Flood Risk Assessment for Planning

Prepared for:
Imovina Properties Limited

June 2024

Location:
49 King Street
Whitehaven
CA28 7JH

Our reference:
92458-Imovina-KingSt

Unda Consulting Limited, Southpoint, Old Brighton Road, Gatwick, West Sussex, RH11 0PR
+44 (0) 1293 214 444
enquiries@unda.co.uk

Document Issue Record

Project:	Flood Risk Assessment for Planning
Client:	Imovina Properties Limited
Application:	Conversion and change of use of the first and second floors into two 2-bedroom holiday lets and conversion of loft into a 1-bedroom holiday let (use class C3) with internal and external alterations.
Location:	49 King Street, Whitehaven, CA28 7JH
Our reference:	92458-Imovina-KingSt
Version:	v1.0 280524

Lead Consultant:	Miss Freya Pott
Checked by:	Mrs Emma Jeffery
Authorisation:	Mrs Emma Jeffery

Southpoint, Old Brighton Road, Gatwick, West Sussex, RH11 0PR

+44 (0) 1293 214 444

www.unda.co.uk

Contents

1. Key Facts

1.1 Flood Risk Posed:

- Site located within Flood Zone 3 (High Risk).
- The risk would appear to be predominantly tidal and originate from the Irish Sea located approximately 355m from the proposed development. The proposed development is also located 120m from Whitehaven Marina.
- Modelled flood levels and extents have been requested from the EA as part of a Product 4 data request. The EA has provided modelled flood data from the Whitehaven Tidal 2012 model.
- Flood levels have been extracted from the most appropriate on site node (12) for the 1:200yr and 1:1000yr return periods. The undefended scenario will be used for the modelled flood levels. The site is not shown to be at risk of flooding for the defended scenario.
- For the undefended 1 in 200 year and 1 in 1000 year modelled tidal events the maximum flood depths on site would be 0.23m and 0.46m respectively.
- For the undefended 1:200 year flood plus the Higher Central and Upper End calculated allowance for climate change events, the site could be inundated with up to 1.19m and 1.58m of flood water for the Higher Central and Upper End allowances.
- For the undefended 1:1000 year flood plus the Higher Central and Upper End calculated allowance for climate change events, the site could be inundated with up to 1.42m and 1.81m of flood water for the Higher Central and Upper End allowances.
- According to Environment Agency data, there are no Flood Storage Areas located in close proximity to the site.
- This location is currently protected by a sea wall with a sea lock which has a length of 595.54m and a design standard of 200 years. The sea lock is maintained by the Whitehaven Harbour Commissioners.
- According to EA data no historic flood events have occurred at the site or within the vicinity of the site.
- The EA Risk of Flooding from Surface Water Map suggests that the land adjacent to the site lies in an area of “Medium” Risk of flooding from surface water.
- Risk of sewer surcharge and groundwater flooding would appear to be low.
- According to the EA flooding from reservoirs is unlikely in this area.

1.2 Flood Risk Mitigation:

- All residential uses will be at first floor level and above.
- Internal access will be maintained from ground floor level to the upper floors of the development for all residential site users.
- Flood proofing of the property will be incorporated as appropriate.
- Due to the scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning.

- A flood warning and evacuation plan which will be prepared in liaison with the Council's Emergency Planners and tied in with the local emergency plans for the area.
- The applicant will register with the Environment Agency Floodline Warnings/Alert Direct service.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

2. Introduction

Unda Consulting Limited have been appointed by Imovina Properties Limited (hereinafter referred to as "the applicant") to undertake a Flood Risk Assessment for the proposed development at 49 King Street, Whitehaven, CA28 7JH (hereinafter referred to as "the site"). The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The purpose of the study is to support a planning application for the proposed development. This report presents our findings based on the readily available information and data relating to the site and surrounding drainage area.

The site appears to be located within Flood Zone 3 as defined by the Environment Agency (EA) on their Flood Map for Planning. Under the National Planning Policy Framework (NPPF), a FRA is required if a proposed development:

- includes building or engineering works in Flood Zone 2 or 3;
- includes building or engineering works on land classified by the Environment Agency as having critical drainage problem;
- changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- is larger than 1 hectare.

The assessment should demonstrate to the Local Planning Authority (LPA) and EA how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its potential users.

- whether the proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate.

3. Existing Situation

3.1 Site Usage:

The site is occupied by a retail shop on the ground floor with ancillary areas/storage on the first and second floor levels.

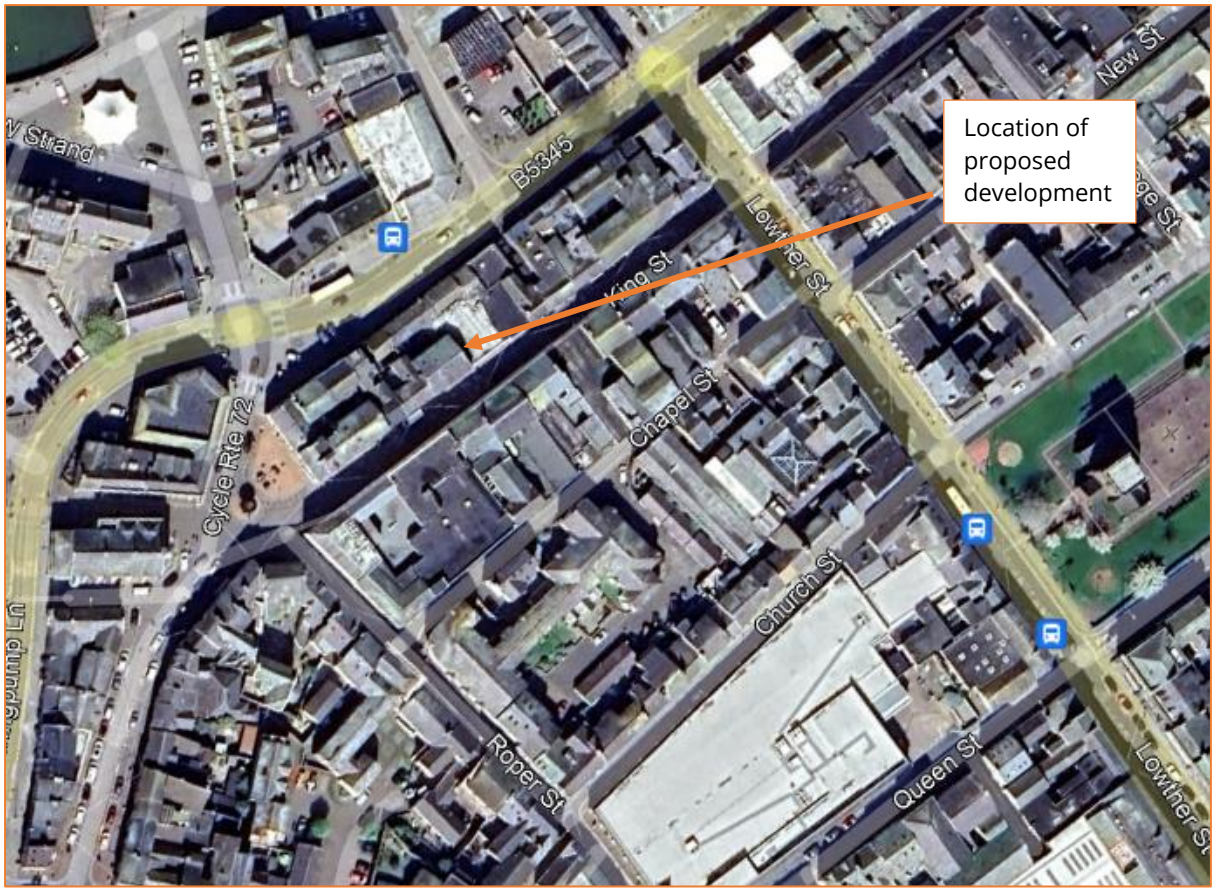


Figure 1: Aerial photograph of site and surrounding area (Source: Google Earth)

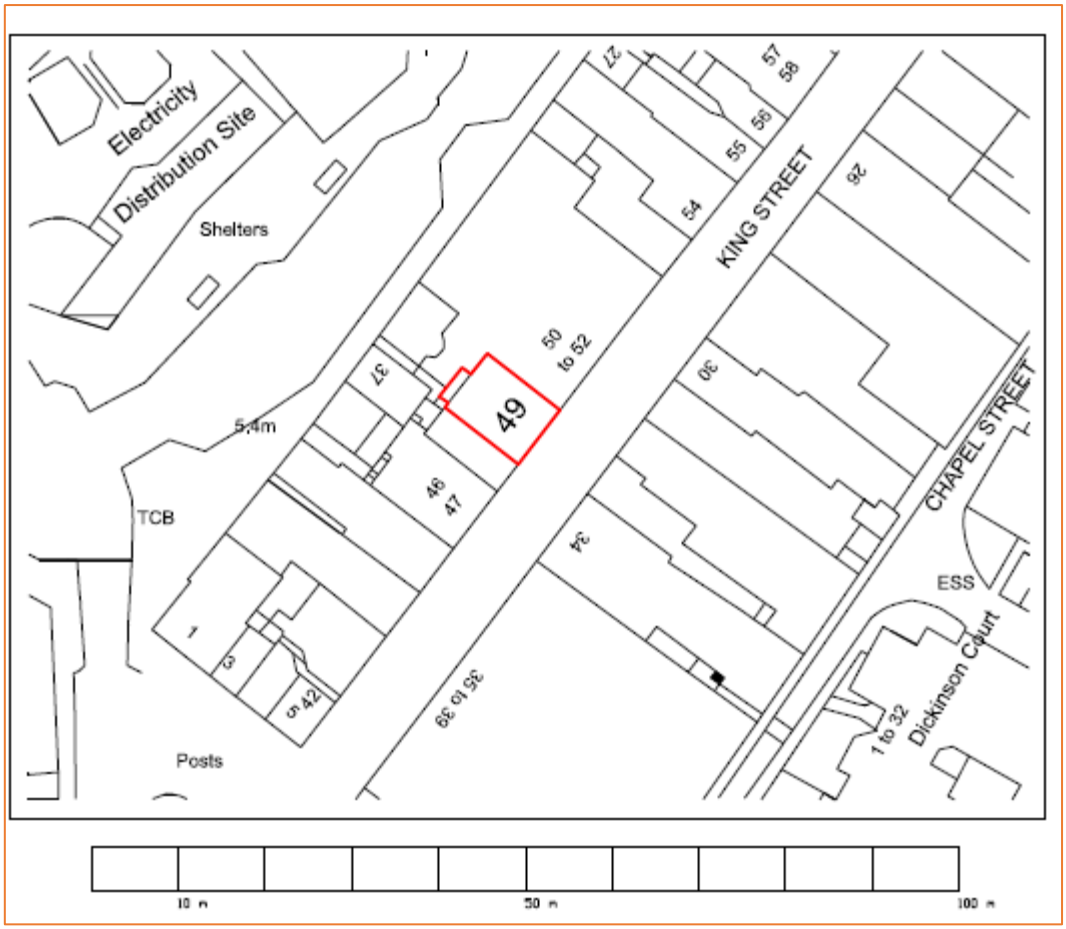


Figure 2: Location Plan (Source: Next Level Architecture)

3.2 Topography:

Environment Agency LiDAR has been used to assess the topography across the site and wider area. Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground surface. Up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at high spatial resolutions. The EA's LIDAR data archive contains digital elevation data derived from surveys carried out by the EA's specialist remote sensing team. Accurate elevation data is available for over 70% of England. The LiDAR technique records an elevation accurate to +0.15m every 1m. This dataset is derived from a combination of the full dataset which has been merged and re-sampled to give the best possible coverage. The dataset can be supplied as a Digital Surface Model (DSM) produced from the signal returned to the LIDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface) or as a Digital Terrain Model (DTM) produced by removing objects from the Digital Surface Model. 1.0m horizontal resolution DTM LiDAR data has been used for the purposes of this study.

The site is relatively flat with topographic levels ranging between approximately 5.61mAOD and 5.82mAOD.

3.3 Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Pennine Middle Coal Measures Formation - Mudstone, Siltstone and Sandstone.

The British Geological Survey (BGS) Map indicated that the superficial deposits underlying the site are Alluvium - Clay, Silt, Sand and Gravel.

The soil type taken from the UK Soil Observatory website is relatively deep soils from Riverine Clay, Sands and Gravel soil parent material, with a Clay to Sandy loam texture.

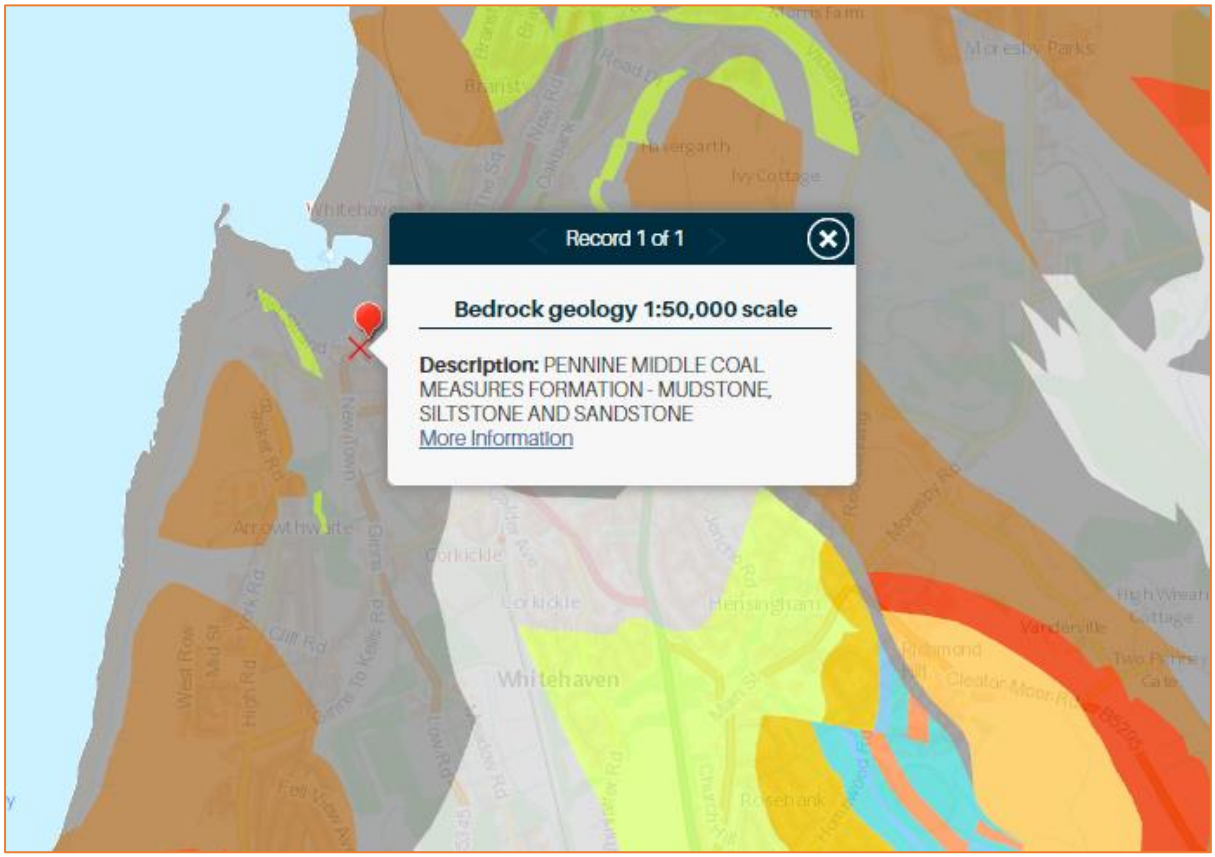


Figure 3: Local bedrock geology (Source: BGS)

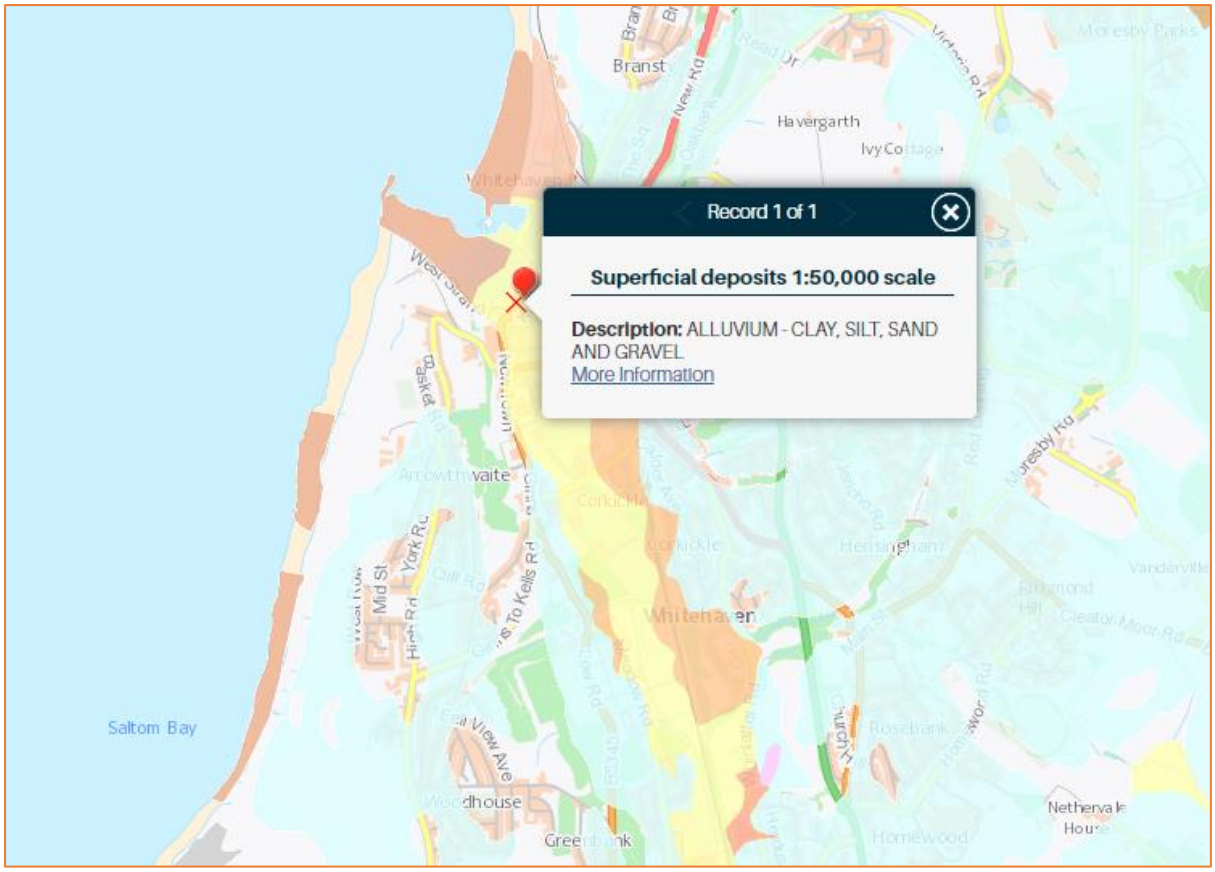


Figure 4: Local superficial deposits (Source: BGS)

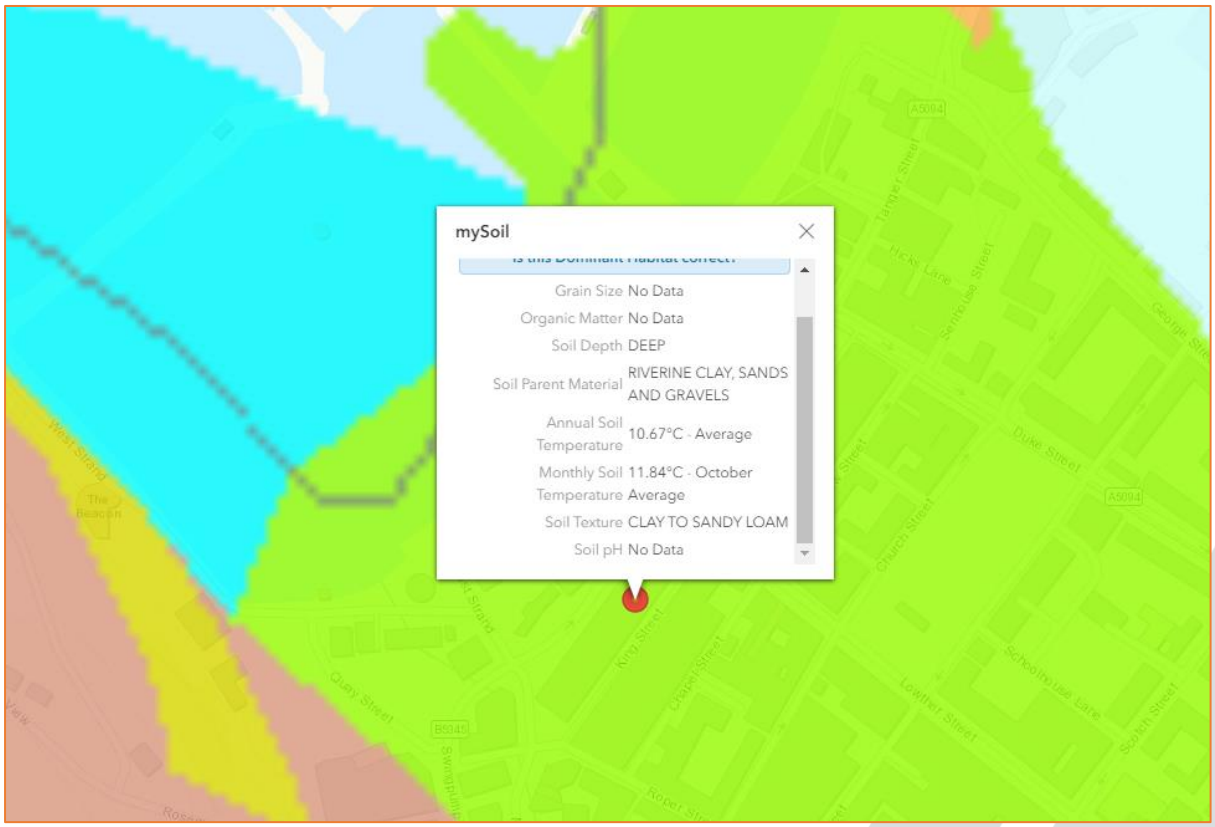


Figure 5: Local soil types (Source: UKSO)

4. Development Proposal

The proposed planning application is for the conversion and change of use of the first and second floors into two 2-bedroom holiday lets and conversion of the loft into a 1-bedroom holiday let (use class C3) with internal and external alterations.

