

JUDWAA CONSULTING

A Vision to Better Solutions

10 WESTERN PARADE, EMSWORTH

**Flood Risk Assessment
Mr and Mrs Brown**

Quality Management

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Planning Issue			
Date	04/05/2020			
Prepared by	HG			
Checked by	HG			
Authorised by	HG			

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1 Introduction

1.1 Appointment and Brief

- 1.1.1 JUDWAA has been commissioned by Mr and Mrs Brown to prepare a site specific Flood Risk Assessment (FRA) aimed at supporting a planning application for the development proposals at 10 Western Parade in Emsworth.

1.2 Aim

- 1.2.1 The aim of this NPPF compliant FRA is to identify flood risk to the site, and those that may arise as a result of the Proposed Development. Where risks are identified, mitigation measures are proposed to manage the risks over the lifetime of the development, accounting for the effects of climate change.
- 1.2.2 To achieve this aim the following objectives have been met:
- A review of flood sources local to the site;
 - A review of the impact of those flood sources to the Proposed Development;
 - A review of the impact the Proposed Development could have on local flood sources;
 - A review of the local national and local policy position of the Proposed Development in relation to local flood risks; and
 - Where necessary identification of mitigation measures for incorporation into the Proposed Development to mitigate flood risk to and/or arising from the proposed Development.
- 1.2.3 To achieve these objectives the following documents have been consulted and/or referenced:
- The National Planning Policy Framework (NPPF);
 - Flood Risk and Coastal Change Planning Guidance to the NPPF (PPG);
 - Development and Flood Risk – Guidance for the Construction Industry, (CIRIA C624);
 - Havant Borough Council Local Development Plan Core Strategy, March 2011;
 - Havant Borough Council Strategic Flood Risk Assessment (Local Plan Sites), Nov 2018;
 - PUSH Strategic Flood Risk Assessment – 2016 Update
 - Hampshire Surface Water Checklist Guidance

1.3 Study Methodology

- 1.3.1 The FRA process consists of a desk study, data research, and consultation with regulatory bodies and third parties.
- 1.3.2 This document presents an assessment of flooding to the Application Site and Proposed Development from all possible sources, including fluvial, pluvial, groundwater, sewers, and man-made infrastructure. The assessment also identifies and examines the residual flood risk to the Proposed Development and neighbouring property from these sources.
- 1.3.3 Data from the following stakeholders has been utilised in the preparation of this FRA:
- The Environment Agency;
 - Hampshire County Council;
 - Havant Borough Council; and
 - Southern Water.
- 1.3.4 Extracts from the above stakeholders are provided within the appendices of this report.

2 Policy

2.1 National Planning Policy Framework (NPPF)

- 2.1.1 The NPPF states 'a site specific flood risk assessment is required for proposals of 1 hectare (ha) or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency), and where Proposed Development or a change of use to a more vulnerable class may be subject to other sources of flooding'.
- 2.1.2 Paragraph 155 of the NPPF states that '*inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere*'.
- 2.1.3 The majority of the Application Site is situated within Flood Zone 1. However, the southern edge of the site straddles Flood Zone 2 and 3 hence the preparation of this FRA.
- 2.1.4 Within Table 2 (Flood Risk Vulnerability Classification) of the PPG, the residential development is classified as 'More Vulnerable'.
- 2.1.5 Table 3 (Flood Risk vulnerability and Flood Zone Compatibility) of the PPG, states that 'More Vulnerable' development is appropriate development within Flood Zone 1.
- 2.1.6 As all built development is located within Flood Zone 1 and is considered appropriate development it therefore passes the Sequential Test.

2.2 Local Policy

Havant Borough Council Core Strategy, March 2011

Policy CS15: Flood and Coastal Erosion Risk

- 2.2.1 *Development in areas at risk of flooding now and in the future as identified on the latest Environment Agency flood risk maps and Strategic Flood Risk Assessment climate change maps will only be permitted where.*
- *It meets the sequential and exception test (where required) in relation to PPS25;*
 - *The site is located in a low hazard area as defined in the Strategic Flood Risk Assessment;*
 - *A site-specific flood risk assessment demonstrates that the development will be safe, including the access, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall;*
 - *The scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site;*
 - *Appropriate flood warning and evacuation plans are in place; and*
 - *New site drainage systems are designed taking account of events which exceed the normal design standard.*

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- 2.2.2 *All development will be required to ensure that there is no net increase in surface water run off. Priority should be given to incorporating Sustainable Drainage Systems (SuDS) to manage surface water drainage, unless it is proven that SuDS are not appropriate. Where SuDs are provided arrangements must be put in place for their whole life management and maintenance.*
- 2.2.3 *The council will work with partners to implement the Coastal Policy Zones in the North Solent Shoreline Management Plan to ensure that development avoids areas at risk from coastal erosion and coastal flooding and that areas required to offset coastal squeeze and prevent habitat fragmentation, to allow species to adapt to climate change, are identified and protected from development.*

3 Background

3.1 Site Location

- 3.1.1 The Application Site is an existing residential dwelling situated on 10 Western Parade, Emsworth in Hampshire.
- 3.1.2 It is primarily bounded by residential development to the north, west and east. Western Parade abuts the Application Site's southern boundary.
- 3.1.3 The OS grid reference for the site is (474195, 105372), and the postcode is PO10 7HS. Refer to Site Location Plan (Figure 1) within **Appendix A**.

3.2 Site Description

- 3.2.1 The Application Site has a gross area of approximately 0.085 ha and is an existing residential dwelling.
- 3.2.2 Table 3-1 describes the general site characteristics.

Table 3-1: General site characteristics

Gross Area	0.085 ha.	
General Topography	The Application Site is located within one principal catchment, which drains from north to south. Levels onsite range from 4.01m above Ordnance Datum (AOD) to 4.93m AOD. The Finished Floor Level of the existing house is 4.69m AOD	
Existing Surfacing	Approximately 40% hardstanding impermeable areas.	
Current Use	Existing residential dwelling	
Boundaries	North	Residential development fronting Warblington Road
	South	Western Parade and Chichester Harbour
	East	Residential dwelling (9 Western Parade)
	West	Residential dwelling (11 Western Parade)
Access	Access to the Application Site can be gained via Western Avenue. There are no public footpaths which cross the Application Site.	

3.3 Geology and Hydrogeology

- 3.3.1 British Geological Survey (BGS) maps (available online at www.bgs.ac.uk, accessed in April 2020) indicate that the site is situated on bedrock of Lewes Nodular Chalk Formation, Seaford Chalk Formation, Culver Chalk Formation and Portsmouth Chalk Formation. There are superficial deposits of River Terrace Deposits on top of the Bedrock. Refer to the BGS maps in **Appendix D**.
- 3.3.2 There are no BGS boreholes within 1 km of the site, the nearest borehole logs on the BGS mapping are located in areas with a different geological set up. According to the anecdotal evidence provided by the current occupiers of 10 Western Parade, there has been no reported incidences of high ground levels at the site.

-
- 3.3.3 According to the Environment Agency, there are no groundwater monitoring points within 500m of the site. The nearest is 4.7km to the east and this will not provide accurate groundwater level data for the site.
- 3.3.4 Environment Agency online resources indicate that the bedrock at the Application Site is classified as a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
- 3.3.5 The superficial deposits at the Application Site are classed as Secondary Aquifer (Secondary A) defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
- 3.3.6 Groundwater mapping published by the Environment Agency shows that the site is not within a Source Protection Zone.

3.4 Identification of Existing Watercourses

- 3.4.1 Ordnance Survey mapping indicates that the nearest watercourse to Application Site is the tidal Nore Rithe located approximately 170m to the south of the site. The confluence of the Nore Rithe and the River Emms is approximately 650m south of the site. Both watercourses are tidally influenced and classed as Main Rivers by the Environment Agency.

3.5 Existing Flood Defences

- 3.5.1 According to the Environment Agency, the flood defences protecting the site are an embankment to the south of Western Parade.

3.6 Existing Sewers and Drainage Infrastructure

- 3.6.1 The Application Site is located within Southern Water's drainage area. Southern Water records (obtained September 2019) identify the following infrastructure in the vicinity of the Application Site.

Onsite:

- A 225mm foul sewer runs through the site conveying foul flows from west to east. A drainage survey completed by InSewer Surveys in July 2019 confirmed the size and location of this public sewer. The existing foul connections at the Application Site utilise this sewer.
- There are no public surface water sewers shown within the Application Boundary. However in a development enquiry undertaking in July 2018, Southern Water confirms that the surface water drains to public sewer.

Offsite:

- A 300mm diameter foul sewer is shown running along Western Parade from west to east. This sewer serves the wider areas to the west and north of the Application Site.
- The nearest public surface water sewer is on Beach Road. This 225mm diameter sewer runs from north to south before discharging into the tidal Nore Rithe.

- 3.6.2 Refer to **Appendix E** for the record plans from Southern Water.

3.7 Historic Flood Records

- 3.7.1 Table 3-2 summarises the historic flood records obtained through consultation and liaison with the various bodies contacted in the production of this FRA.

Table 3-2: Historic Flood Records

Information Source	Flood Records/Details
Environment Agency	The Environment Agency has no records of flooding at the Application Site.
Havant Borough Council	Havant Borough Council SFRA has no records of specific flooding at the Application Site.
Southern Water	Southern Water is yet to confirm any records of flooding at the Application Site.

4 Proposed Development

4.1 Description

- 4.1.1 The development proposals comprise the demolition of the existing dwelling and the construction of a replacement 1 No. 3 bed detached dwelling to incorporate an existing outbuilding with modifications, with a balcony to the front elevation. Refer to **Appendix B** for the development proposals.

5 Overview of Flood Risk and Mitigation

5.1 Introduction

- 5.1.1 The following section provides an overview of flood risk to the Application Site, and risk arising to and from the Proposed Development. An assessment has been undertaken for each possible source that could affect the Proposed Development in accordance with the NPPF Flood Risk and Coastal Change Planning Practice Guidance.

5.2 Existing Risk of Flooding to the Application Site

Flooding from Tidal Sources

- 5.2.1 The primary risk of flooding to the Application Site is tidal flooding from Chichester Harbour and the watercourses in its vicinity.
- 5.2.2 According to the Environment Agency's Flood Map, the southern edge of the site close to Western Parade is in Flood Zone 3. This is land where the annual probability of tidal flooding in any given year is 0.5% as shown in Figure 5.1 below.

