

# Carson Consulting Engineers Ltd

## Infrastructure-Planning-Design

### **Flood Risk Assessment**

53 Clayton Road Selsey PO20 9DF

**C411-001 Rev-A**

**March 2024**

#### **Carson Consulting Engineers**

16 Nightingale Walk

Windsor

Berkshire

SL4 3HS

Tel: 07833 154498

[enquiries@carsonce.com](mailto:enquiries@carsonce.com)

## Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
1.1	Background.....	4
1.2	Scope of FRA.....	5
<b>2</b>	<b>EA Flood Data.....</b>	<b>6</b>
2.1	Fluvial Flooding.....	6
2.2	Surface Water Flooding .....	7
2.3	Other Flood Sources.....	7
<b>3</b>	<b>Development Proposals .....</b>	<b>8</b>
<b>4</b>	<b>National Policy, Local Planning Policy .....</b>	<b>10</b>
4.1	National Planning Policy .....	10
4.2	Local Policy.....	11
<b>5</b>	<b>Flood Risk Assessment.....</b>	<b>12</b>
5.1	Sources of Flooding .....	12
5.2	Flooding from Rivers or Sea .....	12
5.3	Flooding from Other Sources.....	16
5.4	Historic Flooding .....	16
5.5	Safe Access .....	17
5.6	Drainage .....	17
<b>6</b>	<b>Conclusions &amp; Recommendations.....</b>	<b>18</b>
	<b>Appendix A EA Product 4 Data</b>	<b>19</b>
	<b>Appendix B Development Proposals</b>	<b>20</b>

# 1 Introduction

## 1.1 Background

1.1.1 Carson Consulting Engineers have recently been commissioned to prepare a Flood Risk Assessment (FRA) to support a planning application for a proposed extension and conversion to an annex at 53 Clayton Road Selsey PO20 9DP.

1.1.2 The application, reference SY/24/00384/DOM has been submitted to Chichester District Council who considered it incomplete due to the lack of a FRA. This report seeks to address that omission.