Proposed site plans are provided below and in the report Appendix.

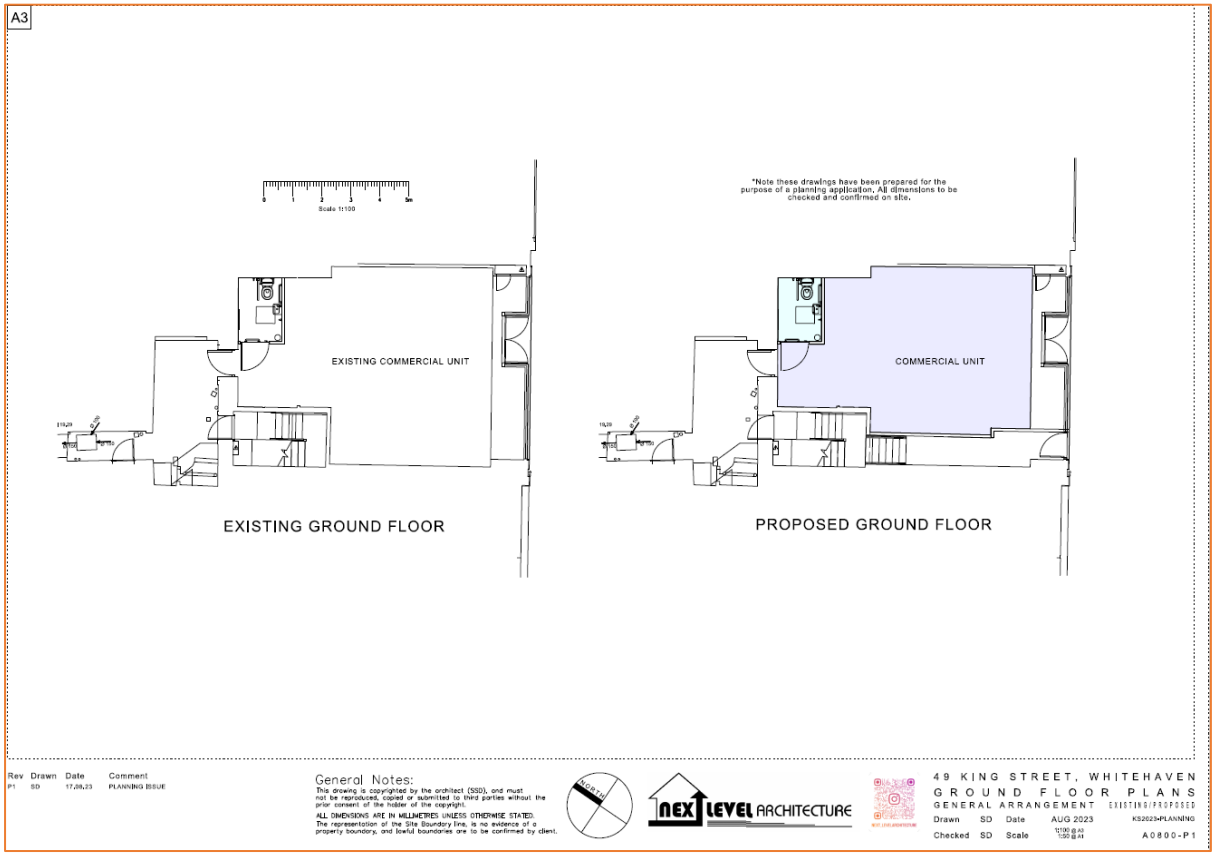


Figure 6: Existing and proposed ground floor plans (Source: Next Level Architecture)

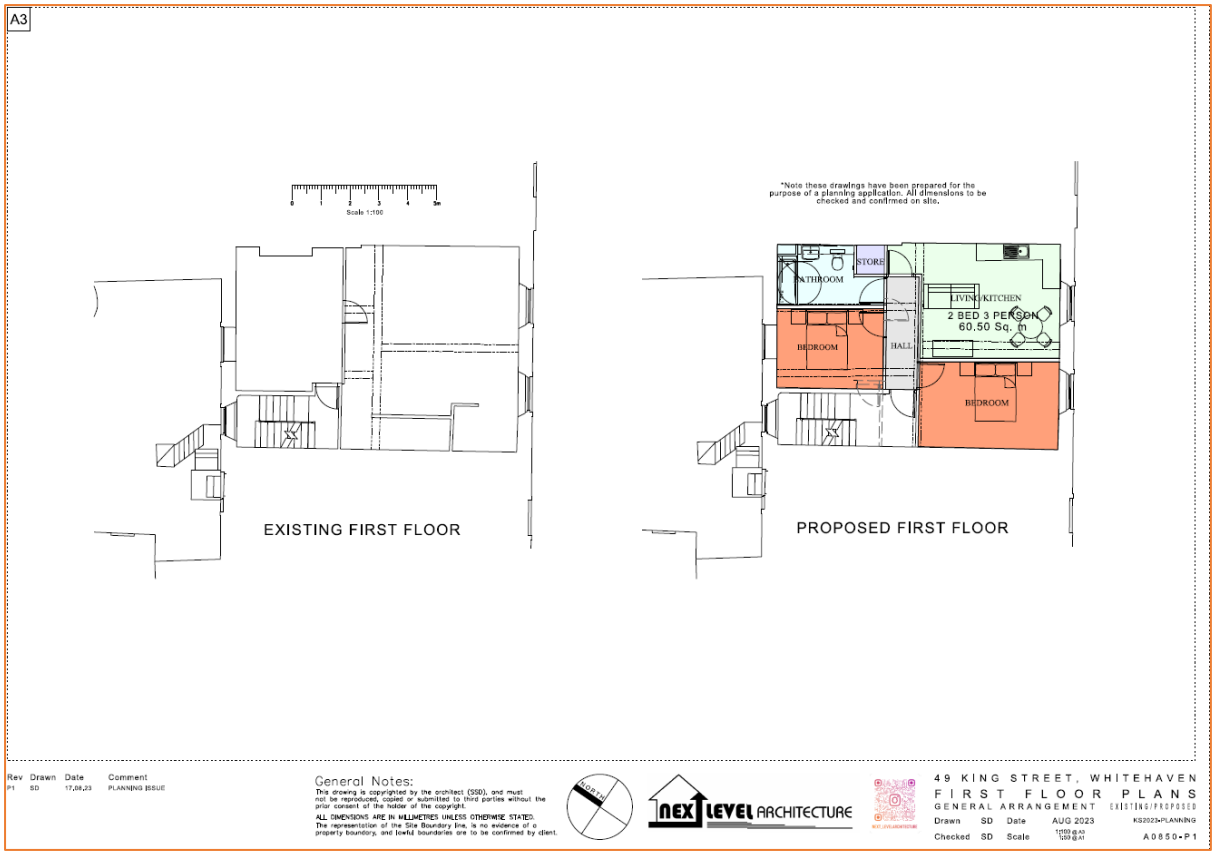


Figure 7: Existing and proposed first floor plans (Source: Next Level Architecture)

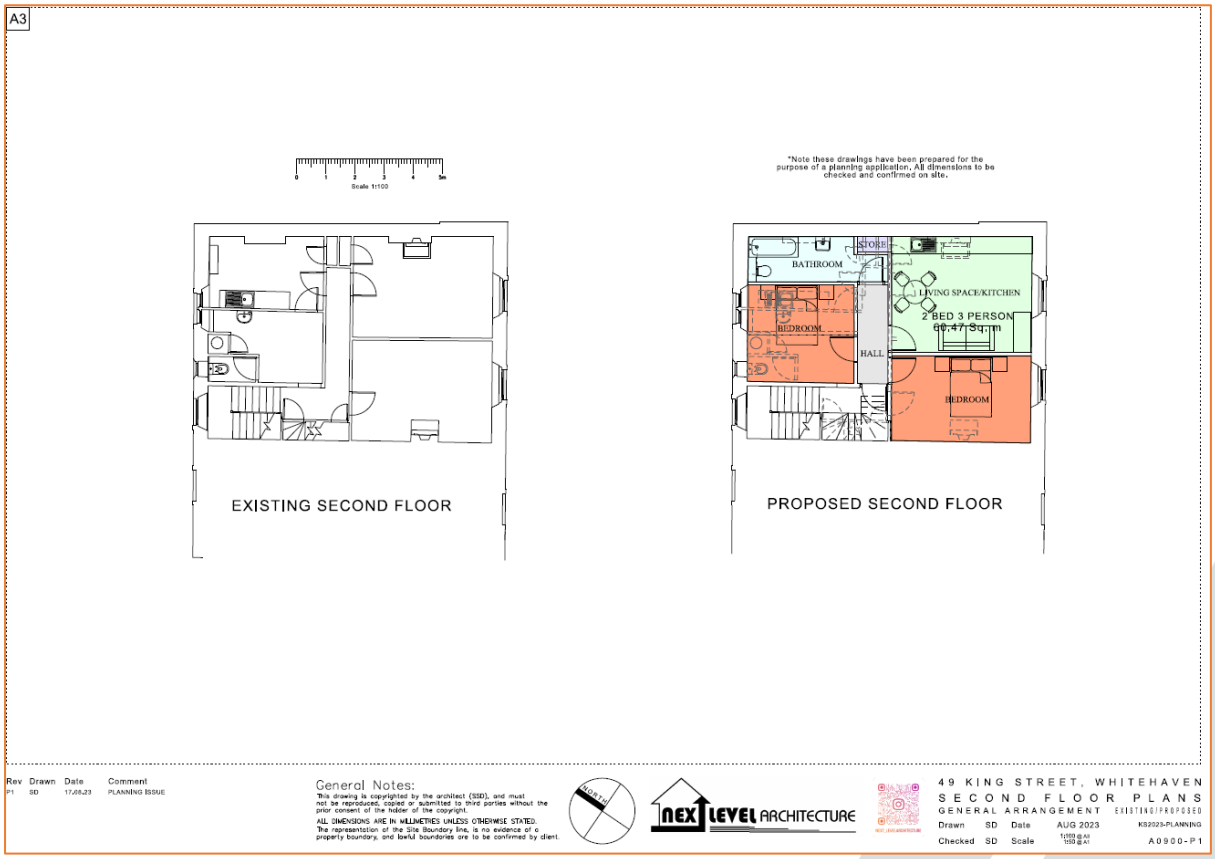


Figure 8: Existing and proposed second floor plans (Source: Next Level Architecture)

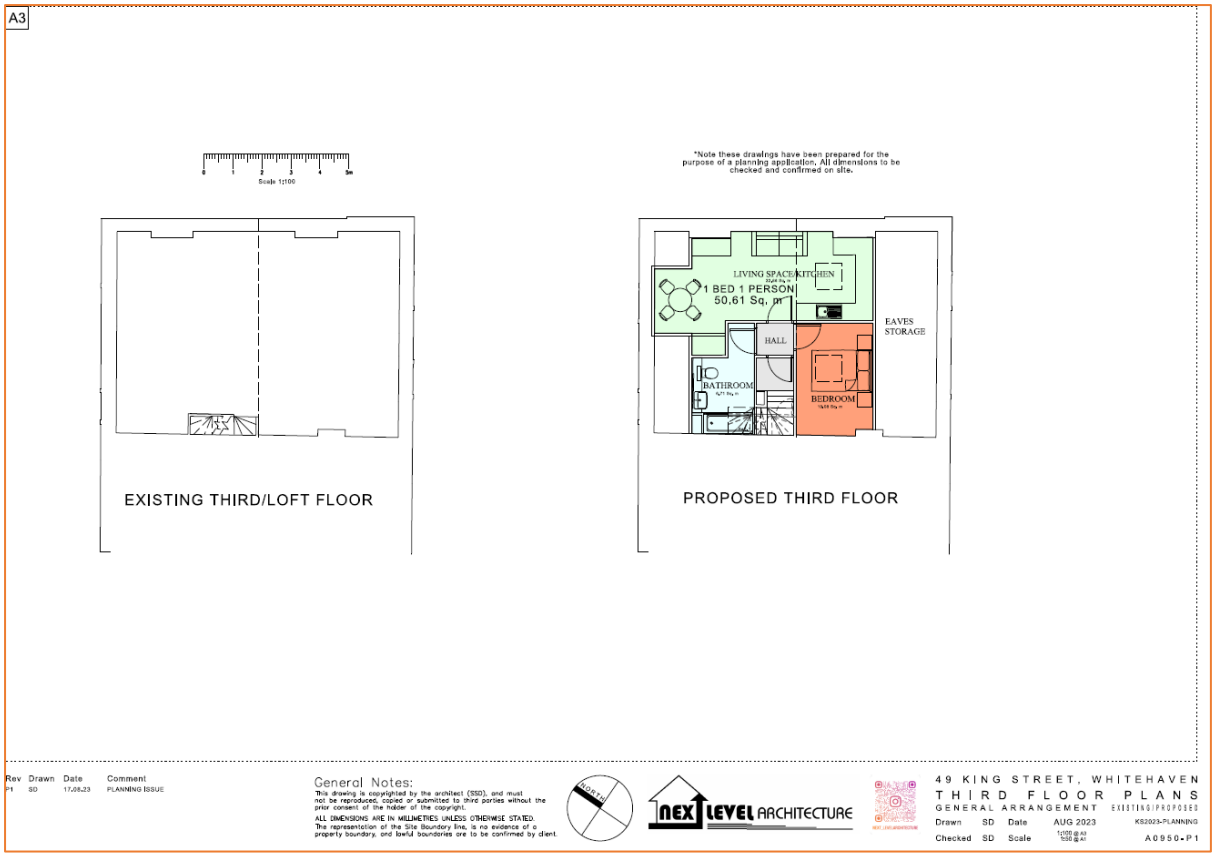


Figure 9: Existing and proposed third/loft floor plans (Source: Next Level Architecture)

5. Assessment of Flood Risk

5.1 Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's website.

Flood Zone	Definition
Zone 1 **Low Probability**	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 **Medium Probability**	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a **High Probability**	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b **The Functional Floodplain**	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 1: Flood Zones

The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

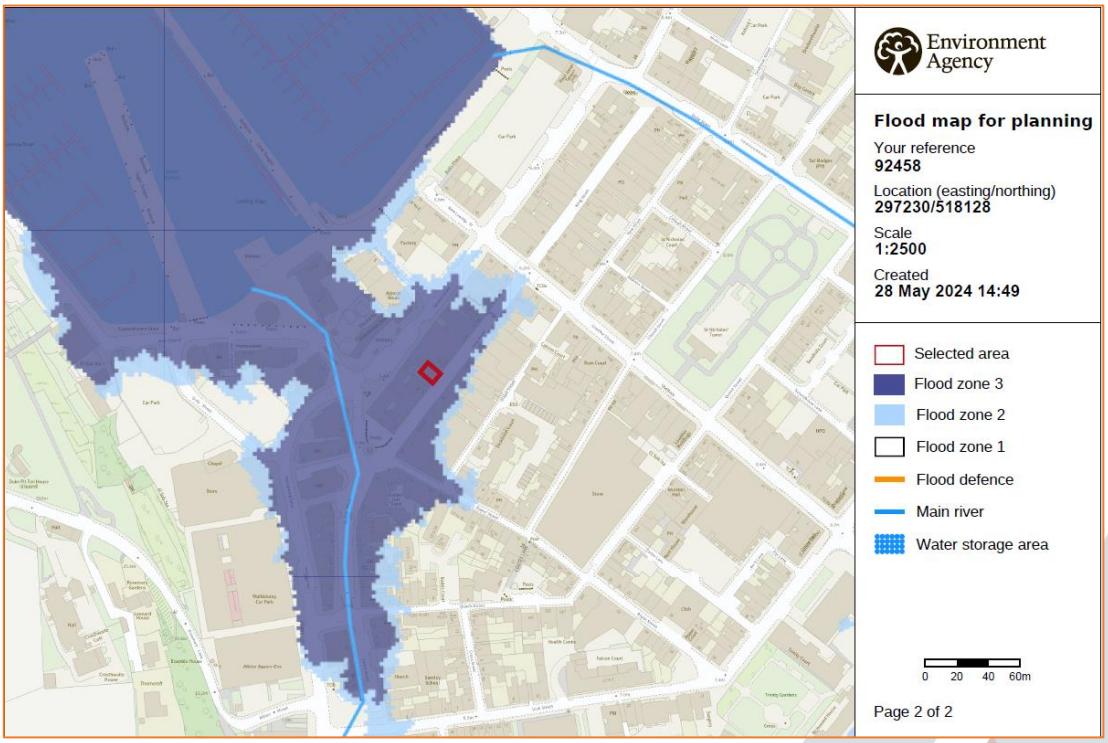


Figure 10: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a greater than 1 in 200 annual probability of tidal flooding.

The risk would appear to be predominantly tidal and originate from the Irish Sea located approximately 355m from the proposed development. The proposed development is also located 120m from Whitehaven Marina.

5.2 Tidal (Irish Sea / Whitehaven Marina):

The Irish Sea separates the islands of Ireland and Great Britain. It is connected to the Celtic Sea in the south by St George's Channel, and to the Inner Seas off the West Coast of Scotland in the north by the North Channel. Anglesey is the largest island within the Irish Sea, followed by the Isle of Man.

The site is also shown to lie between two EA classified 'Main Rivers', the Pow Beck and Midgey Gill, both of which are culverted and discharge into Whitehaven Harbour.