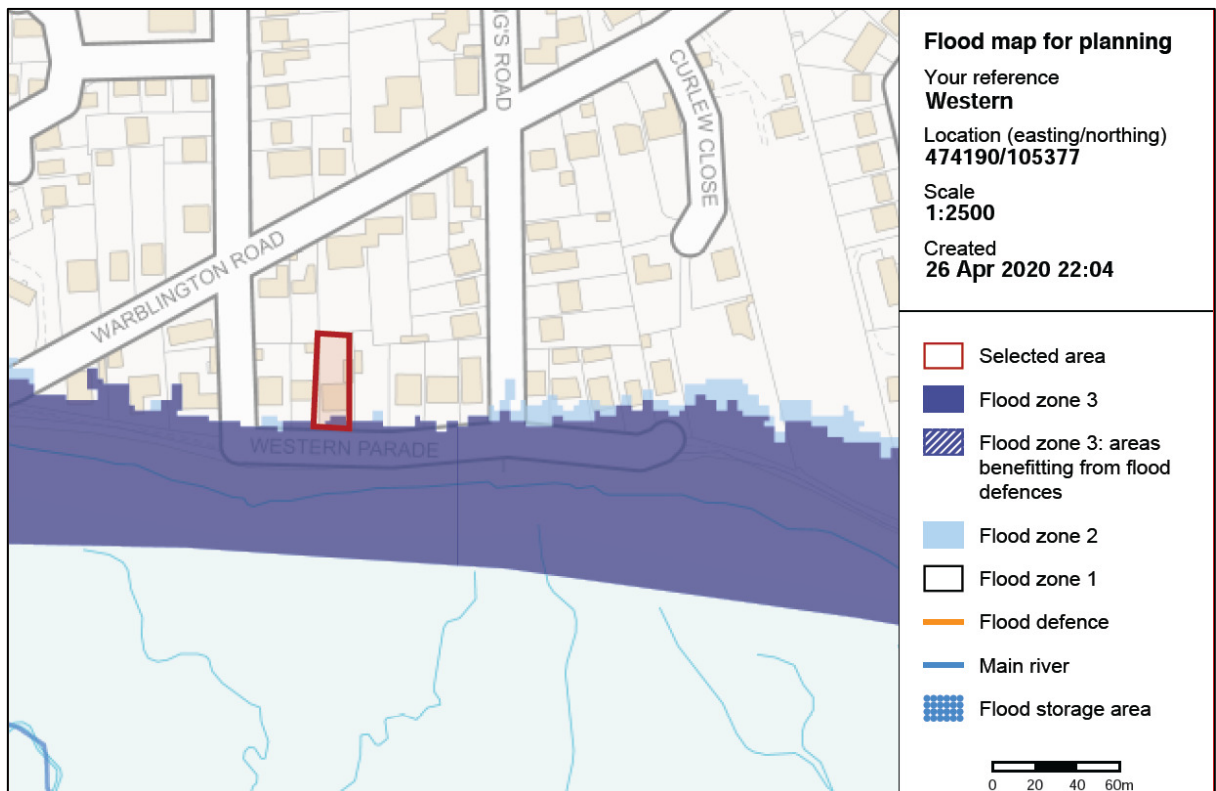


Figure 5.1 – Flood Map for Planning

- 5.2.3 The Environment Agency also provided modelled tidal flood level data at the Application Site. The data was taken from the Chichester Coastal Modelling completed in 2016 and include the defended and undefended scenarios.

5.2.4 The node locations at which the modelled data was provided are as shown in Figure 5.2 below.

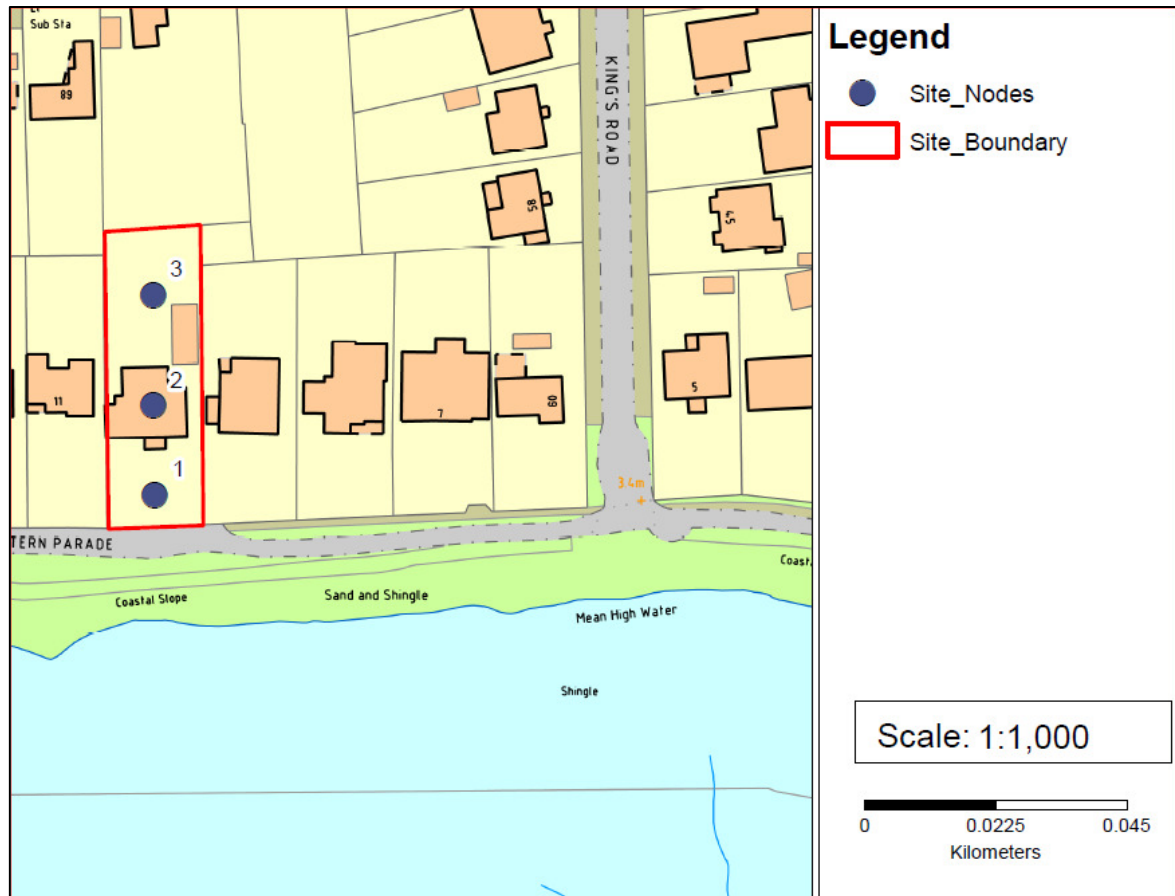


Figure 5.2 – Node Location Plan

5.2.5 The site is defended by embankment with no raised flood, there is therefore no difference in peak levels for both the defended and undefended scenarios as shown below.

Table 5-1: Defended and Undefended Peak Tidal Flood Levels

Node Reference	Modelled Flood Levels (m AOD)			
	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	-	-	4.57	-
2	-	-	4.57	-
3	-	-	4.57	-

Table 5-2: Defended and Undefended Peak Tidal Flood Depths

Node Reference	Modelled Flood Levels (m AOD)			
	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	-	-	0.36	-
2	-	-	0.04	-
3	-	-	0.01	-

- 5.2.6 The design life of the new home is estimated to be 100 years to at least the year 2120. The flood risk data provided is based on the existing Environment Agency hydraulic models for existing 0.5% annual probability event with an allowance for climate change only up to 2115. The climate change allowances were updated in December 2019 and the above allowances up to the year 2115 are therefore not up to date.
- 5.2.7 The sea level allowances as per the Environment Agency's climate change allowances for the south east basin are detailed in Table 5.3 below and the Environment Agency data in **Appendix C**;

Table 5-3: Sea Level Allowances

Allowance	Millimeters (mm) per year			
	2000 - 2035	2036 - 2065	2066 - 2095	2096 - 2125
Higher Central	5.7	8.7	11.6	13.1
Upper End	6.9	11.3	15.8	18.2

- 5.2.8 The modelled data supplied by the Environment Agency is up to the year 2115 and therefore 5 years short of the design life of the development proposals up to 2020. The estimated predicted flood levels for the year 2120 are therefore set out in Table 5.4 below.

Table 5-4: Predicted Flood Levels

Allowance	0.5% (2115)- m AOD	Increase (5yrs) - m	0.5% (2120)
Higher Central	4.57	0.07	4.64
Upper End	4.57	0.09	4.66

- 5.2.9 According to the site's topographical survey the Finished Floor Level of the existing residential dwelling at the site is 4.69m AOD. The Finished Floor Level for the new house will be set at least 300mm above the design flood level at **4.96 mAOD** offering protection beyond 2120. Refer to **Appendix F** for the site topographical survey.
- 5.2.10 Along with the raised Finished Floor Levels, flood proofing and flood resilience measures will be incorporated into the development proposals such as placing fittings as high as it is practicable well above the predicted flood level, sealed PVC external framed doors and specially designed air vents that prevent ingress of flood water into the property.
- 5.2.11 Flood Hazard Mapping from the PUSH SFRA for the extreme 1 in 1000 year tidal event shows that safe access and egress is still available from Western Parade heading west before turning north onto Beach Road into higher areas outside the tidal floodplain as the hazard rating is defined as low risk as shown in Figure 5.3 below.

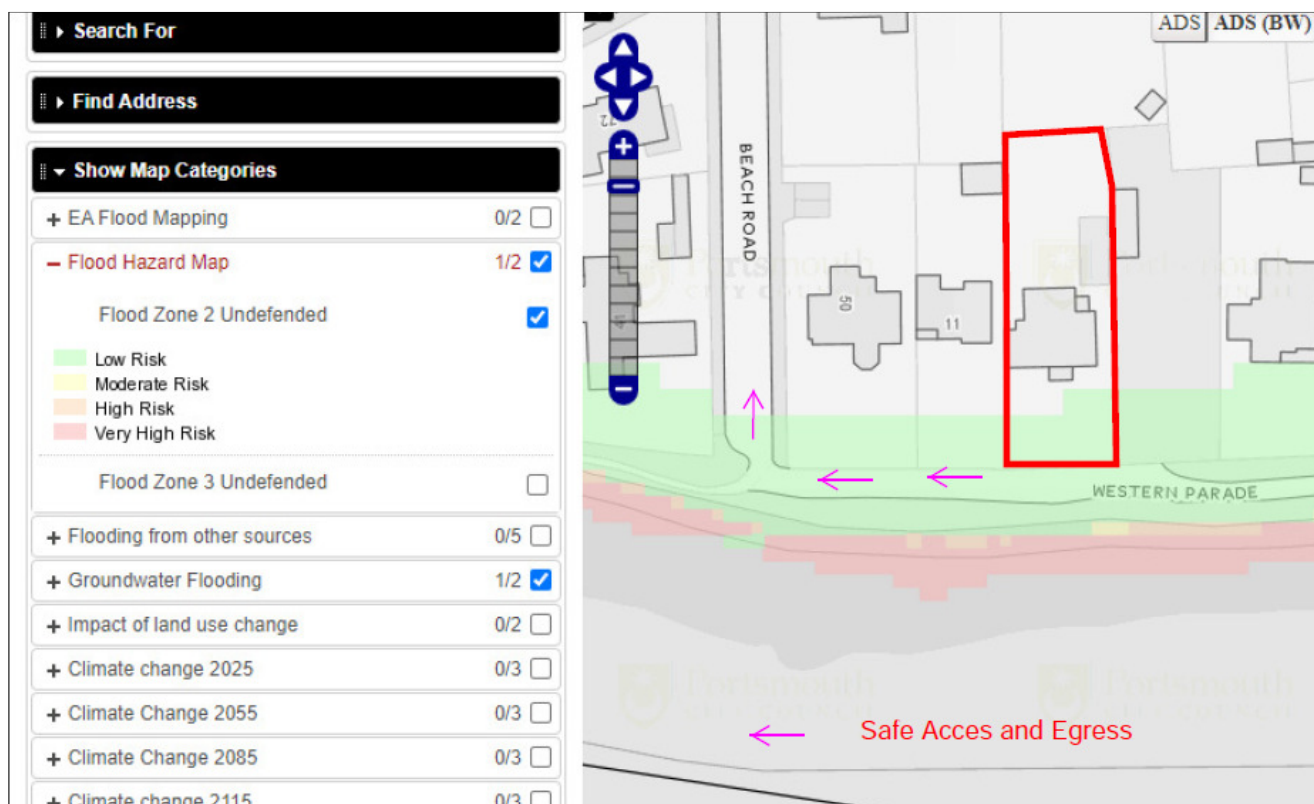


Figure 5.3 – Flood Hazard Maps - Safe Access and Egress

5.2.12 The Application Site lies within the North Solent – Selsey Bill to Hurst Spit Shoreline Management Plan (SMP) where the short and long term SMP Policies are to Hold the Line (HTL). This means the level of protection provided by the existing coastal defences will be maintained or upgraded. It is also stated that the coastal defence type currently protecting the Application Site is the embankment supporting Western Parade. The level of protection offered to the site will therefore be maintained throughout its design life up to year 2120.

