Asland Walks Energy Park, Tarleton

Flood Risk Assessment

Revision 4.0

GA Pet Food Partners

June 2025

Prepared on Behalf of Tetra Tech Limited. Registered in England number: 01959704

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1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

Tetra Tech Ltd have been appointed by GA Pet Food Partners (the 'Client') to prepare a Flood Risk Assessment (FRA) for a planning application for a site north of Sollom Lane/Eyes Lane, Chorley (the 'Site').

GA Pet Food Partners is considering development of a renewable based energy park to supply nearby Plocks Farm. The energy park will comprise of a wind turbine and solar arrays with the surrounding area providing improved access for the public.

The purpose of this report is to assess the current and future flood risk to the site in support of a planning application. The indicative layout is shown in Appendix A.

1.2 SCOPE OF THIS REPORT

This assessment is a desktop appraisal of flood risk at the site. It considers all potential sources of flood risk including fluvial, surface water and overland flow routes, groundwater, sewers and reservoirs. It identifies the level of risk and, where necessary, recommends further assessment or studies to be undertaken in support of a planning application to Chorley Borough Council (CBC) as the Local Planning Authority (LPA).

The assessment is undertaken with respect to the National Planning Policy Framework (NPPF) (Chapter 14), Planning Practice Guidance (PPG) (Flood Risk and Coastal Change), Environment Agency guidance, CBC planning policy and Lancashire County Council (LCC) guidance who act as the Lead Local Flood Authority (LLFA).

1.3 LIMITATIONS OF THE REPORT

This report has been prepared by Tetra Tech Ltd on behalf of GA Pet Food Partners in connection with the scope of the report as described in Section 1.2 above and taking into account the particular instructions and requirements set out in Tetra Tech's fee proposal and the Client's acceptance. It is not intended for and should not be relied on by any third party and no responsibility is undertaken to any third party.

Tetra Tech Ltd accepts no duty or responsibility (including in negligence) to any party other than GA Pet Food Partners and disclaims all liability of any nature whatsoever to any such party in respect of this report.

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

The site is located southeast of Tarleton in Lancashire. The site lies to the north of Sollom Lane / Eyes Lane and west of the River Douglas. The nearest postcode to the site is PR4 6FS and the site's central grid reference is SD4610519237. The site is approximately 39.70 ha and presently comprises agricultural land.

The site is primarily bounded by Sollom Lane / Eyes Lane along with Barrowford House and land belonging to Red Bridge Farm to the south. Beyond Sollom Lane / Eye Lane is agricultural land. To the west, the site is bounded by the Leeds and Liverpool Canal (Rufford Branch), beyond which is agricultural land. To the north the site is bounded by Bank Bridge (A59) overpass, which crosses the River Douglas. The River Douglas also serves as the site's eastern boundary. Figure 2-1 above shows the site location.

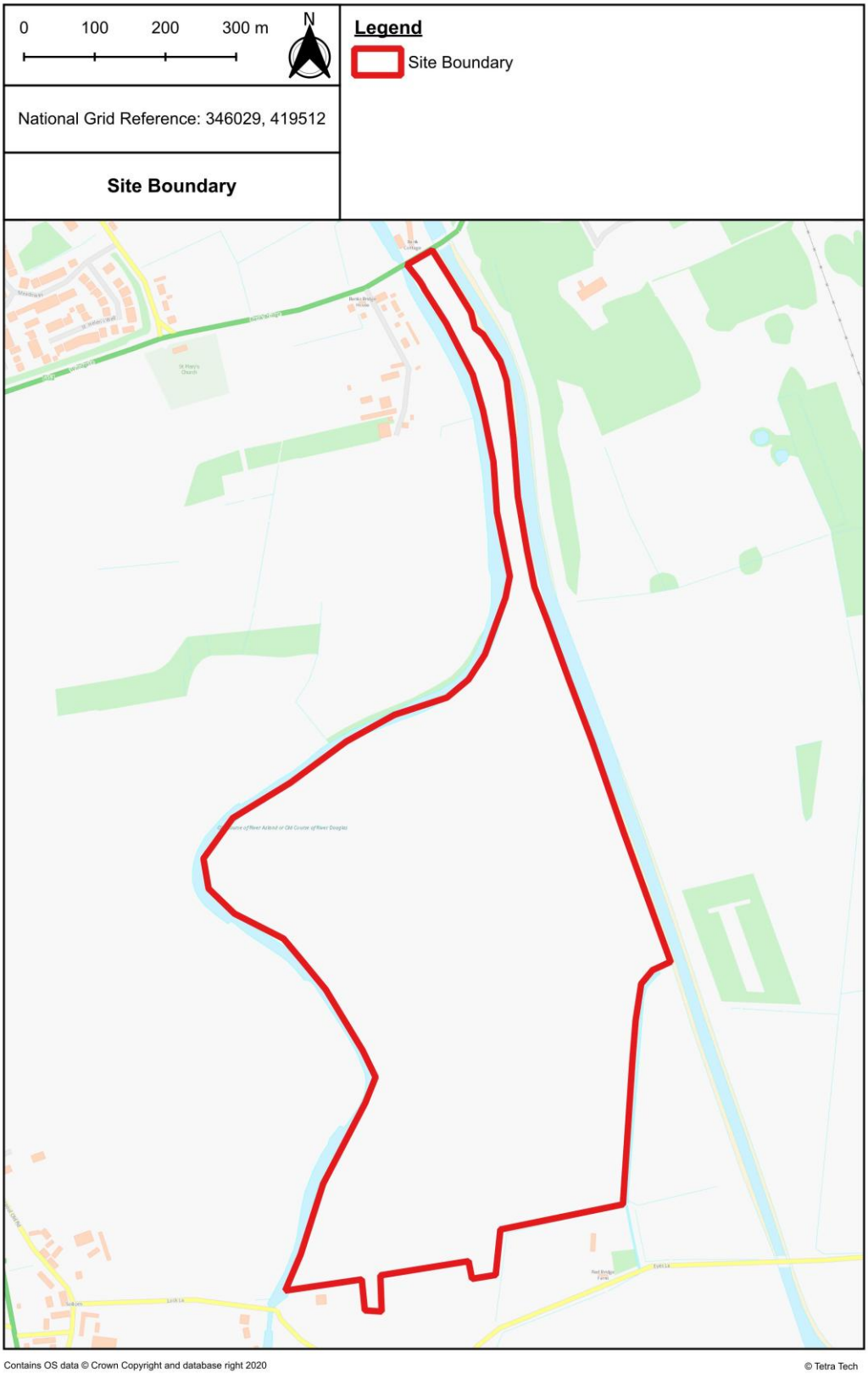


Figure 2-1. Site Boundary

LiDAR data shows the topography of the site is relatively flat, falling slightly to the south of the site. The highest ground level within the site boundary is 8.33 m AOD at canal bridge on the northern boundary, whilst the lowest ground level is 2.46m AOD in the south-eastern corner of the site where the site drains into the drainage ditches. Most of the site is at 4 -5 m AOD with little variation. The contours of the site can be seen below in Figure 2-2. Along the channel of the River Douglas to the east of the site, the site is bounded by raised embankments of heights between 6.78 and 7.30 m AOD. A cross section of the centre of the site, showing the embankment in the east, can be seen in Figure 2-4 below.

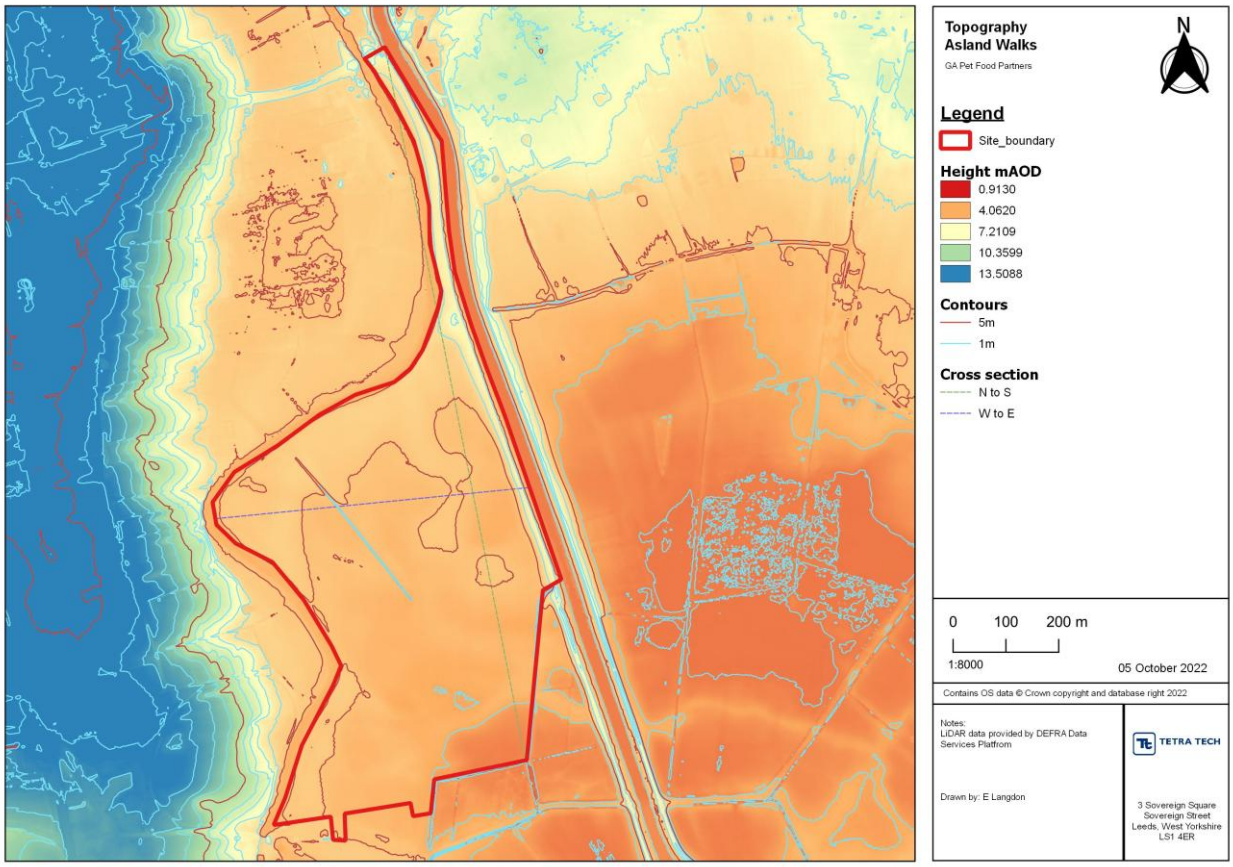


Figure 2-2: Elevation data[1]