1.1.3 The site is located at 53 Clayton Road Selsey, see **Figure 1.1** below and Photo, **Figure 1.2**.

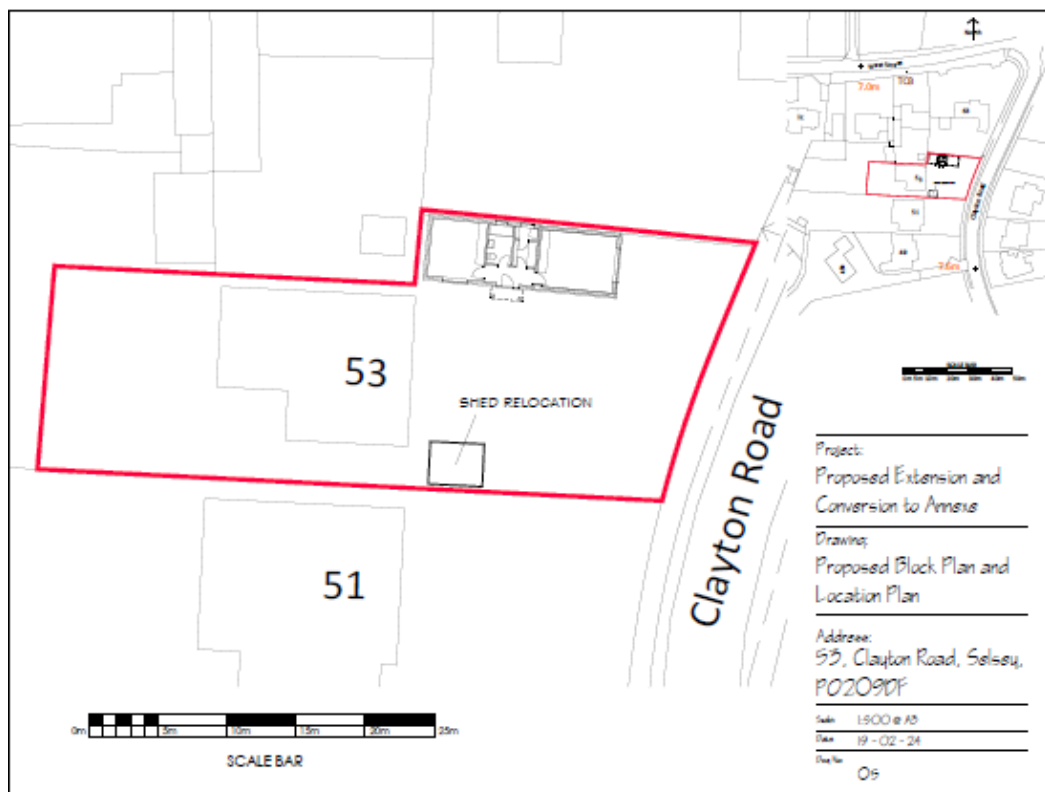


Figure 1.1 Site Location



**Figure 1.2 Photo of Site**

## **1.2 Scope of FRA**

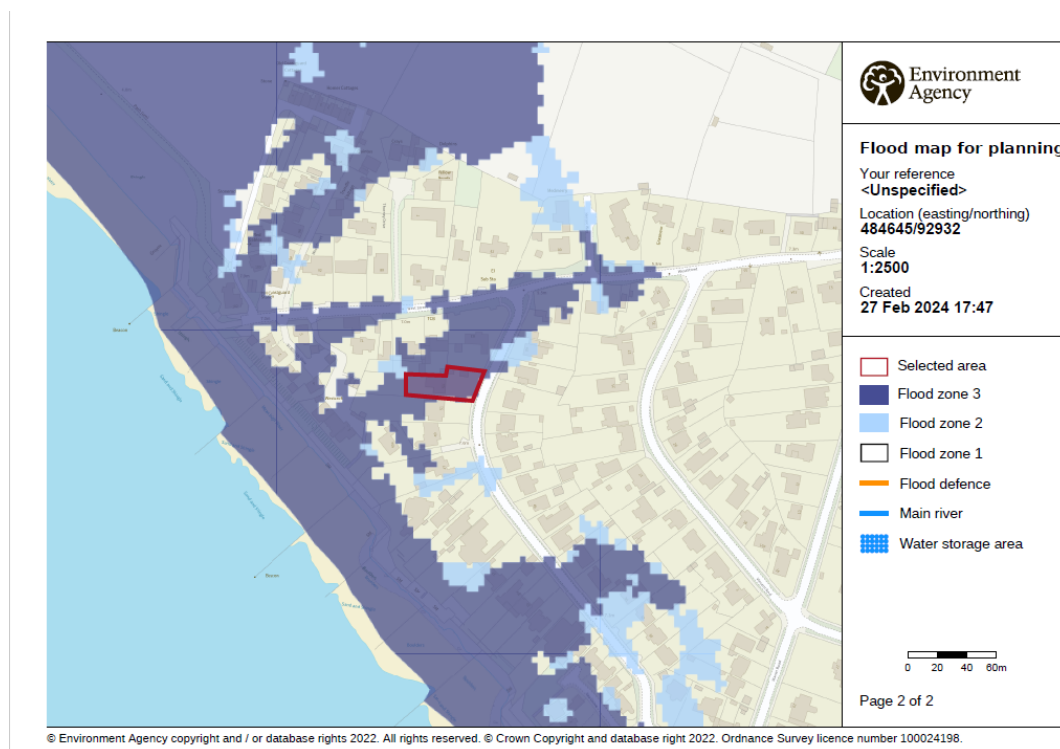
- 1.2.1 The objective of the FRA is to assess the current flood risk to the development and to demonstrate that the risks will be managed both now and over the lifetime of the development.
- 1.2.2 The assessment has been undertaken in accordance with the provisions of the National Planning Policy Framework (NPPF) and includes a review of the Environment Agency (EA's) Standing Advice in relation to minor developments.
- 1.2.3 It also includes the EA's published online flood mapping as well as its site specific flood modelling data, together with a review of the Local Planning Authority's flooding advice.