5.2.13 The risk of flooding from this source to the Application Site is therefore low.

Flooding from Fluvial Sources

5.2.14 From reviewing the flood maps within the PUSH SFRA the site is not shown to be affected by fluvial flooding.

5.2.15 The risk of flooding from this source to the Application Site is negligible.

Flooding from Pluvial/Overland Flow

5.2.16 According to the Environment Agency surface water flood map the majority of the Application Site is located within an area considered to be at very low risk.

5.2.17 'Very Low' means that each year, this area has a chance of flooding of less than 1 in 1,000 (0.1%).

5.2.18 From reviewing the flood maps within the PUSH SFRA, the site is not shown to be affected by surface water flooding and there are no surface water flow routes through the site. Refer to Figure 5.4 below and the Environment Agency data in **Appendix C**.

5.2.19 The risk of flooding from this source to the Application Site is low.

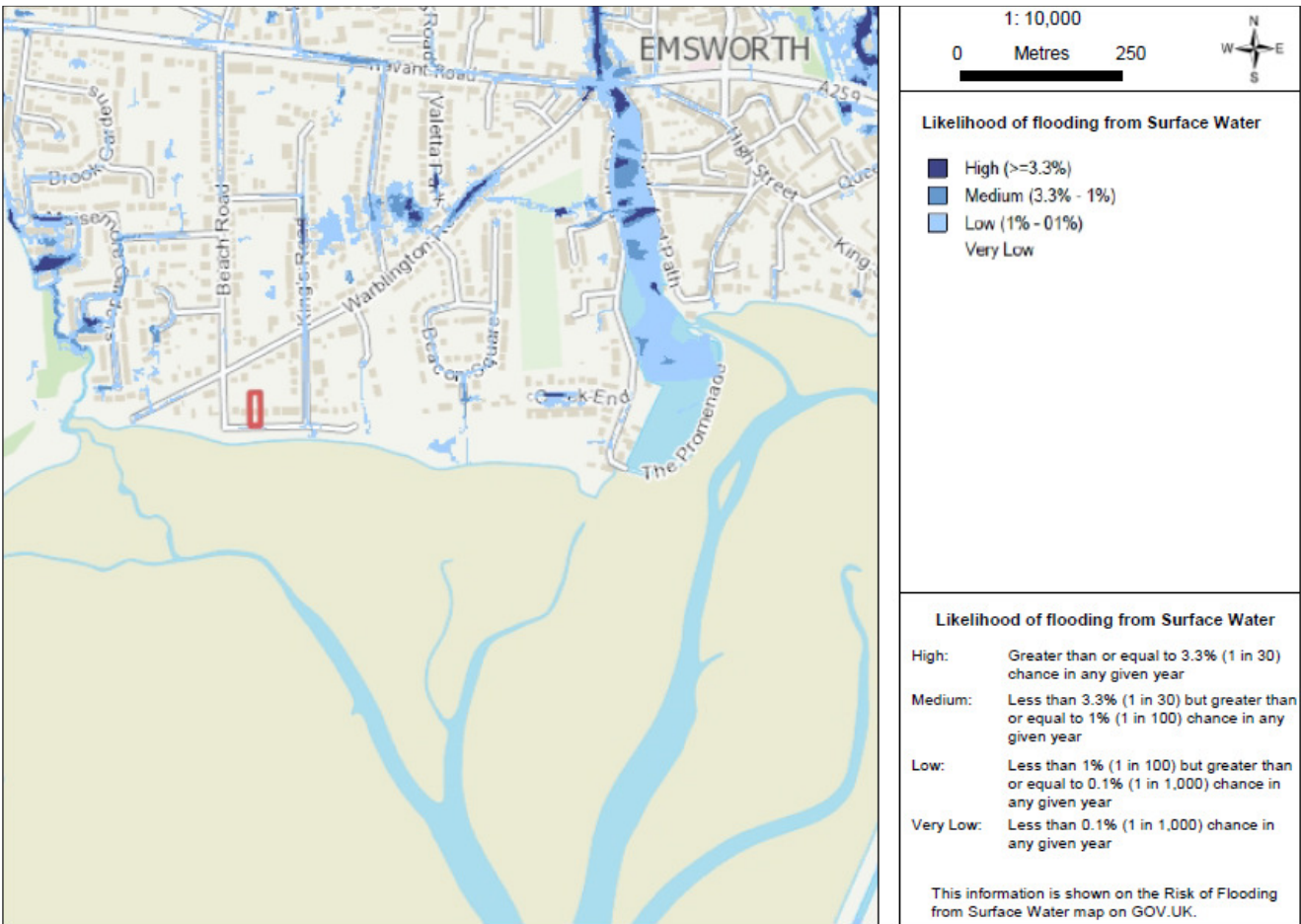


Figure 5.4 – Likelihood of Flooding from Surface Water

Flooding From Groundwater Sources

- 5.2.20 From reviewing the flood maps within the PUSH SFRA the site is not shown to be affected by groundwater flooding.
- 5.2.21 The risk of flooding from this source to the Application Site is negligible.

Flooding from Sewers and Drainage Infrastructure

- 5.2.22 According to the PUSH SFRA, there are no records of flooding from foul or surface water sewers at the Application Site.
- 5.2.23 The risk of flooding from this source to the Application Site is negligible.

Flooding From Artificial Sources

Water Mains and Water Infrastructure

- 5.2.24 The Application Site is within Sothorn Water's supply area. There are no records of sewer flooding at the site within the PUSH SFRA.

Dam and Canal Infrastructure

- 5.2.25 There are no dams or canal infrastructure within a search radius of 500m of the Application Site.
- 5.2.26 The risk of flooding from this source to the Application Site is negligible.

Reservoirs

- 5.2.27 The Environment Agency reservoir flood map (accessed in May 2020) identifies that the Application Site is not within an area at risk of flooding from reservoirs.
- 5.2.28 The risk of flooding from this source to the Application Site is negligible.

6 Conclusions

6.1 Conclusion

- 6.1.1 JUDWAA has been commissioned by Mr and Mrs Brown to prepare a site specific Flood Risk Assessment (FRA) and a Drainage Strategy aimed at supporting a planning application for the development proposals at 10 Western Parade in Emsworth.
- 6.1.2 The Application Site has a gross area of approximately 0.085 ha and the development proposals are for a like for like replacement of the existing residential dwelling unit.
- 6.1.3 The southern edge of the Application Site touches Flood Zone 2 and 3 associated with tidal/coastal flooding. However, the existing and proposed new house is in Flood Zone 1. The flood defences protecting the site from tidal flooding comprise an embankment which also supports the road, Western Parade.
- 6.1.4 The long term policy for the Shoreline Management Plan (North Solent – Selsey Bill to Hurst Spit Shoreline Management Plan) at the site is to Hold the Line. This means the level of protection provided by the existing coastal defences will be maintained or upgraded.
- 6.1.5 The proposed Finished Floor Levels have been set 300mm above the predicted 1 in 200 year plus climate change up to 2120 to ensure a flood resilient home.
- 6.1.6 The Application Site is not at risk of flooding from any other sources of flooding..
- 6.1.7 The development proposals are therefore full compliant with the requirements of NPPF and do not increase flood risk in all areas upstream and downstream of the site. The application should therefore be looked at positively by the Environment Agency with regards to flood risk.

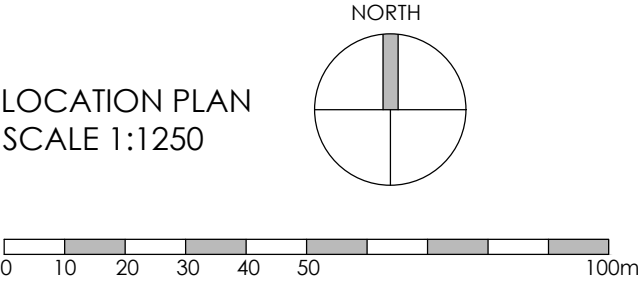
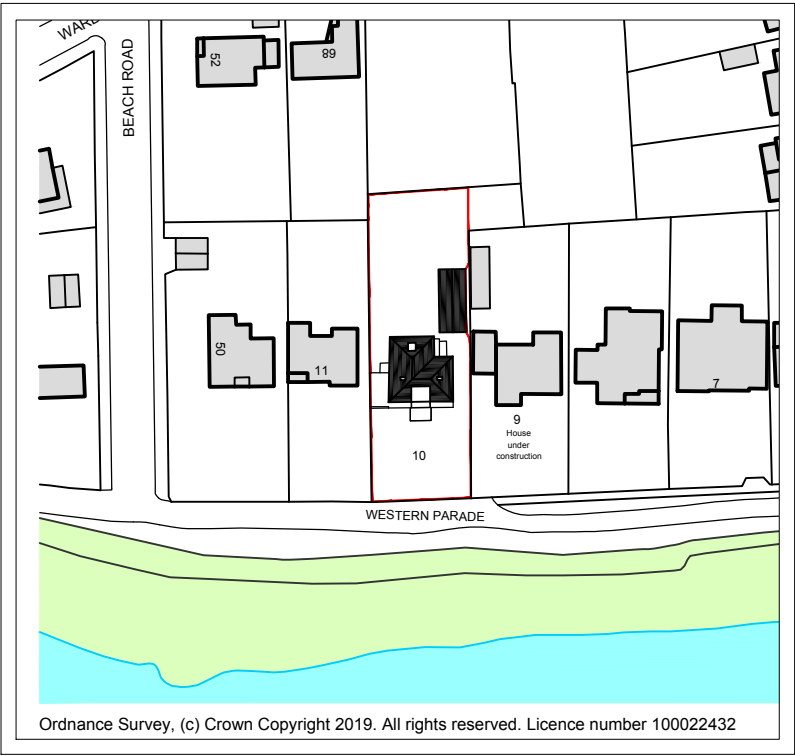
Appendices