5.2.1 Modelled flood levels and extents:

Modelled flood levels and extents have been requested from the EA as part of a Product 4 data request. The EA has provided modelled flood data from the Whitehaven Tidal 2012 model.

Flood levels have been extracted from the most appropriate on site node (12) for the 1:200yr and 1:1000yr return periods. The undefended scenario will be used for the modelled flood levels. The site is not shown to be at risk of flooding for the defended scenario.

For the undefended 1 in 200 year and 1 in 1000 year modelled tidal extent the maximum flood levels on site are 5.84mAOD and 6.07mAOD from label 12. Given the topography of the site (5.61mAOD to 5.82mAOD) the maximum flood depths on site would be 0.23m and 0.46m respectively.

The site is located within Flood Zone 3 and will be classified as "more vulnerable" (residential/class c3) post development. The Flood Risk Assessments: climate change allowances guidance – updated May 2022, states that for flood risk assessments, assess both the higher central and upper end allowances.

Area of England		2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 / metres (m)
North West	**Higher Central**	4.5	7.3	10	11.2	1.01
North West	**Upper End**	5.7	9.9	14.2	16.3	1.41

Table 2: Sea level allowance for each epoch in millimetres (mm) per year for each epoch in brackets (use 2000 baseline) (Source: Flood risk assessments: climate change allowances)

Area of England		2012 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2012 to 2125 / metres (m)
Site	**Higher Central**	108	219	300	336	0.96
Site	**Upper End**	137	297	426	489	1.35

Table 3: Calculated sea level allowance for each epoch in millimetres (mm) per year for each epoch in brackets for the site (Source: Flood risk assessments: climate change allowances)

Flood event/return period	Present Day	Higher Central	Upper End
1:200yr	5.84mAOD	6.80mAOD	7.19mAOD
1:1000yr	6.07mAOD	7.03mAOD	7.42mAOD

Table 4: Modelled defended climate change flood levels

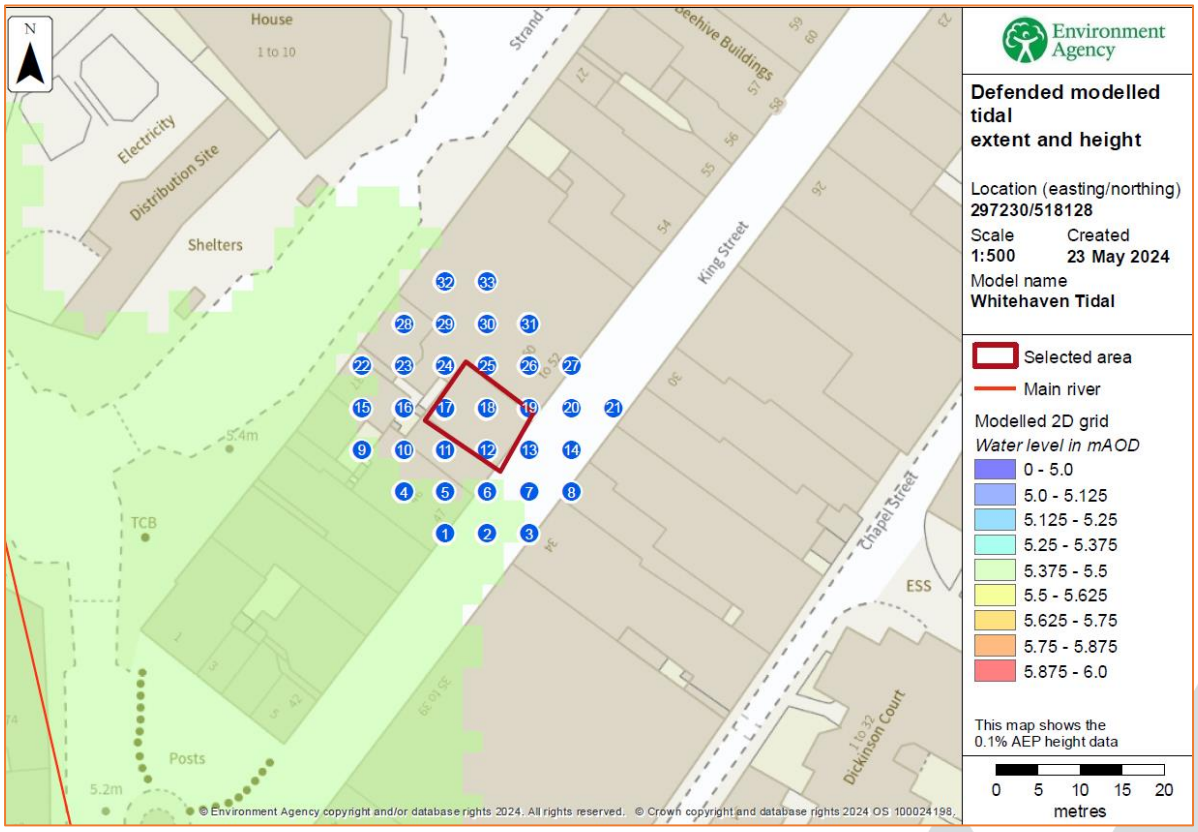


Figure 11: Defended modelled tidal extent and height (Source: EA)

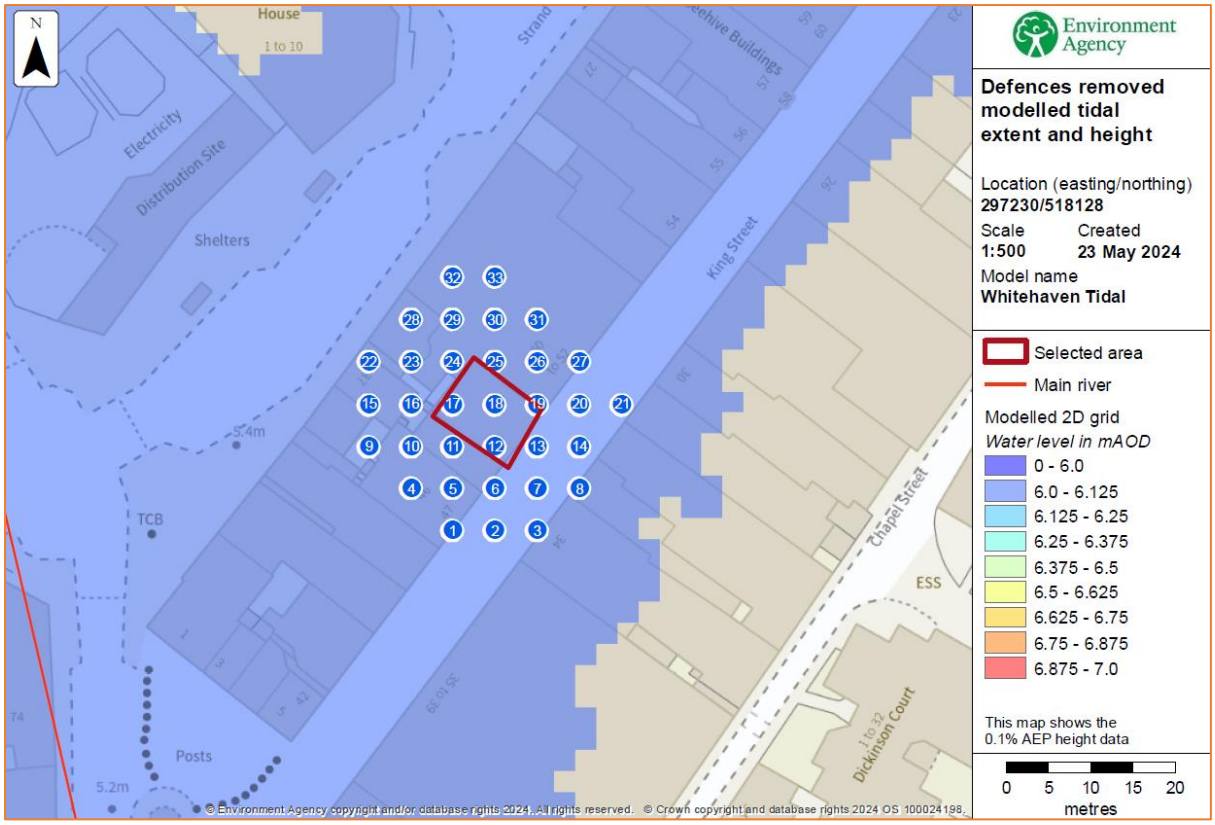


Figure 12: Undefended modelled tidal extent and height (Source: EA)

Utilising the undefended 1:200 year flood level of 5.84mAOD for the site, plus the Higher Central and Upper End calculated allowance for climate change (0.96m and 1.35m) equates to flood levels of 6.80mAOD and 7.19mAOD respectively. Given the topography of the site (5.61mAOD to 5.82mAOD) it would be inundated with up to 1.19m and 1.58m of flood water for the Higher Central and Upper End allowances.

Utilising the undefended 1:1000 year flood level of 6.07mAOD for the site, plus the Higher Central and Upper End calculated allowance for climate change (0.96m and 1.35m) equates to flood levels of 7.03mAOD and 7.42mAOD respectively. The site could therefore be inundated with up to 1.42m and 1.81m of flood water for the Higher Central and Upper End allowances.

5.2.2 Flood storage areas:

Flood Storage Areas are areas that act as a balancing reservoir, storage basin or balancing pond. Their purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer time interval. Flood storage areas do not completely remove the chance of flooding and can be overtopped or fail in extreme weather conditions.

According to Environment Agency data, there are no Flood Storage Areas located in close proximity to the site.

5.2.3 Flood defences

Flood defences are structures which affect flow in times of flooding in order to reduce the risk water entering property. They generally fall into one of two categories; 'formal' or 'informal'.

A 'formal' flood defence is a structure which has been specifically built to control floodwater. It is maintained by its owner or statutory undertaker so that it remains in the necessary condition to function. In accordance with the Flood and Water Management Act, the Environment Agency has powers to construct and maintain defences to help against flooding.

An 'informal' defence is a structure that has not necessarily been built to control floodwater and is not maintained for this purpose. This includes road and rail embankments and other linear infrastructure (buildings and boundary walls) which may act as water retaining structures or create enclosures to form flood storage areas in addition to their primary function.

According to the EA, this location is currently protected by a sea wall with a sea lock which has a length of 595.54m and a design standard of 200 years. The sea lock is maintained by the Whitehaven Harbour Commissioners.

5.2.4 Residual risk (breach or overtopping of flood defences):

Breaching of flood defences can cause rapid inundation of areas behind flood defences as flow in the river channel discharges through the breach. A breach can occur with little or no warning, although they are much more likely to concur with extreme river levels or tides when the stresses on flood defences are highest. Flood water flowing through a breach will normally discharge at a high velocity, rapidly filling up the areas behind the defences, resulting in significant damage to buildings and a high risk of loss of life. Breaches are most likely to occur in soft defences such as earth embankments although poorly maintained hard defences can also be a potential source of breach.

Overtopping of flood defences occurs when water levels exceed the protection level of raised flood defences. The worst case occurs when the fluvial or tidal levels exceed the defence level as this can lead to prolonged flooding. Less severe overtopping can occur when flood levels are below defence levels, but wave action causes cyclic overtopping, with intermittent discharge over the crest level of the defence. Flood defences are commonly designed with a freeboard to provide protection against overtopping from waves. The risk from overtopping due to exceedance of the flood defence level is much more significant than the risk posed by wave overtopping. Exceedance of the flood defence level can lead to prolonged and rapid flooding with properties immediately behind the defences at highest risk.

Flood defences may act to defend the site from direct inundation, but there is residual risk from each (failure) and overtopping (exceedance) of any flood defences in place.

As the site is defended by a sea wall and sea lock it could be at risk from the defences failing (breach) or being overtopped (exceedance).

5.2.5 Historical flood events:

The EA hold records of historic flood events from rivers and the sea. The EA map flooding to land, not individual properties. Their historic flood event record outlines are an indication of the geographical extent of an observed flood event. Their 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.

According the EA data no historic flood events have occurred at the site or within the vicinity of the site. Flooding occurred in Whitehaven in June 2007, August 2006 and November 1999. The site is shown to be entirely outside of all these historic flood extents.

5.2.6 Internal Drainage Boards:

The site is not located within an Internal Drainage Board (IDB) area.

5.3 Pluvial (Surface Water):

Pluvial (surface water) flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead.

In 2013 the EA, working with Lead Local Flood Authorities (LLFAs), produced an updated Flood Map for surface water. It is considered to represent a significant improvement on the previous surface water flood maps available, both in terms of method and representation of the risk of flooding. The modelling techniques and data used are considerably improved, and also incorporated locally produced mapping where this is available to represent features best modelled at a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following change of occurring in any given year (annual probability of flooding is shown in brackets):

- High: Greater than or equal to 3.3% (1 in 30) chance in any given year (3.3%)
- Medium: Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low: Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,1000) chance in any given year
- Very Low: Less than 0.1% (1 in 1,000) chance in any given year

The mapping below shows the Risk of Flooding from Surface Water centred on the site. Please note that the EA to not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The EA Risk of Flooding from Surface Water Map suggests that the land adjacent to the site lies in an area of “Medium” Risk of flooding from surface water.

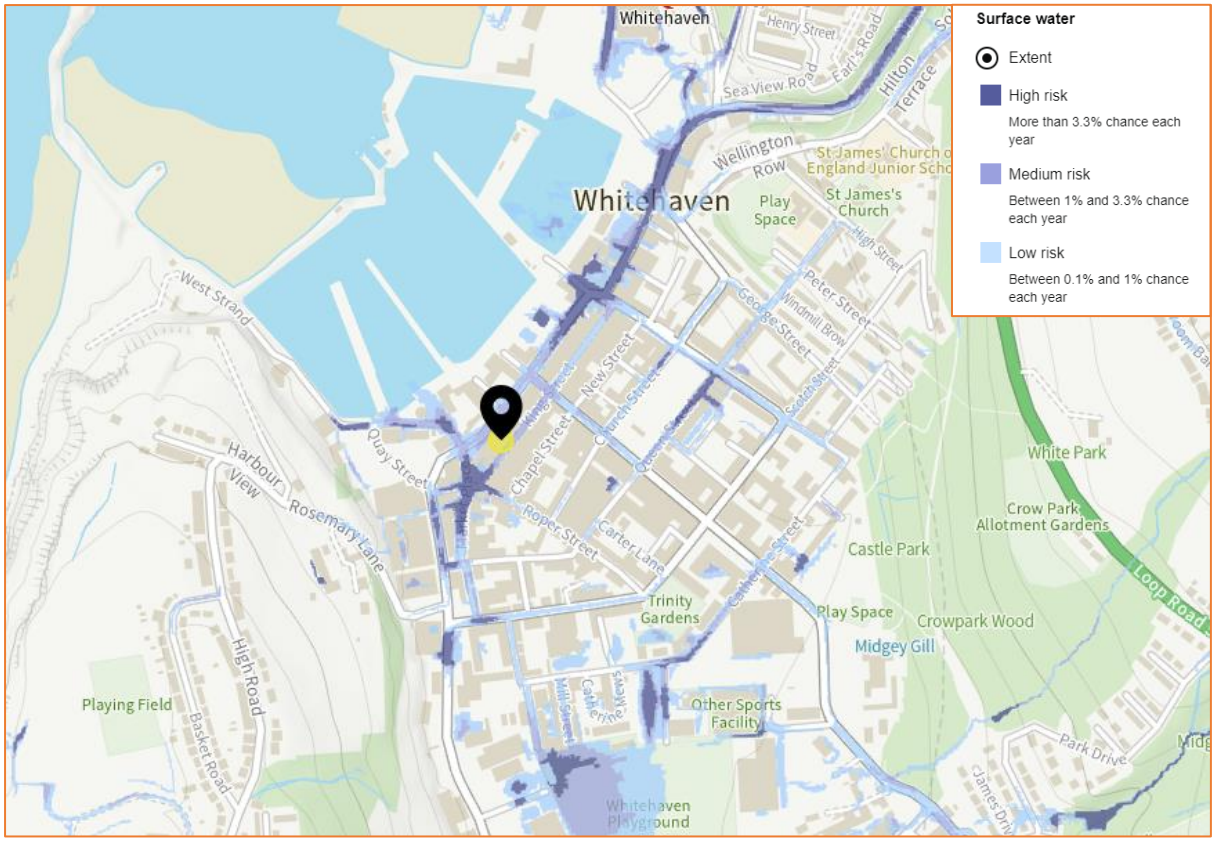


Figure 13: Extract from Environment Agency Surface Water Flood Map (Source: EA)

5.4 Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground.

No information has been provided to suggest that the site is susceptible from groundwater flooding.

The Environment Agency has defined Source Protection Zones for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area.

The zones are used in conjunction with the EA Groundwater Protection Policy to set up pollution prevention measures in areas that are at a higher risk, and to monitor the activities of potential polluters nearby.

The published Environment Agency Groundwater Vulnerability map shows the site is not located within a Groundwater Source Protection Zone.

5.5 Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company. The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

No further information has been provided to suggest that the site is susceptible to sewer surcharge flooding.

5.6 Other Sources:

Reservoirs with an impounded volume in excess of 25,000 cubic metres (measured above natural ground level) are governed by the Reservoirs Act and are listed on a register held by the Environment Agency. The site lies outside of the maximum inundation extent on the EA Reservoir Inundation Map. The EA also advise on their website that reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. In accordance with the Reservoirs Act 1975 in England, these inspections are monitored and enforced by the EA themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial / tidal flooding to occur. The Environment Agency Reservoir Flood Map illustrated below, illustrates the largest area that might be flooded if the storage area were to fail and release the water it is designed to hold during a flood event.

Records of flooding from reservoirs and canals are erratic as there is no requirement for the Environment Agency to provide information on historic flooding from canals and raised reservoirs on plans. In particular, the NPPF does not require flood risk from canals and raised reservoirs to be shown on the Environment Agency flood zones.

Overflows from canals can be common as they are often fed by land drainage, and often do not have controlled overflow spillways. Occasionally, major bank breaches also occur, leading to rapid and deep flooding of adjacent land.

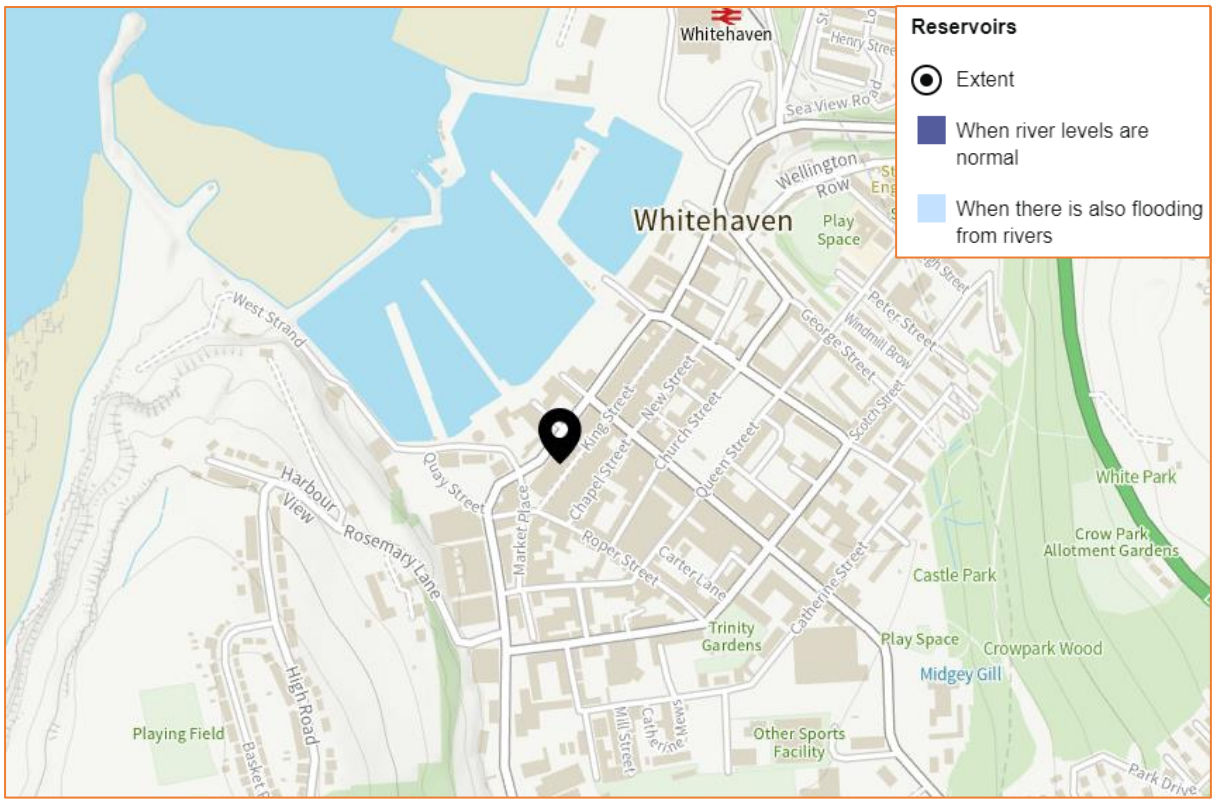


Figure 14: Extract from Environment Agency Risk of Flooding from Reservoirs Map (Source: EA)

6. Flood Risk Management

6.1 Vulnerability to flooding:

The NPPF classifies property usage by vulnerability to flooding.