## 2 EA Flood Data

### 2.1 Fluvial Flooding

2.1.1 The EA's flood mapping website provides information in respect of potential flood risks to help inform planning applications. These include flood risks from river and sea, surface water, ground water and artificial sources such as reservoirs.

2.1.2 The published flood mapping shows that the site lies within Flood Zone 3 which is classified as land having a 1% (1 in 100 year) or greater annual probability of river flooding, or a 0.5% (1 in 200 year) or greater annual probability of sea flooding. The location of the site within this Flood Zone is shown in Figure 2.1 below.



**Figure 2.1 Flood Zone 3 Mapping**

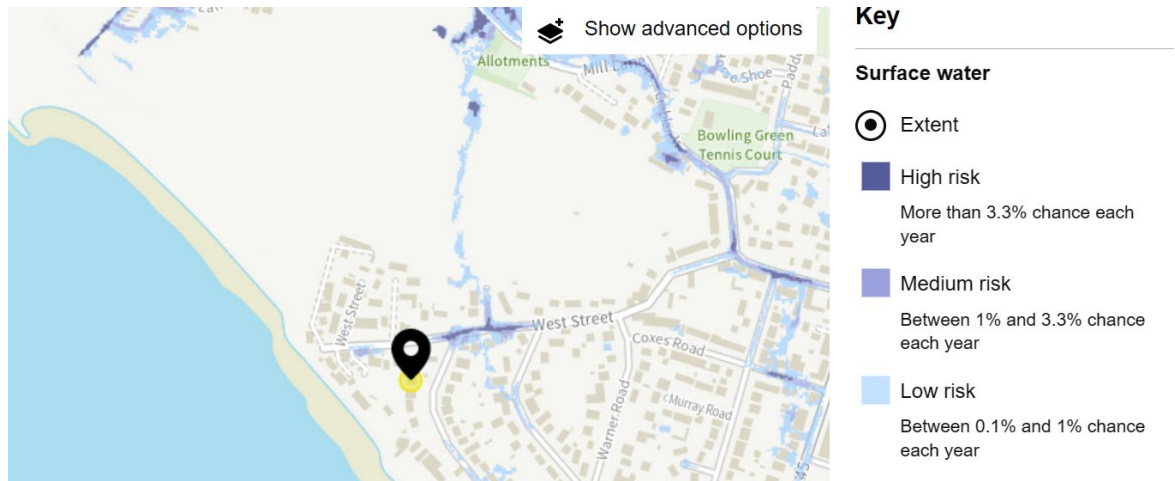
2.1.3 This mapping shows that although the site lies within Flood Zone 3 the road immediately adjacent to the site is in Flood Zone 1.

2.1.4 Additional site specific flooding information was obtained from the EA (Product 4 Data) which provides actual predicted flood levels for a variety of flood events based on Chichester District Council SFRA Coastal Modelling 2022. This information is included as **Appendix A**

2.1.5 Predicted flood levels for a series of node points in the vicinity of the proposed development are provided and these are discussed in Section 5.0 below.

## 2.2 Surface Water Flooding

- 2.2.1 Surface water flood mapping published on the EA's website shows that the site is at Low Risk of flooding from this source. An extract from the published flood mapping is shown in **Figure 2.2** below.



**Figure 2.2 Surface Water Flood Risk**

## 2.3 Other Flood Sources

- 2.3.1 The EA's website notes that the site is at low risk of flooding from groundwater and other artificial sources such as reservoirs.

### 3 Development Proposals

3.1.1 The development proposal is to extend and convert an existing detached garage at the property to provide separate annexe accommodation within the extensive frontage area. An existing shed will be repositioned to accommodate the extension but will not detract from existing car parking and manoeuvring within the curtilage of the property.