[1] DEFRA, 2022 Defra Survey Data Download

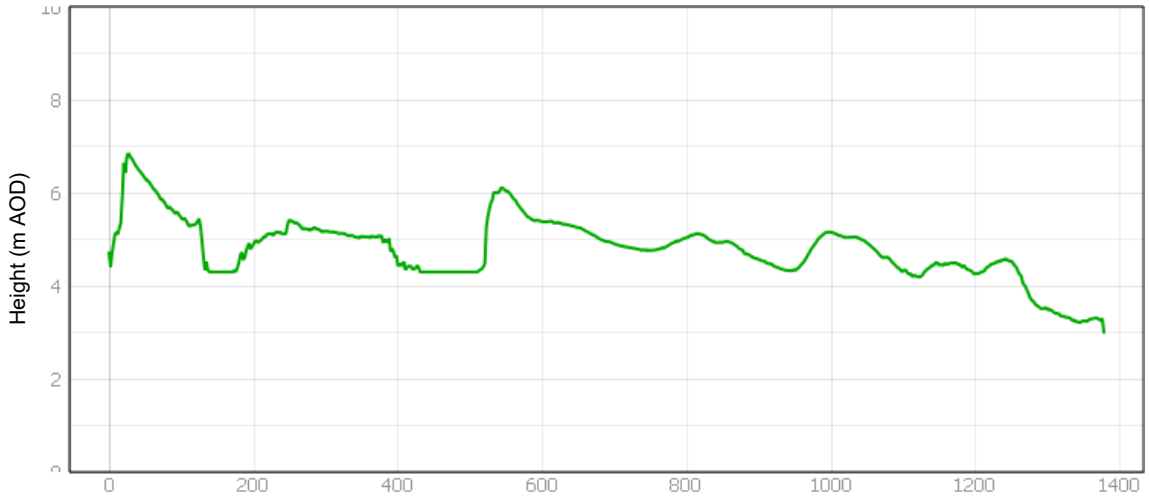


Figure 2-3: Cross section: North to South

The cross section from North to South shows varying heights in the northern section of the site and a gradual slope to the south within the main field.

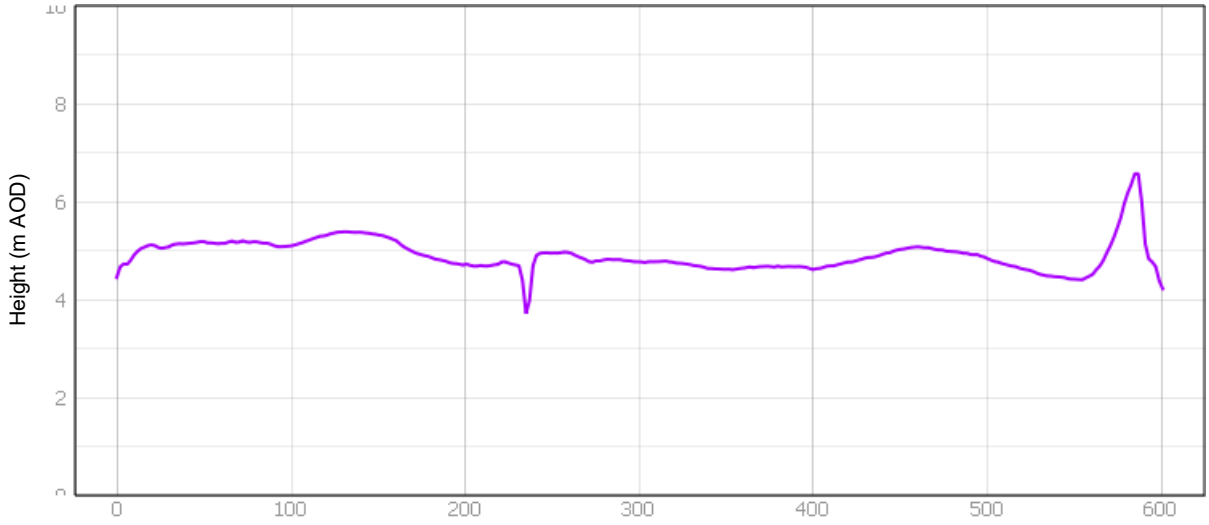


Figure 2-4: Cross section West to East

The cross section from West to East clearly shows the drainage ditch within the field which has a height of 3.54m AOD at this point. This cross section also shows the raised embankment alongside the adjacent watercourse, this is 6.74m AOD at this point.

2.2 WATERCOURSES

The River Douglas, an Environment Agency designated main river, flows in a northerly direction parallel to the eastern boundary of the site. The River Douglas flows in a northerly direction for approximately 10km before it reaches its confluence with the River Ribble, where it becomes the Ribble Estuary.

The River Strine enters the site from the South and flows north to discharge into the Rover Douglas.

The Leeds and Liverpool Canal (Rufford Branch) flows in a northerly direction along the west boundary of the site (the old course of the River Asland). The Leeds and Liverpool Canal flows in a northerly direction for approximately 3km before it enters the River Douglas.

Figure 2-5 below shows the location of the watercourses around the site.

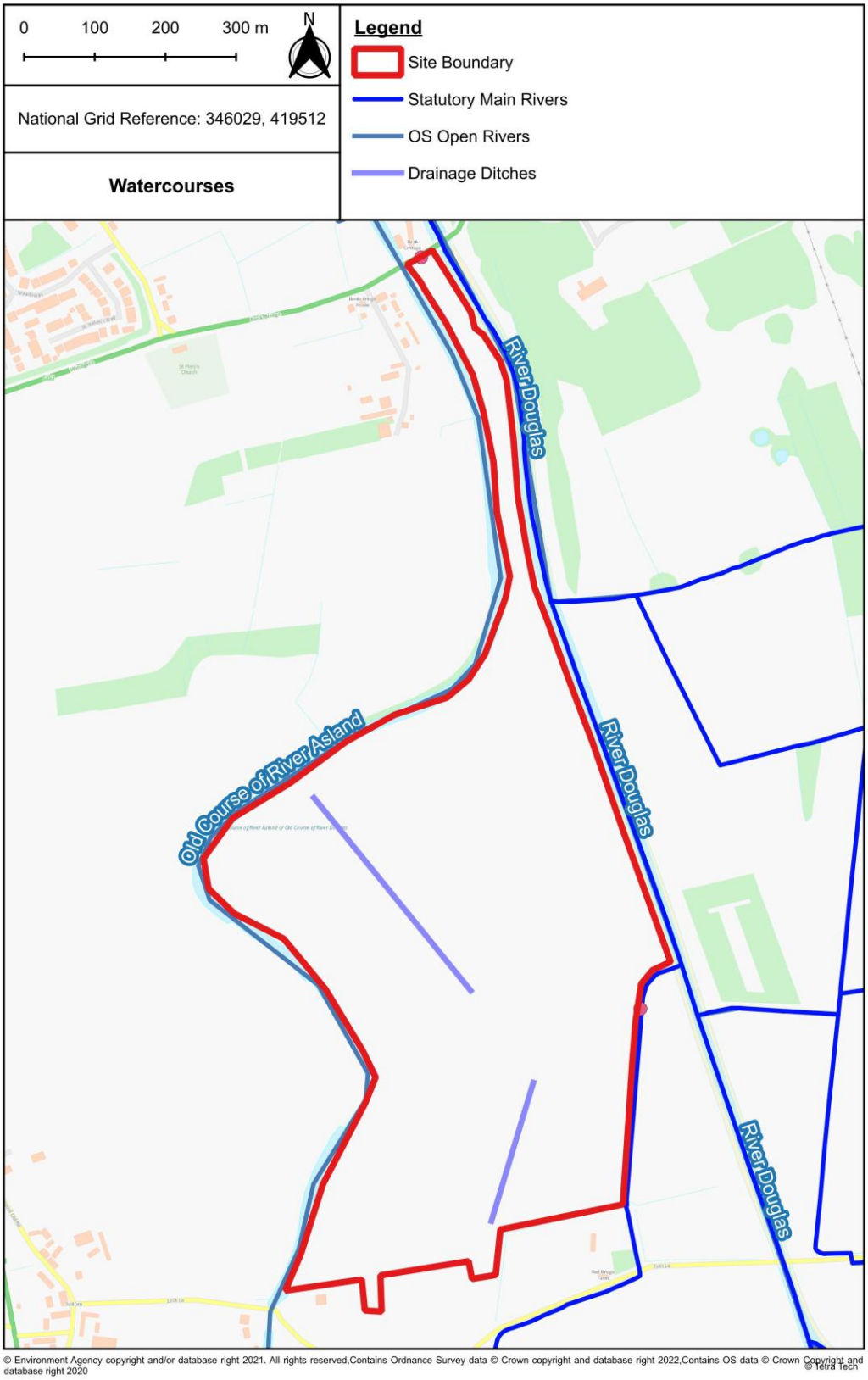


Figure 2-5. Watercourse and Drainage Ditches

2.3 DRAINAGE

The site is a greenfield site that has not previously been developed, therefore it is assumed that there are no sewers located within the site boundary.

An unnamed drainage ditch also passes through the site and acts as the boundary between the site and Red Bridge Farm. The ditch drains to the north from Red Bridge Farm before discharging into the River Strine the site's eastern boundary. There is also an unnamed drainage ditch visible on LiDAR data in the northern section of the site which has an unknown outfall. The location of these ditch networks is shown on Figure 2-5 above.

Further to the informal drainage ditch mentioned above, there are agricultural drains (i.e., grips) located within the field. The location and direction of these can be found in Appendix B It is unknown what the condition of these drainage grips are unknown.

2.4 GROUND CONDITIONS

2.4.1 Soil

A review of Defra's online 'Magic' mapping indicates that the site is primarily located on land with underlying soils classified as 'Loamy and clayey soils of coastal flats with natural high groundwater'. There is also a smaller area to the southeast of the site with underlying soils classified as 'Loamy and clayey floodplain soils with natural high groundwater'.

2.4.2 Geology

A review of the British Geological Survey (BGS) online geological mapping indicates the site is underlain by superficial deposits classified as Tidal Flats Deposits (Silt, Clay and Sand). Below the superficial deposits, the site is primarily underlain by the Sherwood Sandstone Group (Sandstone), however a small section at the north boundary of the site is underlain by Singleton Mudstone Member (Mudstone).

The BGS 'Borehole Scans' tool does not identify any borehole records within the site's boundaries, however multiple records are available for boreholes located within proximity to the site. Borehole ref. SD41NE8 is located just north of Eyes Lane, east of the right bank of the River Douglas. The borehole log identified clays within the ground. The borehole log also recorded that standing water at 4.4m below ground level (bgl).

2.4.3 Hydrogeology

A review of Defra's online 'Magic' mapping indicates that Tidal Flats Deposits are classified as Unproductive aquifers. These aquifers are defined as largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

The Sherwood Sandstone Group and Singleton Mudstone Member bedrock are classified as Secondary B aquifer. Secondary B aquifers are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers.

The site is not located within a Groundwater Source Protection Zone.

