
FLOOD RISK ASSESSMENT

PROPOSED CHANGE OF USE

SITE SPECIFIC FLOOD RISK ASSESSMENT

Unit 14
Wickham Business Centre
Harwood Road
Littlehampton
West Sussex
BN17 7AU

Issue 1

March 2018

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Issue	Copies	Distribution	Format	Date	Status
1	1	T Arnold Esq	By Email only tim@peakperformancesussex.co.uk	5 March 2018	Issue 1

1.0 INTRODUCTION

1.1 Property Description

1.1.1 This Flood Risk Assessment [FRA] supports the change of use of unit 14, Wickham Business Centre [WBC], Littlehampton. The change of use from a light industrial workshop to a gym took place on 1 February 2017.

1.1.2 The property lies north west of the town centre of Littlehampton. The local postcode is BN17 7AU.

1.2 Limitations

1.2.1 Nothing in this report confers or purports to confer on any third party, any benefit or any right to enforce any term of this report pursuant to the Contract [Rights of Third Parties Act] 1999.

1.3 Terms of Reference

2.3.1 This report comprises a Level 1 [Screening Study] FRA in accordance with the requirements and guidance of:

- The National Planning Policy Framework
- Technical Guidance to the National Planning Policy Framework
- Flooding – Engineering Resilience, ICE
- Flood Risks to People – FD2321/TR2 DEFRA

1.4 Flood Risk in Summary

2.4.1 According to the Environment Agency's flood mapping Wickham Business Centre lies within Flood Zone 3, a tidal flood plain. Statistically the likelihood of undefended flooding from the sea is 0.5% Annual Exceedance Probability or a 1 in 200 chance of flooding each year. Projected flood risk to the year 2070 increases to 0.5% AEP for both undefended and defended scenarios.

1.5 Summary of Brief

1.5.1 In accordance with the Client's specific objectives, the purpose of this report is primarily:

- (i) To provide a record of all current and future sources of flood risk affecting the site.
- (ii) Identify whether any flooding or surface water management issues exist that may warrant further consideration or may affect the feasibility of the development.
- (iii) To advise on exceptional flooding events that may have an influence on developing the site.



Figure 1: Aerial view of site.

2.0 EXECUTIVE SUMMARY

- 2.1 This document reports upon the flood risk associated with the proposed change of use from light industrial gym use at unit 14 WBC.
- 2.2 The Environment Agency's flood mapping indicates that the site lies within flood zone 3, with tidal flooding from the River Arun the primary flood risk. The property has a 0.5% AEP of flooding in any one year for both defended and undefended flood scenarios from the year 2070.
- 2.3 This desktop study concludes that the flood risk to users of the gym would be very low. The light industrial unit which houses the gym would suffer minimal damage given the nature of the building.

3.0 SOURCES OF INFORMATION**3.1 Desk Top and Site Based Research**

3.1.1 The flood risk assessment research comprised:

Site Information	YES	NO
Review of Information supplied by Client	✓	
Site walkover		✓
Preliminary discussion with owner/occupier		✓

Public Domain Information	YES	NO
Geological Mapping	✓	
Statutory Services Information		✓
Local Authority enquiry		✓
Strategic Flood Risk Assessment	✓	
Topographic site survey		✓
Internet data	✓	
Anecdotal flooding information		✓
Aerial photographs	✓	
LIDAR Survey		✓
Historic mapping		✓

Key: NA = Not applicable
NR = No records available
AR = Awaiting response

3.2 Environment Agency Flood Mapping

3.2.1 The Environment Agency's flood mapping indicates the site lies within flood zone 3, with tidal flooding from the River Arun the primary flood risk. The site has a 0.5% Annual Exceedance Probability of tidal flooding with flood depths local to unit 14 estimated at 1.5m approximately.