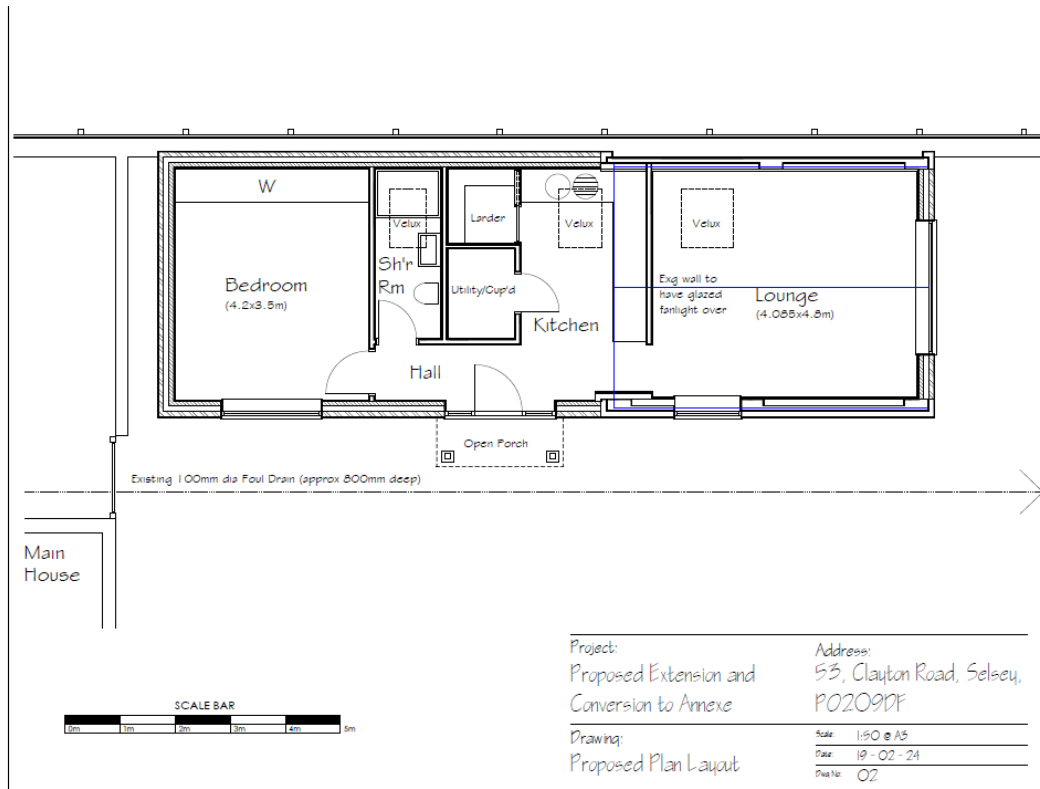


Figure 3.1 Proposed Layout

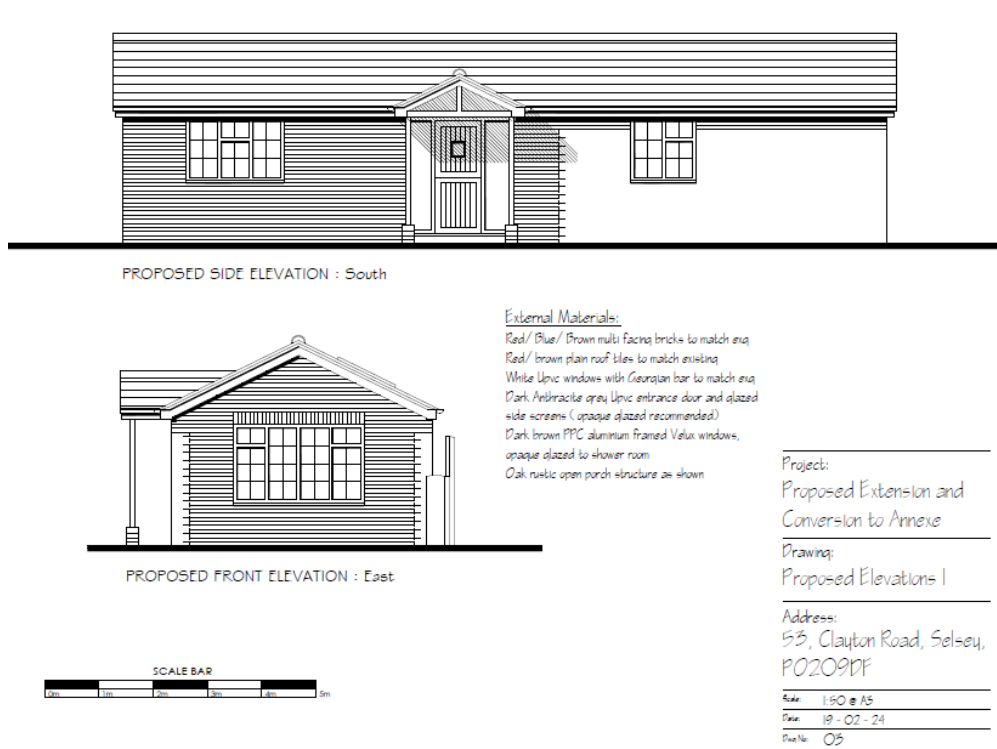


Figure 3.2 Proposed Elevation



## **4 National Policy, Local Planning Policy**

### **4.1 National Planning Policy**

4.1.1 The National Planning Policy Framework (NPPF) which was first published in 2012 was last updated in December 2023. Flood risk is primarily regulated through planning policy and key requirements with respect to flooding are outlined in the latest NPPF. The NPPF requires that an FRA should be submitted with planning applications for all development sites within Flood Zones 2 and 3; and all development sites with an area greater than one hectare to determine the risks of flooding from all sources including rivers, the sea, sewers and groundwater.

4.1.2 The NPPF sets out that flood risk should be defined according to Flood Zone 3 (High Probability), Flood Zone 2 (Medium Probability) and Flood Zone 1 (Low Probability). Flood Zone 3 represents land that the Environment Agency (EA) consider could be affected by flooding:

4.1.3 In terms of flood risk, the NPPF classifies land uses according to vulnerability as follows:

- Essential infrastructure;
- Highly vulnerable
- More vulnerable
- Less vulnerable
- Water compatible development;

4.1.4 The proposed development which is deemed as residential is designated as a 'More Vulnerable' land use in accordance with the NPPF. This is further discussed in Section 5.

4.1.5 As the total additional area of this development is less than 250m<sup>2</sup> it is considered by the NPPF to be a minor development.

4.1.6 NPPF is supported by Planning Practice Guidance, the latest PPG flood risk update being published in August 2022.

