Flood Risk Assessment

20 East Meadway, Shoreham Beach, BN43 5RF

Client

Mr Roger Knott

Consulting Engineers

GTA Civils & Transport Ltd

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Burgess Hill

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Ref: 13874

Date: November 2025

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Schedule of Appendices

Issue	Issue date	Compiled	Checked
Preliminary Issue	04 November 2025	JP	FVV / MR
First Issue	05 November 2025	JP	FVV / MR

1 Introduction

1.1 This report has been prepared for Mr Roger Knott in relation to the proposed development at 20 East Meadway, Shoreham Beach, BN43 5RF. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.

1.2 GTA Civils & Transport Limited was appointed by the client to provide a Flood Risk Assessment (FRA) as required by the Environment Agency (EA) and Adur District Council, in order to achieve Planning Approval at said property.

1.3 This report will take the form of a formal Flood Risk Assessment in accordance with the 2025 National Planning Policy Framework (NPPF) and the current Planning Practice Guidance (PPG).

2 Existing Site and Current Flood Conditions

2.1 The application site, which comprises a bungalow, lies in Shoreham-by-Sea. This area is administered by Adur District Council (ADC). Site location maps and an aerial view are shown in Appendix A.

2.2 The site lies approximately 200m north of the English Channel. The River Adur flows west-east approximately 300m north of the site before discharging into the English Channel about 1km away at Shoreham Harbour.

2.3 A topographic survey is shown in Appendix C. The site's external levels range between 5.15m AOD and 4.80m AOD. The ground floor level is 5.30m AOD.

2.4 Existing surface water drainage: this area of beach is of deep voided shingle. The BGS online map indicates the drift layer in this vicinity as 'Storm Beach Deposits – Gravel'. It is understood that all buildings along Old Fort Road discharge their surface water into this stratum. The infiltration rate is extremely fast, in the order of 10^{-1}m/s to 10^{-2}m/s. Pits empty as fast as they are filled, thereby making accurate timings impossible

2.5 Tidal flooding: the Environment Agency's Flood Map in Appendix B shows although the majority of the site to the north is situated in Flood Zone 1 (FZ1 – Low Risk), the third of the site to the south is located in FZ3 (High Risk). Sites in FZ1 are liable to flooding less than 1 in 1000 years (<0.1% AEP). Tidally affected sites within FZ3 are susceptible to an annual probability of greater than 1 in 200 years (>0.5% AEP).

2.6 The EA's modelled flood data (in Appendix B) shows that the flood level in the undefended 2115 0.5% scenario is **5.39m AOD**. This is higher than the defended flood level in the same scenario – so must be considered. On to this the predicted sea level rise of 18.2mm/yr must be added up to 2126, ie 11 years – this being the **Upper End Allowance** as set out for the South East in Table 1 of the EA's "Climate Change Allowances" webpage. 11 x 18.2 = **200mm**. The critical flood level is therefore 5.39 + 0.20 = **5.59m AOD**.

2.7 Fluvial flooding: this does not affect the site as The Adur is tidally influenced at this location and there are no fluvially influenced watercourses in this area.

2.8 Surface water flooding occurs when excess rainwater does not infiltrate into the ground, or is not intercepted by urban drainage systems, and instead flows across the surface. The EA's surface water flood map in the 'Low Risk Scenario' ('1 in 1000 years' storm event), in Appendix B, shows the site is clear from the risk of flooding from this source.

2.9 Artificial sources: flooding from reservoirs, canals and docks. The EA's reservoir flooding map (in

Appendix C) shows the site is clear from the risk of flooding from this source. There are no docks or canals in this area.

2.10 Groundwater flooding: the EA's Groundwater Vulnerability Zones map and Groundwater Source Protection Zones (SPZ) maps are shown in Appendix B. The site overlies a 'Medium-High' Groundwater Vulnerability Zone and is removed from the nearest Source Protection Zone.

2.11 Sewer flooding: occurs due to limited capacity or blockage in the sewer system causing backing up of storm water and effluent. The flood maps in the SFRA commissioned by ADC show no record of this area having suffered from this source – or any other source.

2.12 Historical records: the EA's historical flood map in Appendix B shows this site is removed from all the recorded flood incidents, which are limited to Shoreham Beach – well to the south of this site.

2.13 In conclusion, the flood risk profile of this site is High – due to the tidal flood level exceeding 5.5m AOD.

3 Proposed Development & Flood Mitigation

3.1 The planning application is to demolish the existing residence and to replace with a replacement detached 2 storey dwelling. The proposed scheme drawings are shown in Appendix D.

3.2 As set out in section 2.6 above, the modelled critical flood level is **5.59m AOD**.

3.3 The ground floor level will be set at **6.19m AOD**, which is 0.6m above the modelled (undefended) flood level of 5.59m AOD. 0.6m freeboard is needed because there shall be bedrooms on the ground floor.

3.4 Extreme event: the site lies outside the 1 in 1000 yrs flood pattern.

3.5 Flood Mitigation: the lowest (ground) floor level will be set with 0.6m of freeboard above the predicted 2126 flood level. There is no need for further flood mitigation measures.

3.6 Safe access to dry land. The whole of the Shoreham Beach area is effectively a 'dry island': the only route to the wider highway network is westwards along Beach Green to the A259, which appears to be liable to deep flooding. The occupants of the dwelling house will be able to reside at both ground and 1st floor for the short duration of peak flooding. (The ground floor's level is +0.6m above the critical flood level, so this constitutes FZ1 – more than adequate for the brief period of peak tidal flooding.)

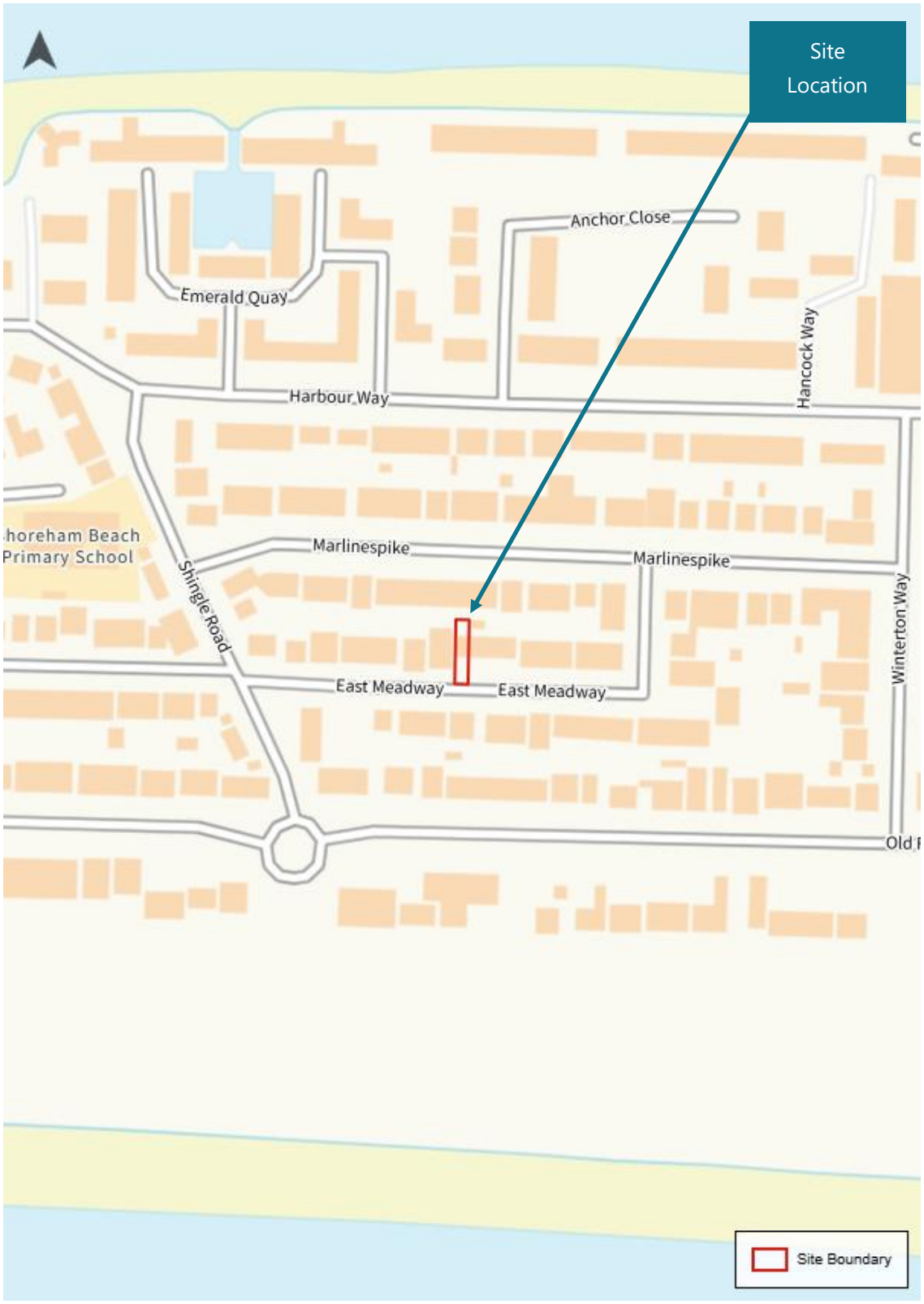
3.7 Surface water drainage: the existing drainage outfall will be maintained, ie flowing directly into the shingle beach and onwards into the English Channel. This is 100% sustainable.

