

Mr & Mrs Reid

Bumbles Locker & The Meeting Room, Fore
Street, Beer

Flood Risk Assessment



QM

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Checked by	Jason Huxham			
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EXECUTIVE SUMMARY

Tumu Consulting Ltd have been appointed by Mr & Mrs Reid to undertake a Flood Risk Assessment (FRA) for a proposed development at Bumbles Locker and The Meeting Room, Fore Street, Beer. This report provides a qualitative assessment of the potential sources and effects of flooding in accordance with the guidelines set out in the National Planning Policy Framework (NPPF).

Item	Response
Site location	The site is located in the village of Beer, East Devon at approximate National Grid Reference 322890, 89410. +6++
Size and Current Land Use	The site comprises an existing shop/retail space on the ground floor of the building fronting Fore Street, with residential space to the rear and on the first floor (Bumbles Locker). There is a rear garden to the northwest, which is a mixture of patio and soft landscaping. Also, at the rear of the property, and accessed via a separate alleyway there is a single storey outbuilding known as The Meeting Room. The site is located within an existing urban area and comprises an area of approximately 400m ² .
Fluvial (rivers) Flood Risk	Medium Risk (reduced to Low Risk via proposed mitigation measures)
Tidal Flood Risk	Low Risk
Surface Water Flood Risk	Low Risk
Groundwater Flood Risk	Low Risk
Sewer Flood Risk	Low Risk
Reservoirs, canals & other artificial sources	Low Risk
Historical Flooding	Environment Agency data indicates that two historical flood events were recorded in this area in 1999 and 2004. The EA have report that approximately 18-properties were flooded during the most recent 2004 flood event and that Fore Street was impacted. The report also indicated that the site did flood internally during May 2004 but that flood levels at the property were minimal.
Proposed Development	The proposed development will comprise the refurbishment of the existing Bumbles Locker building. The existing shop/retail space on the ground floor will be converted to residential accommodation and the loft-space will also be converted so that the building will become 6-bedroom dwelling. The Meeting Room will also be converted into a 1-bedroom holiday apartment. Both building conversions are classified as 'Minor development' in accordance with the NPPF Guidance on Flood risk & coastal change.
NPPF Flood Risk Vulnerability	More Vulnerable

The risk of flooding to the proposed development has been assessed in accordance with the NPPF. It is concluded that the development can be undertaken in a sustainable manner without increasing the flood risk to the proposed development or to existing properties/systems within the downstream catchment and is therefore compliant.

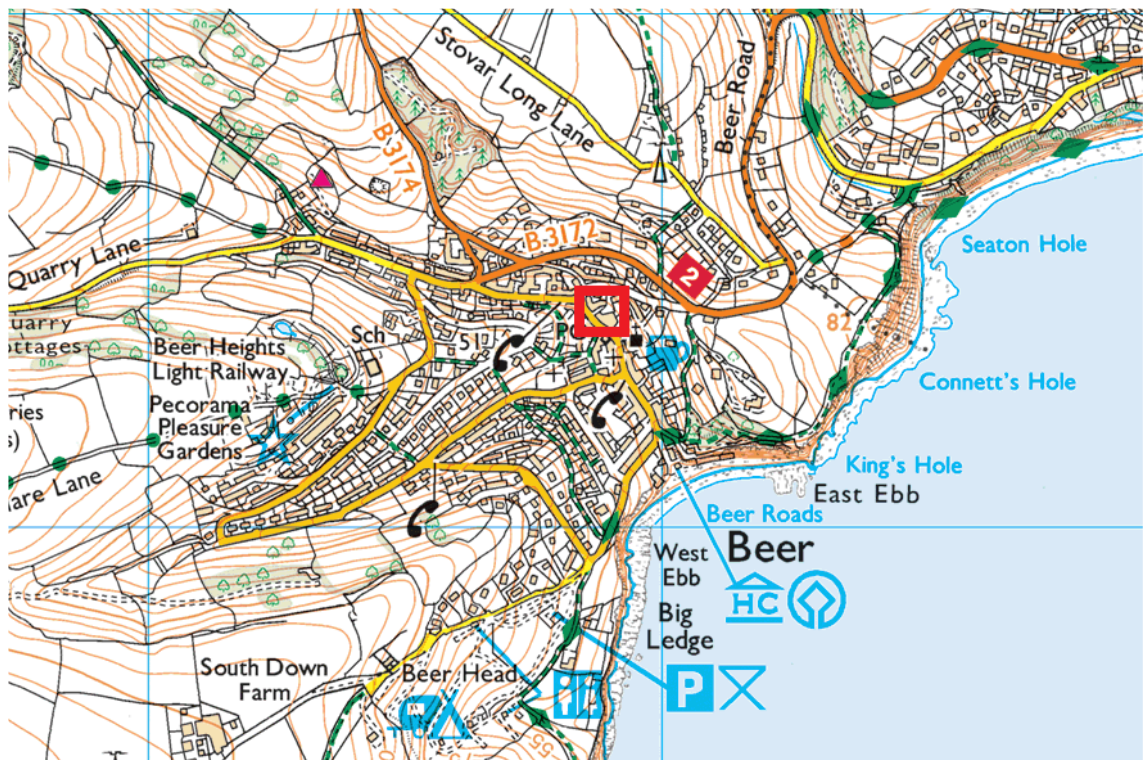
1 INTRODUCTION

Tumu Consulting Ltd have been appointed by Mr & Mrs Reid to undertake a Flood Risk Assessment (FRA) for a proposed development at Bumbles Locker and The Meeting Room, Fore Street, Beer. This report provides a qualitative assessment of the potential sources and effects of flooding in accordance with the guidelines set out in the National Planning Policy Framework (NPPF).

The purpose of this FRA is to demonstrate that the site can be developed safely, without exposing the development to an unacceptable degree of flood risk or increasing the flood risk to third parties.

1.1 Site location

The site is located in the village of Beer, East Devon at approximate National Grid Reference 322890, 89410. The site is accessed directly from Fore Street and comprises an existing shop/retail space on the ground floor of the building fronting Fore Street, with residential space to the rear and on the first floor (Bumbles Locker). There is a rear garden to the northwest, which is a mixture of patio and soft landscaping. Also, at the rear of the property, and accessed via a separate alleyway there is a single storey outbuilding known as The Meeting Room. The site is located within an existing urban area and comprises an area of approximately 400m² (0.040-hectares).



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Figure 1-1 Site Location Plan

1.2 Topography

A topographical survey of the site was undertaken by AP Land Surveys Ltd in November 2020. The survey was undertaken to Ordnance Datum and OS National grid. The topographical survey indicates that the site falls from east to west from a high point of approximately 28.15m

AOD (Above Ordnance Datum) at the eastern end of the rear garden, to a low point of approximately 26.23m AOD at the back of the footway at the southwest corner of the site.

The existing shop/residential building (Bumbles Locker) has a Finished Floor Level (FFL) of 26.34m AOD but this floor levels steps up to 26.47m AOD and 26.83m AOD in what are understood to be historic extensions of the original building.

