

**SCILLONIA BUILDING SUPPLIES.  
TELEGRAPH ROAD.  
St. MARY'S. ISLES OF SCILLY.**

**PROPOSED ALTERATIONS TO SCILLONIA  
BUILDING SUPPLIES.**

**PLANNING REF. P/19/064**

FLOOD RISK ASSESSMENT

J-1265



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FLOOD RISK ASSESSMENT

Report No.	Issue Detail	Originator	Date	Checked by	Date
J-1265	01	TS	10/01/2020	JB	10/01/2020

**For:** Mike Bradbury Design  
C/o Wright Construction Supplies  
21 Porthmellon Ind. Est.  
Porth Mellon  
St. Mary`s  
Isles of Scilly  
TR21 0JY

**Job No:** J-1265  
**Date:** January 2020  
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## **APPENDICES**

Appendix A	Environment Agency Letter of Objection
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## 1.0 INTRODUCTION

Mr. Mark Wright of Wright Construction Supplies has submitted a planning application for permission to undertake various works to the existing Wright Construction Supplies premises at Porthmellon Industrial Estate, St. Mary's, Isle of Scilly under planning reference P/19/064.

During the planning process, the application has received an objection from the Environment Agency (EA) on the grounds that a flood risk assessment (FRA) has not been submitted in support of the application. A copy of the objection letter dated 1<sup>st</sup> November 2019 is attached within **Appendix A**.

In this regard it is noted that Policy SS7 of the Council of the Isle of Scilly Draft Local Plan (extract provided below as **Figure 1**) ordinarily requires a suitable and proportionate Flood Risk Assessments (FRA) for coastal developments when the level of the development is set at an elevation of 5m AOD or lower. As the site is situated on land below the 5m AOD contour, it can be seen that the EA's position is consistent with this policy.

POLICY SS7 Flood Avoidance	
<p>Development proposals to build below the 5 metre contour (5 metres above Ordnance Datum, Newlyn) or in other areas shown to be at risk of flooding or coastal erosion, as set out in the proposals maps, will not be permitted unless a suitable and proportionate Flood Risk Assessment (FRA) demonstrates how the flood risk will be managed and that:</p> <ul style="list-style-type: none"> <li>the development, taking climate change into account, does not create a flood risk over its lifetime to existing or proposed properties and/or surrounding land;</li> <li>appropriate acceptable mitigation and recovery measures can be undertaken to ensure no significant adverse impact on human health or the natural and built environment as well as cultural heritage; and</li> <li>if there is any doubt the precautionary principle<sup>14</sup> will apply.</li> </ul> <p>All major developments, regardless of location, should also be accompanied by a Flood Risk Assessment and appropriate sustainable drainage system.</p>	
Justification and Compliance	
Policy SS7 Flooding Avoidance	Spatial Strategy 1, 3, 5, 7, 9.
Justification	Aims: 1, 2, 6, 7
Compliance with NPPF	Paragraph 17 (Core Principle), 94, 99, 100, 159
Monitoring	Indicator: Appeals upheld contrary to policy
Target:	None upheld at appeal
Trigger for review:	Increasing trend of appeals upheld contrary to policy
Supports Economic Growth	Supports a full Range of Housing needs
n/a	Conserves the Natural and Historic Environment
Key Evidence Base	Yes
	National Planning Policy Framework, 2012
	National Planning Practice Guidance: Flood Risk and Coastal Change, 2014
	(NE01) Climate Change Strategy 2011
	(I02) Infrastructure Plan: Part of the Strategic plan for the Isles of Scilly
	2014
	(F03) Cornwall and Isles of Scilly Shoreline Management Plan 2 - Isles of Scilly Mid Term Review Appendix A
	(F04) Local Flood Risk Management Strategy 2017
	(NE13) EA Groundwater Quality Survey 2015/16
Alternative options considered	None
What the Community have already told us:	<p>"We consider that your Authority will need to update the evidence base on flood risk to have a better understanding of how this will affect the Islands over the Plan period. Without this update it will be difficult to demonstrate how the objectives and vision of the Plan could be achieved, with the consequence that the Plan could be considered unsound".</p> <p>"the SMP2 Review, the 2011 water resources report including flood defences and the Environment Agency datasets including the State of the Nation flood risk assessment provide a good, but high level.</p>
<p><sup>13</sup> Sustainable urban drainage systems (SUDS) can be used in all types of development to provide a natural approach to managing drainage, prevent water pollution and flooding and can create or enhance green spaces and habitat for wildlife.</p> <p><sup>14</sup> Precautionary Principle is risk assessment and avoidance</p>	
49   Page	
CONSULTATION DRAFT LOCAL PLAN 2015 - 2030	
The Local Plan should be read as a whole.	
Proposals will be judged against all relevant policies.	

**Figure 1. Policy SS7 Council of the Isle of Scilly Draft Local Plan**

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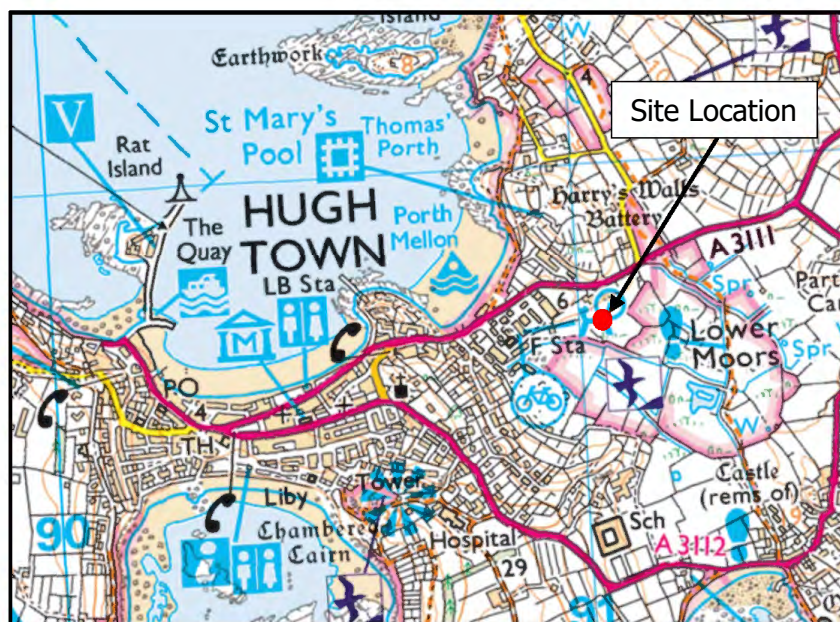


In order to address this requirement, Engineering and Development Solutions Ltd. (EDS) have been commissioned on behalf of Wright Construction Supplies to prepare an FRA with a view to allowing the EA to remove their objection.

### **Site Description**

The site is located on the Porthmellon Industrial Estate to the immediate east of the town of Hugh Town on St. Mary's, Isle of Scilly, as shown in **Figures 1 and 2** below. The Ordnance Survey Grid Reference (OSGR) for the site is SV 90891 10705. The site is bounded to the north and south by Telegraph Road and Porthmellon Industrial Estate Road respectively. There is existing commercial development to the immediate east and west of the site. Access to the site is currently off Porthmellon Industrial Estate Road, off Telegraph Road.

Porthmellon Beach, with St Mary's Pool beyond, is located to the north west of the site on the opposite side of Telegraph Road at a distance of about 70m to the mean high tide mark.



**Figure 1 Plan Showing Site Location**

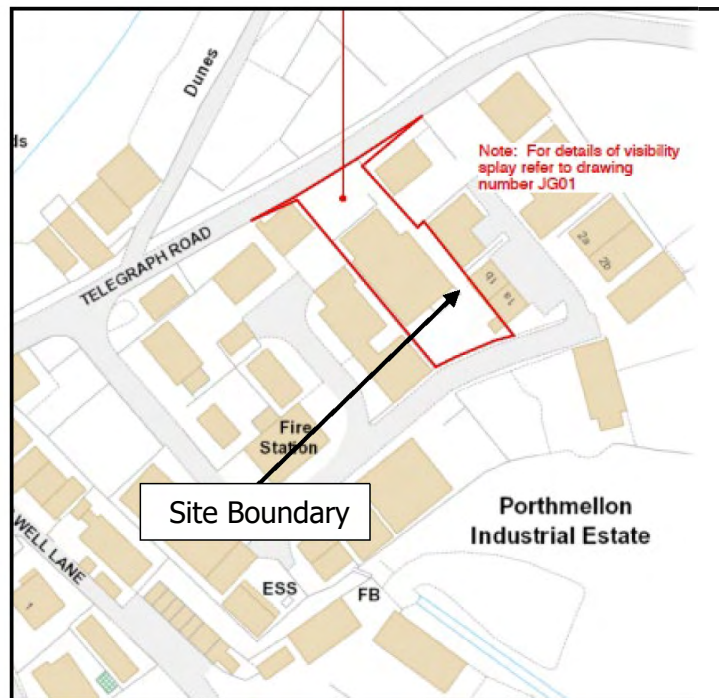
The site is relatively flat with a shallow fall from north to south; the highest point is on the northern boundary with Telegraph Road and at elevation of about 4.0m and the lowest point is on the boundary with the industrial estate access road at a typical elevation of about 3.2m AOD.

In the wider context, the ground topography rises slightly towards the direction of Porthmellon Beach with an elevation of about 5m AOD on Telegraph Road and an elevation of about 4m AOD at the top of the beach. To the south east, the topography falls to the Lower Moor nature conservation area with a surface elevation of about 2m AOD. To the south west and the north east, the topography varies relatively rapidly. The ground rises to a high point of about 17m AOD beyond Jackson's Hill to the south west and to an elevation of about 20m AOD at Rocky Hill to the north east.