3.0 FLOOD RISK

3.1 FLUVIAL AND TIDAL FLOODING

A floodplain is the area that would naturally be affected by flooding if a river rises above its banks or is inundated by the sea (coastal or tidal flooding). In England, floodplains are divided into flood zones for planning purposes. These show the extent of the natural floodplain area at risk of inundation if there were no flood defences or certain other manmade structures and channel improvements. They are divided as follows:

- Flood Zone 1 is land assessed as having an annual probability of flooding of less than 1 in 1000 (<0.1%).
- Flood Zone 2 is land assessed as having an annual probability of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%) for fluvial flooding or between 1 in 1000 (0.1%) and 1 in 200 (0.5%) for tidal flooding.
- Flood Zone 3 is land assessed as having an annual probability of flooding of 1 in 100 or greater (>1%) from fluvial flooding or of 1 in 200 or greater (>0.5%) from tidal flooding.

The Central Lancashire Strategic Flood Risk Assessment[2] states that the tidal limits of the River Douglas extend to Rufford, approximately 5km upstream of the site. Therefore, it can be assumed that the site has the potential to be impacted by tidal flooding on the River Douglas.

The Environment Agency's Flood Map for Planning, shown as Figure 3-1 below, indicates that the majority of the site falls within Flood Zone 3, however isolated sections to the north and west fall within Flood Zone 2.

The defences located along the west bank of the River Douglas, adjacent to the east boundary of the site are identified in Environment Agency data[3] as flood embankments and can be seen in Figure 3-1. The embankments bounding the site onto the River Douglas have effective crest level heights of between 6.78 and 7.30 m AOD.

[2] Central Lancashire Strategic Flood Risk Assessment, 2007, Strategic_Flood_Risk_Assessment_v1.pdf (chorley.gov.uk)
[3] AIMS Spatial Flood Defences, Defra Data Services Platform

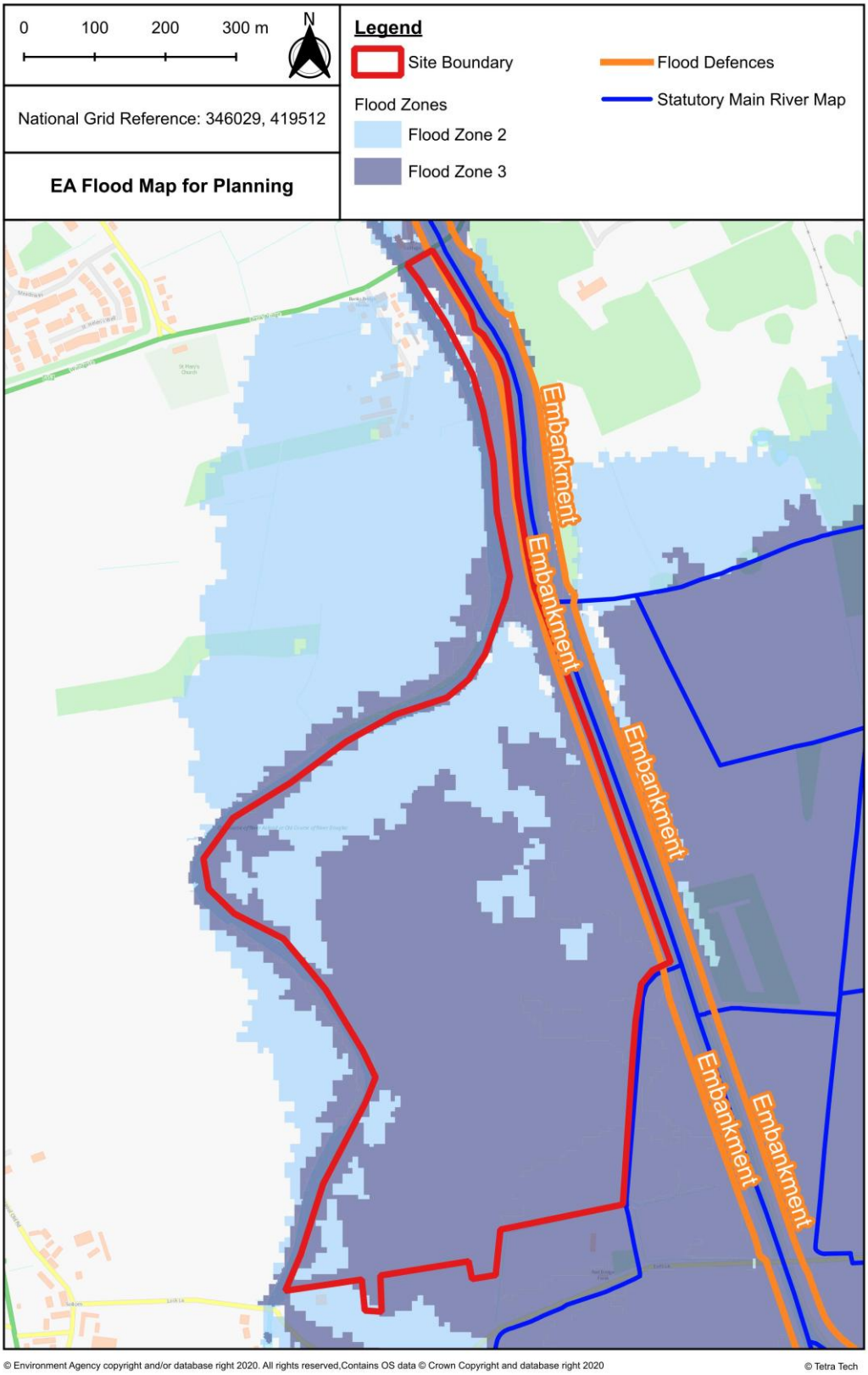


Figure 3-1. EA Flood Map for Planning

Product 4 data received from the Environment Agency on 5th September 2022 includes a fluvial model and a tidal model of the River Douglas. These can be seen in Appendix C.

The tidal flooding model (Ribble Estuary Tidal 2014) shows that most of the site does not experience flooding during a 0.1% AEP event in a defended scenario however, there is slight flooding modelled along the eastern boundary of the site adjacent to the river. Based on the limited extent of the flooding from the watercourse it appears that in this tidal event water is contained within the channel and the overlap with the site is due to model grid size extending channel cells to within the site. The channel is bounded by embankments between 6.78 and 7.30 m AOD as discussed in Section 2.1 above. The Environment Agency mapping in Appendix C shows the water levels do not exceed 6.0 m AOD along any stretch of the channel adjacent to the site, therefore it is likely that the modelled extents are contained within the channel and the embankments are not overtopped in this scenario. The modelled depths in meters at node 24 (Banks Bridge to the north) and node 17 (eastern boundary/River Douglas) are presented below for both a defended and undefended scenario. Full details of modelled depths at all nodes can be found at in Appendix C.

Table 3-1: Ribble Estuary Tidal flooding heights (m AOD)

Scenario	Node	0.1% AEP	0.5% AEP +970mm climate change
Defended	17	0	0
	24	5.86	6.45
Undefended*	17	4.64	-
	24	5.00	-

*Other node points provided are located outside of the site or record no flood levels.

These depths are all below the embankment's minimum height of 6.78 m AOD and therefore for the defended scenario water is expected to stay in the channel and as such the risk of tidal flooding impacting the site in this instance is low.

It should be noted that review of the sea level allowances by river basin district, indicates that for the North West the 'Higher Central' allowance is +1.01 m and the 'Upper End' allowances is +1.41 m (at the time of writing), therefore the data provided by the Environment Agency (+0.97m) is not up to date. The difference in the sea level climate change allowances modelled by the Environment Agency in the Product 4 data and the latest issued is +0.04m (40mm). For the defended scenario, if modelled depths were increased by 40mm then water would still be expected to remain within the channel, therefore the risk in a defended scenario is still considered to be low.

Mapping from the Environment Agency shows the potential impact of tidal flooding in an 'undefended' scenario. As seen in the mapping in Appendix C, the tidal flood level (with +0.97m of climate change allowance) may

reach 4.55 m AOD in the centre of the site and 5.27 m AOD in the north of the site in an 'undefended' scenario (i.e., breach condition / pump failure). The system is required to be operated by the Local Authority and the Environment Agency and the overall risk of a breach/pump failure condition is considered to be low. Therefore, it could be expected that the site is defended and as such the risk is considered to be acceptable.

The fluvial model (Ribble-Douglas 2010) provided by the Environment Agency have modelled the following events for a defended and undefended scenario:

- 2% AEP
- 1.33% AEP
- 1% AEP
- 0.1% AEP
- 1% AEP +20%
- 1% AEP +30%
- 1% AEP +35%
- 1% AEP +70%

It should be noted that the Environment Agency climate change allowance requirements for fluvial flooding were updated in May 2022, and for the 'Higher' allowance for essential infrastructure developments in the 2080s epoch within the flood zone, a 58% allowance for climate change (Crossens Management Catchment) would be applicable, therefore using the 70% allowance could be considered to be conservative. There is no flooding on the site from the River Douglas in all modelled events in a defended scenario. In an undefended scenario the entire site is at risk of flooding in all modelled scenarios with flood depths of between 4.92 m AOD and 6.03 m AOD.

Assuming continued upkeep of the flood defences along the western riverbank of the river Douglas, which are shown in models to withstand both fluvial and tidal flooding, the risk of flooding from these sources can be considered low - medium. In the event of overtopping or a breach of the defences there is potential for a significant risk of flooding to the site. In this instance, typically a breach assessment would provide further clarity in the impacts in the event of a breach, however, based on the site's immediate location adjacent to the watercourse, a breach along this reach of the watercourse is likely to cause significant depths and velocities of flooding to the site. In this instance the risk of flooding would be considered to be high.

3.2 SURFACE WATER FLOODING

Surface water flooding can occur during high intensity rainfall events as sheet runoff from fields or hard paved areas. It is particularly prevalent in areas with significant hardstanding or poorly permeable soils (i.e., clay). This is because the grounds capacity for infiltration is reduced. In addition, the inability to enter local drainage

systems also contributes to risk from this source. The risk of surface water flooding is divided as follows, as defined by the Environment Agency:

- Very low risk means that the annual probability of flooding is less than 1 in 1000 (<0.1%).
- Low risk means that the annual probability of flooding is between 1 in 1000 (0.1%) and 1 in 100 (1%).
- Medium risk means that the annual probability of flooding is between 1 in 100 (1%) and 1 in 30 (3.3%).
- High risk means that the annual probability of flooding of greater than 1 in 30 (>3.3%).

The EA Risk of Flooding from Surface Water extent map is shown in Figure 3-2 below. The map indicates that the majority of the site is at very low risk of surface water flooding. However, there are areas of ponding throughout the site at low to high risk of surface water flooding.