Appendix A

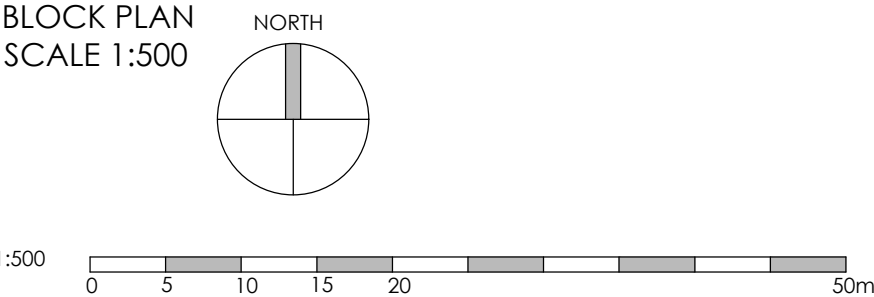
Site Location Plan

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Rev.	Date	Note	Author	Checked
-	dd/mm/yy	Note.	XXX	XXX



- KEY
- Existing house and garage
 - * Indicative landscaping



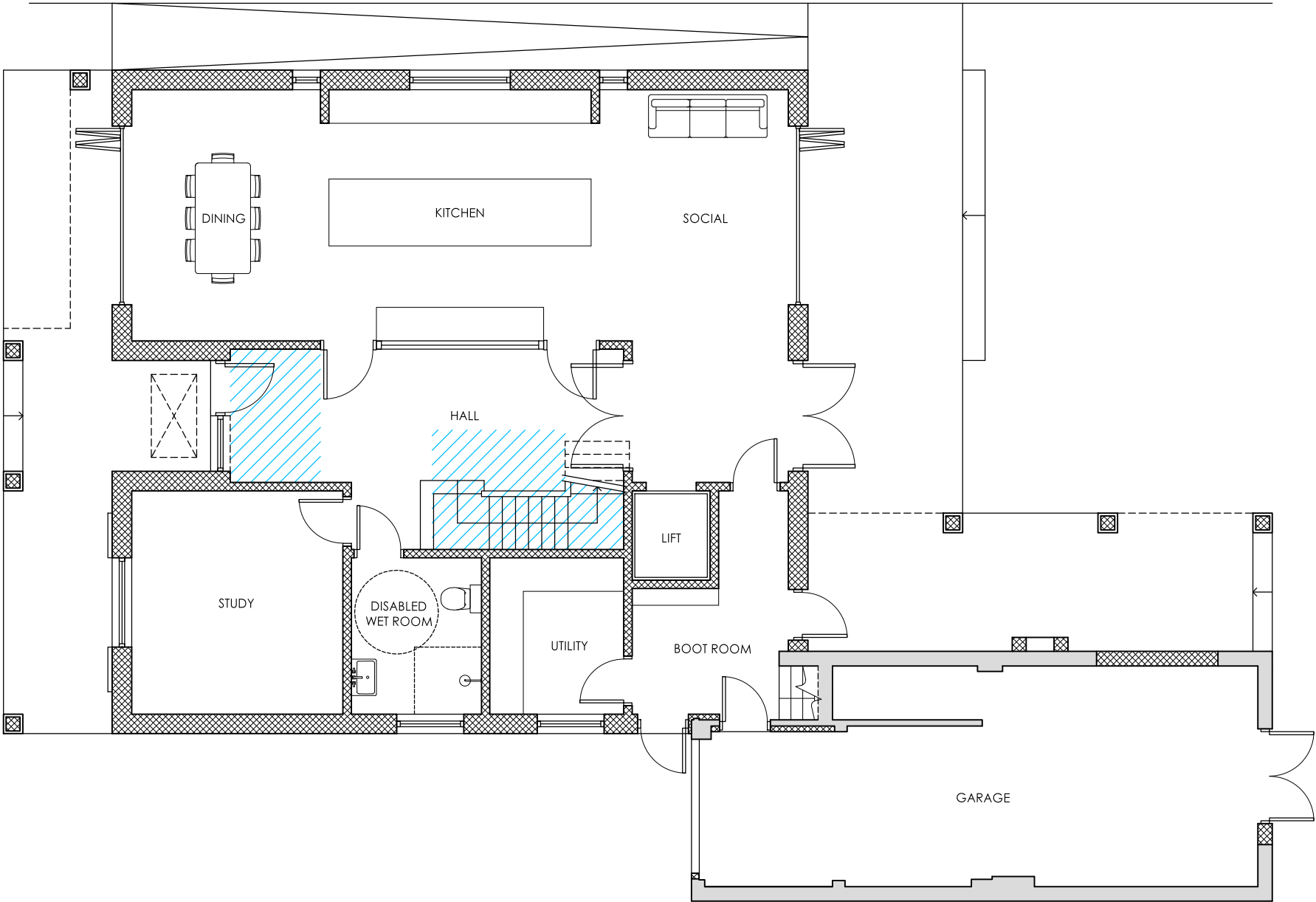
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Author	RH	Checked	JP	Date	11/02/20				

APPENDIX B

Site Layout Plan

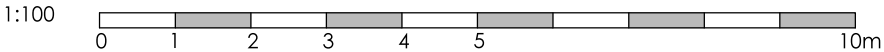
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A	04/05/20	Obscure glass updated	JP	RR



PROPOSED GROUND FLOOR PLAN

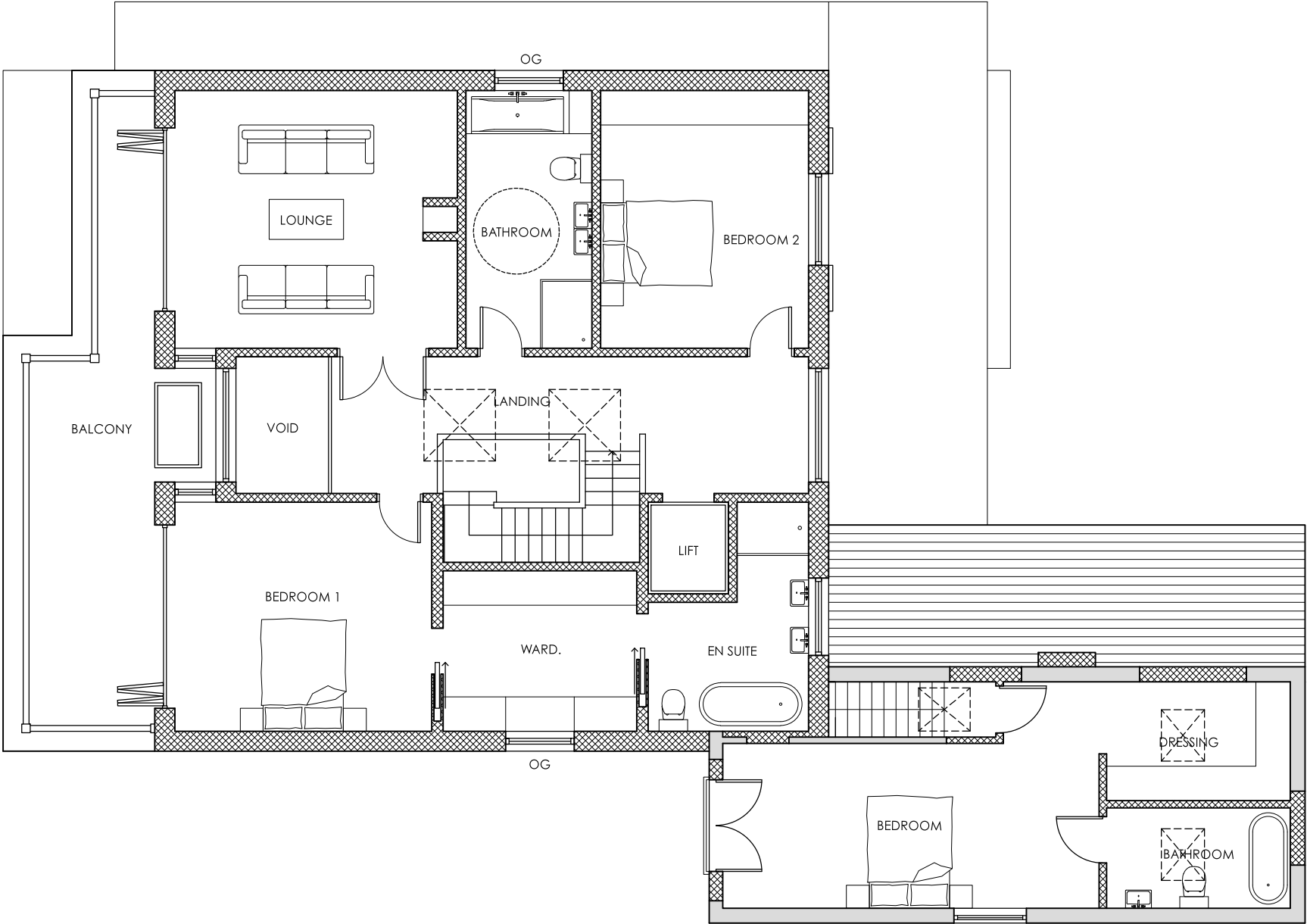
- KEY
- Proposed new walls / partitions
 - Proposed structural lintels & beams
 - Existing walls / partitions
 - Roof light above
 - OG Obscured Glass
 - Double height space



Project	REPLACEMENT DWELLING AT 10 WESTERN PARADE EMSWORTH PO10 7HS					Drawing	PROPOSED GROUND FLOOR PLAN			
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Author	RH	Checked	JP	Date	11/02/20					

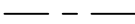
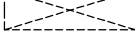
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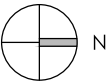
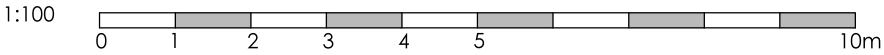
Rev.	Date	Note	Author	Checked
A	04/05/20	Obscured glazing added to first floor windows.	JP	RR