4.0 SITE DETAILS

- 4.1 Unit 14 WBC is situated within a light industrial estate close to and north west of the town centre of Littlehampton. The site is approximately 280m north west of the river Arun and 1.5km north of the sea.
- 4.2 In February 2017 unit 14 which lies within an industrial 'shed' was converted from light industrial use to serve as a private members gym. No structural alternations have been made to the building fabric. Rubberised floor mats have been laid on the floor and some light weight gym equipment has been installed. Total internal floor space equates to 120m².

5.0 POTENTIAL FLOOD HAZARDS

5.1 Flooding from River Arun and Sea

- 5.1.1 The primary flood risk is tidal flooding from the River Arun. The site lies within the flood plain of the River Arun and has a 0.5% Annual Exceedance Probability of flooding in any one year both with and without flood defences.
- 5.1.2 The Arun to Adur Flood Model produced in 2012 and updated in 2015 indicates that flood depths local to unit 14 WBC would in the years 2070 and 2115 lie in the region of 1.5m.
- 5.1.3 Given the proximity of the flood plain to unit 14 the most likely course of action to be taken by the gym operator would be to close the gym in the event of a high flood risk warning.

5.2 Flooding from Land

- 5.2.1 Land flooding results from intense rainfall that is unable to soak into the ground or enter drainage systems.
- 5.2.2 The Environment Agency's flood mapping indicates the site is at very low risk of surface flooding, indicating that each year this area has a chance of land flooding of less than 0.1%.

5.3 Flooding from Groundwater

- 5.3.1 The Arun District Council SFRA indicates that the risk of groundwater flooding is high local to the proposed development.
- 5.3.2 No on-site geotechnical investigation has been undertaken for the property.

5.4 Flooding from Sewers

- 5.4.1 Flooding can result when a sewer is overwhelmed by heavy rainfall, groundwater, becomes blocked or is of inadequate capacity. Historic records show that multiple sewer floods have occurred in the region.
- 5.4.2 The effectiveness of local sewers would be adversely affected by river flooding.

5.5 Flooding from Reservoirs, Canals and other Manmade Sources

- 5.5.1 The site is located well away from any manmade water sources. The probability of this type of flooding occurring is therefore considered to be nil.

6.0 FLOOD MITIGATION MEASURES

- 6.1 Given the gym occupies a light industrial unit of a relatively small plan area, it is considered that the installation of flood migration measures would be inappropriate.
- 6.2 Emergency access can be sought via East Ham Road which is local and lies within flood zone 1 which has less probability of flooding.
- 6.3 The occupier should sign up to the Environment Agency Flood Warning Scheme.

7.0 DISCUSSIONS AND CONCLUSIONS

- 7.1 The gym within unit 14 Wickham Business Centre is located within Flood Zone 3. Its primary flood risk is tidal flooding from the River Arun. The property has a 0.5% AEP chance of flooding in any one year both with and without flood defences.
- 7.2 The gym floor area equates to 120m² and is fitted with equipment which is resistant to flooding, and lies within an industrial building which is resilient to flooding.
- 7.3 It is considered the proposed change of use from light industrial to gym usage will not adversely raise consequential risk and damage to property. Risk to staff and gym members can be managed with reference to local radio and the Environment Agency Flood Warning Scheme. During a predicted flood event the gym will close.



