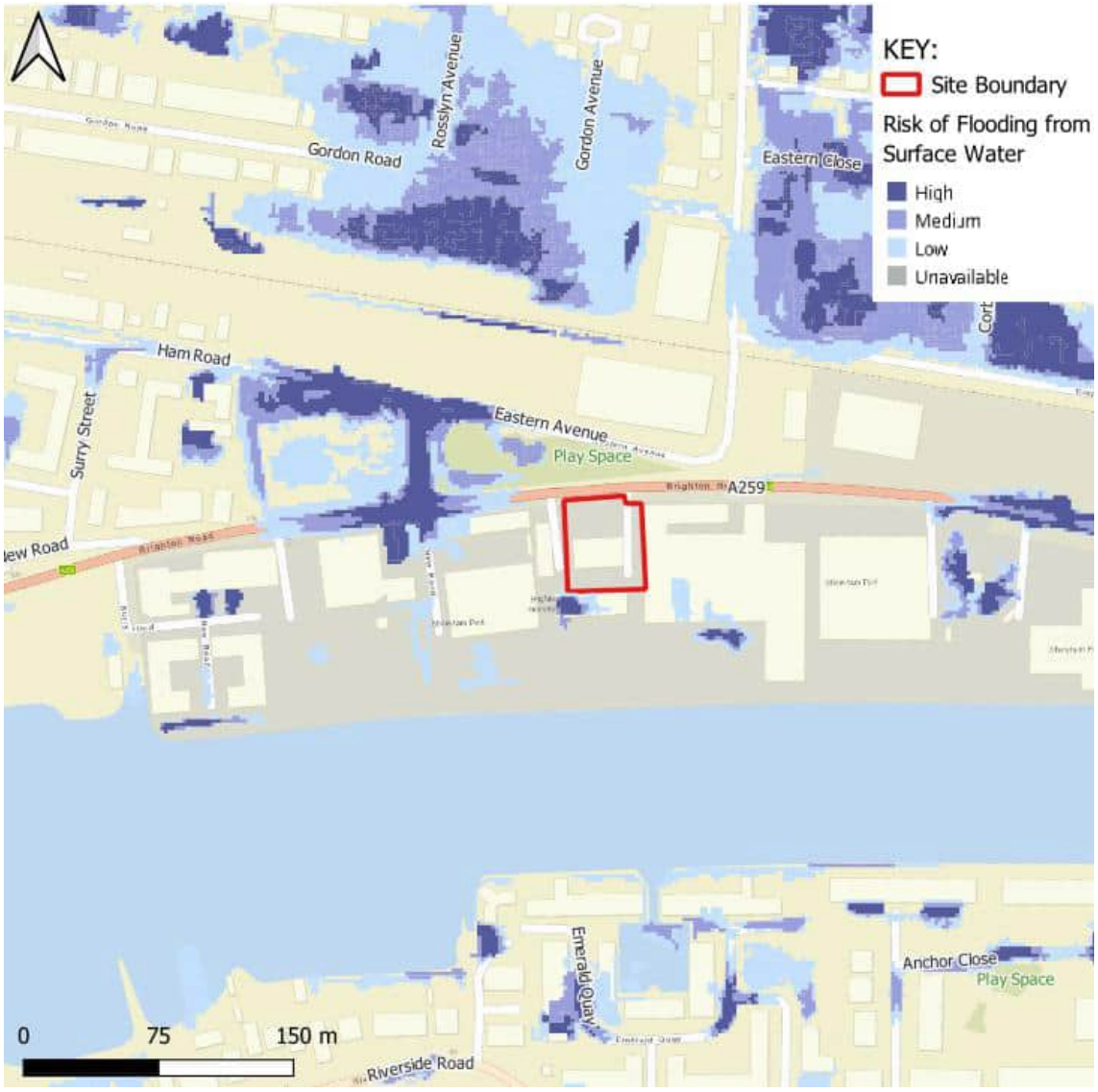


Figure 15 EA Surface Water Flood Extents

5.4.2. The Proposed Development is at **very low** probability of surface water flooding.

5.5 FLOOD RISK FROM GROUNDWATER

5.5.1. According to the EA[24], Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from dormant springs. This tends to occur after long periods of sustained high rainfall. Higher rainfall means that more water will infiltrate into the ground and cause the water table to rise above normal levels.

[24] Groundwater flooding - GOV.UK (www.gov.uk)

PUBLISHED GEOLOGY

5.5.2. Based on the British Geological Survey (BGS) online mapping[25], the bedrock geology of the development comprises mainly of Tarrant Chalk Member – Chalk. This is sedimentary bedrock formed between 83.6 and 72.1 million years ago during the Cretaceous period. The Proposed Development site have of Beach and Tidal flat superficial deposits – Clay, Silt, Sand and Gravel. This is a sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period. See Figure 16 for a visual representation of the site geology.

Figure 16 British Geological Survey (BGS) Map[26]

[25] https://geologyviewer.bgs.ac.uk/?_ga=2.188776747.1667746492.1657784302-2125561074.1657784302

[26] BGS Geology Viewer (BETA)

5.5.3. The Soilscapes dataset[27] at 1:250,000 scale shows that the Proposed Development has Loamy and clayey soils of coastal flats with naturally high groundwater.

5.5.4. During the information gathering for this FRA, no records of the groundwater flooding on site and in the surrounding area were identified. The site lies outside of groundwater source protection zone[28]. SFRA[29] groundwater mapping (Figure 17) shows that in surrounding area groundwater levels are between 0.5m and 5 m below the ground surface.

5.5.5. Based on EA long term flood risk assessment[30], groundwater is unlikely at proposed development. Based on the information available, the overall flood risk from groundwater flooding is considered to be **low.**

[27] LandIS - Land Information System - Soilscapes soil types viewer (Accessed on 20 August 2024)

[28] Magic Map Application

[29] Adur and Worthing SFRA - Appendix J - Groundwater

[30] Select an address - Check your long term flood risk - GOV.UK

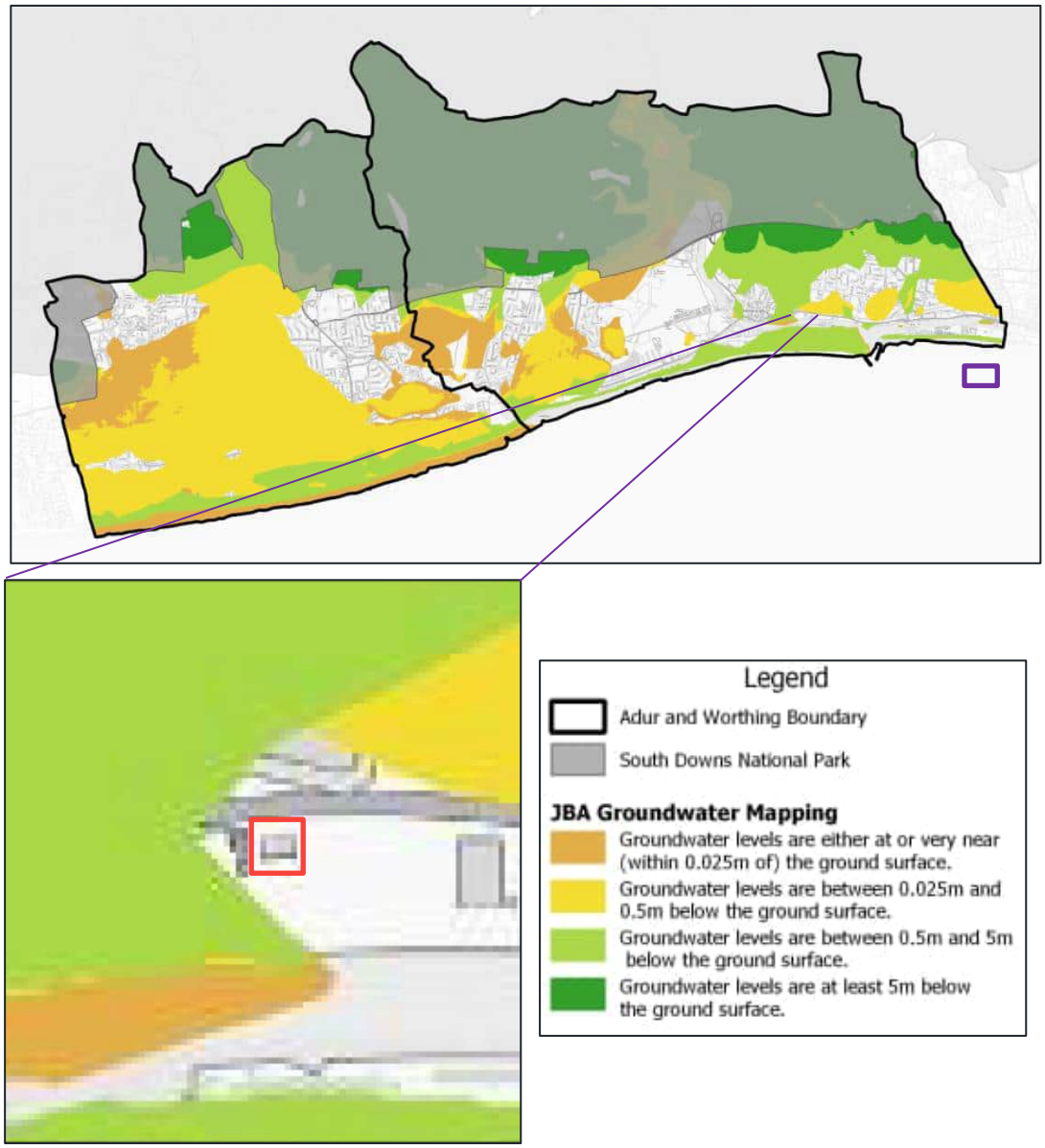


Figure 17 SFRA Groundwater Mapping

5.6 FLOOD RISK FROM SEWERS

5.6.1. During the information gathering for this FRA, no records of the sewer flooding on site and in the surrounding area were identified. Therefore, based on the information available, the overall flood risk from sewers is considered to be **low.**

5.7 FLOOD RISK FROM ARTIFICIAL SOURCES

FLOOD RISK FROM RESERVOIRS

5.7.1. There are no reservoirs within close proximity to the Proposed Development site. Figure 18 provides an extract of the EA Flooding from Reservoirs map. It shows that the Proposed Development is identified as not being susceptible to flooding from reservoirs. Based on EA long term flood risk assessment[31], flooding from reservoirs is unlikely in this area. Therefore, based on the information available, the overall flood risk from reservoirs is considered to be **low**.