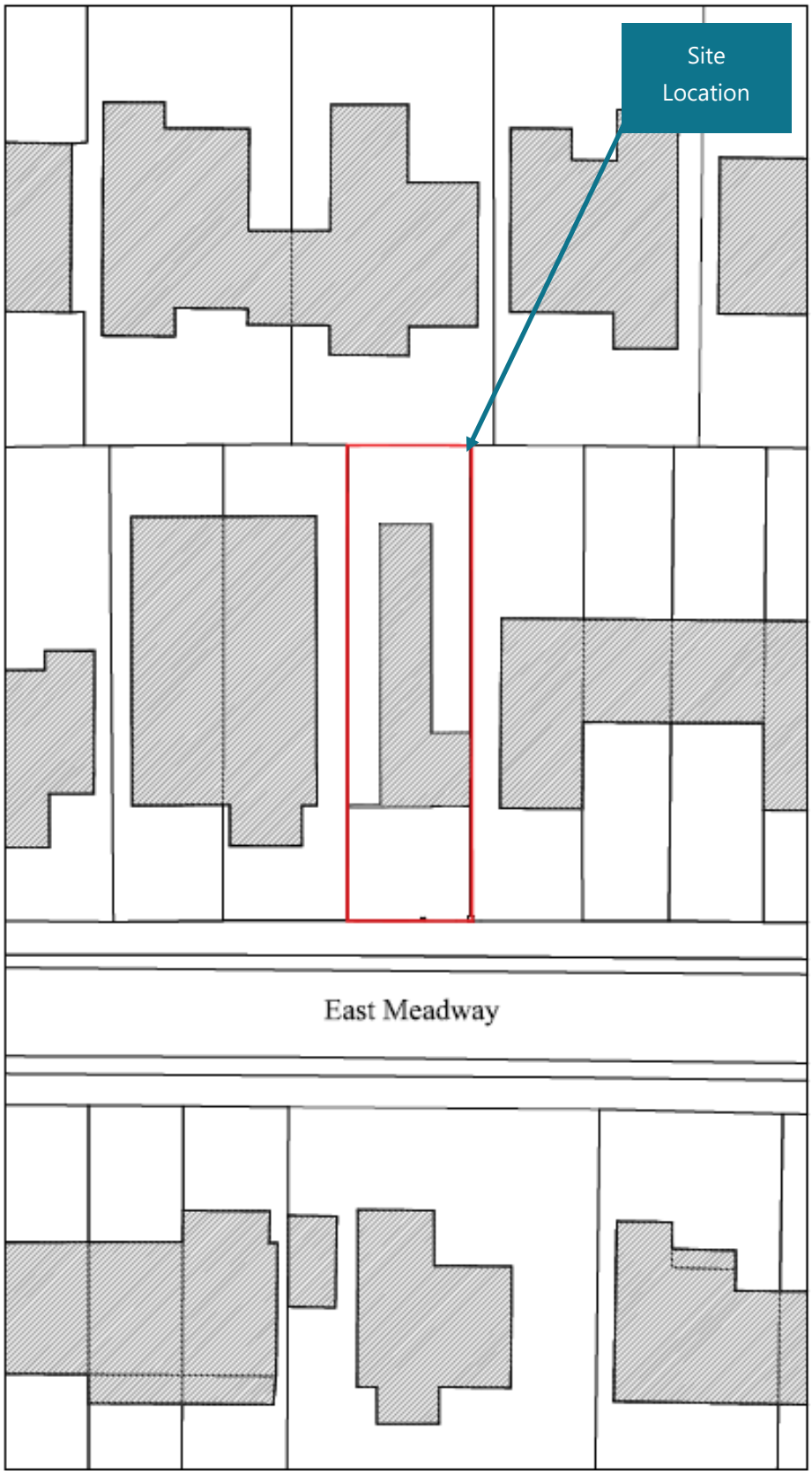
3.8 Conclusion: This development will not increase the flood risk, either on this site or to neighbouring properties, and so complies fully with the 2025 NPPF and current PPG.

