PROPOSED FIRST FLOOR BALCONY, COBBLE COTTAGE, LERRYN, CORNWALL

FLOOD RISK ASSESSMENT

J-2388-Rev.01

Engineering & Development Solutions

www.eadsolutions.co.uk

PROPOSED FIRST FLOOR BALCONY, COBBLE COTTAGE, LERRYN, CORNWALL

FLOOD RISK ASSESSMENT

Report No.	Issue Detail	Originator	Date	Checked by	Date
J-2388	01	EB	18/05/2022	TPS	18/05/2022

For: Mr. K. Smith
The Old Rectory
Back Lane
Shearsby
Leicestershire
LE17 6PN

Job No: J-2388
Date: May 2022
Edition: 01

CONTENTS

APPENDICES

1.0 INTRODUCTION

Mr Smith is proposing to add an outdoor balcony to the first floor of Cobble Cottage in Lerryn, Cornwall.

As shown in **Figures 1** & **2** below, the site is located on the western side of the village of Lerryn.

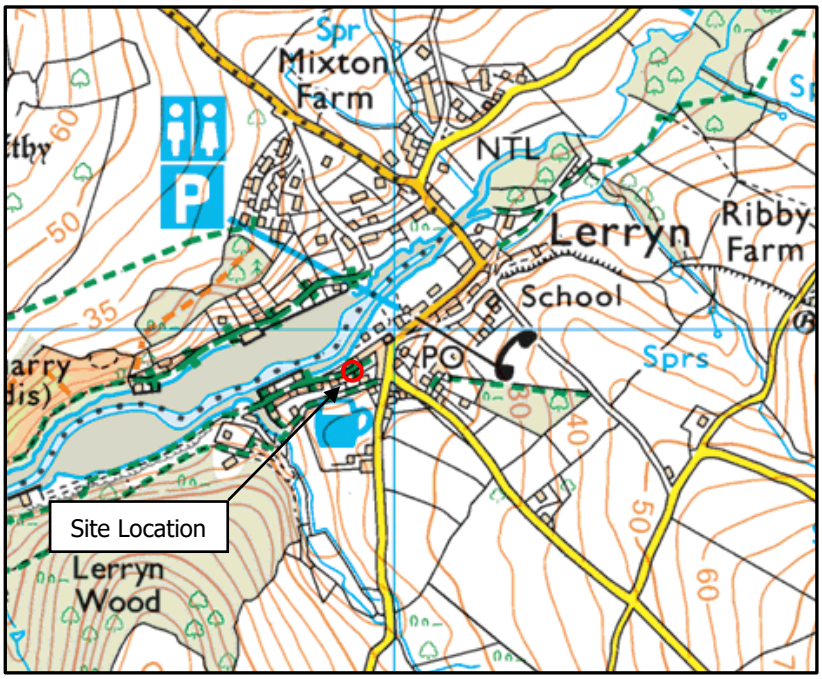


Figure 1 Site Location

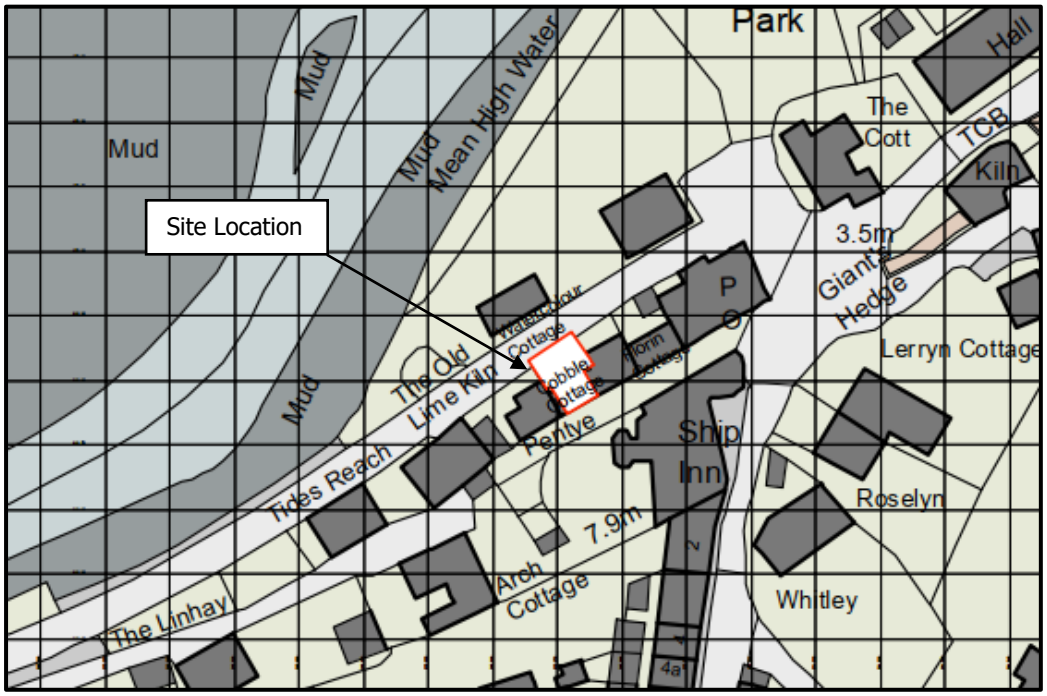


Figure 2 Site Boundary

Site Description

The approximate Ordnance Survey Grid Reference for the site is SX 13969 56979.

The site sits near the bottom of a wide valley. As shown in **Figure 1**, the site is currently accessed by a private road on the northern boundary. The access road runs in a general south-west to north-east direction and joins Fore Street about 40m to the east of the site.

The dwelling is one of a terrace of dwellings facing the River Lerryn, with pockets of dwellings to the east and west of the site. To the north, beyond the access road there is a stone building, and further beyond (about 30m to the north-west of the site) the River Lerryn can be found. To the rear of the terrace is a small byway, which also joins Fore Street to the east of the site.

With respect to topography, the site falls from its southern boundary towards the River Lerryn. Levels of around 2.62m AOD can be found in the access road near the north of the property. Near the first step up to the property, levels of around 2.70m AOD can be found. From here there are further steps up to the ground floor external store, which forms part of the property, and has a Finished Floor Level (FFL) of 3.31m AOD. Further external steps lead up to the first floor of the dwelling which is set at an elevation of around 5.31m AOD. The second floor of the dwelling is set at an elevation of approximately 7.46m AOD. The living accommodation is situated on the first and second floors, with a small external store on the ground floor.

As shown in the topographical survey (**Appendix A**) the site is spread over three storeys on the riverside road, and two storey at the rear byway. From the rear of the property, the topography of the land rises in a general south-easterly direction to levels of around 100m AOD approximately 950m to the south-east of the site.

Existing Usage

The site currently functions a terraced dwelling house, with an external ground floor store on the ground floor, external steps up to the living area on the first floor and sleeping accommodation on the second floor.

Proposed Usage

As shown in **Appendix B**, it is proposed to construct an external balcony on the first floor of the building on the north west, river facing, elevation of the building. An existing window opening on this elevation will be adapted to provide access onto the balcony from the lounge area. Other than addition of the balcony structure and expansion of the existing window opening, there will be no other modifications to the building.

Flood Risk Context

With reference to the Environment Agency (EA) information (**Figure 3**, below, and **Appendix C**) the site is shown to be located in Flood Zone 3. Therefore, any application for planning permission should be accompanied by a Flood Risk Assessment (FRA).

Engineering and Development Solutions (EDS) have been commissioned to undertake an FRA for the site to assess the potential flood risks at the subject site. This report comprises the FRA for the proposed development, in line with the National Planning Policy Framework (NPPF), and the Planning Practice Guidance (PPG).

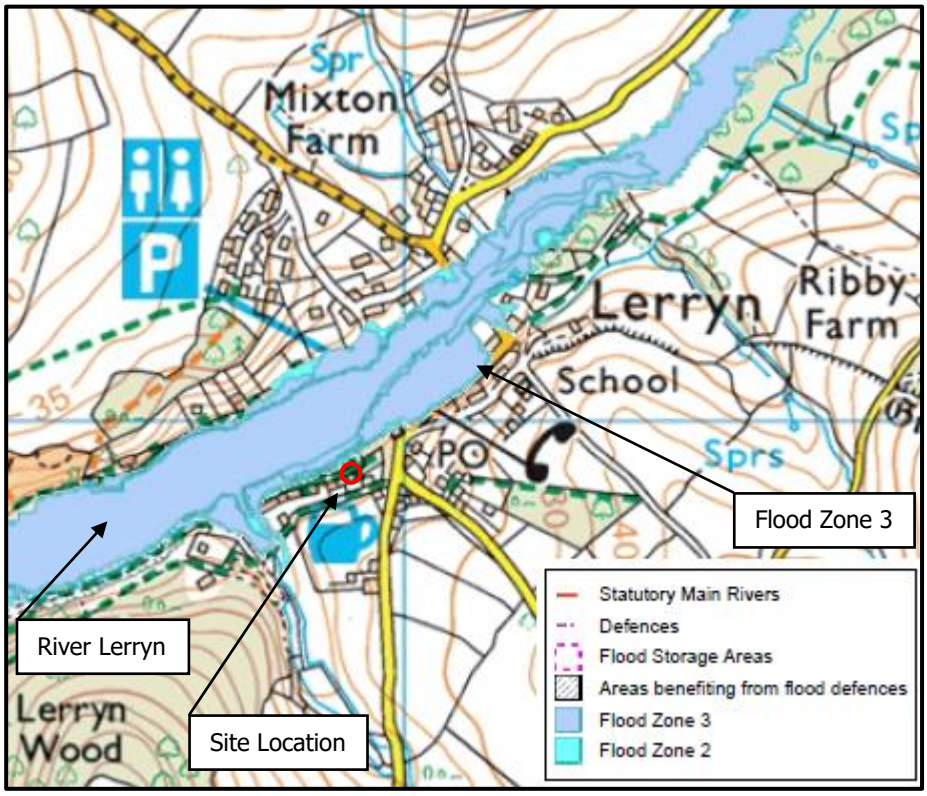


Figure 3 Environment Agency "Product 4" Flood Map for Planning Extract

2.0 FLOOD RISK ASSESSMENT

Several flooding mechanisms have been considered for the site and are discussed below.