As such, the site effectively lies in the base of a shallow valley orientated in a north west to south west alignment falling from Porth Mellon beach to Lower Moor and on towards Old Town.

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**Figure 2 Plan Showing Site Boundary**

### **Existing and Proposed Usage**

At present the site operates as a builder's merchant retail outlet with onsite management. The site accommodates a range of industrial/commercial buildings which occupy approximately 50% of the footprint of the site. There is a three-bedroom apartment on the first floor of the main building in addition to the commercial operations.

Externally, there is a large concreted forecourt accessed from the industrial estate access road and a storage area /parking space with an existing gated access from Telegraph Road.

The works proposed under the application are described within drawings and the Design and Access Statement prepared by Mike Bradbury Designs and submitted in support of the application; in summary the proposals comprise the following:

- Construction of a new storage and distribution shed
- Regularisation of unauthorised elements of the building including balcony over existing covered entrance, mezzanine office and terrace over flat roof link
- Repositioning of the site access onto Telegraph Road including provision of new customer car park and pedestrian access
- Provision of a new lean-to access canopy
- Conversion of the existing first floor open market 3-bedroom apartment into a 2-bedroom apartment and 2-bedroom staff flat including first floor extension on roof terrace

The application also comprises a request to change the ratio of Class A1/B8 usage within the existing ground floor of the main building. Drawings showing the proposed alterations to the site are attached within **Appendix B**.

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## 2.0 ASSESSMENT OF FLOOD RISKS

### Groundwater

Groundwater flooding is linked to the presence of aquifers and the ability of the underlying geological strata to bear water. Flooding occurs when water levels in the ground rise above surface elevations. The Environment Agency/BGS maps have been consulted to establish the aquifer designations of bedrock and superficial deposits underlying the site; the aquifer designation is classified as a **Secondary A** aquifer.

This type of aquifer is defined as a permeable layer 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.

It is unlikely that groundwater would issue to the surface at this site as the nearby water body at Lower Moor and the associated drainage ditches are likely to act sumps for groundwater and would depress groundwater levels beneath the site to the level of the pool in Lower Moor. Should groundwater issue to the ground surface for any reason, it is evident from the local topography that water would be able to flow across the ground towards Lower Moor at shallow depth. As such, flooding from groundwater is not considered to represent a meaningful risk to the site and this form of flooding is discounted from further consideration.

### Overland Flow

There is a very limited area of land situated upslope of the site in the direction of Porthmellon Beach so runoff from this direction would be minimal. There is potential for runoff to be generated from the higher ground to the south west and north east of the site ,however, assessment of contouring and the land profile indicates that such flow is likely to be intercepted by the shallow valley base before it reaches the site and directed in a south easterly direction with the fall of the land towards the drainage channel and water bodies in Lower Moor.

There is some past history of this flow being prevented from running away into Old Town Bay by tide locking in the bay and this has been known to result in local flooding of the industrial estate (IoS Local Flood Risk Strategy 2017 p.13). However, this form of flooding is considered to be of low risk compared to tidal flooding, so this mechanism of flooding is discounted from further assessment as consideration of tidal flooding will provide a much more onerous case.

### Fluvial Flood Risk

There are no significant watercourses near or upslope of the site. A drainage ditch does exist close to the south of the site which flows in the direction of Lower Moor. This is likely to convey surface runoff from the industrial estate and possibly some shallow ground water flows.

The flow in the ditch is likely to be limited and it is located downslope from the site. In consideration of this, flooding from fluvial sources is not considered to represent a meaningful risk to the site and this form of flooding is discounted from further consideration.

### Tidal Flooding

The site is located at a lowest elevation of about 3.2m AOD and in close proximity to tidal waters in St Mary's Pool. An extract from LIDAR mapping providing existing ground levels in and around the site is attached within **Appendix C**.

Estimated still water tidal levels for St Marys are provided below in **Table 1**. It is predicted that sea levels in the UK will be rising as a result of global climate change. Predictions provided by the EA recommend that an allowance of 1.11m should be assumed for net sea level rise in the south west of England over a 100-year horizon; 100 years is taken as a reasonable estimate for

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the lifetime of a mixed commercial/residential development such as this. As such, sea level may be assumed to rise by 1.11m over the lifetime of the development.

Predicted sea levels accounting for climate change over the lifetime of the development are provided within in the right-hand column of the table.

<b>Tidal Event</b>	<b>Current Day Still Water Level (m AOD)</b>	<b>Still Water Level with Climate Change Allowance (m AOD)</b>
Highest Astronomical Tide	3.40	4.51
Mean High Water Springs	2.77	3.88
Mean High Water Neaps	1.44	2.55
1 Year Return	2.81	3.92
5 Year Return	3.30	4.41
10 Year Return	3.43	4.54
50 Year Return	3.59	4.70
100 Year Return	3.75	4.86
200 Year Return	3.82	4.93

**Table 1. Approximate Sea Levels – Current Day and with Climate Change Allowance**

The ground level at the top of the beach running alongside the north west side of Telegraph Road maintains an elevation of about 4m to 5m AOD between the higher ground on the headlands to the north and the south of the beach; as such, the topography provides an informal dune embankment with a minimum crest level of 4m AOD between tidal waters and the site.

Assuming full continuity of the dune embankment, the existing topography provides inherent protection to the site from all present day still water tidal events up to and including the 1 in 200-year event. However, it is apparent that the crest level of the embankment may be overtopped in the climate change scenario for all still water events including and beyond the future 1 in 5-year event. The site is also at risk of flooding from present day still water tide events beyond and including the 1 in 5-year event, if there is a breach in the dune embankment, or if any other form of flow pathway is available to the sea between the beach and the site.

With reference to Appendix A of the Cornwall and IoS Shoreline Management Plan 2 (reproduced part in **Figure 3** below), it is noted that the policy for this stretch of shoreline is to hold the line for the present time with a possible managed retreat from 2055.



DELIVERY OF THE PLAN						
SUMMARY OF SPECIFIC POLICIES						
Policy Unit		SMP1 Policy	SMP2 Policy Plan			Comment
		50 yrs	2025	2055	2105	
42.1	The Mermaid Wall	Hold the line	HTL	HTL	HTL	This part of the quay is integral to the continued shelter of the remainder of the Town Beach frontage.
42.2	The Quay	Hold the line	HTL	HTL	HTL	This part of the quay is also integral to the continued shelter of the remainder of the Town Beach frontage.
42.3	The Quay to Custom House	Hold the line	HTL	HTL	MR	Increasing pressure upon this part of the frontage may dictate that a longer term accommodation of rising sea levels is made.
42.4	Custom house to Carr Thomas	Hold the line	HTL	HTL	MR	As with the previous policy unit frontage, a longer term realignment to accommodate rising sea levels and address the increasing risk factors is likely to be necessary.
42.5	Porth Mellon	Hold the line	HTL	MR	MR	Realignment beyond epoch 1 needed to consider management of the increasing flood risk.

**Figure 3 Extract from Appendix A from Cornwall and IoS Shoreline Management Plan 2**

In view of this, it is evident that the site is at risk of flooding from tidal sources if failure of the dune embankment occurs and is also at risk in the future as a result of sea level rise arising from climate change. This warrants further detailed consideration which is provided in **Section 3.0** of the report.

### **Flood History**

The Isle of Scilly Preliminary Flood Risk Assessment Report May 2011 records no evidence of past flooding to the site from surface water or ground water sources. The IoS Local Flood Risk Management Strategy March 2017 alludes to some flooding from tide locked surface water runoff (p.13) but no specific flood depths or extents are provided.

### **Flooding as a Result of Development**

Developments have the potential to increase flood risk to properties down slope of the proposed development through the introduction of impermeable areas on previously permeable areas. This development entails modifications to an existing site which is already largely covered in impermeable surfaces, so there is limited potential to increase runoff from the site. New structures such as the storage shed will be installed over areas of existing impermeable surfacing and the proposed car parking to the north of the main building is to be constructed from permeable gravel bound within an anti-erosion matting which will allow rainfall to infiltrate into the subsoil.

Therefore, the proposed development presents no significant risk of increasing flooding elsewhere.

### 3.0 TIDAL FLOOD RISK

Tidal flood risk to the site is considered in more detail below. To assist with this, a Product 4 Information Request has been submitted to the Environment Agency. This has resulted in the provision of Depth of Flooding Maps and Head of Water Maps for undefended flood events for the 1 in 200 year and 1 in 1000 year horizons, with a climate change scenario being provided for the 1 in 200 year event; a copy of the information so received is attached within **Appendix D**.