4.1.7 The EA also publish "Standing Advice" in respect of developing in flood risk areas. This also has been reviewed in preparing this FRA.

## 4.2 Local Policy

4.2.1 Chichester District Council's current Local Plan includes Policy 42 Flood Risk and Water Management. This sets out the following criteria which needs to be met where development is proposed in areas identified as being at risk of flooding;

- 1. The proposal meets the sequential and exception test (where required) in relation to the National Planning Policy Framework;*
- 2. A site-specific flood risk assessment demonstrates that the development will be safe, including the access and egress, without increasing flood risk elsewhere, and where possible, will reduce flood risk overall;*
- 3. The proposal incorporates specific requirements of the site, and protection, resilience and resistance measures appropriate to the character and biodiversity of the area;*
- 4. Development would not result/exacerbate coastal squeeze of any European sites or prevent managed realignment that may be required to ensure no adverse effect on European sites as a result of coastal squeeze;*
- 5. The scheme identifies adaptation and mitigation measures;*
- 6. Appropriate flood warning and evacuation plans are in place; and*
- 7. New site drainage systems are designed taking account of events which exceed the normal design standard i.e. consideration of flood flow routing and utilising temporary storage areas.*

4.2.2 The Local Plan is complemented by West Sussex County Council's Local Flood Risk Management Strategy. West Sussex is the Lead Local Flood Authority (LLFA) covering Chichester District Council area. This document was also reviewed during preparation of this FRA.