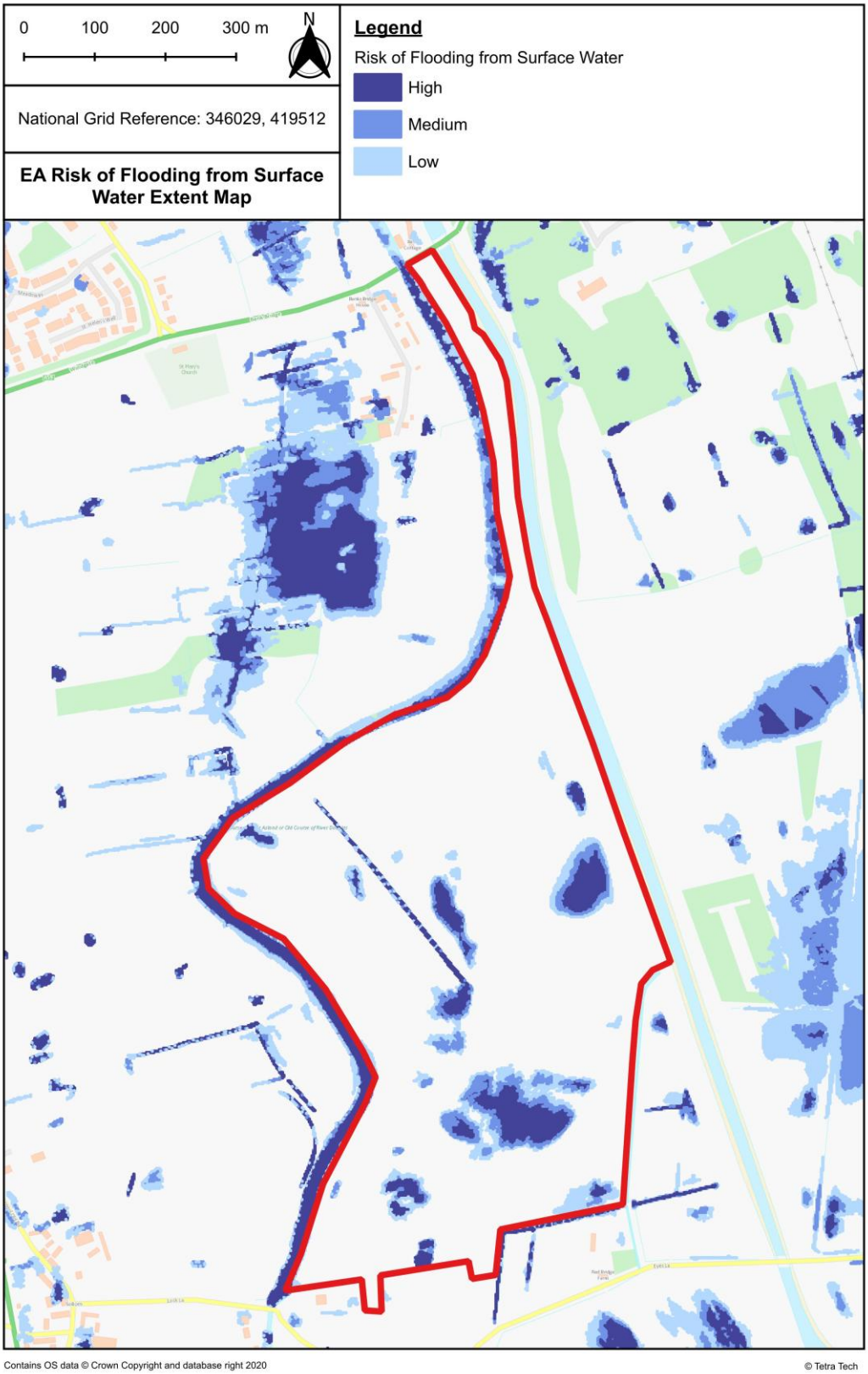


Figure 3-2. EA Risk of Flooding from Surface Water Extent Map

The EA Risk of Flooding from Surface Water depth mapping for all risk events is shown in Figure 3-3 below. Maximum depths within the site are between 0.9 and 1.2 m located within the unnamed drainage ditch within the northern section of the site for all risk events. For the remaining areas of ponding on the site maximum depths are between 0.2 and 0.3 m in a 3.3% and 1% AEP event, and between 0.3 and 0.6 m in a 0.1% AEP event. Surface water flood depths less than 0.2 m are not included within this dataset. Comparing the depth and extent mapping shows that significant areas of the ponding on site has maximum depths of less than 0.2 m.

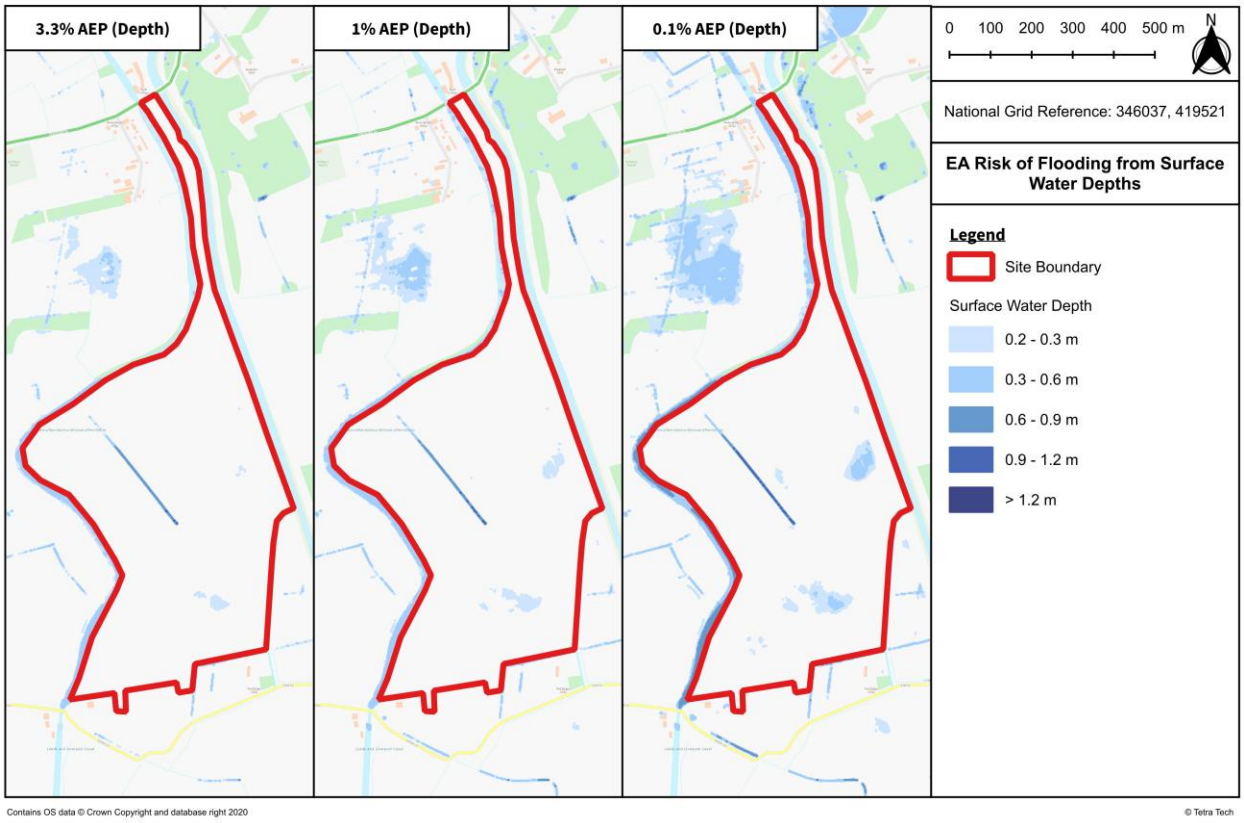


Figure 3-3. EA Risk of Flooding from Surface Water Depth Map

Climate change can increase the frequency and intensity of rainfall events. Therefore, the risk to the site of surface water flooding may change in the future. The EA Risk of Flooding from Surface Water plus climate change extent map is shown in Figure 3-4 below. A mid-range climate change allowance based on projections for the middle of the century have been used to generate the data. In general, the medium and high risk surface water flood extents have increased and the low risk flood extents have remained roughly the same.

