



Breck Homes

Rosemount Avenue, Preesall

Flood Risk Assessment

681279-R1(0)-FRA

February 2024



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RSK GENERAL NOTES

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK LDE Ltd.

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1 INTRODUCTION

RSK Land and Development Engineering Ltd were commissioned by Breck Homes (the client) to provide a Flood Risk Assessment (FRA) to support the detailed planning application at land north of Rosemount Avenue, Preesall (the site). Development proposals comprise a residential development.

The purpose of the FRA is to establish the flood risk associated with the proposed development and to propose suitable mitigation, if required, to reduce the risk to a more acceptable level. The FRA must demonstrate that the development will be safe for its lifetime (in this case assumed to be 100 years) taking account of the vulnerability of its users, without increasing flood risk elsewhere.

This document has been produced to assess the flood risk from tidal, fluvial, surface water, groundwater, sewers, reservoirs and artificial sources in line with the National Planning Policy Framework (NPPF)¹ and its corresponding Planning Practice Guidance (PPG)².

This assessment has been undertaken in consultation with the relevant authorities, and with reference to data, documents and guidance published by the Environment Agency (EA), the Lead Local Flood Authority (LLFA) (Lancashire County Council) and Local Planning Authority (LPA) (Wyre Council) and the Water Authority (United Utilities).

The comments given in this report and opinions expressed are subject to RSK Group Service Constraints provided in **Appendix A**.

¹ Communities and Local Government, 'National Planning Policy Framework', published March 2012 and last updated December 2023.

² Communities and Local Government, 'Planning Practice Guidance - Flood Risk and Coastal Change, ID 7', published March 2014 and last updated August 2022.

2 SITE DESCRIPTION & PROPOSALS

2.1 Existing site

2.1.1 Site description

The site is located to the north of Rosemount Avenue and to the south of Piling Lane, to the north of Preesall. The site can be located at National Grid Reference 336258 E, 448540 N and postcode FY6 0FE. A site location plan is included as **Figure 2.1**.

The site covers an area of approximately 1.53ha and currently comprises a grassed area with a ditch running through the centre of the site aligned north-west to south-east.



Figure 2.1: Site location plan

2.1.2 Topography

A site-specific topographic has been carried out by SurveyEng Ltd and can be found in **Appendix B**. The survey shows the site is generally level with a slight south-eastern fall. The levels on-site range from approximately 4.90m Above Ordnance Datum (mAOD) in the south of the site to approximately 5.60mAOD at the northernmost section of the site access road from Piling Lane.

2.1.3 Existing drainage

2.1.3.1 Public

United Utilities (UU) sewer plans have been obtained for the site and are included in **Appendix C**. These plans indicate the following network of sewers in the vicinity of the site:

- A 375mm combined sewer is located to the west, beneath Rosemount Avenue, conveying flow north to a 225mm combined sewer along Pilling Lane.
- There is a network of foul sewers to the west associated with the properties on Meadow Close. These sewers convey flow west to join the 375mm combined sewer.
- A surface water sewer is located to the west, along Meadow Close, conveying flow west to join a small section of a surface water sewer along Rosemount Avenue. This sewer then joins the 375mm combined sewer on Rosemount Avenue.

2.1.3.2 Private

According to the UU sewer plans (**Appendix C**), a 225mm private surface water sewer is located along Pilling Lane to the north of the site. This sewer conveys flow south-west along the road, and then south, shown to outfall to a watercourse located adjacent to the footpath which joins Meadow Lane to Pilling Lane.

2.2 Development proposals

The proposals for the site are for the construction of residential units and associated roads and landscaping. The relevant proposed site plan is included as **Appendix D**.

3 ENVIRONMENTAL SETTING

3.1 Hydrology

Reference to Ordnance Survey (OS) mapping and the EA's web-based mapping indicates that the nearest EA Main River is Wheel Foot Watercourse, which is located approximately 0.25km to the east. The watercourse conveys flow north-west, discharging to Morecambe Bay.

Morecambe Bay is located approximately 0.25km north-west of the site.

There is an ordinary watercourse shown to be mapped on-site, according to OS maps, shown in **Figure 3.1**. This watercourse conveys flow south-east across the site, to join the ordinary watercourse located along the southern site boundary, which then conveys flow north-east, discharging to Wheel Foot Watercourse. According to the topographic survey (**Appendix B**), the watercourse is open, however the proposed development plans in **Appendix D** indicates that this watercourse will be culverted post-development. A third ordinary watercourse is located adjacent to the western site boundary and a fourth along the eastern site boundary, both conveying flow south-east to join the watercourse along the southern site boundary. The on-site/nearby watercourses detailed above were all partially surveyed in the topographic survey. It is to be noted at the time of the survey (27.06.23) the watercourses were recorded as being dry.

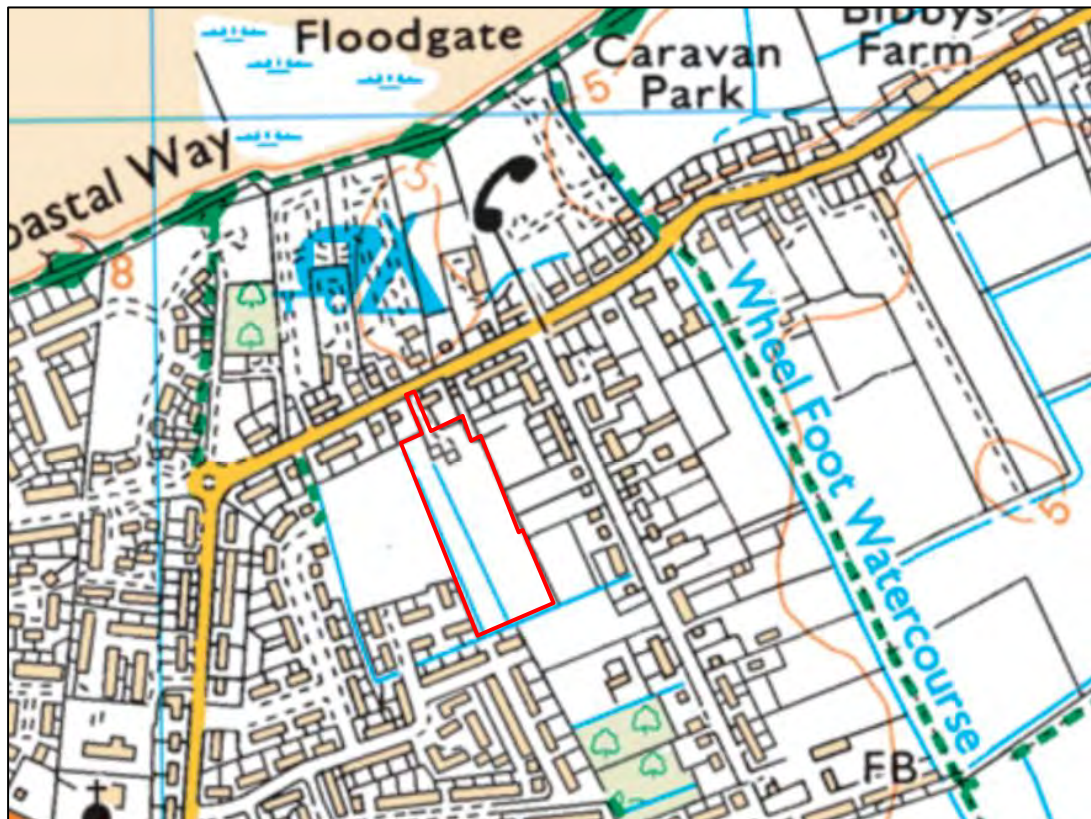


Figure 3.1: OS map (watercourses shown in pale blue and site boundary in red)

3.2 Geology

Based on published geological records for the area (British Geological Survey (BGS) online mapping), the site exhibits the following geology:

- Superficial Geology: Blown Sand - Sand. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.
- Bedrock Geology (split):
 - Majority of the site: Sherwood Sandstone Group - Sandstone. Sedimentary bedrock formed between 272.3 and 237 million years ago during the Permian and Triassic periods
 - South-western and western corner: Breckells Mudstone Member - Mudstone. Sedimentary bedrock formed between 241.5 and 228.4 million years ago during the Triassic period.

There are three BGS Borehole records are located within the nearby vicinity of the site (< 400m): SD34NE140-142. Boreholes SD34NE140 and SD34NE141 exhibited geology of topsoil to a depth of 0.3 metres below ground level (mbgl), underlain by sand to the borehole end (maximum depth of 6.35mbgl). Borehole SD34NE142 exhibited geology of tarmac to 0.4mbgl, underlain by sand to 2.08mbgl at which point the borehole was obstructed and abandoned.

The records noted groundwater seepage within boreholes SD34NE140 and SD34NE141 at a depth of 1.5mbgl in each.

3.3 Hydrogeology

Hydrogeological information was obtained from the online Magic Maps service. These maps indicate that the site is underlain by a Secondary A superficial aquifer associated with the Blown Sand. The maps also indicate that the site is underlain by a Secondary B bedrock aquifer, with the eastern site boundary directly adjacent to a Principal bedrock aquifer.

The site is not located within any groundwater Source Protection Zones. The nearest groundwater Source Protection Zone is located approximately 2.1km east of the site and is designated as 'Zone III – Total Catchment'.

4 SOURCES OF FLOOD RISK

4.1 Criteria

In accordance with the NPPF and advice from the EA, an assessment of the risk associated with various flooding sources is required along with consideration of the effects of climate change over the design life of the development (in this case assumed to be 100 years).

The EA's most recent climate change guidance³, should be referenced in order to identify the appropriate peak river flow and rainfall intensity allowances for the scheme. The appropriate allowance for peak river flow is based on the site's location in the country, the lifetime of development, the relevant flood zone and the vulnerability of the proposed end use.

The flood risk elements that need to be considered for any site are defined in BS 8533 'Assessing and managing flood risk in development Code of practice'⁴ as the "Forms of Flooding" and are listed as:

- Flooding from rivers (fluvial flood risk);
- Flooding from the sea (tidal flood risk);
- Flooding from the land;
- Flooding from groundwater;
- Flooding from sewers (sewer and drain exceedance, pumping station failure etc); and
- Flooding from reservoirs, canals and other artificial structures.

The following section reviews each of these in respect of the subject site.

4.2 Definitions of risk

Table 4.1: Flood map for planning risk zoning

Flood Zone	Description
Flood Zone 1	Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)
Flood Zone 2	Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year

³ Environment Agency, 'Guidance: Flood Risk Assessments: Climate Change Allowances'. <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>, published February 2016, last updated May 2022.

⁴ BSI, 'BS 8533-2017 Assessing and managing flood risk in development Code of practice', December 2017.

Flood Zone	Description
Flood Zone 3	Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Flood Zone 3b	Land having the potential to flood for storm events up to the 1 in 30 year return period (>3.3% annual probability of flooding occurring). It is classified as 'functional floodplain'

Table 4.2: Flood Risk from rivers or the sea and flood risk from surface water

Flood Risk	Description
High	High risk means that each year this area has a chance of flooding of greater than 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.
Medium	Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.
Low	Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.
Very Low	Very low risk means that each year this area has a chance of flooding of less than 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Table 4.3: Flood risk category matrix from reservoirs, groundwater, sewers and other artificial sources

Threat Probability	Low Impact	Medium Impact	High Impact
High	Medium	Medium	High
Medium	Low	Medium	Medium
Low	Low	Low	Medium
Very Low	Very Low		

4.3 Flooding from rivers (fluvial flood risk)

The EA Flood Zone mapping study for England is available on their website at: <https://flood-map-for-planning.service.gov.uk>.

The latest EA published flood zone map (**Figure 4.1**) shows that the site lies within Flood Zone 3.

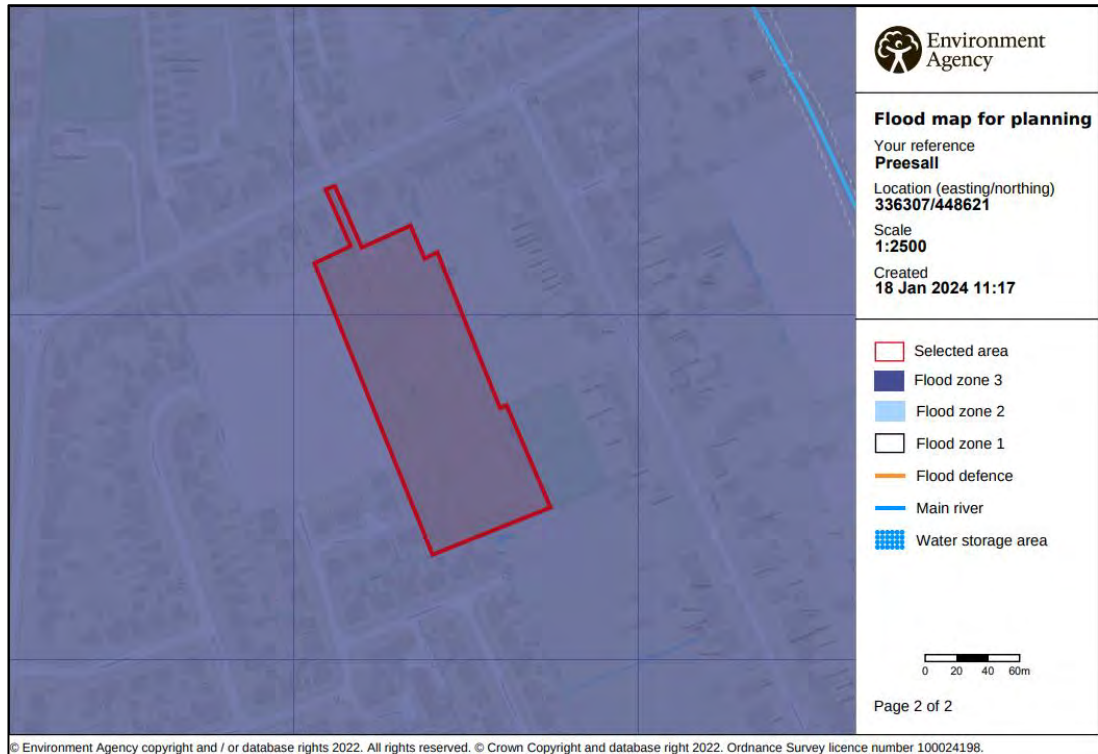


Figure 4.1: Environment Agency ‘Flood map for planning’

The EA was formally consulted as part of this assessment, with request for flood related information (including flood levels) included in the consultation. Their full response to the flood data request can be found in **Appendix E**. It is to be noted that the Flood Zone 3 designation is associated with tidal flooding and as such, the site is at **very low** risk of flooding from fluvial sources. The surface water flood extents have been used as a proxy to determine the fluvial flood extents which can be expected on-site as a result of the on-site watercourses. The pluvial risk is detailed in **Section 4.5**.

