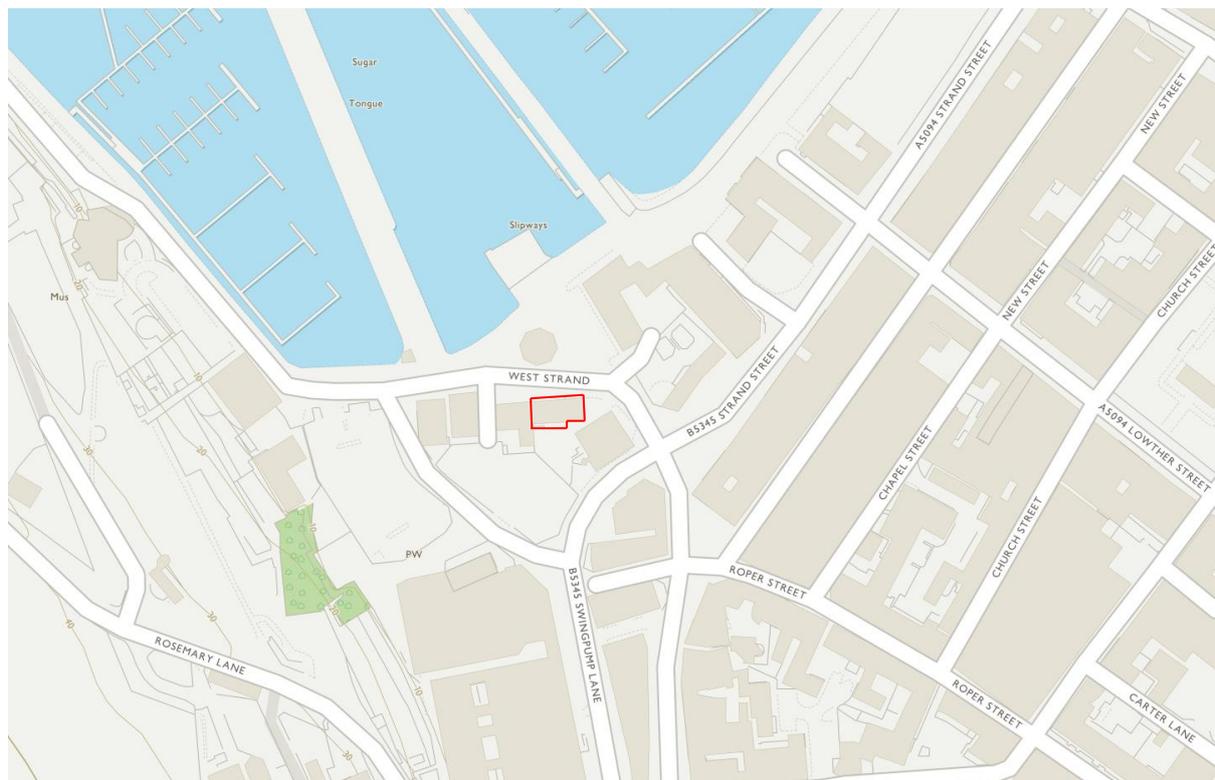


**OLD CUSTOMS HOUSE, WHITEHAVEN****FLOOD RISK ASSESSMENT – 1ST OCTOBER 2021****1. DEVELOPMENT DESCRIPTION AND LOCATION****a. What type of development is proposed and where will it be located?**

This flood risk assessment supports a planning application for the redevelopment of the Old Customs House in Whitehaven, Cumbria.

The site is located approximately 35m south of Whitehaven Marina that is protected by the sea lock at the entrance to the harbour.



**Figure 1 - Location of Proposed Development – Site of Old Customs House Shown by Red Boundary.**

**DIRECTORS****R. J. Gibson** BEng (Hons) CEng MStructE**A. K. Poole** BEng (Hons) MSc CEng MICE PCert

Tel 01768 865400

Email [mail@tsceltd.com](mailto:mail@tsceltd.com)[www.tsceltd.com](http://www.tsceltd.com)

The site location indicators are as follows:

OS X (Easting) 297132  
OS Y (Northing) 518144  
Nearest Post Code CA28 7LR  
Lat (WGS84) 54.54805849672985  
Long (WGS84) -3.591810930449668  
Nat Grid NX971181 / NX9713218144

**b. What is its flood risk vulnerability classification?**

In the flood risk vulnerability classification, the ‘use of land as a residential establishment’ would be classed as “more vulnerable”.