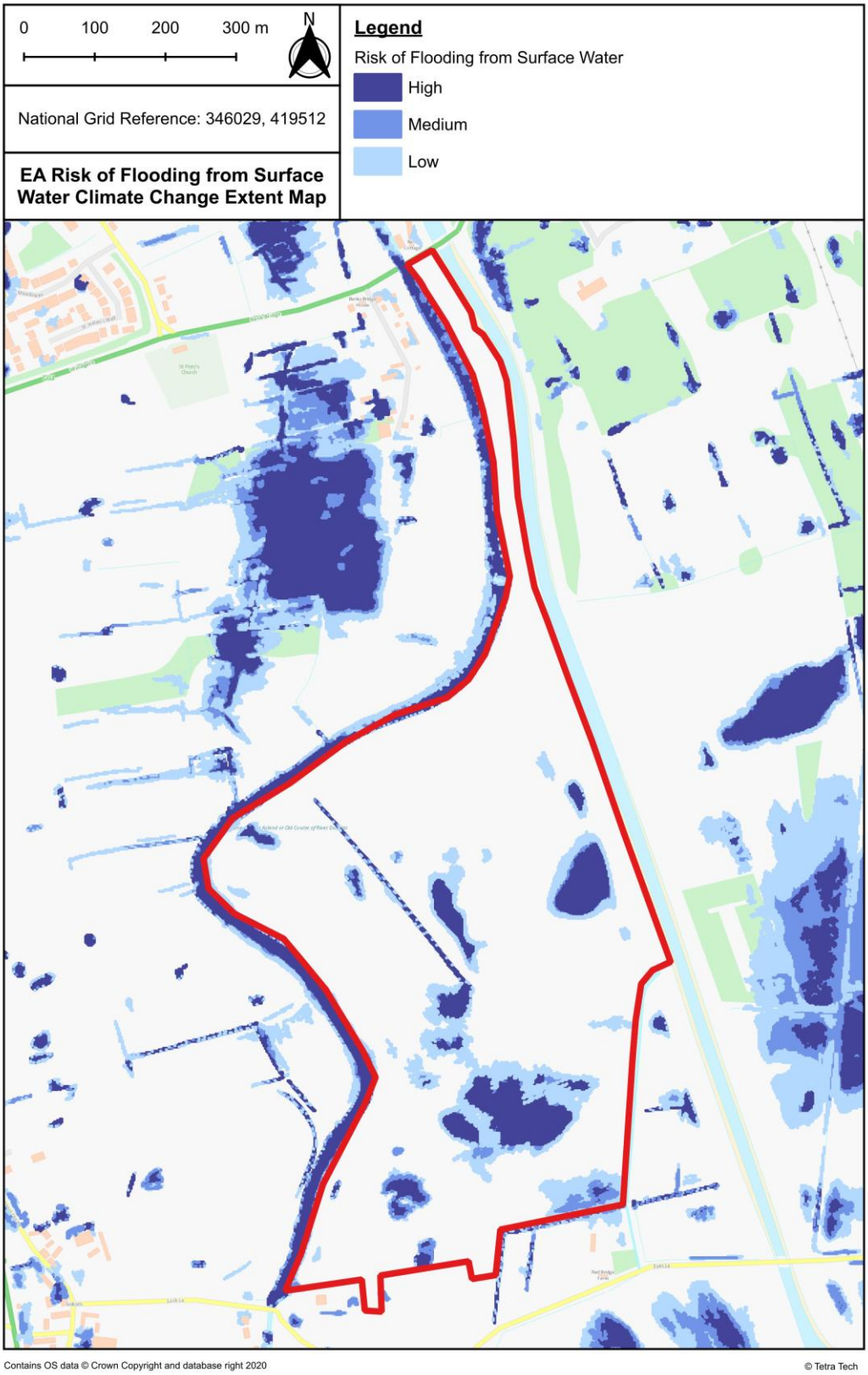


Figure 3-4. EA Risk of Flooding from Surface Water Climate Change Extent Map

The EA Risk of Flooding from Surface Water plus climate change depth mapping, Figure 3-5, shows that the maximum depths present are still 0.9 to 1.2 m within the drainage ditch within all risk events. The maximum depths within the areas of ponding across the rest of the site are between 0.2 and 0.3 m in a 3.3% AEP event, and between 0.3 and 0.6 m in a 1% and 0.1% AEP event. The extent of flooding between 0.3 and 0.6 m in depth in a 0.1% AEP is increased within this ponding across the site.

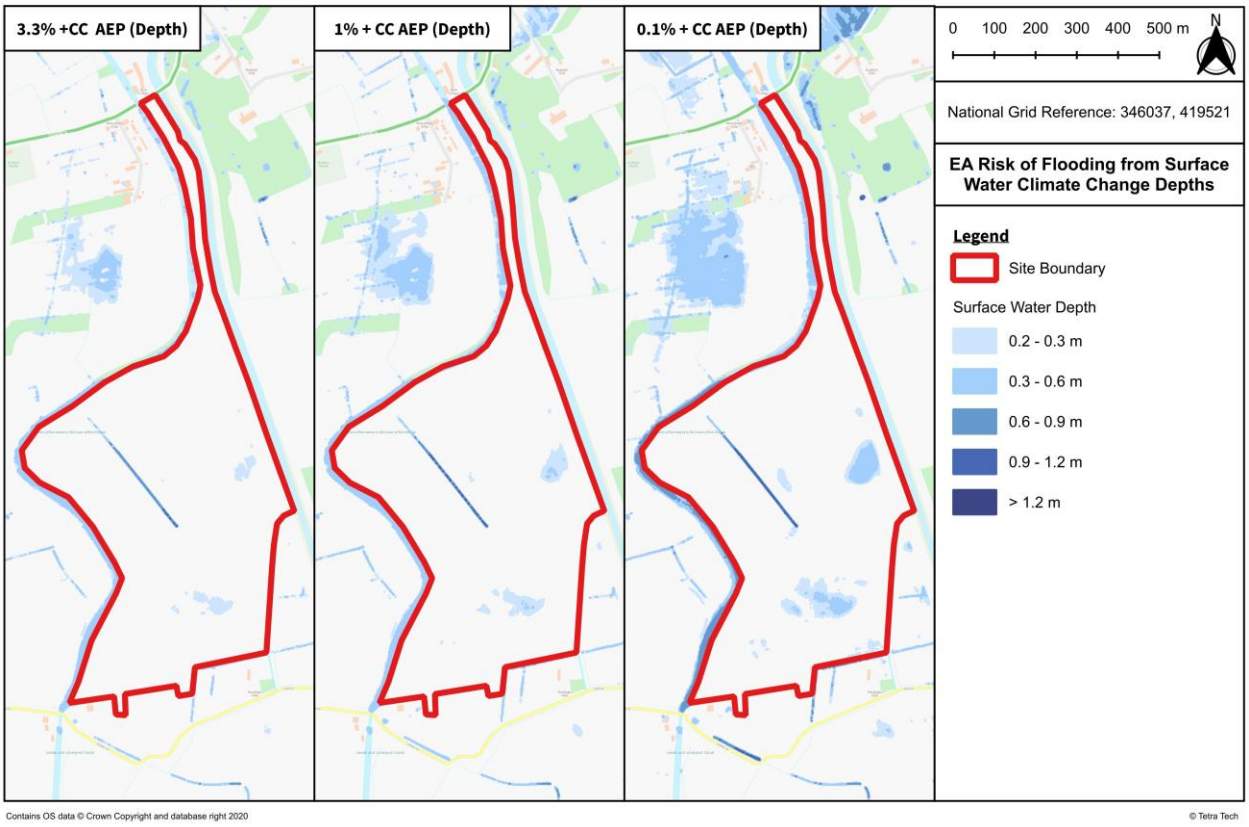


Figure 3-5. EA Risk of Flooding from Surface Water Climate Change Depth Map

Overall, for the majority of the site the surface water flood risk is low, however, there are areas of ponding classified as high across the site.

3.3 GROUNDWATER FLOODING

Groundwater flooding occurs when groundwater emerges at the surface under conditions where the 'normal' range of groundwater levels and groundwater flows is exceeded. This type of flooding is most likely to occur in areas above an aquifer. The occurrence of groundwater flooding is usually local and does not generally pose a significant risk to life due to the slow rate at which the water level rise.

According to Central Lancashire's Strategic Flood Risk Assessment, little to no incidents of groundwater flooding were identified. However, borehole records identify water levels are approx. 4m deep and when considered with the underlying geology of permeable superficial deposits and soils with naturally high groundwater then

suggests that groundwater flooding may be possible. Therefore, the risk of groundwater flooding to the site is medium.

3.4 SEWER FLOODING

Sewer flooding occurs when intense rainfall overloads the sewer system capacity and/or when sewers cannot discharge properly to watercourses due to high water levels. Sewer flooding can also be caused when problems such as blockages, collapses or equipment failure occur in the sewerage system.

Maps provided by United Utilities in the Central Lancashire's SFRA indicates that between 9 and 13 external sewer flooding incidents have occurred in the proximity of the site. However, this is not site specific and covers a large area including the nearby town of Tarleton. Based on the assumption in Section 2.3 that there are no sewers located within the site boundary, the risk of sewer flooding is considered low.

3.5 RESERVOIR FLOODING

The Environment Agency's Extent of Flooding from Reservoirs map indicates that the entirety of the site is at risk from reservoir flooding when fluvial flooding occurs, this is shown in Figure 3-6 below.

The site is identified to be at risk from flooding when a reservoir breach coincides with when river levels are high. Although the probability of a catastrophic dam failure is considered to be extremely low, the consequence of such an event would be severe, therefore the risk to the site is considered to be low – medium.

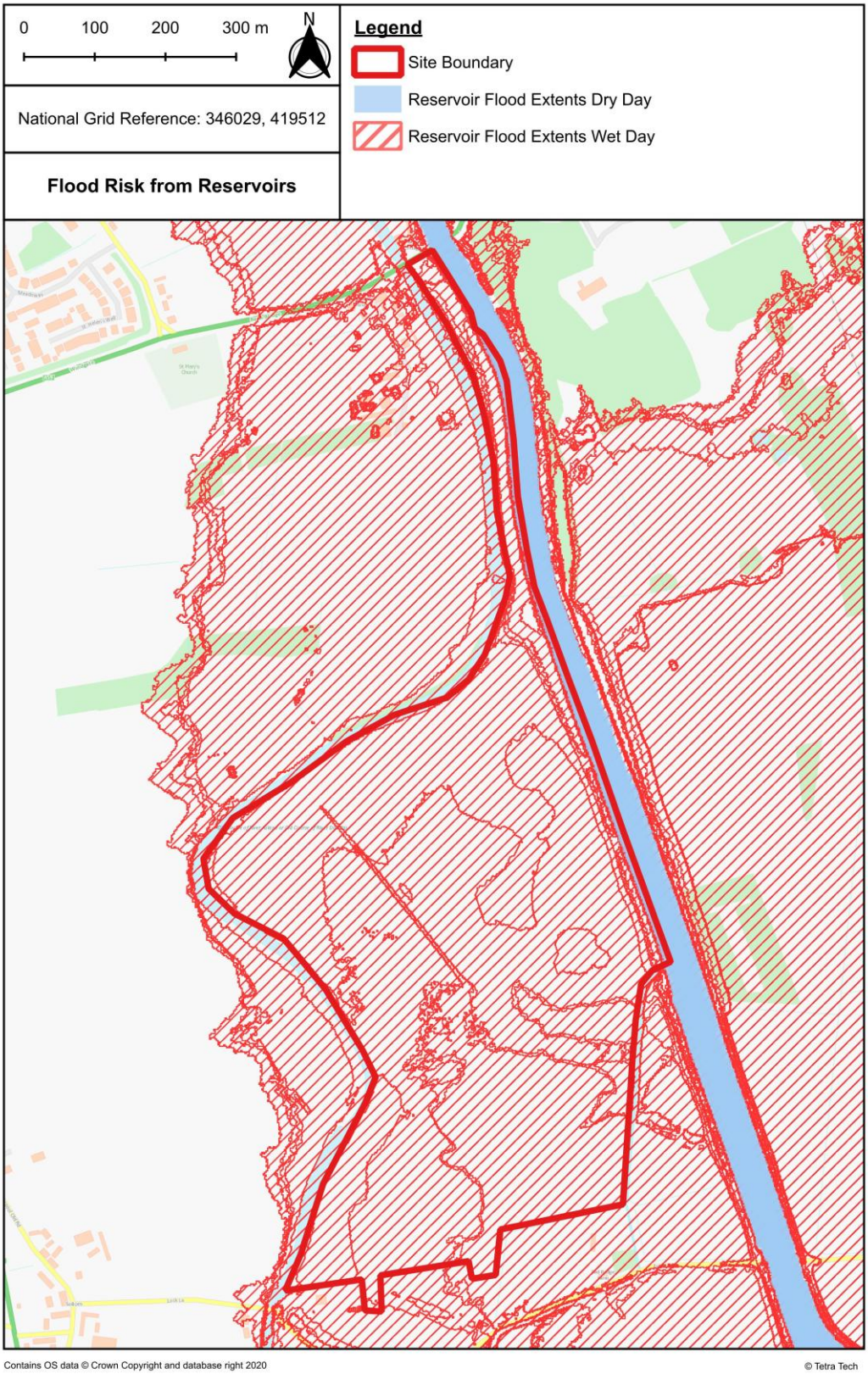


Figure 3-6. EA Flood Risk from Reservoirs

3.6 CANAL FLOODING

Flooding from a canal occurs when the canal is overtopped or breaches due to failure. The Leeds and Liverpool Canal (Rufford Branch) directly bounds the site to the west. The likelihood of canal overtopping is very low, however in the event of overtopping the site would be severely affected, therefore the risk can be considered low – medium.