4.3.1 Climate change

Fluvial flooding is likely to increase as a result of climate change. A greater intensity and frequency of precipitation is likely to raise river levels and increase the likelihood of a river overtopping its banks. Climate change guidance for river modelling was updated by the EA in May 2022. No model re-runs have been undertaken as part of this site-specific FRA, and the supplied EA data therefore represents the best available and up-to-date data when considering the flood risk to the site. The impact upon the site should be negligible as the Flood Zone 3 designation is not in relation to fluvial flooding.

4.4 Flooding from the sea (tidal flood risk)

In accordance with the EA data (**Appendix E**), the site is at potential risk from tidal flooding.

The EA provided model flood extent mapping taken from the Tidal Lune Estuary Model (2014) which included four modelled scenarios: tidal defended and tidal defended plus climate change, tidal undefended and tidal undefended plus climate change.

4.4.1 Defended scenario

It is shown that for the defended 1 in 75 year, 1 in 100 year, 1 in 200 year and 1 in 100 year events the site is not at risk from tidal flooding during normal operation of the defences.

In the defended 1 in 200 year plus climate change scenarios, three sea level rise allowances have been modelled: +370mm, +670mm and +970mm. The site is partially at risk from all three scenarios with tidal levels for all three scenarios reaching levels of 5.20mAOD. The climate change allowance for the site should be assessed up to the year 2125 to allow for the 100 year lifespan of the development for residential uses. In accordance with Table 1 of the EA climate change guidance, the cumulative sea level allowance up to the year 2125 is 1.4m, which is 430mm higher than the EA modelled level (undefended 1 in 200 year plus 970mm event). As such, 430mm has been added to the maximum EA modelled climate change level of 5.20mAOD, producing a peak flood level of 5.63mAOD for the defended 1 in 200 year plus climate change event to the year 2125 (the maximum modelled scenario). From this event, the flood depth is expected to reach up to 0.73m in the southern extent of the site (based on the lowest elevation of 4.90mAOD) and up to 0.03m in the northern extent of the site (based on the highest elevation of 5.60mAOD).

4.4.2 Undefended scenario

In the undefended 1 in 200 year plus climate change scenarios, three sea level rise allowances have been modelled: +370mm, +670mm and +970mm. The site is wholly at risk from all three scenarios, with tidal levels for the +970mm sea level rise scenario reaching 7.31mAOD. In this scenario, in accordance with the lowest recorded ground level on-site (4.90mAOD), up to 2.41m can be expected.

4.4.3 Breach scenario

It is shown on the 'EA Reduction in Risk of Flooding from Rivers and the Sea' mapping⁵ that the site benefits from flood defences and as such, a breach scenario is more reflective of the impact of defence failure, as opposed to the undefended modeling provided. The EA have provided breach scenario mapping for the 1 in 200 year tidal

⁵ 'EA Reduction in Risk of Flooding from Rivers and the Sea' available at: <https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/ReductionInRiskOfFloodingFromRiversAndSea&mode=spatial>

breach event. It is shown that flood levels of up to 5.24m AOD on the eastern half of the site are reached. In accordance with EA climate change guidance, the cumulative sea level allowance up to the year 2125 is 1.4m. In reference to this guidance, the 1 in 200 year plus climate change level to the year 2125 for the site is 6.64m AOD.

The site is served by flood defences along the coast of Morecambe Bay. The nearest to the site are a combination of walls and embankments, offering standards of protection of 100 years and 200 years.

4.4.4 Historic tidal flooding

The EA data response provided mapping of two historic flood events: one which took place in December 2013 caused by tidal flooding as a result of operational failure/breach of defences and the second in February 2002 caused by overtopping of the defences. For both events, the site was not affected and the recorded flood events were not in the nearby proximity of the site.

The EA holds records of the wider area being affected by flooding during a flood event occurring in November 1977, however the site may not have been affected as the data is not site-specific.

The overall tidal flood risk is considered to be **medium**, as the site is at risk from the defended climate change scenarios and the breach 1 in 200 year event.

4.5 Flooding from the land (surface water flood risk)

If intense rain is unable to soak into the ground or be carried through manmade drainage systems, for a variety of reasons, it can run off over the surface causing localised floods before reaching a river or other watercourse.

Generally, where there is impermeable surfacing or where the ground infiltration capacity is exceeded, surface water runoff can occur. Excess surface water flows from the site are believed to drain to the local sewers.

The EA's surface water flood map (**Figure 4.2**) shows that the site is 'very low' risk of surface water flooding. There are areas of low-medium pluvial risk adjacent to the western boundary/western site corner, however these areas of risk have been separated from the site via the western ordinary watercourse. There is also noted to be low risk areas associated with the route of the on-site watercourse and the watercourses located to the west and south of the site, with flood depths contained within these watercourses.

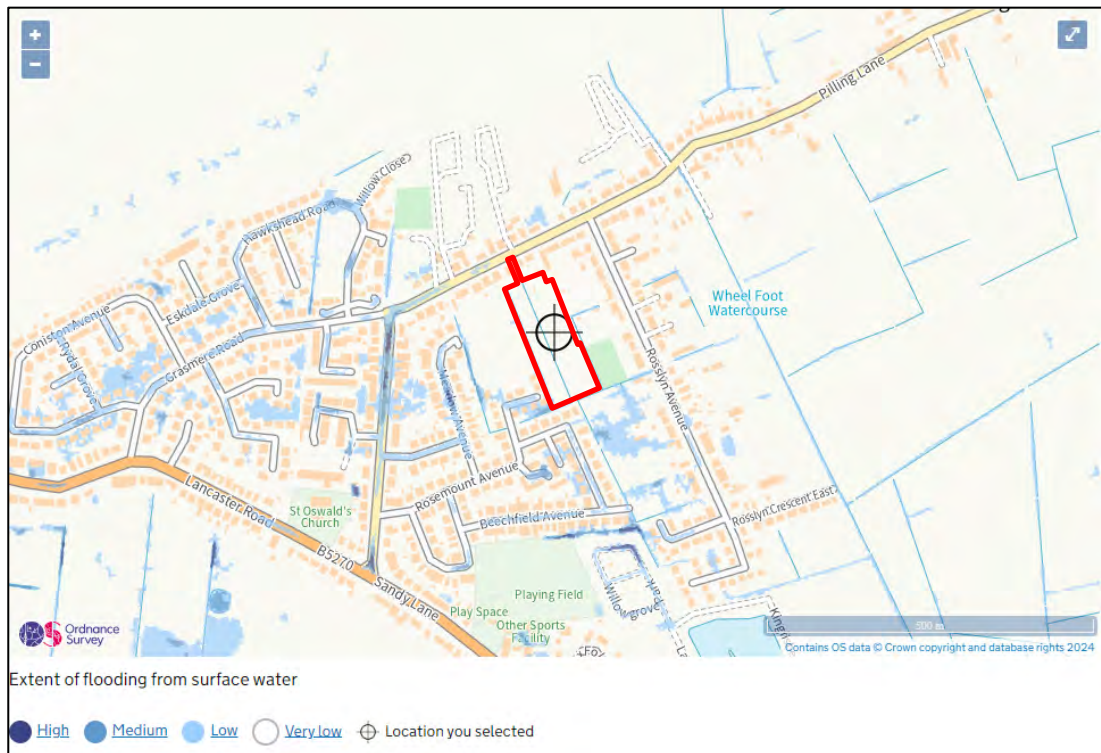


Figure 4.2: Environment Agency ‘Flood risk from surface water’ map

The topography on site shows the site falls south-east and therefore any surface water runoff will likely fall away in this direction. Runoff generated by the proposed development will need to be controlled to prevent surface water flooding elsewhere.

The overall risk of surface water flooding at the site is considered to be **very low - low**.

4.5.1 Climate change

Surface water flooding is likely to increase as a result of climate change in a similar ratio to fluvial flooding. Increased intensity and frequency of precipitation is likely to lead to reduced infiltration and increased overland flow. This will need to be taken into account in the design of the surface water drainage system for the development.

4.6 Flooding from groundwater

Groundwater flooding tends to occur after long 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. 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.

Available nearby BGS borehole records indicate groundwater strikes at depths of 1.50mbgl. During the operational phase, the absence of basement features within the

proposals minimises the potential hazards posed by groundwater flooding, however site investigation would confirm the groundwater levels and geology on-site.

The overall groundwater flood risk is considered to be **low**, however, there is a medium risk of encountering shallow groundwater during groundworks.

4.6.1 Climate change

Climate change could increase the risk of groundwater flooding as a result of increased precipitation filtering into the groundwater body. This is less likely to cause a significant change to flood risk than from other sources since groundwater flow is not as confined. Any locally perched aquifers may be more affected, but these are likely to be isolated. The change in flood risk as a result of climate change is likely to be low.

4.7 Flooding from sewers

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its conveyance capacity, the system becomes blocked or it cannot discharge due to a high water level in the receiving watercourse. When exceeded, the surcharged pipe work could lead to flooding from backed up manholes and gully connections.

Sewer details have been referenced from sewer record plans obtained from UU. The plans indicate there are no sewers located on-site, with a combined sewer running from Rosemount Avenue to Pilling Lane and a number of surface, combined and foul water sewers in the road networks to the west.

Based on the local topography, any surcharged water would most likely be contained within kerb heights along the highways, whilst surcharging from the 375mm combined sewer to the west may flow south-west towards the southern extent of the site. The combined sewer is separated from the site via ordinary watercourses and as such any surcharged water is likely to be contained within the watercourse and will not reach the site.

Due to there being no sewers located in the immediate vicinity of the site and the likelihood of any surcharging from sewers in the area not reaching the site, the resultant sewer flood risk is considered to be **very low**.

4.7.1 Climate change

Climate change is likely to result in an increase in flooding from sewers. Increased rainfall and more frequent flooding put existing sewer and drainage systems under additional pressure resulting in the potential for more frequent surcharging and potential flooding. This would increase the frequency of local sewer flooding but would not be significant in terms of the proposed development.

4.8 Flooding from reservoirs

Flood events can occur from a sudden release of large volumes of water from reservoirs. The EA reservoir flood map (reproduced as **Figure 4.3**) shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. Since this is a prediction of a worst-case scenario, it is unlikely that any actual flood would be this large.

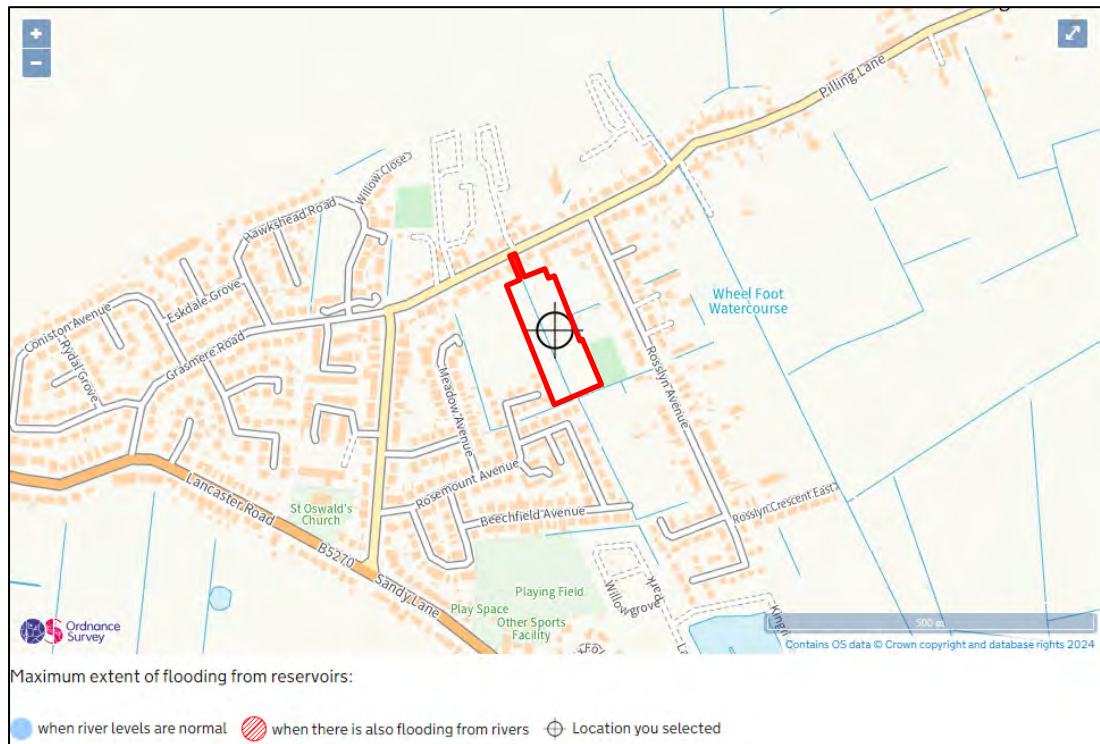


Figure 4.3: Environment Agency 'Flood risk from reservoirs' map

The EA mapping was updated in 2021 to demonstrate the potential maximum extent of flooding for two scenarios - a "dry day scenario" in which river levels are "normal", and a "wet day scenario" where the flooding from the reservoir coincides with flooding from rivers.

The map shows that the site is not in a location at risk of reservoir flooding when river levels are normal or when there is also flooding from rivers.

Reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. Since then reservoir safety legislation has been introduced to ensure reservoirs are maintained.

Reservoirs can be managed over time, controlling inflow/outflow of water and therefore there is the capacity to control the effects of climate change. Increased rainfall has the potential to increase base flow, but this should be minimal. It is unlikely that there will be a substantial change to the risk of flooding for this site as a result of climate change.

The resultant flood risk is considered to be **very low**.

4.9 Other sources of flooding

4.9.1 Canals

There are no Canal and Rivers Trust owned assets within the nearby vicinity of the site.

4.9.2 Other artificial features

There are no artificial features in the vicinity of the site which may pose a risk.

5 MITIGATION MEASURES AND RESIDUAL RISK

5.1 Overland flood flow

The site is not at risk from surface water flooding, according to the EA mapping.

All surface water runoff up to the 1 in 100 year plus climate change storm generated on site will be stored on-site and discharged accordingly, in line with the SuDS hierarchy. Surface flows may be generated on site due to drainage capacity exceedance, which can be conveyed into the storage features on-site.

5.2 Finished floor levels

As this site is likely to be affected by tidal flooding during the defended 1 in 200 year plus climate change event, finished floor levels will need to be considered into the design. The finished floor levels of the proposed buildings should be set a minimum of 300mm above the modelled defended 1 in 200 year plus climate change event to the year 2125 level (the maximum modelled scenario). This provides a finished floor level of 5.93mAOD.

As a precautionary measure, flood resistant and flood resilient techniques could be incorporated, the details of which are described in **Section 5.6**.