**c. Is the proposed development consistent with the Local Plan for the area?**

We believe that this proposal is consistent with the local plan for the area by providing high quality housing in the form of serviced apartments within the area.

**d. What evidence can be provided that the Sequential Test and where necessary the Exception Test has/have been applied in the selection of this site for this development type?**

The site lies within Flood Zone 3 but is classed as an area benefiting from flood defences. Therefore, the sequential and exception test process will not need to be carried out by the planning authority.

**e. Will your proposal increase overall the number of occupants and/or users of the building/land, or the nature or times of occupation or use, such that it may affect the degree of flood risk to these people?**

The proposed serviced apartments will increase the number of permanent users that could be affected by flooding.

## 2. DEFINITION OF THE FLOOD HAZARD

### a. What sources of flooding could affect the site?

The likelihood of flooding from all sources is assessed as follows: -

#### From Main Rivers and Other Watercourses

The existing property is over 800m from any open river/watercourse. Therefore, there is no risk associated with flooding from rivers or other watercourses.

#### From Tidal Sources

In accordance with the EA Flood Plans available online, the site lies within Flood Zone 3 but is classed as an area benefiting from flood defences. See Figure 2.

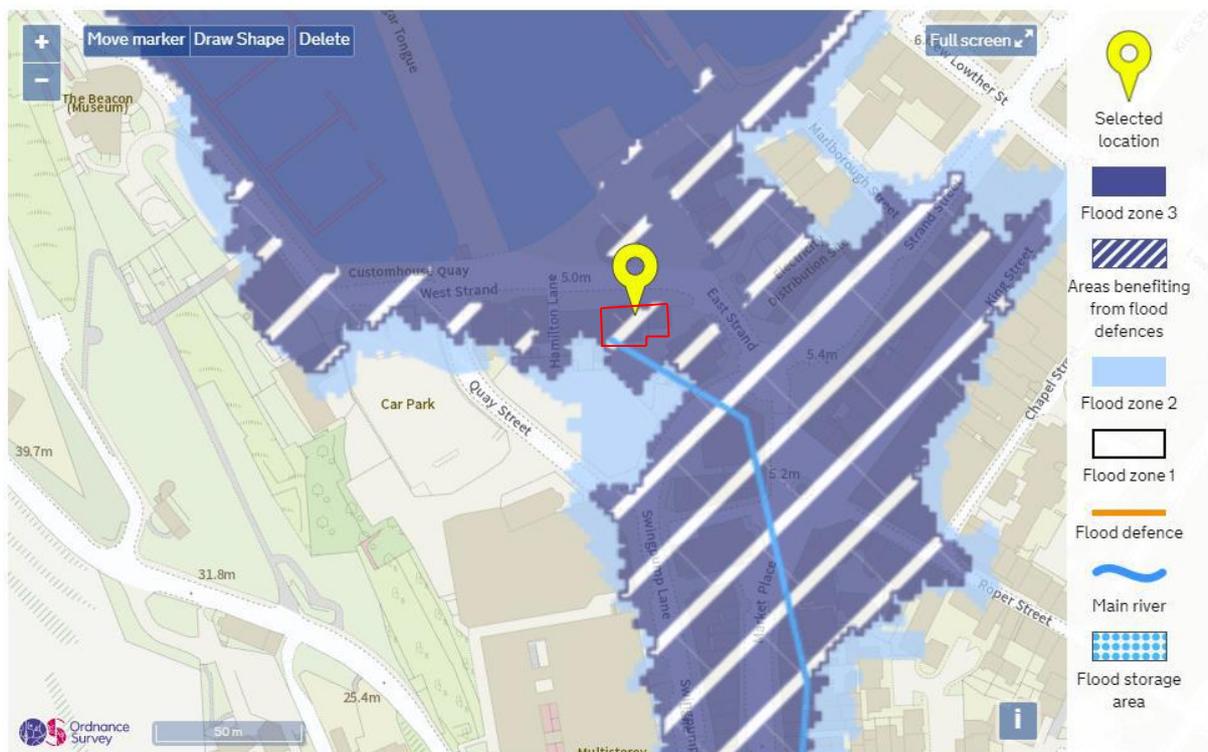


Figure 2 - EA Flood Map for Planning.