- End of Report -

Appendix A

Site Location Maps & Aerial Photo

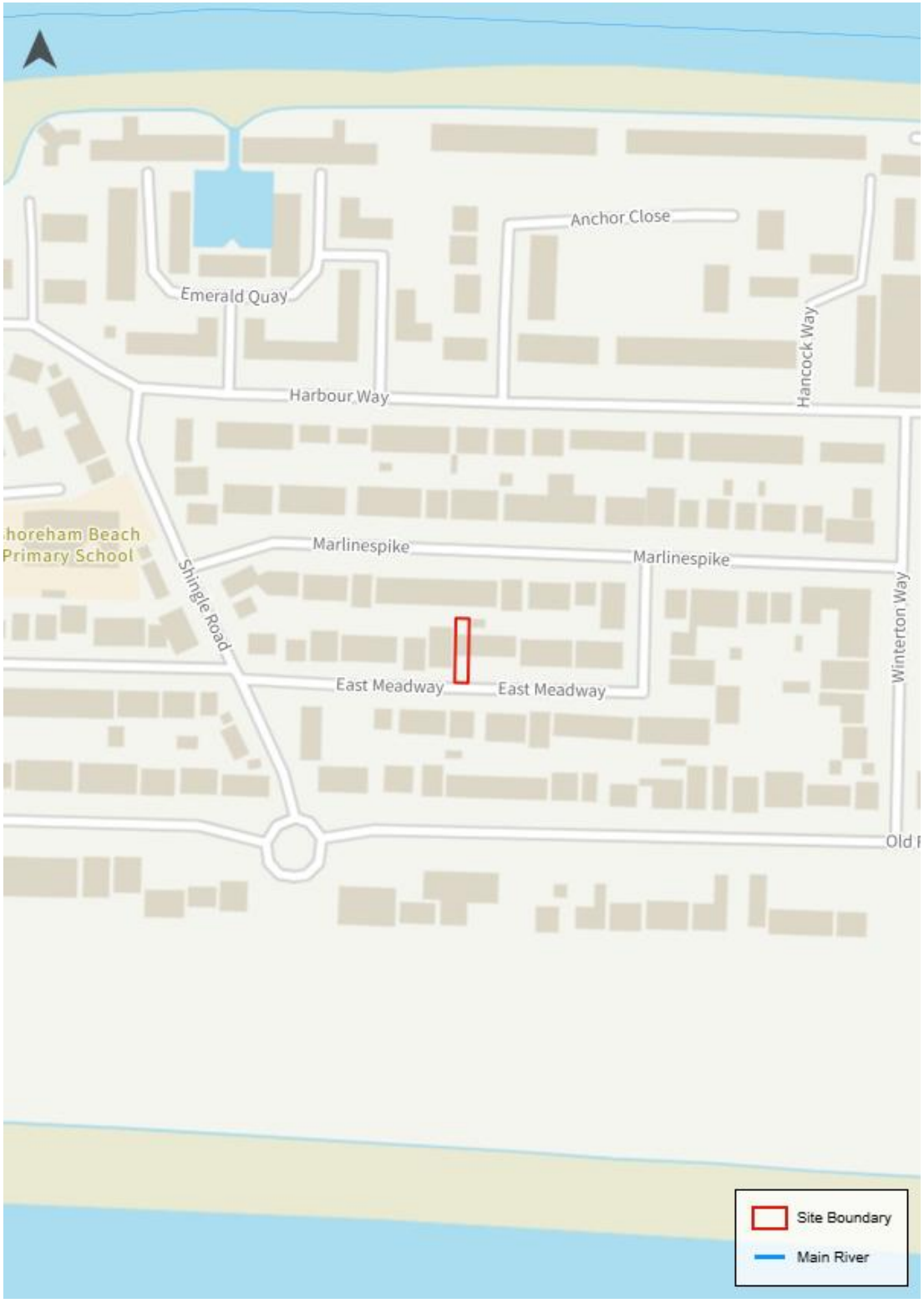



Site
Location
East Meadway


Site Location
Site Boundary

Appendix B

Environment Agency Flood Data & Groundwater Maps

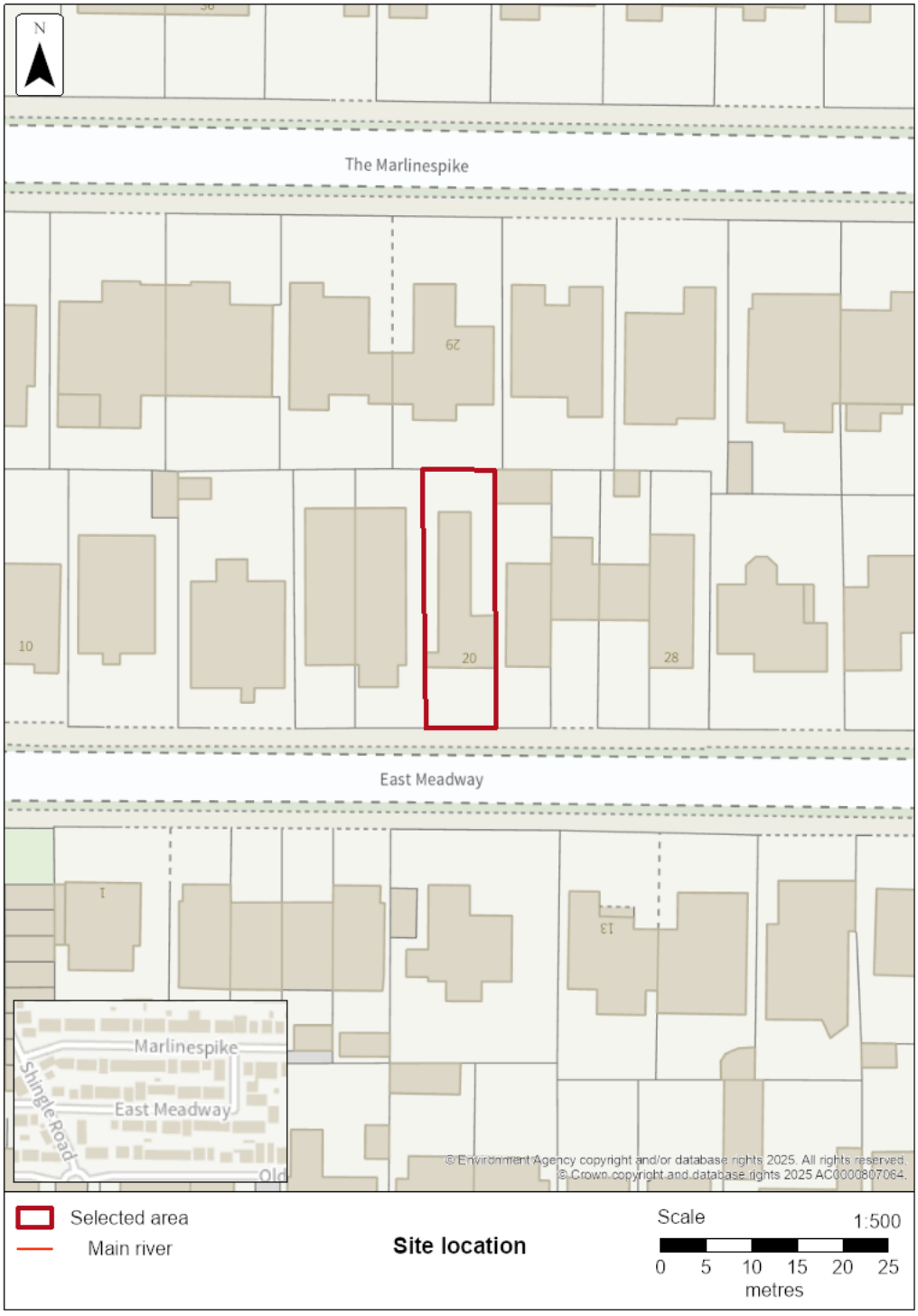


Environment Agency Main Rivers Map

Flood risk assessment data

Location of site: 20 East Meadway, Shoreham-by-Sea, BN43 5RF
Document created on: 7 July 2025
This information was previously known as a product 4.
Customer reference number: EIR2025/13667

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)
- 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
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- past floods

We do not have past flooding data for this location.

Please note that:

- 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 floodng from rivers or the sea

You can 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.

Surface water and other sources of flooding

When using the surface water map on the check your long term flood risk service the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- reservoir flood risk
- groundwater flood risk - you could use the British Geological Survey groundwater flooding data, groundwater: current status and flood risk and the guide on mining and groundwater constraints for development - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is West Sussex County.

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

About the models used

Model name: Adur Coastal Model, 2012
Scenario(s): Defended tidal, Undefended tidal
Date: 20 August 2012

These models contain 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 2.

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

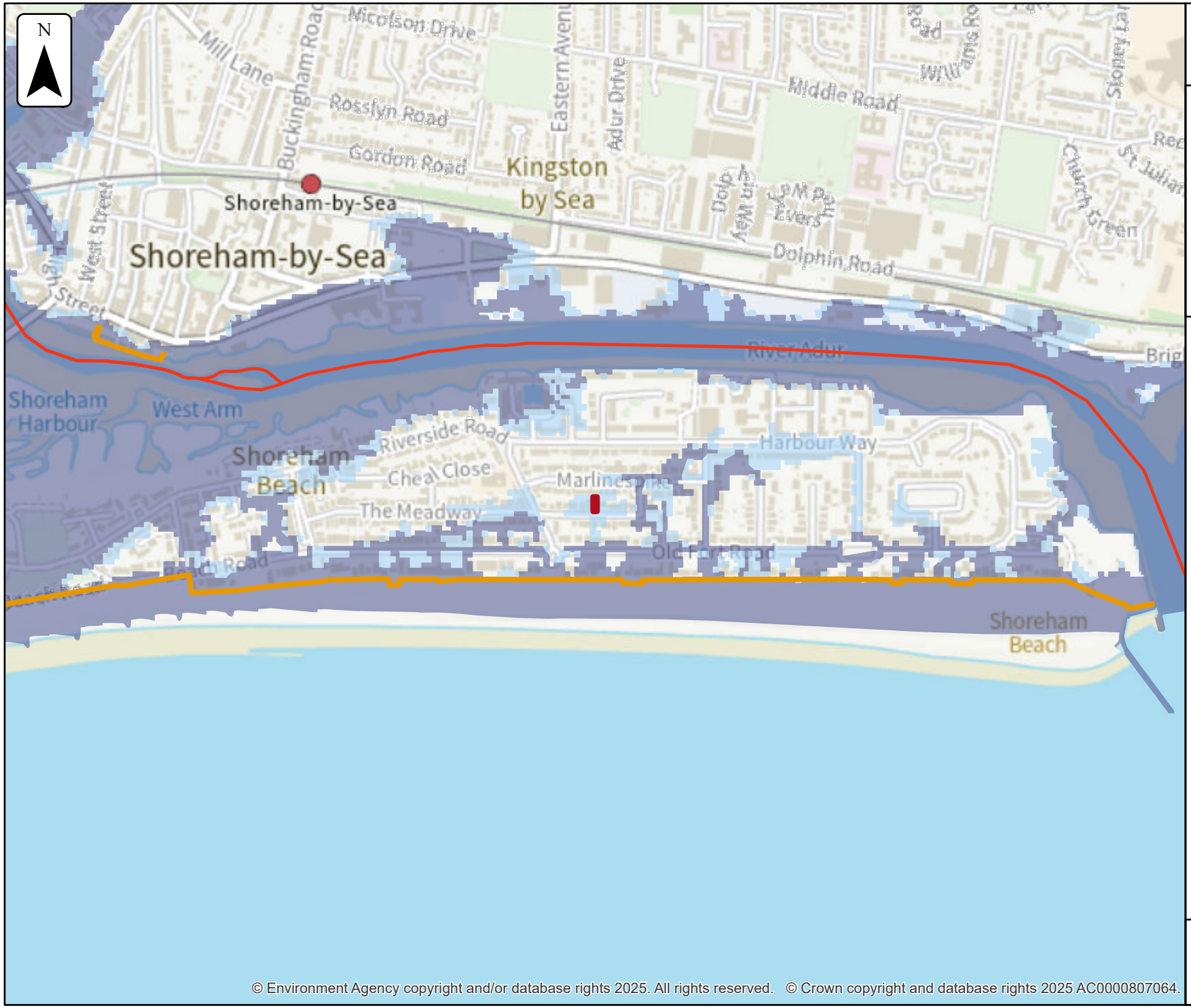
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

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



Environment Agency

Flood map for planning

Location (easting/northing)
522361/104671

Scale
1:10,000

Created
7 Jul 2025

- Selected area
- Main river
- Flood defence
- Flood Zone 3
- Flood Zone 2

0 100 200 300 400 500
metres

Flood defences and attributes

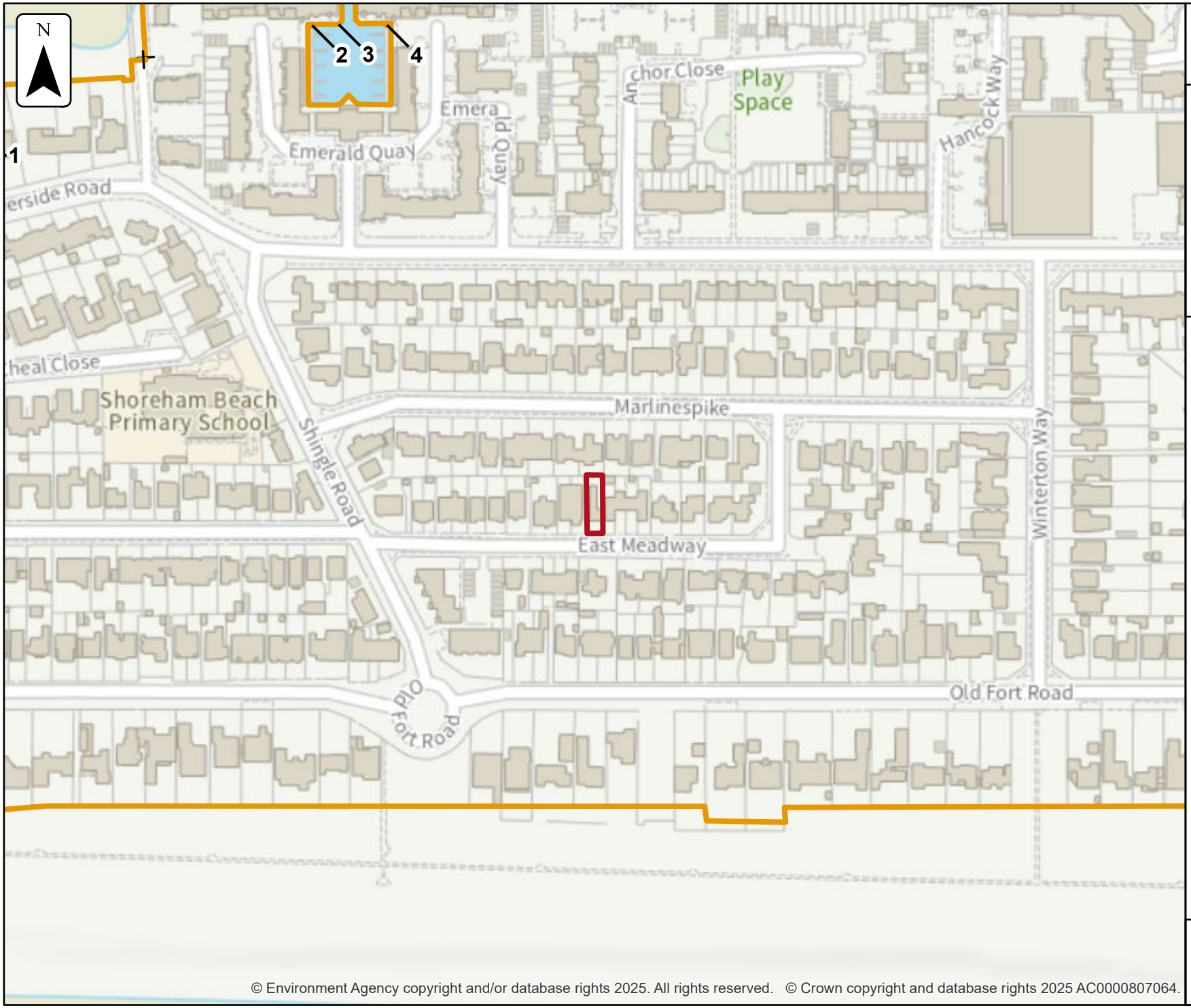
The flood defences map shows the location of the flood defences present.