The undefended tidal flood level (1 in 200 year plus 970mm sea level rise) results in an expected flood depth of up to 2.41m on-site. The risk from this event is residual in the event that the defences are not maintained for the lifetime of the development. It is therefore recommended that there should be no sleeping accommodation at ground floor level in the design, ensuring that the users are safe during the event of an undefended tidal flood event.

5.3 Flood compensation

The risk to the site is from a tidal flood event and therefore compensation is not required, as there will no impact on flood levels as a result of proposed ground raising.

5.4 Easements and consents

The ordinary watercourse which is located through the centre of the site is proposed to be culverted as part of the development. Ordinary watercourse consent should be applied for and agreed with Lancashire County Council (LLFA).

There are two open ordinary watercourses along the eastern and southern site boundaries which require a development easement.

5.5 Groundwater flooding mitigation

Given the potential for groundwater, the following mitigation measures should be considered and incorporated where feasible:

- Best practice should be followed for all new pipes/sewers to prevent the ingress of groundwater into the drainage systems;
- Non-return valves could also be fitted to prevent flooding within buildings;
- Any retained sewers and drains which may be leaking should be replaced and renewed;
- Additional jointing/sealing should be incorporated in manholes, in areas potentially at risk;
- Ongoing groundwater monitoring should be undertaken to establish the full range of conditions and any trends in groundwater levels;
- Consider use of groundwater interception systems to divert groundwater flows around below ground level obstructions; and,
- Appropriate signage should be provided within the basin areas to warn people of possible water depths during storm events.

The proposed development does not include any basement proposals. Therefore, aside from shallow foundations works, the proposals will have no material impact on the risk of groundwater flooding both to and from the development.

5.6 Flood resistance and resilience measures

The current design flood level has been established as 5.63mAOD (tidal defended 1 in 200 year plus climate change event to the year 2125) which is approximately 730mm above the lowest elevation on-site of 4.90mAOD.

Therefore, as a precautionary measure, during the detailed design process, it would be prudent to consider the use of flood resistant and resilient techniques such as those described below where possible.

- Flood resistant measures – methods to prevent floodwater reaching or entering properties
 - Demountable flood barriers to be installed across airbricks and doorways;
 - Bespoke flood skirts to be installed surrounding the property walls;
 - Permanent low bunds may provide restricted flow towards buildings acting as an effective local flood defence, subject to approval from planning authority and the EA;

- Using external waterproof wall render for external walls;
 - Provision of non-return valves for all private connections points into any public sewer system to minimise the risk of backflows entering the property during overloading of the public sewer system following extreme rainfall events; and
 - Temporary airbrick covers and airbrick membrane covers can be manually installed in advance of flood events or periscope (raised) airbricks used where feasible.
- Flood resilient measures – methods to minimise damage caused by floodwaters
 - Raised services - advisable to install electrical wall sockets and domestic appliances at elevated wall levels, above flood levels;
 - Internal doors may be replaced with water resistant plastic or acrylic doors;
 - Internal waterproof wall render and internal waterproof coating for any ground level fixings;
 - The Damp Proof Membrane will be installed above the main floor slab and tied into the walls where appropriate, to reduce the turnaround time for returning the property to full operation after a flood event; and,
 - Plasterboard to be installed in horizontal sheets rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event.

In terms of the construction of the development, reference should be made to “Preparing for Floods” a DEFRA publication⁶, CIRIA guidance C624 “Development and flood risk”⁷ and the CLG document “Improving the flood performance of new buildings”⁸.

5.7 Flood management plan

The site is located within Flood Zone 3 and is shown on the modelled EA data to be at risk from the tidal defended 1 in 200 year plus climate change extent. Given that the site could be impacted during a defended 1 in 200 year event plus climate change event, a Flood Management Plan should be prepared to support the development and future residents should sign up to the EA’s Flood Warning service.

The site is located within the Lancashire coastline at Over Wyre, between Wrampool Bridge, Preesall and Knott End EA Flood warning area.

⁶ DTLR, ‘Preparing for Floods Interim guidance for improving the flood resistance of domestic and small business properties’, October 2003.

⁷ CIRIA, ‘Development and Flood Risk guidance for the construction industry’ C624, 2004.

⁸ Communities and Local Government, ‘Improving the flood performance of new buildings – flood resilient construction’, May 2007.

5.8 Safe access/egress

As the EA modelled data indicates the site is located within the tidal defended 1 in 200 year plus climate change flood extent, safe access and egress is required.

Given the extent of the surrounding floodplains, there would need to be a reliance placed on flood warnings and/or a flood management plan to ensure safe access/egress to the site is available. In the unlikely event that flooding onsite occurs without prior flood warning, safe and dry refuge will be provided in all dwellings at first floor. Therefore, the default position for future users of the site will be dependent on flood warning and a Flood Risk Management Plan and as a last resort, directing people to refuge at first floor level within the property. In the event of a major flooding incident, safe refuge can be sought from the upper floors of the dwellings, until flood waters have receded. Given the tidal nature of the flooding, the duration of the flood event is likely to be relatively short.

6 PLANNING CONTEXT

6.1 Land use vulnerability

Table 2 of the PPG indicates the compatibility of various land uses in each flood zone, dependent on their vulnerability to flooding. **Table 6.1** below is reproduced from Table 2 of PPG.

Table 6.1: Flood risk vulnerability and flood zone ‘compatibility’

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
	Zone 2	Appropriate	Appropriate	Exception Test Required	Appropriate	Appropriate
	Zone 3a	Exception Test Required	Appropriate	Should not be permitted	Exception Test Required	Appropriate
	Zone 3b functional floodplain	Exception Test Required	Appropriate	Should not be permitted	Should not be permitted	Should not be permitted

With reference to Annex 3 of the NPPF, the proposed development, based on its residential use, is classed as 'more vulnerable'. This classification of development is appropriate for areas within Flood Zone 1 and 2, however, the exception test is required for areas within Flood Zone 3.

6.2 Sequential Test

The Sequential Test aims to direct new development to areas with the lowest probability of flooding. The site has been identified as located within a tidally influenced Flood Zone 3, with no other significant flooding issues identified from other sources.

According to the NPPF, if there is no reasonably available site in Flood Zone 1, the flood vulnerability of the proposed development (see PPG Table 2) can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3. Within each Flood Zone new development should be directed to sites at the lowest probability of flooding from all sources.

Although the site is located within an area of Flood Zone 3, it is offered protection from flooding through maintained tidal defences. It has been stated in the EA data response

that there have been two historic events in which there has been a breach of the defences, however, the flood extents did not reach the vicinity of the site.

Wyre Council have produced a guidance document⁹ which details how to apply the sequential test and should be read in conjunction with the Wyre Local Plan¹⁰. In accordance with the Wyre Council advice, the development is classed as “Hard development” and it should be demonstrated that safe access/egress should be located to avoid the possibility of development being “cut off” if flooding were to occur. As the flood extents of the Flood Zone 3 designation and the modelled 1 in 200 year plus climate change extent are extensive, it is critical that in the event of a flood, safe refuge is sought via the upper floors of the buildings until the flood waters have resided.

The sequential test of the site in reference to alternative sites in the local area is outside of the scope of this assessment.

6.3 Exception Test

In accordance with **Table 6.1**, in order for a ‘more vulnerable’ development to be considered acceptable within Flood Zone 3a, the Exception Test must be passed.

The stipulations of the Exception Test (reproduced from Paragraph 164 within NPPF), both of which will have to be passed for development to be allocated or permitted, are:

- Development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk. In response to this requirement, it is noted:
 - The development will provide additional housing to the area in keeping with the local housing policies;
 - The development will provide controls on surface water drainage via flow control devices, as not to increase the risk of flooding the risk of flooding to the surrounding area;
 - Public open space is to be provided in the north of the site, providing amenity to the local residents.
- The development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. In response to this requirement, it is noted:
 - The design will incorporate mitigation measures (see **Section 5** for details) to keep future residents and their properties suitably protected from the risks associated with tidal flooding;

⁹ Flood risk sequential test - advice to applicants, Wyre Council, April 2021. Available at: <https://www.wyre.gov.uk/general-information/flood-risk-sequential-test/1>

¹⁰ Wyre Local Plan (2011-2031) (incorporating partial update of 2022), Wyre Council, 2022. Available at: <https://www.wyre.gov.uk/planning-policy/local-plan-partial-review-2011-2031-1>

- The site is afforded protection from sea defences along the coastline of Morecambe Bay, with a breach of the defences highly unlikely. The defences offer standards of protection for 100 years and 200 years;
- The site is affected by tidal flooding and the addition of a development will not displace flood water and flood storage is not required, unlike if the site were to be affected by fluvial flooding;
- Minimum floor levels will be set above predicted defended flood levels, this demonstrates that all proposed residential development is “acceptable” in line with relevant guidance; and
- Safe refuge will be available at first floors within the residential properties.

7 CONCLUSIONS AND RECOMMENDATIONS

This FRA complies with the NPPF and Planning Practice Guidance and demonstrates that flood risk from all sources has been considered in the proposed development. It is also consistent with the Local Planning Authority requirements with regard to flood risk.

The proposed development site lies in an area designated by the EA as Flood Zone 3 and is at risk from tidal flooding. No significant risks have been identified associated with other sources of flooding.

This FRA demonstrates that the site is offered protection from the tidal defences located along Morecambe Bay coastline. In the event of a flood, safe refuge can be sought via the upper floors of the buildings until flood water have resided.

The proposed development is classified as 'more vulnerable' and therefore requires the application of the Exception Test. The finished floor levels of the proposed buildings are to be set 300mm above the modelled flood level of the defended 1 in 200 year plus climate change event.

This FRA has considered multiple sources of flooding and concluded the following:

Table 7.1: Flood risk summary

Source	Level of risk	Mitigation
Fluvial	Very Low Flood Zone 3	None required.
Tidal	Medium Flood Zone 3	The finished floor levels of the proposed buildings should be a minimum of 300mm above the modelled defended 1 in 200 year plus climate change event up to the year 2125, calculated as a level of 5.93m AOD. it is recommended that the flood mitigation and resilience measures, detailed in Section 5.6 , are considered in the design.
Surface water	Very Low - Low	The development will incorporate a surface water drainage strategy to accommodate surface water generated on site.
Groundwater	Low	The mitigation measures detailed in Section 5.5 could be utilised on-site.
Sewers	Very Low	None required.
Reservoir	Very Low	None required.

Source	Level of risk	Mitigation
Other sources	Very Low	None required.

Overall, taking into account the above points, the development of the site should not be precluded on flood risk grounds.

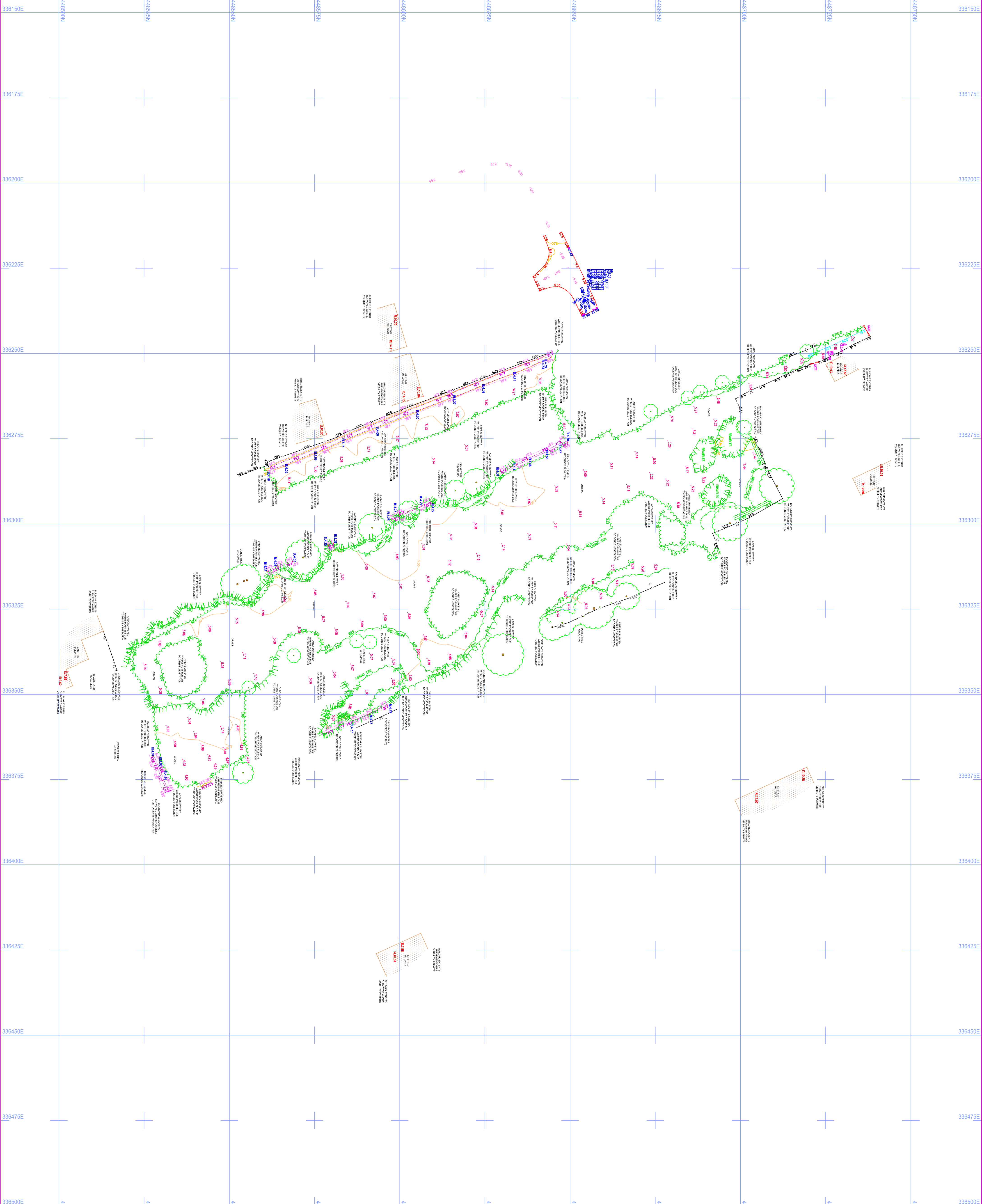
APPENDIX A

RSK GROUP SERVICE CONSTRAINTS

1. This report and the drainage design carried out in connection with the report (together the "Services") were compiled and carried out by RSK LDE Ltd (RSK) for Breck Homes (the "client") in accordance with the terms of a contract between RSK and the "client" dated January 2024. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable civil engineer at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.
7. The Services are based upon RSK's observations of existing physical conditions at the site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.
9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (boreholes, trial pits etc) annotated on site plans are

not drawn to scale but are centred over the appropriate location. Such features should not be used for setting out and should be considered indicative only.