To undertake a flood risk assessment for the development proposals a "Product 4" information request was submitted to the Environment Agency (**Appendix C**).

Fluvial (River) Flooding

Due to the large width of the River Lerryn it is deemed that this site is not at risk from fluvial flooding alone. The primary risk of flooding to this site is likely to be from tidal flooding, especially when climate change allowances are considered. As such, the risk from fluvial flooding is not considered further in this report.

Tidal Flooding

The Product 4 information provided by the Environment Agency (EA) predicts tidal flood levels for 2018 for the "Lerryn" area as follows:

- Predicted 1 in 200-year tidal flood level: **3.47m AOD**
- Predicted 1 in 1,000-year tidal flood level: **3.63m AOD**

The EA 'Climate Change Allowances for Planners' document (using the "Higher Central Allowance" in the document) has been used to predict the present day flood levels which are predicted to be as follows for 2022:

- 1 in 200-year tidal flood level: **3.49m AOD**
- 1 in 1,000-year tidal flood level: **3.65m AOD**

An allowance for the effects of climate change over the lifetime of the development (100 years for a residential property) has been calculated using the EA's Climate Change Allowances for Planners". It is predicted that with an allowance for climate change over 100 years the 1 in 200 year tidal flood level will increase by 1.04m to **4.53m AOD**.

With a FFL of 3.31m AOD the ground floor (store) is predicted to flood to the following depths:

- Present day 1 in 200-year tidal flood: **0.18m flood depth**
- Present day 1 in 1,000-year tidal flood: **0.34m flood depth**
- Present day 1 in 200-year + cc tidal flood level: **1.22m flood depth**

The ground floor of the property is an external store with no internal access from the first or second floor of the dwelling to the store.

Access to the dwelling is provided by external steps from the access road at the front of the dwelling up to the first floor. The proposed balcony will be accessed from the first floor of the dwelling, which has a Finished Floor Level (FFL) of 5.31m AOD. The balcony is proposed be set at a similar FFL.

Therefore the first floor of the dwelling and proposed balcony are predicted to retain the following freeboards above extreme tidal flood levels:

- Present day 1 in 200-year tidal flood: **1.82m freeboard**
- Present day 1 in 1,000-year tidal flood: **1.66m freeboard**
- Present day 1 in 200-year + cc tidal flood level: **0.78m freeboard**

Given the information presented above, it is concluded that the site is located in **Flood Zone 3**.

However, pre and post development, occupants of the dwelling are predicted to remain safe from flooding, with more than a 0.60m freeboard available on the first floor of the dwelling during an extreme tidal flooding scenario.

Groundwater Flooding

Groundwater flooding is linked to the ability of the ground to hold water and the presence of aquifers. The site is located adjacent to the River Lerryn, groundwater levels beneath the site will be largely controlled by this waterbody which would act as a sump to drain water in the ground away from the site.

The Cornwall Council Strategic Flood Risk Assessment (SFRA) highlights that the geology of Cornwall has only minor aquifers and generally does not experience much groundwater flooding.

Consequently, groundwater flooding is not considered any further in this report.

Overland Sheet Flow

The site is situated at the base of a valley formed by the River Lerryn, with land surrounding the site rising to the south / south east. There is potential for surface water runoff generated over this area to move towards the site.

There are properties and access roads / highways to the south / south-east of the site; further upslope agricultural land and field boundaries are present. Any overland flow from higher ground to the south / south-east would either infiltrate to the ground and be disrupted by field boundaries, be intercepted by drainage infrastructure serving properties and highways upslope of the site, or flow overland at a shallow depth to the north to discharge into the River Lerryn.

In consideration of this, it is concluded that the site is at very low risk of flooding from surface water/overland flow sources. The assessment is confirmed when viewing an extract of the EA surface water flood map for the site area (**Figure 4**, below).

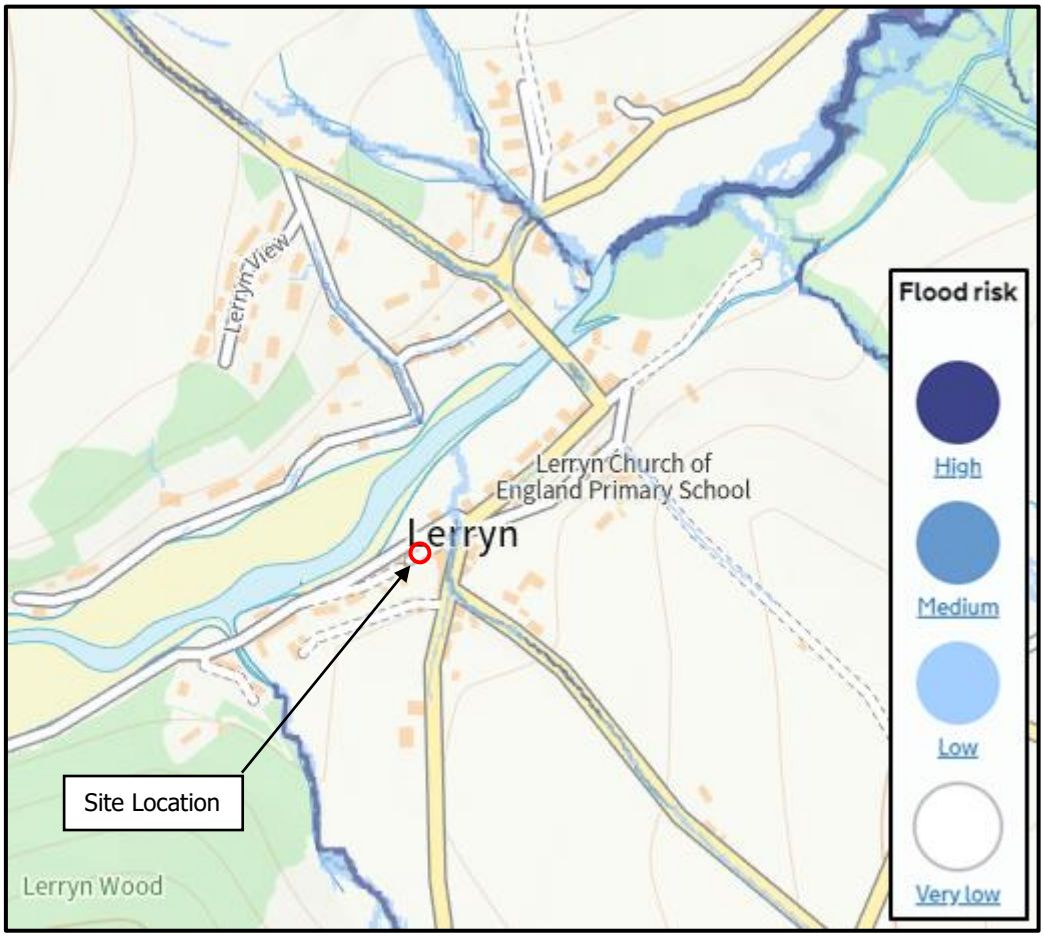


Figure 4 Environment Agency Surface Water Flood Map Extract

Historic Flooding

Information on historic flooding in the site area was provided by the EA as part of the Product 4 information request (**Appendix C**). An extract from the EA historic flood map provided with the Product 4 information is shown below (**Figure 6**).

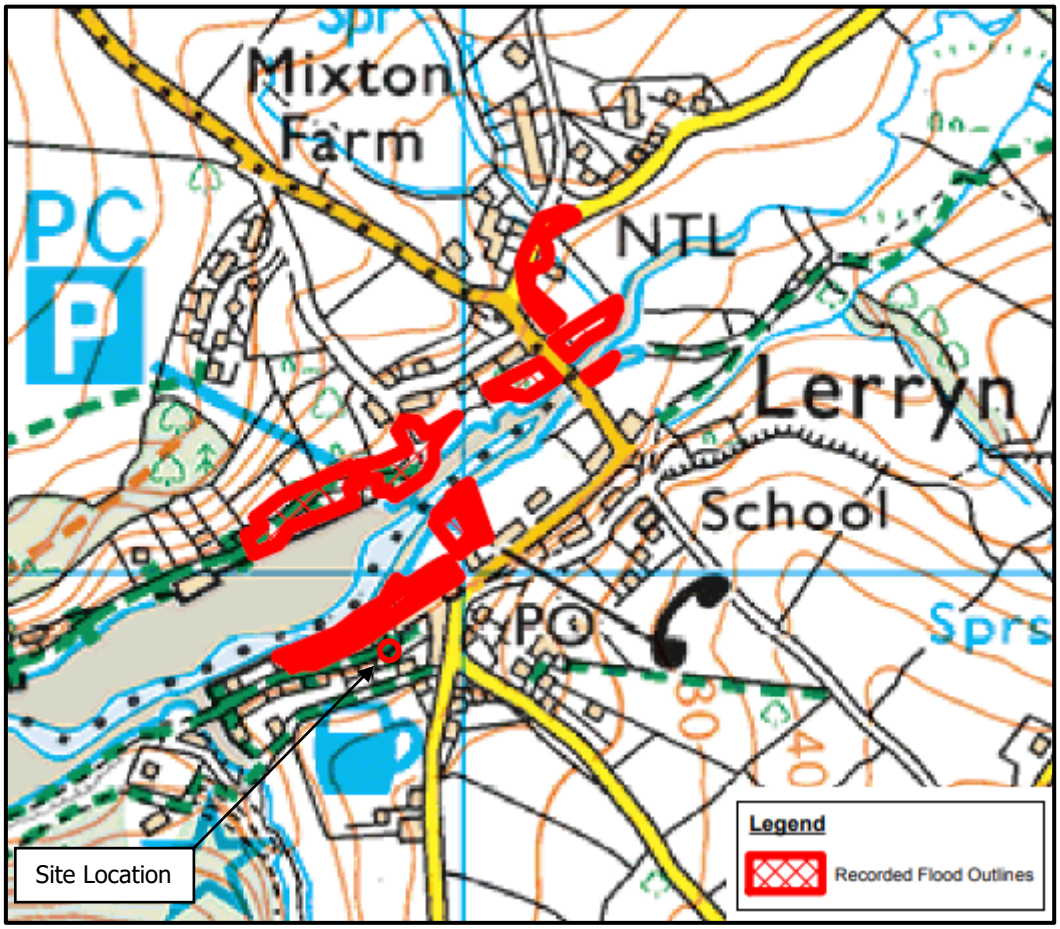


Figure 6 Extract from Environment Agency Historic Flood Map

It is apparent from inspection of the historic flood map that the site has been subject to, or close to, flooding recorded by the EA at some point in the past. The EA also provided textual details of historic flood events that have occurred in Lerryn.