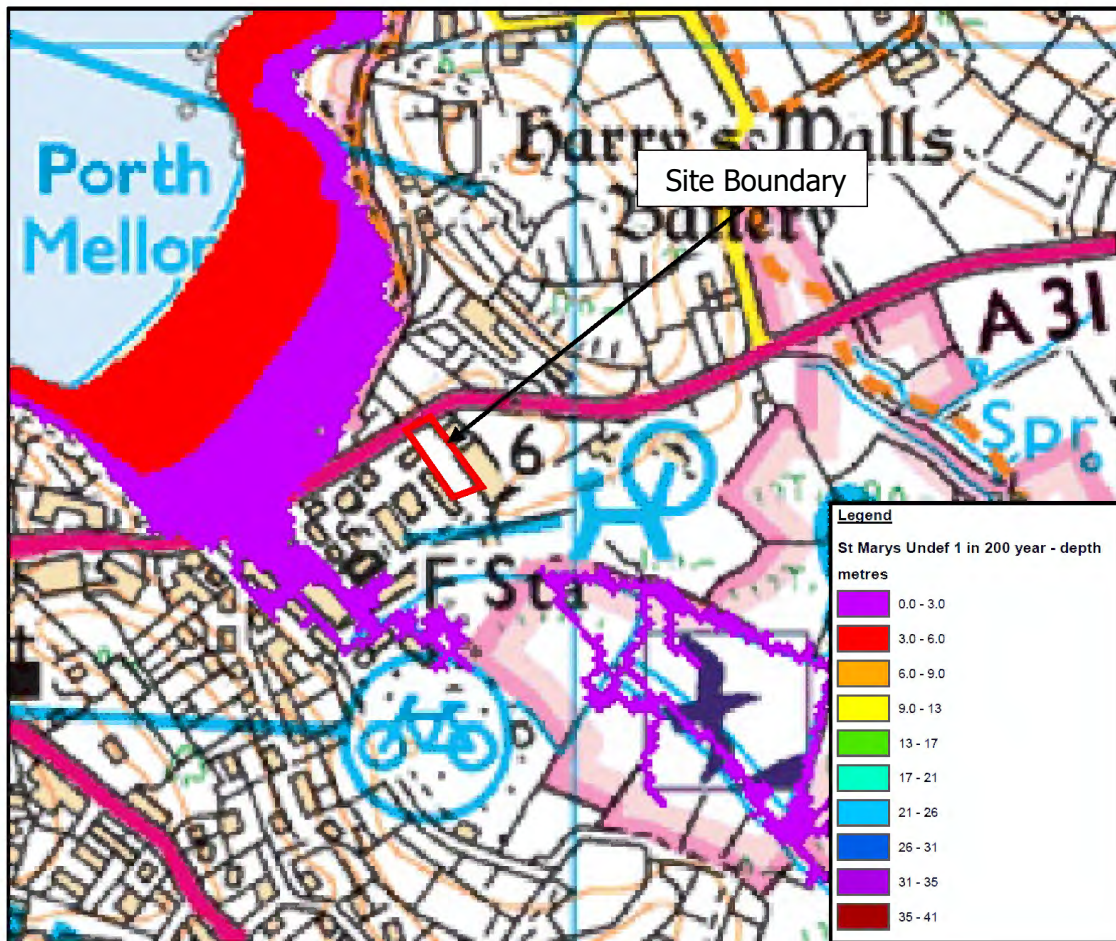
It is noted that the maps include an allowance for wave overtopping. A summary of the flood depths and water surface elevations obtained from the EA mapping is provided in **Table 2** below.

Event	Water Surface Elevation (m AOD)	Water Depth from Map (m)	Water Depth Based Upon Site Level of 3.2m AOD(m)
1 in 200 Yr.	No flooding shown	No flooding shown	No flooding shown
1 in 200 Yr. with CC	4.6 to 4.8	0.0 to 3.0	1.73
1 in 1000 Yr.	No flooding shown	No flooding shown	No flooding shown

**Table 2. Summary of Flood Depths and Levels Derived from EA Information**

Reference to the EA flood mapping (see **Figure 3** below) indicates that the site remains free from flooding under the present day 1 in 200 year and 1 in 1000-year tidal flood events as the site is protected by the natural topography formed by the dune embankment. As such, it may be concluded that the site currently lies within Flood Zone 1 (Low Risk of Flooding).

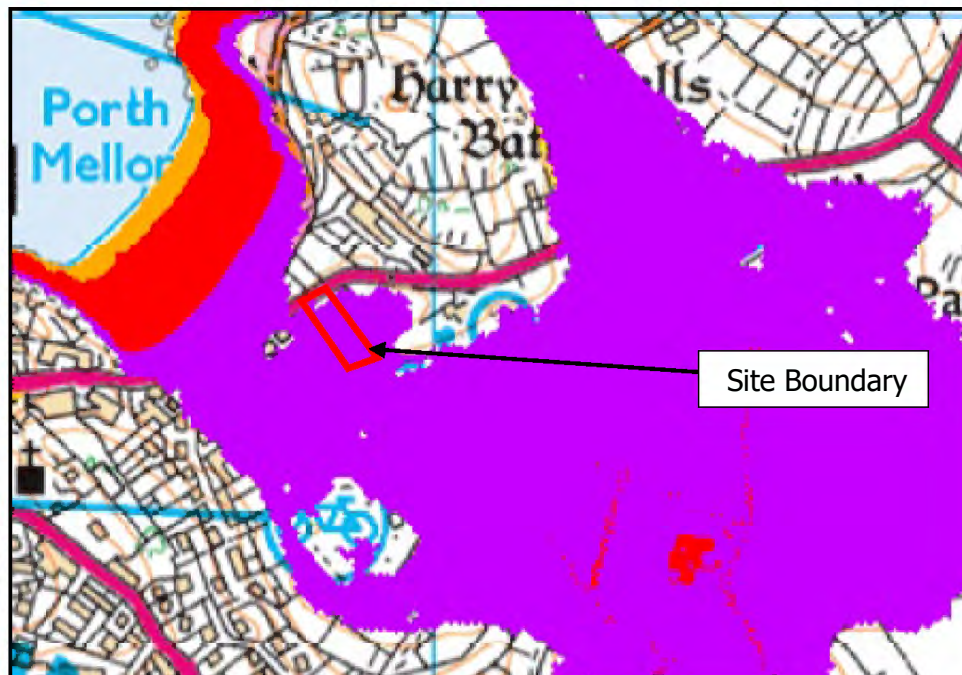
Flooding is shown to occur to the west of the site where water overtops Telegraph Road and runs down the industrial estate access road before flowing into the low-lying areas of Lower Moors and back into the sea at Old Town Bay. The depth of flooding in the road is not provided but it is estimated to be just above kerb height i.e. approx. 200mm above road channel level. None of the flow encroaches onto the subject site.



**Figure 3 Extract from EA Flood Map for Planning 1 in 200 Year - Depth**

During the climate change event (**Figure 4**), water is shown to break out over Telegraph Road over a much wider front and progresses across the road and onto the site. It moves through the site to the southeast into Lower Moors and joins with the sea in Old Town Bay.





**Figure 4 Extract from EA Flood Map for Planning 1 in 200 Year with Climate Change - Depth**

The maximum depth of flooding on the site in the climate change situation is predicted to be 1.73m based on a minimum ground elevation at the site of 3.2m AOD.

The flood map with climate change show all of the access road in the industrial site to be inundated ;Telegraph Road is also shown to be inundated for a distance of some 35m to the west of the proposed access to a point where the road begins to rise up towards Rocky Hill. The depth of flooding on Telegraph Road immediately outside of the site (minimum elevation 4.0m AOD) is estimated to be about 0.93m.

Using the Rule of Twelfths for tidal movement and assuming a tidal range of 7.64m, it is estimated that the lowest part of the site (3.2m AOD) will be subject to flooding of some depth for a period of about 3hours 45 minutes hours, centred around the peak of the tide. The public highway on Telegraph Hill outside of the site (4m AOD) would be under water for about 2 hours 30 minutes.

Given the timing of spring tides in this area, the high-risk times will be centred around the early morning and late afternoon periods during a spring tide cycle. Spring tides occur on a consistent bi-weekly basis with the peak of the tide typically occurring between 5:00 to 7:00 in the morning and 17:00 to 19:00 in the evening.

High spring tides are predictable, but weather conditions can create storm surges and ground swell that add to the water levels, so unfavourable conditions could still occur outside of the spring tide cycle, though the worst conditions will always occur during the coincidence of a high spring tide, strong winds from the north to north west and storm surge caused by low barometric pressure.

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#### 4.0 ACCESS AND EGRESS

A new access direct from Telegraph Road through the north boundary of the site is proposed under the development, though an access will also be maintained onto the Porthmellon Industrial Estate access road. This provides added flexibility for access arrangements and indeed reduces flood risk under certain circumstances. It is intended that retail customers will generally use the access onto Telegraph Road whilst the access via the industrial estate will be retained for deliveries and construction company business. Residents of the first-floor accommodation will be able to use either access/egress route.

In the case of a present day extreme tidal flood event, the access road into the industrial estate and its junction with Telegraph Road is shown to be flooded (estimated depth 0.2m), though the site remains dry. As such, under existing arrangements, there is no formalized safe and dry access to the site under an extreme event. Under the proposed arrangement, there will be a new vehicular access available direct onto Telegraph Road which will remain dry during the flood. Site users and occupants will be able to turn right onto Telegraph Hill and have a safe and dry travel route to the east of the island including the airport and parts of Old Town.

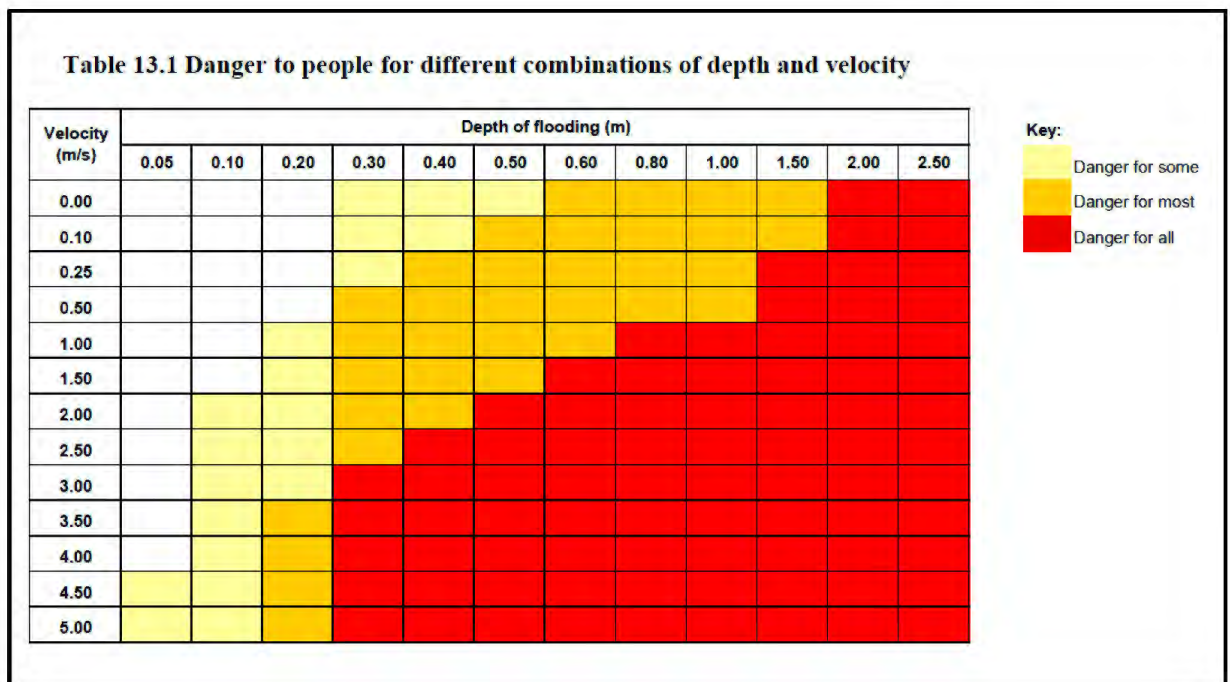
However, there would be no totally dry access route to the east into Hugh Town and travel in this direction should be avoided during a flood unless absolutely necessary. Occupants and users of the site should remain on the site or travel in a westerly direction only during the duration of the flood.