APPENDIX B TOPOGRAPHIC SURVEY



SURVEY ORIENTATED TO OS GRID (OSGB36-15)

SURVEY LEGEND	
FEATURES	SURVEY ANNOTATIONS
TOP OF BANK	AV AIR VALVE
BOTTOM OF BANK	BS BOLT STUD
SURVEY STATION	BT BRITISH TELECOM
TREE	SPR CONCRETE PAVING SLABS
HEDGE	CR CONCRETE
THREE CANOPY	EB ELECTRIC CONTROL BOX
BUSHES	EP ELECTRICITY POLE
VEGETATION	FR FIRE HYDRANT
	PP FLAG POLE
	GH GREENHOUSE
	GP GATE POST
	KV INSPECTION COVER
	JB JUNCTION BOX
	WED WOOD
	MO MESS OUTLET
	LH LAMP HOLE LIGHT COLUMN
	HH HANDBOLE
	AP APPOINTMENT POINT
	OC OVERHEAD COILS
	KG KNEE WALL FENCE
	PG POST BOX
	PO POSTING BOX
	MC MISC. CONCRETE
	PLC POST AND WIRE FENCE
	PO POST AND WIRE FENCE
	RS RANCH STYLE FENCE
	SEC SECURITY FENCE
	TH THUNDER FENCE
	BLW BRICK WALL
	CON CONCRETE
	CMW CONCRETE WALL
	THES THES
	REW RETAINING WALL
	RMW RETAINING WALL
	STW STONE WALL
	UTS UTILITY UNABLE TO SURVEY
	ASL ARCH SPRINKLING LEVEL
	RL BED LEVEL
	CL COVER LEVEL
	DM TOP OF ROOM
	FD FINISHED FLOOR LEVEL
	IL INVERT LEVEL
	RL ROOMFLOOR LEVEL
	SL SLOPE LEVEL
	TP TOP OF PIPE
	THR THRESHOLD LEVEL
	ME WATER LEVEL
	WS WINDOW SIGHT

DISCLAIMER:

ONLY MANHOLES AND SERVICES SHOWN WERE VISIBLE AT THE TIME OF SURVEY. LAND OWNERS AND SERVICE PROVIDERS ARE ADVISED TO VERIFY THE LOCATION AND DEPTH OF SERVICES PRIOR TO ANY WORK COMMENCING. BOUNDARIES SHOWN ARE PHYSICAL AND MAY NOT REPRESENT LEGALLY CONNECTED OWNERSHIP. THESE SPREADSHEETS ARE FOR INFORMATION ONLY AND DO NOT REPRESENT THE FINAL SURVEY. THE SURVEYOR'S RESPONSIBILITY IS TO THE CLIENT AND NOT TO THE PUBLIC.

SURVEY NOTES

ALL LEVELS ARE RELATED TO OS DATUM (OSGB36-15) ESTABLISHED BY SETTING THE LEICA SHANNON GPS NETWORK

TOTAL SURVEY UNPAID	REQ.	DATE	DRWN	APPR
	A	20.06.23	LD	

Survey Eng Ltd
Land Surveyors & Engineers

14 GREEN LANE
WESTON BOLTON
BL3 3DF
TEL: 01603 772 250
WWW.SURVEYENG.CO.UK

CLIENT
BRECK HOMES

PROJECT TITLE
PILLING LANE, PRESAL

DRAWING DETAIL
TOPOGRAPHICAL LAND SURVEY

PROJECT ENGINEER	LD	DATE	24.06.2023
DRAWN	LG	SCALE	1:500@A1

DRAWING NUMBER	TH.TS.02	REVISION	A
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APPENDIX C SEWER RECORDS

IGE Consulting

**Office 11, Bartle House
Oxford Court,
Manchester,
M2 3WQ**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: 4122
Our Ref: UUPS-ORD-543762
Date: 22/01/2024**

Dear Sirs

Location: 58 PILLING LANE, PREESALL, POULTON-LE-FYLDE, FY6 0HB

I acknowledge with thanks your request dated 22/01/2024 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.



Refno	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad	Refno	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad		
3328	5.49	SW	4.13	225	225	VC	1326216	1	1 in 3716	3303	6.15	SW	4.08	225	225	VC	9.37414	1	1 in 537		
1410		FO				VC	24.45868			1406		FO				VC	42.8421				
9405	5.15	SW	4.28	225	225	VC	13.46962	1	1 in 224	1407		SW	4.0	225	225	VC	30.31413				
2527	5.3	FO	1.72	150	150	UN	17.88076	1	1 in 369	1408		FO				PVC	18.27016				
0601	5.17	CO	1.29	375	375	CO	14.21782	1	1 in 358	1409		FO				VC	6.78834				
3441	5.14	CO	4.3	100	100	CO	50.27699	1	1 in 358	1410		FO				VC	11.91809				
4307		FO				PF	5.296848			1411		FO				VC	18.55698				
0808		SW	0	225	225	VC	13.2667			1412		SW	4.65	100	100	VC	28.65873		1 in 476		
1511		FO				VC	13.42377			1413		FO				VC	9.751287				
0607		FO				VC	10.28274			1414		FO				VC	18.22112				
0602		CO				VC	15.60442			1415		CO				VC	4.643795				
2701	5.43	CO	2.29	225	225	VC	10.072	1	1 in 258	1416		CO				VC	15.38668				
1307	6.11	2.11				VC	56.32735	1	1 in 808	1417		CO	2.67	225	225	VC	102.896		1 in 278		
1509		FO				VC	7.206815			1418		CO				VC	9.114717				
3305		CO				VC	5.213444			1419		CO				VC	9.358412				
2410		SW	3.16	100	100	VC	24.11598			1420		CO				VC	28.68792				
3704	5.31	SW	0	225	225	VC	6.45348			1421		SW	0	225	225	CO	12.63766				
0901		SW	2.29	225	225	VC	17.80237			1422		SW	4.49	225	225	VC	108.8448				
2420		FO				PVC	7.457396			1423		SW	5.33	100	100	UN	74.28307		1 in 321		
3703	5.31	CO	0.93	225	225	VC	19.82313			1424		FO	4.27	225	225	VC	41.78516				
4308		FO				PF	18.22322			1425		CO				VC	8.809127				
0317		FO				VC	19.84559			1426		CO				VC	4.645004				
3319		FO	3.47	100	100	VC	34.05877			1427		FO				PF	6.992991				
4201	5.53	FO	3.33	100	100	PF	100.4832		1 in 913												
2424		FO				VC	6.136517		1 in 688												
4501	5.17	CO	3.68	225	225	VC	102.8793														
2430		CO				VC	4.845716														
4802		FO				VC	19.25317														
2318		FO				VC	7.729759														
4401		CO				PVC	9.248108														
0807		SW				VC	24.44038														
4403		CO				PVC	5.245228														
0302	6.08	CO	4.16	100	100	VC	17.1724		1 in 171												
5903	5.25	CO	3.55	225	225	VC	61.00828		1 in 339												
5303	5.49	FO	4.27	225	225	VC	27.09972		1 in 143												
4603		CO				VC	27.4528														
0402	5.19	CO	3.46	375	375	CO	15.29706		1 in 170												
2408	5.79	SW	4.47	225	225	VC	41.95927		1 in 231												
0303	5.61	SW	4.47	225	225	VC	152.302														
1402		FO				VC	4.898983														
2306	5.79	SW	4.6	225	225	VC	40.1995		1 in 251												
2502		CO	3.23	450	450	VC	42.48039		1 in 256												
3331		CO				VC	5.798046														
0709		FO				UN	30.08131														
2509		FO				UN	7.687266														
1511		FO				VC	15.57094														
3318		FO				VC	4.420323														
0401	5.11	CO	3.37	375	375	CO	72.6926		1 in 559												
3805		CO				VC	13.20274														
2705		CO				VC	28.20917														
3808		FO				VC	13.20274														
3326		FO				VC	8.519653														
5307	5.49	SW	4.63	225	225	VC	20.07833		1 in 279												
1606	5.38	CO	2.72	375	375	CO	78.8103		1 in 99												
3413		FO				PVC	6.33961														
4815		FO				VC	26.8191														
0403	5.17	SW	4.38	225	225	VC	29.15476		1 in 324												
3303	5.6	SW	4.18	225	225	VC	8.895348														
2305	5.91	SW	4.7	225	225	VC	28.28427		1 in 707												
0305	6.41	SW	5.47	150	150	VC	36.12478		1 in 401												
1505	5.23	FO	4.18	225	225	VC	20.2892														
1411		CO				VC	27.06874		1 in 118												
5308	5.47	SW	4.71	150	150	VC	33.47406		1 in 257												
2501		CO				VC	7.678724														
0410		FO				VC	10.51997														
0806		SW				VC	2.869233														
9806		CO				VC	4.304157														
0806		SW				VC	17.23993														
2319		FO				VC	6.332773														
3410		FO				VC	12.10188														
2402	5.69	FO	1.98	150	150	VC	12.10188		1 in 333												
3701	5.32	CO	2.99	225	225	VC	5.242096		1 in 17												
2326		FO				VC	19.22773														
5302	5.46	CO	4.04	225	225	VC	102.4204		1 in 539												
0306	6.2	SW	5.46	150	150	VC	9.430981														
5904		FO				VC	18.09723														
2403	5.68	SW	4.37	225	225	VC	33.24154		1 in 277												
1306		FO				VC	50.89992														
1701	5.2	CO	1.17	525	525	UN	30.8515		1 in 129												
2519		UN				UN	2.50554														
2323		FO				VC	5.90657														
1305	6.12	SW	5.25	150	150	VC	17.11724														
0601	4.99	FO	0			VC	54.16038		1 in 1354												
2308		FO				VC	15.67348														
3404	5.44	FO	4.07	150	150	VC	80.86278		1 in 202												
4601	5.27	CO	3.51	225	225	VC	100.9168		1 in 594												
3327		CO				VC	7.21515														
3710		CO				VC	7.018312														
1344		FO				VC	18.07774														
1407	5.2	FO	4.11	225	225	VC	86.97701		1 in 458												
0307	6.33	SW	5.47	150	150	VC	35.3534		1 in 707												
1502	5.03	FO	4.38	225	225	VC	35.35311														
4606		CO				VC	12.42954														
3330		CO				VC	14.01966														
3418	5.46	FO	4.78	100	100	VC	13.35354		1 in 186												
5305		FO				VC	25.79968														
0308	6.31	FO	4.59	150	150	VC	21.08305														
2423		FO				VC	12.14814		1 in 68												
1603	5.3	CO	1.29	3																	



LEGEND

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water

	Air Valve
	AC Valve, open
	AC Valve, closed
	CC Valve, open
	CC Valve, closed
	Non Return Valve
	Pressure Management Valve
	OMS Valve
	Stop Tap
	Flow Meter
	Domestic Meter
	Commercial Meter
	Pump
	Hydrant
	Fire Hydrant
	Anode
	Chlorination Point
	De-chlorination Point
	Strainer Point
	Access Point
	Hatch Box
	IP Point
	Sampling Station
	Logger Box
	Bore Hole
	Inlet Point
	Bulk Supply Point
	End Cap
	Site Termination
	Change of Characteristic
	Condition Report

Property Types

	Water Tower
	Valve House
	Booster Pumping Station
	Intake Pumping Station
	Water Treatment Works
	Supply Reservoir
	Service Reservoir
	Impounding Reservoir
	Pipe Bridge

Symbology for proposed assets is the same as above, but shown in green.
Symbology for abandoned assets is the same as above, but shown in black.

Address or Site Reference:
 58 PILLING LANE,
 PREESALL,
 POULTON-LE-FYLDE,
 FY6 0HB

Scale: 1:1250
Date: 22/01/2024
Printed by: Property Searches



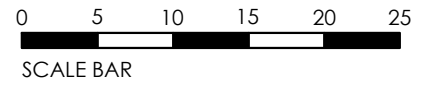
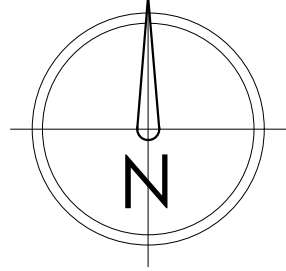
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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APPENDIX D DEVELOPMENT PROPOSALS



Accommodation Schedule	
15No. 2b3p Bungalow	74 sq.m
14No. 2b4p House Types	68 sq.m
03No. 2b4p Corner House Types	68 sq.m
11No. 3b5p House Types	82 sq.m
10No. 4b6p House Types	100 sq.m
Total 53No. Units	
Site Area = 1.50 Hectares	



2b3p 74 Dormer Bungalow

2b4p 68 House Type
2b4p 68 Corner House Type

3b5p 82 House Type

4b6p 100 House Type

Site Density = 35 Units Per Hectare

Car Parking
2 Spaces for 2 & 3 Bedroom Units
3 Spaces for 4 Bedroom Units

REV	DATE	DRAWN	DESCRIPTION	APPROV	ENCL
TITLE: PROPOSED SITE LAYOUT					
			Breck Homes 211 Scapellato Court Bamber Bridge Preston PR3 5AW Tel: 01524 587 000 Fax: 01524 587 001 www.breckhomes.com info@breck.co.uk		
PROJECT: ROSEMOUNT AVENUE, PREESELL					
DATE:	SCALE:	JOB REF:	DRAWING NUMBER:	REV:	
FEB 24	1:500 @ A1	-	P01 - Proposed Site Layout	-	

APPENDIX E

ENVIRONMENT AGENCY CORRESPONDENCE

Emma Walker

From: EWalker@rsk.co.uk
Subject: FW: CL337923KR Flood Information Request - Rosemount Ave, Presall 681222
Attachments: CL337923 Product 4.pdf

From: CMBLNC Info Requests <Inforequests.cmblnc@environment-agency.gov.uk>
Sent: Wednesday, December 13, 2023 2:40 PM
To: Kathryn Olive <KOlive@rsk.co.uk>
Subject: CL337923KR Flood Information Request - Rosemount Ave, Presall 681222

CAUTION: This email originated from outside the Organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Kathryn

Enquiry regarding product data

Thank you for your enquiry.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

- The Tidal data provided has been taken from the Lune Estuary Tidal ABD study produced in 2014. Please note that the tidal climate change allowances provided here may not be appropriate for some planning applications. In these instances please refer to Table 1, Sea Level Rise guidance on the following website: www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
- The data shows the site to be unaffected by the 0.5% AEP and 0.1% AEP defended scenarios from the Lune Estuary tidal 2014 study and therefore no maps have been produced
- Please be advised that the Environment Agency holds records of the wider area being affected by flooding during the following events:
 - November 1977Please be aware that this does not necessarily mean that flooding has not occurred at other times at this site in the past as our records are not comprehensive.
- For all queries relating to flooding from surface water, ordinary watercourses and groundwater flooding, please contact the Lead Local Flood Authority Lancashire County Council.