3.7 SUMMARY OF FLOOD RISK

The flood risk to the site from all sources are categorised below:

Source	Risk
Fluvial	Low, however if defences are overtopped the risk is High
Tidal	Low, however in the event of a breach the risk is High
Surface Water	Low, however areas of ponding classified as High across the site
Groundwater	Medium
Sewer	Low
Reservoir	Low - Medium
Canal	Low - Medium

Any new development should not increase the risk of flooding on site or downstream from any of the sources assessed above, this is further detailed in Section 4.

4.0 DEVELOPMENT PROPOSALS

4.1 PROPOSED DEVELOPMENT

GA Pet Food Partners is considering development of a renewable based energy park to supply nearby Plocks Farm. The energy park will comprise of a wind turbine and solar arrays with the surrounding area landscaped to provide improved access and amenity areas for the public.

The site covers 39.70 ha and is currently a greenfield site. The proposed development aims to keep the majority of the site as greenfield with raised solar arrays allowing sheep to graze beneath the arrays.

4.2 PLANNNG POLICY & GUIDANCE

4.2.1 National Planning Policy Framework

In accordance with the NPPF[4] a full FRA would be required in support of a planning application for development sites greater than 1ha in Flood Zone 1 and for development sites of any size located within Flood Zone 2 or 3. The level of detail within an FRA should be appropriate to the scale and nature of the development.

4.2.2 Chorley Local Plan 2012- 2026 (July 2015) [5]

Chapter 9: Tackling Climate Change

9.4 Sites for Renewable Energy Generation

Any formal proposals received by the Council for renewable or low carbon energy schemes will be supported provided they meet the criteria set out in Policy 28 of the Core Strategy.

4.2.3 Central Lancashire Adopted Core Strategy: Local Development Framework (July 2012)[6]

Policy 28: Renewable and Low Carbon Energy Schemes

Proposals for renewable and low carbon energy schemes will be supported and planning permission granted where the following criteria are met:

[4] NPPF (February 2021) Chapter 14 Paragraph 167
5 Chorley Local Plan 2012-2026, Chorley Council, Adopted 21 July 2015
6 Central Lancashire Adopted Core Strategy: Local Development Framework, Preston, South Ribble and Chorley Council, July 2012

(a) The proposal would not have an unacceptable impact on landscape character and visual appearance of the local area, including the urban environment;

(b) The reason for the designation of a site with statutory protection would not be compromised by the development;

(c) Any noise, odour, traffic or other impact of development is mitigated so as not to cause unacceptable detriment to local amenity;

(d) Any significant adverse effects of the proposal are considered against the wider environmental, social and economic benefits, including scope for appropriate mitigation, adaptation and/or compensatory provisions

Policy 29: Water Management

Improve water quality, water management and reduce the risk of flooding by:

(d) Appraising, managing and reducing flood risk in all new developments, avoiding inappropriate development in flood risk areas particularly in Croston, Penwortham, Walton-le-Dale and southwest Preston

(g) Encouraging the adoption of Sustainable Drainage Systems.

4.2.4 Sequential & Exception Tests

One of the aims of NPPF is to steer development away from zones of high flood risk towards aeras at little or no risk of flooding, this means where possible avoiding development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. This is achieved through compliance with the Sequential and Exception Tests.

There were three sites identified as potential locations for the development close to Plocks Farm:

- Site A: Sollom (as detailed in the previous sections of this report)
- Site B: Carr Brook
- Site C: Haunders Lane

The location of these sites and the Flood Zones within the boundaries are shown in the figure below. The exact boundary for Site C is unknown, a 20m buffer has been applied to the point data provided for the purposes of this comparison.

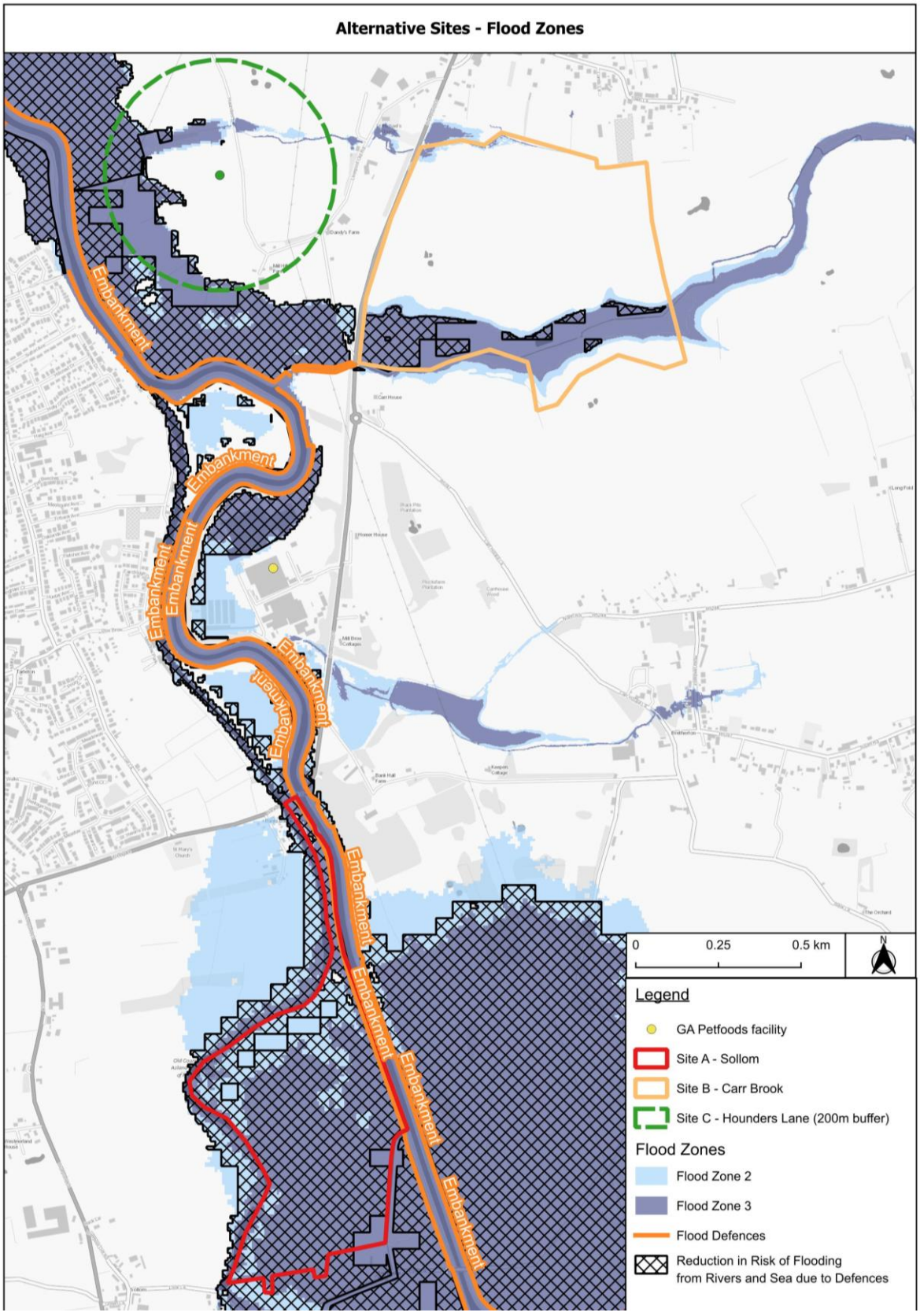


Figure 4-1: Alternative Sites – EA Flood Map for Planning

All three sites have areas of Flood Zone 3, however, Site A – Sollom has a larger proportion of the site within Flood Zone 3 and no areas of Flood Zone 1 compared to the other sites. The proposed development is classified as 'Essential infrastructure' in accordance with Table 2 of the PPG (Flood Risk & Coastal Change), suggesting that the development may not be sequentially acceptable in Flood Zone 3. However, the development is acceptable in this location given it is aligned to Chapter 9 in Chorley Local plan.

Whilst all sites have areas classified as Flood Zone 3, the area does benefit from defences. Sita A is shown to be almost entirely within an area that is classed as benefitting from defences, thereby demonstrating that the site is at reduced risk of flooding on site. Sites B and C contain some areas that benefit from defences but a large proportion of the areas of Flood Zone within the site are not shown to benefit and therefore present a risk of flooding.

The surface water flood risk on the site in future with climate change is shown on the figure below. This mapping shows that there are surface water flow paths through both Site B and C, whereas Site A has no flowpaths, only areas of ponding associated with agricultural drainage ditches and low spots (as discussed in Section 3.2).