The existing site is currently occupied by a shop and storage and is classified as “less vulnerable” under the NPPF.

Post development, the site will become “more vulnerable” on the upper floors, as the application is for the conversion and change of use of the first and second floors into two 2-bedroom holiday lets and conversion of loft into a 1-bedroom holiday let (use class C3) with internal and external alterations. The ground floor usage will remain Commercial which is classified as “less vulnerable” under the NPPF.

Accordingly, it is considered that the vulnerability of the site as a whole will increase post development on the upper floors (change of use from ancillary areas/storage to holiday lets). There will be no change to the vulnerability of the ground floor.

6.2 Physical Design Measures:

Due to the nature of the proposed development, which uses the confines of the existing structure, it is not possible to raise existing finished floor levels. It should be noted that all residential uses are proposed at first floor level and above, which is entirely above the modelled 1:200 year and 1:1000 year flood levels with both Higher Central and Upper End allowances for climate change.

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the development where practically possible.

These measures can include the following:

- Waterproof screed used on floors;
- Closed-cell foam used in wall cavities;
- External walls rendered resistant to flooding to first floor level;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Boilers, control and water storage / immersion installed at first floor level or above;
- Gas meter installed at first floor level or above;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Anti-syphon fitted to all toilets;
- New kitchen units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;
- Stairs of solid hardwood construction with wood faces treated to resist water penetration.

The applicant should also consider the use of demountable flood defence barriers to defend ground level doorways and low windows.

6.3 Safe Escape and Flood Action Plan:

The NPPF requires a route of safe escape for all residents and users to be provided from new residential properties in Flood Zone 3. Safe escape is usually defined as being through slow moving flood water no deeper than 25cm.

The entire site is located within Flood Zone 3. With a potential flood depth of up to 1.19m on site for the undefended 1:200 year with Higher Central climate change allowance flood level, safe escape will be provided by a flood warning and evacuation strategy which will be prepared in liaison with the Council's Emergency Planners, and tied in with the existing emergency plans for the local area.

All residential accommodation is on the first and second floors and the loft, and therefore provides safe refuge for the occupants.

Internal access will be maintained from ground floor level to the upper floors of the development for all residential site users.

Tidal flooding from storm surges is well understood and tidal storm surges are monitored and predicted. As such, it is unlikely that the site would flood unexpectedly without sufficient flood warning for evacuation. The tidal cycles generally dictate 6 hours between the peak and trough of the tidal cycle, and as such after a likely maximum of 6 hours water will be able to drain from the site. The duration of any tidal flooding would be likely to be limited to a period of a few hours around high water.

6.4 Flood Warning:

The EA is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door to door visits by the police or locally appointed flood wardens.

The site lies within an Environment Agency Flood Warning Area. The EA issue flood warnings/alerts to specific areas when flooding is expected. It is recommended that the applicant registers online with the free Environment Agency Floodline Warnings/Alert Direct service at www.gov.uk/sign-up-for-flood-warnings to receive flood warnings by phone, text or email.

The site is located within both flood alert and warning area.

The flood warning service has three types of warnings that will help you prepare for flooding and take action:

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
When it's used?	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
What to do?	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.	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.	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.

Table 5: EA Flood Warning Service

6.5 Flood Plan:

It is recommended that the applicant and future owners, occupiers and Landlords of the property prepare a flood plan to protect life and property during a flood event:

Before a flood:

- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood.
- Know how to turn off electricity and water supplies to the site.
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.

During a flood:

- Activate the evacuation plan and evacuate the site.
- Remove cars from the site if there is sufficient warning and the water levels are not rising rapidly.
- Switch off water and electricity for the site.
- Tune into your local radio station on a battery or wind-up radio.
- Listen to the advice of the emergency service and evacuate if told to do so.

- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

After a flood:

- If you have flooded, contact your insurance company as soon as possible.
- Take photographs and videos of your damaged property as a record for your insurance company.
- If you don't have insurance, contact your local authority for information on grants and charities that may help you.
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask.
- Have your electrics and water checked by qualified engineers before switching them back on.

6.6 Off-Site Impacts:

6.6.1 Fluvial floodplain storage:

The NPPF requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

The site is situated within an area of predominantly tidal flood risk, and the proposed development is a change of use, therefore post development there will be no loss of fluvial floodplain storage.

6.6.2 Surface water drainage:

The development will utilise Sustainable drainage systems (SuDS) design in accordance with the NPPF for Planning Applications and the drainage hierarchy as follows:

1. Store rainwater for later use;
2. Infiltration techniques;
3. Attenuate rainwater by storing in tanks for gradual release;
4. Discharge rainwater direct into watercourse;
5. Discharge rainwater into surface water sewer;

6. Discharge rainwater into a combined sewer;

However, based on the development plans provided, the proposal is for the change of use of the existing building and does not incorporate any alterations to the built footprint. As such, there will be no change in the impermeable coverage post development and therefore no change in the surface water runoff generation from the site.

There will be no change to the existing on-site drainage system.

7. Sequential and Exception Test

The Sequential Test aims to ensure that development does not take place in areas at high risk of flooding when appropriate areas of lower risk are reasonably available.

The Sequential Test is applied to developments in areas identified as being at risk of any source of flooding now or in the future. The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk flooding, taking all sources of flood risk and climate change into account.

The sequential approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, as far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. Other forms of flooding need to be treated consistently with river and tidal flooding in mapping probability and assessing vulnerability, so that the sequential approach can be applied across all areas of flood risk.

The site is situated within Flood Zone 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea). The EA Risk of Flooding from Surface Water Map suggests that the land adjacent to the site lies in an area of "Medium" Risk of flooding from surface water.

Post development, the site will become "more vulnerable" throughout, as the application is for the conversion and change of use of the first and second floors into two 2-bedroom holiday lets and conversion of loft into a 1-bedroom holiday let (use class C3) with internal and external alterations.

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	✓

Table 6: Flood risk vulnerability and flood zone 'compatibility'

Using the table above, the proposed application is considered to be suitable within Flood Zone 3,. The Sequential and Exception Tests do not need to be applied to minor developments and changes of use. The proposed application is considered to be a change of use.

8. Discussion and Conclusions

Unda Consulting Limited have been appointed by Imovina Properties Limited to undertake a Flood Risk Assessment for the proposed development at 49 King Street, Whitehaven, CA28 7JH. The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The proposed planning application is for the conversion and change of use of the first and second floors into two 2-bedroom holiday lets and conversion of loft into a 1-bedroom holiday let (use class C3) with internal and external alterations.

Post development, the site will become “more vulnerable”, as the application is for the conversion and change of use of the first and second floors into 2 two-bedroom holiday lets and conversion of loft into a 1-bedroom holiday let (use class C3) with internal and external alterations. Therefore, there will be an increase in vulnerability post development.

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a greater than 1 in 200 annual probability of tidal flooding. The risk would appear to be predominantly tidal and originate from the Irish Sea located approximately 355m from the proposed development. The proposed development is also located 120m from Whitehaven Marina.

Modelled flood levels and extents have been requested from the EA as part of a Product 4 data request. The EA has provided modelled flood data from the Whitehaven Tidal 2012 model.

Flood levels have been extracted from the most appropriate on site node (12) for the 1:200yr and 1:1000yr return periods. The undefended scenario will be used for the modelled flood levels. The site is not shown to be at risk of flooding for the defended scenario.

For the undefended 1 in 200 year and 1 in 1000 year modelled tidal extent the maximum flood levels on site are 5.84mAOD and 6.07mAOD from node 12. Given the topography of the site (5.61mAOD to 5.82mAOD) the maximum flood level on site would be 0.23m and 0.46m respectively.

Utilising the undefended 1:200 year flood level of 5.84mAOD for the site, plus the Higher Central and Upper End calculated allowance for climate change (0.96m and 1.35m) equates to flood levels of 6.80mAOD and 7.19mAOD respectively. Given the topography of the site (5.61mAOD to 5.82mAOD) it would be inundated with up to 1.19m and 1.58m of flood water for the Higher Central and Upper End allowances.

Utilising the undefended 1:1000 year flood level of 6.07mAOD for the site, plus the Higher Central and Upper End calculated allowance for climate change (0.96m and 1.35m) equates to flood levels of 7.03mAOD and 7.42mAOD respectively. The site could therefore be inundated with up to 1.42m and 1.81m of flood water for the Higher Central and Upper End allowances.

According to Environment Agency data, there are no Flood Storage Areas located in close proximity to the site.

According to the EA, this location is currently protected by a sea wall with a sea lock which has a length of 595.54m and a design standard of 200 years. The sea lock is maintained by the Whitehaven Harbour Commissioners.

As the site is defended by a sea wall and sea lock it could be at risk from the defences failing or being overtopped.

According the EA data no historic flood events have occurred at the site or within the vicinity of the site. Flooding occurred in Whitehaven in June 2007, August 2006 and November 1999. The site is shown to be entirely outside of all these historic flood extents.

The EA Risk of Flooding from Surface Water Map suggests that the land adjacent to the site lies in an area of "Medium" Risk of flooding from surface water.

No information has been provided to suggest that the site is susceptible from groundwater flooding.

No further information has been provided to suggest that the site is susceptible to sewer surcharge flooding.

According to the EA flooding from reservoirs is unlikely in this area.

Due to the nature of the proposed development, which uses the confines of the existing structure, it is not possible to raise existing finished floor levels. To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the development where practically possible. The finished floor levels will remain the same post development.

The entire site is located within Flood Zone 3. As such, safe escape will be provided by a flood warning and evacuation strategy which will be prepared in liaison with the Council's Emergency Planners, and tied in with the existing emergency plans for the local area.

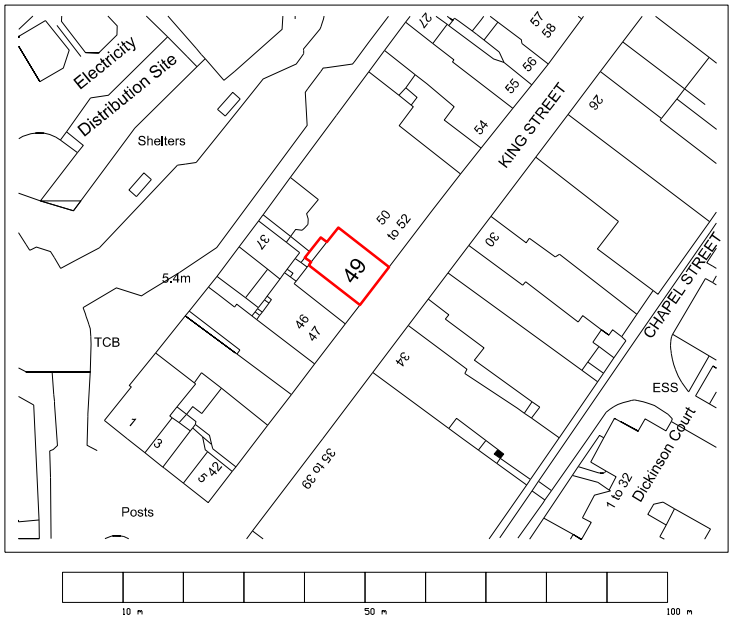
The applicant has confirmed:

- All residential uses will be at first floor level and above.
- Internal access will be maintained from ground floor level to the upper floors of the development for all residential site users.
- Flood proofing of the property will be incorporated as appropriate.
- Due to the scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning.
- A flood warning and evacuation plan which will be prepared in liaison with the Council's Emergency Planners and tied in with the local emergency plans for the area.
- The applicant will register with the Environment Agency Floodline Warnings/Alert Direct service.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Appendix

- Proposed and existing plans.
- EA Product 4
- EA Flood Map for Planning



NORTH

NEXT_LEVELARCHITECTURE

NEXT LEVEL ARCHITECTURE

49 KING STREET. WHITEHAVEN

LOCATION PLAN

RED LINE BOUNDARY PLAN

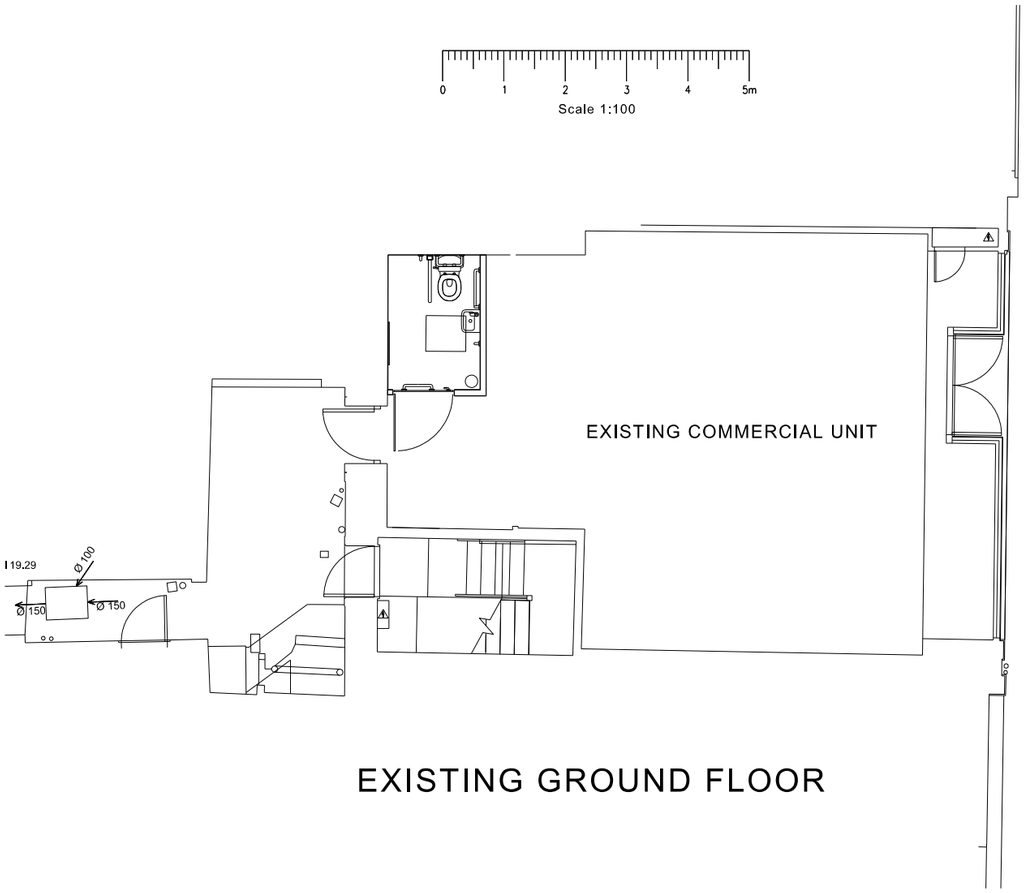
DRAWN: AUG 2023 KS2023-PLANNING APPLICATION

SCALE - 1:1250@A4 A0700-P1

A3

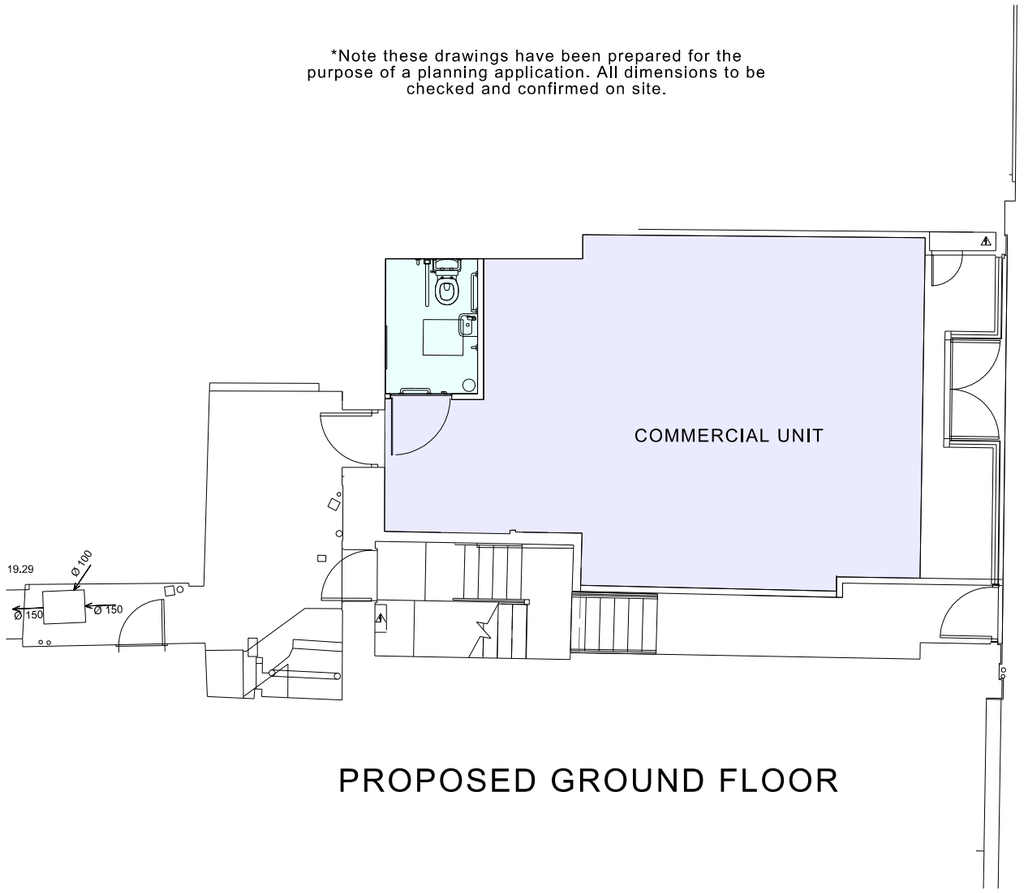
0 1 2 3 4 5m

Scale 1:100



EXISTING GROUND FLOOR

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.



PROPOSED GROUND FLOOR

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE

General Notes:

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

The representation of the Site Boundary line, is no evidence of a property boundary, and lawful boundaries are to be confirmed by client.