The existing Meeting Room building has an FFL of 27.21m AOD. This building also has a historic extension, which houses a WC and Washroom and has an FFL 27.39m AOD.

The site has a pre-development impermeable area of approximately 230m².

1.3 Geology & Hydrogeology

Geological mapping indicates that the underlying bedrock comprises Upper Greensand Formation – Sandstone. This is overlain by superficial deposits of Head – Sand with Clay and Gravel. The site is not located within an Environment Agency Source Protection Zone for groundwater.

1.4 Hydrology

There is an existing partially culverted and generally channelised watercourse which runs along the opposite channel of Fore Street adjacent to the site. This is classified by the Environment Agency as a Main River. The UK Government's Flood Risk Map for Planning, available online, identifies that the site is partly in Flood Zone 3a (High probability of flooding >1.0% per year). Refer to Figure 1-2 below.

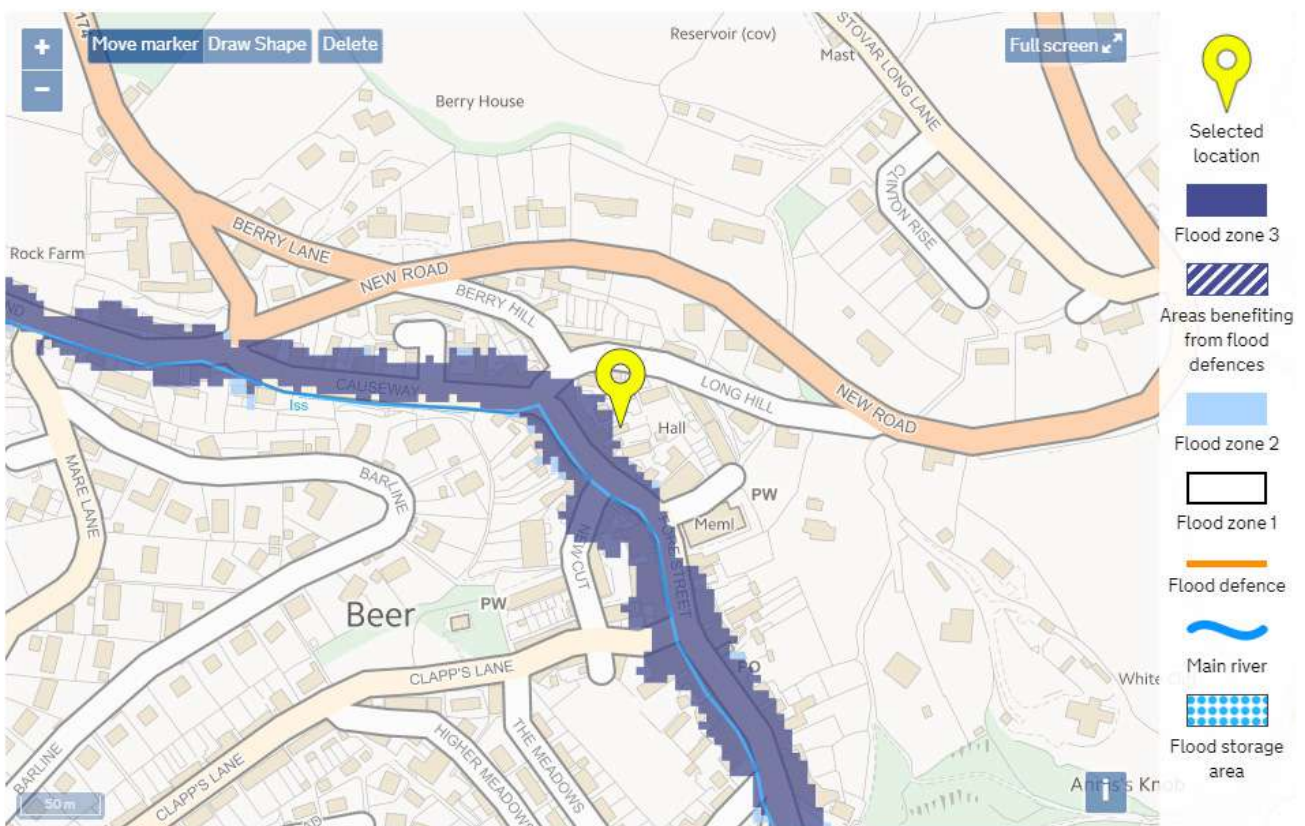
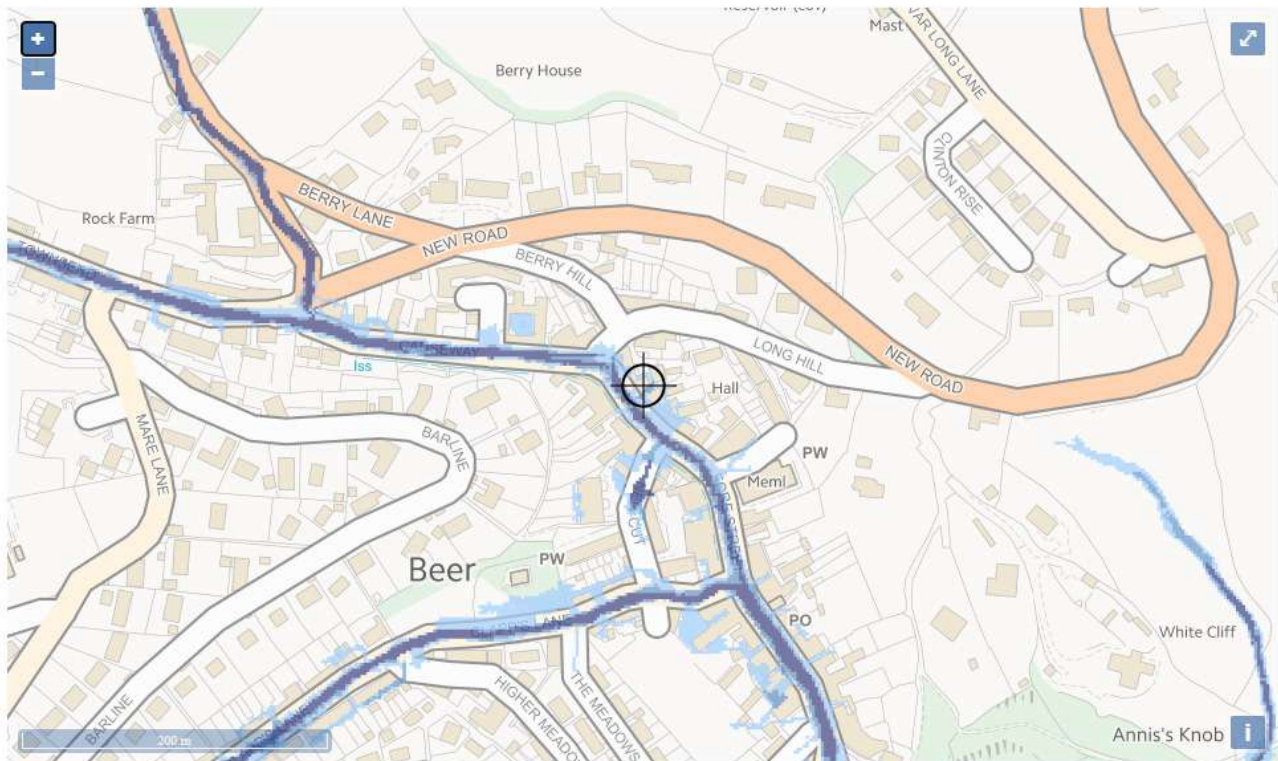


Figure 1-2 UK Government Fluvial Flood Risk Mapping

The mapping shows that the existing shop/retail space (Bumbles Locker) is within the extent of Flood Zone 3a. However, the Meeting Room building is located in Flood Zone 1.