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)
522361/104671

Scale
1:2,500

Created
7 Jul 2025

- Selected area
- Main river
- Flood defence

0 25 50 75 100
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	172967	Wall	2				
2	762561	Flood Gate	300				
3	172966	Wall	2		4.84	3.87	
4	762564	Flood Gate	300				
5	149939	Beach	100				7.10

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 5RF. Created 07/07/2025.

Environment Agency

N

Legend

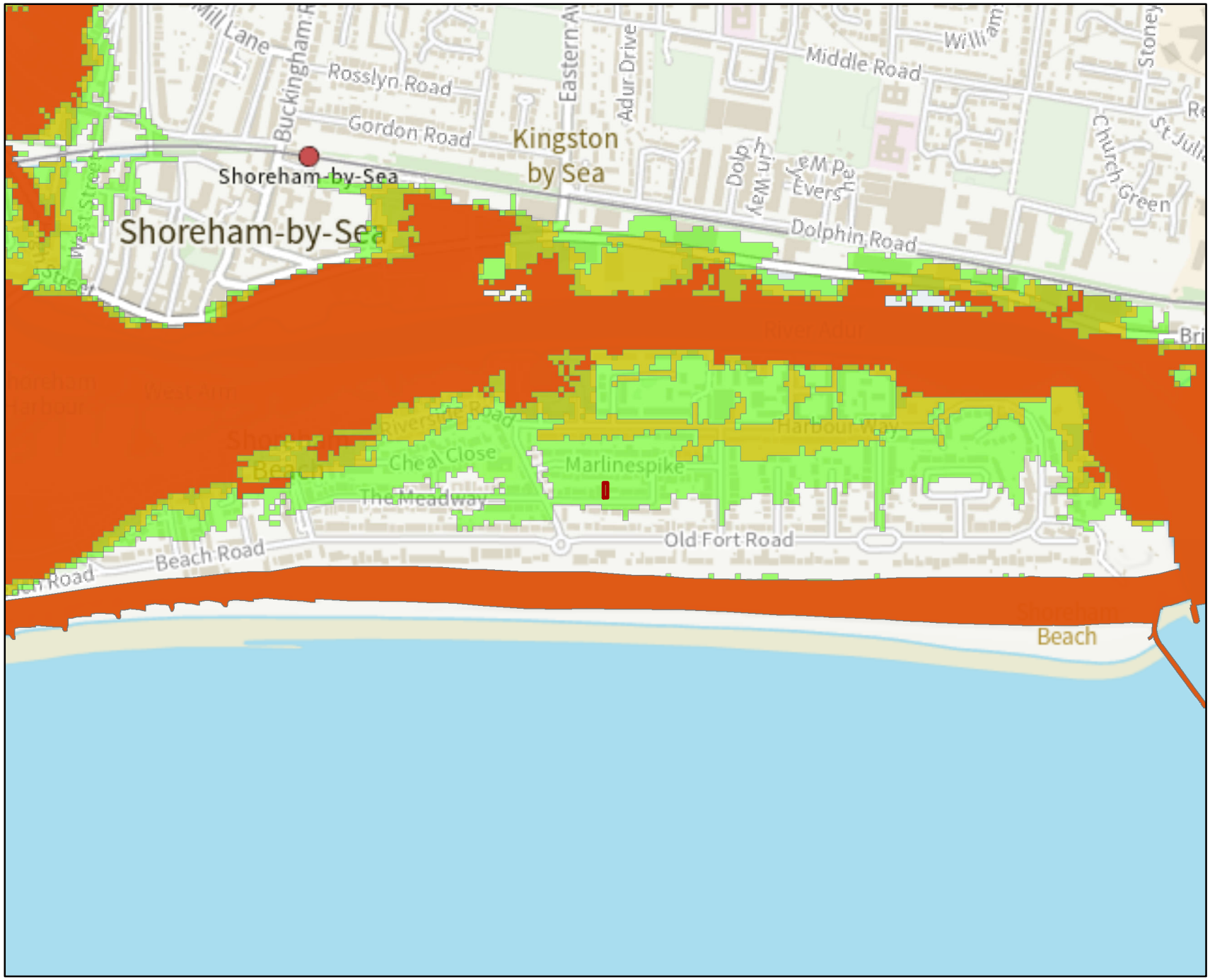
- Site Boundary
- 0.5% AEP (2012) (Defended)
- 0.5% AEP (2070) (Defended)
- 0.5% AEP (2115) (Defended)
- 0.1% AEP (2012) (Defended)

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

Modelled Flood Outlines (Undefended Tidal). Centred BN43 5RF. Created 07/07/2025.



Environment Agency

N

Legend

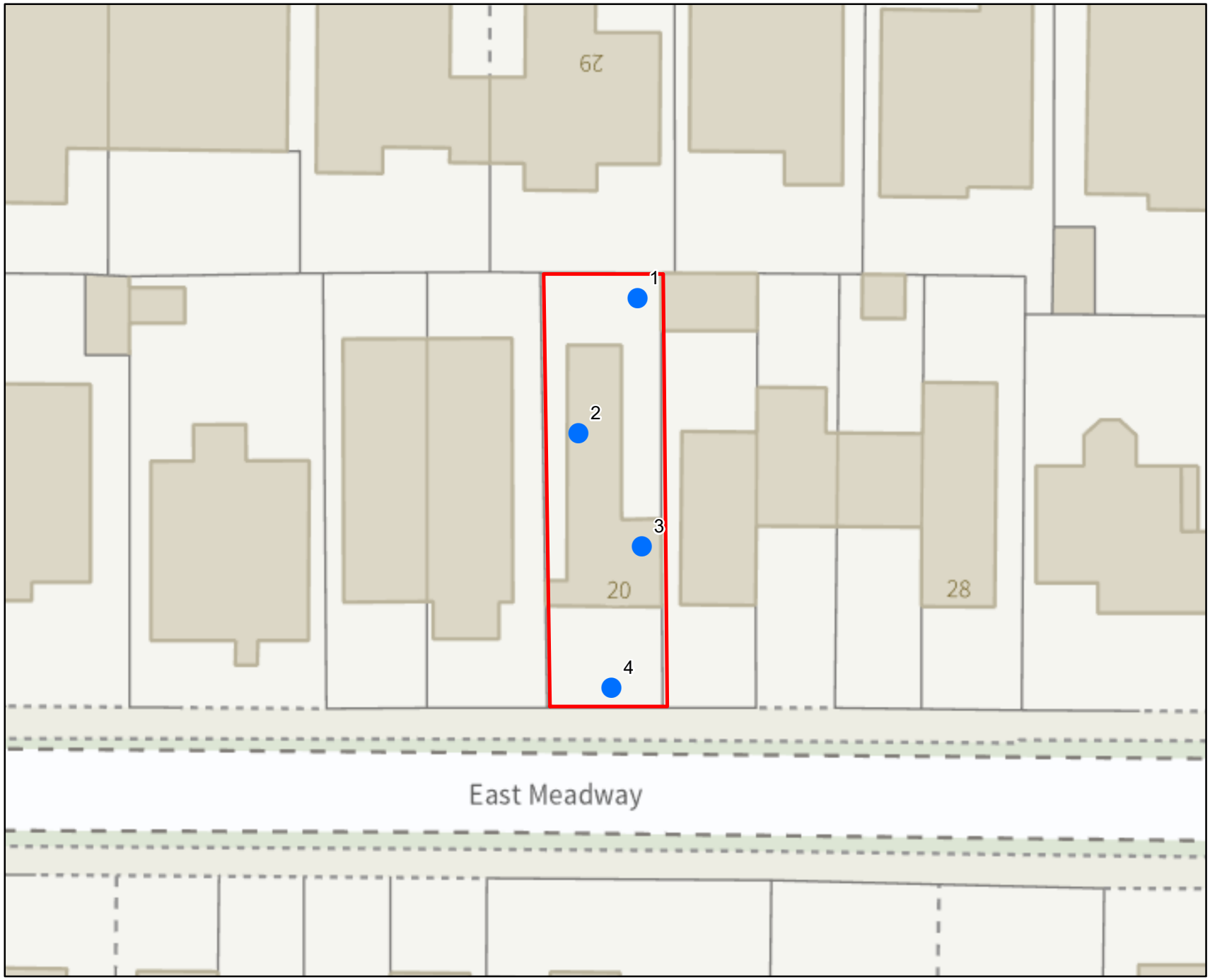
- Site Boundary
- 0.5% AEP (2012) (Undefended)
- 0.5% AEP (2070) (Undefended)
- 0.5% AEP (2115) (Undefended)
- 0.1% AEP (2012) (Undefended)

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 5RF. Created 07/07/2025.