Surface Water Maps can be viewed online at <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map>

Please refer to [Open Government Licence](#) which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Thanks

Karen

Karen Rooke

Customers and Engagement Officer, Cumbria and Lancashire

Environment Agency | Ghyll Mount, Gillan Way, Penrith 40 Business Park, Penrith, Cumbria, CA11 9BP

inforequests.cmblnc@environment-agency.gov.uk



From: Kathryn Olive <KOlive@rsk.co.uk>

Sent: 06 December 2023 13:35

To: Enquiries, Unit <enquiries@environment-agency.gov.uk>

Subject: 231207/SB10 Flood Information Request - Rosemount Ave, Presall 681222

Dear Sir/Madam,

Please could I order information on flooding and drainage for the following site in order to inform a Flood Risk Assessment:

Presall,
Borough of Wyre,
Lancashire,
FY6 0FE

Grid reference – 336258 E, 448540 N

I would like all the flooding information you have including the following, if available:

- Confirmation of the site's Flood Zone designation, alternatively could you provide the flood flows and levels for a range of return periods including the 1 in 2, 10, 30, 100, 100+CC, 200, 1000,
- Information on the recently published climate change guidance for this area and how this may impact on the data available for the area,
- Information on historic flooding,
- Information on flood defences in the area, if any,
- Any information on reservoir flooding; and,
- Any information on culverted watercourses or private sewers which you know of which do not show up on the public sewer records.

Finally, please could you provide any recommendation on how the surface water is to be managed; for example, restrictions in discharge rates the requirements for SuDS, possible discharge locations and attenuation requirements?

We have a relatively quick turn around on this project and would therefore appreciate a quick response.

If you have any queries please don't hesitate to contact me.

Kind regards,

Kathryn

Kathryn Olive
Senior Administrator



an **RSK** company

www.rsklde.com

14 Beecham Court, Pemberton Business Park, Wigan, WN3 6PR, UK

Switchboard: +44 (0)1942 493255

RSK Land & Development Engineering Ltd is registered in England at Spring Lodge, 172 Chester Road, Helsby, Cheshire WA6 0AR.

Company Number: 4723837

This e-mail is intended only for the addressee named above. As this e-mail may contain confidential or privileged information, if you are not the named addressee, or the person responsible for delivering the message to the named addressee, please notify us immediately and delete the e-mail. The content must not be disclosed to any other person, nor copies taken. Although this e-mail and any attachment are believed to be free from viruses, it is the responsibility of the recipient to ensure that they are virus free. No responsibility is accepted by LDE for any loss or damage arising in any way from their receipt. LDE reserve the right to monitor e-mails sent or received. All works/services agreed are carried out under the LDE terms and conditions that can be found at

<https://rsklde.com/terms-of-use/>

Before printing think about your responsibility and commitment to the ENVIRONMENT!

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

Flood risk assessment data

Location of site: 336303 / 448610 (shown as easting and northing coordinates)

Document created on: 12 December 2023

This information was previously known as a product 4.

Customer reference number: KPEYFGFXTBXH

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

Not included in this document

This document does not include a Flood Defence Breach Hazard Map.

If your location has a reduced flood risk from rivers and sea because of defences, you need to request a Flood Defence Breach Hazard Map and information about the level of flood protection offered at your location from the Cumbria and Lancashire Environment Agency team at inforequests.cblnc@environment-agency.gov.uk. This information will only be available if modelling has been carried out for breach scenarios.

Include a site location map in your request.

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 models used

Model name: Lune Estuary_Tidal 2014

Scenario(s): Defended tidal, defences removed tidal, defended climate change tidal, defences removed climate change tidal

Date: 30 July 2014

These models contain 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 occurring 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

This data is updated on a quarterly basis as better data becomes available.








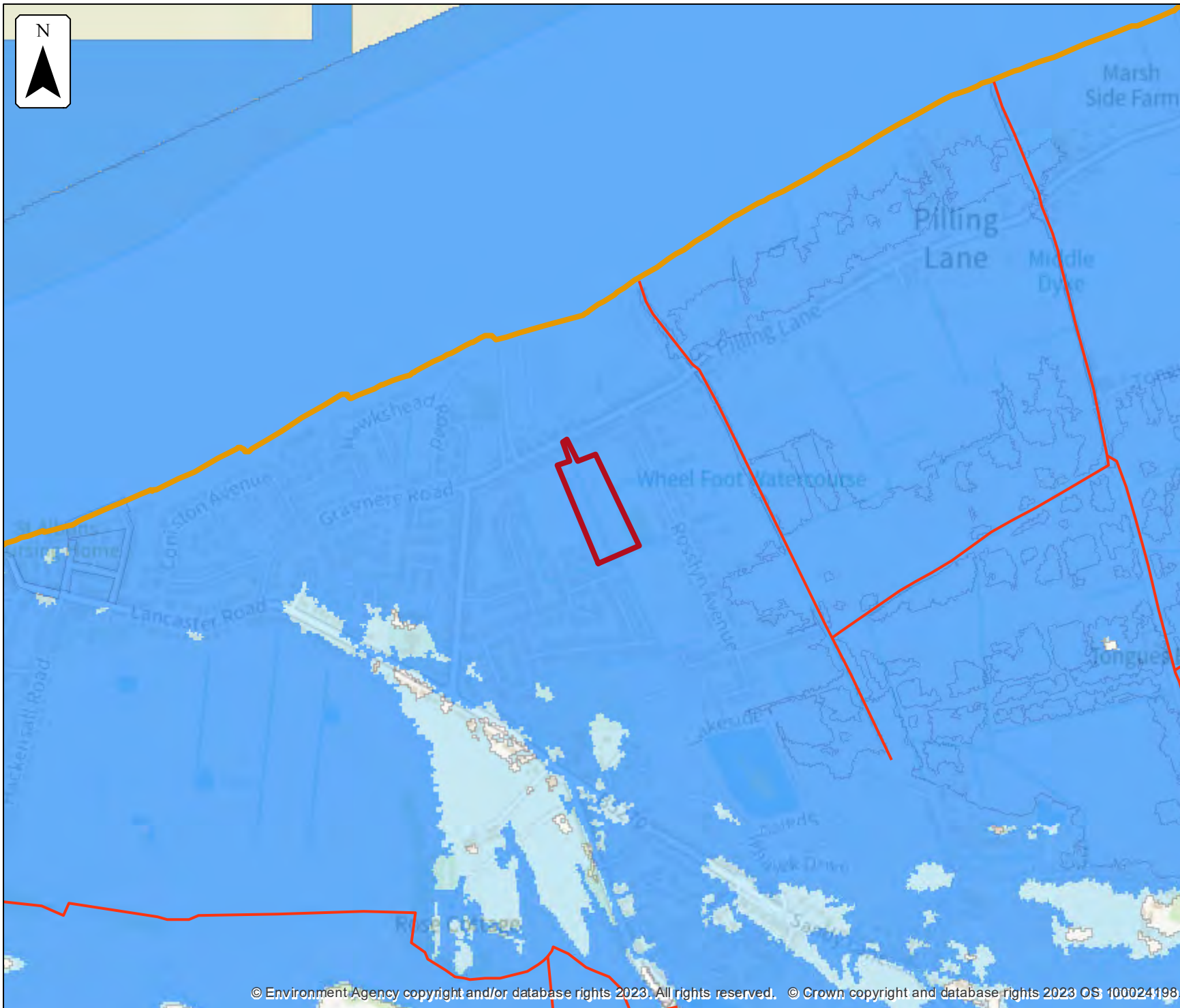
Flood map for planning

Location (easting/northing)
336303/448610

Scale
1:10,000

Created
12 Dec 2023

-  Selected area
-  Main river
-  Flood defence
-  Flood zone 3
-  Flood zone 2



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](#)



Historic flood map

Location (easting/northing)
336303/448610

Scale
1:10,000


Created
12 Dec 2023

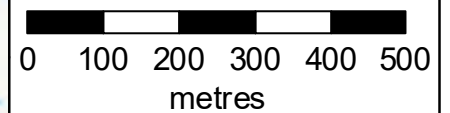
 Selected area

 Main river

Date of flood event

 December, 2013

 February, 2002



Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
5 December 2013	6 December 2013	sea	operational failure/breach of defence	No
1 February 2002	2 February 2002	other	overtopping of 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






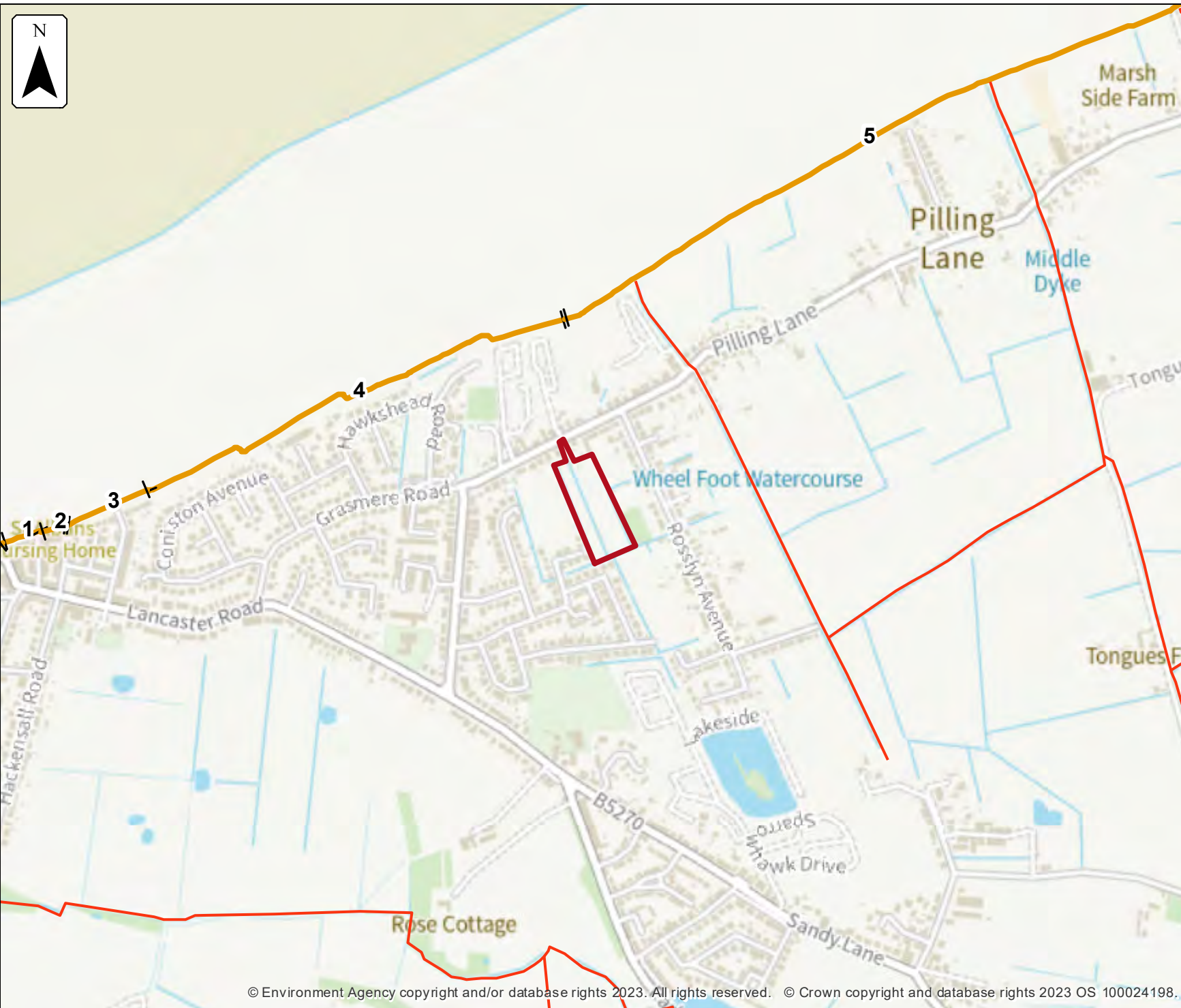
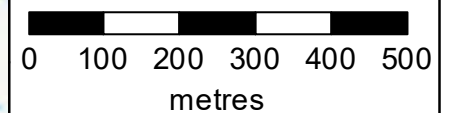
Flood defences

Location (easting/northing)
336303/448610

Scale
1:10,000

Created
12 Dec 2023

-  Selected area
-  Main river
-  Flood defence



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	69216	Wall	200	Fair			7.44
2	69692	Wall	200	Fair			7.25
3	89399	Wall	100	Fair			7.25
4	100903	Embankment	200	Fair			7.56
5	138594	Embankment	200	Fair			7.92

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









Defended modelled tidal extent

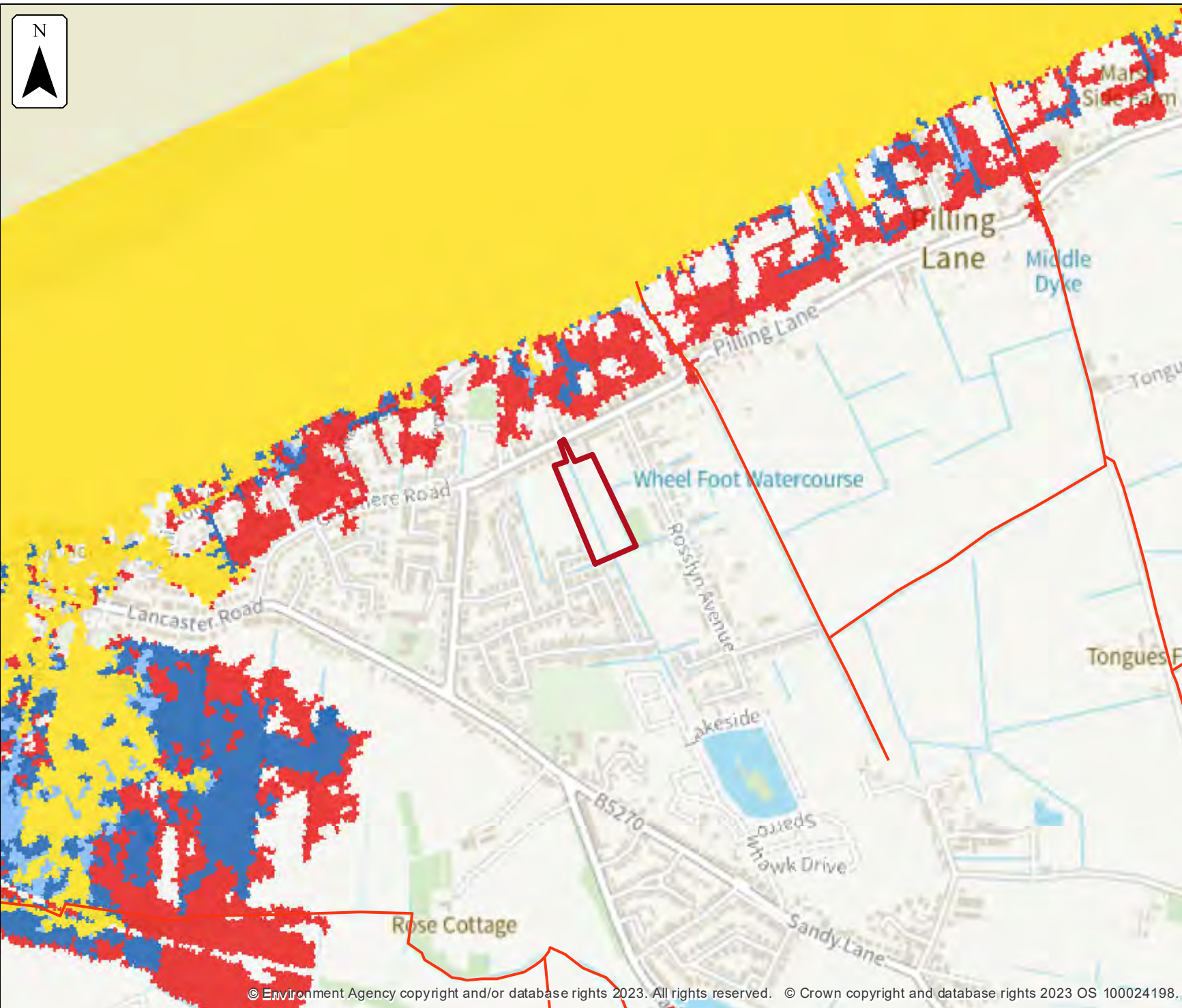
Location (easting/northing)
336303/448610