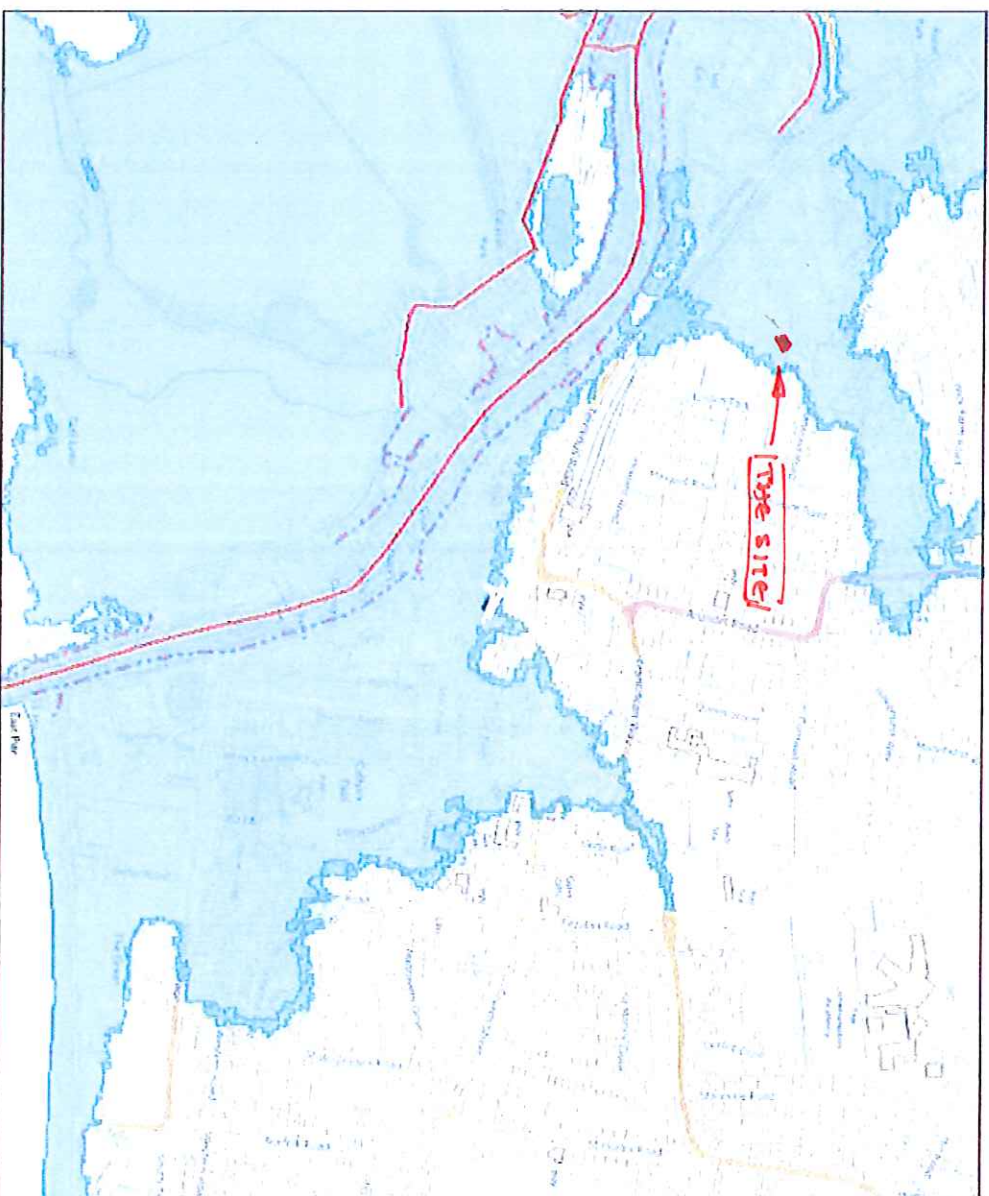
Prepared by: Eur Ing Vincent Carpenter BSc (Hons) CEng MICE FCIWEM MIHT MIOD

Date: 5 March 2018

APPENDIX A

Environment Agency Flood Mapping Data

Flood Map for Planning (Rivers and Sea). Centred on BN17



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Scale 1: 10,000



Flood Map for Planning (Rivers & Sea)