NORTH

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

49 KING STREET, WHITEHAVEN

GROUND FLOOR PLANS

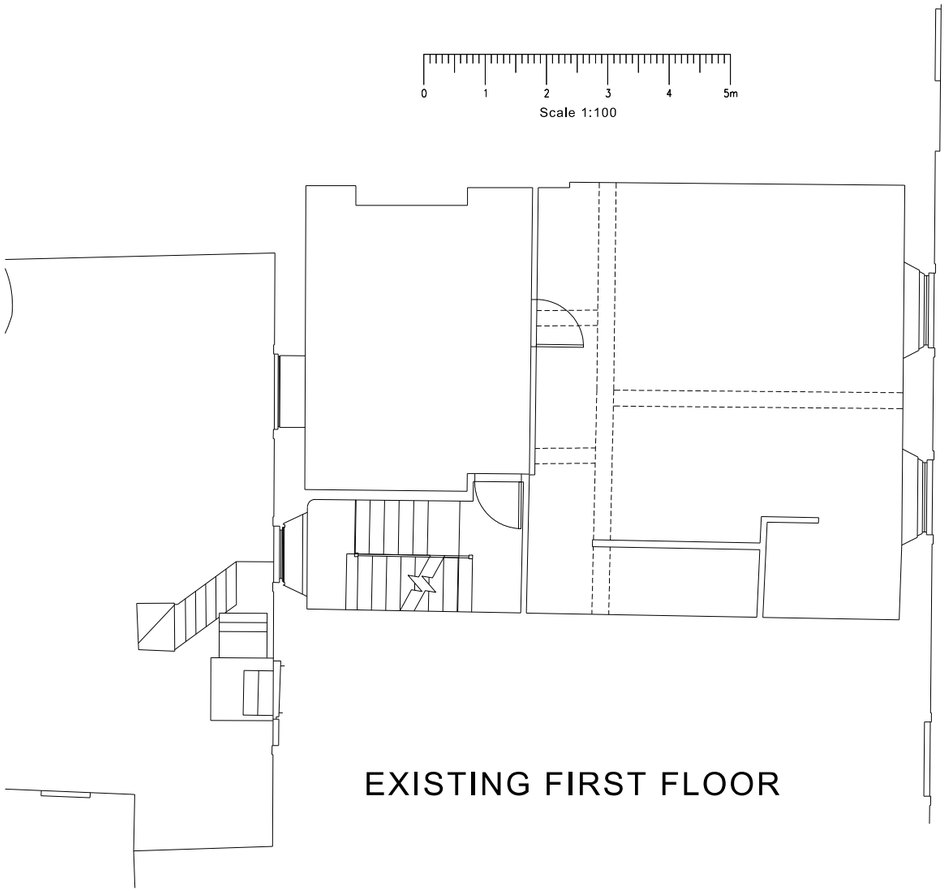
GENERAL ARRANGEMENT EXISTING/PROPOSED

Drawn	SD	Date	AUG 2023	KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1	A0800-P1

A3

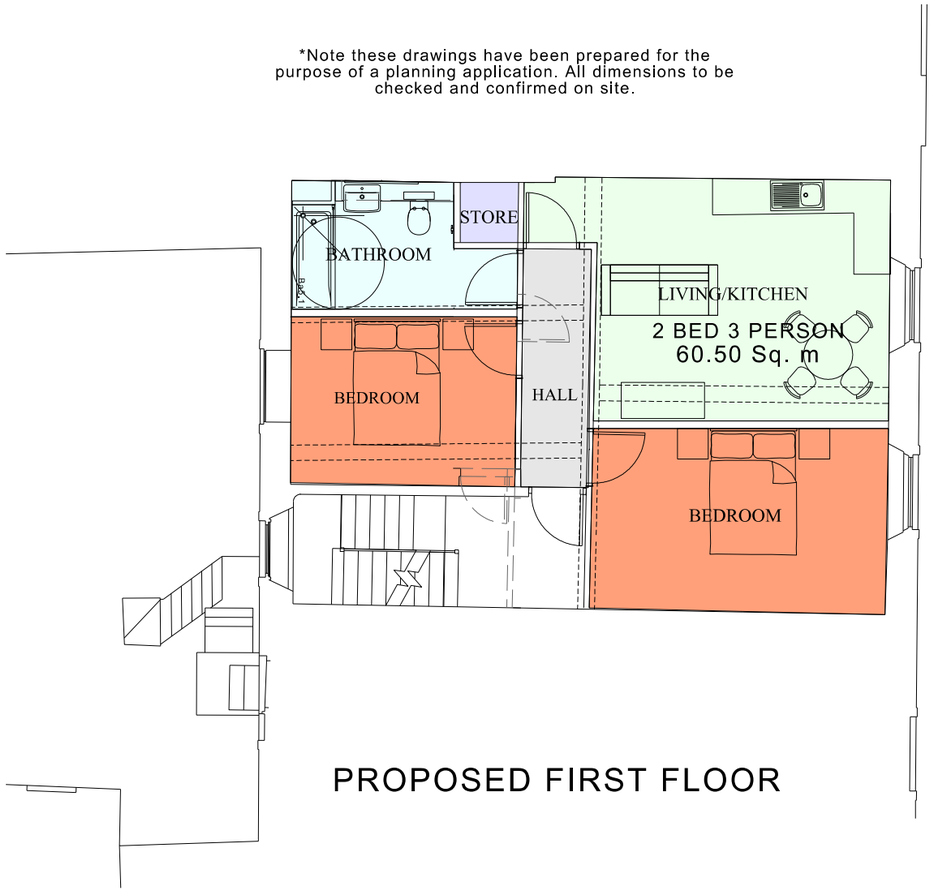
0 1 2 3 4 5m

Scale 1:100



EXISTING FIRST FLOOR

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.



PROPOSED FIRST FLOOR

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE

General Notes:

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

The representation of the Site Boundary line, is no evidence of a property boundary, and lawful boundaries are to be confirmed by client.

NORTH

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

49 KING STREET, WHITEHAVEN

FIRST FLOOR PLANS

GENERAL ARRANGEMENT EXISTING/PROPOSED

Drawn	SD	Date	AUG 2023	KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1	A0850-P1

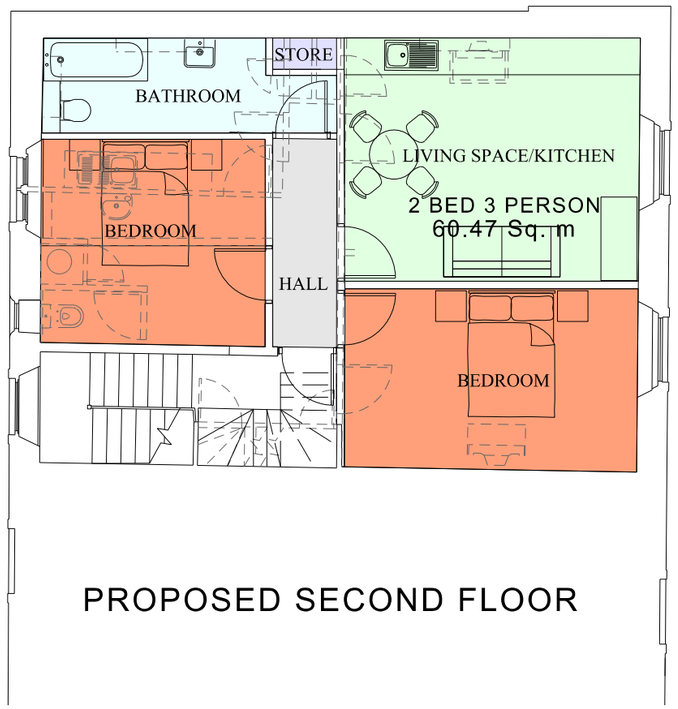
A3

0 1 2 3 4 5m

Scale 1:100

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.

EXISTING SECOND FLOOR



PROPOSED SECOND FLOOR

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE

General Notes:

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
The representation of the Site Boundary line, is no evidence of a property boundary, and lawful boundaries are to be confirmed by client.

NORTH

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

49 KING STREET, WHITEHAVEN

SECOND FLOOR PLANS

GENERAL ARRANGEMENT EXISTING/PROPOSED

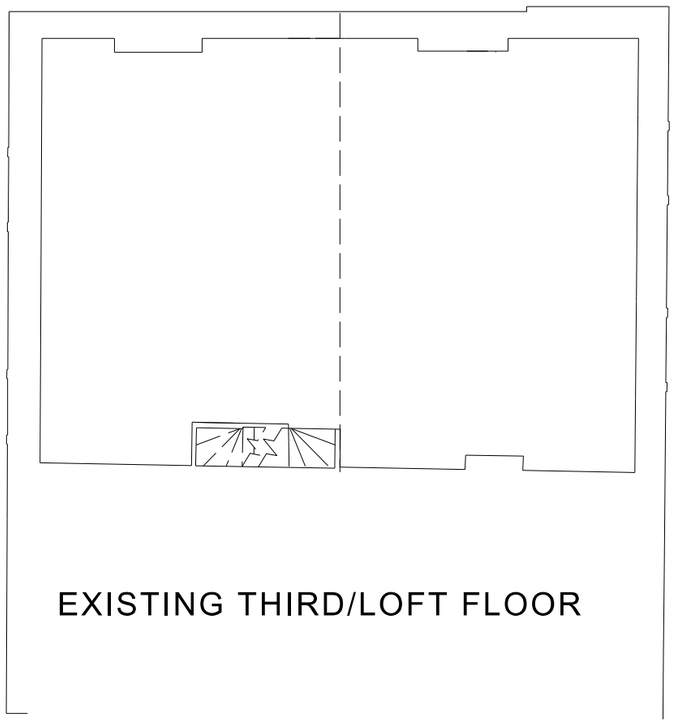
Drawn	SD	Date	AUG 2023	KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1	A0900-P1

A3

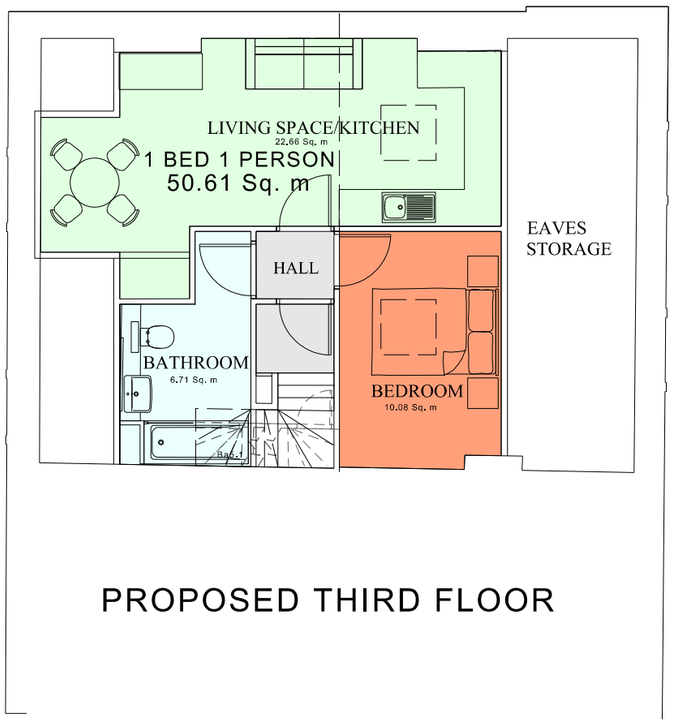
0 1 2 3 4 5m

Scale 1:100

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.



EXISTING THIRD/LOFT FLOOR



PROPOSED THIRD FLOOR

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE

General Notes:

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
The representation of the Site Boundary line, is no evidence of a property boundary, and lawful boundaries are to be confirmed by client.

NORTH

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

49 KING STREET, WHITEHAVEN

THIRD FLOOR PLANS

GENERAL ARRANGEMENT EXISTING/PROPOSED

Drawn	SD	Date	AUG 2023	KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1	A0950-P1

A3

EXISTING FRONT ELEVATION

0 1 2 3 4 5m

Scale 1:100

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.

PROPOSED FRONT ELEVATION

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE

General Notes:

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
The representation of the Site Boundary line, is no evidence of a property boundary, and lawful boundaries are to be confirmed by client.

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

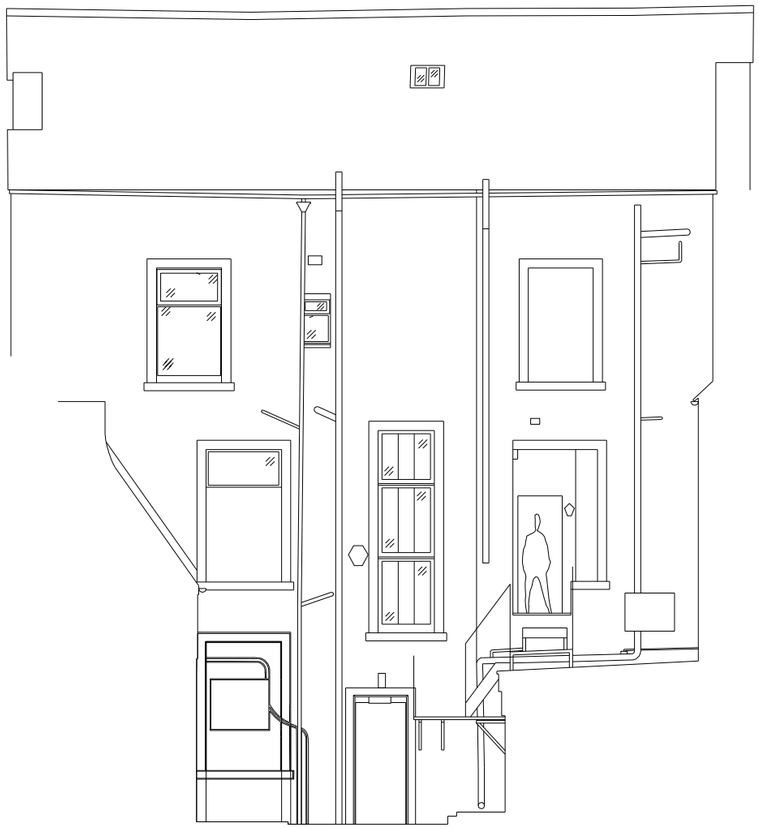
49 KING STREET, WHITEHAVEN

FRONT ELEVATIONS

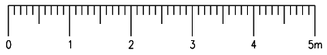
GENERAL ARRANGEMENT EXISTING/PROPOSED

Drawn	SD	Date	AUG 2023	KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1	A01000-P1

A3

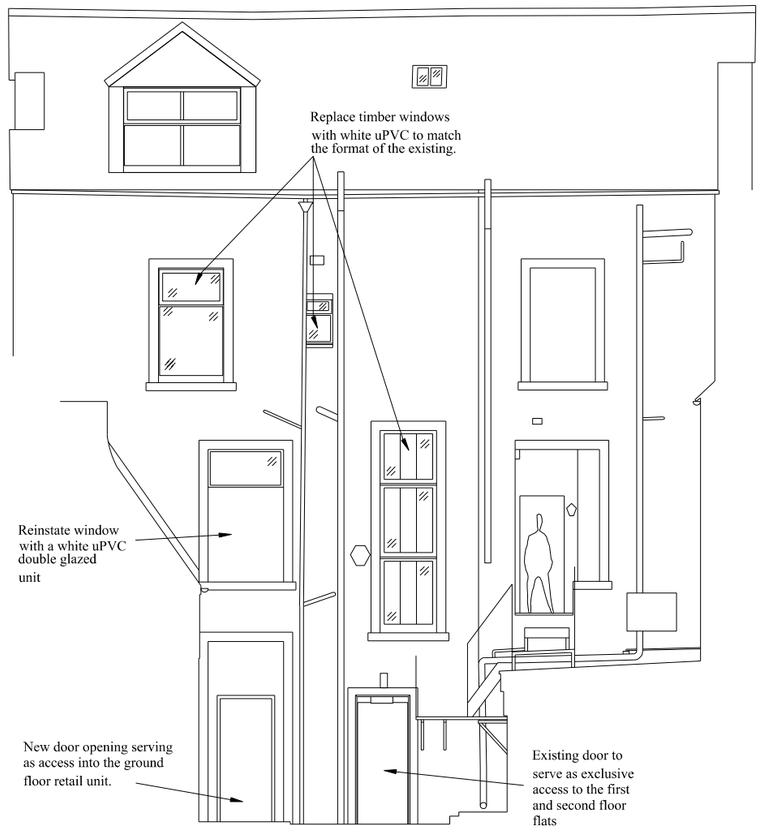


EXISTING REAR ELEVATION



Scale 1:100

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.



PROPOSED REAR ELEVATION

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE

General Notes:

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

The representation of the Site Boundary line, is no evidence of a property boundary, and lawful boundaries are to be confirmed by client.

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

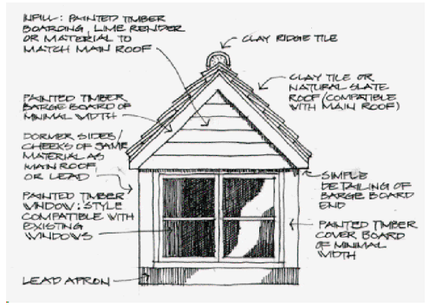
49 KING STREET, WHITEHAVEN

REAR ELEVATIONS

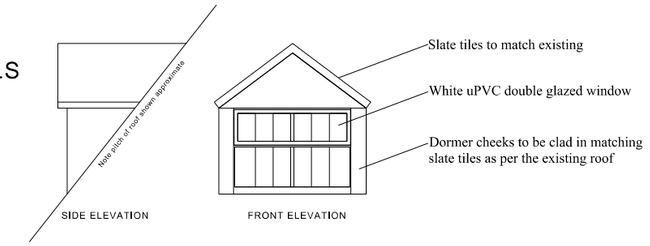
GENERAL ARRANGEMENT EXISTING/PROPOSED

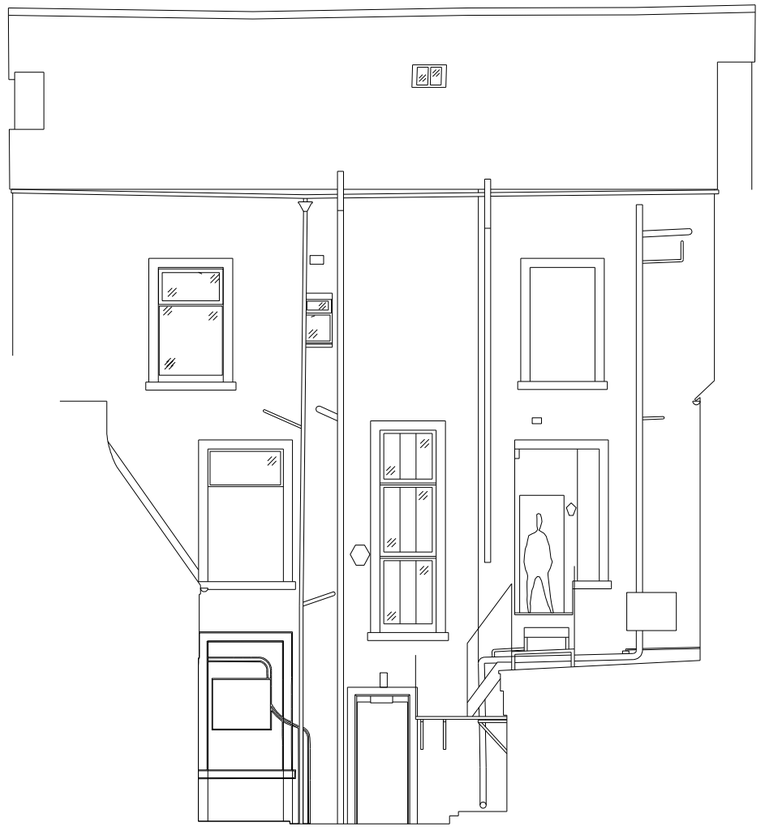
Drawn	SD	Date	AUG 2023		KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1		A01050-P1

A3

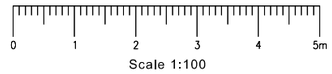


DORMER DETAILS



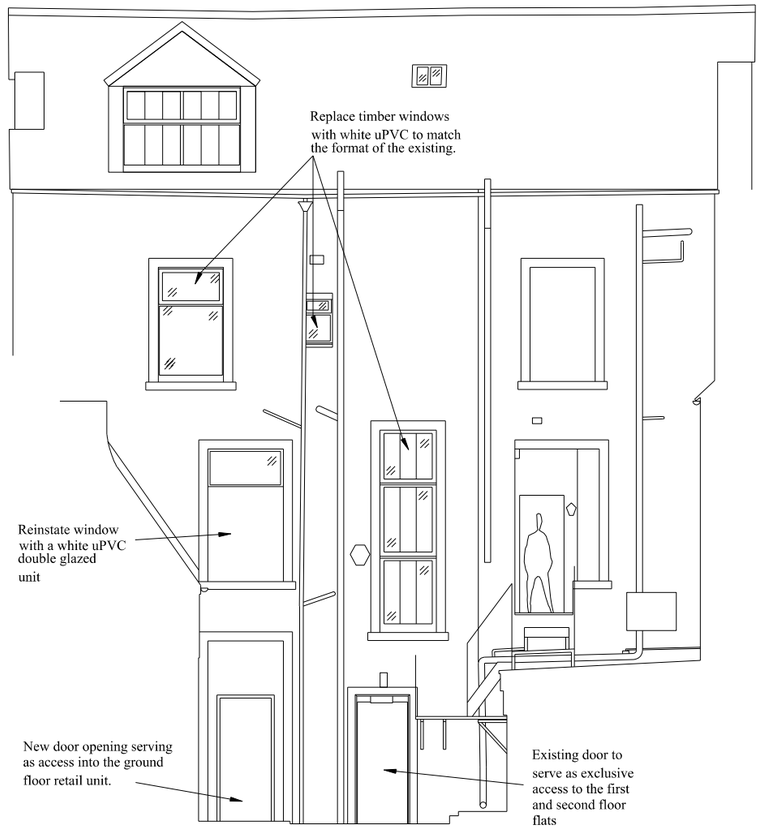


EXISTING REAR ELEVATION



Scale 1:100

*Note these drawings have been prepared for the purpose of a planning application. All dimensions to be checked and confirmed on site.