Flooding on Telegraph Road would not be of long duration in the current day flood situation; estimated to be 40 minutes for a flood depth of 200mm at the peak of the tide; so, remaining on site for this duration would be viable for those wishing to travel into Hugh Town.

In the longer-term climate change event, the depth of flooding on Telegraph Road is predicted to rise to about 0.93m at the peak of the flood. The velocity of flow is likely to be low (less than 0.25m/s) given that it is tidal in nature.

DEFRA document FD2320/TR2 "Flood Risk Assessment Guidance for New Development" provides guidance on risks to persons moving through flood water of varying depths and velocities. Figure 13.1 of FD2321/TR2 is provided below as **Figure 5** for reference purposes.

Considering the situation on Telegraph Road at the peak of the flood (depth 0.93m; velocity 0.25m/s) the situation would be classified as between "Danger to most". Moving through these water conditions should not be undertaken except by emergency services.



**Figure 5 – Extract from FD2320/TR2**

In the event of an anticipated extreme flood where the water level is predicted to exceed about 3.7m AOD, then it is recommended that the site is evacuated in advance of the high tide and/or the premises are not opened for business, if appropriate. If there is any water on Telegraph Road, then the evacuation route should be to the east where water depths will be shallower.

Residents of the first-floor accommodation should also evacuate the site, but where this is not possible occupants may take refuge at first floor level which will remain at least 1m above the peak flood level and will act as a safe haven. The maximum period of forced occupation due to flooding is estimated to be 3.75 hours, which is viable.

The evacuation route should be incorporated into a comprehensive Flood Evacuation Plan for the premises to be prepared by the site occupiers; the plan should be prepared in accordance with further advice provided within **Section 6.0** of this report.

## 5.0 POLICY

The site has been shown to be in Flood Zone 1 at the present time, though its designation is likely to move to Zone 3a in the longer term. In accordance with Planning Practice Guidance (PPG) Table 2, the development use would be classified as 'More Vulnerable' within Table 2 due to the residential element; it is noted that this is the same vulnerability classification as the current use of the premises.

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

**Key:**  
 ✓ Development is appropriate  
 x Development should not be permitted.

**Figure 6 – PPG Table 3**

Referring to Table 3 of PPG shown in **Figure 6** above, and considering the existing flood zone designation of Zone 1, a 'More Vulnerable' development such as this within Flood Zone 1 is deemed appropriate under flood risk policy with no further action being necessary.

## 6.0 FLOOD SUMMARY

The risk of flooding to the site from various sources have been considered; the only meaningful risk of flooding is considered to be from tidal flooding propagating from the direction of St. Mary's Pool. At the current time, the local topography and the dune embankment along Telegraph Road protects the site from flooding during an extreme tidal event, although the access road within the industrial estate and its junction with Telegraph Road may be flooded to an estimated depth of about 0.2m. As such, the site itself would be deemed to be within Flood Zone 1.

With the predicted effects of climate change and rising sea levels, the risk of tidal flooding will increase, and the site is predicted to experience flooding during an extreme tidal event (1 in 200 yr.) to a maximum depth of about 1.73m. The flood depth on Telegraph Road is predicted to be about 0.93m for this event. Flooding to the site will occur to lesser depths at more frequent intervals (1 in 5 yr. and upwards) if the anticipated sea level rise due to climate change is realised.

The site will also be at increased risk of flooding if the dune embankment at the top of Porthmellon Beach becomes breached for any reason, however, it is noted that the Shoreline Management Policy for St Mary's is to hold the line on this stretch of the coast to at least 2055.

The proposed development maintains the fundamental nature of the existing activities on site and as such the vulnerability classification of the site is not altered by the application. The reconfiguration of the first-floor residential accommodation from a 3-bedroom open market apartment into 2-bedroom apartment and 2-bedroom staff flat has limited potential to introduce say an additional 1 or 2 persons into a residential environment on the site, however, this is offset by having the benefits of an operational presence on site at all times in order to deal with any flood related matters out of hours. The improvements to the access, providing a formal access onto Telegraph Road and thereby avoiding the need to travel through the lower area of the estate access road, also acts to mitigate against any increased residential occupancy.

In any event, the residential accommodation has been shown to be in Flood Zone 1 and could be used as a safe haven in the event of increased flood depths arising from climate change. Maximum forced dwell times in the residential accommodation from the most extreme flood event likely to occur in the lifetime of the development have been shown to be about 3.75 hours.

The development itself will not increase runoff rates. Also, it will not result in any redirection of flood flow routing or infilling of any fluvial flood plain and as such will not act to raise flood risk elsewhere.

## 7.0 MITIGATION MEASURES

Though the site is currently classified as being in Flood Zone 1, a range of mitigation measures are proposed in order to ensure the safety of the development over its anticipated lifetime. Adopting these measures has the potential to reduce the level of flood risk to the site, when compared to the current situation.

To this end the following mitigation measures are proposed;

1. The proposed development is for alterations within an existing site, with direct access from street level; therefore, it would not be practical to raise the Finished Floor Levels. Therefore, in line with Environment Agency standing advice, the proposed finished floor level (FFLs) for any new buildings should be no lower than the FFLs of the equivalent existing buildings.
2. All new construction works undertaken below 5.51m AOD (1 in 100-year event + climate change + 600mm freeboard) should be carried out using flood resilient materials where practicable. Further advice on flood resilient construction is available from Improving Flood Resilience of New Buildings which is available at: [http://www.planningportal.gov.uk/uploads/br/flood\\_performance.pdf](http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf)
3. All future electrical circuitry and apparatus should be installed at or higher than 5.51m AOD where practicable or made resistant to flooding as far as practicable if it can not be installed at high level.
4. Provision to be made for the installation of flood resistant barriers on all the ground floor door openings to the buildings.
5. Any highly pollutive materials, oils and solvents are to be stored at a level of at least 5.51m AOD where practicable, or as high as possible where this cannot be practically achieved.
6. A detailed Flood Evacuation Plan should be prepared ; this will become particularly relevant with the onset of sea level rise arising from climate change, when tidal levels are expected to approach and exceed 4.0m AOD. This plan should describe how the premises will be operated and how staff, residents and customers will be managed when tidal flooding is expected. As a minimum it should address the following items:
  - a. Describe how tide levels and sea conditions will be monitored and when action will be triggered; predicted water levels of 3.4m and 3.7m AOD are suggested as early trigger thresholds . The plan should include proposals for monitoring local radio, monitoring the EA's website and keeping in contact with the IoS Council. In this regard the IoS Local Flood Risk Management Strategy notes that flood warning information will be disseminated by the Council by the following means:
    - Council website.
    - Community Message Board.
    - Tourist Information Office.
    - Town Hall.
    - Radio Scilly.
    - Posters in various locations.
    - Where deemed appropriate – door knocking in specific vulnerable areas.
    - Direct to IOS Fire and Rescue Service.
    - General flooding advice is provided on the Council website and Z-Cards have been produced and distributed to all households giving information

### Engineering and Development Solutions Ltd

Registered Office: Engineering and Development Solutions, Unit 10 Penstraze Business Centre, Truro, Cornwall, TR4 8PN  
 Registered in England and Wales No. 10467487  
 Phone 01872 306311 Mobile 07973816457

about how to be prepared in the event of an emergency including flood incidents



### **FLOOD ALERT**

#### **Amber Alert – Significant tidal overtopping is possible. (3.4m AOD)**

- Monitor flood warnings and advice issued by the Environment Agency, IoS Council, the Emergency Services and local radio
- Monitor sea conditions in the Pool
- Prepare to implement Flood Evacuation Plan



### **FLOOD WARNING**

#### **Warning - Significant tidal overtopping is expected. (3.7m AOD)**

- Continue to monitor flood warnings and weather/tide conditions
- Put Flood Evacuation Plan into action
- Inform affected persons that flood contingency plan is in force



### **SEVERE FLOOD WARNING**

#### **Severe - Dangerous level of tidal overtopping is expected (4.0m AOD)**

- Continue to monitor flood warnings and weather/tide conditions
- Continue to enforce Flood Evacuation Plan and monitor effectiveness
- Advise persons when tide/weather conditions have subsided to safe levels and that normal operation is resumed
- Advise persons of Flood Contingency Plan being implemented again during next tidal cycle

- b. Describe proposals as to how staff, customers and residents will be informed about flooding risks, mitigation measures and emergency access routes and how they will be informed when the Plan is in place.
  - c. Describe how and when any vehicles associated with the premises will be moved to higher ground
  - d. Describe how and when flood barriers will be deployed
  - e. Describe how materials stored on site will be moved to higher level ,if appropriate
  - f. Describe how the risks will be deemed to have subsided to normal levels and how this will be communicated to staff, residents and customers
7. Register with the Environment Agency's countrywide flood warning system in as far as it covers the Isle of Scilly. Flood warnings are issued by phone, text or email. Registration to receive warnings can either be by phone on 0345 988 1188 or online at [www.gov.uk/sign-up-for-flood-warnings](http://www.gov.uk/sign-up-for-flood-warnings)
  8. Provided that the specified mitigation and contingency measures are adopted, then it is considered that the development may be operated in a safe and appropriate manner over its lifetime.