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: 1:350

0 0.0075 0.015
Kilometers

Product 4 Flood Risk Data Requested by: GTA Civils & Transport Ltd

Site: 20 East Meadway, Shoreham-by-Sea, BN43 5RF

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	522634	104684	-	-	5.39	-
2	522360	104675	-	-	5.39	-
3	522364	104667	-	-	5.39	-
4	522362	104658	-	-	5.39	-

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% (2070)*	0.5% (2115)*	0.1%
1	522634	104684	-	5.04	5.26	4.93
2	522360	104675	-	5.04	5.28	4.93
3	522364	104667	-	5.04	5.29	4.93
4	522362	104658	-	5.05	5.30	4.93

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	522634	104684	-	-	0.59	-
2	522360	104675	-	-	0.59	-
3	522364	104667	-	-	0.50	-
4	522362	104658	-	-	0.51	-

Table 4: Water Depths: Tidal Defended

	NGR		Modelled Flood Depths in Metres			
			Defended Annual Exceedance Probability			
Node Ref	**Eastings**	**Northings**	**0.5%**	**0.5% (2070)***	**0.5% (2115)***	**0.1%**
1	522634	104684	-	0.24	0.52	0.19
2	522360	104675	-	0.24	0.38	0.03
3	522364	104667	-	0.15	0.36	0.01
4	522362	104658	-	0.16	0.59	0.22

All levels taken from: Arun to Adur Coastal Modelling (2012), completed by JBA Consulting.

Produced on: 07/07/2025

*** 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 Lead Local Flood Authority is West Sussex County.

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

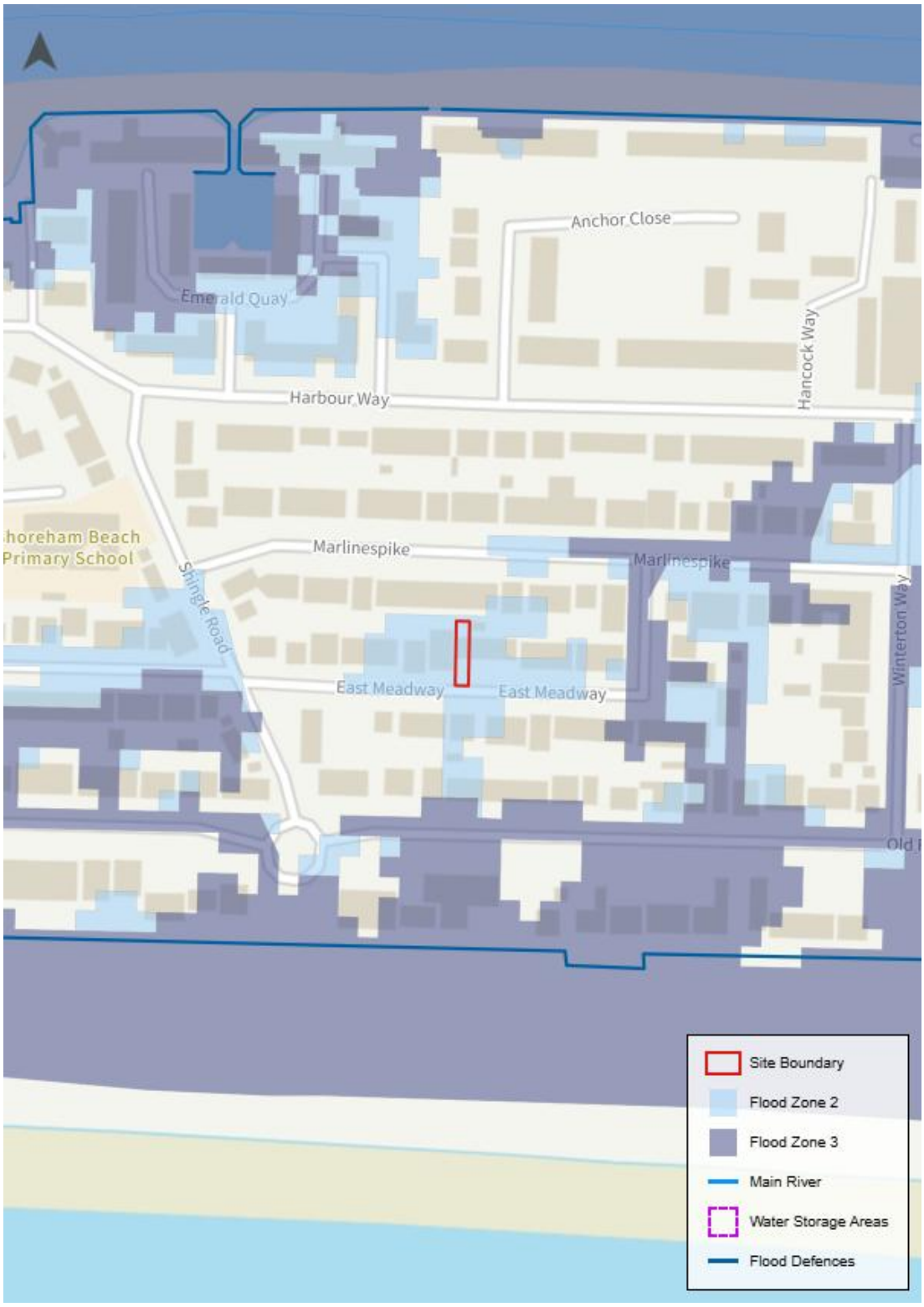
Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence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

Find out more about flood risk activity permits

Help and advice

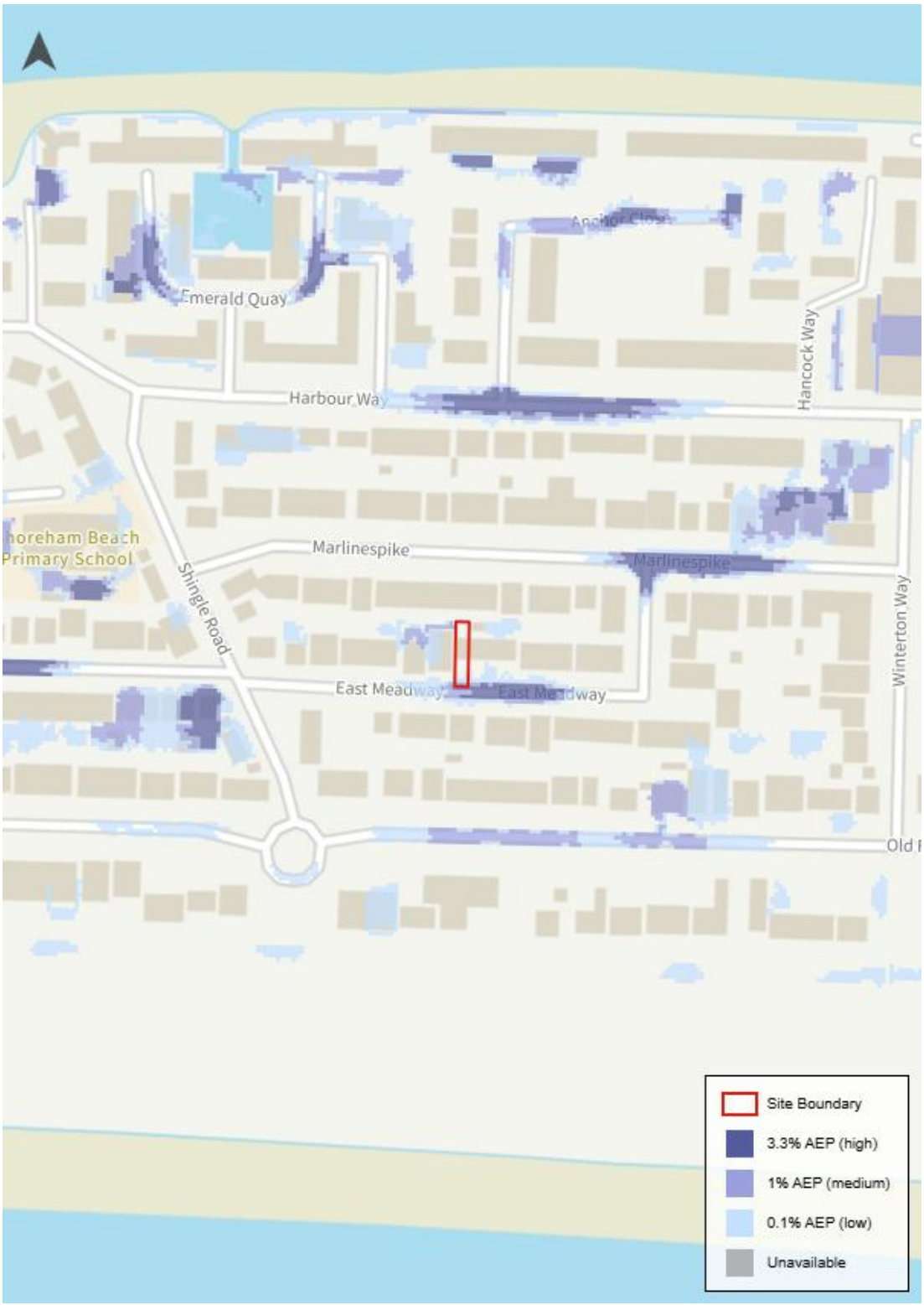
Contact the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk for:

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

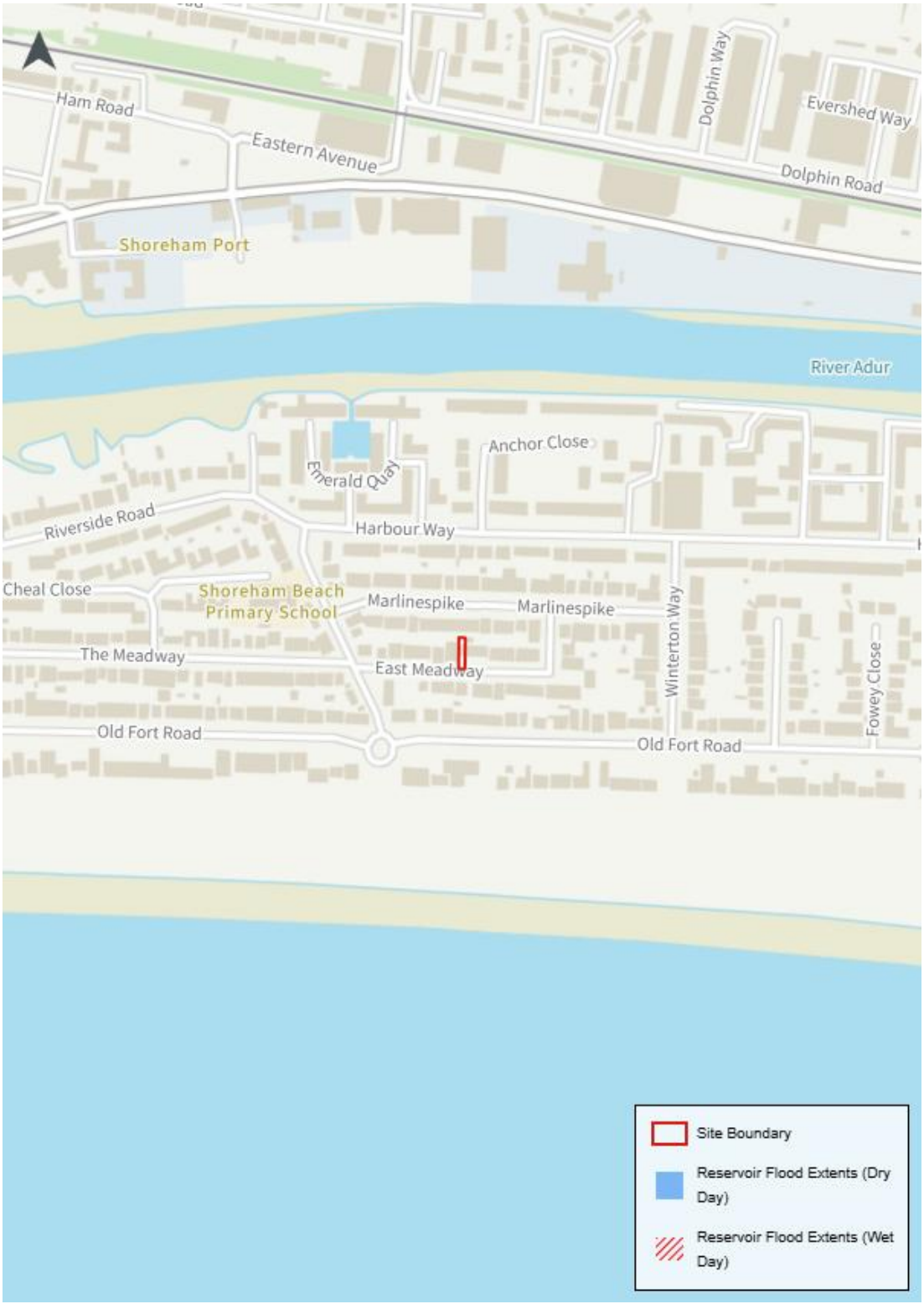


Environment Agency Flood Map for Planning

The site is located in Flood Zone 1

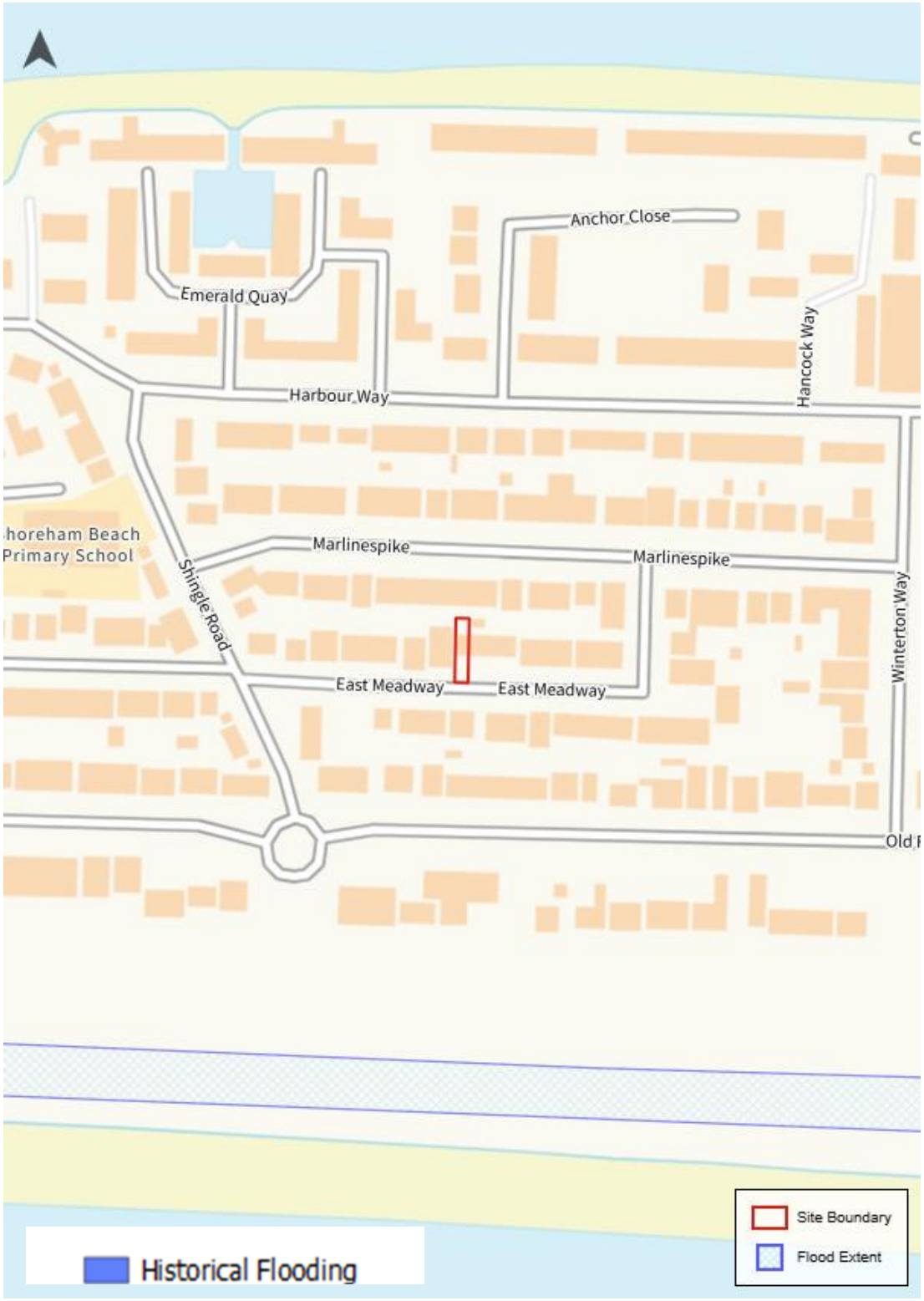


Environment Agency Surface Water Flood Extents Map



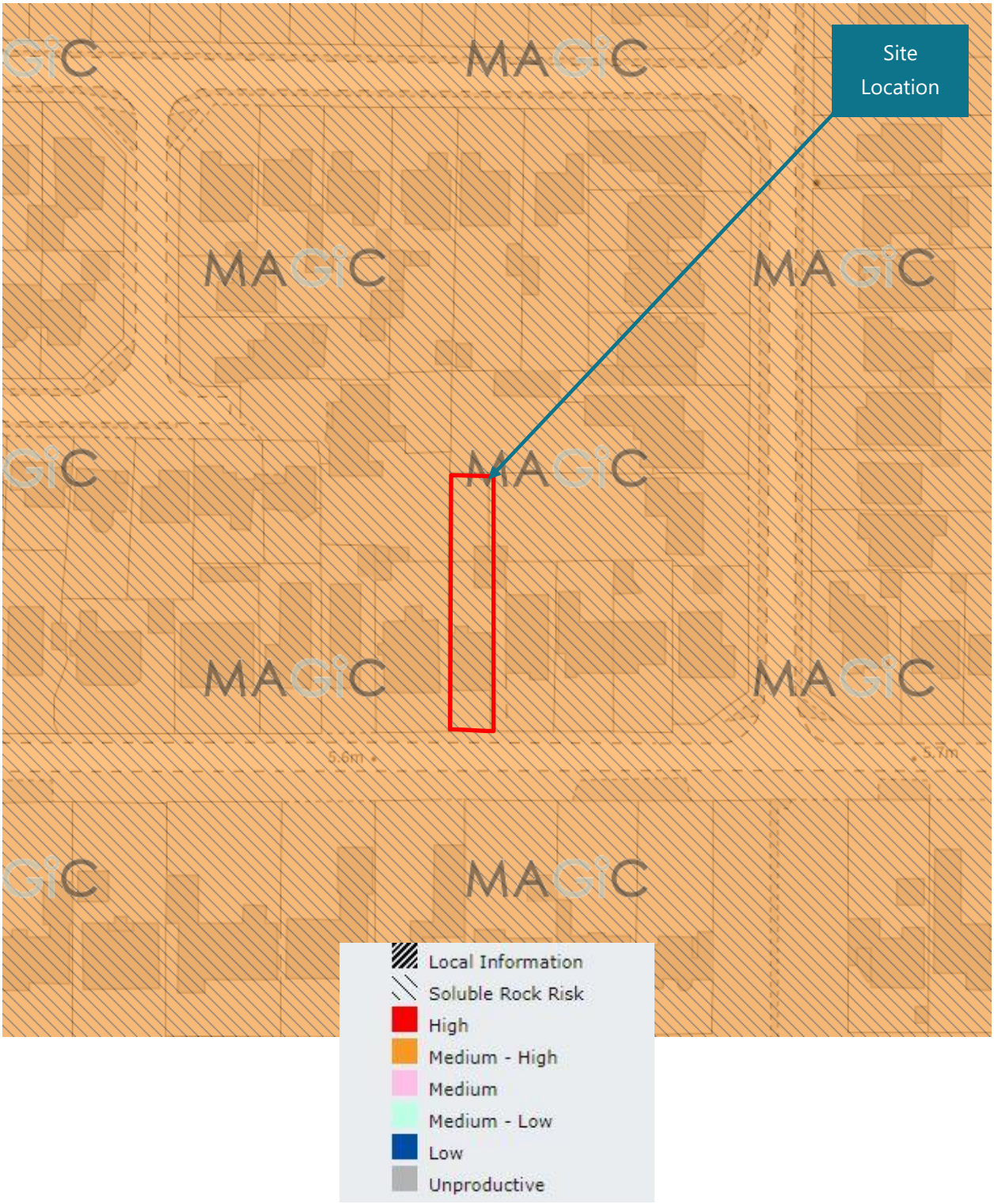
Environment Agency Flood Risk from Reservoirs

The site is clear from the risk of flooding from this source



DEFRA's Online 'Historical Flooding' Map

The site has not been affected by flooding in the past



Environment Agency's Online Groundwater Vulnerability Zones Map

The site overlies a 'Medium - High' Groundwater Vulnerability Zone

Environment Agency's Online Groundwater Source Protection Zones Map

The site is removed from the nearest Groundwater Source Protection Zone

Appendix C

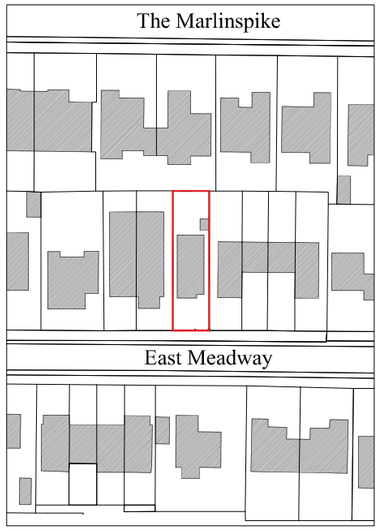
Topographic Survey & Architect's Scheme Drawings

4.77
4.93
gravel
decking
92
4.92
decking
4.81
gravel
5.30
threshold
5.01