PROPOSED REAR ELEVATION

Rev	Drawn	Date	Comment
P1	SD	17.08.23	PLANNING ISSUE
P2	SD	17.03.24	LOFT ELEVATIONS ADDED
P3	SD	27.04.24	LOFT ELEVATIONS AMENDED

NEXT LEVEL ARCHITECTURE

NEXT_LEVELARCHITECTURE

49 KING STREET, WHITEHAVEN

REAR ELEVATIONS

GENERAL ARRANGEMENT EXISTING/PROPOSED

Drawn	SD	Date	AUG 2023	KS2023-PLANNING
Checked	SD	Scale	1:100 @ A3 1:50 @ A1	A01050-P3

Flood risk assessment data

Location of site: 297230 / 518128 (shown as easting and northing coordinates)
Document created on: 23 May 2024
This information was previously known as a product 4.
Customer reference number: TF4KGERDBH9N

Map showing the location that flood risk assessment data has been requested for.

How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- historic flooding
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

Use the long term flood risk service to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

For information about sewer flooding, contact the relevant water company for the area.

About the model used

Model name: Whitehaven_Tidal 2012
Scenario(s): Defended tidal, defences removed tidal, defended climate change tidal, defences removed climate change tidal
Date: 1 July 2013

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

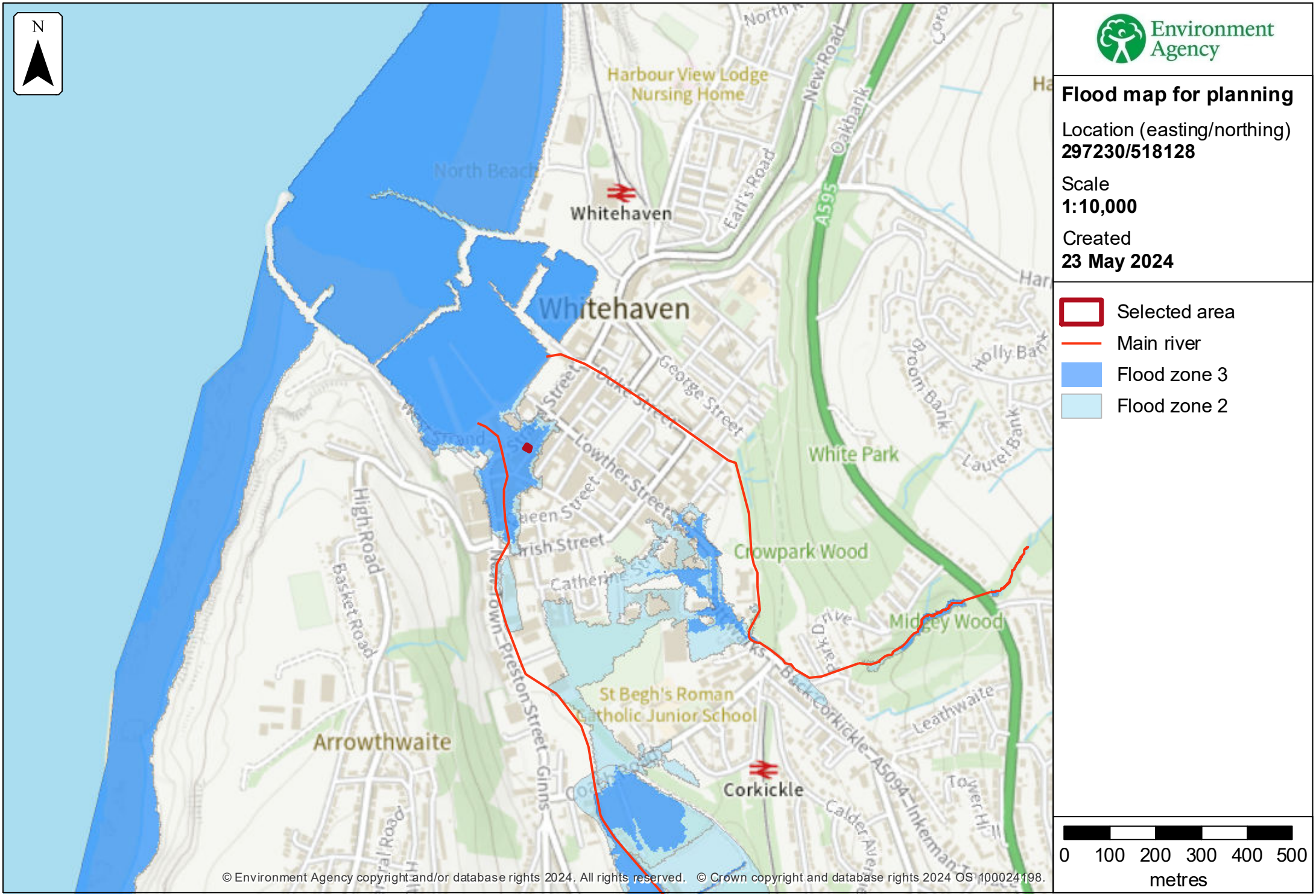
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.


N
Environment Agency
Flood map for planning
Location (easting/northing)
297230/518128
Scale
1:10,000
Created
23 May 2024
Selected area
Main river
Flood zone 3
Flood zone 2
Harbour View Lodge Nursing Home
North Beach
Whitehaven
Earl's Road
New Road
A595
Oakbank
George Street
Lowther Street
White Park
Broom Bank
Laurel Bank
Crowpark Wood
Midgey Wood
High Road
Basket Road
Preston Street
Ginns
St Begh's Roman Catholic Junior School
Arrowthwaite
Corkickle
Back Corkickle
A5094
Inkerman Terrace
Leathwaite
Tower Hill
Calder Avenue
0 100 200 300 400 500
metres
© Environment Agency copyright and/or database rights 2024. All rights reserved. © Crown copyright and database rights 2024 OS 100024198.

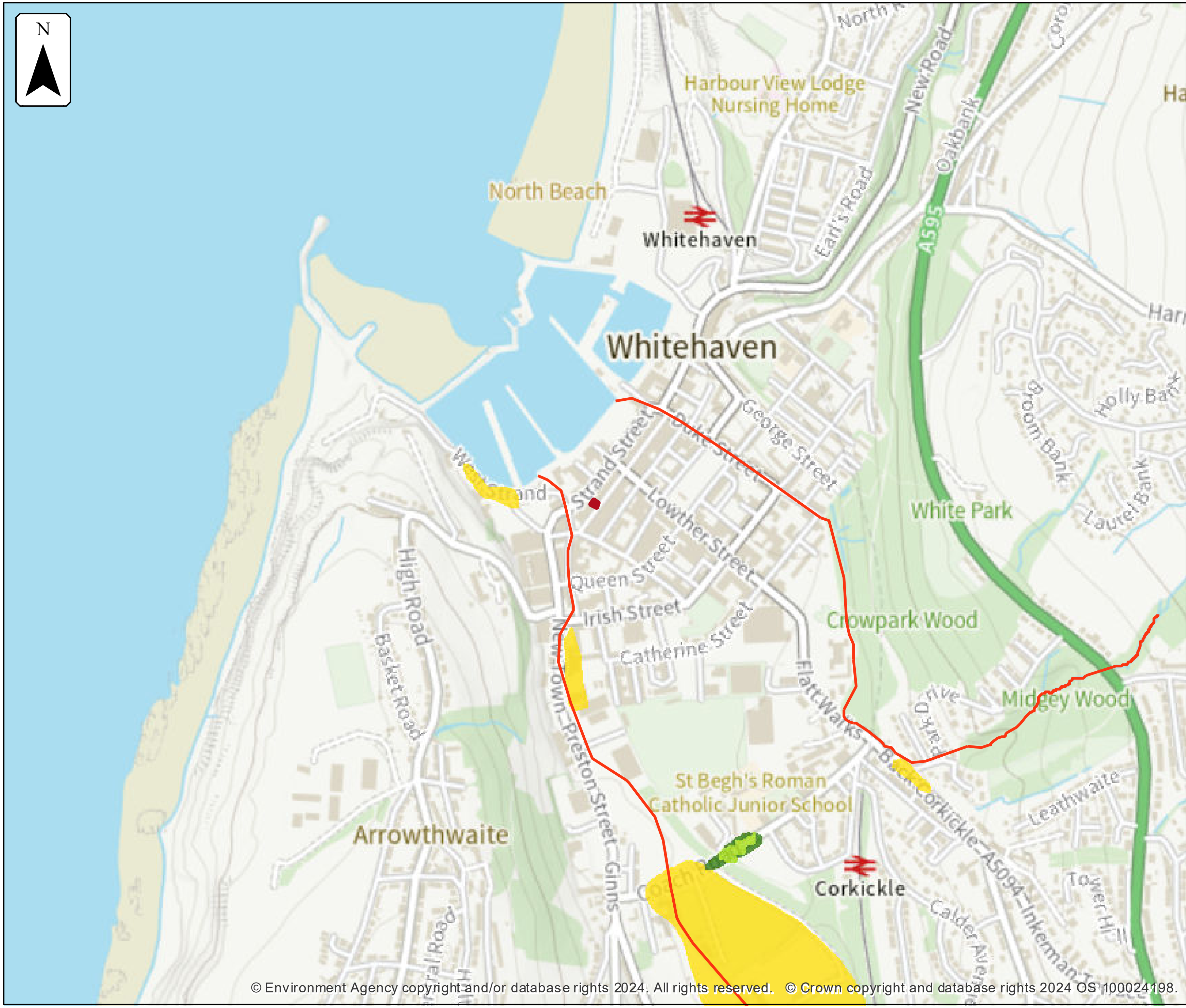
Historic flooding

This map is an indicative outline of areas that have previously flooded. Remember that:

- our records are incomplete, so the information here is based on the best available data
- it is possible not all properties within this area will have flooded
- other flooding may have occurred that we do not have records for
- flooding can come from a range of different sources - we can only supply flood risk data relating to flooding from rivers or the sea

You can also contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

Download recorded flood outlines in GIS format



N
North Beach
Harbour View Lodge
Nursing Home
Whitehaven
Whitehaven
Strand Street
George Street
Lowther Street
Queen Street
Irish Street
Catherine Street
High Road
Basket Road
Preston Street
Ginns
Flatt Walks
White Park
Crowpark Wood
Midgey Wood
St Begh's Roman
Catholic Junior School
Arrowthwaite
Corkickle
A595
Earl's Road
New Road
Oakbank
Holly Bank
Broom Bank
Laurel Bank
Leathwaite

Environment Agency

Historic flood map

Location (easting/northing)
297230/518128

Scale
1:10,000

Created
23 May 2024

Selected area
Main river
Date of flood event
June, 2007
August, 2006
November, 1999

0 100 200 300 400 500
metres

Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
12 June 2007	12 June 2007	drainage	local drainage/surface water	No
11 August 2006	11 August 2006	main river	unknown	No
5 November 1999	5 November 1999	main river	channel capacity exceeded (no raised defences)	No

Flood defences and attributes

The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is In mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk

Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	94578	Wall	20	Fair	17.58	18.54	17.58

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

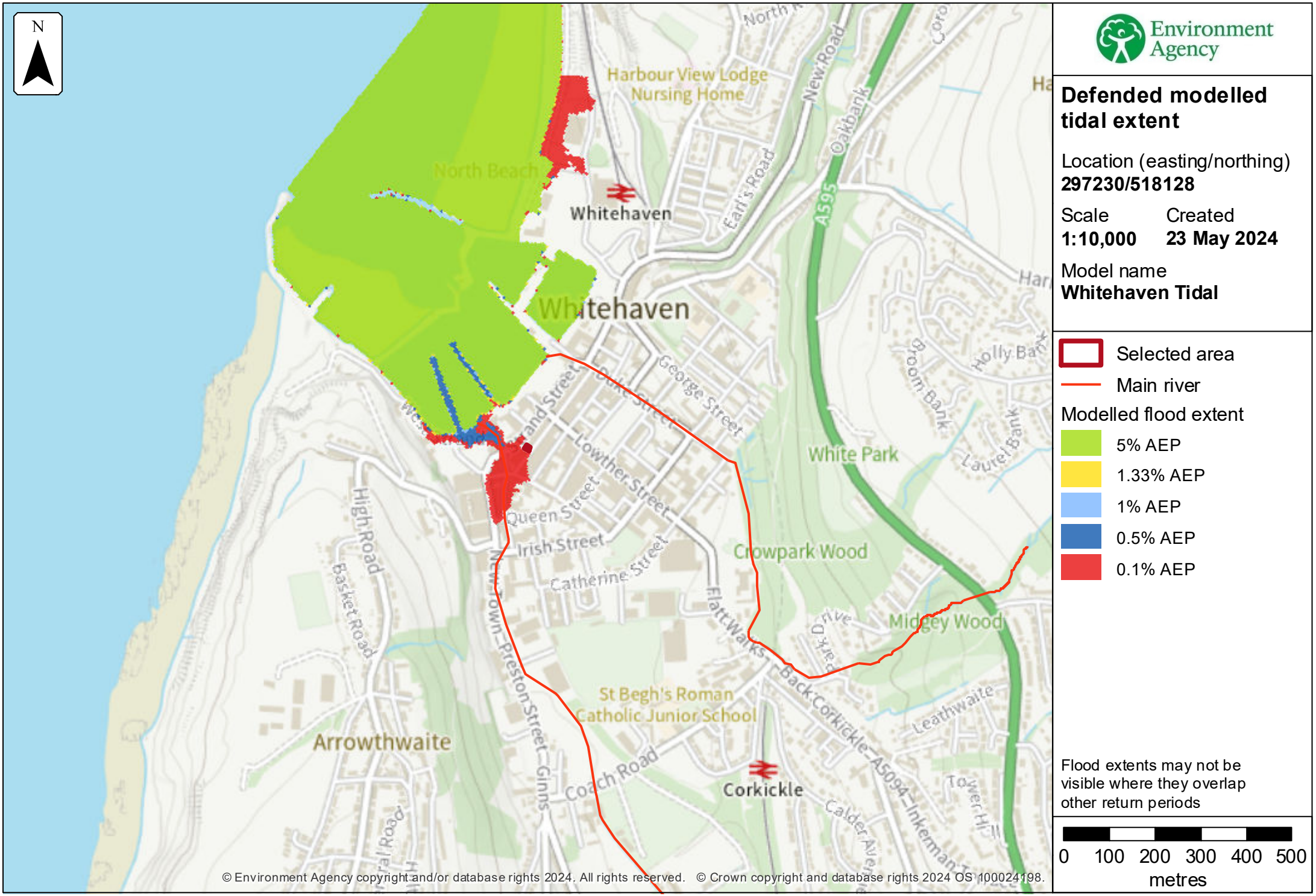
The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

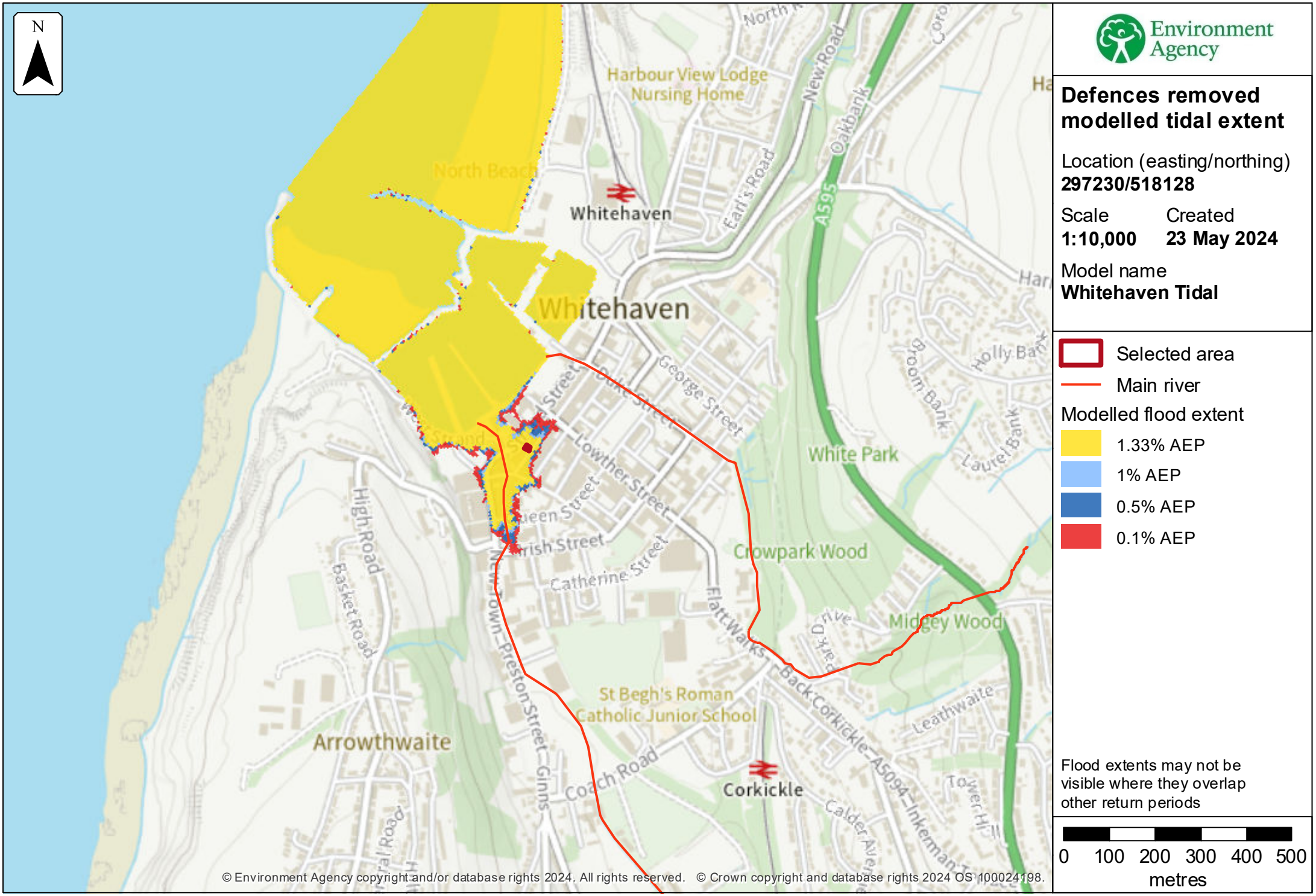
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