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## 8.0 CONCLUSIONS

The risk of flooding to the site from various sources have been considered. The only meaningful risk of flooding is considered to be from tidal flooding propagating from the direction of St. Mary's Pool. At the current time, the local topography and the dune embankment along Telegraph Road protects the site from flooding during an extreme tidal event, although the access road within the industrial estate and its junction with Telegraph Road may be flooded to an estimated depth of about 0.2m. As such, the site itself would be deemed to be within Flood Zone 1.

With the predicted effects of climate change and rising sea levels , the risk of tidal flooding will increase, and the site is predicted to experience flooding during an extreme tidal event (1 in 200 yr.) to a maximum depth of about 1.73m. The flood depth on Telegraph Road is predicted to be about 0.93m for this event. Flooding to the site will occur to lesser depths at more frequent intervals (1 in 5 yr. and upwards) if the anticipated sea level rise due to climate change is realised.

The proposed development maintains the fundamental nature of the current activities on site and the vulnerability classification of the site is not altered by the application. No additional flood risk is introduced by the development and it is deemed to be appropriate under national planning policy guidelines on flooding.

Though the site is currently classified as being in Flood Zone 1, a range of mitigation measures are proposed as outlined in **Section 7.0** of this report. The preparation of a detailed Flood Evacuation Plan is a key aspect of the mitigation measures, though the plan will become especially pertinent with the onset of predicted sea level rise resulting from climate change.

Provided that the specified mitigation and contingency measures are adopted, then it is considered that the development may be operated in a safe and appropriate manner over its lifetime.

## **APPENDIX A      EA Letter of Objection**



Council of the Isles of Scilly  
Planning & Development Department  
Old Wesleyan Chapel Garrison Lane  
St Mary's  
Isles of Scilly  
TR21 0JD

**Our ref:** DC/2019/121037/01-L01  
**Your ref:** P/19/064  
**Date:** 01 November 2019

Dear Sir/Madam

**ALTERATION TO EXISTING ACCESS ON MAIN ROAD AND CREATION OF NEW PARKING AREA, CHANGE OF USE OF GROUND FLOOR STORAGE AREA (USE CLASS B8) TO EXTEND RETAIL AREA (USE CLASS A1), CONVERSION OF PART OF FIRST FLOOR APARTMENT INTO STAFF FLAT INCLUDING SMALL EXTENSION, CONSTRUCTION OF ENTRANCE CANOPY, CONSTRUCTION OF NEW STORAGE SHED (USE CLASS B8), MINOR ALTERATIONS AND REGULARISATION OF CREATION OF BALCONY, ROOF TERRACE, LOBBY AND OFFICE.**

**WRIGHT CONSTRUCTION SUPPLIES 22 PORTHMELLON INDUSTRIAL ESTATE PORTH MELLON ST MARY'S ISLES OF SCILLY TR21 0JY**

Thank you for consulting us on this planning application.

### **Environment Agency Position**

In the absence of a flood risk assessment (FRA), we object to this application and recommend that planning permission is refused.

### **Reasons**

The development is in close proximity to Porth Mellon beach and is therefore susceptible to coastal inundation. While formal flood zones for the Isles of Scilly have not yet been created, analysis of predicted still water levels for 2105 taken from the Shoreline Management Plan (SMP2), show complete inundation of the site with the proposed access and egress route cut off by flood waters. As these levels do not take into account wave action and overtopping, flooding in the area is likely to be more frequent and of greater consequence than current data suggests.

It is also agreed in the Draft Local Plan (Policy SS7) that applications below the 5m contour on the Isles of Scilly will provide a flood risk assessment. LIDAR data displays the site to sit approximately 3.2mAOD (For SP to decide if this section can be included).

To overcome our objection, the applicant should submit an FRA which demonstrates that the development is safe without increasing risk elsewhere. Where possible, it should reduce flood risk overall. If this cannot be achieved, we are likely to maintain our objection. Please re-consult us on any revised FRA submitted and we'll respond within 21 days of receiving it.

Environment Agency  
Sir John Moore House Victoria Square, Bodmin, Cornwall, PL31 1EB.  
Customer services line: 03708 506 506  
[www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

Cont/d..

**FRA sources of information - advice to applicant**

We do not prepare or provide FRAs. However, our Customers and Engagement teams can provide any relevant flood risk information that we have available. Please email [DCISEnquiries@environment-agency.gov.uk](mailto:DCISEnquiries@environment-agency.gov.uk) . Further advice on what to include in an FRA can be found at <https://www.gov.uk/guidance/flood-risk-and-coastal-change#site-specific-flood-risk-assessment-all>

Yours faithfully

**Mark Williams**  
**Planning Advisor**

Direct dial 020 84 746199

Direct fax

Direct e-mail [mark.williams@environment-agency.gov.uk](mailto:mark.williams@environment-agency.gov.uk)

## **APPENDIX B      Drawings Showing Proposed Development**



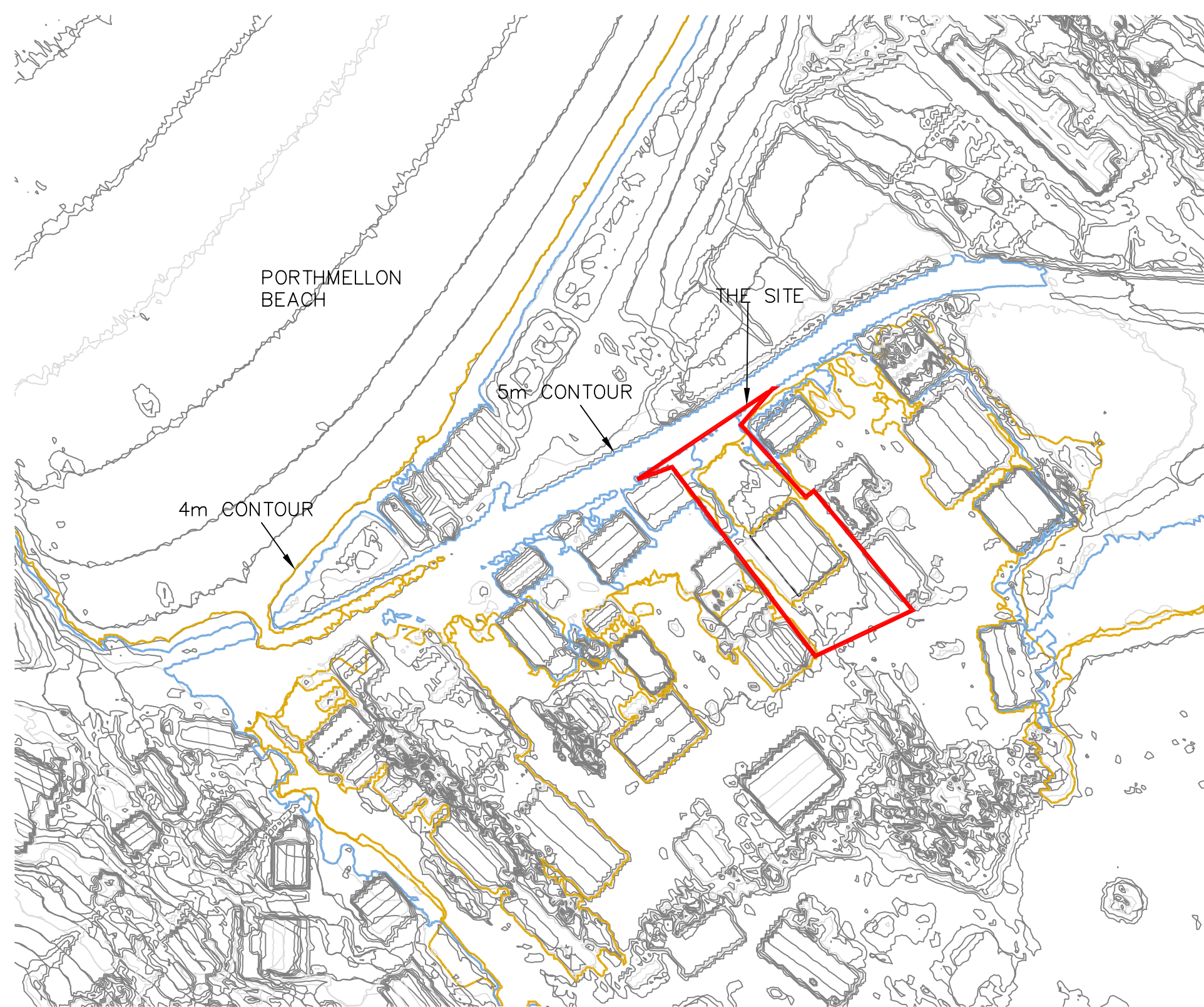
## **APPENDIX C      LIDAR Mapping Extract**