Land and property within Flood Zone 3 that benefits from flood defences would have a high probability of flooding without the local flood defences. These protect the area against a river flooding event with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

#### From Reservoirs

Not possible.

### From Ground Water Return Flow

According to the Copeland Borough SFRA, “a limited potential for groundwater flooding exists within the Borough.

### From Surcharged Sewers

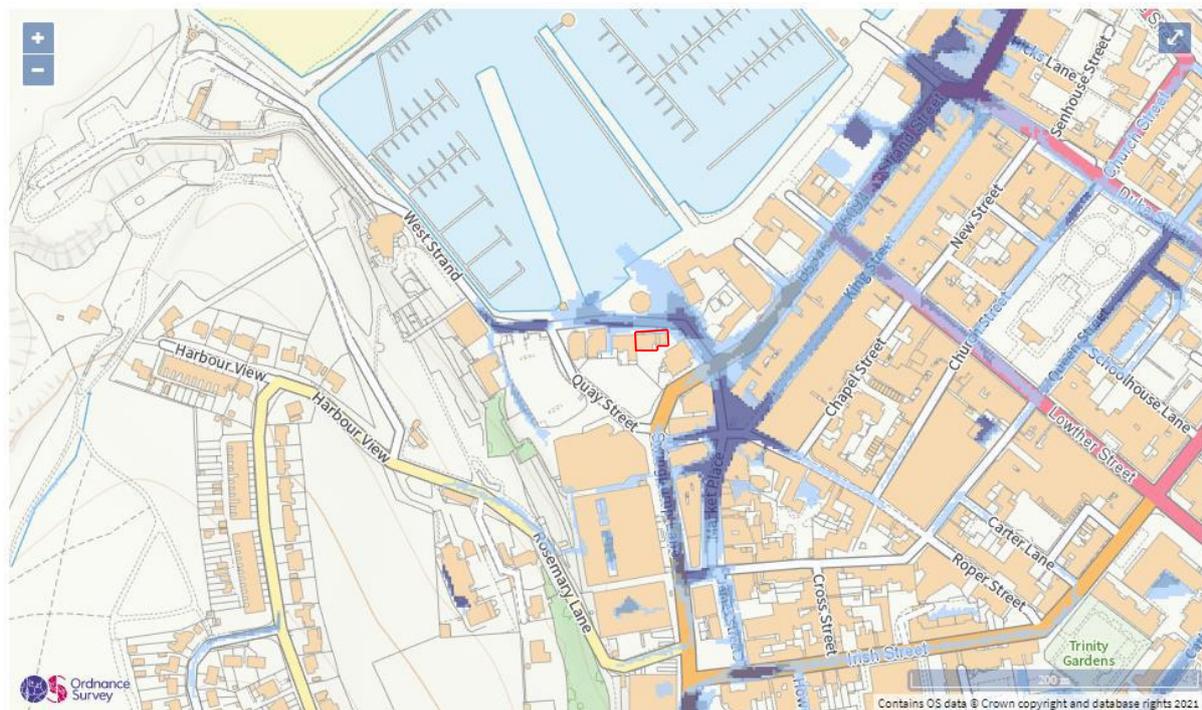
The site is within proximity to public sewers beneath the nearby public highway that may become surcharged.

### From Blocked/Surcharged Culverts

Pow Beck is culverted directly beneath the site and outfalls to Whitehaven Marina a short distance to the north of site and may become surcharged.

### Surface Water Runoff

According to the Government long term flood risk website the risk of surface water flooding within the development boundary is very low. This risk is uniform across the site. A very low risk means that the area has a yearly chance of flooding less than 0.1%.



Extent of flooding from surface water

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

**Figure 3 - Surface Water Risk for the Proposed Development Location.**

A summary of the potential sources of flooding is given below:

<b>Potential Source of Flooding</b>	<b>Assessed Risk</b>	<b>Remedial Measures Required</b>
Main River and Other Watercourses	Low	No
Tidal	High	No
Reservoirs	N/A	No
Ground Water Return Flow	Low	No
Surcharged Sewers	Low	No
Blocked/ Surcharged Culverts	N/A	No
Surface Water Runoff	Very Low	No

**b. For each identified source in box 2a above, can you describe how flooding would occur, with reference to any historic records where these are available?**

**From Main Rivers and Other Watercourses**

Study of the EA flood maps shows that the site lies within Flood Zone 3 but is classed as an area benefiting from flood defences. The land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

**From Ground Water Return Flow**

According to the Copeland Borough SFRA, “a limited potential for groundwater flooding exists within the Borough. In the whole of the Southwest Lakes Catchments, less than 10 properties are thought to be at risk.” The areas at risk are largely located further north than the proposed development.