Scale Created
1:10,000 12 Dec 2023

Model name
Lune Estuary Tidal 2014

-  Selected area
-  Main river
- Modelled flood extent**
-  1.33% AEP
-  1% AEP
-  0.5% AEP
-  0.1% AEP

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










Defended climate change modelled tidal extent

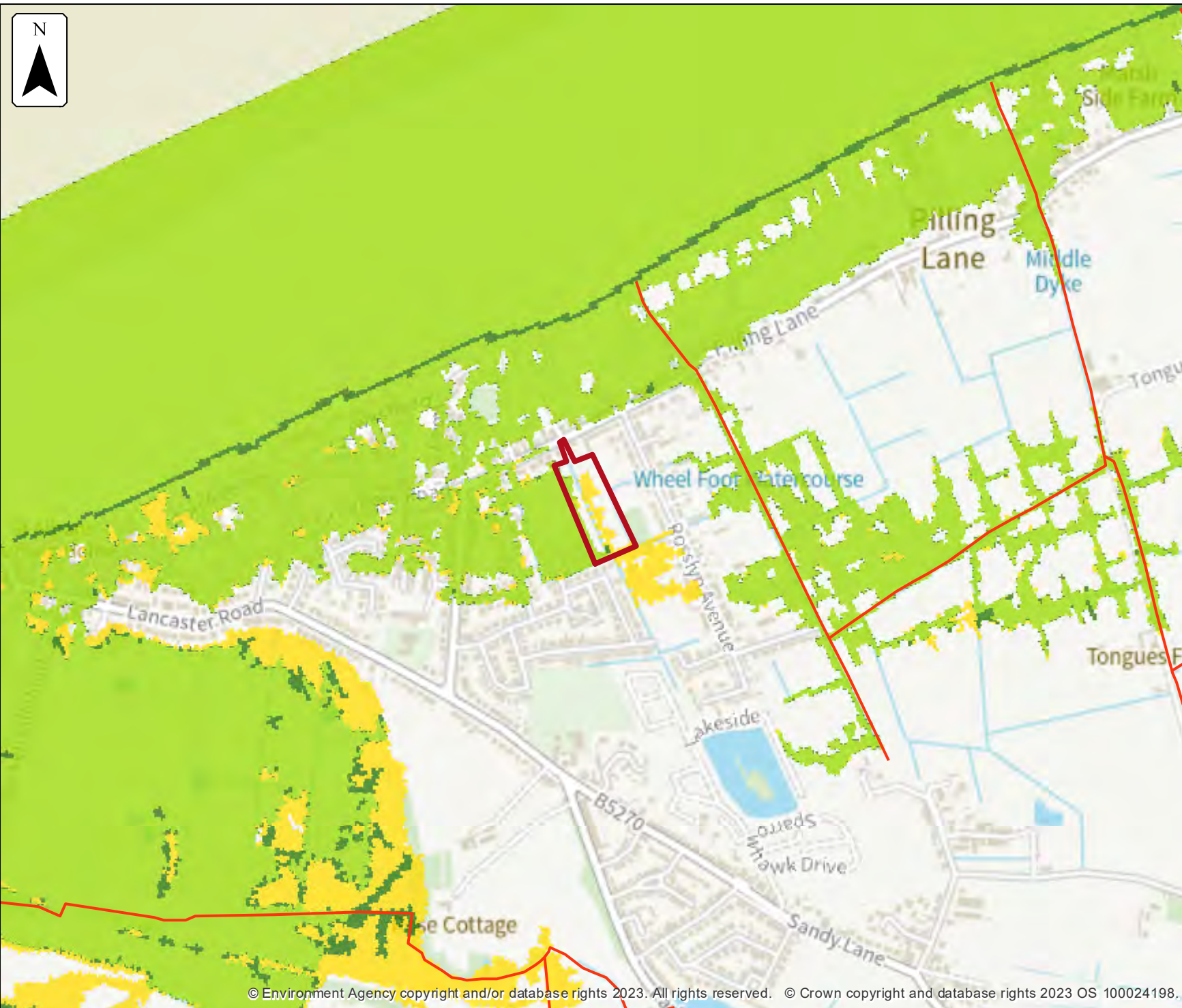
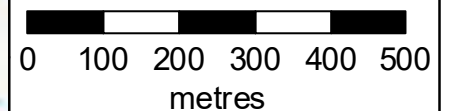
Location (easting/northing)
336303/448610

Scale Created
1:10,000 12 Dec 2023

Model name
Lune Estuary Tidal 2014

-  Selected area
-  Main river
- Modelled flood extent
 -  0.5% AEP (+370mm)
 -  0.5% AEP (+670mm)
 -  0.5% AEP (+970mm)

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











Defences removed modelled tidal extent

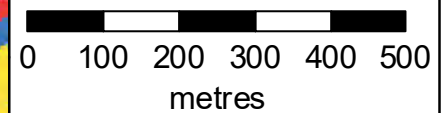
Location (easting/northing)
336303/448610

Scale Created
1:10,000 12 Dec 2023

Model name
**Lune Estuary Tidal
2014**

-  Selected area
-  Main river
- Modelled flood extent**
-  1.33% AEP
-  1% AEP
-  0.5% AEP
-  0.1% AEP

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





Defences removed climate change modelled tidal extent

Location (easting/northing)
336303/448610

Scale Created
1:10,000 12 Dec 2023

Model name
**Lune Estuary Tidal
2014**

Selected area

Main river

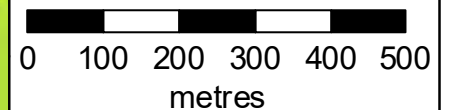
Modelled flood extent

0.5% AEP (+370mm)

0.5% AEP (+670mm)

0.5% AEP (+970mm)

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

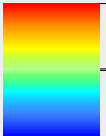


Key

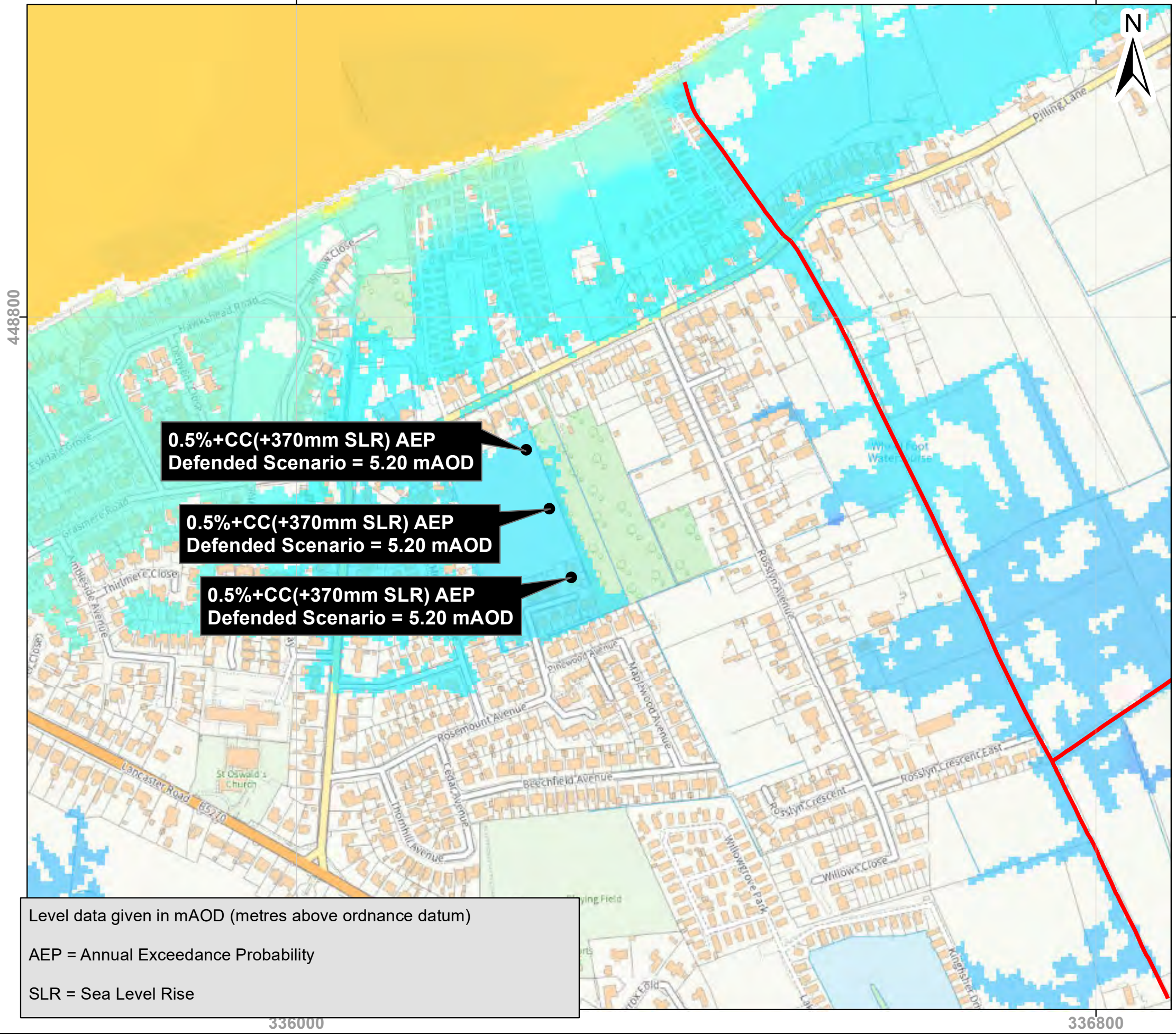
 Statutory Main Rivers

**0.5%+Climate Change (+370mm SLR)
Annual Exceedance Probability
Defended Scenario**

mAOD



High : 8
Low : 4

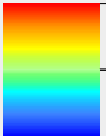


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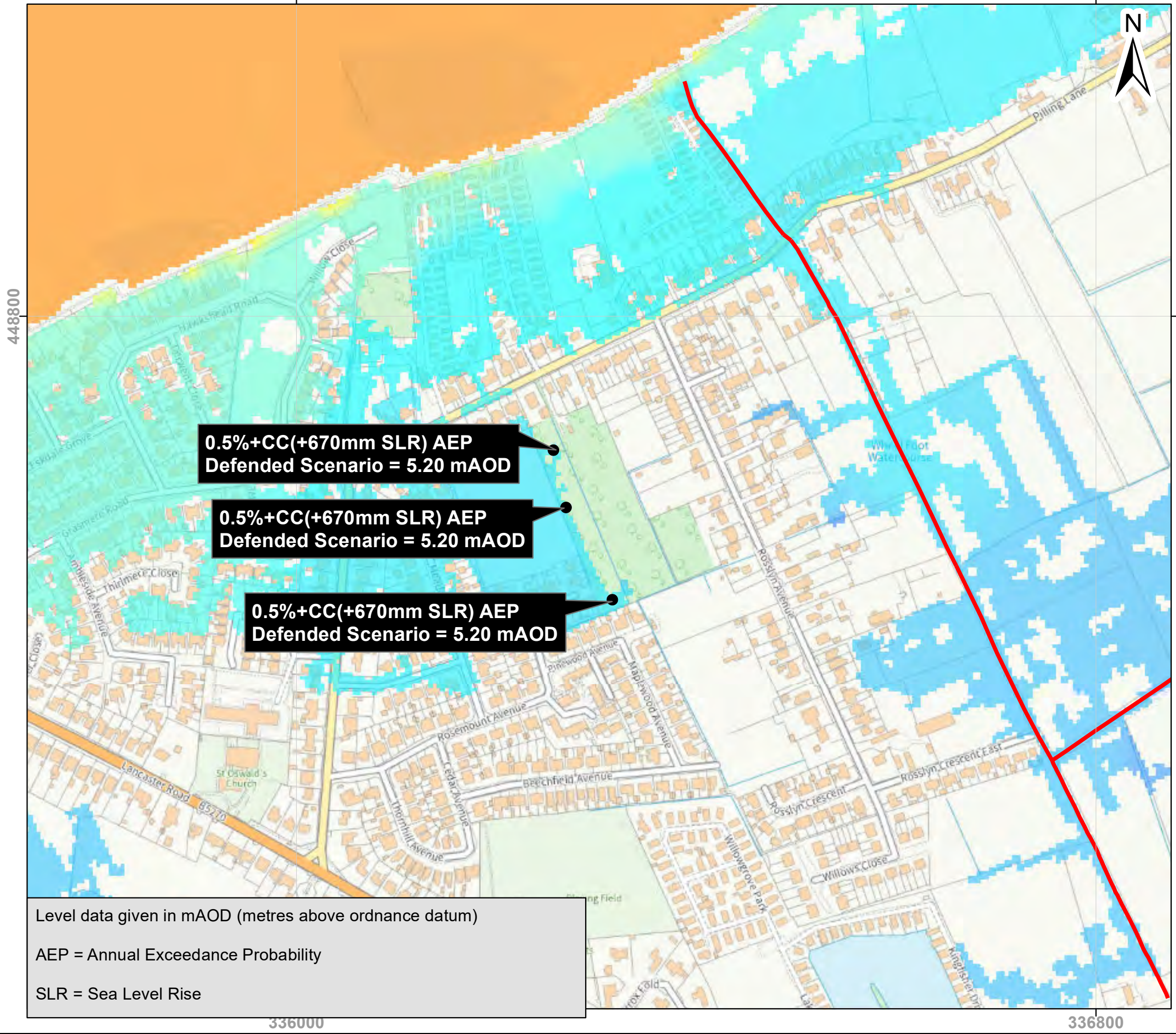
 Statutory Main Rivers