PORTHMELLON  
BEACH

THE SITE

5m CONTOUR

4m CONTOUR



## **APPENDIX D      Environment Agency Information**

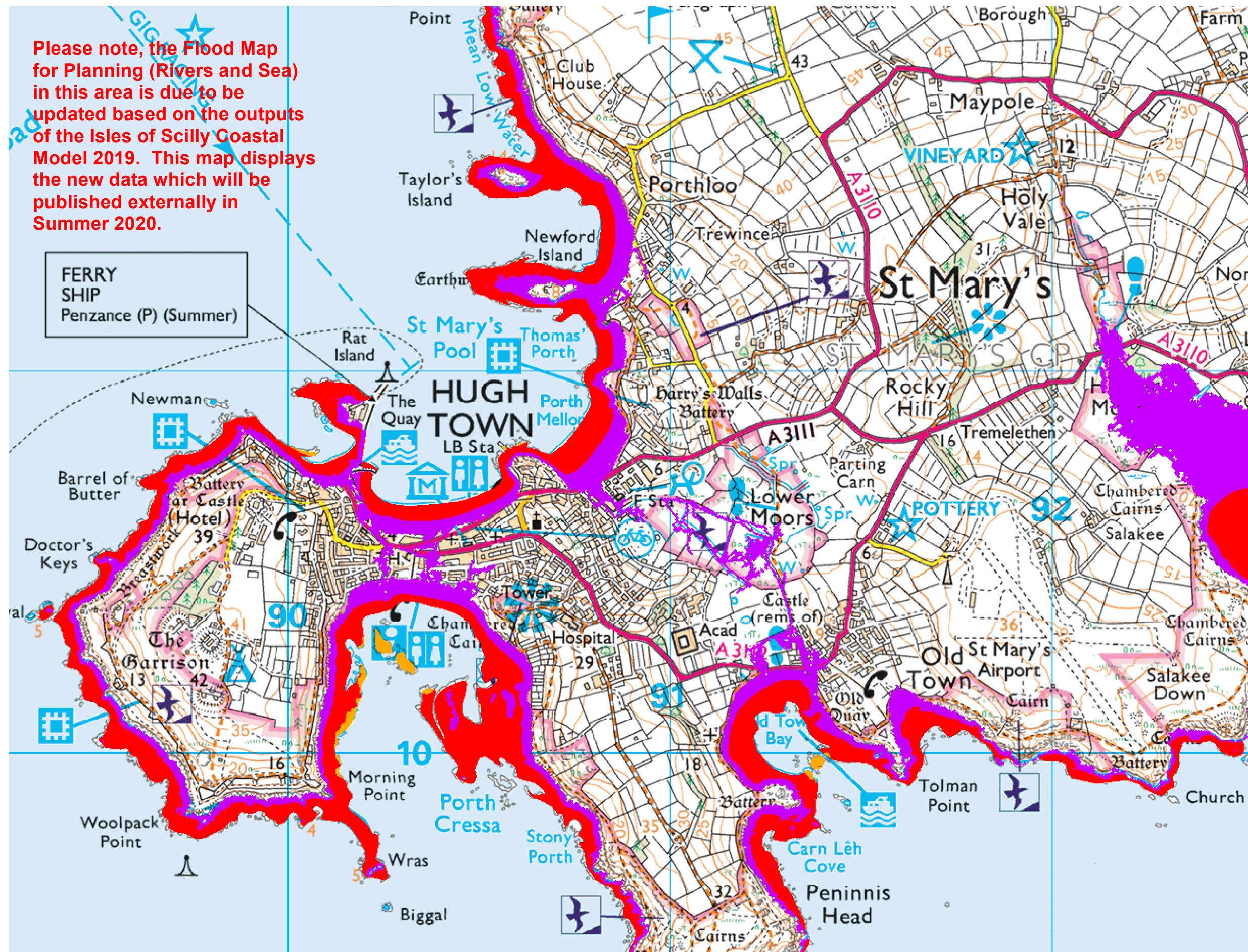


# Depth Map undefended 1 in 200 year taken from the Isles of Scilly Coastal Model 2019 centred on Telegraph Road, St Mary's

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

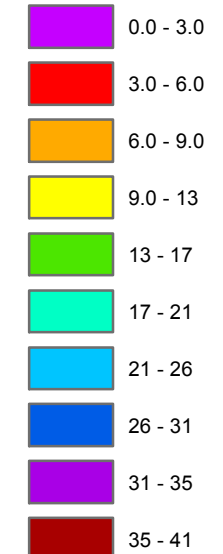
Please note, the Flood Map for Planning (Rivers and Sea) in this area is due to be updated based on the outputs of the Isles of Scilly Coastal Model 2019. This map displays the new data which will be published externally in Summer 2020.

FERRY  
SHIP  
Penzance (P) (Summer)



## Legend

St Marys Undef 1 in 200 year - depth  
metres



This map displays the depths (m) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

1:10,000 Correct as of the 16<sup>th</sup> December 2019

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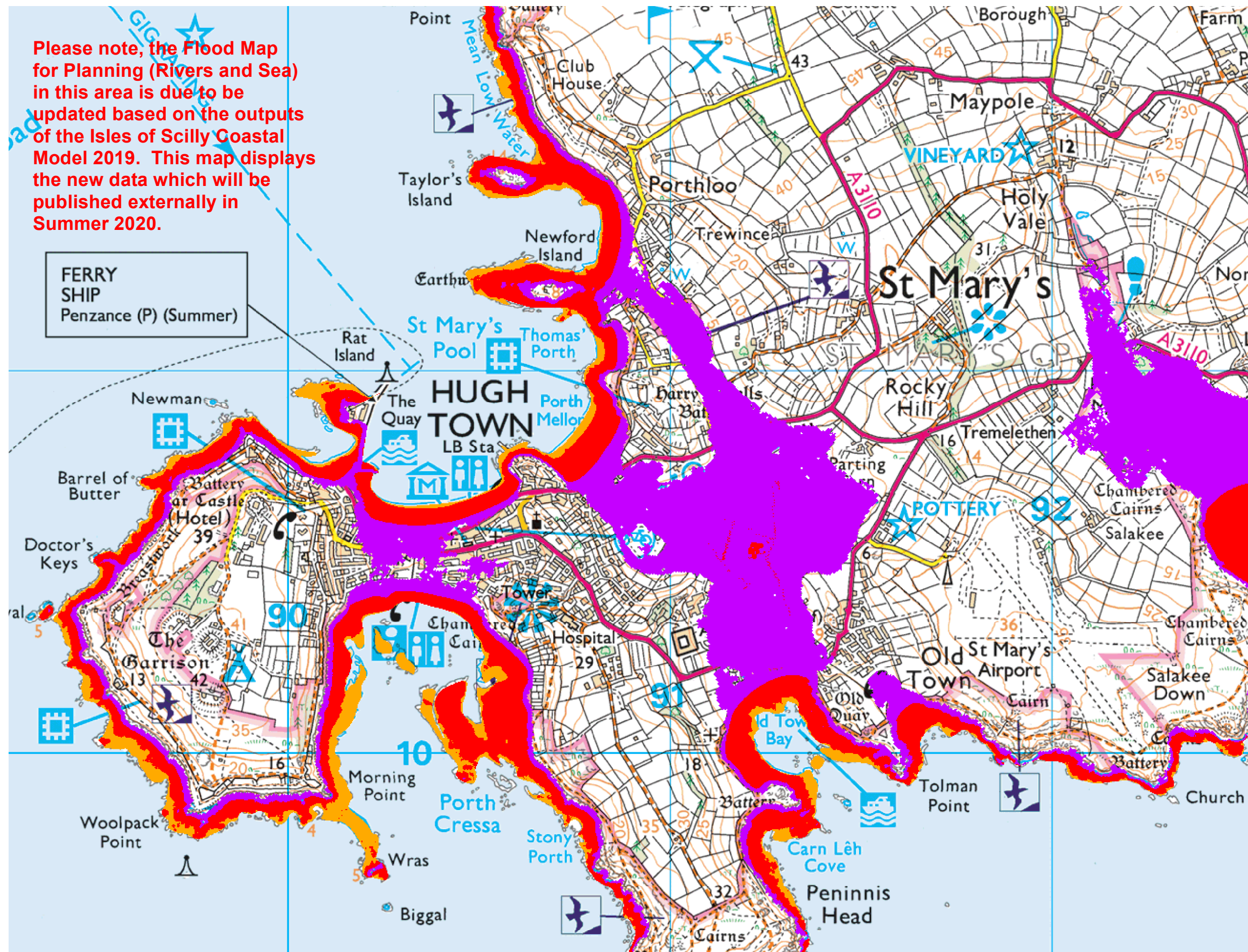


# Depth Map undefended 1 in 200 year + cc taken from the Isles of Scilly Coastal Model 2019 centred on Telegraph Road, St Mary's

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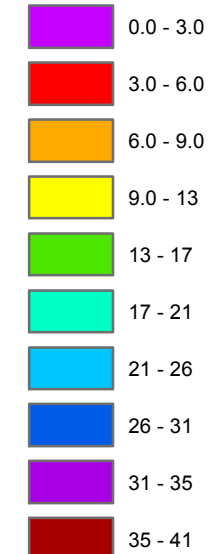
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FERRY  
SHIP  
Penzance (P) (Summer)



## Legend

St Marys Undef 1 in 200 year+cc - Depth  
metres



This map displays the depths (m) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

Climate change scenarios  
To calculate the impact of climate change on wave overtopping discharge rates, changes were applied to the water level, wind speeds and wave heights. For more information, please see the attached caveat.