Further information from Copeland Borough council has highlighted that ground water flooding has previously occurred in a number of properties in the Market Place area adjacent to site. The flooding on record for these properties occurred entirely within cellars. As the proposed development will not have a cellar, groundwater flooding is deemed to not pose a significant risk to the site.

**From Surcharged Sewers**

The site is within proximity to public sewers beneath the nearby public highway. These sewers are managed and maintained by United Utilities and as such it is not anticipated that flooding from surcharging is likely. There are no recorded instances of flooding from surcharged sewers affecting the site.

### **From Blocked/Surcharged Culverts**

Pow Beck is culverted directly beneath the site and outfalls to Whitehaven Marina a short distance to the north of site. This culvert runs through the centre of Whitehaven with the culvert entrance located approximately 800m to the southeast. In the event of the culvert becoming blocked or surcharged, flooding would occur in the proximity of the culvert entrance. As this location is approximately 800m from the site of the development it is not anticipated that flooding would occur on site as a result of this culvert becoming blocked or surcharged.

### **From Reservoirs**

It is anticipated that there are no reservoirs adjacent to the site that could cause a flood risk.

### **Surface Water Runoff**

According to the Government long term flood risk website, the location of the proposed redevelopment is shown to be at very low risk from surface water flooding.

### **c. What are the existing surface water drainage arrangements for the site?**

This site currently drains to the public sewer. There will be no increase in surface water from the site.

## **3. PROBABILITY**

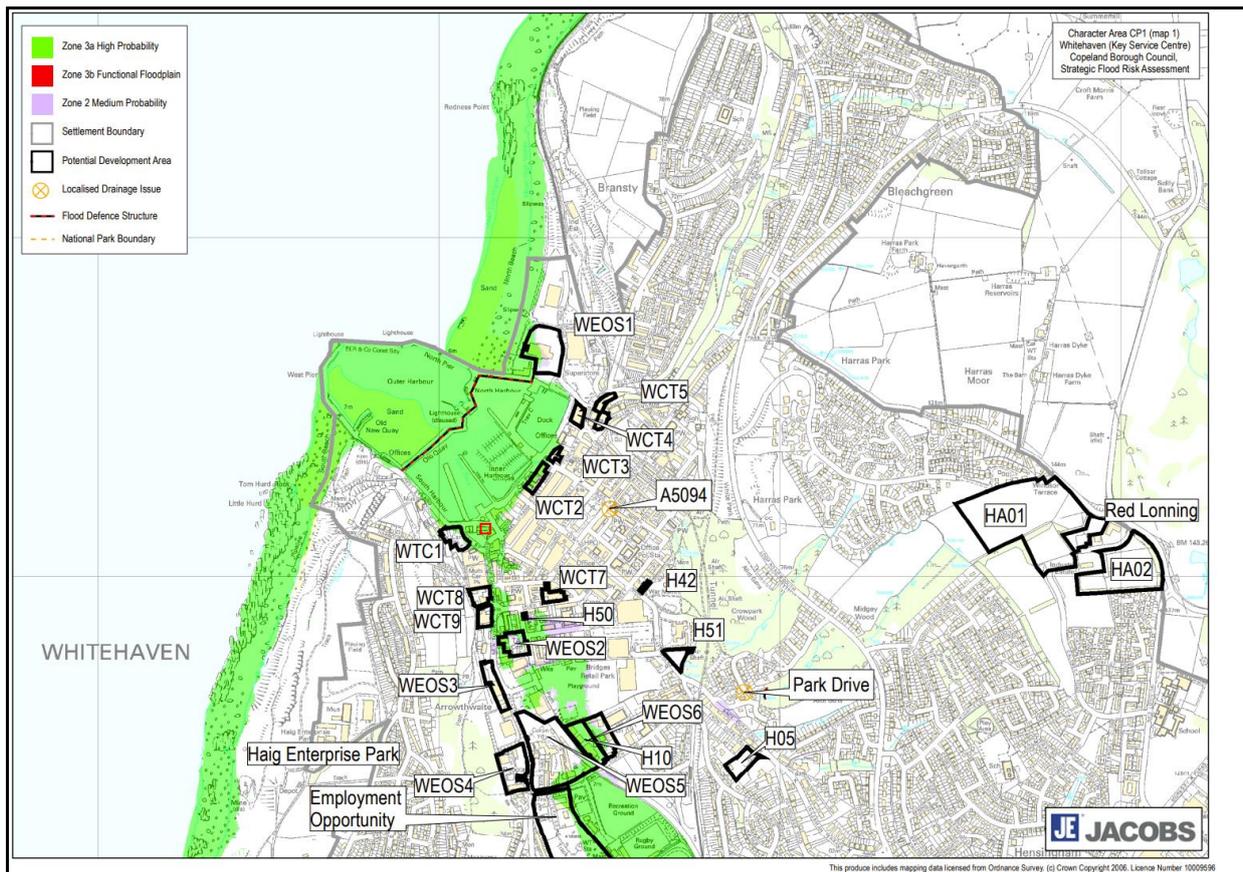
### **a. Which flood zone is the site within?**