[31] Select an address - Check your long term flood risk - GOV.UK

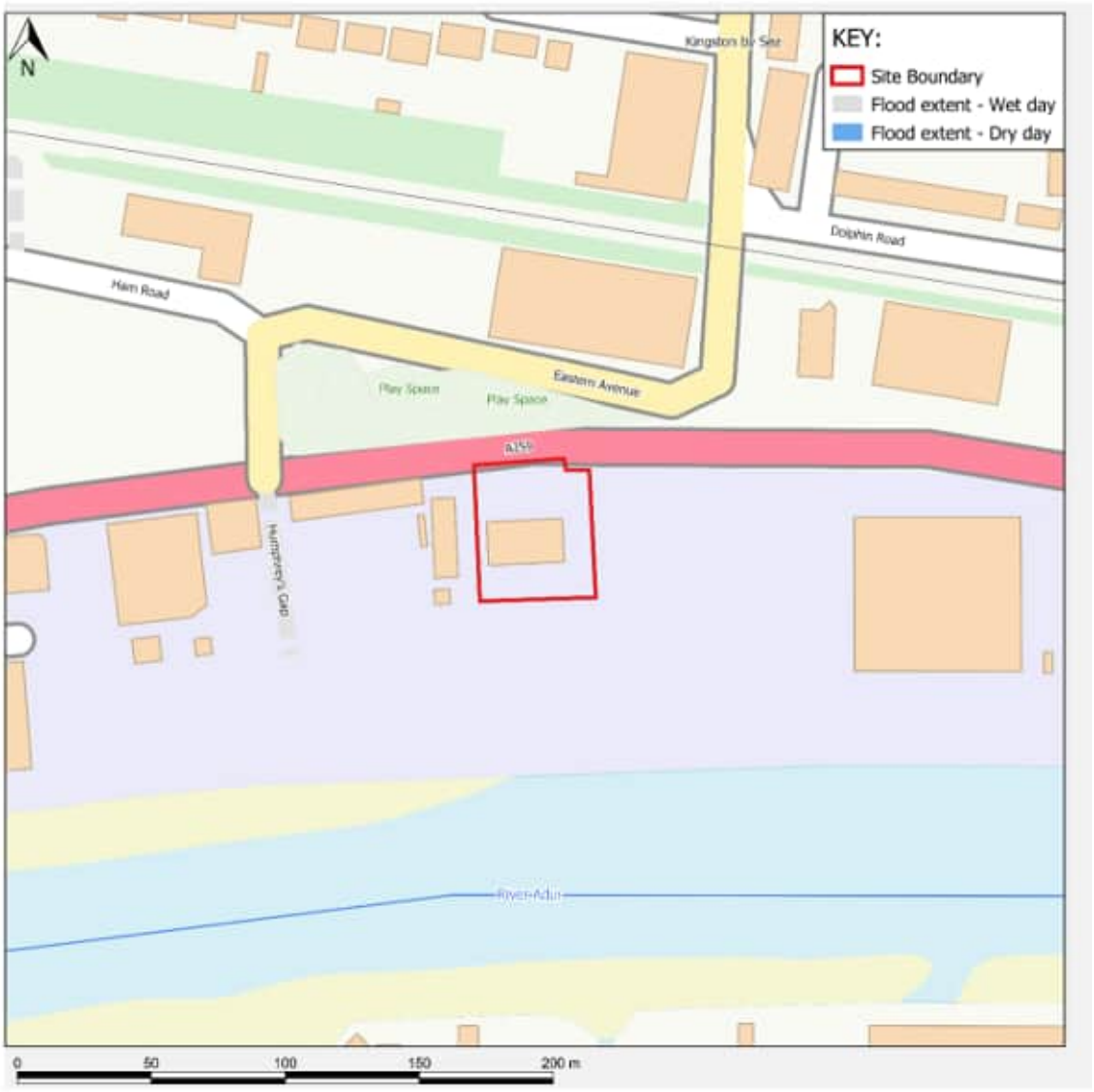


Figure 18 Flooding from Reservoirs Map

RESIDUAL FLOOD RISK

5.7.2. Residual flood risk shall be considered to include flood from flood defences being breached, blockage of sewer network, reservoir failure, and flood events that exceed design standard. The Shoreham Harbour Joint Area Action Plan (JAAP) includes proposals for new/upgraded flood defences in the area (as shown in Figure 8). Hence there will be flood defences present in the vicinity of the Proposed Development (Refer Figure 19). Therefore, the risk caused by failure of defences is relevant.

5.7.3. No defence breach modelling outputs were available when the data request was made, however the undefended depths reported in Section 5.3 can be used as an indication of depths which would be expected on site. The defences are classified as having a 0.5% standard of protection and it is assumed that the defences are regularly inspected and maintained and will continue to be. Hence,

the residual flood risk for the proposed development is deemed to be **high** since breach of defences are a probable flood risk to the proposed development.

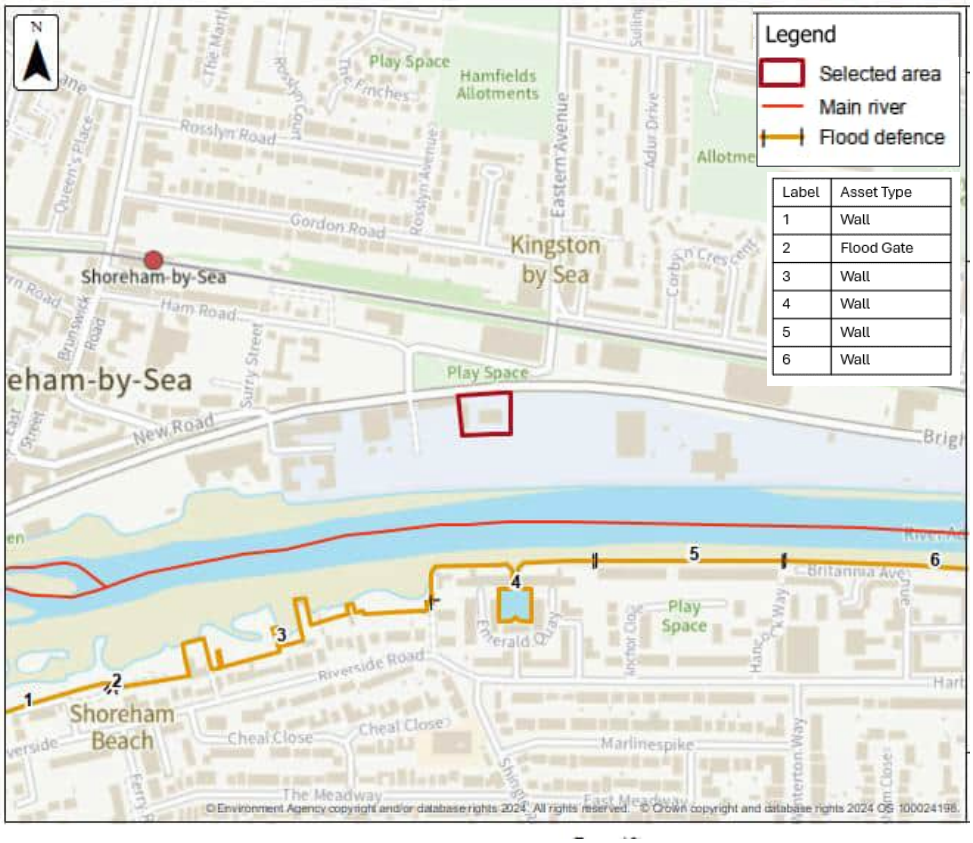


Figure 19 Flood Defence Data

6 FLOOD RISK MITIGATION

6.1.1. The site falls in Flood Zone 2 and 3. The risk of flooding is associated the River Adur, which is tidally influenced. NPPF paragraph 49 states that “The loss of floodplain storage is less likely to be a concern in areas benefitting from appropriate flood risk management infrastructure or where the source of flood risk is solely tidal.” During the pre-application consultation with the EA in November 2024, EA confirmed that flood compensation will not be needed for the proposed development as the it is under tidal flood risk. Hence flood compensation plan is not required for the proposed development.