gravel
5.15
decking
5.03
concrete
4.88
4.87
4.80
4.82
4.79
N 104656.894
E 522362.399
N 104656.716
E 522364.905

November 2025
Drawing no:JB 503/ planning application 03

20 EAST MEADWAY, SHOREHAM BY SE, BN43 5RF

REPLACEMENT OF EXISTING BUNGALOW WITH A 2 STOREY HOUSE



N
W E
S

PROPOSED LOCATION PLAN 1:1250

Red line indicated Application Site Boundary

NB: Based on ordnance survey information

0 10 20 30 40 50 60

SCALE BAR 1:1250 (metres)

PROPOSED BLOCK PLAN 1:500

Red line indicated Application Site Boundary

Site area = 212m.sq (0.0523 Acres) or 0.0212 Hectares

0 5 10 15 20 25

SCALE BAR 1:500

JAMES BRECKELL : ARCHITECT : ARB : RIBA

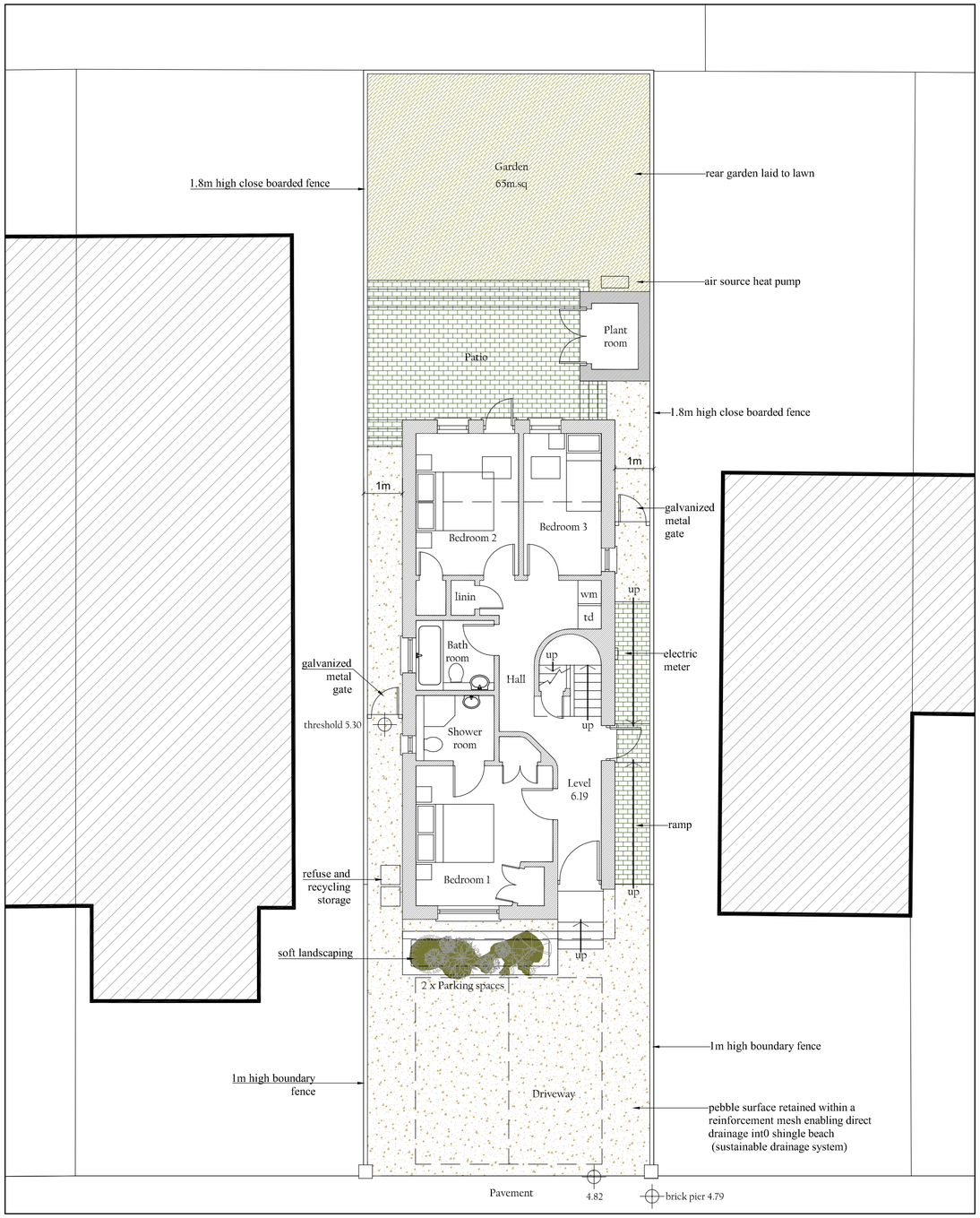
89 Old Fort Road, Shoreham by Sea, BN43 5HA, Tel 07733 268 297, Email: james@breckell.co.uk

20 EAST MEADWAY, SHOREHAM BY SEA, BN43 5RF

REPLACEMENT OF EXISTING BUNGALOW WITH A 2 STOREY HOUSE

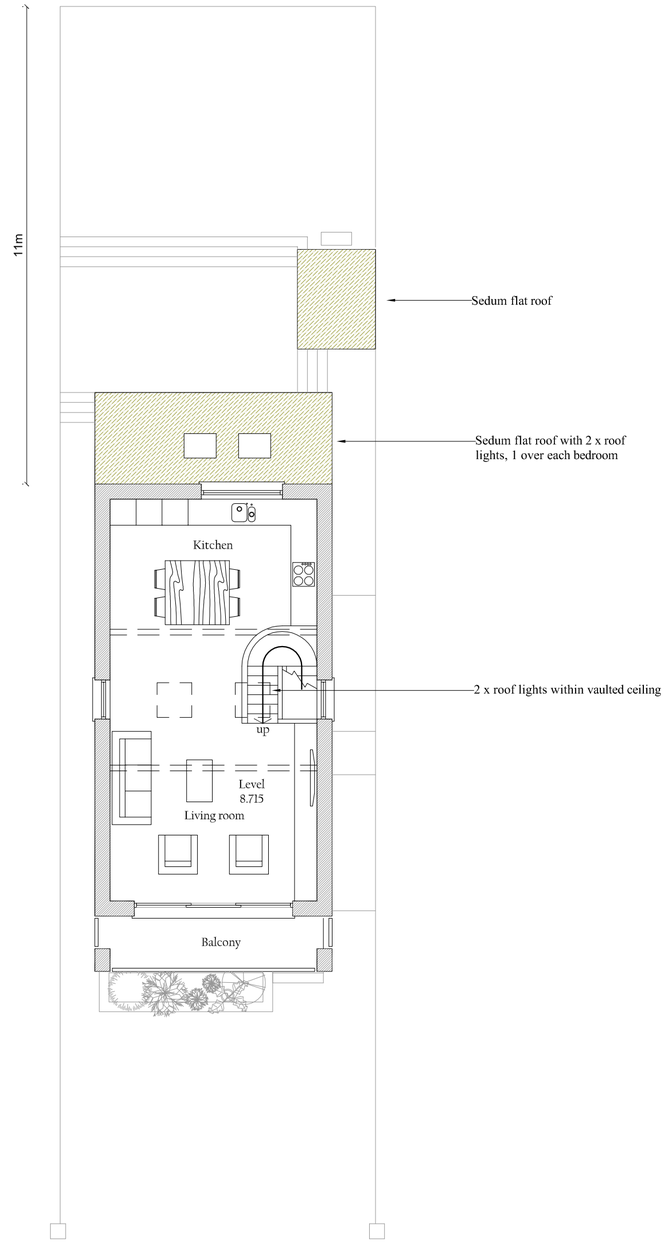
November 2025
Drawing no:JB 503/ planning application 04