1.5 Existing Surface Water Drainage

The UK Government's Surface Water Flood Risk Mapping, available online, identifies that the site is at Low risk of flooding due to surface water runoff from adjacent areas. Refer to Figure 1-3 below.



Extent of flooding from surface water

● High ● Medium ● Low ○ Very low ⊕ Location you selected

Figure 1-3 UK Government Surface Water Flood Risk Mapping

South West Water's sewer record (refer to Appendix A) shows that there is an existing 375mm diameter public combined sewer beneath Fore Street to the west of the site. This combined sewer flows towards the southeast, following the route of Fore Street. It is understood that all existing surface water runoff from the site is discharged to the public combined sewer.

1.6 Existing Surface Water Runoff Rates

As the existing development is predominantly hardstanding, we have calculated pre-development surface water runoff using the Modified Rational Approach (Wallingford Procedure) and based upon the average rainfall intensity derived from a 15-minute storm for each return period, which is appropriate given the time of concentration that would be anticipated for these small areas of existing hardstanding. The parameters used in the calculation and results are summarised below in Table 1.

Parameter	Value	Units
AREA	0.023	ha
1-year rainfall intensity, i_1	27.148	mm
2-year rainfall intensity, i_2	35.130	mm
30-year rainfall intensity, i_{30}	66.428	mm
100-year rainfall intensity, i_{100}	85.799	mm
Q_1	1.7	l/s
Q_{BAR}	2.2	l/s
Q_{30}	4.2	l/s
Q_{100}	5.5	l/s

Table 1 Modified Rational Approach calculation for runoff from existing hardstanding areas

The calculation shows that the total pre-development runoff response to a 30-year return period storm event would be 4.2 l/s and to a 100-year return period storm event would be approximately 5.5 l/s.

2 DEVELOPMENT PROPOSALS

2.1 Description of proposed works

The proposed development will comprise the refurbishment of the existing Bumbles Locker building. The existing shop/retail space on the ground floor will be converted to residential accommodation and the loft-space will also be converted so that the building will become 6-bedroom dwelling.

The Meeting Room will also be converted into a 1-bedroom holiday apartment.

As all of the proposed works will be internal, comprising refurbishment and conversion of existing buildings, the post-development impermeable area be 230m².

Both building conversions are classified as 'Minor development' in accordance with the NPPF Guidance on Flood risk & coastal change.

2.2 Flood risk vulnerability classification

In accordance with Table 3 of the NPPF the development is classified as 'More Vulnerable' since it comprises '*Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels*'.

2.3 Flood risk issues for minor development

The NPPF Guidance on Flood risk & coastal change states that minor developments are unlikely to raise significant flood risk issues unless:

- they would have an adverse effect on a watercourse, floodplain or its flood defences;
- they would impede access to flood defence and management facilities, or;
- where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows

The development proposals will not have an adverse effect on the existing watercourse as this runs down the channel on the opposite side of Fore Street. There will be no works within the floodplain. There are no existing flood defences in the vicinity of the site and the proposed development will not affect or impede access to any flood defences or management facilities. The internal refurbishment of these buildings will not have any effect on local flood storage capacity or flood flows.

2.4 Flood risk issues for changes of use

The NPPF Guidance on Flood risk & coastal change notes that a change in use may involve an increase in flood risk if the vulnerability classification of the development is changed.

As noted above, the proposed development will result in an increase in vulnerability – both on the ground floor of Bumbles Locker and for The Meeting Room. In such cases, the applicant will need to show in their flood risk assessment that future users of the development will not be placed in danger from flood hazards throughout its lifetime.

3 ASSESSMENT OF FLOOD RISK

3.1 Fluvial (rivers) flood risk

Fluvial flood risk originates from a watercourse of any size that may affect a site when the channel capacity is exceeded. This type of flooding often occurs following an extreme rainstorm event or prolonged period of wet weather. The UK Government's Flood Risk Mapping, available online, identifies that the western part of the site, comprising the existing shop/retail space fronting onto Fore Street is in Flood Zone 3a (High probability of flooding > 1.0% per year). The mapping shows that the Meeting Room building is located in Flood Zone 1.

The Flood Risk Mapping indicates that the principal flood risk arises from the unnamed drainage channel on Fore Street and that the flooding is due to fluvial influences.

In response to a Freedom of Information request the Environment Agency (EA) have provided details of existing flood defences (refer to Appendix B). This data indicates that there are no existing flood defences in the vicinity of the site.

The EA data states that JFLOW modelling (2012) has been carried out for this areas, undefended depth grids have been provided for Beer for the 1% AEP (1 in 100-year) and 0.1% AEP (1 in 1000-year) scenarios. As no climate change guidance or allowance modelling has been provided by the EA, we have based our assessment on the provided Q1000 (in 1000-year defended scenario). The maps indicate that the far west of the site is expected to see flooding up to 0.3m during a 1 in 100 and 1 in 1000-year undefended scenario.

As a result, the risk of flooding from fluvial sources is considered to be moderate for the Bumbles Locker building but low for The Meeting Room building.

3.2 Tidal flood risk

Tidal flood risk can affect the coastline as well as estuaries and rivers that are tidally influenced. Flood events often coincide with the tidal regime, high rainfall events or other natural phenomena, which can lead to water levels covering low-lying land or exceeding natural or man-made defences.

Despite its proximity to the coast (approximately 350m to the south of the site, Flood Risk Mapping indicates that the site is not at risk of tidal flooding. It is therefore considered that the site is at **low** risk of tidal flooding.

3.3 Surface water flood risk

When interpreting the surface water flood map information, it needs to be taken into account that the surface water mapping is generated from high-level information. The flood mapping must be correctly interpreted in order to give a fair representation of the site's surface water flood risk and used only as a guide.

The UK Government's Surface Water Flood Risk Mapping, available online, identifies that the site is at **low** risk of flooding due to surface water runoff from adjacent areas.

3.4 Groundwater flood risk

The underlying bedrock geology is unlikely to be subject to groundwater flooding. A review of the GeoSmart Information Ltd Groundwater Flood Map (available online) indicates that the site is at a low and negligible risk of groundwater flooding. The risk of groundwater flooding is therefore considered to be **low**.