6.1.2. Hard defences are set at 5.6m AOD at the adjacent Free Wharf site and is above the required design levels set out in the Shoreham Harbour Flood Risk Management Guide Supplementary Planning Document.

6.2 FINISHED FLOOR LEVELS

COMMERCIAL DEVELOPMENT

6.2.1. The Environment Agency’s latest modelled 0.5 % (2115 epoch) design flood level for the undefended scenario is **5.39m** AOD. The properties will be protected against flooding from the River Adur by the **5.6m AOD** hard defences along the river front.

6.2.2. The proposed commercial finished floor levels to **4.40m AOD**. Flood resilience and resistance measures will be incorporated into the structure of the building and the commercial development to mitigate the residual risk of floodwaters entering the site.

RESIDENTIAL DEVELOPMENT

6.2.3. It is proposed for the finished floor levels for the ‘more vulnerable’ classified residential properties to be set at **8.0m AOD.** The Environment Agency’s latest modelled 0.5% design flood level for the defended condition excluding climate change is 4.3m AOD. Using the latest climate change allowances for the “upper end” scenario (an additional 1.6m cumulative rise in sea level to 2125), the estimated design flood level of **5.84m AOD**. The finished floor levels allow **2.16m** freeboard above this more conservative design flood level. This represents a conservative approach to managing flood risk for the more vulnerable residential development, considering the latest climate change allowances.

6.3 FLOOD RESISTANT AND RESILIENT MEASURES

6.3.1. To address the residual flood risk to the ground floor levels of commercial properties and parking areas, flood-resistant and resilient measures will be integrated into the building's construction, following guidelines from the DEFRA/EA document "Improving the Flood Performance of New Buildings – Flood Resilient Construction." These measures aim to prevent floodwater from entering the building by implementing barriers and low permeability materials in walls and floors.

6.3.2. It is accepted that in extreme events, water may enter parts of the development. It is important that the building is able to be made usable again after flood water has receded. This can be achieved by using materials which retain their structural integrity and are quick drying and easily cleaned. Vulnerable infrastructure, such as electricity are placed at a suitable freeboard above the predicted flood level.

6.3.3. In the design flood event, the undefended 0.5% AEP 2115 Climate Change scenario, estimated water levels at the site are 5.39mAOD, which would result in an approximate flood depth of 0.99m on the ground floor which has a proposed use of commercial (retail) and car parking, with proposed Finished Floor Levels (FFL) at 4.40mAOD.

6.3.4. It should be noted that the risk of tidal flooding in this scenario is a residual risk as the site benefits from defences which offer a 0.5% AEP / 1 in 200 year Standard of Protection (SoP). In addition, this is an outline application and the following level of detail is assumed to be sufficient at this stage.

6.3.5. As mitigation it is proposed to incorporate flood resilience measures into the development up to 600mm above the design flood level, in accordance with the Defra guidance document, “Improving the Flood Performance of New Buildings-Flood Resilient Construction (2007)”. These will include flood resilient construction materials, typical examples of which are listed below:

1. Quick drying materials, which retain integrity such as standard cavity masonry wall construction (brick-concrete block-gypsum plasterboard);
2. uPVC skirtings;
3. Easy to clean “wipe-down” materials;
4. Non-return valves if and where appropriate;
5. External wall construction free of wood-based or gypsum based materials and water resistant insulation;

6.3.6. Electrical infrastructure including wiring, plug sockets and light switches should be placed 600mm above the design flood level (5.99mAOD) and wiring should be routed downwards to sockets and switches, not upwards.

6.3.7. To mitigate the risk posed by cars potentially floating in the car park, temporary flood barriers will be deployed and set above the predicted flood level of 5.39mAOD.

6.3.8. The above resilience measures are indicative examples and further design information will be provided at the detailed design stage. It is not proposed to carry out a structural assessment / survey to determine if measures in excess of 600mm in height could be installed due to the presence of defences. The acceptability of these indicative examples was agreed with EA in August 2025, as shown in Appendix H.

6.4 SAFE ACCESS AND EGRESS

6.4.1. It is essential to incorporate safe access and egress arrangements as part of the flood mitigation strategy to ensure the safety of users and occupants during flooding events. The safety of pedestrian routes has been evaluated based on guidance from the Environment Agency's document, "Supplementary Note on Flood Hazard Ratings and Thresholds for Development Planning and Control." The finished floor levels of residential units provide a safe refuge for residents during floods, with advance warnings available due to predictable high tides and storm surges. The EA’s Floodline Warnings Direct Service will notify site users of potential flood risks, allowing them time to prepare. The EA stated in the consultation that a coastal flood alert or warning would usually be 9 hours in advance of peak tide. Alerts or warnings may sometimes be issued with more notice. This was confirmed by an email on 16th January 2025 (See Appendix G).

6.4.2. A flood evacuation plan is recommended before first use to provide information to future users on the procedures to follow in the case of a flood event.

6.5 GROUNDWATER MITIGATION

6.5.1. It is noted the groundwater levels are at low risk. Further, the site is tarmacked throughout. Groundwater mitigation is less critical in areas with hardstanding surfaces, as these surfaces significantly reduce the risk of groundwater flooding, with limited opportunity for groundwater egress.

6.6 SURFACE WATER DRAINAGE STRATEGY

6.6.1. The EA's risk of flooding from surface water mapping the Proposed Development is at very low probability of surface water flooding. However, the mapping indicates that Brighton Road to the northwest of the Proposed Development is at risk of surface water flooding.

6.6.2. A Drainage Strategy has been developed for the development by WSP and will be issued seperately.

7 CONCLUSIONS

7.1.1. WSP UK Limited (WSP) has been commissioned by Blenheim Estates to undertake a Flood Risk Assessment (FRA) to support an outline planning application for the redevelopment of 37-41 Brighton Road, Shoreham-by-Sea, which will include up to 49 apartments and approximately 58 m² of retail space. The proposed development, which is residential-led and mixed-use, is situated south of Brighton Road and to the north and west of the Free Wharf Development and covers an area of approximately 0.215 hectares (ha).

7.1.2. The proposed development site lies within the Adur District Council local plan allocation under Policy 8 and CA7. The 'Sequential and Exception Test for the Proposed Submission Adur Local Plan 2014' by Adur District Council sets out the Sequential and Exception test for the allocation in the local plan. The report concludes that the Shoreham Harbour area where the proposed development is located within passes the sequential test. The development complies with the National Planning Policy Framework (NPPF) and local planning policy with respect to flood risk and is an appropriate development at this location.

7.1.3. The proposed development is in Flood Zone 2 and 3. The risk of flooding is associated the River Adur, which is tidally influenced. The FRA assesses all sources of flooding, those being fluvial, tidal, surface water, groundwater, sewer, and artificial sources. During the pre-application consultation with the EA in November 2024, EA confirmed that flood compensation will not be needed for the proposed development as it is under tidal flood risk.

7.1.4. The Environment Agency's latest modelled 0.5% design flood level excluding climate change is 4.24m AOD. Using the latest climate change allowances for the "upper end" scenario (an additional 1.6 m cumulative rise in sea level to 2125), we estimate a design flood level of 5.84m AOD for residential use as agreed with EA during the pre-application meeting on 25 November 2024. The residential finished floor levels are set at a minimum of 8.0m AOD, 2.16m above 0.5% design flood level plus latest allowance for climate change level.

7.1.5. The Environment Agency's latest modelled 0.5 % (2115 epoch) design flood level for the undefended scenario is 5.39m AOD. The proposed commercial finished floor levels to 4.40m AOD. Therefore, it is proposed to include flood resilience measures into the structure of the building and the commercial development to mitigate the residual risk of floodwater entering the site. Indicative examples of resilience measures have been outlined in Section 6.3, which have been agreed with the EA as acceptable to overcome their previous objection. This FRA recommends that safe access and egress from the site to be addressed and managed with an emergency evacuation plan.

7.1.6. The EA 'Flood Risk from Reservoirs' map shows the proposed development does not fall within the maximum extent area at risk of flooding from reservoirs, neither when river levels are normal nor when there is also flooding from rivers. The proposed development is also not at flood risk from sewers, therefore the likelihood of flooding from artificial sources for the proposed development is considered to be low.