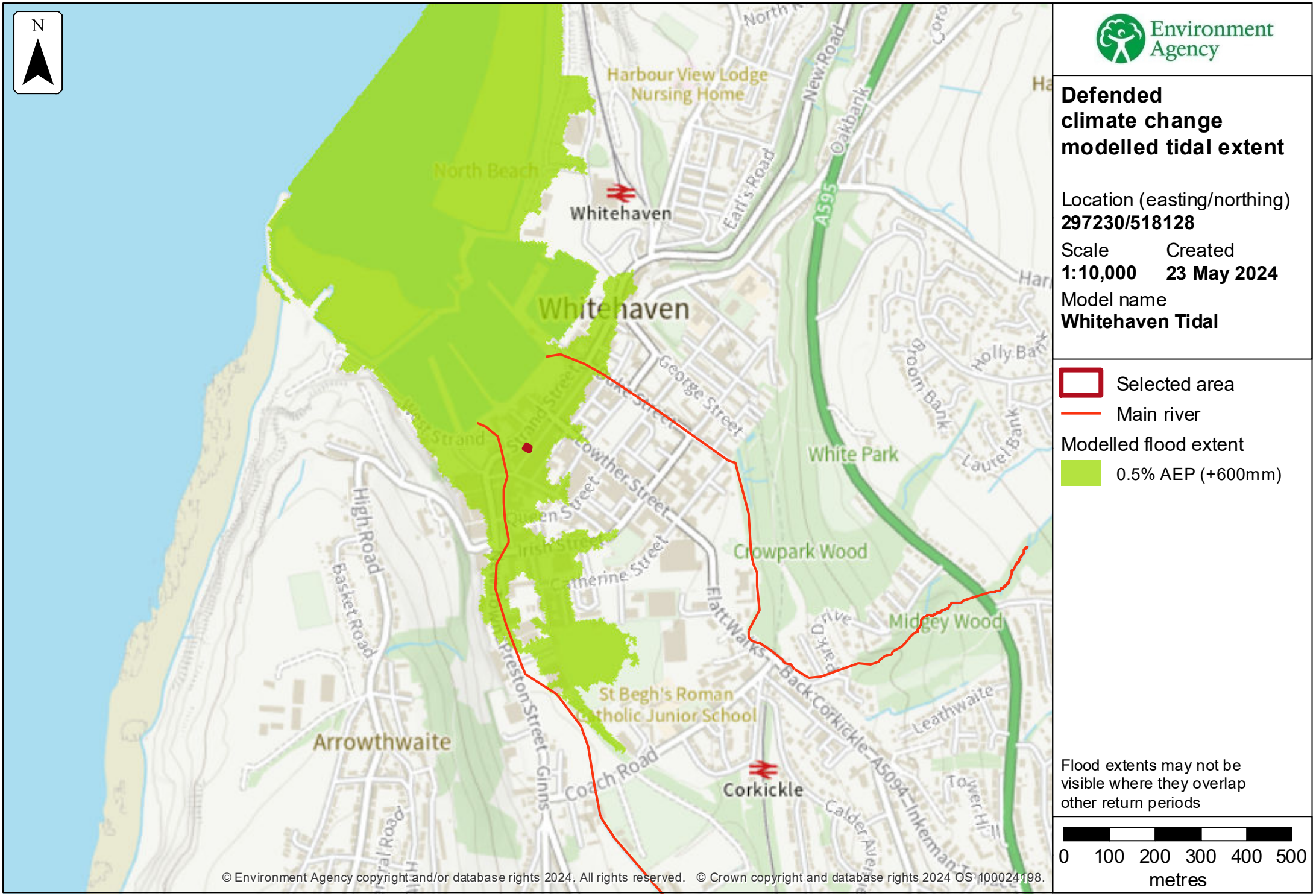
Modelled scenarios

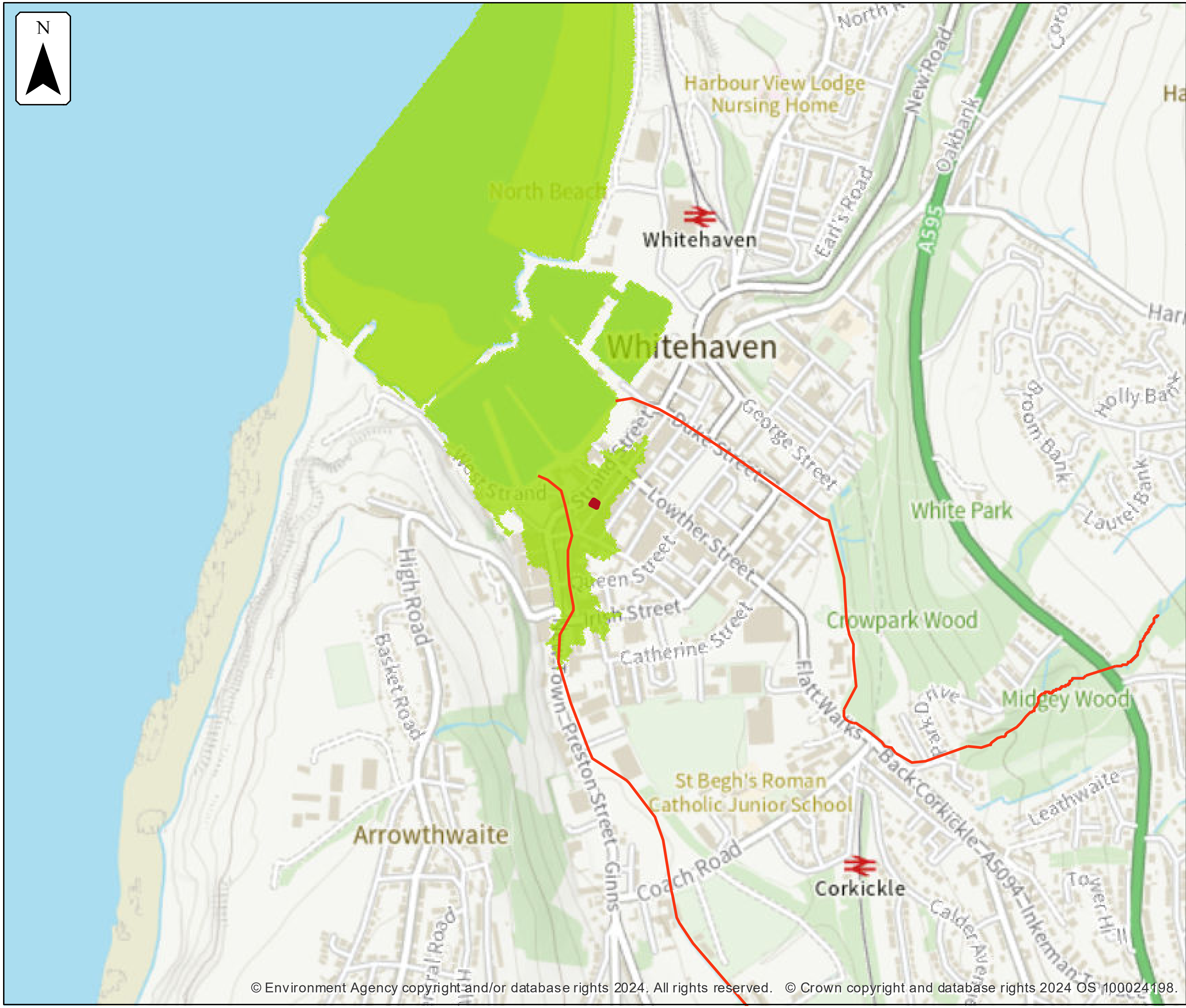
The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended modelled tidal: risk of flooding from the sea where there are flood defences
- Defences removed modelled tidal: risk of flooding from the sea where flood defences have been removed
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change
- Defended climate change modelled tidal: risk of flooding from the sea where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled tidal: risk of flooding from the sea where flood defences have been removed, including estimated impact of climate change


N
Harbour View Lodge Nursing Home
North Beach
Whitehaven
Whitehaven
George Street
Lowther Street
Queen Street
Irish Street
Catherine Street
High Road
Basket Road
Arrowthwaite
St Begh's Roman Catholic Junior School
Coach Road
Corkickle
White Park
Crowpark Wood
Midgey Wood
Flatt Walks
Back Corkickle
A595
New Road
Oakbank
Earl's Road
Broom Bank
Laurel Bank
Holly Bank
Leathwaite
Tower Hill
Calder Avenue
Inkerman Terrace
Preston Street
Ginns
Environment Agency
Defended modelled tidal extent
Location (easting/northing)
297230/518128
Scale
1:10,000
Created
23 May 2024
Model name
Whitehaven Tidal
Selected area
Main river
Modelled flood extent
5% AEP
1.33% AEP
1% AEP
0.5% AEP
0.1% AEP
Flood extents may not be visible where they overlap other return periods
0 100 200 300 400 500
metres
© Environment Agency copyright and/or database rights 2024. All rights reserved. © Crown copyright and database rights 2024 OS 100024198.




N
Harbour View Lodge Nursing Home
North Beach
Whitehaven
Whitehaven
George Street
Lowther Street
Queen Street
Irish Street
Catherine Street
Strand Street
West Strand
High Road
Basket Road
Preston Street
Ginns
Coach Road
Arrowthwaite
St Begh's Roman Catholic Junior School
Corkickle
Flatt Walks
Back Corkickle
A5094
Inkerman Terrace
Calder Avenue
Tower Hill
Leathwaite
Crowpark Wood
Midgey Wood
White Park
Broom Bank
Laurel Bank
Holly Bank
New Road
Earl's Road
Oakbank
A595
Environment Agency
Defended climate change modelled tidal extent
Location (easting/northing)
297230/518128
Scale
1:10,000
Created
23 May 2024
Model name
Whitehaven Tidal
Selected area
Main river
Modelled flood extent
0.5% AEP (+600mm)
Flood extents may not be visible where they overlap other return periods
0 100 200 300 400 500
metres
© Environment Agency copyright and/or database rights 2024. All rights reserved. © Crown copyright and database rights 2024 OS 100024198.


N
Harbour View Lodge
Nursing Home
North Beach
Whitehaven
Whitehaven
New Road
Oakbank
Earl's Road
A595
George Street
Duke Street
Lowther Street
Queen Street
Catherine Street
Flatt Walks
White Park
Crowpark Wood
Midgey Wood
Holly Bank
Laurel Bank
West Strand
High Road
Basket Road
Arrowthwaite
St Begh's Roman
Catholic Junior School
Coach Road
Corkickle
Back Corkickle
Leathwaite
Preston Street
© Environment Agency copyright and/or database rights 2024. All rights reserved. © Crown copyright and database rights 2024 OS 100024198.

Environment Agency

Defences removed climate change modelled tidal extent

Location (easting/northing)
297230/518128

Scale **1:10,000**

Created **23 May 2024**

Model name
Whitehaven Tidal

Selected area

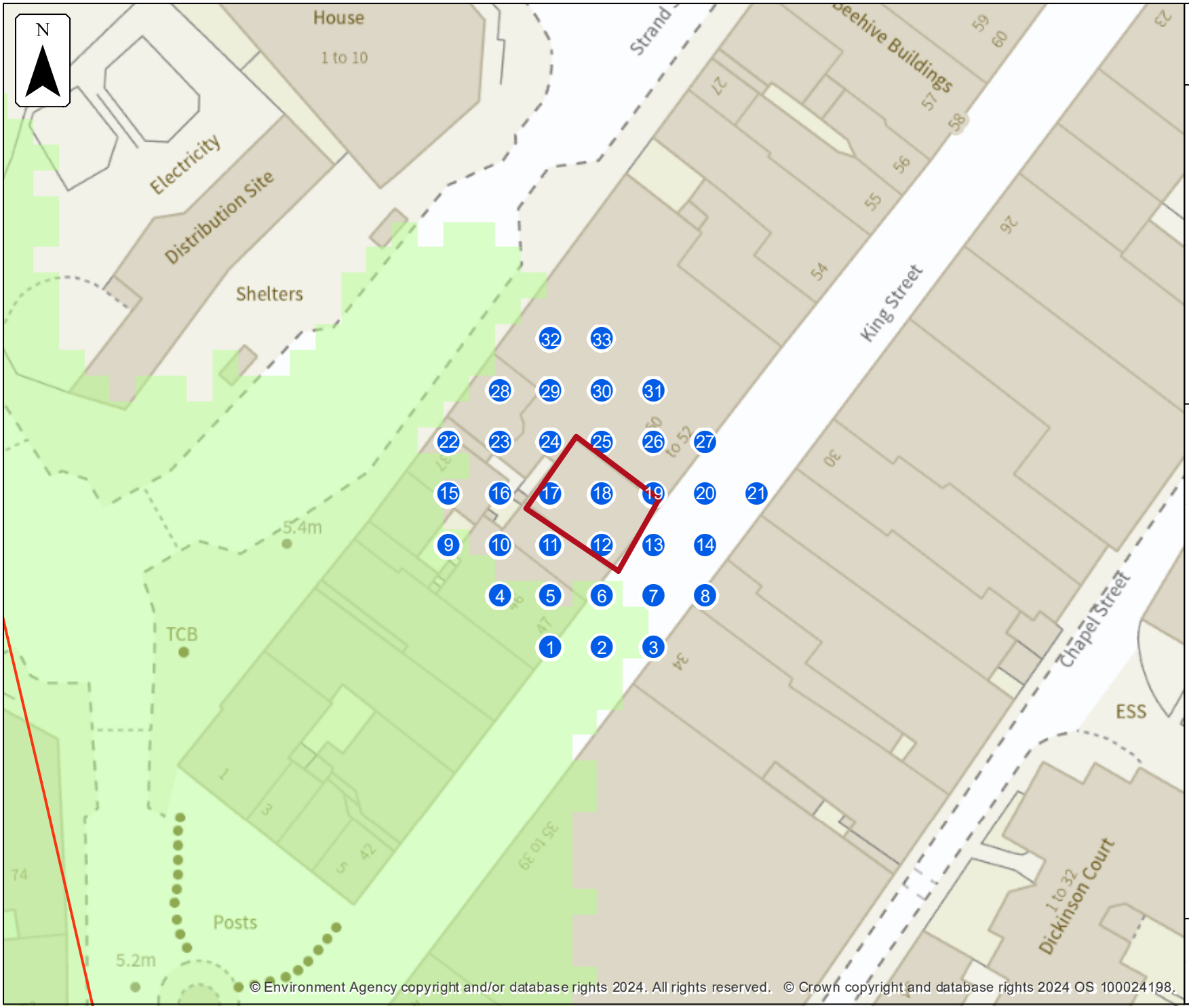
Main river

Modelled flood extent

0.5% AEP (+600mm)

Flood extents may not be visible where they overlap other return periods

0 100 200 300 400 500
metres



Environment Agency

Defended modelled tidal extent and height

Location (easting/northing)
297230/518128

Scale
1:500

Created
23 May 2024

Model name
Whitehaven Tidal

Selected area

Main river

Modelled 2D grid

Water level in mAOD

- 0 - 5.0
- 5.0 - 5.125
- 5.125 - 5.25
- 5.25 - 5.375
- 5.375 - 5.5
- 5.5 - 5.625
- 5.625 - 5.75
- 5.75 - 5.875
- 5.875 - 6.0

This map shows the 0.1% AEP height data

0 5 10 15 20
metres

Sample point data

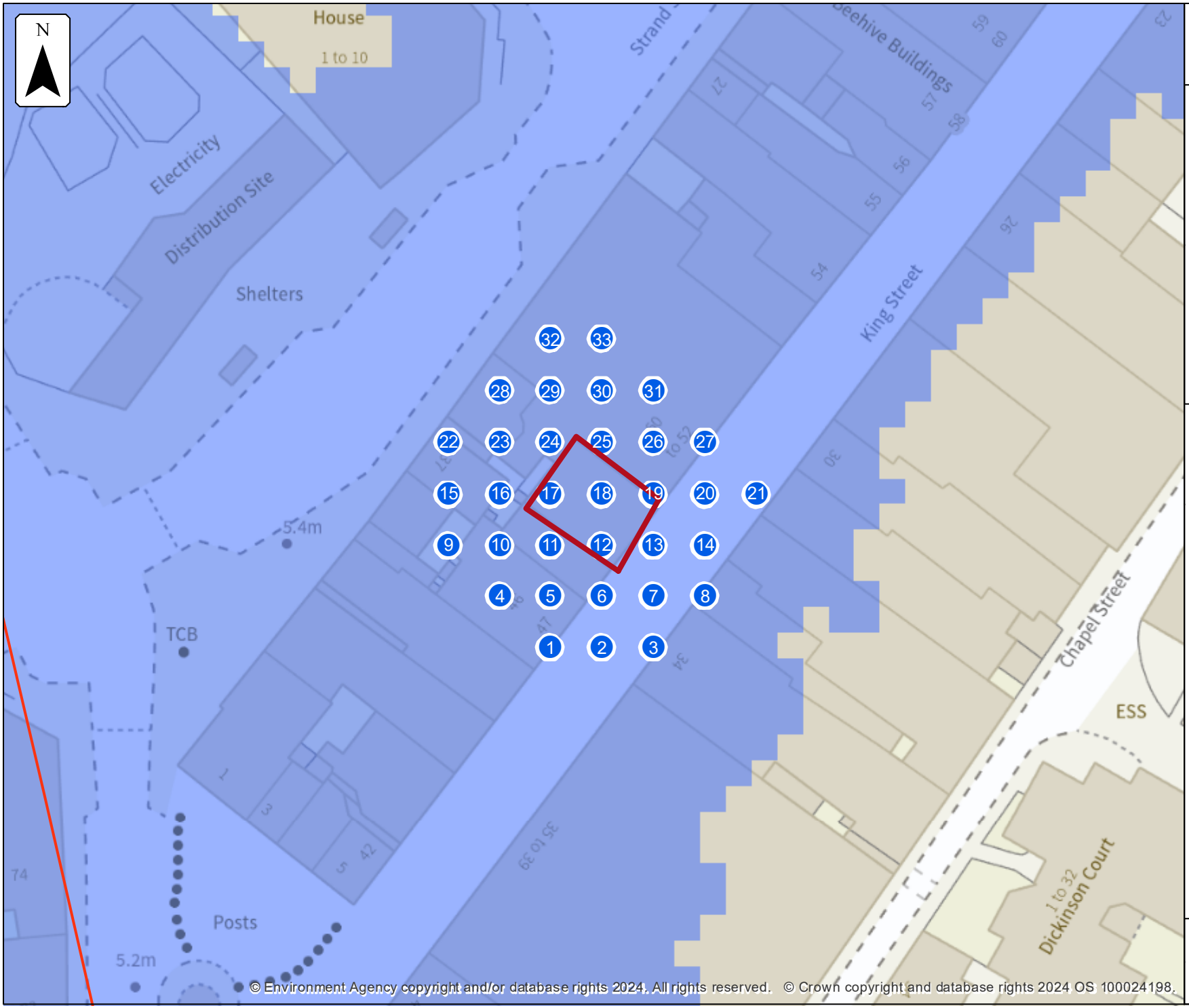
Defended

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	297226	518114	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	0.11	5.50
2	297231	518114	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	0.07	5.50
3	297236	518114	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	297221	518119	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	0.06	5.50
5	297226	518119	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	297231	518119	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	0.04	5.50
7	297236	518119	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	297241	518119	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	297216	518124	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	0.06	5.50
10	297221	518124	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	297226	518124	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	297231	518124	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
13	297236	518124	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	297241	518124	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	297216	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	297221	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	297226	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	297231	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	297236	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	297241	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	297246	518129	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	297216	518134	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
23	297221	518134	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
24	297226	518134	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
25	297231	518134	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
26	297236	518134	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
27	297241	518134	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
28	297221	518139	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
29	297226	518139	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
30	297231	518139	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
31	297236	518139	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
32	297226	518144	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
33	297231	518144	NoData	NoData			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Data in this table comes from the Whitehaven Tidal 2012 model.
Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.
Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Environment Agency