3.5 Sewers: combined, foul or surface water flood risk

The East Devon Strategic Flood Risk Assessment (SFRA) does not indicate that the area has previously been subject to sewer flooding. It is therefore considered that the site is at **low** risk of flooding due to existing sewers.

3.6 Reservoirs, canals & other artificial sources

The site is not shown to be located in an area at risk of flooding from reservoir failure on the UK Government's online mapping. It is therefore considered that there is **low** risk of flooding to the site from artificial water bodies.

3.7 Historical flooding

The East Devon Strategic Flood Risk Assessment (SFRA) indicates that there have been a number of historical flood events around Beet. These events are assumed to be associated with the watercourse flowing down the opposite side of Fore Street. However, the SFRA does not provide details on which properties specifically were impacted by flooding.

The EA data also indicates that two historical flood events were recorded in this area in 1999 and 2004. The EA have report that approximately 18-properties were flooded during the most recent 2004 flood event and that Fore Street was impacted. The report also indicated that the site did flood internally during May 2004 but that flood levels at the property were minimal.

3.8 Development Justification

Considering that part of the site will be changed from commercial to residential use, and that the remainder of the site will also be for residential use, development that are More Vulnerable typically require the Sequential and Exception Tests if proposed within Flood Zone 2 or 3.

However, in line with the NPPF Guidance, the proposals comprise a minor development and change of use. Therefore, the Sequential and Exception Tests need not apply, and the Standing Advice guidance should be followed in their stead. Given the proposal and its location, the site is considered suitable, providing flood risk mitigation measures are incorporated into the design the property.

4 PROPOSED MITIGATION MEASURES

4.1 Finished Floor Levels (FFLs)

Standing advice provided by the NPPF guidance states that finished floor levels should be a minimum of whichever is higher of:

- 300 millimetres (mm) above the general ground level of the site
- 600mm above the estimated river or sea flood level

The EA have reported that for a 1 in 1000-year return period, flood depths are expected to impact the far west of the site and could reach a depth of up to 0.3m. The existing FFL at the west of the site (in the Bumbles Locker building) is 26.34m AOD. It is therefore estimated that the 1 in 1000-year flood level is approximately 26.64m AOD.

The Meeting Room building is in Flood Zone 1 and has an existing FFL of 27.21m AOD – which is 570mm above the estimated 1000-year flood level. It is therefore considered that this is sufficiently above the flood level to be safe from flooding and compliant with the requirements of the NPPF.

For the Bumbles Locker building – which has FFLs varying between 26.34m AOD at the west and 26.83m AOD at the east – it is not possible to raise FFLs to 600mm above the estimated flood level. The main access into the building is directly onto the public footway on Fore Street at the west of the site. This access is set slightly above the footway level with a small step, but if it had to be raised 600mm then it would require steps and ramps to be built which would block the public footway. Furthermore, the existing building is an old structure – in keeping with the character of the rest of the buildings on Fore Street – where lifting the ground floor level by 600mm is not feasible.

The NPPF guidance states that where it is not possible to raise FFLs above the estimated flood level then extra flood resistance and resilience measures need to be considered instead.

4.2 Flood Resilient Design

As it is not possible to raise finished floor levels in line with the standing advice provided by the NPPF guidance, the proposed development will provide additional protection measures through flood resilient design. The maximum depth of flooding that would affect the building would be 300mm. NPPF standing advice requires that for water depths up to 300mm:

The design of the building or development should keep water out as much as possible. You should use materials that have low permeability (materials that water cannot pass through, for example, impermeable concrete).

Given the risk to the west of the building, and the sleeping area being situated on the ground floor, and possible water ingress points on this side of the building should be fitted with appropriated flood resistance measures. These could include:

- Demountable door and window guards
- Air brick covers
- Non-return valves

It is also recommended that the ground floor areas to the Bumbles Locker building have non-carpeted floors where possible.

5 FLOOD EVACUATION PLAN

As discussed in Section 4 of this report there is a residual risk of up to 300mm depth of flooding impacted the ground floor of the Bumbles Locker building during a 1 in 1000-year flood event. Flooding as a result of fluvial flood defences overtopping is forecastable by flood warnings which are issued by the Environment Agency.

The Environment Agency (EA) provides an early flood warning service in England and Wales, and supports the public taking action to prepare and respond when these warnings are issued. The warnings are provided for flooding from rivers and the sea but are not for localised flash flooding from blocked or overloaded sewers or groundwater flooding.

Warnings are issued through the media on TV and radio weather bulletins and on its website (www.environment-agency.gov.uk/floodline). In areas of particular risk, the Environment Agency can send a warning message direct to people at home or at work by telephone, mobile, email, SMS text message, fax or pager using an Automatic Voice Messaging (AVM) system. The EA's Floodline 0845 988 1188 service for England and Wales carries recorded information on flood warnings in force anywhere in England and Wales. The information is regularly updated and is available 24 hours a day.

The Environment Agency's flood warning system is divided into four categories, depending on the stage of flooding and the predicted severity of flooding as shown overleaf. The fourth stage of flooding warning is 'Flood Warning No Longer in Place'.




	<p>What it means</p> <ul style="list-style-type: none"> • Flooding is possible. Be prepared. <p>When it's used</p> <ul style="list-style-type: none"> • Two hours to two days in advance of flooding. <p>What to do</p> <ul style="list-style-type: none"> • Be prepared to act on your flood plan. • Prepare a flood kit of essential items. • Monitor local water levels and the flood forecast on our website.
	<p>What it means</p> <ul style="list-style-type: none"> • Flooding is expected. Immediate action required. <p>When it's used</p> <ul style="list-style-type: none"> • Half an hour to one day in advance of flooding. <p>What to do</p> <ul style="list-style-type: none"> • 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.
	<p>What it means</p> <ul style="list-style-type: none"> • Severe flooding. Danger to life. <p>When it's used</p> <ul style="list-style-type: none"> • When flooding poses a significant threat to life. <p>What to do</p> <ul style="list-style-type: none"> • Stay in a safe place with a means of escape. • Be ready should you need to evacuate from your home. • Co-operate with the emergency services. • Call 999 if you are in immediate danger.