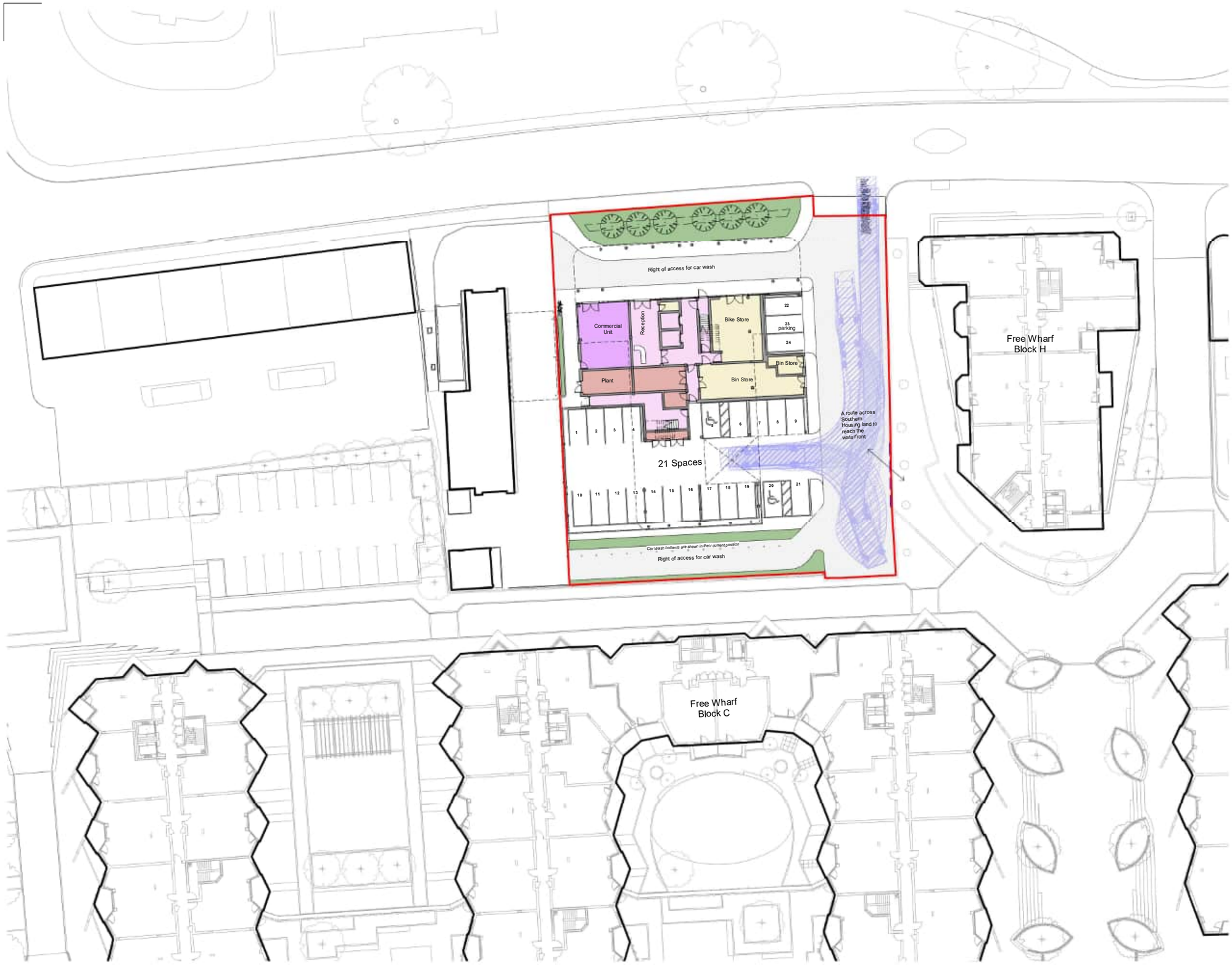
7.1.7. Based on the information available, the overall flood risk from groundwater flooding is considered to be low. Further, the site is tarmacked throughout. Groundwater mitigation is less critical in areas with hardstanding surfaces, as these surfaces significantly reduce the risk of groundwater flooding, with limited opportunity for groundwater egress.

7.1.8. The proposed development is at very low probability of surface water flooding, based on the EA's flood map for planning from surface. The surface water flood risk within the proposed development area is entirely managed by on-site drainage features and the same is detailed within the Drainage Strategy, which will be issued separately).

7.1.9. In conclusion, no residential accommodation is proposed at the ground floor level. The Environment Agency advised to use the 0.5 % (2115 epoch) flood level for the undefended scenario for the commercial development which is 5.39m AOD. The properties will be protected against flooding from the River Adur by the 5.6m AOD hard defences along the river front. The proposed commercial finished floor levels are to 4.40m AOD. Therefore, flood resilience and resistance measures will be incorporated into the structure of the building and the commercial development to mitigate the residual risk of floodwaters entering the site.

Appendix A

PROPOSED DEVELOPMENT



1 **Proposed Site Plan**

1 : 500

5 0 5 10 15 20 25

SCALE 1:500 m

N

Note:

1. The site plan within the site boundary is based on survey drawings completed in March 2024.
2. The Free Wharf plan is indicative only, relying on the latest publicly available drawings.
3. Structural, M&E and Landscape elements are only illustrative at this stage and will be developed by the relevant consultants at a later stage.

Rev	Status	Date	Check	Description
P05	S0	28.04.25	NC	Ground Floor layout amended, parking numbers increased, the main core mirrored.
P04	S0	12.12.24	NC	Undercroft extended
P03	S0	25.09.24	NC	Landscape strip and bin stores amended
P02	S0	10.09.24	NC	General Amendments
P01	S0	29.08.24	NC	First Issue

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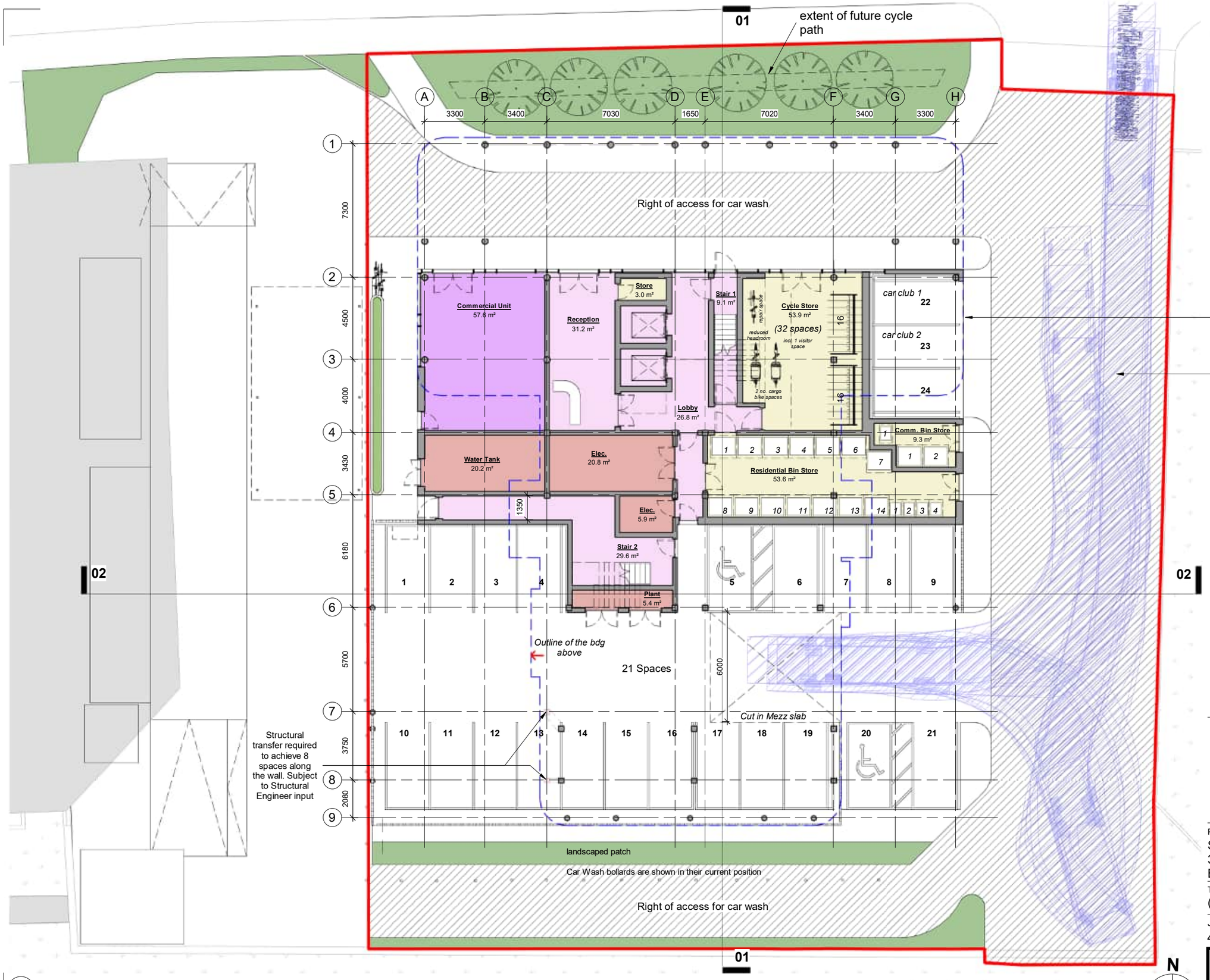
London Cardiff Munich

Project
Shoreham-by-Sea
37-41 Brighton Road
Blenheim Estates

Title
Proposed Site Plan

Job No	Scale at A3	Classification	Status Revision
4713	As indicated	PM_40_40_34	S0 P05

Project - Originator - Functional Breakdown - Spatial Breakdown - Form - Discipline - Number
KFSH-HMA-ZZ-ZZ-D-A-00003



1 **+4.40 (00) - Ground Floor**

1 : 200

Note:

1. The site plan within the site boundary is based on survey drawings completed in March 2024.
2. The Free Wharf plan is indicative only, relying on the latest publicly available drawings.
3. Structural, M&E and Landscape elements are only illustrative at this stage and will be developed by the relevant consultants at a later stage.