**0.5%+Climate Change (+670mm SLR)
Annual Exceedance Probability
Defended Scenario**

mAOD



High : 8
Low : 4

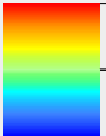


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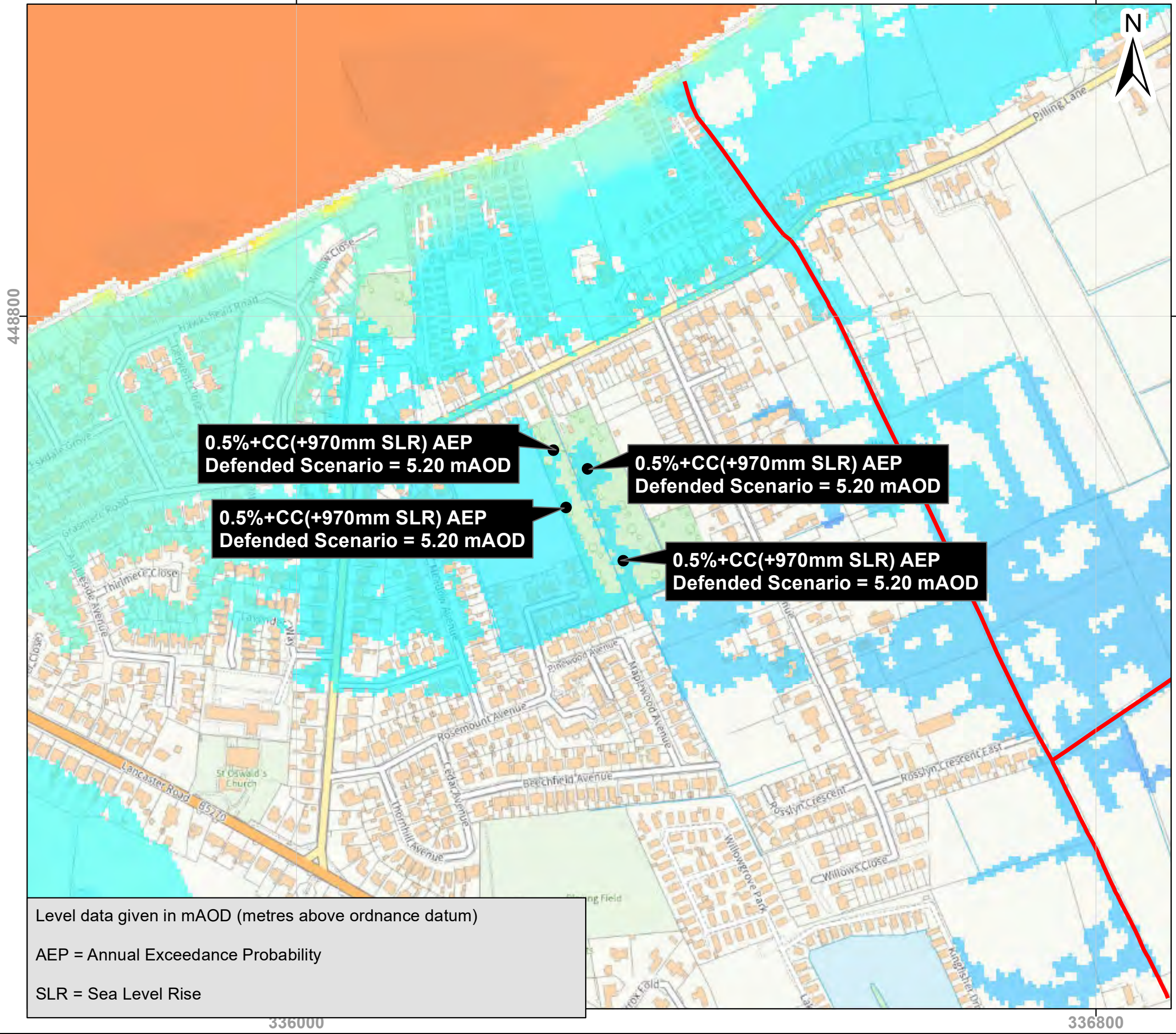
 Statutory Main Rivers

**0.5%+Climate Change (+970mm SLR)
Annual Exceedance Probability
Defended Scenario**

mAOD



High : 8
Low : 4

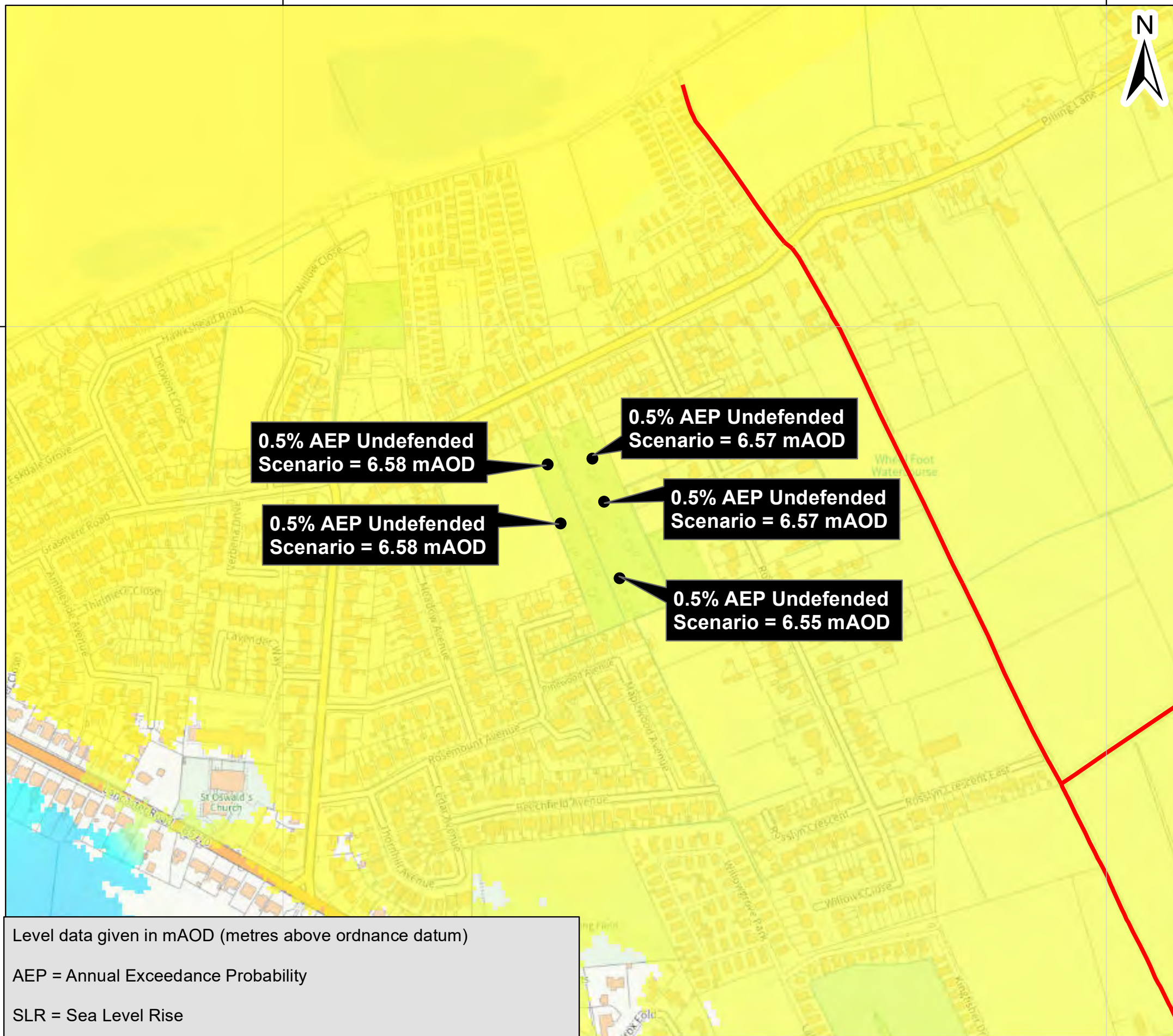
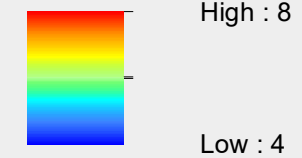


Key

 Statutory Main Rivers

**0.5% Annual Exceedance Probability
Undefended Scenario**

mAOD



Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

SLR = Sea Level Rise

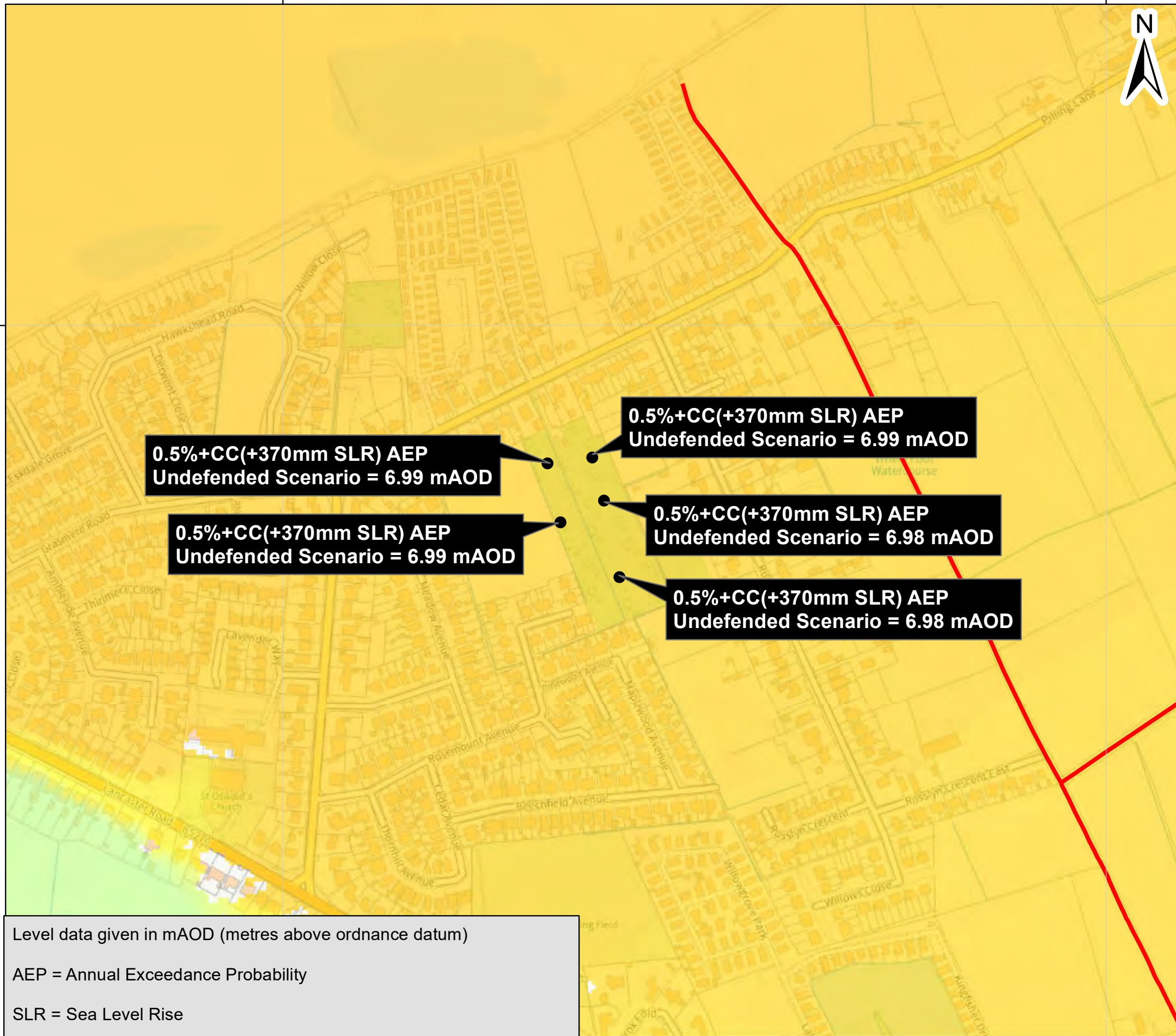
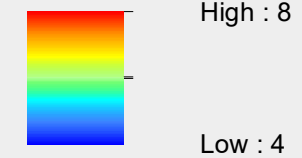