## 5 Flood Risk Assessment

### 5.1 Sources of Flooding

5.1.1 NPPF identifies six potential sources of flooding which should be assessed;

*Flooding from rivers or fluvial flooding;*

*Flooding from the sea or tidal flooding;*

*Flooding from land;*

*Flooding from groundwater;*

*Flooding from sewers; and*

*Flooding from reservoirs, canals, and other artificial sources.*

### 5.2 Flooding from Rivers or Sea

5.2.1 As noted in Section 2 (Figure 2.3) the site is shown on the EA's Flood Map for Planning to be wholly located within Flood Zone 3.

5.2.2 The NPPF includes advice on flood risk vulnerability and flood zone compatibility. Table 1 of the document defines the following flood zones relating to the probability of river and sea flooding, without the presence of defences:

**Zone 1** - low probability: less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year;

**Zone 2** - medium probability: between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% to 0.1%) or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% to 0.1%) in any year;

**Zone 3a** - high probability: 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability flooding from the sea (>0.5%) in any year; and

**Zone 3b** - the functional floodplain: where water has to flow or be stored in times of flood; identification should take account of local circumstances but would typically flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme 1 in 1,000 (0.1%) flood.

5.2.3 Flood Zone 3 is divided into two sub zones 3a and 3b. This site is in Flood Zone 3a, see extract from EA flood data in **Figure 2.1** above.

5.2.4 Table 2 of the NPPF guidance, see **Figure 5.1** below, provides a matrix of vulnerabilities for different types of development against compatibility within each Flood Zone as follows;

**Essential Infrastructure**, e.g. essential transport and utility infrastructure, wind turbines;

**Highly Vulnerable**, e.g. emergency services (those required to be operational during flooding), basement dwellings;

**More Vulnerable**, e.g. residential dwellings, hospitals, schools, hotels, drinking establishments;

**Less Vulnerable**, e.g. retail, offices, storage and distribution, leisure, restaurants; and

**Water-Compatible Development**, e.g. docks, marinas, wharves.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *

**Figure 5.1 – NPPF Table 2**

- 5.2.5 The NPPF includes requirements for Sequential and Exception Tests when assessing flood risk. These aim to steer development away from areas of greatest flood risk. Paragraph 174 of NPPF however exempts minor developments such as this site from these tests.
- 5.2.6 NPPF Guidance in respect of preparing FRAs for minor developments suggests that, whilst site specific assessments should still be undertaken a pragmatic approach should be taken to the scope and detail of the assessment. As a minimum, the assessment needs to show that the development will be safe for its users for the intended lifetime of the development, without increasing flood risk elsewhere, and be sufficiently flood resistant and resilient to the level and nature of the flood risk.
- 5.2.7 Flood modelling data issued by the EA within their Product 4 information provides a series of predicted flood levels and depths at a number of node points on the site for a range of flooding scenarios, including allowances for climate change, see **Figures 5.2 and 5.3** below.