However, it is not possible to link the stated flood events to the subject site. As such, the specific details of historic flooding at the site are not known.

Flooding as a Result of Development

There is the potential for new developments to increase flood risks to properties down slope of the development due to the introduction of impermeable areas on previously permeable areas.

In this case, the site is already hard paved, with a minor balcony extension proposed for the first floor of the existing dwelling with no increase in impermeable area. Therefore there will not be an increase in flood risks to properties and interests downstream of the site post development.

Flood Summary

From the information provided above, and based on the location of the site, it is predicted that the primary flood risk on site is from an extreme tidal flood event in the site area.

Present day tidal flood levels for the site are are predicted to be as follows:

- 1 in 200-year tidal flood level: **3.49m AOD**
- 1 in 1,000-year tidal flood level: **3.65m AOD**

It is predicted that with an allowance for climate change over 100 years the 1 in 200 year tidal flood level will increase by 1.04m to **4.53m AOD**.

The proposed balcony will be accessed from the first floor of the dwelling, which has a Finished Floor Level (FFL) of 5.31m AOD. The balcony is proposed be set at a similar FFL.

Therefore the first floor of the dwelling and proposed balcony are predicted to retain the following freeboards above extreme tidal flood levels:

- Present day 1 in 200-year tidal flood: **1.82m freeboard**
- Present day 1 in 1,000-year tidal flood: **1.66m freeboard**
- Present day 1 in 200-year + cc tidal flood level: **0.78m freeboard**

Given the information presented above, it is concluded that the site is located in **Flood Zone 3**.

However, pre and post development, occupants of the dwelling are predicted to remain safe from flooding, with more than a 0.60m freeboard provided on the first floor of the dwelling during an extreme tidal flooding scenario.

Mitigation measures presented below will show how tidal flood risks on site can be minimised post development.

3.0 ACCESS / EGRESS

The access road to the north is the main entrance to the property and has a minimum level of 2.62m AOD. The access road joins Fore Street about 45m to the east of the site, where levels of around 3.5m AOD can be found.

Levels of around 2.70m AOD can be found near the first of the external steps up to the dwelling.

The extreme tidal flood levels in this area are predicted to be as follows:

- Present day 1 in 200-year tidal flood level: **3.49m AOD**
- Present day 1 in 1,000-year tidal flood level: **3.65m AOD**

During an extreme tidal flood, the front external steps are predicted to flood to the following maximum depths:

- Present day 1 in 200-year tidal flood depth: **0.79m**
- Present day 1 in 1,000-year tidal flood depth: **0.95m**

As shown in an extract from the EA FD2320 (**Figure 5**, below) a flood depth of 0.95m and low velocities (>0.25m/s) due to the tidal nature of the flooding, would be classed as "danger for most" (the general public).

Table 13.1 Danger to people for different combinations of depth and velocity

Velocity (m/s)	Depth of flooding (m)											
	0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.00												
0.10												
0.25												
0.50												
1.00												
1.50												
2.00												
2.50												
3.00												
3.50												
4.00												
4.50												
5.00												

Key:
- Danger for some
- Danger for most
- Danger for all

For details regarding the danger classifications of 'danger to all', 'danger to most' and 'danger to some' reference should be made to HR Wallingford (2005) *Flood Risks to People Phase 2, The Flood Risk to People Methodology*, Environment Agency\Defra R&D Technical Report FD2321/TR1, March 2005. However, the following provides a very simplified guide as to the groups of people that should be considered as falling into these danger classifications:

- Danger for some – includes children, the elderly and the infirm.
- Danger for most – includes the general public
- Danger for all – includes emergency services

The outputs of the Flood Risk to People project indicate that flood depths below 0.25 m and velocities below 0.5 m/s are generally considered low hazard. When designing safe access and exit routes, the combinations of depth and velocity on the routes should correspond to the white boxes in the above diagram. As flood depth and/or velocity increase the hazard to people increases. Combinations of depths and velocities in the white boxes (below the 'danger for some' class) are 'very low hazard', but a hazard does remain.

Figure 5 Extract from Defra/EA R&D Technical Report FD2320/TR2

Levels of around 5.45m AOD can be found in the byway near the rear entrance of the dwelling. This area is predicted to retain the following freeboards above extreme tidal flood levels:

- Present day 1 in 200-year tidal flood depth: **1.96m freeboard**
- Present day 1 in 1,000-year tidal flood depth: **1.80m freeboard**

The byway to the rear of the property falls slightly to the north-east and joins Fore Street around 30m to the north-east of the property. Thereafter Fore Street rises rapidly in a south-easterly direction.

It would be safe to remain in the internal living areas (first floor and second floor) during an extreme flood event in the site area, but if residents should wish to, they can evacuate the dwelling to the rear of the property via a safe dry route that would be available at all times.

Flood mitigation measures for the proposed development are discussed in more detail in the "Mitigation Measures" section of this report. A suggested evacuation route is also provided below.

4.0 MITIGATION MEASURES

The following flood mitigation measures are recommended for the development proposals.

- The floor level of the first floor balcony extension should be set at a minimum level of **5.31m AOD**, which is currently the FFL of the first floor of the dwelling. The 1 in 200 year tidal flood level including an allowance for climate change over 100 years is predicted to be **4.53m AOD**. Setting the FFL of the balcony extension at 5.31m AOD would afford the balcony extension a 0.78m freeboard above the aforementioned flood level.

- Any construction works undertaken below a level of **5.31m AOD** should use flood resilient construction. All electrical circuitry and apparatus should be installed at or higher than this level. Alternatively, ground based electrical installations should be designed to withstand flooding.

  Further advice on flood resilient construction is available from Improving Flood Resilience of New Buildings which is available at:
  www.planningportal.gov.uk/uploads/br/flood_performance.pdf

- Occupants of the dwelling should sign up to the Environment Agency (EA) flood alert system for the area. The EA operate a countywide flood warning system (**Figure 7**, below), which will provide an alert of a flood event which may affect the site area.

- The flood warning system is free, and the site owner should sign up to the system as soon as the dwelling is occupied. Flood warnings can be issued by phone, text or email. Registration to receive warnings can be either by phone on 0345 988 1188 or online at www.gov.uk/sign-up-for-flood-warnings

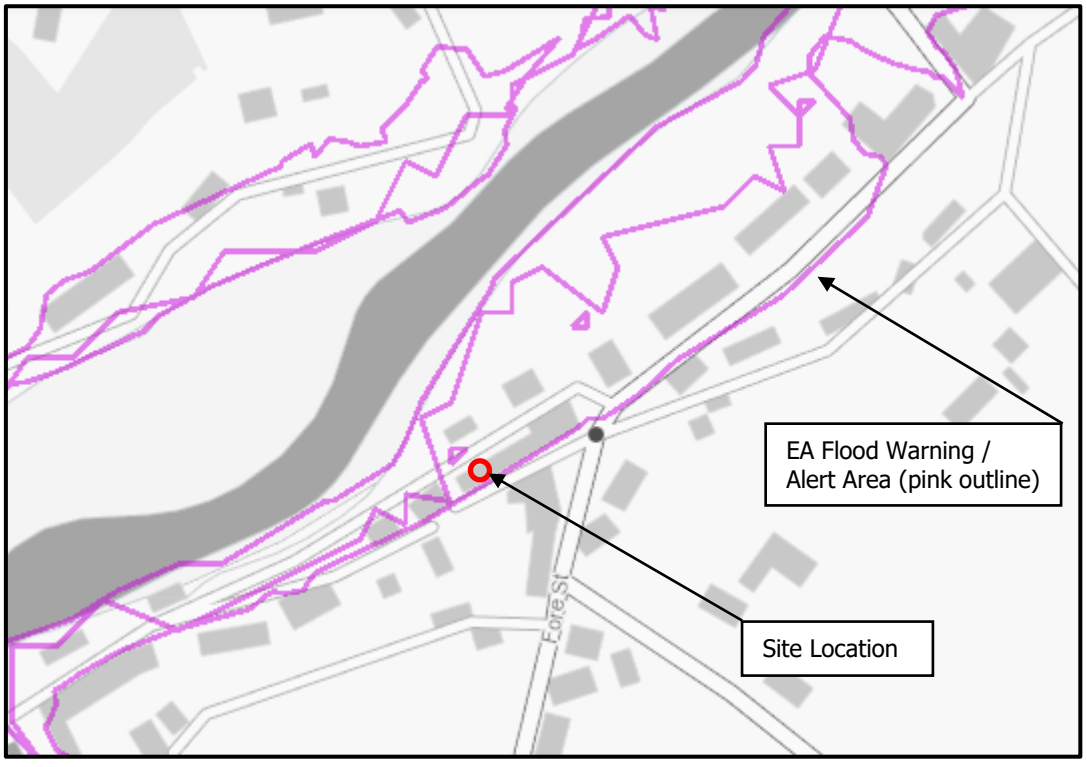


Figure 7 EA Flood Warning / Alert Map Extract

Connection to the system will provide warning of a possible flood event in the area and allow adequate time for site occupants to prepare for flooding. EA flood alert / warning standing advice is reproduced below for reference:

Flooding is possible.
Be prepared.