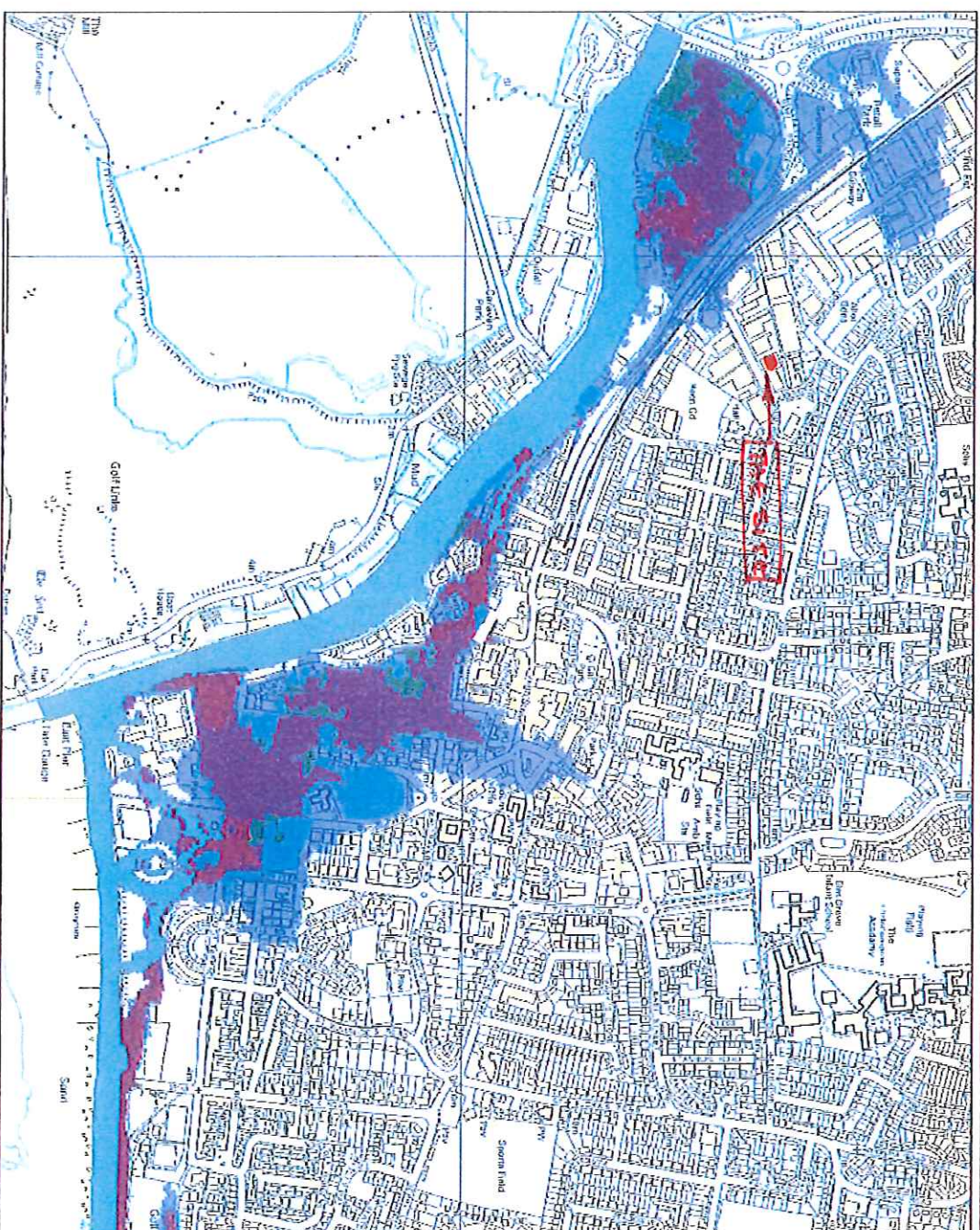
- Sealed Main Rivers
- - - Defences
- - - Flood Storage Areas
- ▣ Areas benefiting from flood defences
- ▣ Flood Zone 3
- ▣ Flood Zone 2

Flood Map Areas (assuming no defences)
Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Modelled Flood Outlines (Defended Tidal) Map. Centred BN17



Legend

- Site Boundary
- 20% AEP (2012) (Defended)
- 5% AEP (2012) (Defended)
- 1.3% AEP (2012) (Defended)
- 1% AEP (2012) (Defended)
- 0.5% AEP (2012) (Defended)
- 0.1% AEP (2012) (Defended)