PROPOSED FIRST FLOOR PLAN

KEY

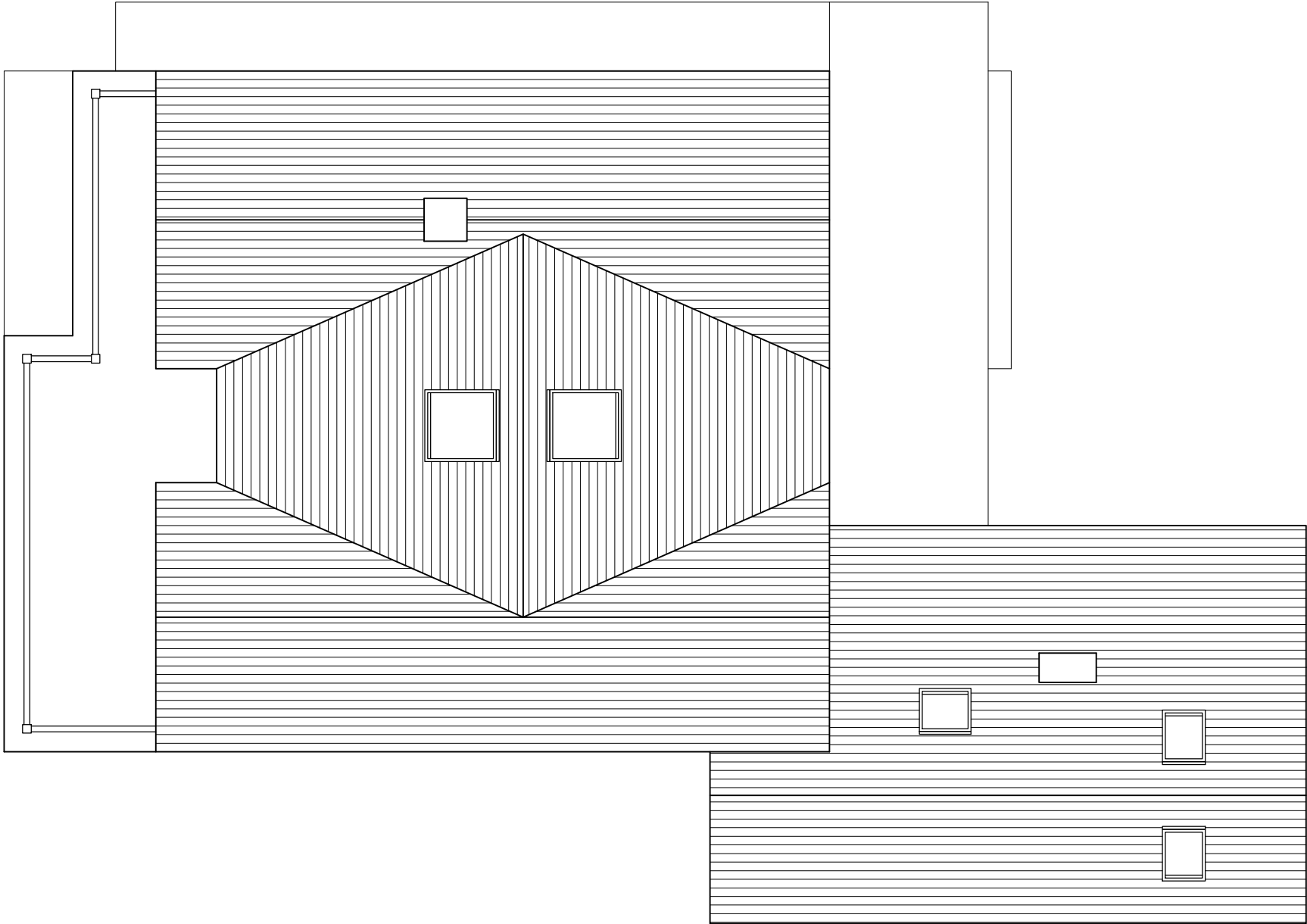
-  Proposed new walls / partitions
-  Proposed structural lintels & beams
-  Existing walls / partitions
-  Roof light above
-  Obscured Glass



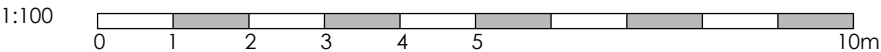
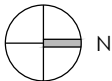
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PROPOSED ROOF PLAN



Project	REPLACEMENT DWELLING AT 10 WESTERN PARADE EMSWORTH PO10 7HS					Drawing	PROPOSED ROOF PLAN			
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Rev.	Date	Note	Author	Checked
A	04/05/20	Amended heights to FRA.	JP	RR



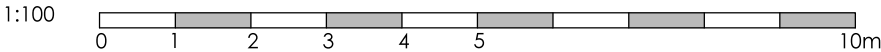
PROPOSED FRONT ELEVATION (South)



PROPOSED REAR ELEVATION (North)

MATERIALS KEY

- 1. WEATHERBOARDING (Colour to be agreed via planning condition)
- 2. WINDOW SHUTTERS
- 3. COMPOSITE GLAZING SYSTEMS
- 4. GLAZED BALUSTRADE
- 5. SLATE ROOF TILES



Project	REPLACEMENT DWELLING AT 10 WESTERN PARADE EMSWORTH PO10 7HS					Drawing	PROPOSED ELEVATIONS 1			
						Job-Dwg Number	18065-PL-309		Rev.	A
Client	MR & MRS BROWN					JPA JAMES POTTER ASSOCIATES www.jpa.design JPA - PORTSMOUTH 117 Highland Road, Southsea, Portsmouth, PO4 9DD t. +44(0)2394 002 897				
Status	PLANNING									
Scale	1:100		Sheet Size A3							
Author	RH	Checked	JP	Date	11/02/20					

This drawing may be scaled with reference to the scale bar for planning application purposes only. Do not scale for any other purpose, use only annotated dimensions. All dimensions are to be checked by parties using the drawing, and any errors or omissions are to be reported to James Potter Associates Ltd.

Rev.	Date	Note	Author	Checked
A	30/03/2020	Obscure glass added to first floor windows.	RH	JP
B	04/05/20	Amended heights to FRA.	JP	RR



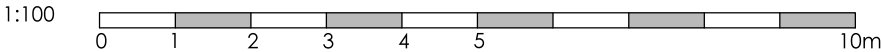
PROPOSED SIDE ELEVATION (West)



PROPOSED SIDE ELEVATION (East)

KEY
OG Obscured Glass

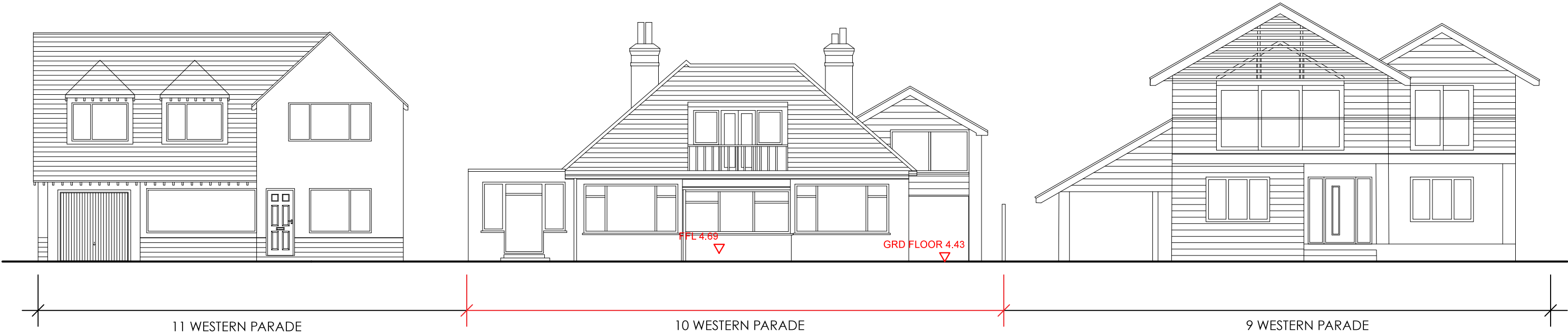
- MATERIALS KEY
- 1. WEATHERBOARDING (Colour to be agreed via planning condition)
 - 2. WINDOW SHUTTERS
 - 3. COMPOSITE GLAZING SYSTEMS
 - 4. GLAZED BALUSTRADE
 - 5. SLATE ROOF TILES



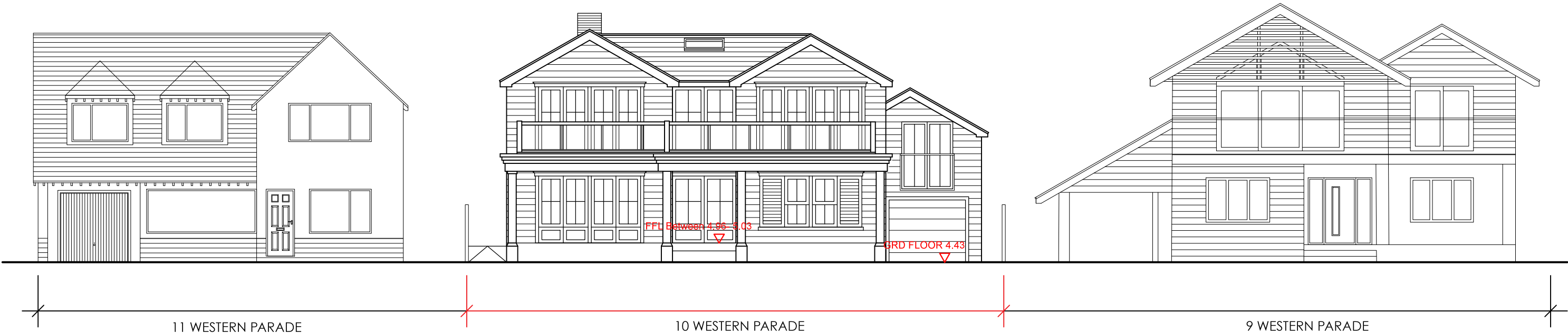
Project	REPLACEMENT DWELLING AT 10 WESTERN PARADE EMSWORTH PO10 7HS					Drawing	PROPOSED ELEVATIONS 2			
						Job-Dwg Number	18065-PL-310		Rev.	B
Client	MR & MRS BROWN					JPA JAMES POTTER ASSOCIATES www.jpa.design JPA - PORTSMOUTH 117 Highland Road, Southsea, Portsmouth, PO4 9DD t. +44(0)2394 002 897				
Status	PLANNING									
Scale	1:100		Sheet Size A3							
Author	RH	Checked	JP	Date	11/02/20					

This drawing may be scaled with reference to the scale bar for planning application purposes only. Do not scale for any other purpose, use only annotated dimensions. All dimensions are to be checked by parties using the drawing, and any errors or omissions are to be reported to James Potter Associates Ltd.