Figure 5-1 Stages of Environment Agency Flood Warning

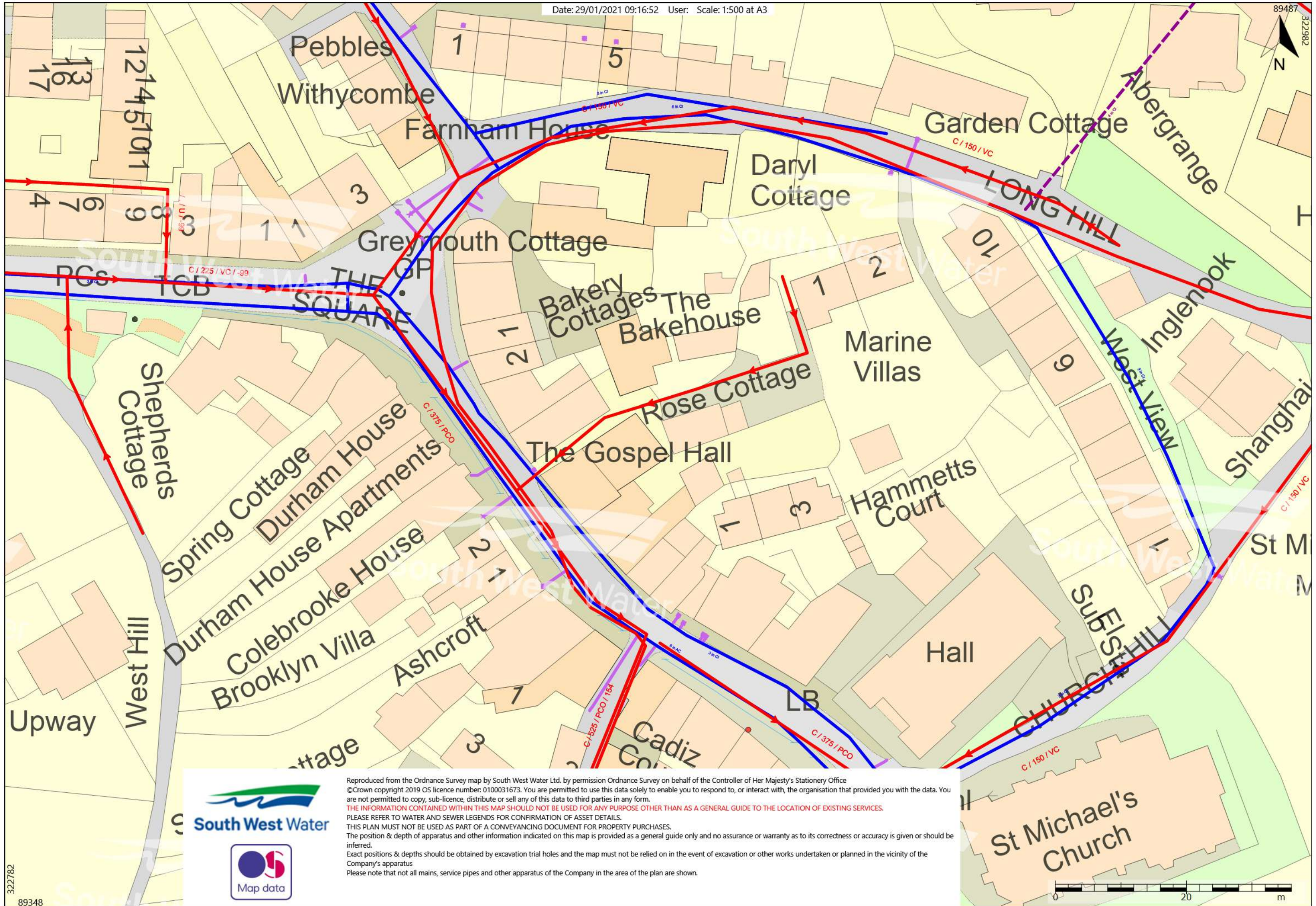
The Environment Agency have confirmed that the site lies within an Environment Agency Flood Alert Area. The site owner will subscribe to the Environment Agency's flood warning system to ensure as far as possible that sufficient warning is provided to all site users. Appropriate signage will be provided, and a formal flood evacuation plan will be prepared and adopted by the owners of the proposed development. This would allow site users of the Bumbles Locker building to evacuate the site or find safe refuge on the upper floors.

Residents in The Meeting Room would be safe from any flooding and would be advised to stay and take refuge in the building rather than leaving the site.

6 CONCLUSIONS

The risk of flooding to the proposed development has been assessed in accordance with the NPPF. It is concluded that the development can be undertaken in a sustainable manner without increasing the flood risk to the proposed development and also reducing the flood risk to existing properties/ systems within the downstream catchment and is therefore compliant.

South West Water Sewer Record



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THE INFORMATION CONTAINED WITHIN THIS MAP SHOULD NOT BE USED FOR ANY PURPOSE OTHER THAN AS A GENERAL GUIDE TO THE LOCATION OF EXISTING SERVICES.
 PLEASE REFER TO WATER AND SEWER LEGENDS FOR CONFIRMATION OF ASSET DETAILS.
 THIS PLAN MUST NOT BE USED AS PART OF A CONVEYANCING DOCUMENT FOR PROPERTY PURCHASES.
 The position & depth of apparatus and other information indicated on this map is provided as a general guide only and no assurance or warranty as to its correctness or accuracy is given or should be inferred.
 Exact positions & depths should be obtained by excavation trial holes and the map must not be relied on in the event of excavation or other works undertaken or planned in the vicinity of the Company's apparatus
 Please note that not all mains, service pipes and other apparatus of the Company in the area of the plan are shown.

Environment Agency Flood Data



Information relates to flood incident during evening of 11th
and morning of 12th August 2004

Quotations from residents following post event questionnaire survey

Relevant general quotes on incident & cause

'Date and Time of incident: 11th August 23:30 onward for several hours'
'Property in Park Road flooded to 14 inches; garden to 6ft'
'Cause due to modern pig farming practice'
'No help from authorities other than 'little' from fire service'
'same thing happened 15 years ago but not as bad to no.22 Park Road
upwards'
'flash flooding and pond at pig farm broke its banks.' Neighbour has video of
flooding'
'heavy rain. Drains could not cope'
'adverse camber in road'
'no drainage ditches around pig farm. Water reeked of pig effluent'
'modern farming practice caused flooding'
'waterway clogged with stones'

Involvement of Authorities

generally 'no help' received
(Bay View, Fore Street) 'received help from Parish and District'
(Pharmacy, Fore Street) 'very impressed with clean-up by EDDC, Clinton
Estates and SWW'
EA NIRS incident 00258697 (report attached) regarding complaint to EM
about water being polluted, rather than flooding incident.

Estimated Number of Properties Flooded

18 (see 'property incidents' report attached)

WEATHER SITUATION from EA Flood Warning Duty Officer report

Much of the week was cloudy and overcast with isolated showers, some of which were heavy and thundery. On Wednesday night very intense rain fell in some parts of East Devon. Other parts of England received very heavy rainfall earlier in the week. A Severe Weather Warning was issued for the region for the period Sunday to Wednesday, and Heavy Rainfall Warnings were subsequently issued on Sunday and Wednesday.

Tides fell to neaps on Monday and Tuesday, and were well below MHWS throughout the week.

RAINFALL (mm)

Min-Max	Thur	Fri	Sat	Sun	Mon	Tues	Weds
Devon	0-0.5	0-0.2	0-0.2	0-22	0-20	0-6	13-62
Forecast	0-11	0-2	0-5	11-28	1-13	3-28	6-30
Max. Forecast as % Max. Actual*	2200	-	-	127	65	467	48

* Only complete if max forecast or max actual rainfall is 10mm or greater

CATCHMENT CONDITIONS

Many Devon Area catchments remained dry overall despite isolated heavy rainfall.