- Monitor flood warnings and advice issued by the Environment Agency, Council, the emergency services and News channels.
- Prepare a flood kit of essential items

Flooding is expected.
Immediate action required.

- Continue to monitor flood warnings and advice
- Move family, pets and valuables to a safe place
- Turn off gas, electricity and water supplies if safe to do so
- Put flood protection equipment in place

Severe flooding.
Danger to life.

- Evacuate building immediately to higher ground
- Return to building only when advised to do so by Emergency Services

- Remaining on the first or second floor of the dwelling during an extreme flood will enable occupants of the site to remain above predicted tidal flood levels. However, if occupants of the site feel the need to vacate the site in advance of or during an extreme tidal flood, they should utilise the evacuation route detailed below

Proposed Evacuation Route

As described in the "Access / Egress" section of this report, safe and dry access /egress to and from the site will be available from the rear of the property during all predicted tidal flood events by utilising the evacuation route shown in **Figure 8**, below.

The evacuation route would be from the rear entrance of the dwelling to the byway, to the north-east along the byway, past the Ship Inn, then up Fore Street where elevations of roughly 7.6m AOD can be found (well above extreme tidal flood levels outlined in this report).

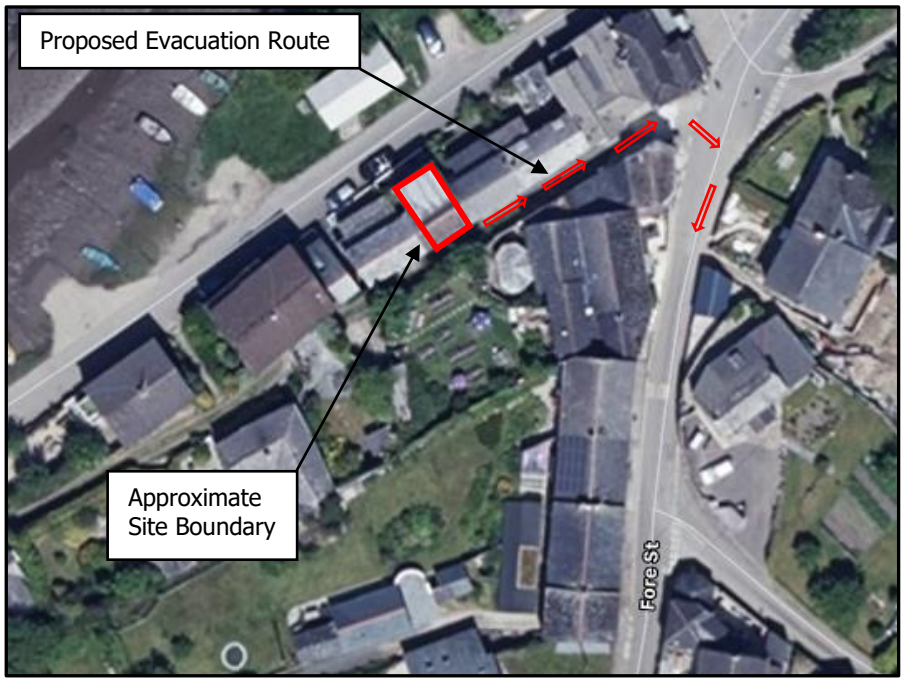


Figure 8 Suggested Evacuation Route

5.0 FLOOD RISK POLICY

The development has been shown to be located in Flood Zone 3. In accordance with PPG Table 2, a development of this type '*Buildings used for dwellings houses'* is classified as 'More Vulnerable'.

Referring to Table 3 of PPG (**Figure 9**, below), a 'More Vulnerable' development within Flood Zone 3 would be subject to the Exception Test, as well as the Sequential Test.

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 †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Figure 9 NPPF Table 3 Extract

However, it should be noted that Paragraph 164 of NPPF (2018) states that applications for '*minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments*.

Therefore, the application of the sequential and exception tests should not be required for the development proposals.

6.0 SUMMARY

It is proposed to add a minor first floor balcony extension to Cobbles Cottage in Lerryn.

From the information provided above, the site is assessed as being located in Flood Zone 3. The primary risk to the site, in flood risk terms, is flooding from an extreme tidal flood in the site area.

Using Environment Agency Product 4 Information, the present day (2022) extreme tidal flood levels for the site area are as follows:

- Predicted 1 in 200-year tidal flood level: **3.49m AOD**
- Predicted 1 in 1,000-year tidal flood level: **3.65m AOD**

Over 100 years it is predicted that the 1 in 200-year tidal level with an allowance for climate change will increase by 1.04m to **4.53m AOD**.

The proposed balcony will be accessed from the first floor which has a FFL of 5.31m AOD. The balcony is proposed be set at the same FFL. The first floor of the dwelling and proposed balcony is predicted to retain the following freeboards above extreme tidal flood levels:

- Present day 1 in 200-year tidal flood: **1.82m freeboard**
- Present day 1 in 1,000-year tidal flood: **1.66m freeboard**
- Present day 1 in 200-year + cc tidal flood level: **0.78m freeboard**

It is noted that the proposed development will not alter the flood risk vulnerability of the site nor encourage additional persons into the building.

Flood mitigation measures have been presented in this report in relation to the development proposals on this site. The mitigation measures include setting the Finished Floor Level (FFL) of the first floor balcony at **5.31m AOD**, which is currently the FFL of the first floor of the dwelling.

The 1 in 200 year tidal flood level including an allowance for climate change is predicted to be **4.53m AOD**. Setting the FFL of the balcony extension at 5.31m AOD would afford the balcony extension a 0.78m freeboard above the aforementioned flood level.

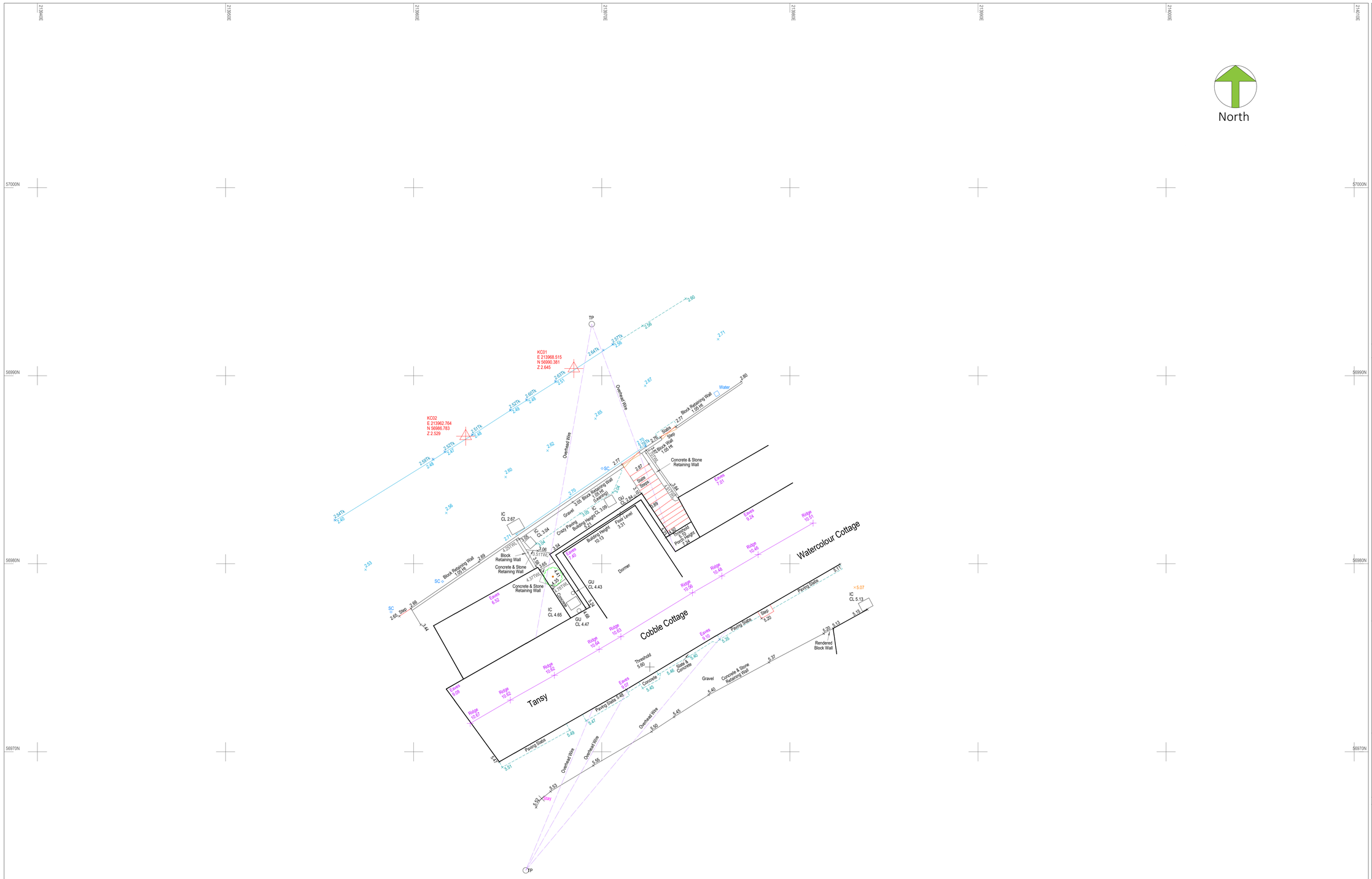
Additional mitigation measures include the use of flood resilient construction techniques, fixtures and fittings up to a level of 5.31m AOD, and ensuring occupants sign up to the EA flood warning system for the site area.