PROPOSED PLANS



GROUND FLOOR PLAN 1:100

Gross Internal Area of the Ground Floor = 57m.sq
Total Gross Internal Area = 101.2m.sq



FIRST FLOOR PLAN 1:100

Gross Internal Area of the First Floor = 44.2m.sq

N
W E
S

0 1 2 3 4 5
SCALE BAR 1:100

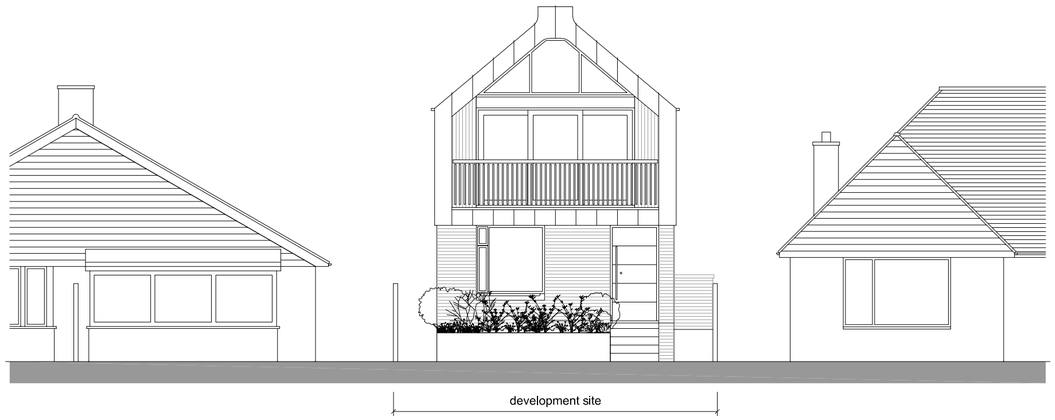
JAMES BRECKELL : ARCHITECT : ARB : RIBA
89 Old Fort Road, Shoreham by Sea, BN43 5HA, Tel 07733 268 297, Email: james@breckell.co.uk

20 EAST MEADWAY, SHOREHAM BY SEA, BN43 5RF

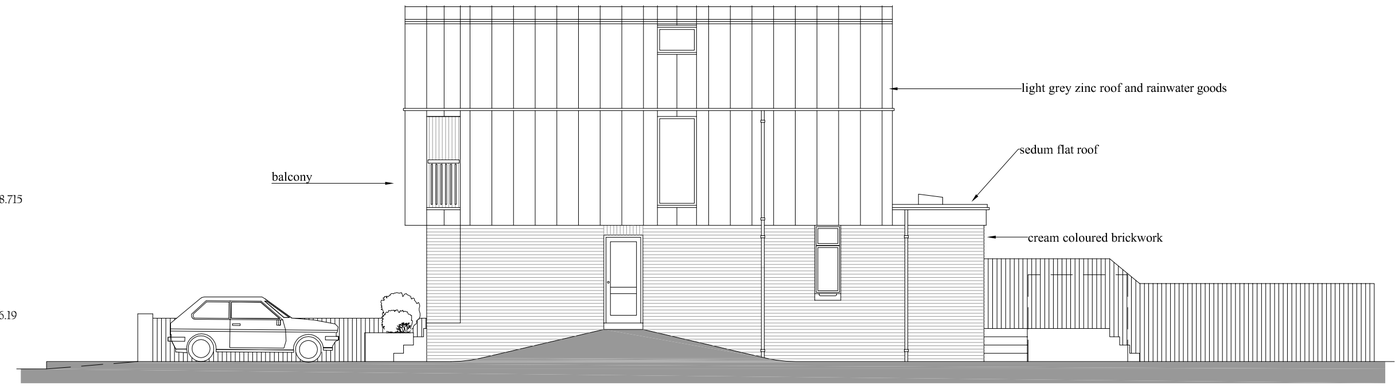
REPLACEMENT OF EXISTING BUNGALOW WITH A 2 STOREY HOUSE

November 2025
Drawing no:JB 503/ planning application 05

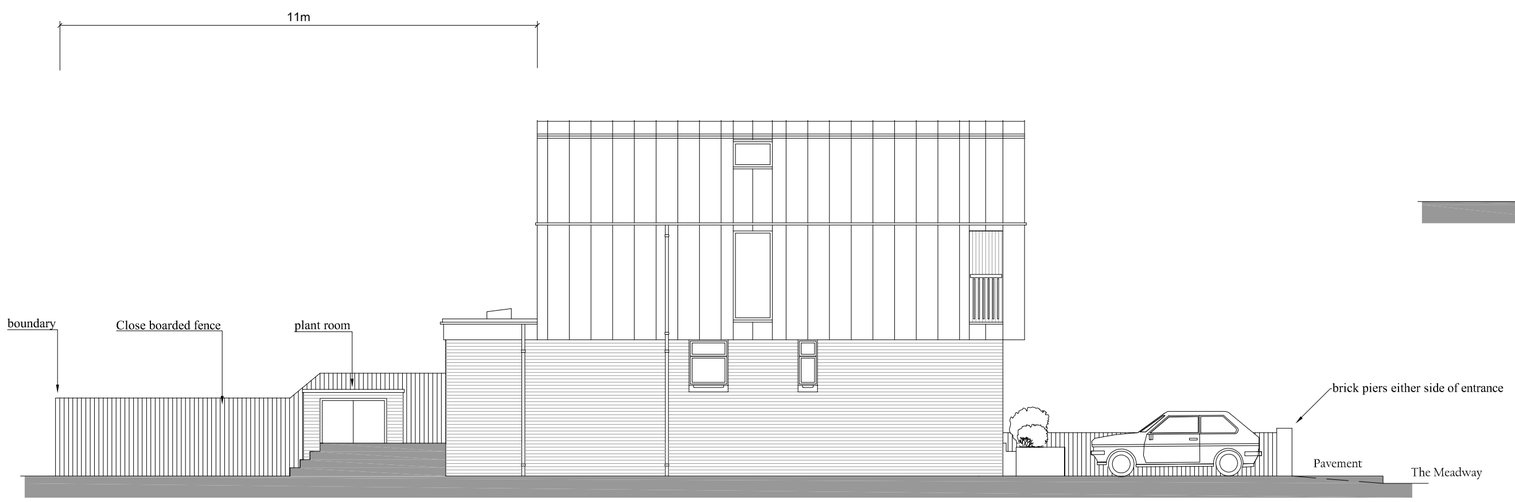
PROPOSED ELEVATIONS



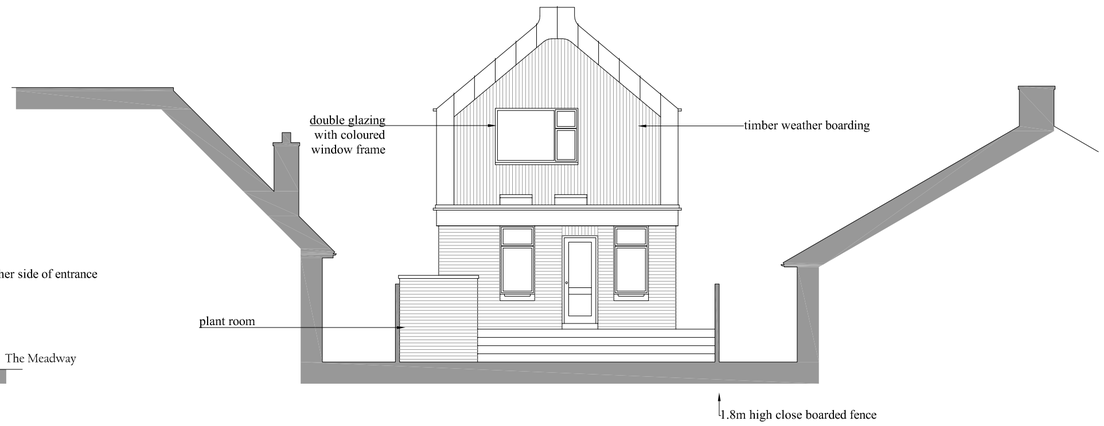
FRONT ELEVATION 1:100



SIDE ELEVATION 1:100



SIDE ELEVATION 1:100



REAR ELEVATION 1:100

0 1 2 3 4 5
SCALE BAR 1:100

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