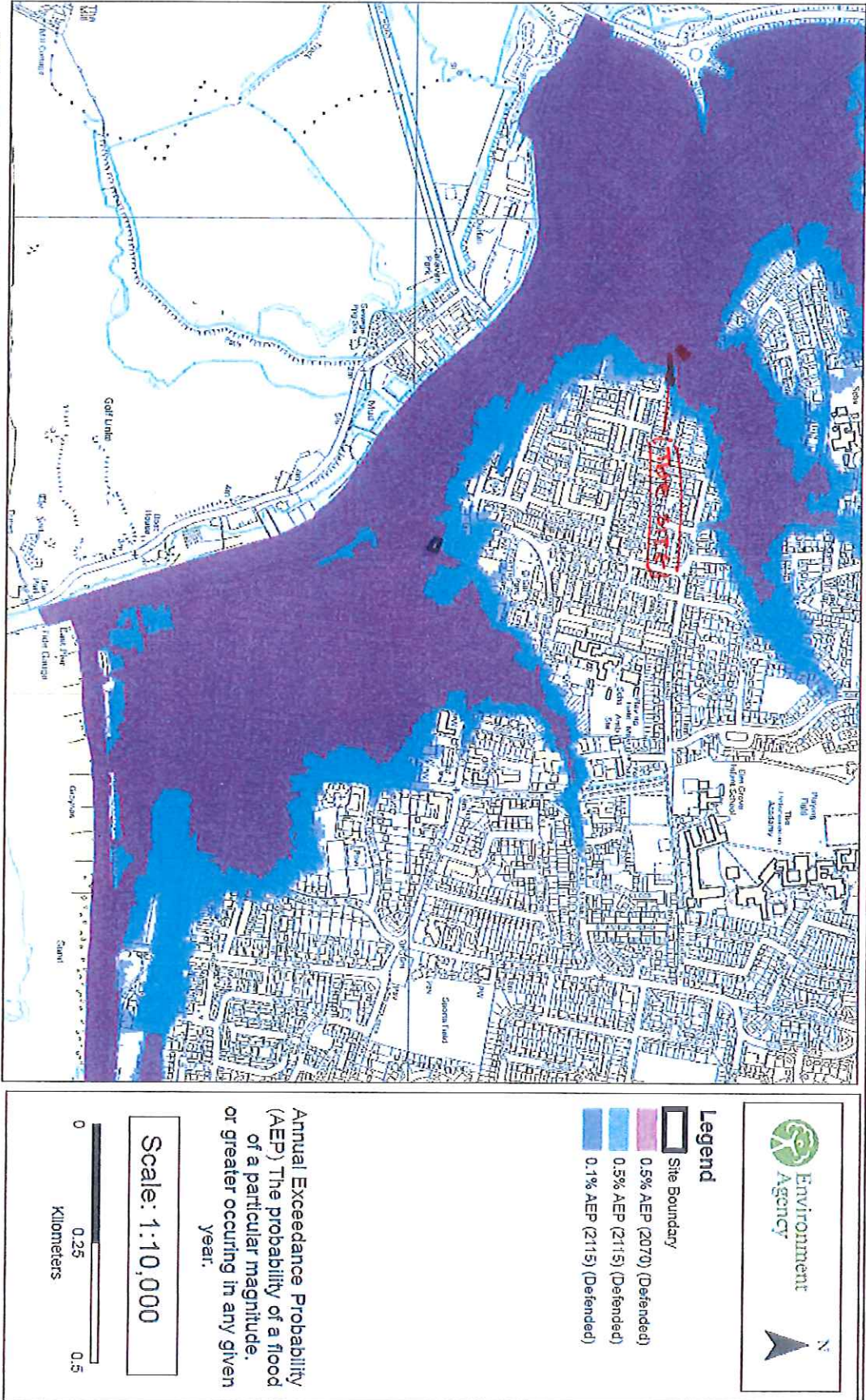
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000