During an extreme tidal flood in the site area safe / dry access / egress from the main entrance (to the north of the property) will not be possible. However, safe / dry access will be from the rear of the property via an evacuation route detailed in this report.

In accordance with Planning Practice Guidance (PPG) Table 2, the development proposals would be classified as 'More Vulnerable' in flood risk vulnerability terms.

However, Paragraph 164 of NPPF (2018) states that applications for '*minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments*.

APPENDIX A TOPOGRAPHICAL SURVEY



LEGEND

UTILITY LINETYPES

British Telecom	BT	Gas	G
Cable Television	CATV	Heating Pipes	HP
Closed Circuit Television	CCTV	HV Cables	HV
Communications	C	Multiple Services Route	MSR
Drainage	DR	Oil	OIL
Drainage - Combined Water	CW	Oxygen	OXY
Drainage - Foul Water	FW	Street Lighting	SL
Drainage - Storm Water	SW	Traffic Signal Loop	TSL
Empty Duct	ED	Unknown	U
Electric	E	Unknown Cable	UC
Fire Hydrant Main	FH	Unknown Pipeline	UP
Fibre Optic	FO	Water	W
Fuel	FUEL		

Assumed Service Route - See GENERAL NOTES (Using abbreviation of service and colour as above): ASR — XXX — ASR — XXX — ASR — XXX

UTILITY SURVEY INFORMATION

Located by Ground Penetrating Radar	GPR	Unable to Survey	UTS
Area of Concern	AOC	Unable to Lift (cover)	UTL
Contracted Survey Area	SV AREA	Unable to Trace	UTC
Previous Survey Area	PREVIOUS	Unable to Trace (due to blockage)	UTBD
Depth to Top of Service (metres)	(D.856)	Unable to Trace Further	UTu
		End of Trace	UTeof

ABREVIATIONS used on a PAS 128 Survey

(D.856 82P) 0.856 = Depth in metres, B2 = Quality Level, P = Post processed GPR

TOPOGRAPHIC & UTILITY DETAILS

Barrier (symbol - sized)	Barrier	Post	PO
Belisha Beacon	BB	Rain Water Pipe	RWP
Bollard	B	Road Sign	RS
Borehole		Rodding Eye	RE
British Telecoms IC	BT IC	Sign Post	SP
Building (incomplete detail)		Spot Light	SL
		Spot Height	SS.00
Cable into Ground		Stop Cock	SC
Cable TV Box	CTV	Stop Valve	SV
CCTV Camera		Survey Station	
Cover Level in metres	CL 50.00	Telephone Pole	TP
Direction of Flow (Drainage)		Traffic Light	
Distribution Board	DB		
Earth Rod	ER	Tree	
Electric Cabinet	EC		
Electric Pole	EP	Unknown Valve	UV
Electric Sign		Vent Pipe	VP
Embankment		Wall	
Feeder Pillar	FP		
Fire Hydrant	FH	Waste Pipe	WP
Flag Pole	FP	Water Meter	WM
Flood Light	FL	Water Valve	Water
Gas Valve	GV		
Gate			
Ground Level in metres	GL 50.00		
Gulley	GV		
Inspection Cover	IC	Building Canopy	
Invert Level in metres	IL 50.00	Crash Barrier	
Junction Box - BT	JB BT	Drainage Channel	
Junction Box - Comms	JB COM	Drop Kerb (level in metres)	50.00
Junction Box - Elec	JB Elec	Edge Detail (level in metres)	50.00
Lamp Post	LP	Footpath (level in metres)	50.00
Light Bollard	LB	Fence	
Light In-ground	GLIG	Heras Fence	HERAS
Manhole	MH	Kerb channel (level in metres)	50.00
Manhole Capped Port		Kerb top (level in metres)	50.00
Pipe Diameter in millimetres	000	Overhead Service Line	
Pipe into Ground		Pedestrian Railing	

General Notes

Utilities may continue outside of the survey area. Any paint marks outside of the area are for investigative purposes only and may not represent the full extent of the sub-surface utilities.

Only sub-surface utility information is provided. Above ground utility information may be shown where it assists with positional referencing.

Where logic indicates a utility exists but which cannot be positively confirmed with the technology, an assumed route (ASR) is recorded.

Survey Dimensions do not procure statutory or private source utility information as part of its detection service nor does it record any such information in a utility survey unless otherwise noted. Statutory plans should be consulted to supplement this survey.

Vertical & Horizontal Position - Vertical position (depth) is indicative to the top of the utility/feature and is recorded as (depth to top of service) and should not be taken as exact. Where depth information from the technology is unclear, depth is not shown. Drains may have been detected using threading and the depth indicated could be between the top and the bottom of the drain. Horizontal position is indicative to the centre of the utility/feature and should not be taken as exact.

Warranty - Biodegradable paints are used to mark-out the position of the utilities. Before long paint markings may become illegible depending on ground, weather and traffic conditions. No warranty is given in respect of the durability of the paint markings and that they are a complete representation of the sub-surface utilities therefore this drawing should be used as the primary reference for the survey results.

This drawing does not provide an absolute representation of the sub-surface. Utilities have been detected using non-invasive technologies only and the performance can be adversely affected by ground, weather and site conditions outside of our control therefore some utilities may be undetectable. While we use reasonable endeavours to detect all utilities it does not warrant that 100% detection will be achieved and that approximate depth penetration of the technologies will be greater than two metres.

Sewer and manhole details shown on this drawing have been obtained by observation and measurement from the surface and as such cannot be guaranteed. Where precise sewer details will be critical to the project design we would recommend that entry into the chamber be undertaken using a specialist team, appropriately qualified for confined space entry. These teams can be supplied on request.

Irrespective of the information provided by a utility survey and statutory plans, excavation work should be undertaken with extreme caution and in accordance with HSE Guidelines - HSG47 Avoiding Danger from Underground Services

Sheet 01

SHEET LAYOUT

Rev	Description	Drwn/Chk	Date

Survey Dimensions Ltd

Measured surveys of land and buildings

01726 390 010
+44 (0) 7970 205 932
+44 (0) 7970 205 935
info@SurveyDimensions.co.uk
www.SurveyDimensions.co.uk

Project Title:

Cobble Cottage
Lerryn
Lostwithiel
PL22 0PX

Client:

Hone Architecture Ltd

Drawing Title:

Topographical Survey

Scale:	1 : 100 @ A1	Drawn:	MWS
Date:	28-02-2022	Checked:	KC
Drawing Status:	SURVEY	Surveyor:	KC

Project Ref.	Dwg No.	Rev.
211027	01	

APPENDIX B DEVELOPMENT PROPOSALS

notes:
All dimensions to be checked onsite, written dimensions take precedence over scaled.

rev	date	int	desc
A:	20/01/22	kbl	P.R.O.W noted on site plan

N 234385711mm
E 752716836mm

N 234385711mm
E 752716836mm

10000

10000

N

S

E

W

PM

PM

AM

AM

prevailing wind

winter sun

summer sun

Watercolour Cottage

The Old Lime Kiln

Florin Cottage

Pentye

Ship Inn

Mud

des Reach

P

O

45°

45°

45°

45°

45°

Public Right of Way (Byway No 634/19/1)

0

10m

7.9m

date	Dec 21	desc	existing site plan	status	SURVEY
drawn	kbl	client	Miss D Pragnell-Smith	add	Cobble Cottage, Lerryn, Lostwithiel, Cornwall PL220PX
Scale	1:100@A1	job no	21-121	dwg no	A-002
				rev	A

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10 pope crescent enderby leicester t. 07590 985 639 e. kl@honeltd.co.uk

notes:
All dimensions to be checked onsite, written dimensions take precedence over scaled.

rev	date	int	desc
A:	20/01/22	kbl	P.R.O.W noted on site plan

N 234385711mm
E 752709836mm

N 234385711mm
E 752719836mm

10000

10000

N

S

E

W

PM

PM

AM

AM

prevailing wind

winter sun

summer sun

Watercolour Cottage

The Old Lime Kiln

Florin Cottage

Pentye

Ship Inn

Mud

des Reach

P

O

45°

45°

45°

45°

45°

Public Right of Way (Byway No 634/18/1)

proposed new garage

7.9m

0

10m

date Dec 21 | desc **proposed site plan** | status **PLANNING**

drawn kbl | client Miss D Pragnell-Smith | add Cobble Cottage, Lerryn, Lostwithiel, Cornwall PL220PX