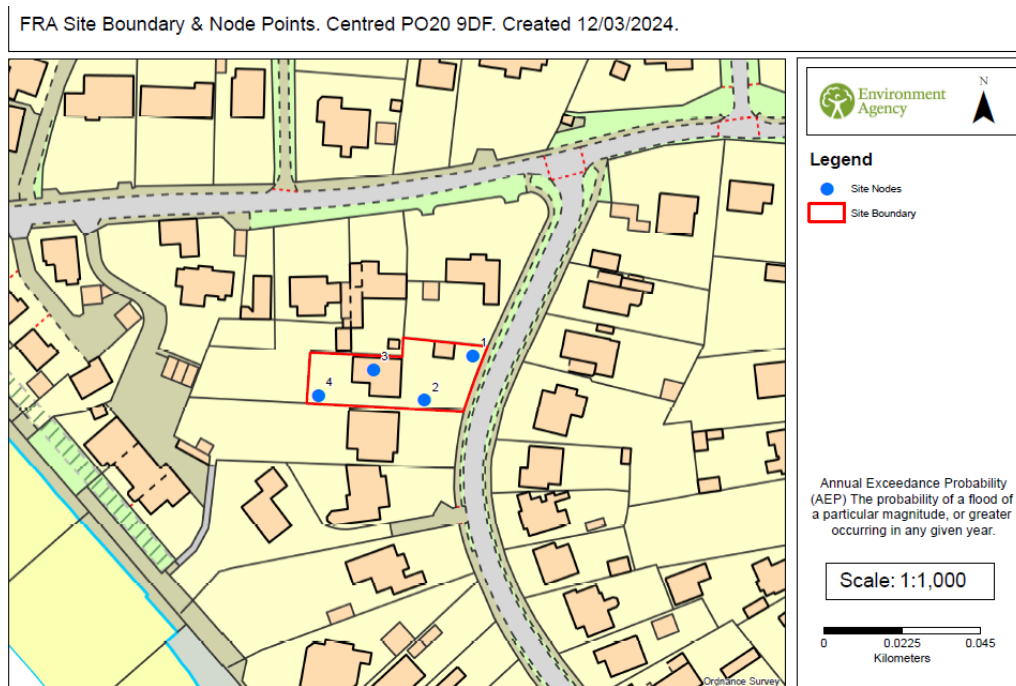


Figure 5.2 Site Node Points

Table 1: Water Levels: Tidal Undefended

Node Ref	NGR		Modelled Flood Levels in Metres AOD		
	Eastings	Northings	Undefended Annual Exceedance Probability		
			0.5%	0.5% (2121)*	0.1%
1	484667	92938	7.43	7.46	7.44
2	484653	92925	7.58	7.62	7.58
3	484638	92934	7.86	7.92	7.86
4	484622	92927	8.07	8.09	8.07

Table 2: Water Levels: Tidal Defended

Node Ref	NGR		Modelled Flood Levels in Metres AOD		
	Eastings	Northings	Defended Annual Exceedance Probability		
			0.5%	0.5% (2121)*	0.1%
1	484667	92938	7.43	7.46	7.43
2	484653	92925	7.58	7.62	7.58
3	484638	92934	7.86	7.92	7.86
4	484622	92927	8.07	8.09	8.07

Table 3: Water Depths: Tidal Undefended

Node Ref	NGR		Modelled Flood Depths in Metres		
	Eastings	Northings	Undefended Annual Exceedance Probability		
			0.5%	0.5% (2121)*	0.1%
1	484667	92938	0.02	0.04	0.02
2	484653	92925	0.07	0.11	0.08
3	484638	92934	0.07	0.13	0.09
4	484622	92927	0.02	0.04	0.02