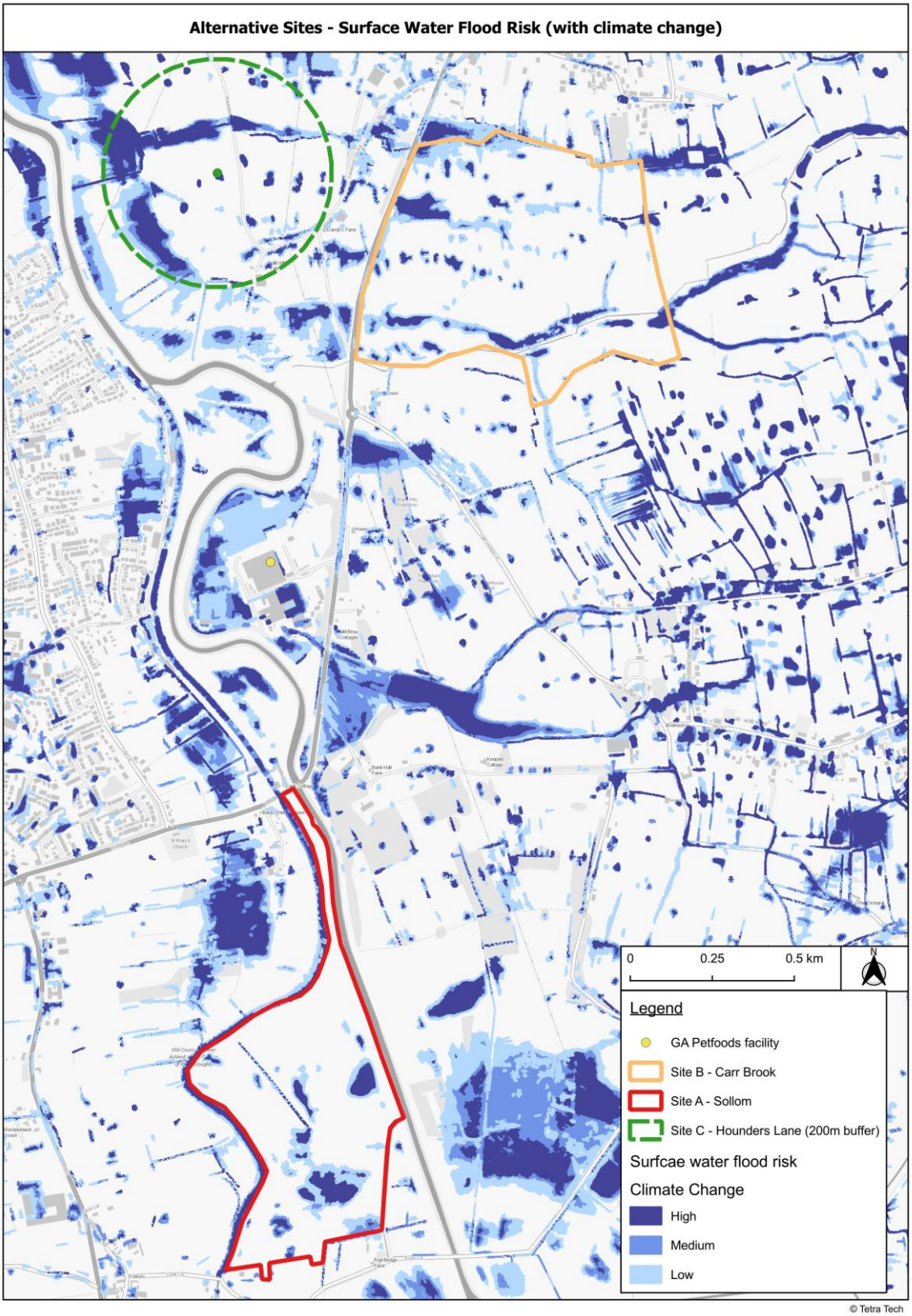


Figure 4-2: Alternative Sites – EA Surface Water Flood Mapping

It is understood that the two alternative sites B and C have been assessed and disregarded due to reasons not related to flood risk (including the presence of a pipeline, and the location in a separate planning borough to the applicant and residents).

Whilst Site A may have a larger area of Flood Zone 3 than the alternatives, development of any of these sites would include interactions with the flood zone and therefore require mitigation, meaning the risk arising from Site A would be similar to development on the alternative sites. There is no surface water disruption expected from development on Site A, whereas additional surface water mitigation may have been required within the alternative sites.

Therefore, the site is deemed to be acceptable if the recommended mitigation measures be implemented within the design to ensure the site can accommodate flood waters as a floodplain, and that the risk of flooding is not displaced. See Section 4.3 for proposed mitigation measures. Similar mitigation measures would have been required on the alternative sites, therefore, in terms of flood risk, Site A is not significantly more at risk of flooding than the alternative sites put forward and benefits from the defences in place to a larger extent that the alternative sites.

4.2.5 Environment Agency Guidance

A pre-application enquiry response from the Environment Agency received 1st July 2022, states that a 16m unobstructed buffer strip is required between the landward toe of the River Douglas flood defence embankment and the development and an 8 metre wide (minimum) unobstructed buffer strip should be provided between the top of the bank of the Strine Brook and the development.

The Environment Agency also recommend that consideration be given to the use of flood proofing measures to reduce the impact of flooding when it occurs.

The pre-application enquiry can be found in Appendix D.

4.3 FLOOD RISK MITIGATION

Whilst the risk to the site from fluvial and tidal flooding is low provided the defences are maintained, mitigation should be considered in the case of a breach or overtopping event. The proposed development is for solar panels, a wind turbine and two substations.

The proposed levels of the panels are 850mm above ground level (see diagram in Appendix A). The Ribble Estuary Tidal 2014 model shows flood levels reach approximately 4.55mAOD in the south of the site in an undefended 0.5% AEP +970mm scenario tidal. The lowest site level is in the south of the site and is 3.08mAOD, therefore the greatest flood depth can be expected to be 1.47m. The height of the solar panels therefore offers inbuilt mitigation against tidal flooding in an undefended scenario. Whilst the site is defended and a total removal of defences is an unlikely even, there are significant flood depths modelled in this scenario. Breach modelling (for the partial loss of defences) has not been provided by the Environment Agency; therefore, the impact of a

breach cannot be definitely stated. Therefore, waterproofing of solar panels should be considered, particularly in the south of the site, where flood depths are expected to be greatest.

Fluvial models described in Section 3.1, estimate flood depths of 6.03mAOD in the lowest point of the site during a 1% AEP + 70% climate change event in an undefended scenario. At the lowest point of the site, located in the south towards Red Bridge Farm, this is approximately 2.95m depth. A total loss of defences is highly unlikely to occur, and no ingress of water is expected in a defended scenario, however the impact of such an event should be considered.

The proposed substations are located throughout the site with the most southerly adjacent to the River Strine. This is located within the lower area of the site and is within the flood extents for undefended tidal and fluvial flood events. Whilst an undefended scenario is unlikely, to prevent damage during a breach event, which is not expected to be as severe as full loss of defences, it is recommended to implement flood mitigation to protect the site. Previously the Environment Agency has recommended raising floor levels and access to the substations and inverters 300mm above the existing ground level for a site to the north of Asland Walks. It is proposed that all transformers and inverters within the site are set above 6mAOD, or waterproofed up to this level to mitigate impacts of flooding during an extreme event.

An 8m stand off from the landward toe of the flood defences is required for the development. This will protect the defences' integrity and prevent them being undermined.

It is recommended that a flood management plan is put in place. Attendance on site should be prohibited during a flood event to ensure the safety of any potential visitors to the site and appropriate warning systems should be utilised in the event of tidal and fluvial flooding.

It addition to the above to mitigate fluvial flood risk, a surface water drainage strategy will be implemented to manage surface water flows in site. This will reduce the risk of surface water flooding to the site itself and will prevent an increase in runoff from the site that may increase risk elsewhere. This strategy is provided in a separate document produced by Tetra Tech (784-B039518 Asland Energy Park Surface Water Drainage Strategy, 2025).

5.0 CONSENTS REQUIRED

5.1 LAND DRAINAGE CONSENT

Any new connection and discharge of surface water into the drainage ditches would require land drainage consent from LCC as the LLFA in accordance with Section 23 of the Land Drainage Act 1991.

5.2 ENVIRONMENTAL PERMIT

Under the Environmental Permitting (England and Wales) Regulations 2016, an environmental permit is required from the Environment Agency for any works carried out within 16m of a tidal main river. The type and number of permits required should be checked with the Environment Agency before applying.

6.0 CONCLUSIONS & RECOMMENDATIONS

6.1 CONCLUSIONS

This report has identified the following conclusions:

Source	Risk
Fluvial	Low, however if defences are overtopped the risk is High
Tidal	Low, however in the event of a breach the risk is High
Surface Water	Low, however areas of ponding classified as High across the site
Groundwater	Medium
Sewer	Low
Reservoir	Low - Medium
Canal	Low - Medium

- The site is largely considered to be at low risk of fluvial, tidal, surface water, sewer, reservoir and canal flooding based on the presence of flood defences.
- In the event of overtopping or a breach of the defences the risk of flooding to the site is considered to be high.
- There are areas of surface water ponding classified as high risk throughout the site.
- There is a medium risk of groundwater flooding at the site.
- Inverters and transformers located within the site will be raised or waterproofed to 6mAOD to mitigate against flooding in an extreme event.
- An assessment of flood risk at alternative sites to support the sequential test concluded that whilst Site A is shown to have a larger proportion of Flood Zone 3, this is shown to be defended and therefore, when compared to the alternative sites which do not benefit from the defences to the same extent, the risk to Site A – Sollom Lane is lower. Further to this, the absence of modelled surface water flowpaths within Site A, when compared to the alternative sites, suggests that Site A is more suitable for development when considering surface water flood risk.

6.2 RECOMMENDATIONS

Based on the above conclusions, the following recommendations are made:

- It is advised that the EA and/or LCC as the LLFA are consulted to establish further requirements, if necessary.
- Formal consent from LCC as the LLFA would be required under the Land Drainage Act 1991 for any new outfall into the unnamed drainage ditches on the site.
- It is recommended that a warning system is put in place to alert site users of a tidal flood event.
  A surface water drainage strategy is recommended to mitigate the risk of surface water flooding on site.

APPENDICES

APPENDIX A – PROPOSED SITE LAYOUT

SSW UK
Coombe Farm
Crewkerne, Somerset
TA18 8RR
+44 (0)1460 279571
info@solarsouthwest.co.uk

PROJECT INFO

CLIENT:	GA Petfoods Ltd		
ADDRESS:	A59, Preston PR4 5JQ PR4 5JQ		
PROJECT:	1810.5-GA Petfood		
TITLE:	Block Plan-Asland Walks Energy Park		
SCALE:	1:3000 @ A3	Drawing No.:	102.004

TECHNICAL INFO

Panel manufacture:	Risen		
Model:	RSM132-8-650BMDG		
Panel dimensions:	2,384x1303x40mm		
No. Panels: 42,200	Tilt: E-W	Azimuth: E-W	
Total Power (kWp):	27,430		

Notes:

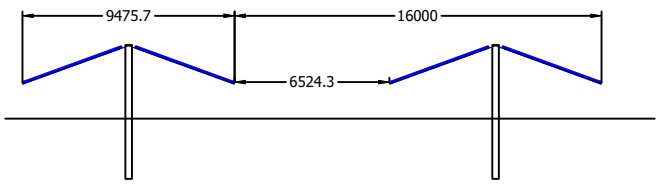
1. Dimensions are in mm and are indicative only.
2. Based on survey information.