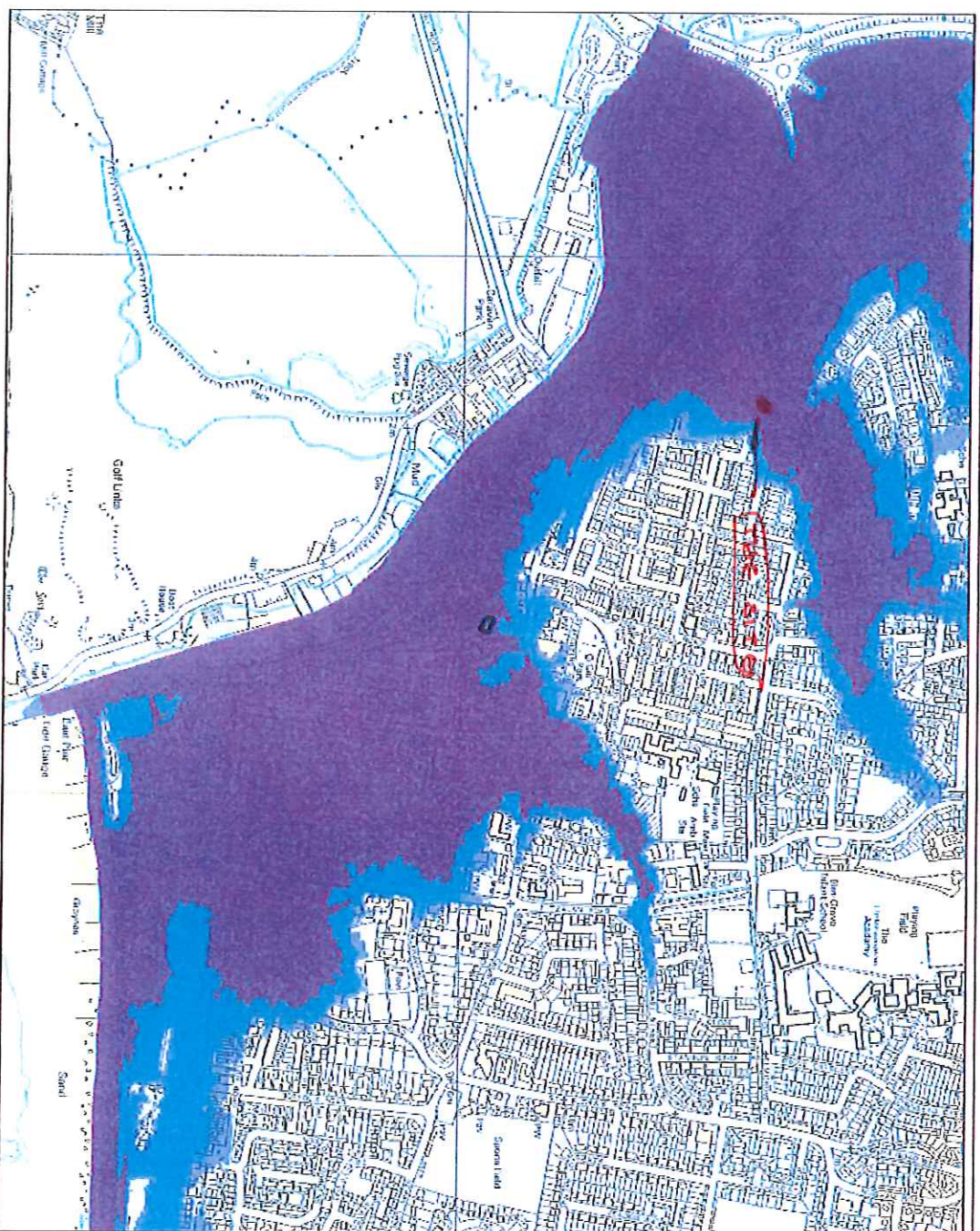


Modelled Flood Outlines (Defended Tidal, 2115, 2070) Map. Centred BN17



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Modelled Flood Outlines (Undefended Tidal, 2115, 2070) Map. Centred BN17



Legend

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