Scale 1:100@A1 | job no **21-121** | dwg no **A-012** | rev **A**

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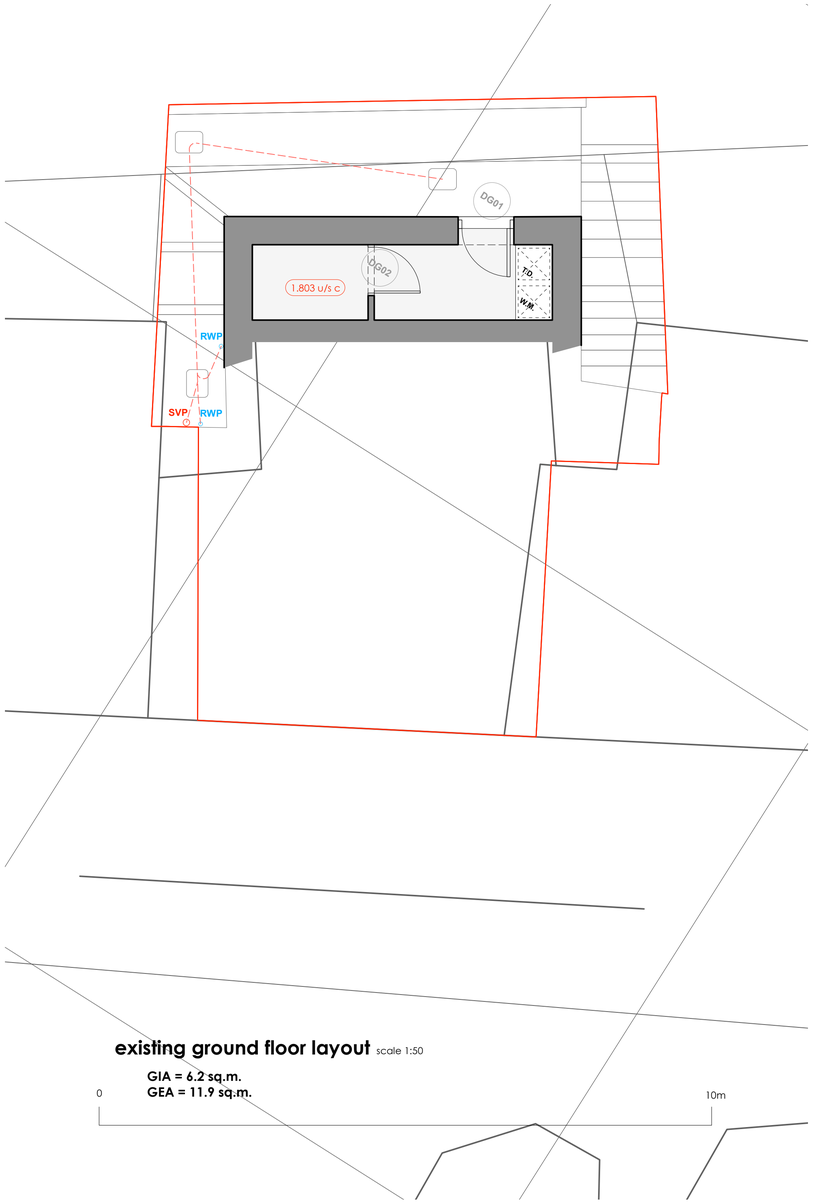
notes:
All dimensions to be checked onsite, written dimensions take precedence over scaled.

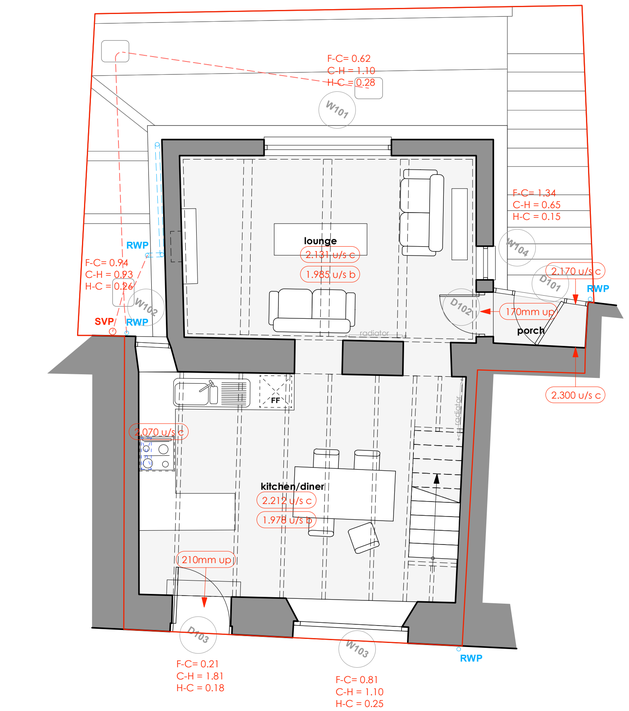
rev	date	int	desc



existing ground floor layout scale 1:50

GIA = 6.2 sq.m.
GEA = 11.9 sq.m.

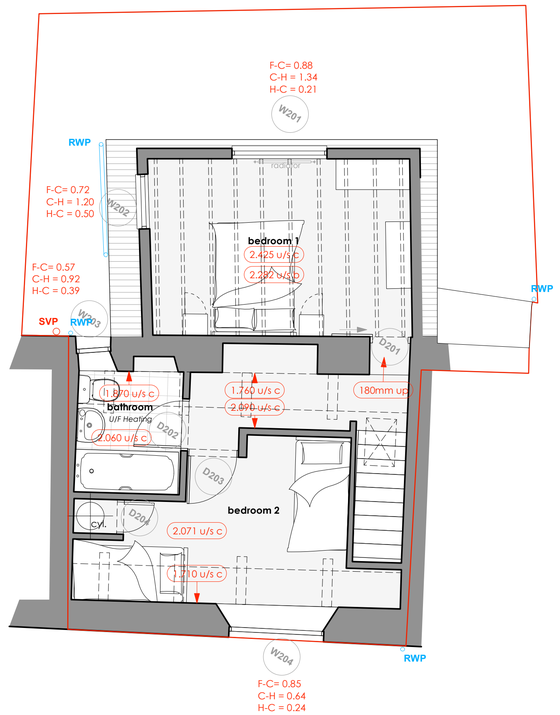
0 10m



existing first floor layout scale 1:50

GIA = 37.7 sq.m.
GEA = 47.1 sq.m.

0 10m



existing second floor layout scale 1:50

GIA = 35.5 sq.m.
GEA = 41.9 sq.m.

0 10m

date	Dec 21	desc	**existing floor plans**	status	**SURVEY**
drawn	kbl	client	Miss D Pragnell-Smith	add	Cobble Cottage, Lerryn, Lostwithiel, Cornwall PL220PX
Scale	1:50@A1	job no	**21-121**	dwg no	**B-001** rev -

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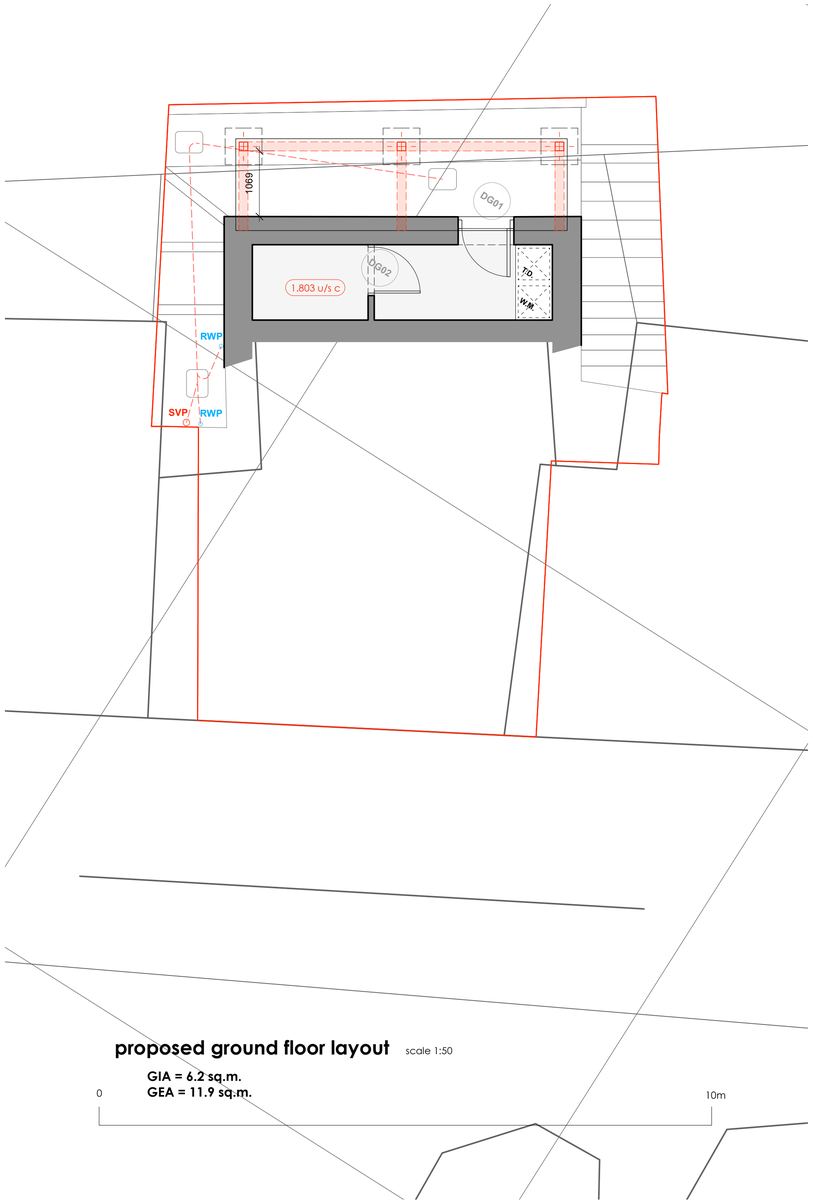
notes:
All dimensions to be checked onsite, written dimensions take precedence over scaled.

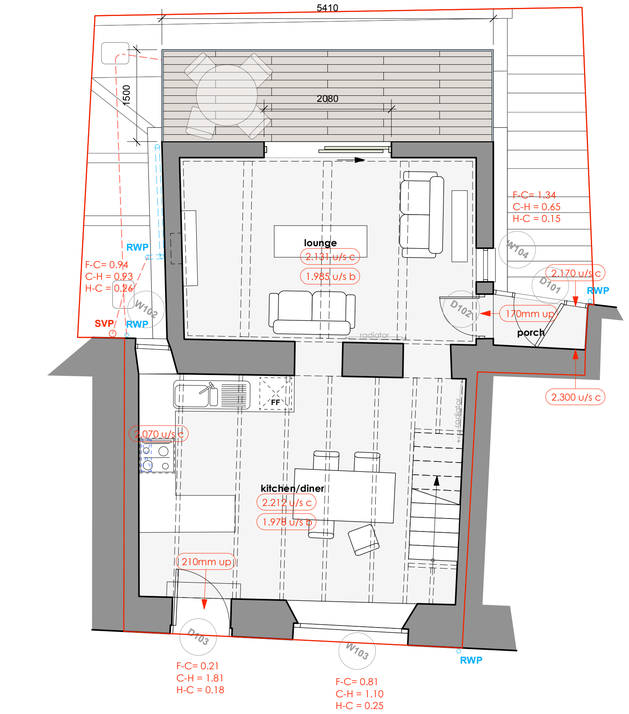
rev	date	int	desc
A:	02/01/22	kbl	balcony altered
B:	10/01/22	kbl	readied for submission



proposed ground floor layout scale 1:50

GIA = 6.2 sq.m.
GEA = 11.9 sq.m.