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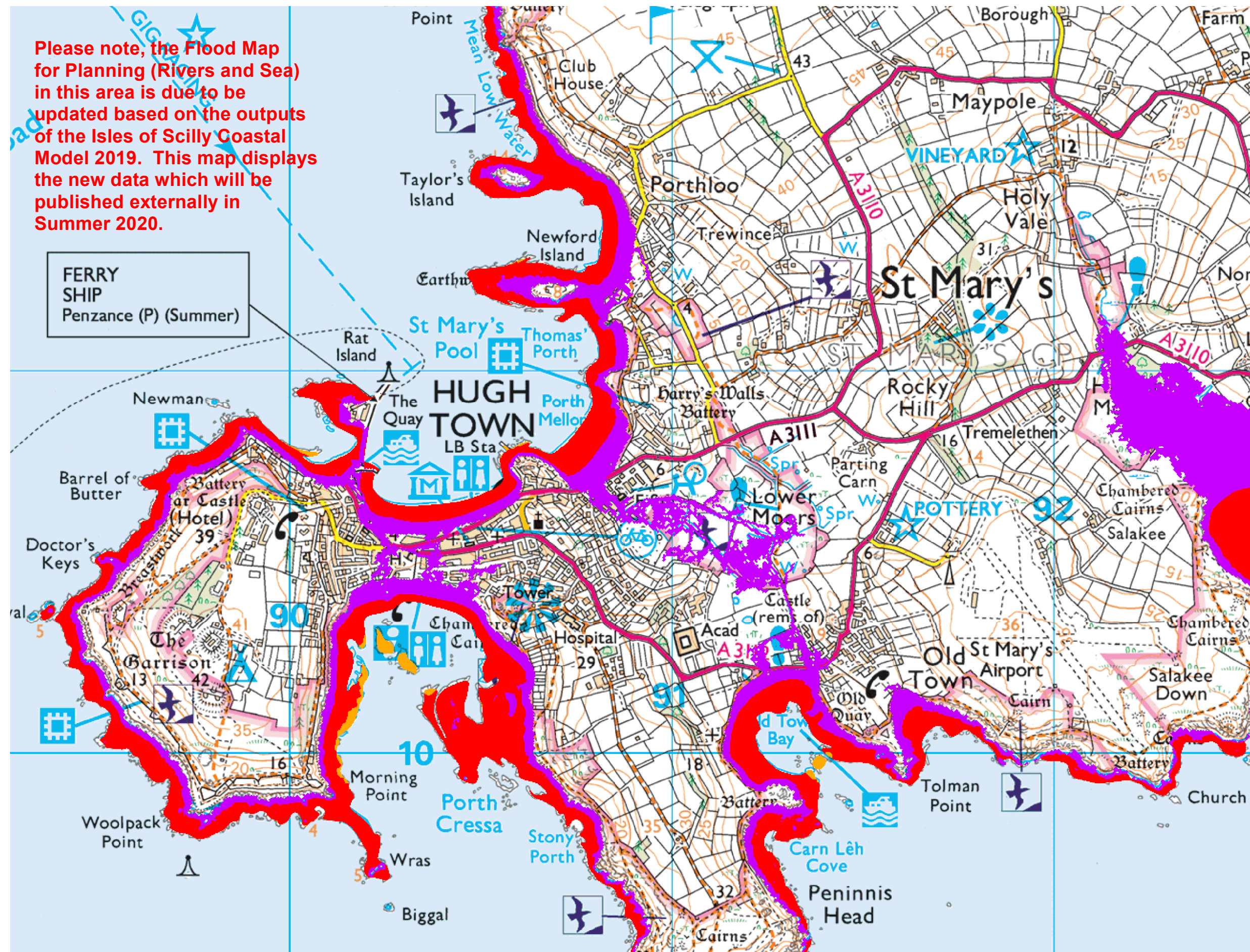


# Depth Map undefended 1 in 1000 year taken from the Isles of Scilly Coastal Model 2019 centred on Telegraph Road, St Mary's

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

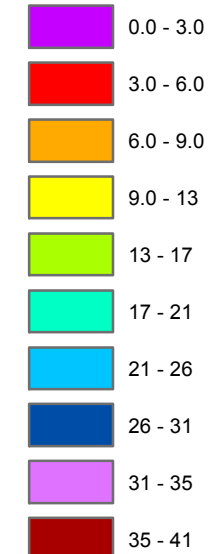
Please note, the Flood Map for Planning (Rivers and Sea) in this area is due to be updated based on the outputs of the Isles of Scilly Coastal Model 2019. This map displays the new data which will be published externally in Summer 2020.

FERRY  
SHIP  
Penzance (P) (Summer)



## Legend

St Marys Undef 1 in 1000 year - depth  
metres



This map displays the depths (m) across the site for a 1 in 1000 year (0.1% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

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Council of the Isles of Scilly  
Planning & Development Department  
Old Wesleyan Chapel Garrison Lane  
St Mary's  
Isles of Scilly  
TR21 0JD

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**WRIGHT CONSTRUCTION SUPPLIES 22 PORTHMELLON INDUSTRIAL ESTATE PORTH MELLON ST MARY'S ISLES OF SCILLY TR21 0JY**

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Environment Agency  
Sir John Moore House Victoria Square, Bodmin, Cornwall, PL31 1EB.  
Customer services line: 03708 506 506  
[www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

Cont/d..

**FRA sources of information - advice to applicant**

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Yours faithfully

**Mark Williams**  
**Planning Advisor**

Direct dial 020 84 746199

Direct fax

Direct e-mail [mark.williams@environment-agency.gov.uk](mailto:mark.williams@environment-agency.gov.uk)



# Head of Water Map undefended 1 in 200 year taken from the Isles of Scilly Coastal Model 2019 centred on Telegraph Road, St Mary's

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

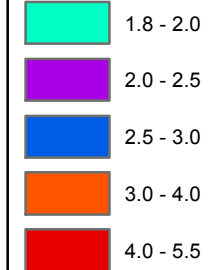
Please note, the Flood Map for Planning (Rivers and Sea) in this area is due to be updated based on the outputs of the Isles of Scilly Coastal Model 2019. This map displays the new data which will be published externally in Summer 2020.

FERRY  
SHIP  
Penzance (P) (Summer)



## Legend

St Marys Undef 1 in 200 year - head of water  
mAO



## Head of Water

This map displays the head of water (mAO) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

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# Head of Water Map undefended 1 in 1000 year taken from the Isles of Scilly Coastal Model 2019 centred on Telegraph Road, St Mary's

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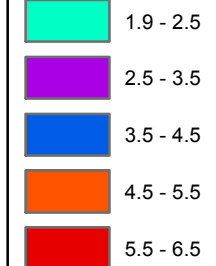
Please note, the Flood Map for Planning (Rivers and Sea) in this area is due to be updated based on the outputs of the Isles of Scilly Coastal Model 2019. This map displays the new data which will be published externally in Summer 2020.

FERRY  
SHIP  
Penzance (P) (Summer)



## Legend

St Marys Undef 1 in 1000 year - head of water  
mAO



## Head of Water

This map displays the head of water (mAO) across the site for a 1 in 1000 year (0.1% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

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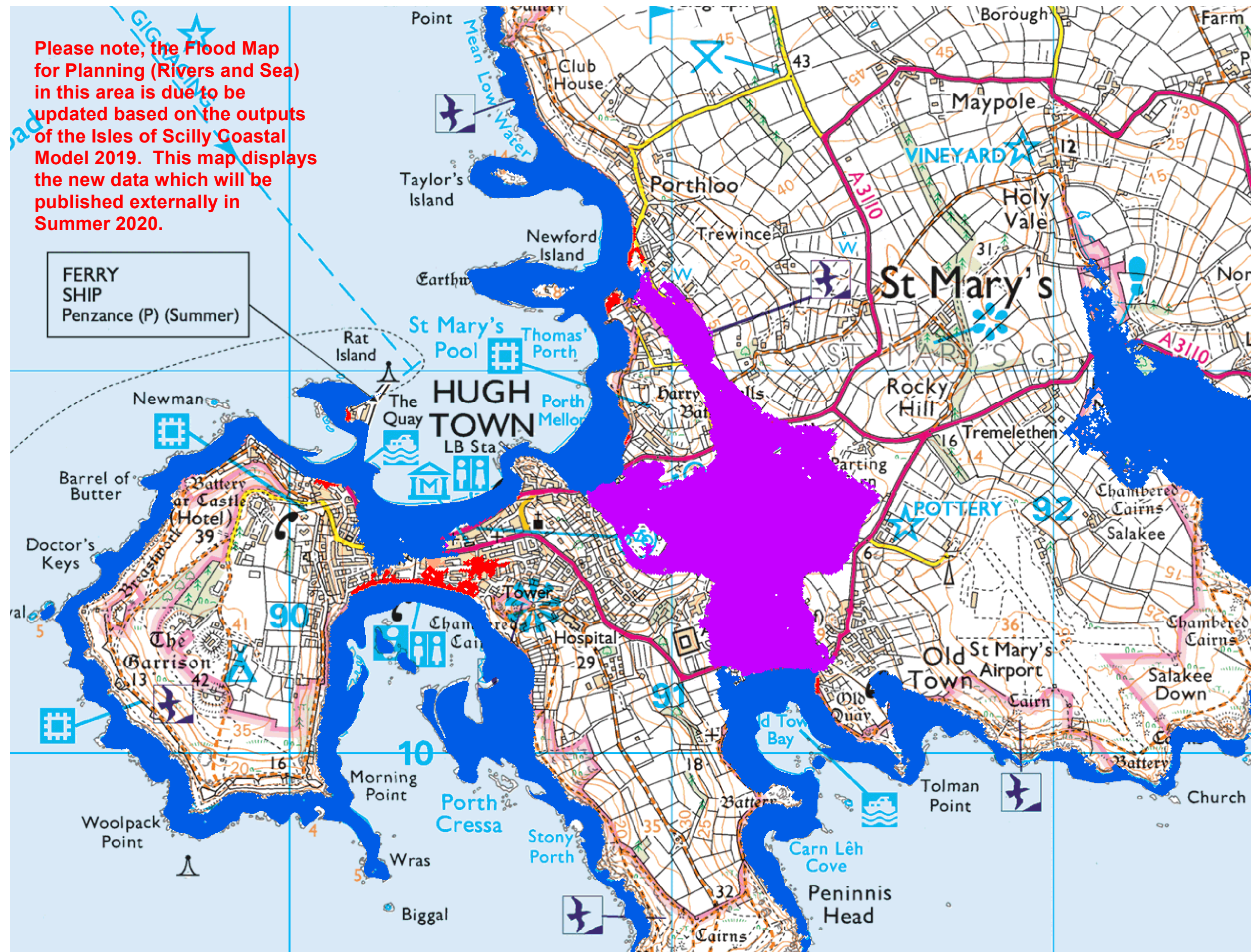