Rev.	Date	Note	Author	Checked
A	04/05/20	Updated datum to OS.	JP	RR



EXISTING INDICATIVE STREET SCENE



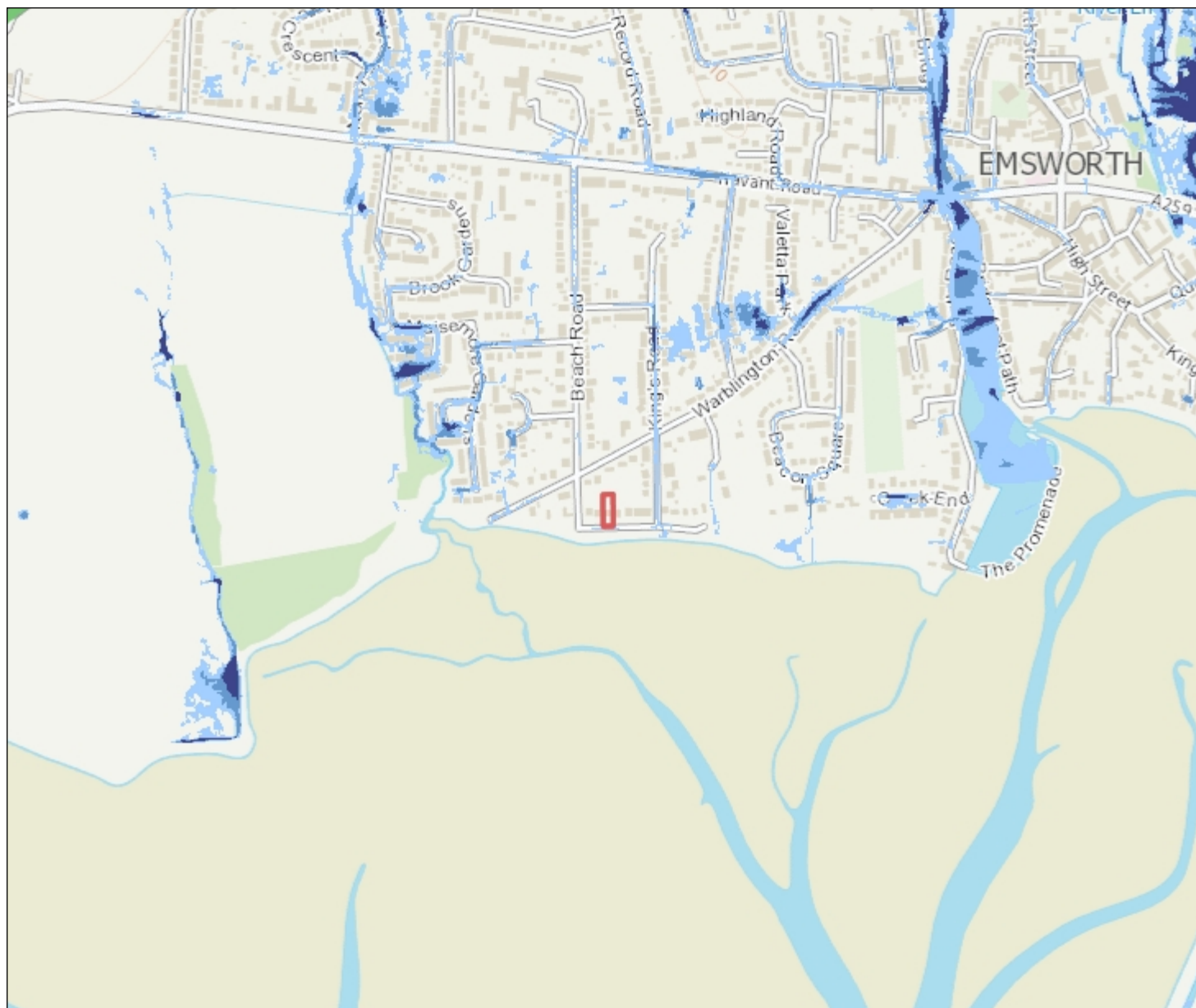
PROPOSED INDICATIVE STREET SCENE

Project	REPLACEMENT DWELLING AT 10 WESTERN PARADE EMSWORTH PO10 7HS					Drawing	FINISHED FLOOR LEVELS STREET SCENES			
						Job-Dwg Number	18065-PL-315		Rev.	A
Client	MR & MRS BROWN					JPA JAMES POTTER ASSOCIATES www.jpa.design JPA - PORTSMOUTH 117 Highland Road, Southsea, Portsmouth, PO4 9DD t. +44(0)2394 002 897				
Status	PLANNING									
Scale	N/A		Sheet Size A3							
Author	RH	Checked	JP	Date	25/02/20					

APPENDIX C

Environment Agency Correspondence and Data

Risk of flooding from Surface Water. Centred PO10 7HS. Created 17/04/2020.



1: 10,000

0 Metres 250



Likelihood of flooding from Surface Water

- High ($\geq 3.3\%$)
- Medium (3.3% - 1%)
- Low (1% - 0.1%)
- Very Low

Likelihood of flooding from Surface Water

- High: Greater than or equal to 3.3% (1 in 30) chance in any given year
- Medium: Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low: Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
- Very Low: Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on GOV.UK.



Environment
Agency

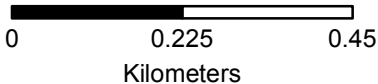


Legend

- Site_Boundary
- 0.5% AEP (Un defended Tidal)
- 0.5% AEP (2070) NPPF (Un defended Tidal)
- 0.5% AEP (2115) NPPF (Un defended Tidal)
- 0.1% AEP (Un defended Tidal)

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

Scale: 1:10,000





Environment
Agency

N
▲

Legend

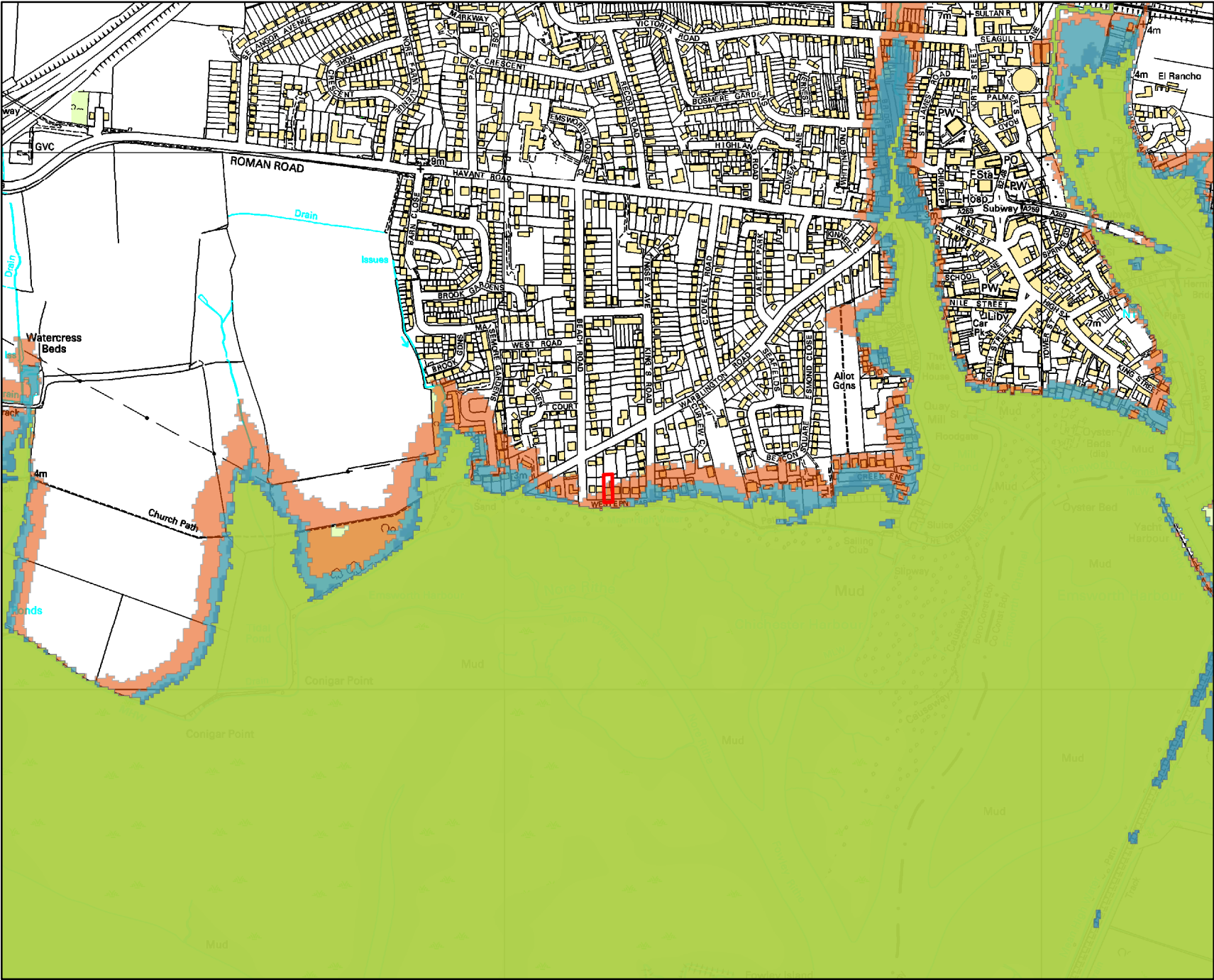
- Site_Boundary
- 0.5% AEP (Defended Tidal)
- 0.5% AEP (2070) NPPF (Defended Tidal)
- 0.5% AEP (2115) NPPF (Defended Tidal)
- 0.1% AEP (Defended Tidal)

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

Scale: 1:10,000

00.2250.45

Kilometers



Product 4 Flood Risk Data Requested by: udwaa Consulting

Site: 10 Western Parade, Emsworth, PO10 7HS

Table 1: Water Levels Tidal nde ended

Node Ref	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Undefended Annual Exceedance Probability			
			0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	474193	105354			4.57	
2	474193	105369			4.57	
3	474193	105388			4.57	

Table 2: Water Levels Tidal De ended

Node Ref	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Defended Annual Exceedance Probability			
			0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	474193	105354			4.57	
2	474193	105369			4.57	
3	474193	105388			4.57	

Table 3: Water Depths Tidal nde ended

Node Ref	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Undefended Annual Exceedance Probability			
			0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	474193	105354			0.36	
2	474193	105369			0.04	
3	474193	105388			0.01	

Table 4: Water Depths Tidal De ended

Node Ref	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Defended Annual Exceedance Probability			
			0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	474193	105354			0.36	
2	474193	105369			0.04	
3	474193	105388			0.01	

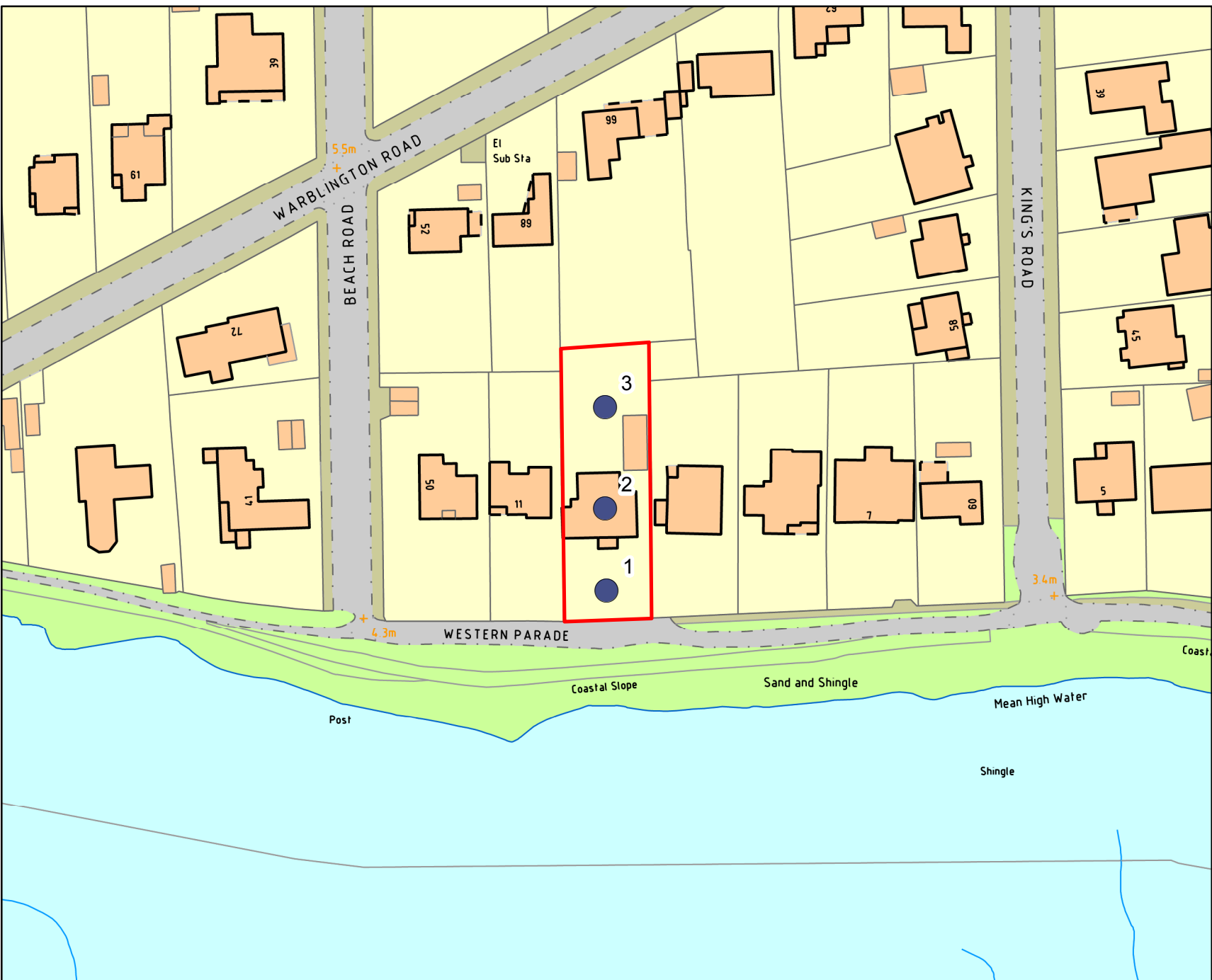
All levels taken from Chichester Coastal Modelling (2D)

Produced on 20 04 2020

*** The flood risk data provided is based on existing EA hydraulic models for existing 0.5% annual probability events with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 17 December 2019.**

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.