- BOH
- Circulation
- Commercial
- M+E

Outline of Building Above (Upper Ground - Level 4)

Vehicle Tracking provided by WSP

Rev	Status	Date	Check	Description
P06	S0	28.04.25	NC	Ground Floor layout amended, parking numbers increased, the main core mirrored.
P05	S0	12.12.24	NC	Undercroft extended
P04	S0	06.12.24	NC	Surrounding building heights added
P03	S0	25.09.24	NC	Landscape strip and bin stores amended
P02	S0	10.09.24	NC	General Amendments
P01	S0	29.08.24	NC	First Issue

SCALE 1:200 (2 0 2 4 6 8 10 m)

N

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37-41 Brighton Road
Blenheim Estates

Title
(+4.40) Ground Floor Plan

Job No	Scale at A3	Classification	Status	Revision
4713	As indicated	PM_40_40_34	S0	P06

Project - Originator - Functional Breakdown - Spatial Breakdown - Form - Discipline - Number

KFSH-HMA-ZZ-00-D-A-00004

Floor Plans

Upper ground Floor Plan

his level includes the reversing space for service vehicles, requiring double-height headroom.

There are five apartments at this level, including two 1-bed wheelchair-accessible units in the northern part of the building.

Each unit has access to a private terrace. Two green roof zones enhance biodiversity and visual amenity.

Typical Floor Plan

Flats are arranged around two cores. The main core with two lifts serves 8 flats on the lower levels and 4 flats on the upper levels.

Flats are mirrored for efficiency.

Floors 01-04 are identical, with 6 out of 8 flats being double-aspect.

Typical floor features five 2-bed-4p flats, two 1-bed and one 3-bed-5p flat.

A firefighting shaft includes a firefighting lift, a lobby and a smoke shaft, in compliance with AD Part B.

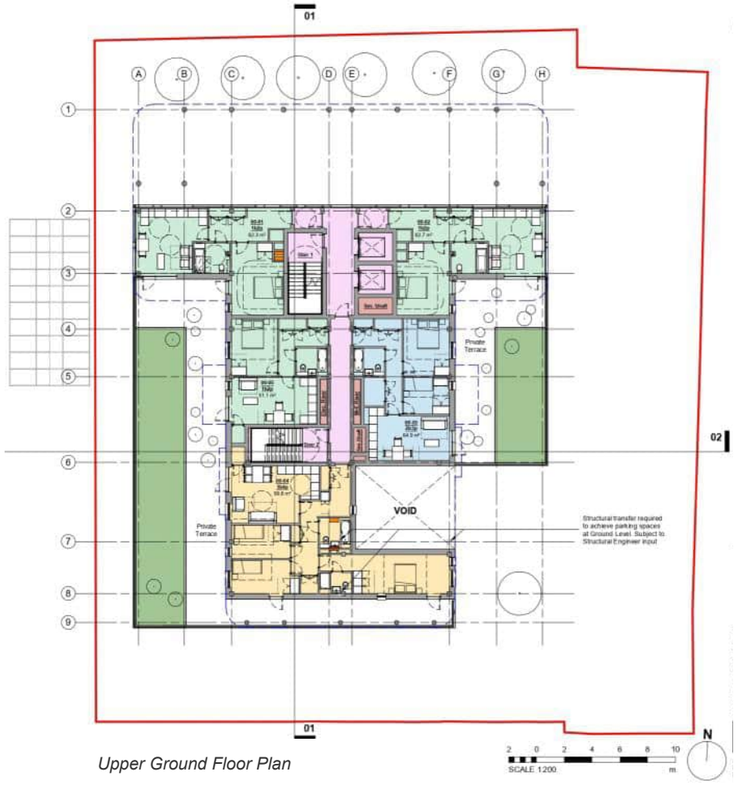
Mechanical and electrical risers are centrally located, with structural and M&E elements to be developed later by consultants.

Fifth Floor Plan

The fifth floor steps back along Brighton Road and the Lane, creating a communal terrace (150 m2) and generous terraces to all four units (three 2-bed and one 1-bed).

Sixth and Seventh Floor Plan

These levels are similar to the 5th with terraces replaced by private corner balconies that further lighten the architectural volume.



Upper Ground Floor Plan

Typical Floor Plan (First to Fourth)

Fifth Floor Plan

Sixth and Seventhes Floors Plan

Appendix B

ENVIRONMENT AGENCY CONSULTATION DATA

Flood risk assessment data

Location of site: Kwik Fit, 37-41 Brighton Rd, Shoreham-by-Sea, BN43 6RE
Document created on: 28 August 2024
This information was previously known as a product 4.
Customer reference number: SSD373114

Map showing the location that flood risk assessment data has been requested for.

How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- historic flooding
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

Use the long term flood risk service to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

Or you can contact your Lead Local Flood Authority for further information.

Your Lead Local Flood Authority is West Sussex County Council.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Adur Coastal Modelling
Scenario(s): Undefended tidal
Date: 2012

Model name: Adur Tidal Walls Scheme modelling
Scenario(s): Defended tidal
Date: 2018

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

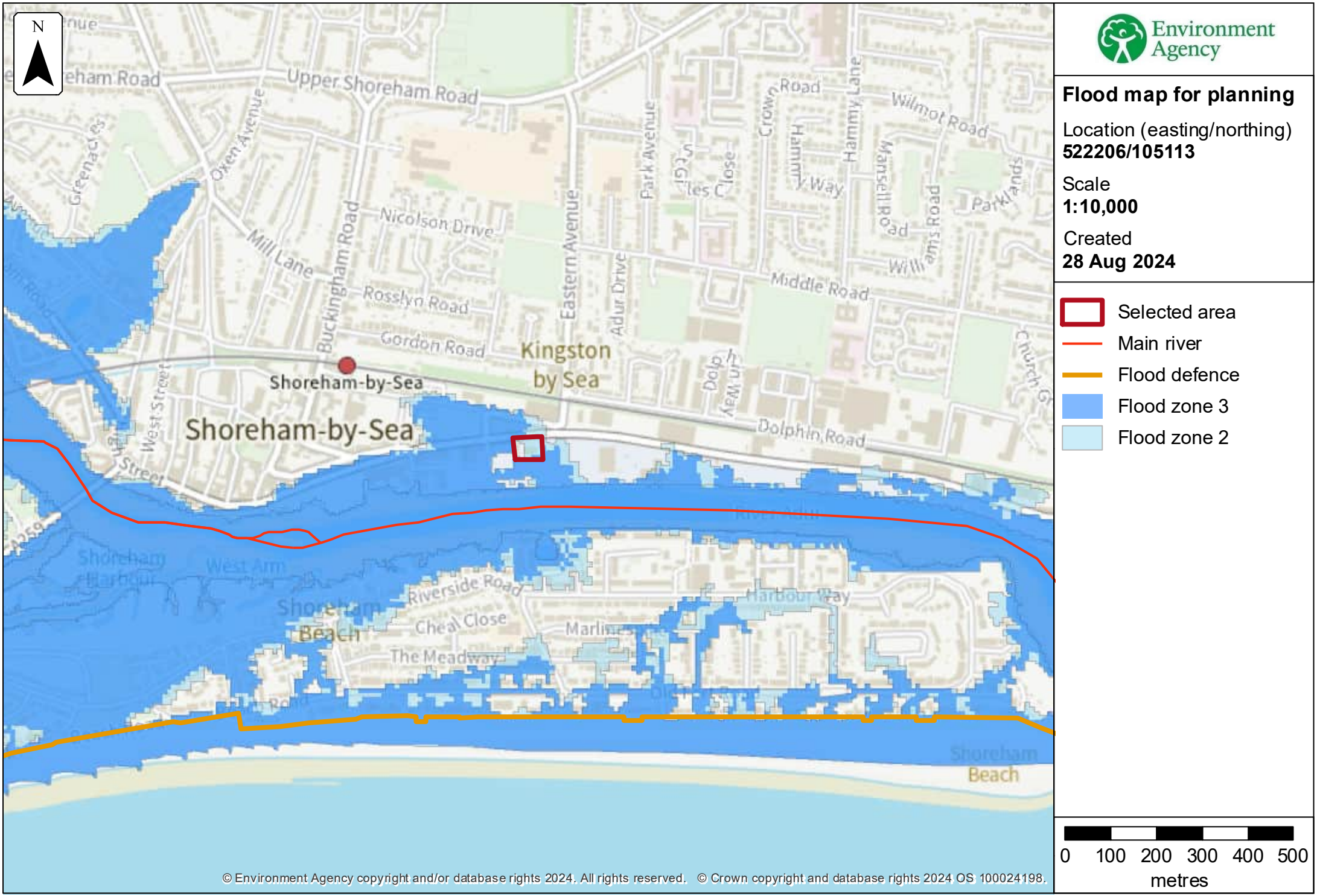
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.