Defences removed modelled tidal extent and height

Location (easting/northing)
297230/518128

Scale
1:500

Created
23 May 2024

Model name
Whitehaven Tidal

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 6.0
- 6.0 - 6.125
- 6.125 - 6.25
- 6.25 - 6.375
- 6.375 - 6.5
- 6.5 - 6.625
- 6.625 - 6.75
- 6.75 - 6.875
- 6.875 - 7.0

This map shows the 0.1% AEP height data

0 5 10 15 20
metres

Sample point data

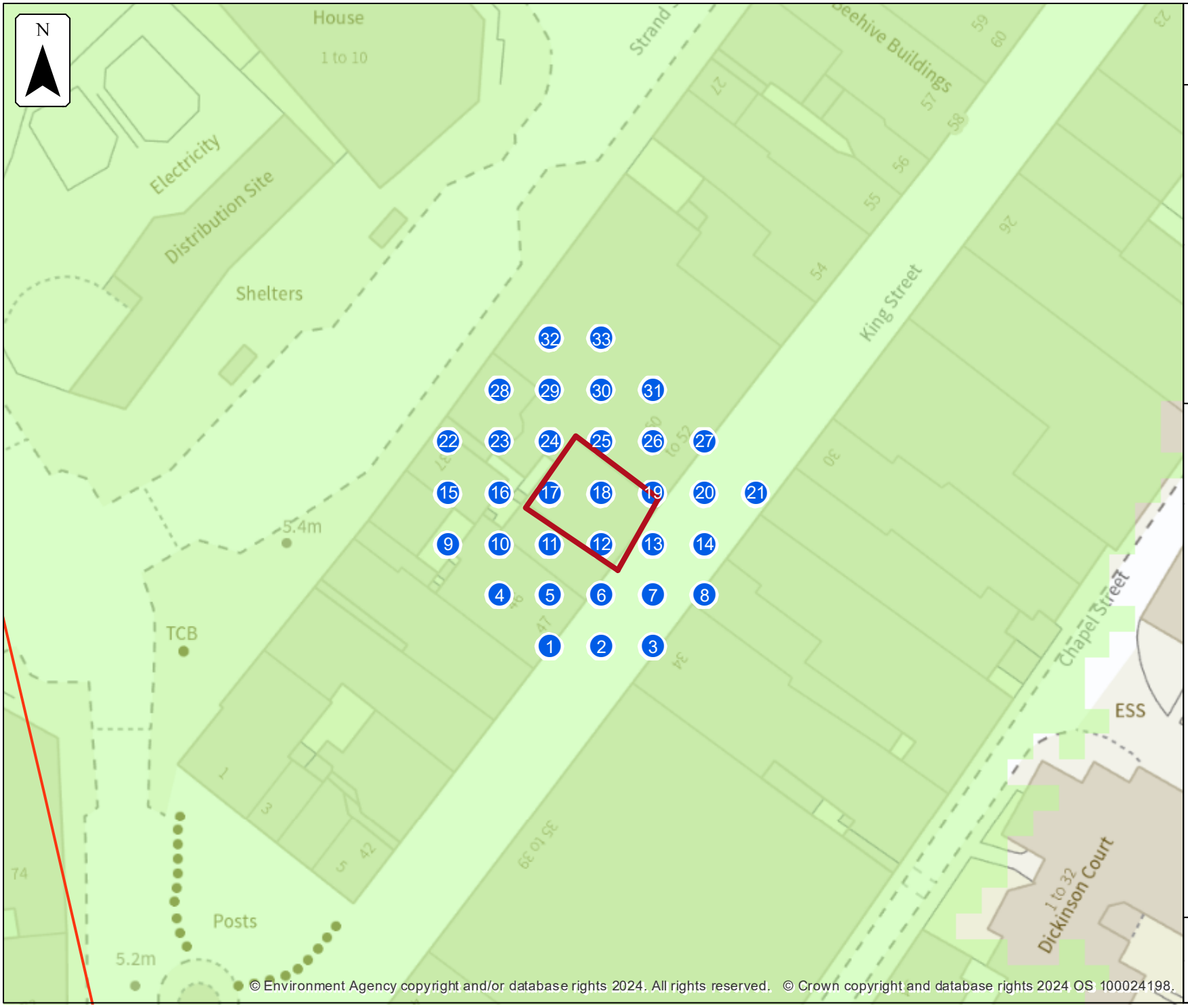
Defences removed

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	297226	518114					0.30	5.69	0.35	5.74	0.45	5.84	0.69	6.07
2	297231	518114					0.26	5.69	0.31	5.74	0.41	5.84	0.64	6.08
3	297236	518114					0.14	5.69	0.19	5.74	0.29	5.84	0.52	6.08
4	297221	518119					0.26	5.69	0.31	5.74	0.41	5.84	0.64	6.07
5	297226	518119					0.22	5.69	0.27	5.74	0.37	5.84	0.61	6.07
6	297231	518119					0.23	5.69	0.28	5.74	0.38	5.84	0.61	6.07
7	297236	518119					0.17	5.69	0.22	5.74	0.32	5.84	0.56	6.07
8	297241	518119					NoData	NoData	NoData	NoData	0.19	5.84	0.42	6.08
9	297216	518124					0.26	5.69	0.31	5.74	0.41	5.84	0.64	6.07
10	297221	518124					0.18	5.69	0.22	5.74	0.32	5.84	0.56	6.07
11	297226	518124					0.10	5.69	0.15	5.74	0.25	5.84	0.48	6.07
12	297231	518124					0.12	5.69	0.17	5.74	0.27	5.84	0.50	6.07
13	297236	518124					0.17	5.69	0.22	5.74	0.32	5.84	0.55	6.07
14	297241	518124					0.09	5.69	0.14	5.74	0.24	5.84	0.47	6.07
15	297216	518129					0.19	5.69	0.24	5.74	0.34	5.84	0.58	6.07
16	297221	518129					0.06	5.69	0.10	5.74	0.20	5.84	0.43	6.07

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	297226	518129					NoData	NoData	0.04	5.74	0.13	5.84	0.37	6.07
18	297231	518129					0.03	5.69	0.07	5.74	0.17	5.84	0.40	6.08
19	297236	518129					0.08	5.69	0.13	5.74	0.23	5.84	0.46	6.07
20	297241	518129					0.14	5.69	0.19	5.74	0.29	5.84	0.53	6.07
21	297246	518129					0.11	5.69	0.15	5.74	0.26	5.84	0.49	6.07
22	297216	518134					0.20	5.69	0.25	5.74	0.35	5.84	0.58	6.07
23	297221	518134					0.06	5.69	0.10	5.74	0.20	5.84	0.43	6.07
24	297226	518134					NoData	NoData	NoData	NoData	0.11	5.84	0.34	6.07
25	297231	518134					0.01	5.69	0.05	5.74	0.15	5.84	0.38	6.08
26	297236	518134					0.06	5.69	0.10	5.74	0.20	5.84	0.44	6.08
27	297241	518134					0.09	5.69	0.14	5.74	0.24	5.84	0.47	6.07
28	297221	518139					0.13	5.69	0.18	5.74	0.28	5.84	0.51	6.07
29	297226	518139					0.05	5.69	0.09	5.74	0.19	5.84	0.42	6.07
30	297231	518139					0.06	5.69	0.11	5.74	0.21	5.84	0.44	6.08
31	297236	518139					0.07	5.69	0.12	5.74	0.22	5.84	0.46	6.07
32	297226	518144					0.07	5.69	0.12	5.74	0.23	5.84	0.46	6.07
33	297231	518144					0.08	5.69	0.13	5.74	0.23	5.84	0.46	6.07

Data in this table comes from the Whitehaven Tidal 2012 model.
Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.
Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Environment Agency

Defended climate change modelled tidal extent and height

Location (easting/northing)
297230/518128

Scale
1:500

Created
23 May 2024

Model name
Whitehaven Tidal

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 7.0
- 7.0 - 7.125
- 7.125 - 7.25
- 7.25 - 7.375
- 7.375 - 7.5
- 7.5 - 7.625
- 7.625 - 7.75
- 7.75 - 7.875
- 7.875 - 8.0

This map shows the 0.5% AEP +600mm height data

0 5 10 15 20
metres

Sample point data

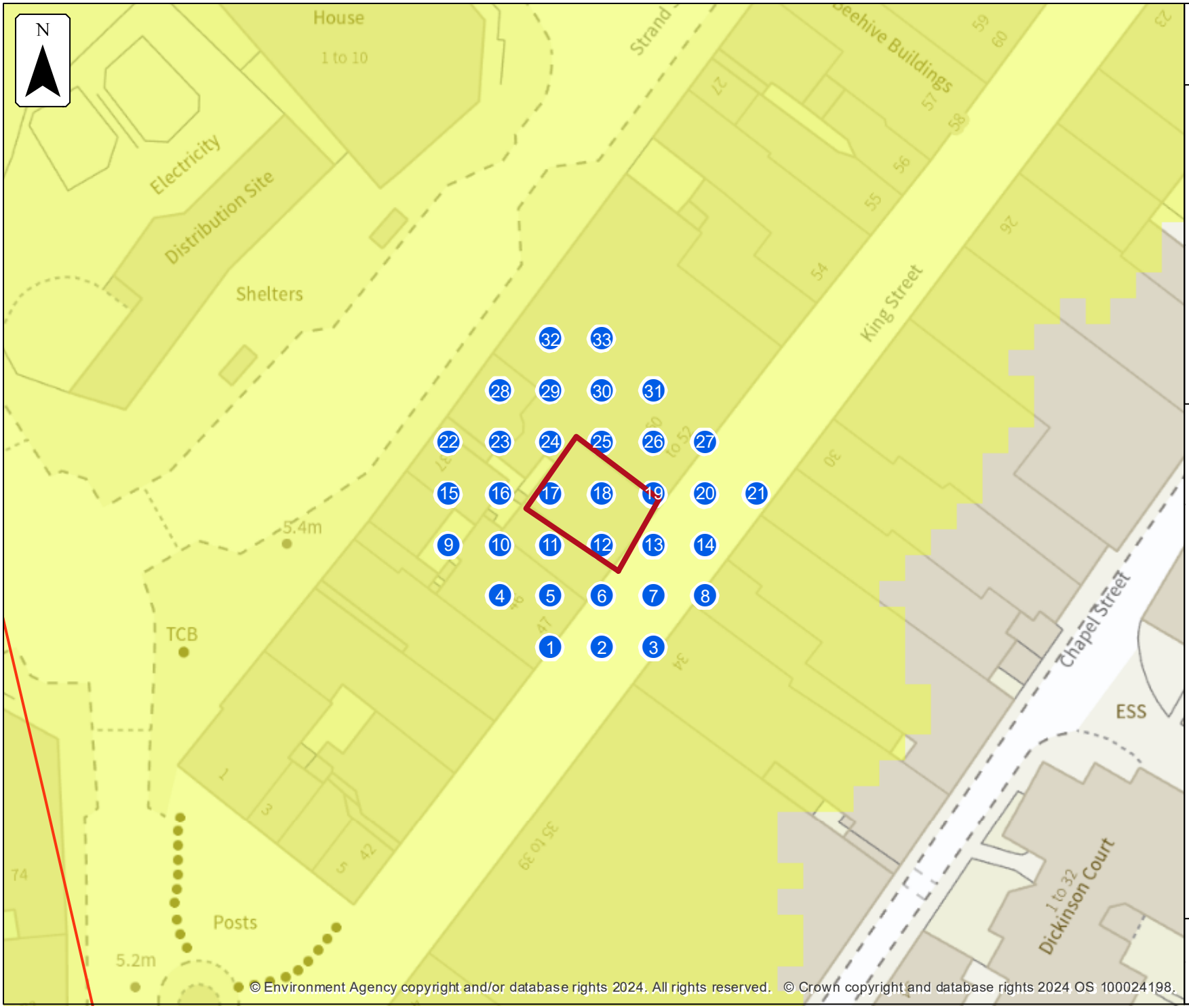
Defended climate change

Label	Easting	Northing	0.5% AEP (+600mm)	
			Depth	Height
1	297226	518114	2.00	7.39
2	297231	518114	1.96	7.39
3	297236	518114	1.84	7.39
4	297221	518119	1.96	7.39
5	297226	518119	1.92	7.39
6	297231	518119	1.92	7.39
7	297236	518119	1.87	7.39
8	297241	518119	1.73	7.39
9	297216	518124	1.96	7.39
10	297221	518124	1.87	7.39
11	297226	518124	1.79	7.39
12	297231	518124	1.81	7.39
13	297236	518124	1.87	7.39
14	297241	518124	1.79	7.39
15	297216	518129	1.89	7.39
16	297221	518129	1.74	7.39

Label	Easting	Northing	0.5% AEP (+600mm)	
			Depth	Height
17	297226	518129	1.68	7.39
18	297231	518129	1.72	7.39
19	297236	518129	1.77	7.39
20	297241	518129	1.84	7.39
21	297246	518129	1.80	7.39
22	297216	518134	1.90	7.39
23	297221	518134	1.74	7.39
24	297226	518134	1.66	7.39
25	297231	518134	1.69	7.39
26	297236	518134	1.75	7.39
27	297241	518134	1.79	7.39
28	297221	518139	1.83	7.39
29	297226	518139	1.74	7.39
30	297231	518139	1.75	7.39
31	297236	518139	1.77	7.39
32	297226	518144	1.77	7.39
33	297231	518144	1.78	7.39

Data in this table comes from the Whitehaven Tidal 2012 model.
Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.
Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Environment Agency

Defences removed climate change modelled tidal extent and height

Location (easting/northing)
297230/518128

Scale
1:500

Created
23 May 2024

Model name
Whitehaven Tidal

- Selected area
- Main river

Modelled 2D grid
Water level in mAOD

- 0 - 6.0
- 6.0 - 6.125
- 6.125 - 6.25
- 6.25 - 6.375
- 6.375 - 6.5
- 6.5 - 6.625
- 6.625 - 6.75
- 6.75 - 6.875
- 6.875 - 7.0

This map shows the
0.5% AEP +600mm height data

0 5 10 15 20
metres

Sample point data

Defences removed climate change

Label	Easting	Northing	0.5% AEP (+600mm)	
			Depth	Height
1	297226	518114	1.12	6.51
2	297231	518114	1.08	6.51
3	297236	518114	0.96	6.51
4	297221	518119	1.08	6.51
5	297226	518119	1.05	6.51
6	297231	518119	1.05	6.51
7	297236	518119	0.99	6.51
8	297241	518119	0.85	6.51
9	297216	518124	1.08	6.51
10	297221	518124	1.00	6.51
11	297226	518124	0.92	6.51
12	297231	518124	0.94	6.51
13	297236	518124	0.99	6.51
14	297241	518124	0.91	6.51
15	297216	518129	1.02	6.51
16	297221	518129	0.87	6.51

Label	Easting	Northing	0.5% AEP (+600mm)	
			Depth	Height
17	297226	518129	0.81	6.51
18	297231	518129	0.84	6.51
19	297236	518129	0.90	6.51
20	297241	518129	0.96	6.51
21	297246	518129	0.92	6.51
22	297216	518134	1.03	6.51
23	297221	518134	0.87	6.52
24	297226	518134	0.79	6.52
25	297231	518134	0.82	6.51
26	297236	518134	0.88	6.51
27	297241	518134	0.91	6.51
28	297221	518139	0.96	6.52
29	297226	518139	0.87	6.52
30	297231	518139	0.88	6.52
31	297236	518139	0.90	6.51
32	297226	518144	0.90	6.52
33	297231	518144	0.90	6.52

Data in this table comes from the Whitehaven Tidal 2012 model.
Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.
Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Cumbria and Lancashire Environment Agency team at inforequests.cmblnc@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

Flood map for planning

Your reference	Location (easting/northing)	Created
92458	**297230/518128**	**28 May 2024 14:49**

Your selected location is in flood zone 3
– an area with a high probability of flooding.

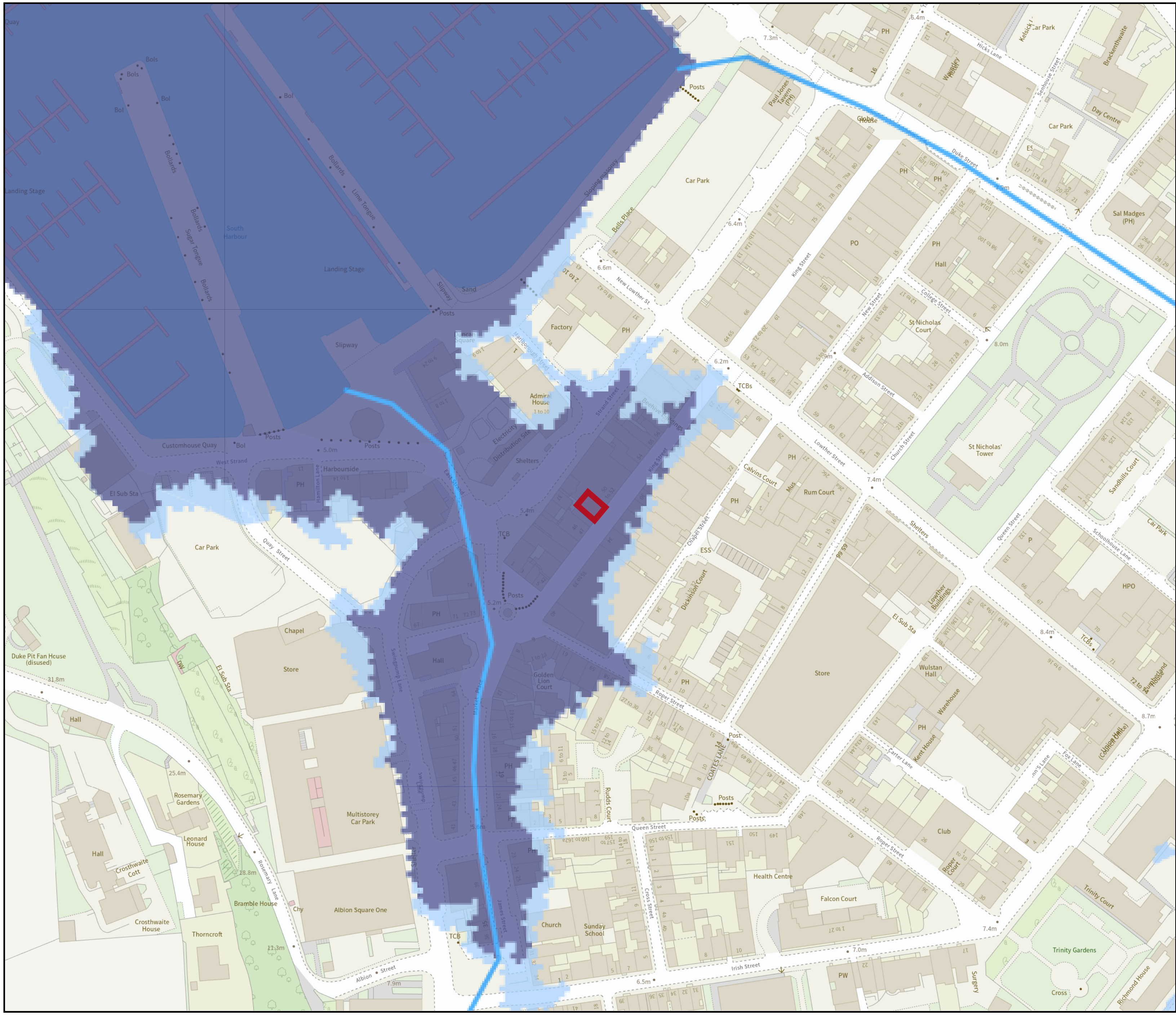
This means:

- you may need to complete a flood risk assessment for development in this area
- you should ask the Environment Agency about the level of flood protection at your location and request a Flood Defence Breach Hazard Map (You can email the Environment Agency at: enquiries@environment-agency.gov.uk)
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (find out more at www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
92458

Location (easting/northing)
297230/518128

Scale
1:2500

Created
28 May 2024 14:49

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m