CWI Range	West Devon	North Devon	South Devon	Mid & East Devon
W/c (5 th Aug)		17-55	56-78	29-60
W/e (12 th Aug)		43-152	77-124	23-81

Summary

Significantly less rainfall fell on Thursday and Tuesday than was forecast; on these occasions rain systems tracked north east across Wales avoiding the Southwest. In general because forecasts were for isolated showers, many parts of the Area received little or no rain. In other parts significantly more rain fell than forecast. **In East Devon on Wednesday night 49mm fell in 45 minutes at Wilmington, and an estimated 50mm rain fell in 1 hour at Beer (68mm in 3 hours).**

Summary of Incident

Summary from Flood Reconnaissance Information System (FRIS) report compiled by Helen Simpson

SURFACE WATER FLOODING ISSUING FROM SURROUNDING FIELDS. CLAPPS LANE, PARK ROAD, THE CAUSEWAY, BOVEY LANE AND FORE STREET WERE AFFECTED. MAXIMUM DEPTH OF WATER IN PROPERTY WAS APPROX. ONE METRE. FLINT DEBRIS CARRIED BY THE RUNOFF CAUSED DAMAGE TO HIGHWAYS AND BLOCKED

THE LOCAL WATERCOURSE CAUSING CAPACITY TO BE REDUCED. LOCAL SEWERS AND DRAINS OVERFLOWED.

Possible Cause of Flooding

FLOODING WAS A RESULT OF A SEVERE SUMMER RAINSTORM OVER AN APPROX. TWENTY-MINUTE PERIOD. LOCAL DRAINAGE AFFECTED BY BLOCKAGES CAUSED BY FLINT STONE FROM LOCAL GRAVEYARD BEING CONVEYED BY THE SURFACE WATER. LOCAL ROAD DESIGNS AND SOME THRESHOLD LEVELS MAY HAVE BEEN A CONTRIBUTORY FACTOR TO THE NUMBER OF PROPERTIES AFFECTED.

Recce visit: 20/08/04

Summary of site visit from Dave Hill..

'When myself and Helen arrived in Beer we were met by 2 town councilors, one of them being a Mike Green. The main areas we covered were from the car park up to Clapps Lane and then onto Park Road and then the cemetery. As we moved through this area we took a number of pictures of the local area and of damage to properties. As well as this we talked to a number of residents and took statements in ref to the damage done. We also walked up to Townsend Causeway to see damage caused from that direction of flow of water inspecting the inadequacies of a grate system.

Fences were breached at the top of the cemetery. Headstones were uplifted and ground damaged. Much soil, rock and debris moved from this location.

Another site visit was undertaken for the future prefeas report. Myself, Steve Moore and Ian Blackwell visited the cemetery and then walked further up until we reached the pig farm. The ground was very hard due to the farming techniques in this area and water would easily run off it without much absorption of water into the ground.

From Steve Moore, DC Engineer

'Due to the presence of the pig farm the flooding in Beer was significantly worse than it would have been without it. From observation, the run-off from field adjacent to site was much less. Flint deposits (probably used to backfill old channels) was also washed down slopes in large numbers.'

Similar problems with pig farming sites have been observed at Yettington, East Budleigh and along the lower reaches of the Otter.'

Product 4 (Detailed Flood Risk) for : Beer
Requested by: Argyll Environmental
Reference: 66954 Beer
Date: 29 November 2017

Contents

- Flood Map for Planning (Rivers & Sea) Confirmation
- Flood Map for Planning (Rivers & Sea) Extract
- Model Output Data
- Data Point Location Map
- Modelled Flood Outlines Map
- Defence Details
- Recorded Flood Events Data
- Recorded Flood Events Data Map
- Surface Water
- Additional Data

The information provided is based on the best available data as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals to check whether any amendments/improvements have been made to the data for this location. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

Flood Map for Planning (Rivers & Sea) Confirmation

The Flood Map for Planning (Rivers & Sea)

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove the risk as they may be over-topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. The map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time, taking in to account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at <http://www.environment-agency.gov.uk>

At this Site:

The Flood Map shows that this site lies within the 1.0% **chance of flooding in any given year.**

Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

Flood Map at this location has been derived using JFLOW completed by JBA (2012)

Flood Map for Planning (Rivers & Sea) centred on Beer - created 29/11/2017



Scale 1:10,000

- Legend**
- Main River
 - Areas Benefiting From Flood Defence
 - 1% AEP of Fluvial Flooding or 0.5% Tidal
 - 0.1% AEP of Flooding

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

Model Output Data

You have requested flood levels for various return periods at this location.

The modelled flood levels for the most appropriate model grid cells, any additional information you may need to know about the modelling and/or any specific use or health warnings for their use are set out below. We do not hold modelled flood levels for all locations, and in some instances the table below may appear blank.

Using a **2D TuFLOW** model the floodplain has been represented as a grid. The flood water levels have been calculated for each grid cell.

A map showing the location of the points from which the data is taken is enclosed. Please note you should read the notice enclosed for your specific use rights.

Table 1: Modelled Defended Site Levels

Node ID	X	Y	Modelled Flood Level for Annual Exceedance Probability Shown (mAOD)							
			20% AEP	5% AEP	2% AEP	1% AEP	0.5% AEP	0.1% AEP	1% AEP plus CC Defended	

Flood risk data requests including an allowance for climate change will be based on the 1% annual probability flood including an additional 20% increase on peak flows to account for climate change impacts, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may 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.

If you have any further questions please contact our technical officer for this area: Tom Walling (020302 52530) and please see the indicative Q100 & Q1000 Flood Depth Maps placed at the end of this report.

LEVEL NODE MAP

THERE ARE NO RELEVANT LEVEL NODES IN THIS AREA.

MODELLED DEFENDED FLOOD EXTENTS MAP

THERE ARE NO MODELLED DEFENDED FLOOD EXTENTS IN THIS AREA.

MODELLED CLIMATE CHANGE MAP

THERE ARE NO MODELLED CLIMATE CHANGE EXTENTS IN THIS AREA.

Defence Details

If the table below is empty there are no significant flood defences in this area which are owned or maintained by the Environment Agency.

Asset ID	Description	Maintainer	Comments	Location	Fluvial		
					D/S Crest Level	U/S Crest Level	Condition Grade

FLOOD DEFENCES MAP

THERE ARE NO ENVIRONMENT AGENCY OWNED OR MAINTAINED FLOOD DEFENCES IN THIS AREA.

Defence Structures Details

If the table below is empty there are no significant flood defence structures in this area which are owned or maintained by the Environment Agency.

Asset ID	Description	Maintainer	Comments	Location	Condition Grade

FLOOD DEFENCE STRUCTURES MAP

THERE ARE NO ENVIRONMENT AGENCY OWNED OR MAINTAINED FLOOD DEFENCE STRUCTURES IN THIS AREA.