N
Upper Shoreham Road
Oxen Avenue
Greenacres
Mill Lane
Buckingham Road
Nicolson Drive
Rosslyn Road
Gordon Road
Eastern Avenue
Park Avenue
Adur Drive
Crown Road
Hammy Way
Hammy Lane
Wilmot Road
Middle Road
Dolphin Road
Shoreham-by-Sea
Kingston by Sea
West Street
Riverside Road
Harbour Way
Cheal Close
The Meadway
Shoreham Beach
Shoreham Harbour
West Arm
Environment Agency
Flood map for planning
Location (easting/northing)
522206/105113
Scale
1:10,000
Created
28 Aug 2024
Selected area
Main river
Flood defence
Flood zone 3
Flood zone 2
0 100 200 300 400 500
metres
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Historic flooding

This map is an indicative outline of areas that have previously flooded. Remember that:

- our records are incomplete, so the information here is based on the best available data
- it is possible not all properties within this area will have flooded
- other flooding may have occurred that we do not have records for
- flooding can come from a range of different sources - we can only supply flood risk data relating to flooding from rivers or the sea

You can also contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

Your Lead Local Flood Authority is West Sussex County Council.

Download recorded flood outlines in GIS format

Environment Agency

Historic flood map

Location (easting/northing)
522206/105113

Scale
1:10,000

Created
28 Aug 2024

Selected area

Main river

Date of flood event

August, 1992

0 100 200 300 400 500
metres

Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
26 August 1992	26 August 1992	other	overtopping of defences	No

Flood defences and attributes

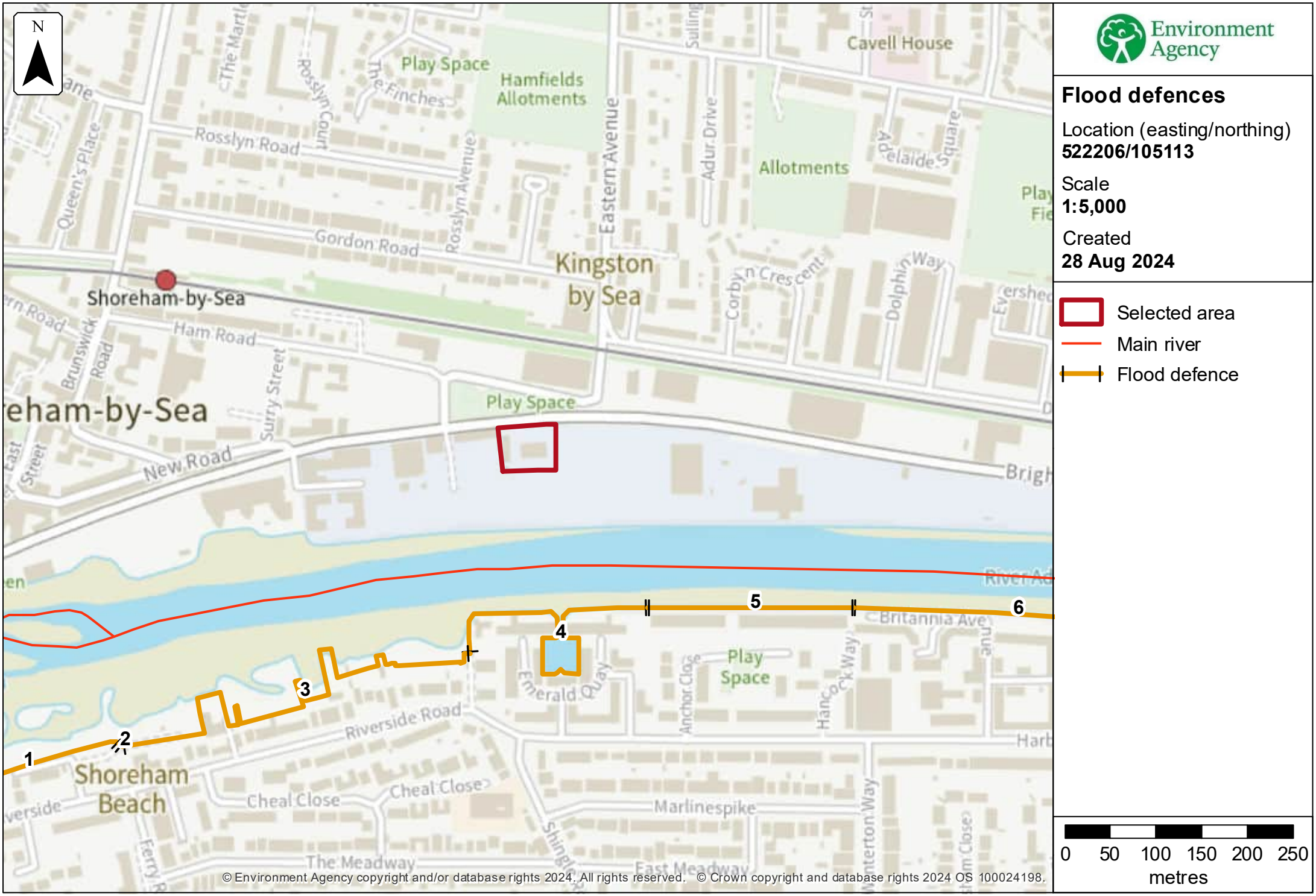
The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is In mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



Environment Agency

Flood defences

Location (easting/northing)
522206/105113

Scale
1:5,000

Created
28 Aug 2024

Selected area
Main river
Flood defence

0 50 100 150 200 250
metres

Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	143312	Wall	15		4.21	4.13	
2	761196	Flood Gate					
3	172967	Wall	2				
4	172966	Wall	2		4.84	3.87	
5	761205	Wall					
6	172965	Wall	2		4.84	4.58	3.93

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

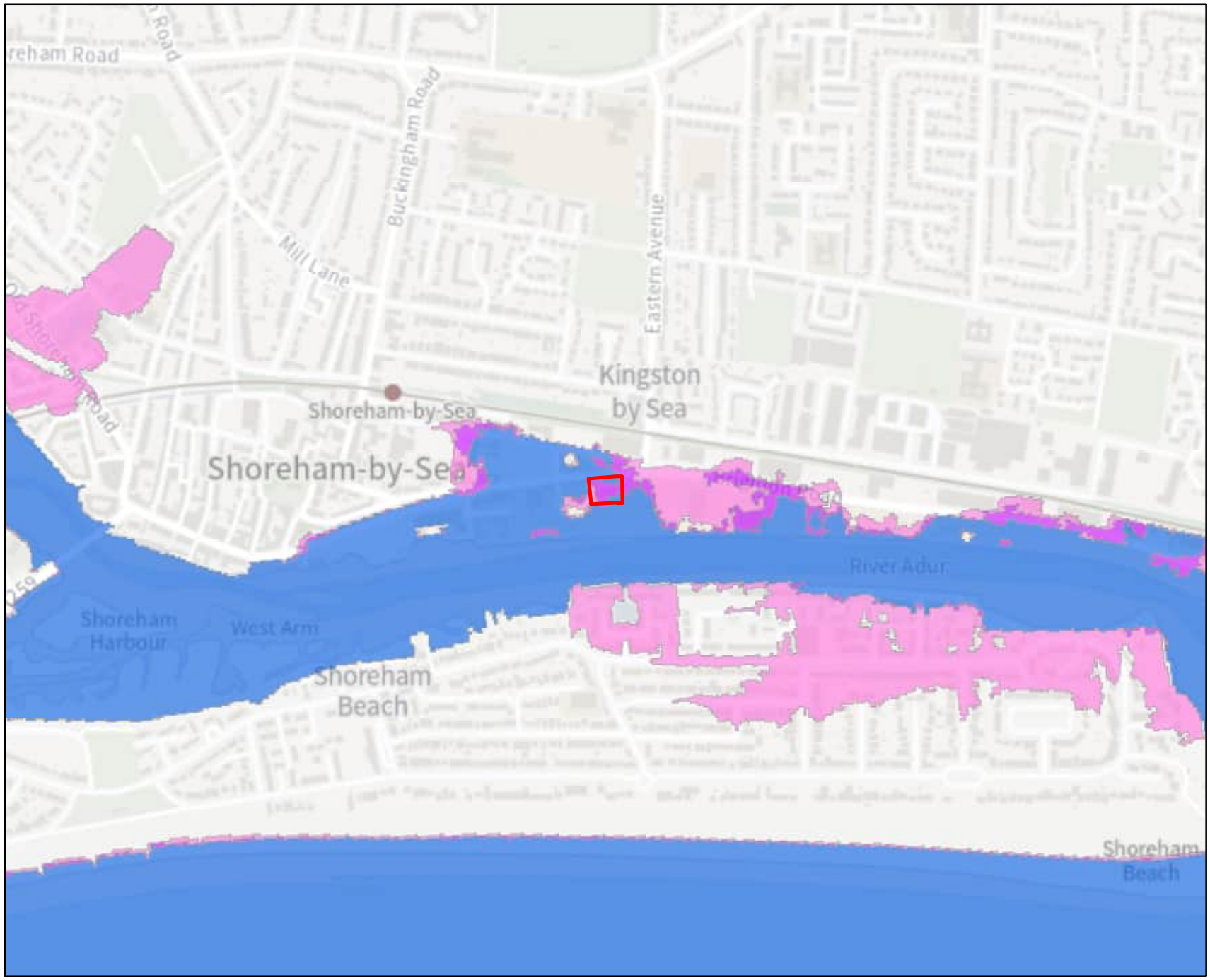
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled tidal: risk of flooding from the sea where there are flood defences
- Defences removed modelled tidal: risk of flooding from the sea where flood defences have been removed

Modelled Flood Outlines (Defended Tidal). Centred BN43 6RE. Created 28/08/2024.