Environment Agency

N

Legend

-  Site_Nodes
-  Site_Boundary

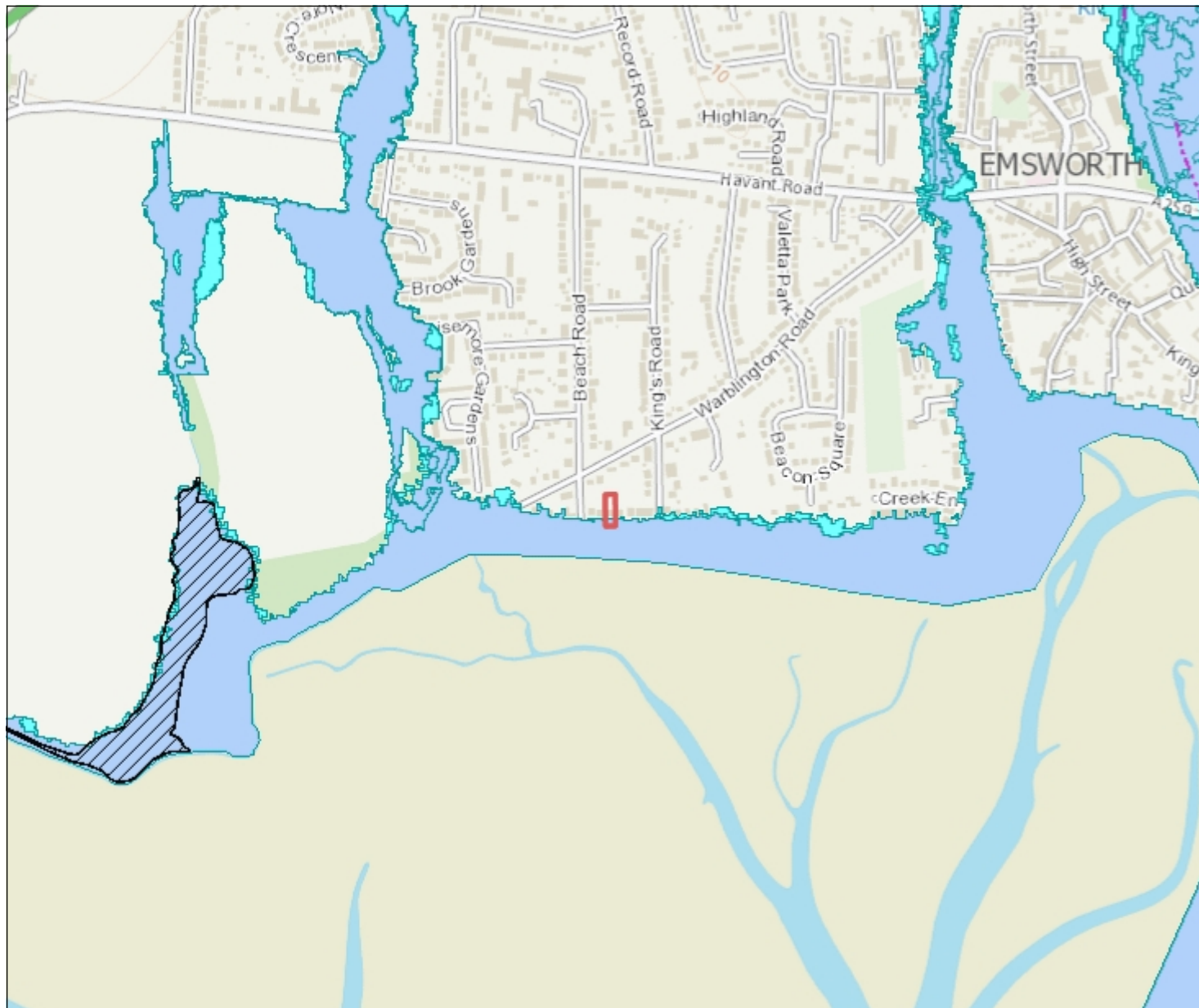
Scale: 1:1,000



00.02250.045

Kilometers

Flood Map for Planning (Rivers and Sea). Centred PO10 7HS. Created 17/04/2020.



1: 10,000

0 Metres 250



Flood Map for Planning (Rivers & Sea)

- 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.

Hussaini Giwa
udwaa Consulting
Suite 522
5 Charter House
Lord Montgomery Way
Portsmouth
PO1 2SN

Our ref: SSD167984
Date: 20 04 2020

Dear Hussaini Giwa,

Enquiry Regarding Product 4 for Flood Risk Assessment for 10 Western Parade, Emsworth, PO10 7HS.

Thank you for your enquiry which was received on 24 March 2020.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The information is attached.

The information on flood zones in the area relating to this address is as follows

The site is in an area located within Flood Zone 1,2 & 3 as shown on our Flood Map for Planning (Rivers and Sea).

Note - This information relates to the area that the above named property is in and is not specific to the property itself as it is influenced by factors such as the height of door steps, air bricks or the height of surrounding walls. We do not have access to this information and is not currently used in our flood modelling.

Flood zone definitions can be found at www.gov.uk/guidance/flood-risk-and-coastal-change-table-1-flood-zones

Flood Defences

There are no formal raised flood defences in the vicinity of the site.

Model Information

The model used was the Chichester Coastal Modelling which was completed by BA Consulting in 2016.

Flood History

We hold no record of previous flooding events affecting this site.

Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flood Authority, **West Sussex County Council** or the Local Authority, **Havant District Council** for a more comprehensive flood history check.

RA advisory letter

Name	Product 4
Description	Detailed Flood Risk Assessment map for 10 Western Parade, Emsworth, PO10 7HS.
Licence	Open Government Licence
Information Warnings	The flood risk data provided is based on existing EA hydraulic models or existing 0.5 annual probability events with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 17 December 2019. 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.
Information Warning OS background mapping	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.</i>
Attribution	Contains Environment Agency information Environment Agency and/or database rights. Contains Ordnance Survey data Crown copyright 2020 Ordnance Survey 100024198.

Data Available Online

any of our flood datasets are available online

- Flood map for Planning ([Flood zone 2](#), [Flood zone 3](#), [Flood Storage Areas](#), [Flood Defences](#), [Areas Benefiting from Defences](#))
- [Risk of flooding from Rivers and Sea](#)
- [Historic flood map](#)
- [Current flood Warnings](#)

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

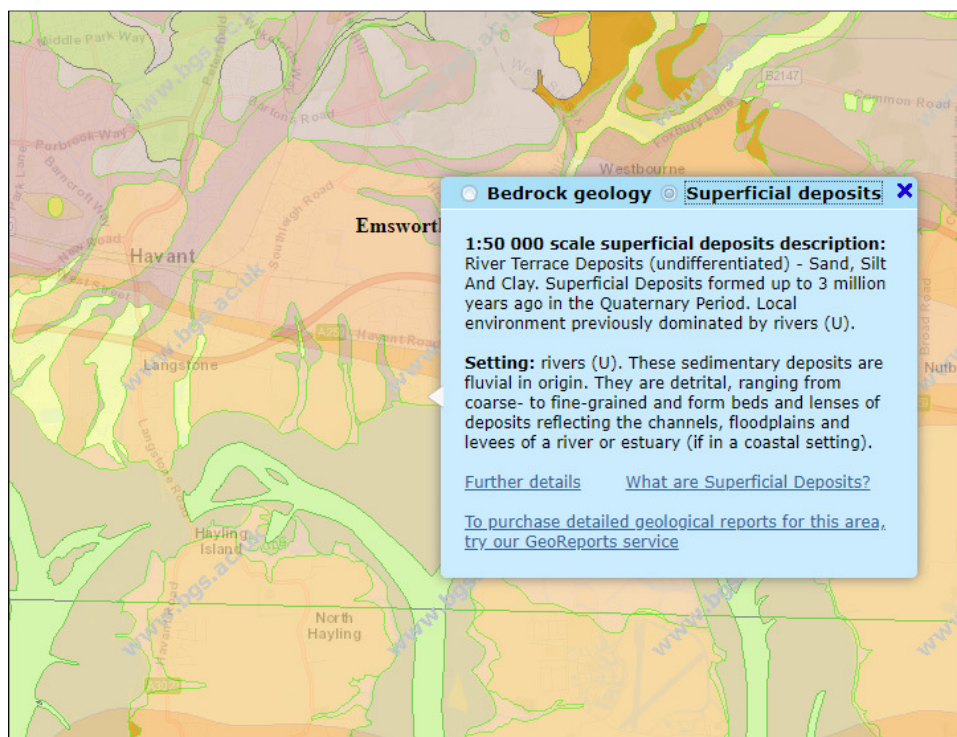
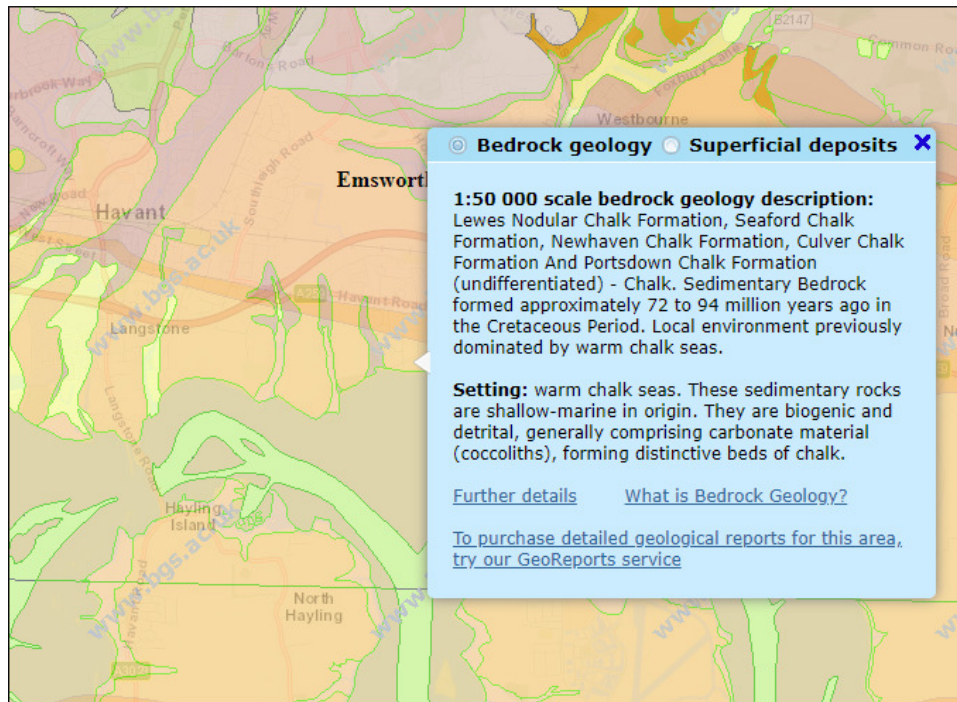
Tom Lamboo