Figure 5.3 Predicted Flood Levels and Depths

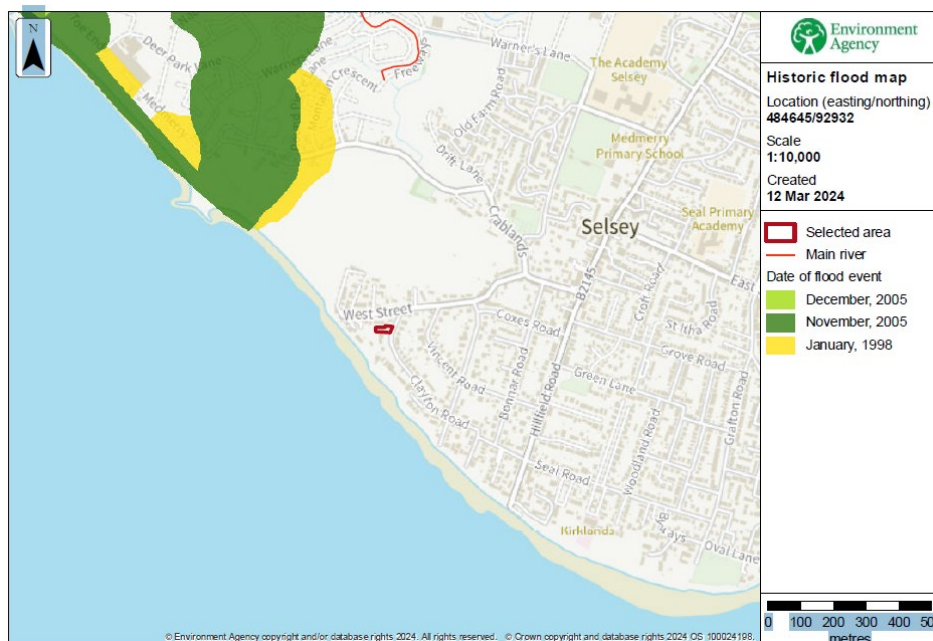
- 5.2.8 These predicted flood levels range from 7.44m AOD for the current 0.1% (1 in 1000 year) undefended flood event to 7.46m AOD for a 0.5% (1 in 200 year) floor event in 2121, allowing for climate change. These levels are at node point 1, the closest point to the building subject to this planning application.
- 5.2.9 The predicted depth of flood water at this node point is 0.02m and 0.04m respectively.
- 5.2.10 The existing site levels adjacent to the proposed annex building are approximately 7.4m AOD. The finished floor level of the building will be approximately 165mm above existing ground level, i.e. minimum of 7.565m AOD.
- 5.2.11 In a worst case scenario of a 0.5% flood event in 2121 the maximum flood depth adjacent to the annex building, as noted in **Figure 5.3** above would be 40mm. This would be below the finished floor level of the building.

**5.3 Flooding from Other Sources**

- 5.3.1 As noted in para 2.1.7 the EA’s website states that this site is at low risk of flooding from other sources such as surface water, groundwater and artificial sources.

**5.4 Historic Flooding**

- 5.4.1 Mapping provided within the EA’s flooding data shows that this site did not flood during the major flood events affecting the area in January 1998, November 2005 and December 2005, see **Figure 5.4** below.



## Figure 5.4 Historic Flooding

### 5.5 Safe Access

- 5.5.1 The EA flood mapping shows that the road adjacent to the site is in Flood Zone 1, i.e. at the lowest risk of flooding. As the above assessment demonstrates in a worst case scenario of a 0.5% flood in 2121 the maximum depth of flood water adjacent to the building would be 40mm.
- 5.5.2 It is therefore deemed that safe access to outside of Flood Zone 3 can be satisfactorily achieved.

### 5.6 Drainage

- 5.6.1 There are no proposed changes to the existing drainage regime on the site as the new Annex building will utilise the existing drainage connections from the existing garage.



## 6 Conclusions & Recommendations

- 6.1.1 This development is for a new Annex building to replace an existing garage located on the site. The total area of the new development is less than 250m<sup>2</sup> and is therefore classified as a minor development.
- 6.1.2 The site is wholly located within Flood Zone 3 and is considered to have a high probability of flooding from tidal and fluvial sources.
- 6.1.3 Information provided by the EA demonstrates that in the current and future scenarios, upto 2121, the maximum depth of flood waters adjacent to the annex building, in the event of a 0.5% (1 in 200 year) storm would be 40mm. This would be below the finished floor level of the building.
- 6.1.4 The road immediately adjacent to the site is within Flood Zone 1 hence a safe access route can be achieved from the site.
- 6.1.5 None of the other flood sources, surface water, groundwater, sewers or artificial sources are considered to pose any risk to the development.
- 6.1.6 There will be no changes to the surface water run off from the new development as the current connections from the existing garage will be reused.
- 6.1.7 This FRA demonstrates that this annex building can be constructed safely and will not adversely impact flooding on adjacent areas and is therefore compliant with the requirements of NPPF, EA guidance and local planning policy.

Appendix A    **EA Product 4 Data**

## Appendix B **Development Proposals**