Environment Agency

N

Legend

- Site Boundary
- 0.5% AEP (2018) (Defended)
- 0.5% AEP (2067) (Defended)
- 0.5% AEP (2117) (Defended)

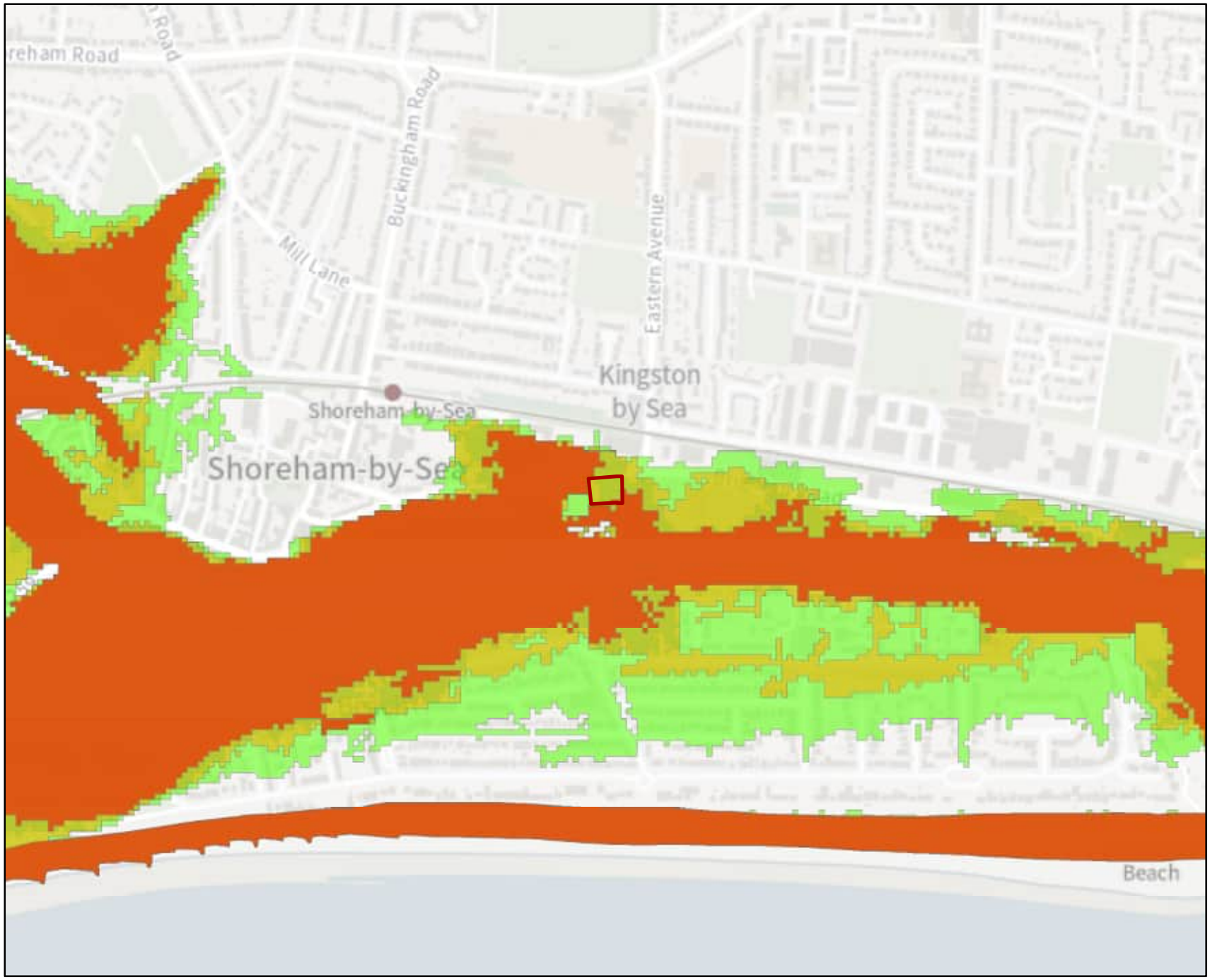
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Modelled Flood Outlines (Undefended Tidal). Centred BN43 6RE. Created 28/08/2024.



Environment Agency

N

Legend

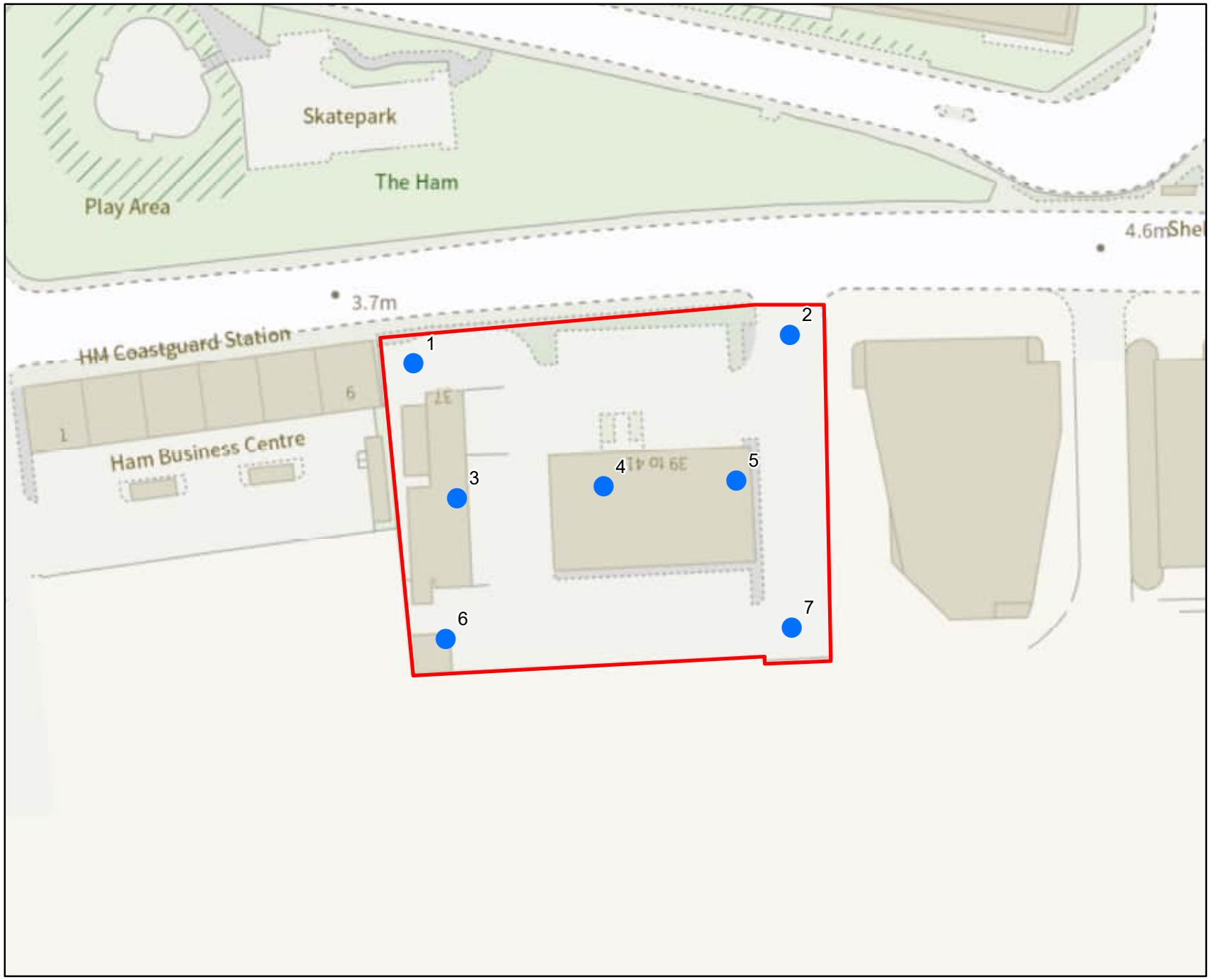
- Site Boundary
- 0.5% AEP (2012) (Undefended)
- 0.5% AEP (2070) (Undefended)
- 0.5% AEP (2115) (Undefended)
- 0.1% AEP (2012) (Undefended)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

FRA Site Boundary & Node Points. Centred BN43 6RE. Created 28/08/2024.