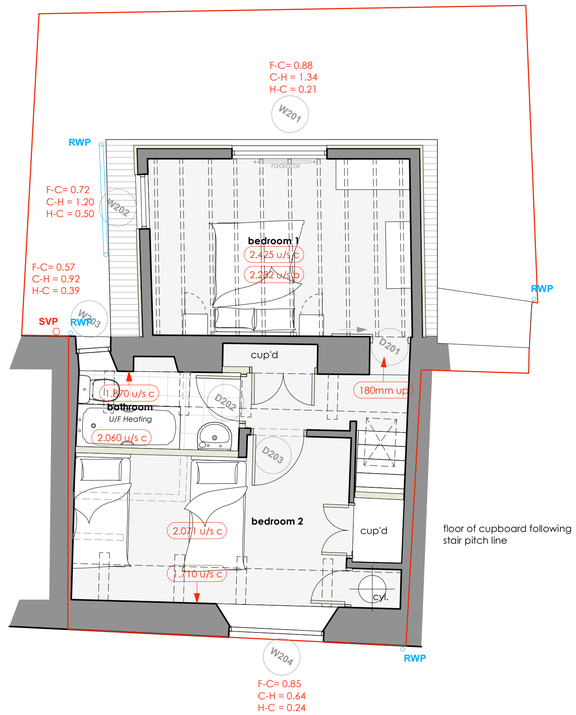
0 — 10m



proposed first floor layout scale 1:50

GIA = 37.7 sq.m.
GEA = 47.1 sq.m.

0 — 10m



proposed second floor layout scale 1:50

GIA = 35.5 sq.m.
GEA = 41.9 sq.m.

0 — 10m

proposed floor plans status **PLANNING**

date	Dec 21	client	Miss D Pragnell-Smith	add	Cobble Cottage, Lerryn, Lostwithiel, Cornwall PL220PX
drawn	kbl				
Scale	1:50@A1	job no	**21-121**	dwg no	**B-010** rev **B**

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APPENDIX C EA INFORMATION

ENQ22/DCIS/250662 - Records of flooding in the Lerryn area.

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
21/01/1980	Lerryn	Lerryn. Experienced slight flooding during severe storm. No further details	Severe Storms and High Winds	0	Unknown
01/04/1985	Lerryn	Lerryn -One property flooded internally from River Lerryn - exact date not known	Unknown assumed tidal flooding event	1	Tidal
01/01/1986	Lerryn	Lerryn - One property flooded 6 times during 1986 actual dates of flooding not known	Unknown, Possibly Tidal events	1	Unknown
14/11/1986	Lerryn	Lerryn. Two properties flooded. One property at Couch's Mill from water running of fields, and one property in Lerryn flooded from a minor watercourse	Intense rainfall.	2	Fluvial & Surface Water Runoff
01/12/1989	Lerryn	Lerryn - One property flooded internally by the River Lerryn. Exact date not known	Tidal: Rive Lerryn	1	Tidal
30/11/1992	Lerryn	Lerryn - At Couch's Mill the road was flooded for a 40m stretch.	Unknown	0	Unknown

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
24/10/1995	Lerryn	Lerryn. One property flooded from the River Lerryn due to a high tide event.	High tide	1	Tidal
23/11/1995	Lerryn	Lerryn - One property flooded from high tide	River Fowey: High Tide	1	Tidal
22/01/1996	Lerryn	Lerryn - 6 - 10 Properties flooded due to the River Lerryn overtopping its banks during a Spring Tide Event. Houses affected to a depth of 1 to 2 inches, Roads affected to a depth of 2 feet.	River Lerryn overtopps its banks during a high tide event.	10	Tidal
07/03/1996	Lerryn	Lerryn - Frequent flooding from high spring tides. A number of properties often affected along the waterfront.	River Lerryn overflows with very high tides.	0	Tidal
22/12/1999	Lerryn	Lerryn. River View one property flooded by the River Lerryn	Flooding from swollen river	1	Fluvial
26/04/2001	Lerryn	Lerryn: One property floooded from runoff from land behind behind property	Flooding from land behind.	1	Surface Water Runoff
01/02/2002	Lerryn	Lerryn. Flooding of roads along waterfront following a high tide event with strong southwesterley winds.	High Spring Tides		Tidal
27/10/2004	Lerryn	Lerryn - Cotttages approaching bridge flooded from highway runoff.	Inadequate drainage		Tidal & Surface Water Runoff

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
10/03/2008	Lerryn	Lerryn: Flooding to road and land due to Spring Tides and 0.5 storm surge	High spring tides and storm surge	0	Tidal
17/11/2010	Lerryn	Lerryn. Three properties flooded from large volumes of surface water runoff down main road. A small roadside drain / culvert blocked, contributing to the flood extent.	Extreme rainfall event, caused surface water to flow down the road and into the 3 properties	3	Surface Water Runoff
09/10/2014	Lerryn	Lerryn. Flooding to the north east corner of the carpark and the road that runs parallel to the south of the river	High tide overtopped the river banks	0	Coastal

This list contains all the records of flooding we hold, in a 1km radius of the specified location. Although this information is compiled to the best of our knowledge, the absence of flooding does not mean that an area has not flooded in the past, nor guarantee it will not flood in the future. Our records are updated as more information comes to light, and as flood incidents occur.

Correct as of 17 February 2022

ENQ22/DCIS/250662 - Flood Map for Planning (Rivers and Sea) centred on Lerryn, Lostwithiel 16 February 2022

Environment Agency

1: 10,000

0 Metres 250

N W E S

Flood Map for Planning (Rivers & Sea)

- Statutory 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.

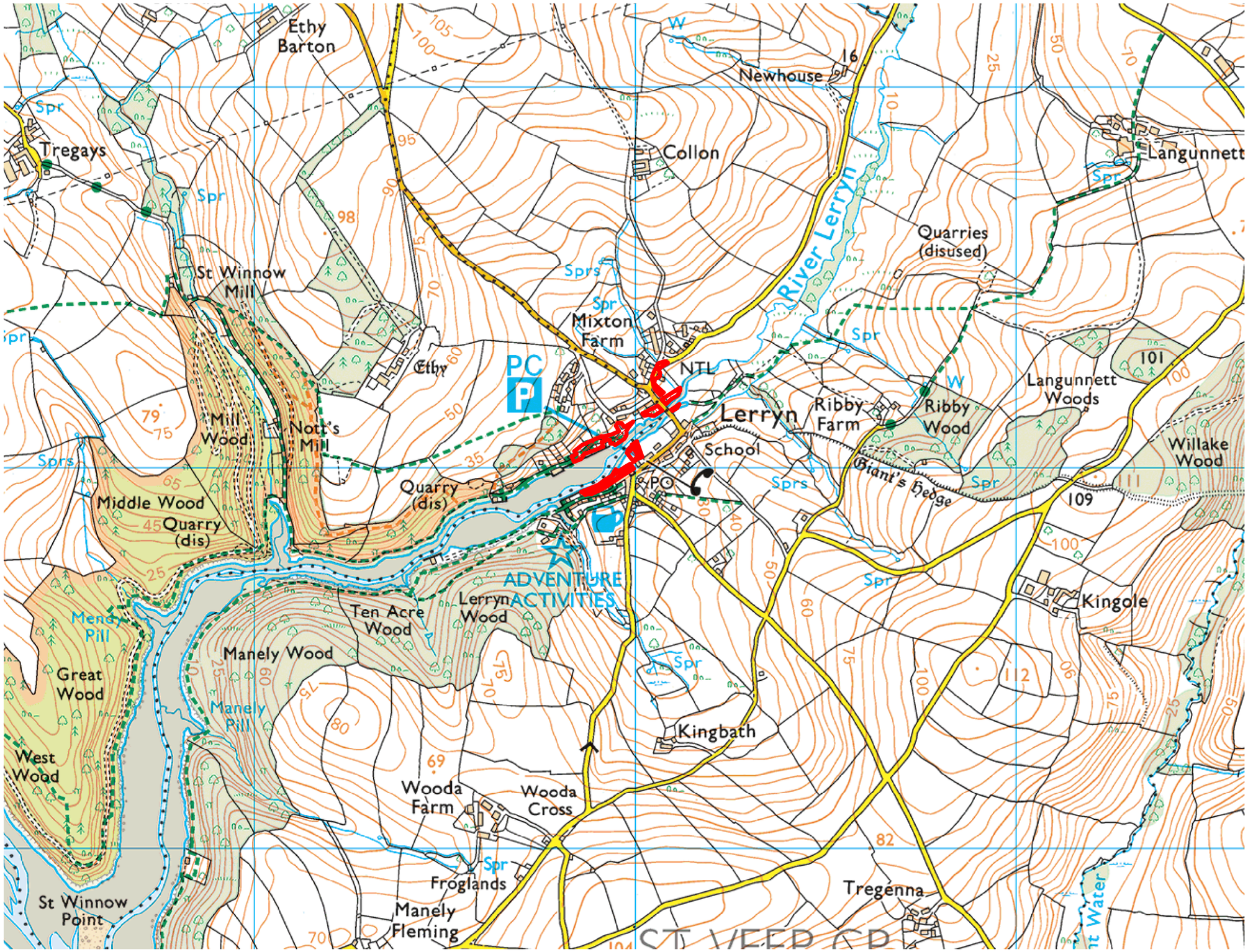
Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occuring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

ENQ22/DCIS/250662 - Historic Flood Map centred on Lerryn, Lostwithiel

Environment Agency

Please note this map is intended only as a guide - it is not accurate at individual property level



Legend

Recorded Flood Outlines

The Recorded Flood Event Outline, shows the extent of known flooding from rivers and the sea. This outline is indicative of the flood extent, and does not necessarily confirm that a property has flooded internally. If an area is outside the extent of recorded flooding, it does not mean it has never flooded. This will be updated as more data comes to light, and as flood incidents occur.