FCRM Officer, Partnership & Strategic Overview West Sussex, Solent and South Downs

Environment Agency, Guildbourne House, Chatsworth Road, Worthing, West Sussex, BN11 1LD

APPENDIX D

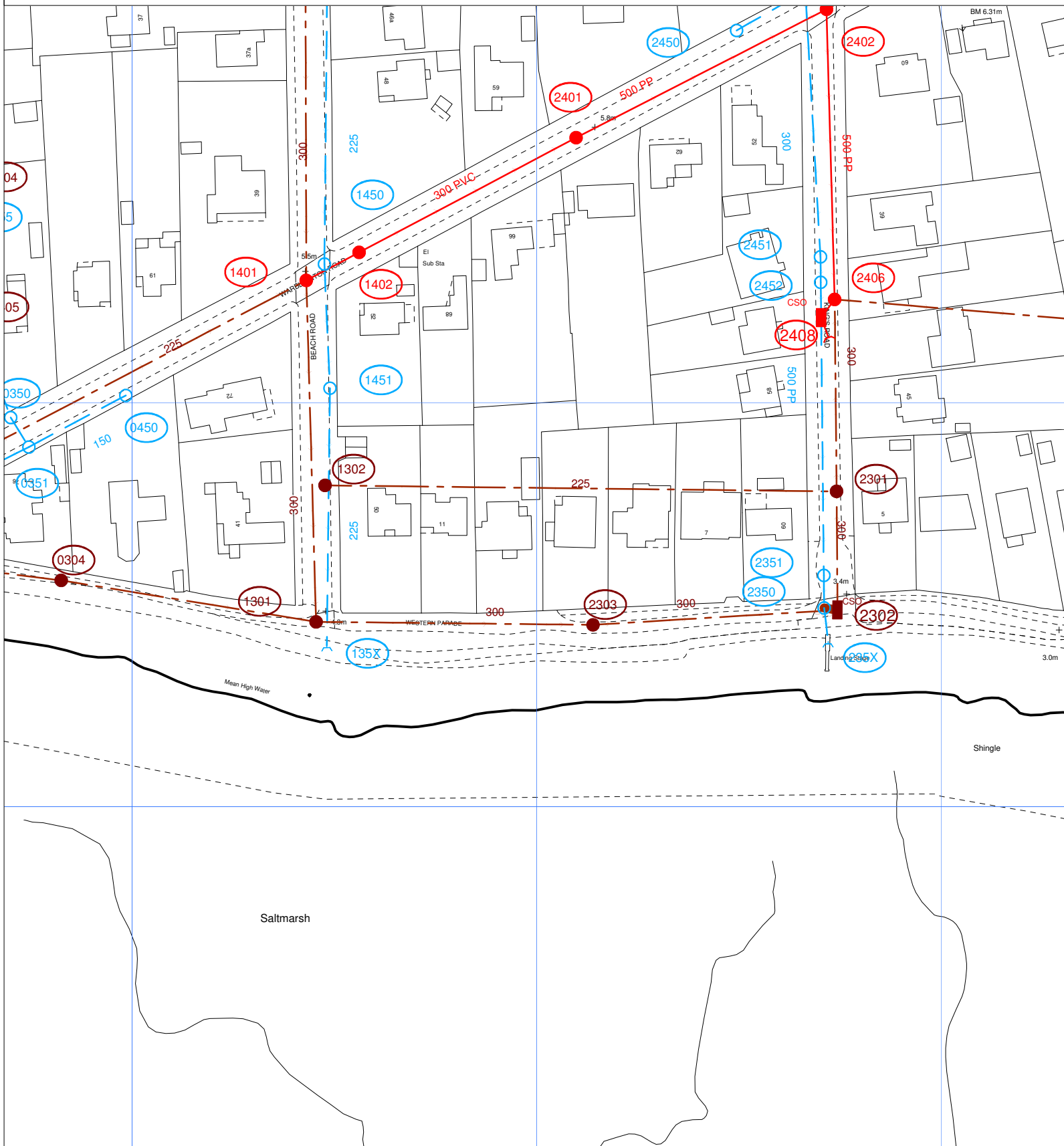
British Geological Survey (BGS) Maps



APPENDIX E

Southern Water Sewer Records

SOUTHERN WATER



The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site.

Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530

O.S. REF: SU7405SW

Scale: 1:1250

Screen Print

WARNING: BAC pipes are constructed of Bonded Asbestos Cement

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement



Printed By: kishoku

Date: 4-9-2019

Southern Water MapGuide Browser

Requested By:

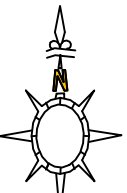
N

APPENDIX F

Site Topographical Survey



NOTES:
Drainage:
Inspection Covers are lifted where possible and all drainage invert information has been obtained through visual inspection only, with no entry into manholes. Therefore the complete accuracy cannot be guaranteed. Where drainage is of critical importance we suggest the services of a specialist drainage expert be used.
Trees:
Every effort has been made to identify and detail all trees on site but where trees are of critical importance we suggest the use of a specialist such as an arborist. Tree spread and heights are indicative.
GPS:
GPS detail is relative to the time and date of survey. GPS levels and grid are obtained using industry standard guidelines and can vary according to the quality of the GPS network at the time of survey. Unless stated otherwise, surveys are Scale factor 1 and Horizontal and Vertical Datums are established from a central site fix and baseline orientation station utilising GNSS correction data.
Survey notes:
Survey specification is linked to the original purpose of the survey commissioned at source and is to be used for this purpose only. Survey is accurate within limitations of site conditions at the time of survey. In areas difficult to survey due to restricted access, lines of sight or dense vegetation, critical dimensions and positions should be verified following suitable clearance.
Survey detail obtained and shown is relative to the plotting scale.
Copyright:
This survey information is Copyright Encompass Surveys Ltd (2009). All rights reserved.



LEGEND

TREE SPECIES INFORMATION

ALDER	ALD	LOOUST	LOC
ASH	ASH	LONDON PLANE	LPI
ASPEN	ASP	MAGNOLIA	MAG
BEECH	BCH	MAPLE	MPL
CEDAR	CED	OAK	OKA
CHERRY	CHY	PINE	PNE
CYPRESS	CYP	POPLAR	POP
ELM	ELM	PRUNUS	PNS
FIR	FIR	RHODODENDRONS	RDN
FRUIT	FRT	ROWAN	RWN
HAWTHORN	HAW	SILVER BIRCH	SIB
HAZEL	HAZ	SORBUS	SOR
HOLLY	HLY	SWEET CHESTNUT	SCN
HORSE CHESTNUT	HCH	SYCAMORE	SYC
HORNBEAM	HRM	WALNUT	WNT
LABURNUM	LBN	WILLOW	WLW
LARCH	LAR	YEW	YEW
LIME	LIM	SPECIES UNKNOWN	SPU
		COPICED	COP

TREE ANNOTATIONS: Tree Species / Tree Boll Size / No of Bolts
Tree Height / Tree Canopy Spread

FENCE INFORMATION

BARBED WIRE FENCE	BWF
CORRUGATED IRON FENCE	CF
CLOSE BOARD FENCE	CBF
CHAIN LINK FENCE	CLF
CHESTNUT PALING	CPF
CRASH BARRIER	CBR
HANDRAIL	HDL
IRON RAILINGS	IRF
LARCH LAF FENCE	LLF
MISCELLANEOUS FENCE	MSF
PALISADE FENCE	PSF
PICKET FENCE	PKF
POST AND CHAIN FENCE	PCF
POST AND RAIL FENCE	PRF
POST AND WIRE FENCE	PWF
STOCK WIRE FENCE	SWF
TRELLIS FENCING	TLF

LEVEL INFORMATION

BTL	BASEMENT LEVEL
BL	BED LEVEL
CL	COVER LEVEL
DPC	DAMP PROOF COURSE
FL	FLOOR LEVEL
IL	INVERT LEVEL
OL	OUTFALL LEVEL
TL	THRESHOLD LEVEL
FW	FOUL WATER
SW	SURFACE WATER
UTL	UNABLE TO LIFT
WL	WATER LEVEL

SURFACE INFORMATION

Conc	CONCRETE
BP	BRICK PAVERS
FB	FLOWERBED
PS	PAVING SLABS
RWall	RETAINING WALL
Tac	TACTILE PAVING

FEATURE INFORMATION

BOLLARD	BO	NOTICE BOARD	NB
BRITISH TELECOM BOX	BTB	POST	P
BRITISH TELECOM IC	BTIC	RAIN WATER PIPE	RWP
BUS STOP	BS	RAISED FLOWERBED	RFB
CABLE TELEVISION BOX	CATB	ROAD SIGN	RS
CABLE TELEVISION IC	CATV	RODDING EYE	RE
EARTHING ROD	ER	SERVICE MARKER POST	SMP
ELECTRICITY CABLE PIT	ELCP	SOIL VENT PIPE	SV
ELECTRICITY CONTROL BOX	ECB	STOP COOK	SC
ELECTRICITY POLE	EP	STOP VALVE	SV
FIRE HYDRANT	FH	TELEGRAPH POLE	TP
INSPECTION COVER	IC	TELEPHONE CALL BOX	TCB
LAMP POST	LP	TRAFFIC SIGNAL	TS
LETTER BOX	LB	TRAFFIC SIGNALS IC	TSIC
LITTER BIN	LBIN	WATER METER	WM
KORB OUTLET	KO	WATER TAP	Tap
NAME PLATE	NP		

Level Datum:
Levels are related to OSG815 derived from the GPS network

Grid:
Grid is related to OSG815 derived from the GPS network

Northpoint:



Encompass Surveys Ltd
Unit 2
Talisman Business Centre
Duncan Road
Park Gate, Southampton
Hampshire SO31 1GA
Tel: 023 80692002
Fax: 023 80697125
Email: info@encompass-surveys.co.uk
encompass-surveys.co.uk

Client:	Judwaa Consulting		
Survey Location:	10 Western Parade Emsworth PO10 7HS		
Survey type:	Topographical	Scale:	1:100@A1
Drawing ref:	ENC/290420/1KK9	Date:	April 2020
Drawn/QA:	DH/SH	Revision:	-