# Head of Water Map undefended 1 in 200 year + cc taken from the Isles of Scilly Coastal Model 2019 centred on Telegraph Road, St Mary's

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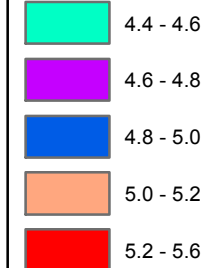
FERRY SHIP  
Penzance (P) (Summer)



## Legend

St Marys Undef 1 in 200 year+cc - head of water

mAO



## Head of Water

This map displays the head of water (mAO) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

## Climate change scenarios

To calculate the impact of climate change on wave overtopping discharge rates, changes were applied to the water level, wind speeds and wave heights. For more information, please see the attached caveat.

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## **Isles of Scilly Coastal Model (2019)**

We have provided data from the Isles of Scilly Coastal Model, 2019. Please consider the following information when using this model data:

- This is coastal model, and does not consider the risk of flooding from other source, including fluvial or surface water flooding.
- Model scenarios were completed with increases to the still water levels, wind speeds and wave heights to represent the impacts of climate change.
- The maps and digital data supplied should be considered only a summary of the conclusions of the study. It will be necessary to collect more detailed topographic information for particular sites where development is proposed and undertake a more detailed site-specific hydrological and hydraulic analysis for the location using guidance from the National Planning Policy Framework (NPPF)
- In this commission the focus has been on flooding from the sea rather than from fluvial sources. It is important that consideration is given to fluvial flooding for any development sites if appropriate. The impact of combined fluvial and tidal events should be examined to understand the impact that this has upon flood depth extent and the duration of inundation
- 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.





# Devon Cornwall and Isles of Scilly Area

Preliminary Opinion Advice Note

January 2019

**This document sets out the environmental issues we will consider when providing our planning application consultation advice to Local Planning Authorities. It can be used by applicants, developers and consultants at the pre-planning stage.**

## **Further pre-application options**

We are able to provide detailed and bespoke advice and answer technical questions for a charged fee which equates to £100 per hour plus VAT.

If you are interested in finding out more about this service, please email:

[SPDC@environment-agency.gov.uk](mailto:SPDC@environment-agency.gov.uk)

We can explain this service and provide you with a bespoke quote for further pre-application advice that you may require.

## **Fluvial/Tidal Flood Risk**

**Development must be safe and should not increase the risk of flooding.**

You can view a site's flood zone on the Flood Map for Planning on the .gov.uk website

<https://flood-warning-information.service.gov.uk/long-term-flood-risk>

If your proposed development is located within flood zone 2 or 3 you should consult the Flood Risk and Coastal Change pages of the National Planning Policy Guidance (NPPG)

<http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/>

Here you can determine whether the flood risk vulnerability of your proposed development and the flood zone are compatible. You can also establish if there are flood risk sequential test and exception test requirements for your proposed development.

If your proposed development is located within flood zone 2 or 3 and its vulnerability and flood zone are considered acceptable under the NPPG then a site specific Flood Risk Assessment (FRA) is required to support any subsequent planning application. This is required by paragraph 103 of the National Planning Policy Framework (NPPF)

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf)

Guidance on the content of a site specific FRA can be found on the NPPG and the .gov website:

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

We are in the process of making the majority of our data open source. Flood risk data is available from .gov.uk <https://data.gov.uk/data/search?q=Flood&publisher=environment-agency&unpublished=false>

However, if you need more detailed flood risk modelling data to help you produce a FRA then please contact our Customers and Engagement team at [DCISEnquiries@environment-agency.gov.uk](mailto:DCISEnquiries@environment-agency.gov.uk)

## **Climate Change Allowances**

On 19 February 2016, we published new guidance for planners and developers on how to use climate change allowances in a site-specific FRA: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

If you have any questions regarding this guidance, please contact our Customers and Engagement team:

[DCISEnquiries@environment-agency.gov.uk](mailto:DCISEnquiries@environment-agency.gov.uk)

# Groundwater Quality

Development must not cause pollution to the water environment.

## Source Protection Zones

These zones indicate that an area is very sensitive to pollution risks due to the proximity of drinking water sources and the way groundwater flows. In these areas we may consider it inappropriate for development to discharge foul or surface water into the ground.

To see if your proposed development is located within a Source Protection Zone, please use our online map: <http://apps.environment-agency.gov.uk/wiyby/37833.aspx>

## Contaminated land

The NPPF takes a precautionary approach to land contamination. Before the principle of development can be determined, land contamination should be investigated to see whether it could preclude certain development due to environmental risk or cost of remediation.

Where contamination is known or suspected, a desk study, site investigation, remediation and other works may be required to enable safe development (paragraph 121 of the NPPF). Minimum requirements for submission with a planning application are a preliminary risk assessment, such as a site walkover or desk top study.

Site investigation and remediation strategy reports may be required for submission with a planning application for sensitive land use types or where significant contamination, or uncertainty, is found. When dealing with land affected by contamination, developers should follow the risk management framework provided in the CLR11, Model Procedures for the Management of Land Contamination:

<https://www.gov.uk/guidance/land-contamination-risk-management>

## Pollution

If the proposed development use has the potential to pollute ground or surface water receptors then an assessment to establish whether the risk of pollution is acceptable or can be satisfactorily mitigated for will be required within any planning application.

## Foul Drainage

When drawing up wastewater treatment proposals for any new development, the first presumption is to provide a system of foul drainage discharging into a public sewer to be treated at a public sewage treatment works (those provided and operated by the water and sewerage companies). This should be done in consultation with the sewerage company of the area prior to the submission of a formal planning application.

If connection to the public sewerage system is not feasible, a private foul drainage system may be considered. Under the Environmental Permitting Regulations 2010 any discharge of sewage or trade effluent made to either surface water or groundwater will need to be registered as an exempt discharge activity or hold a permit issued by the Environment Agency, in addition to planning permission. This applies to any discharge to inland freshwaters, coastal waters or relevant territorial waters.

Further guidance is available at:

<https://www.gov.uk/government/publications/small-sewage-discharges-in-england-general-binding-rules>.

# Main Rivers

## Ecology

If a Main River is located on or within 8 metres of your proposed development site an ecological survey is required to establish whether development is likely to have a detrimental impact on the biodiversity of the watercourse. We would not support development proposals if there was shown to be a likely detrimental impact on the water environment. In accordance with the National Planning Policy Framework (NPPF), any development proposal should avoid significant harm to biodiversity and seek to protect and enhance it. Opportunities to incorporate biodiversity in and around the development will be encouraged.

Your scheme should be designed with a naturalised buffer zone of at least 8 metres from the main river to protect and enhance the conservation value of the watercourse and ensure access for flood defence maintenance.

This buffer zone should be managed for the benefit of biodiversity for example by the planting of locally appropriate, UK native species. The buffer zone should be undisturbed by development with no fencing, footpaths or other structures. This buffer zone will help provide more space for flood waters, provide improved habitat for local biodiversity and allows access for any maintenance requirements.

To identify any Main Rivers in proximity to your proposed development please see our Main Rivers Consultation Map: <http://apps.environment-agency.gov.uk/wiyby/151293.aspx>

## Water Framework Directive (WFD)

With any development alongside watercourses, consideration should be given to the requirements of the Water Framework Directive (WFD) <http://ec.europa.eu/environment/water/water-framework/> . This includes preventing overall deterioration in water quality and promoting improvement in the ecological status of any water body. Actions to achieve this are listed in the South West River Basin Management Plan (RBMP) <https://www.gov.uk/search?q=River+Basin+Management+Plans>.

Where appropriate, a WFD Assessment (<http://planningguidance.communities.gov.uk/blog/guidance/water-supply-wastewater-and-water-quality/water-supply-wastewater-and-water-quality-considerations-for-planning-applications/>) should assess any potential impacts on the watercourse and demonstrate that the required enhancements will be delivered. In some cases the requirements of a WFD assessment can be incorporated into an Environmental Impact Assessment (EIA). Any development that has the potential to cause deterioration in classification under WFD or that precludes the recommended actions from being delivered in the future is likely to be considered unacceptable to us.

## Environmental Permitting Regulations

To see if your proposed development requires an Environmental Permit under the Environment Permitting Regulations please refer to our website:

<https://www.gov.uk/guidance/check-if-you-need-an-environmental-permit>

From 6 April 2016 an Environmental Permit is required for any proposed works or structures, in, under, over or within 8 metres of the top of the bank of a designated Main River and within 16 metres of a tidal defence.

## Please note

This document is a response to a pre-application enquiry only and does not represent our final view in relation to any future planning application made in relation to any site. You should seek your own expert advice in relation to technical matters relevant to any planning application before submission.

If you have any questions please contact the Sustainable Places team:

[SPDC@environment-agency.gov.uk](mailto:SPDC@environment-agency.gov.uk)



**Engineering and Development Solutions Ltd**

Registered Office: Unit 10 | Penstraze Business Centre | Truro | Cornwall | TR4 8PN

Registered in England No. 10467487