1:10,000 Correct as of the 16th February 2022

N

ENQ22/DCIS/250662 - Modelled JFLOW Flood levels

This data is taken from the JFLOW model. Please refer to the attached caveat when considering JFLOW modelled levels.

Jflow Study: Jflow_2007

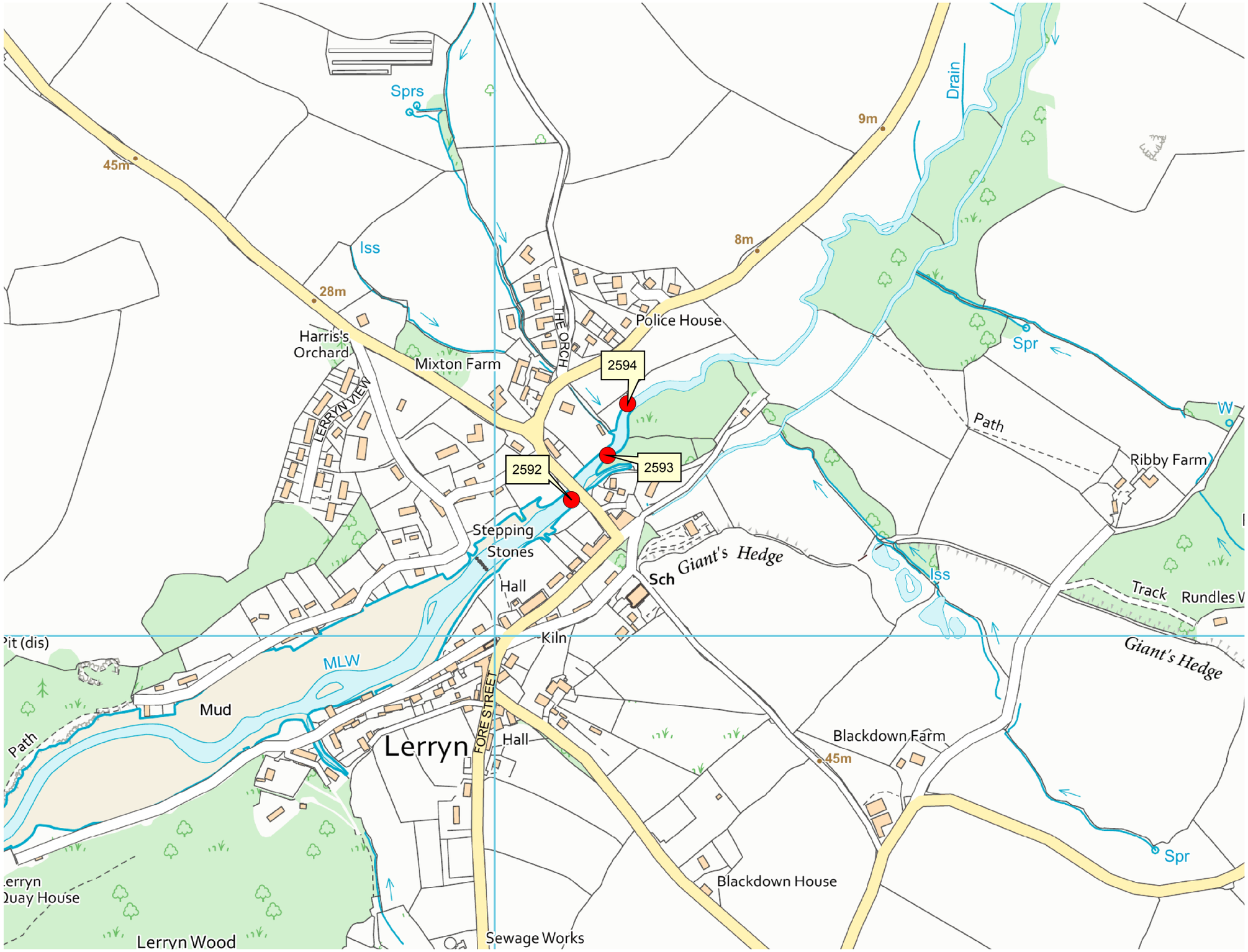
Node Reference	Easting	Northing	Modelled Flood levels, in mAOD	
			1% AEP (1 in 100 year)	0.1% AEP (1 in 1000 year)
2592	214080	57143	2.80	3.09
2593	214118	57190	3.14	3.35
2594	214139	57244	3.53	3.74

Correct as of 17 February 2022

ENQ22/DCIS/250662 - JFLOW Node Location Map

Environment Agency

Please note this map is intended only as a guide - it is not accurate at individual property level



Legend

JFLOW Node Location

Please refer to the enclosed table, for modelled water level data, and the enclosed caveat when considering modelled levels.

1:4,000

Correct as of the 17th February 2022

N

ENQ22/DCIS/250662 - Coastal Flood Boundary Data - Tidal Levels (2018)

Site	Grid Ref		Tidal Still Water Level (m OD) for return period Base year is 2017					
	Easting	Northing	50% AEP 1 in 2 year	20% AEP 1 in 5 year	10% AEP 1 in 10 year	2% AEP 1 in 50 year	0.5% AEP 1 in 200 year	0.1% AEP 1 in 1000 year
Lerryn	210555	59678	3.01	3.11	3.17	3.33	3.47	3.63
Confidence intervals (2.5%)			2.99	3.08	3.14	3.27	3.37	3.49
Confidence intervals (97.5%)			3.02	3.12	3.20	3.39	3.59	3.85

Although levels are given to 2 decimal places, practitioners should treat them as only accurate to 1 decimal place. Confidence levels are provided when conducting sensitivity testing in a study or design.

Correct as of 17 February 2022

Coastal flood boundary conditions for the UK: 2018 update

We have provided extreme peak sea levels for the points most relevant to your area of interest.

Please be aware of the following points:

- The extreme sea levels provided by this project can be considered accurate to one decimal place. Two decimal places have been provided to differentiate between nodes on the chainage. This does not infer greater accuracy and the user should be mindful of this when selecting a node for an extreme sea level
- Extreme sea level values include the effects of storm surge and astronomical tides but do not specifically account for any localised increase in sea level that may be induced by onshore wave action, orientation or topography.
- The confidence levels provided in the accompanying spreadsheet, take account of the uncertainty associated with the skew surge joint probability statistics only. Uncertainty relating to the accuracy of the CS3X model interpolation, 2km interpolation and tidal prediction is not included. Additional uncertainty due to model inaccuracies should be considered for points within estuaries, which were derived using local models.

Detailed results are available in multiple geographical information system (GIS) shapefiles, available online at data.gov.uk under an Open Government Licence.

Please read the following documents when using this data.

Coastal flood boundary conditions for the UK: technical summary report

Coastal flood boundary conditions for the UK: user guide

You asked us to provide you with depth / flow / water level data from the JFLOW model used to produce the Flood Zones.

The water depths have been produced from the JFLOW model (2007) as a 'by-product' of running the model to produce Flood Zones.

In 2013, over 600km of watercourses were remodelled using JFlow+. These watercourses were either previously not modelled in 2008, or where modelled using a lesser quality DTM. This project used an improved DTM, revised hydrology and the latest version of Jflow+.

You should be aware of the following points.

- Our work to produce Flood Zones followed a 10 year programme which delivered more detailed mapping for 821 locations. However, in order to complete Flood Zones we needed national coverage, hence a generalised approach was used to provide this national coverage within the time available, to fill the gaps between the 821 locations where we had more detailed information. The Flood Zones are therefore not as accurate as we would normally specify for river modelling, but they do provide an adequate indication of the extent of flood risk such that developers can consider flooding as part of their proposals to ensure they are not unknowingly putting additional lives at risk. This is the purpose for which the Flood Zones were produced

- Depths outputs were not specified when we commissioned this generalised modelling for Flood Zones. As the JFLOW modelling method was developed, tested and reviewed for production of the Flood Zone extents only, we currently have no information on the accuracy of the water depth data.

- The models were run using a Digital Terrain Model (DTM) with a grid generalised to between 5m and 100m (depending on the type of model and location, for reasons such as processing speed). Fluvial modelling produced depth data which can be processed using the DTM to provide water level data. However the differing grid sizes means that there is a significant potential for inaccuracy in producing level data, because of the DTM generalisation. Therefore because of the nature of the model and the DTM, in many cases it will not be possible to confidently assess whether or not a site is above the resulting water level. This is because there are further inherent uncertainties in the depth calculation and within the DTM itself.

- Depth or level outputs from the National Generalised Modelling (JFLOW) are suitable to be used for decision making at a broad catchment scale

- JFLOW and JFlow+ is a suitable method for broad scale flood mapping. It may however fail to produce satisfactory results in some locations.

- They are not suitable for use in site specific Flood Risk Assessments or Strategic Flood Risk Assessments and must not normally be used for these studies. However, where in exceptional circumstances Nationalised Generalised Modelling outputs are requested to be used for anything other than at a broad catchment or Shoreline Management Plan coastal cell scale further verification must be undertaken.

- For the 2013 data we can provide the data for the 100 year plus climate change scenario. The influence of climate change on expected flows for the 2080 planning horizon was represented by increasing the 1 in 100-year flood hydrograph by 30%.

- Any assessment of Flood Risk undertaken must be appropriate for the decisions that need to be based upon it, consider the risks and also take into account any limitations of the data used.

- Please be aware that the Environment Agency does not guarantee that this data is suitable for your purposes.

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