Environment Agency

N

Legend

- Site Nodes
- Site Boundary

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:750

0 0.015 0.03
Kilometers

Product 4 Flood Risk Data Requested by: WSP

Site: Kwik Fit - Shoreham-By-Sea, 37-41 Brighton Rd, Shoreham-by-Sea, BN43 6RE

Table 1: Water Levels: Tidal Undefended

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	522178	105131	-	-	5.39	-
2	522230	105134	-	4.79	5.39	4.48
3	522184	105112	-	4.79	5.39	-
4	522205	105114	-	4.79	5.39	4.48
5	522223	105114	-	4.79	5.39	4.48
6	522182	105092	-	4.79	5.39	4.48
7	522231	105094	4.24	4.79	5.39	4.48

Table 2: Water Levels: Tidal Defended

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2067)	0.5% (2117)
1	522178	105131	4.26	4.57	4.93
2	522230	105134	-	4.57	4.93
3	522184	105112	-	-	4.93
4	522205	105114	-	4.57	4.93
5	522223	105114	-	4.57	4.93
6	522182	105092	-	-	4.94
7	522231	105094	4.30	4.57	4.94

Table 3: Water Depths: Tidal Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	522178	105131	-	-	0.79	-
2	522230	105134	-	0.49	1.09	0.18
3	522184	105112	-	0.12	0.72	-
4	522205	105114	-	0.42	1.02	0.12
5	522223	105114	-	0.43	1.03	0.12
6	522182	105092	-	0.20	0.80	0.02
7	522231	105094	0.06	0.61	1.21	0.30

Table 4: Water Depths: Tidal Defended

	NGR		Modelled Flood Depths in Metres Defended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2067)	0.5% (2117)
1	522178	105131	0.07	0.22	0.57
2	522230	105134	-	0.35	0.71
3	522184	105112	-	-	0.29
4	522205	105114	-	0.02	0.38
5	522223	105114	-	0.06	0.42
6	522182	105092	-	-	0.16
7	522231	105094	0.09	0.36	0.72

All levels taken from: Arun to Adur Coastal Modelling (2012), completed by JBA Consulting, with updated defended scenarios taken from the Adur Tidal Walls Scheme modelling (2018).

Produced on: 28/08/2024

*** The flood risk data provided is based on existing EA hydraulic models with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 27 July 2021.**

You should refer to 'Flood risk assessments: climate change allowances' for the most up to date allowances. You will need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

There is no additional information or health warnings for these levels/depths or the model from which they have been produced.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Local Authority is Adur.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

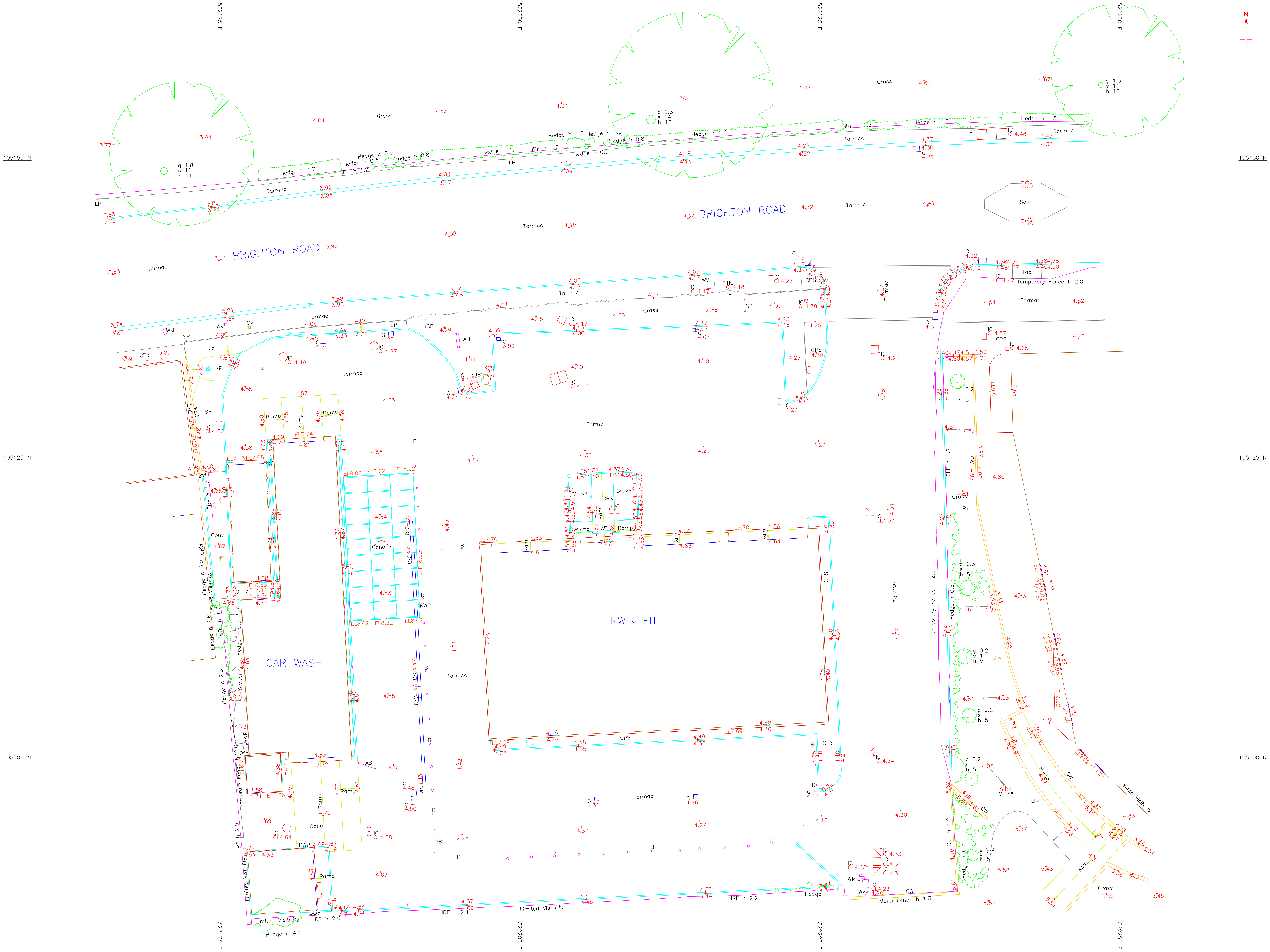
Contact the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

Appendix C

TOPOGRAPHICAL SURVEY

A0 DO NOT SCALE



ALL DIMENSIONS, LEVELS AND CLEARANCES TO BE CHECKED ON SITE PRIOR TO WORKS COMMENCING

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NOTES

STANDARD ABBREVIATIONS

A/C	Air Conditioner	IRF	Iron Railing Fence
AH	Arch Height	IRS	Illuminated Road Sign
AL	Arch Level	JB	Junction Box
ASH	Arch Spring Height	L	Light
ASL	Arch Spring Level	LB	Litter Bin
B	Bollard	LP	Lamp Post
BGP	Break Glass Point	Max	Maximum
BH	Beam Height	MH	Manhole
Br	Brick	Min	Minimum
BRW	Brick Retaining Wall	O/H	Overhead
BSL	Beam Soffit Level	OSBM	Ordnance Survey Bench Mark
BT	British Telecom	P	Post
BW	Brick Wall	PB	Pillar Box
CBF	Close Boarded Fence	PLt	Pavement Light
CCTV	Closed Circuit Television	PS	Paving Stones
Chy	Chimney	Rad	Radiator
CL	Cover Level	RDM	Recessed Door Mat
CLF	Chain Link Fence	RE	Rodding Eye
Col	Column	RS	Road Sign
Conc	Concrete	RSJ	Rolled Steel Joist
CPS	Concrete Paving Slabs	RWP	Rain Water Pipe
CTV	Cable Television IC	s	spread
Cup	Cupboard	S	Window Sill Level/Height
DP	Down Pipe	SBM	Site Bench Mark
DrC	Drainage Channel	SC	Stop Cock
EIC	Electrical Inspection Cover	SH	Spring Height
EJB	Electrical Junction Box	SL	Sump Level
EM	Electricity Meter	Slt	Skylight
ER	Earthing Rod	SO	Smoke Outlet
ESG	Electrical Switchgear	SP	Sign Post
FA	Fire Alarm	SS	Security Sensor
FB	Flower Bed	SV	Stop Valve
FE	Fire Extinguisher	T	Telephone
FH	Fire Hydrant	Tac	Tactile Paving
FHR	Fire Hose Reel	TBM	Temporary Bench Mark
FL	Floor Level	TCB	Telephone Call Box
Flt	Floodlight	TIC	Telephone Inspection Cover
g	girth	TJB	Telephone Junction Box
G	Gully	TL	Traffic Light
GC	Gas Cock	TLCB	Traffic Light Control Box
GM	Gas Meter	TLIC	Traffic Light Inspection Cover
GV	Gas Valve	TP	Telephone Pole
H	Window Head Height/Level	Typ	Typical
h	height	V	Vent
HB	Hand Basin	VP	Vent Pipe
HR	Handrail	WH	Water Heater
IC	Inspection Cover	WM	Water Meter
IL	Invert Level	WV	Water Valve

Rev	Date	By	Chk	Apr	Comment
R01	29.02.24	MT	GO	NC	Final Issue

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Client:
Client

Project Title:
Kwik Fit
Shoreham-By-Sea

Drawing Title:
2D Topographical Survey

Status:
RECORD

Drawn By:	Designed By:	Checked By:	Approved By:
MT	MT	GO	NC

Original Issue Date:	Scale @ A0:
29/02/2024	1:100

Job No/ File Ref	Originator	Zone	Level
LF5568	LAF	LAF	ST

Type	Discipline	Number	Suitability	Revision
G	DR	1001	S2	R01

Appendix D

ADUR POLICIES MAP