Key

 Statutory Main Rivers

**0.5%+Climate Change (+370mm SLR)
Annual Exceedance Probability
Undefended Scenario**

mAOD



Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

SLR = Sea Level Rise

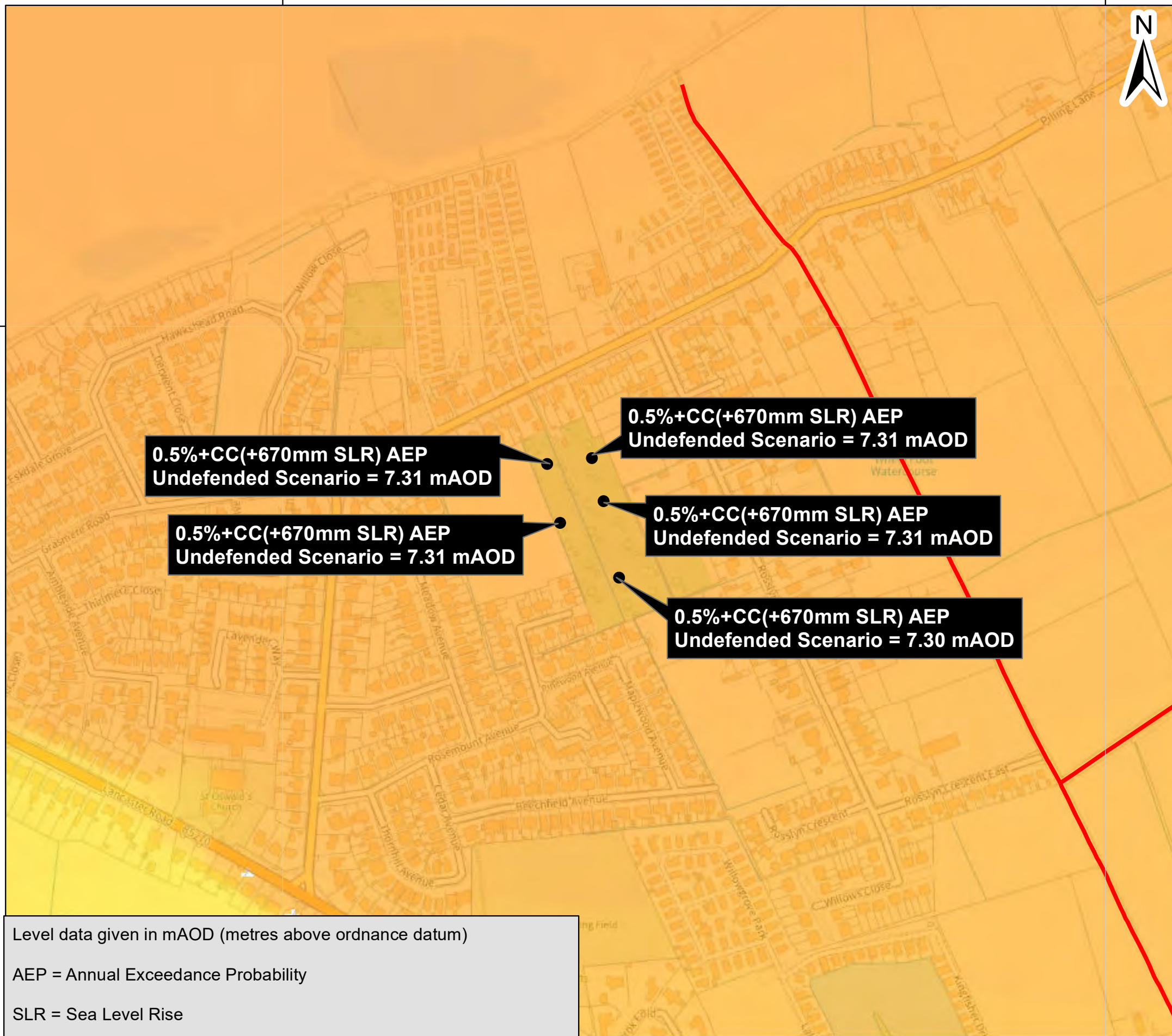
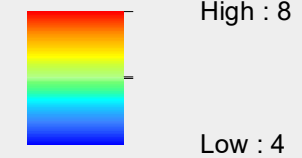


Key

 Statutory Main Rivers

**0.5%+Climate Change (+670mm SLR)
Annual Exceedance Probability
Undefended Scenario**

mAOD



Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

SLR = Sea Level Rise

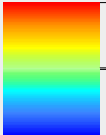


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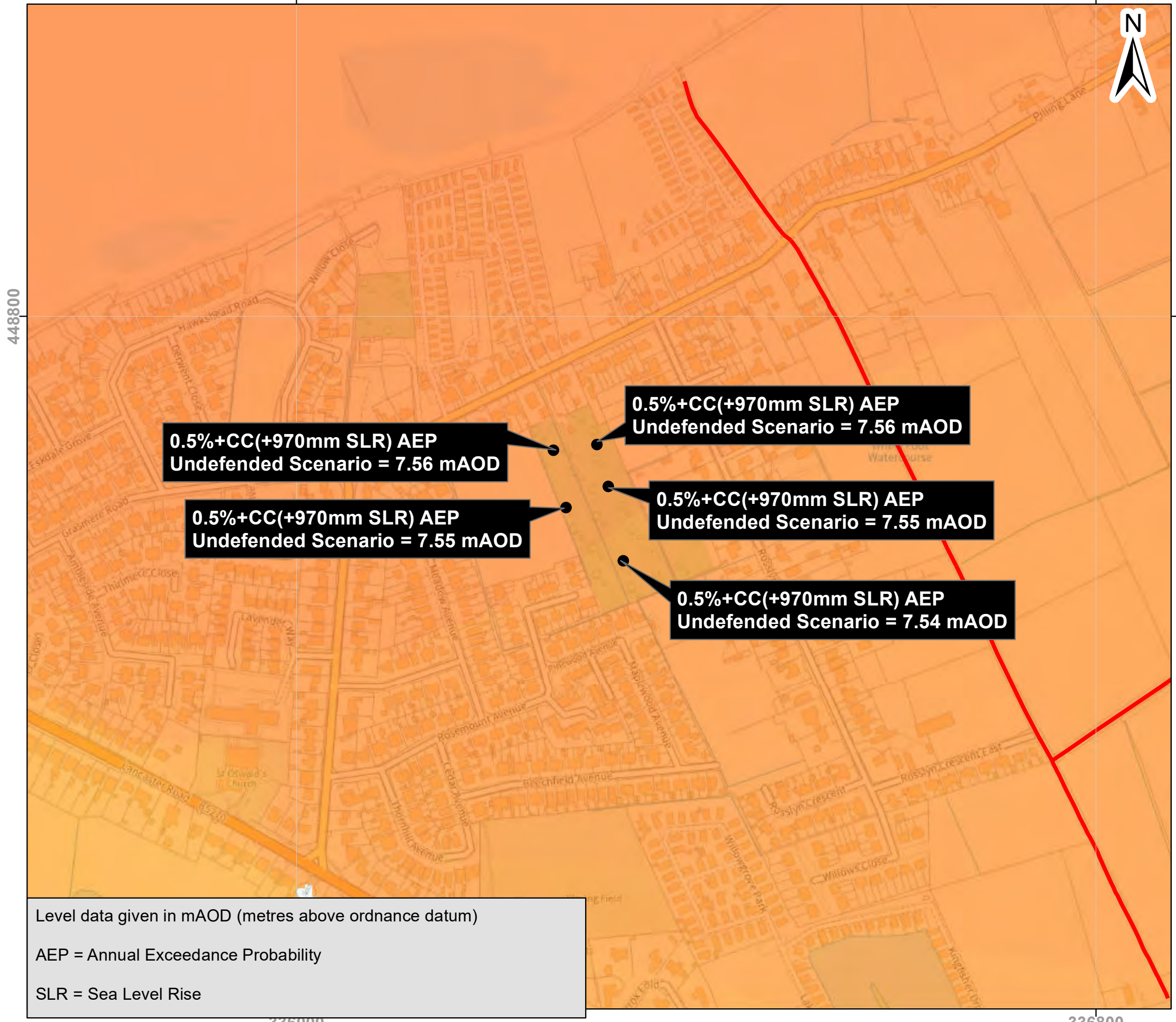
 Statutory Main Rivers

**0.5%+Climate Change (+970mm SLR)
Annual Exceedance Probability
Undefended Scenario**

mAOD



High : 8
Low : 4



Level data given in mAOD (metres above ordnance datum)
AEP = Annual Exceedance Probability
SLR = Sea Level Rise

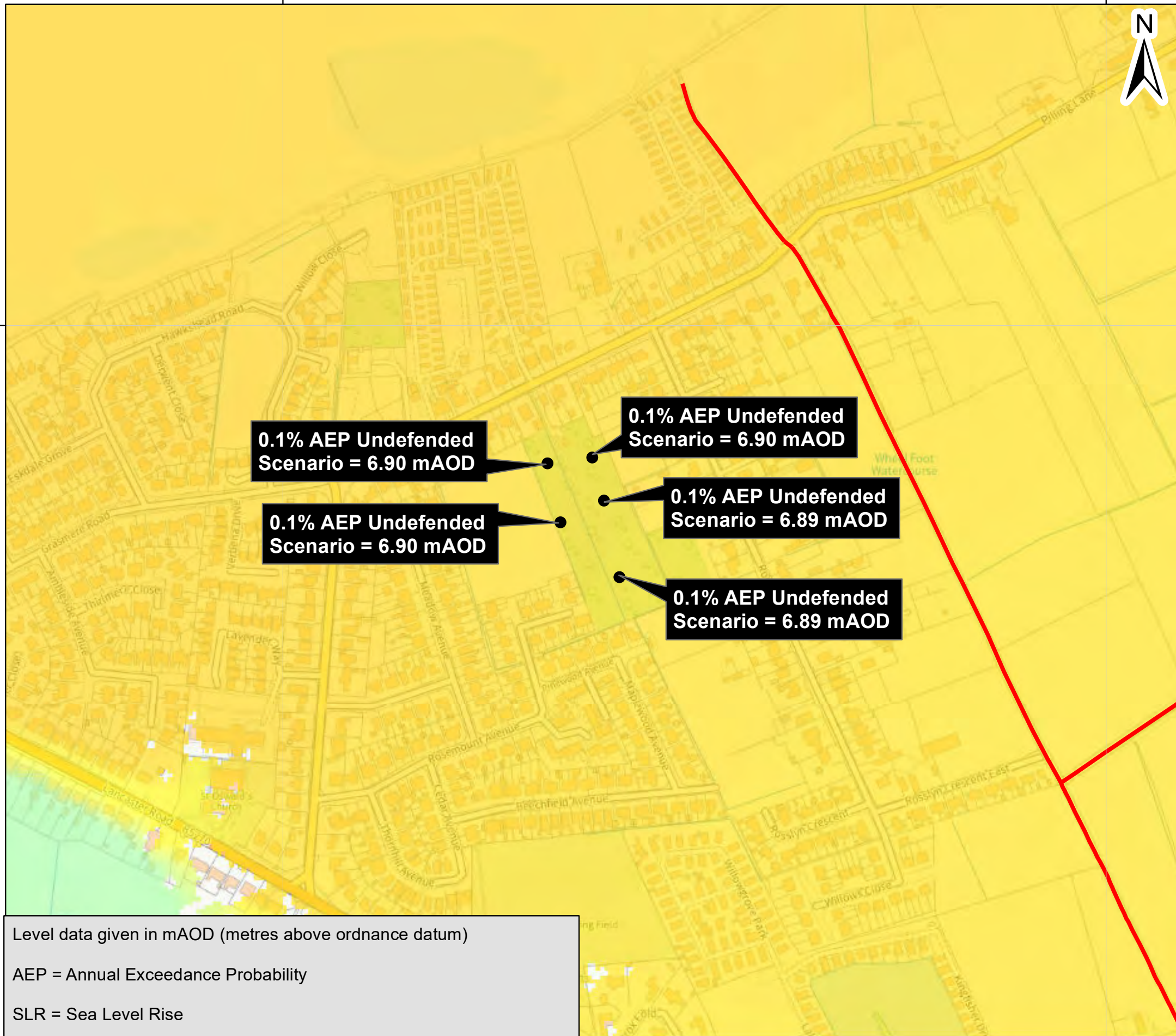
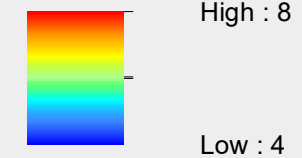


Key

 Statutory Main Rivers

**0.1% Annual Exceedance Probability
Undefended Scenario**

mAOD



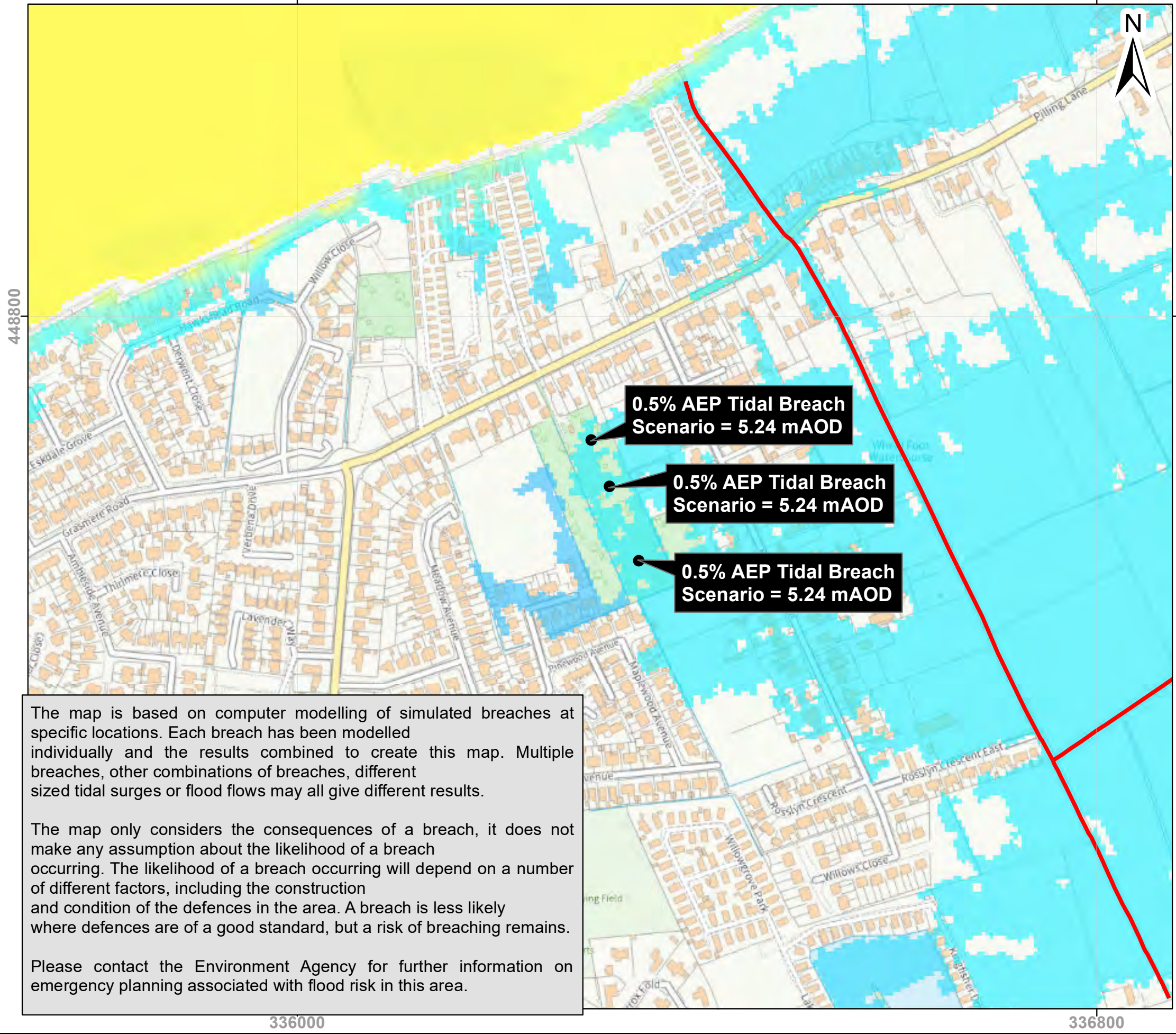
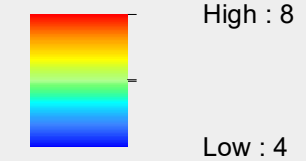
Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

SLR = Sea Level Rise



Key
 Statutory Main Rivers

0.5% AEP Tidal Breach Scenario 2
mAOD


The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.

The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring. The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.

Please contact the Environment Agency for further information on emergency planning associated with flood risk in this area.



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