Recorded Flood Events Data

We hold records of historic flood events from rivers and the sea. Information on the floods that may have affected the area local to your site are provided below and in the enclosed map (if relevant).

Flood Event Data

Dates of historic flood events in this area - **1999 and 2004**

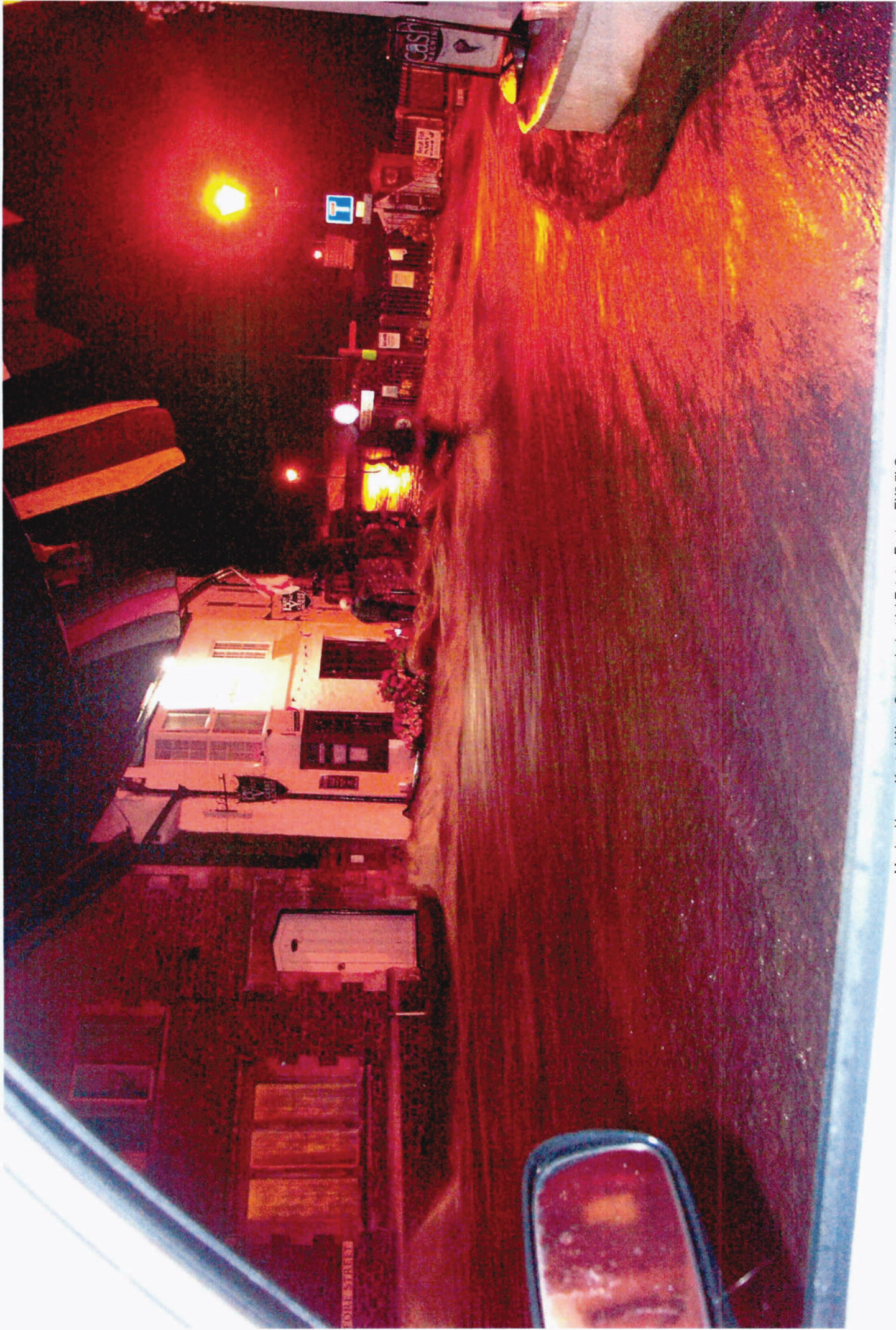
Please note that our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewage undertaker for the area.

We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. Rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed;
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers and/or the sea. However you should be aware that in recent years there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed.



Manley House, Kestrel Way, Sowton Industrial Estate, Exeter, EX2 7LQ
Email: SW_PSO-Exeter@environment-agency.gov.uk

Surface Water

We have provided two national Surface Water maps, under our Strategic Overview for flooding, to your Lead Local Flood Authority - Devon County Council who are responsible for local flood risk (i.e. Surface runoff, ground water and ordinary watercourse), which alongside their existing local information will help them in determining what best represents surface water flood risk in your area.

Devon County Council have reviewed these and determined what it believes best represents surface water flood risk. You can access the most up to date surface water maps via the Environment Agency web page here: [Environment Agency - Risk of Flooding from Surface Water](#)

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources. We are working with these organisations to improve knowledge and understanding of surface water flooding.

Additional Information

Use of Environment Agency Information for Flood Risk/Flood Consequence Assessments

Important: If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry.

Depending on the enquiry, we may also provide advice on other issues related to our responsibilities including flooding, waste, land contamination, water quality biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In England, you should refer to the Environment Agency's Flood Risk Standing Advice, the technical guidance to the National Planning Policy Framework and the existing PPS25 Practice Guide for information about what flood risk assessment is needed for new development in the different Flood Zones. These documents can be accessed via:

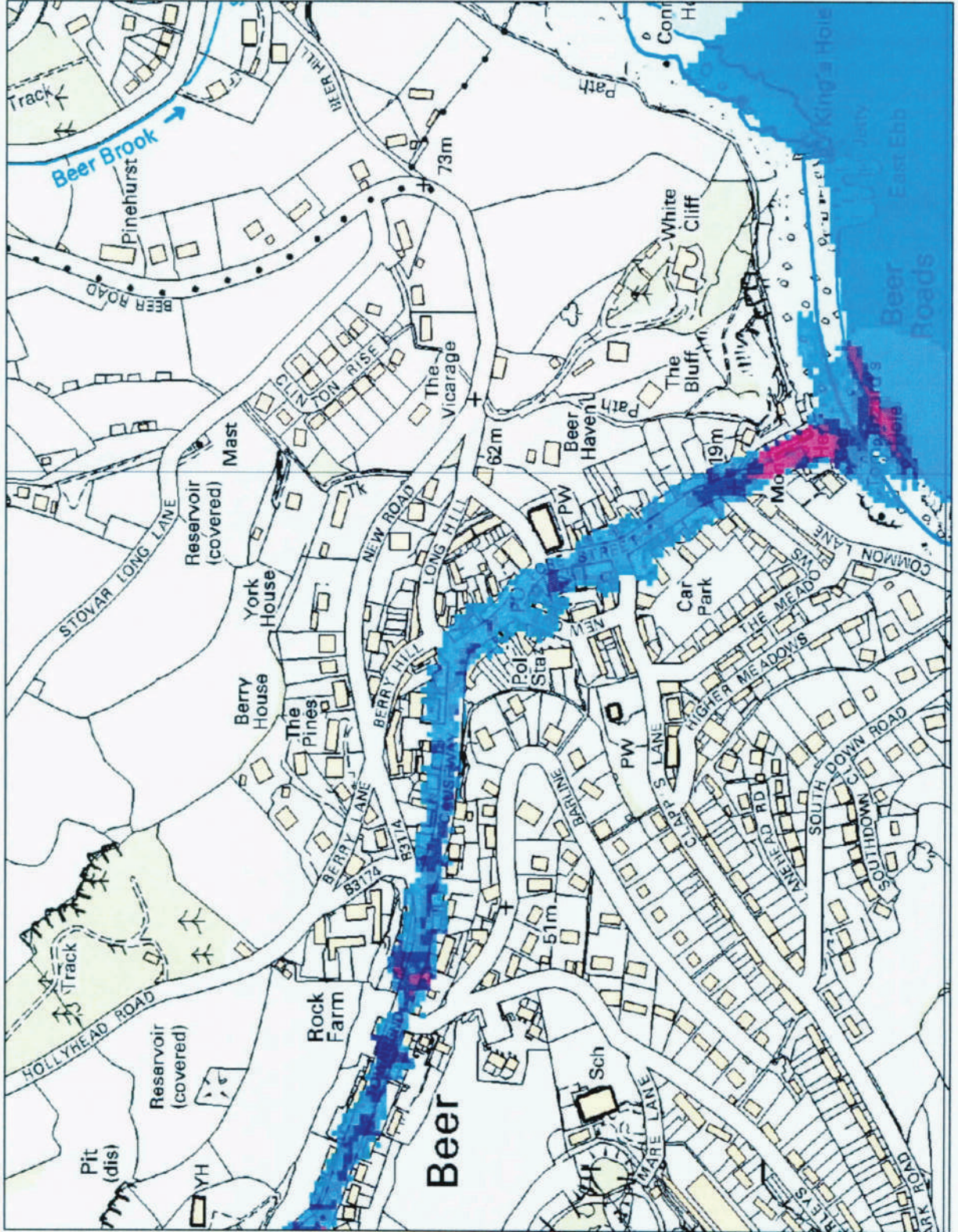
<https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

You should note that:

- Information supplied by the Environment Agency may be used to assist in producing a Flood Risk/Consequence Assessment (FRA/FCA) where one is required, but does not constitute such an assessment on its own.
- This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. The information produced by the local planning authority, referred to above, may assist here.
- Where a planning application requires a FRA/FCA and this is not submitted or deficient, the Environment Agency may well raise an objection.
- For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your local planning authority.

Q100 Undefended Depth Grid Map centred on Beer - created 29/11/2017



Scale 1:5000

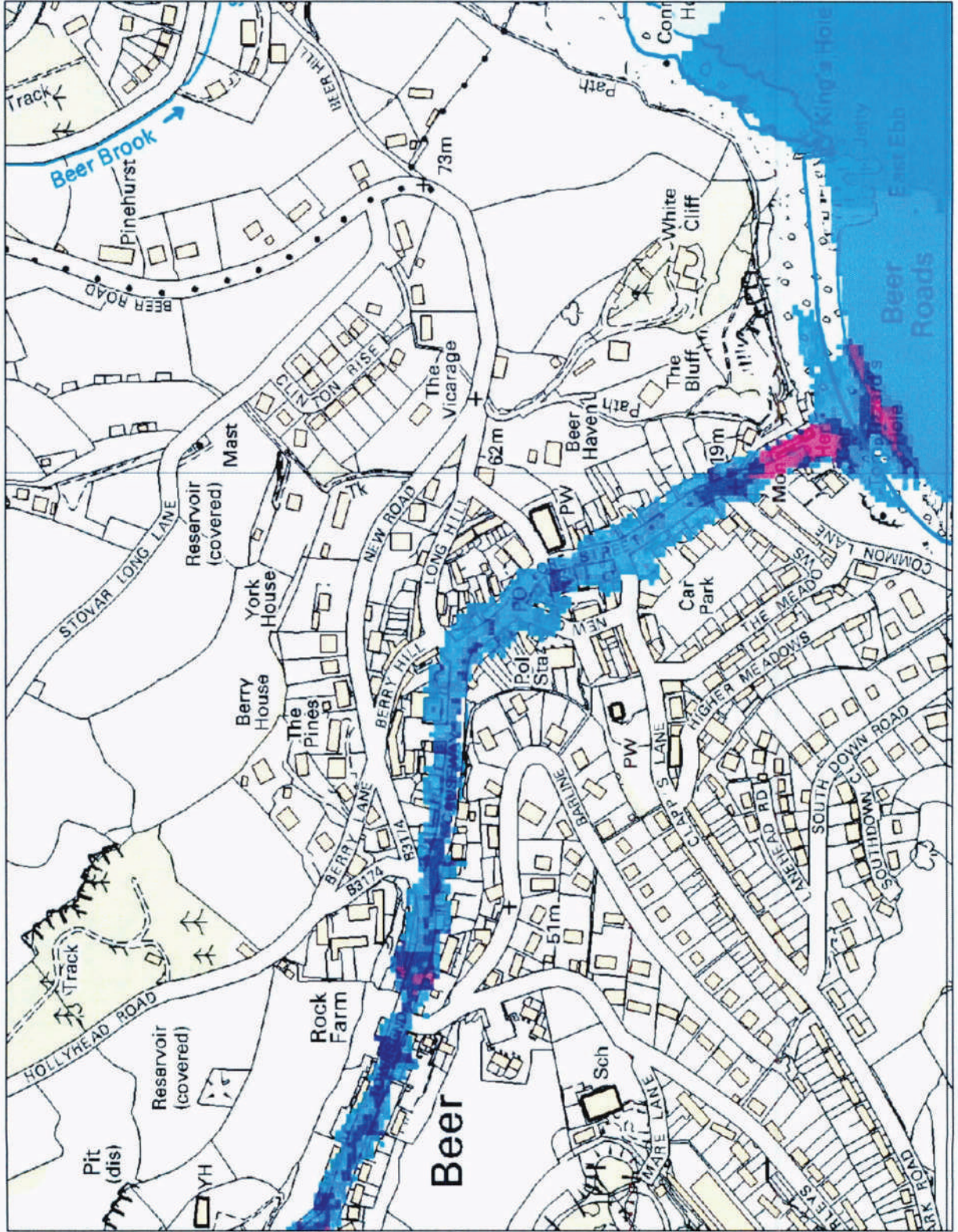
Legend

East Devon Undefended Q100 Depth

Depth (Metres)

0 - 0.3
0.3 - 0.6
0.6 - 0.8
0.8 - 1.5
1.5 - 2.5
2.5 +

Q1000 Undefended Depth Grid Map centred on Beer - created 29/11/2017



Scale 1:5000



Legend

East Devon Undefended Q1000 Depth

Depth (Metres)