The EA Flood Map for Planning shows the site lies within Flood Zone 3 but is classed as an area benefiting from flood defences. The land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

### **b. If there is a Strategic Flood Risk Assessment covering this site. Does this show the same or a different flood zone compared with the Environment Agency's flood map?**

The Strategic Flood Risk Assessment for Copeland Borough shows the same flood zone as the EA, Zone 3a high probability but benefits from local flood defences. See Figure 4 below.

The SFRA states the risk of tidal flooding is reduced by recent flood defence improvements that provide protection for a 0.5% (1 in 200 year) rainfall event coinciding with a high tide.



**Figure 4 - SFRA flood risk map.**

**c. What is the probability of the site flooding, taking account of the maps of flood risk from rivers and the sea and from surface water, on the Environment Agency’s web site, and the Strategic Flood Risk Assessment, and of any further flood risk information for the site?**

The EA Flood Map for Planning indicates that the site lies within Flood Zone 3 but is classed as an area benefiting from flood defences. The land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

The SFRA states that the risk of tidal flooding has been reduced due to recent flood defence improvements that provide protection for a 0.5% (1 in 200 year) rainfall event coinciding with a high tide.

According to the Government long term flood risk website, the location of the proposed redevelopment is shown to be at very low risk from surface water flooding.

#### **4. CLIMATE CHANGE**

**How is flood risk at the site likely to be affected by climate change?**

Climate change may increase the frequency of potential flood events and may increase flood levels.

#### **5. DETAILED DEVELOPMENT PROPOSALS**

**Where appropriate, are you able to demonstrate how land uses most sensitive to flood damage have been placed in areas within the site that are at least risk of flooding (including providing details of the development layout)?**

Not applicable as it is the redevelopment of an existing building into serviced apartments.

#### **6. FLOOD RISK MANAGEMENT MEASURES**

**How will the site/building be protected from flooding, including the potential impacts of climate change, over the development's lifetime?**

The site is protected from flooding by the local flood defences. The risk of tidal flooding has been reduced due to recent flood defence improvements that provide protection for a 0.5% (1 in 200 year) rainfall event coinciding with a high tide.

**Access and Escape:**

The property would need to be registered on the Environment Agency flood warning system.

#### **7. OFF SITE IMPACTS**

**a. How will you ensure that your proposed development and the measures to protect your site from flooding will not increase flood risk elsewhere?**

There will be no increase in run off from the site due to redeveloping an existing building.

**b. How will you prevent run-off from the completed development causing an impact elsewhere?**

As above – there will be no increase in natural runoff from the site.

**c. Are there any opportunities offered by the development to reduce flood risk elsewhere?**

There will be no increase in run off from the site.

## **8. RESIDUAL RISKS**

**a. What flood-related risks will remain after you have implemented the measures to protect the site from flooding?**

Not applicable.

**b. How, and by whom, will these risks be managed over the lifetime of the development? (e.g., flood warning and evacuation procedures).**

It is recommended that the site be registered with the Environment Agency Warning System if not already so that site users receive warning of flooding risks.

Andy Poole BEng (Hons) CEng MICE  
For Tweddell & Slater Ltd

Tweddell & Slater Ltd,  
Unit 2 Mereside Greenbank Road  
Eden Business Park Penrith Cumbria  
CA11 9FB

October 2021