REVISIONS

REV.	REV. INFO	DATE	DRAWER	CHECKER
001	Block Plan	17/11/21	JLBD	JB
002	Border change	22/12/21	HK	JMB
003	Customer Sub	06/01/22	HK	JMB
004	E-W fixed	16/08/22	MF	

E-W Fixed

E-W



Row spacing calculation: https://www.monsolar.com/separacion-paneles-solares

Legend

Wide Planting

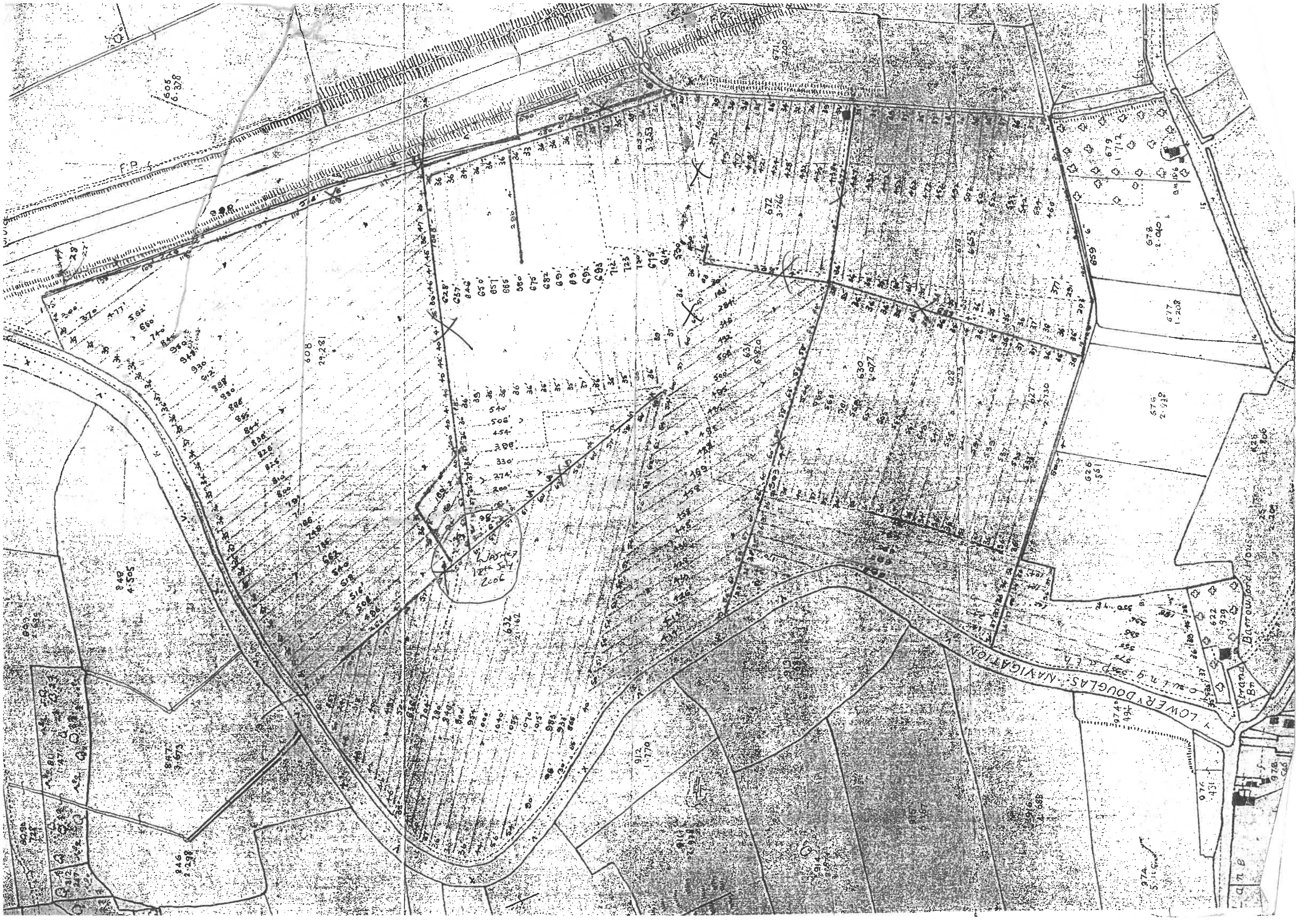
Hedge

N

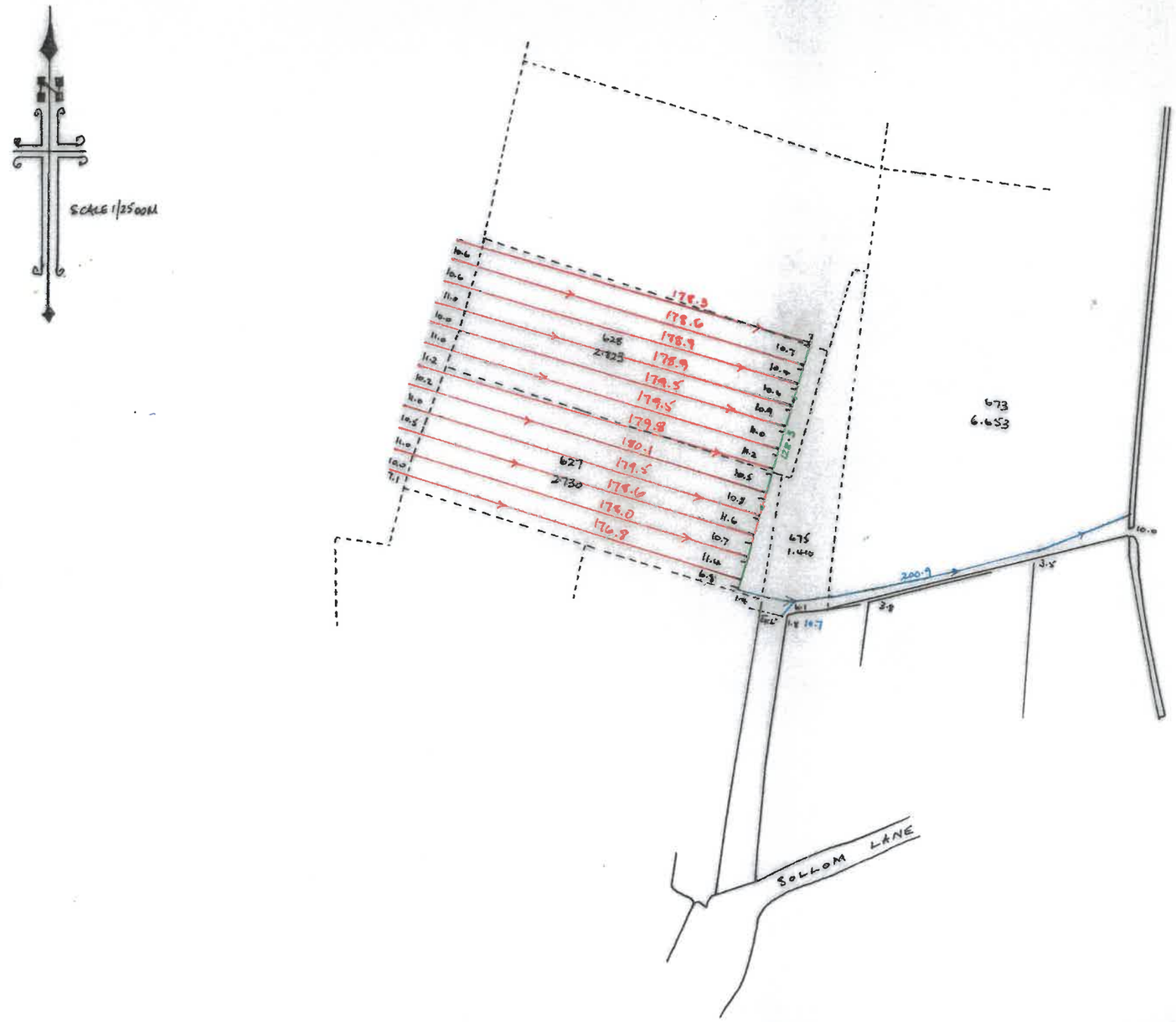
0m 50m 100m 150m 300m

SCALE IN METRES 1:3000

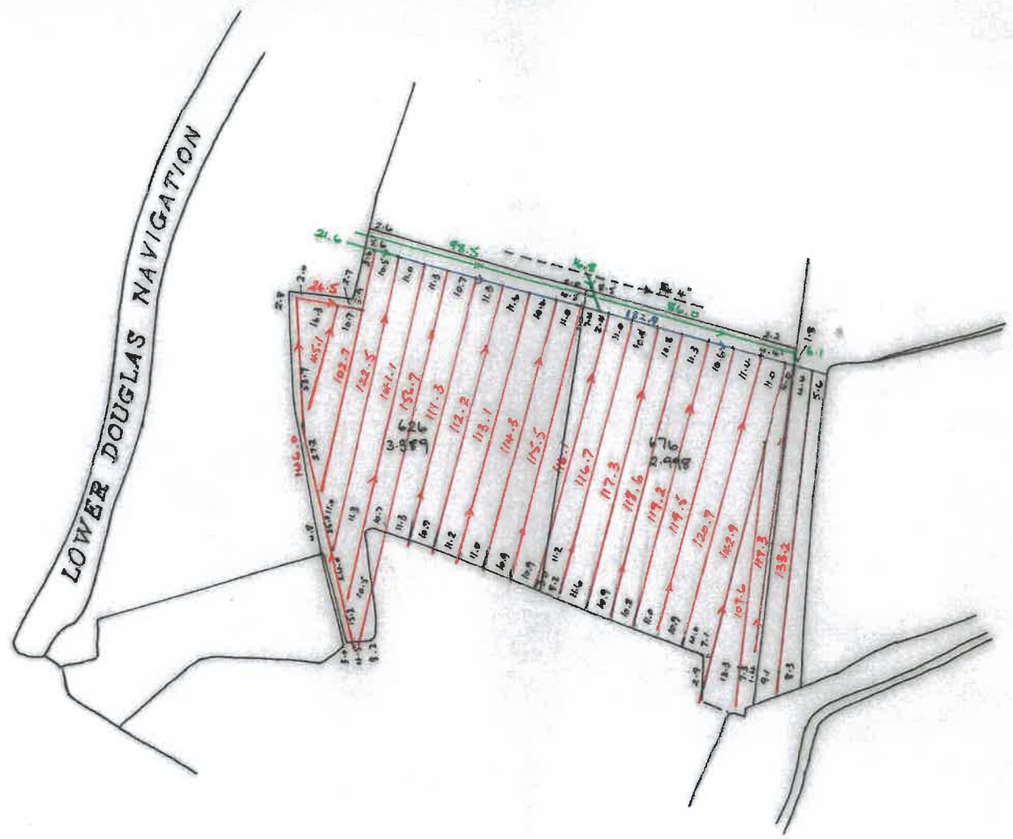
APPENDIX B – EXISTING AGRICULTURAL DRAINAGE



LOWER DOUGLAS NAVIGATION
608
29.281
632
21.162
672
3.766
F.P.



CAPE LIMITED – PLOCKS FARM, BRETHERTON.	3" drain tiles 2144 Lin (906.3) 4" " " 128 M (421) 6" " " 212 M (694)	Acland Bracewell & Co. Land Agents, Surveyors, Valuers and Auctioneers The Barrons, Tarleton, Preston, PR4 6UP.
Certified a true record of drainage laid down in O.S. Nos. 627, 628, 673, 675.	Lancs sheet – LXXVI·6 & ·7 edition of 1928.	DRAWN BY: Geoffrey Bracewell DATE: 20th May 1982 DRAWING NO.: 110.



REAPER LIMITED - BARROWFORD HOUSE, SOLLOM.

certified a true record of drainage laid down in O.S. Nos. 626, 676.

3" drain tiles 2636 m (8648)
4" " " 229 m (751)
6" " " 183 m (600)

Lancs sheet · LXXVI·6 · 7 edition of 1928.

Adam Bracewell & Co.
Land Agents, Surveyors, Valuers
The Surveyors
Tarleton
Preston.
PR4 6UT

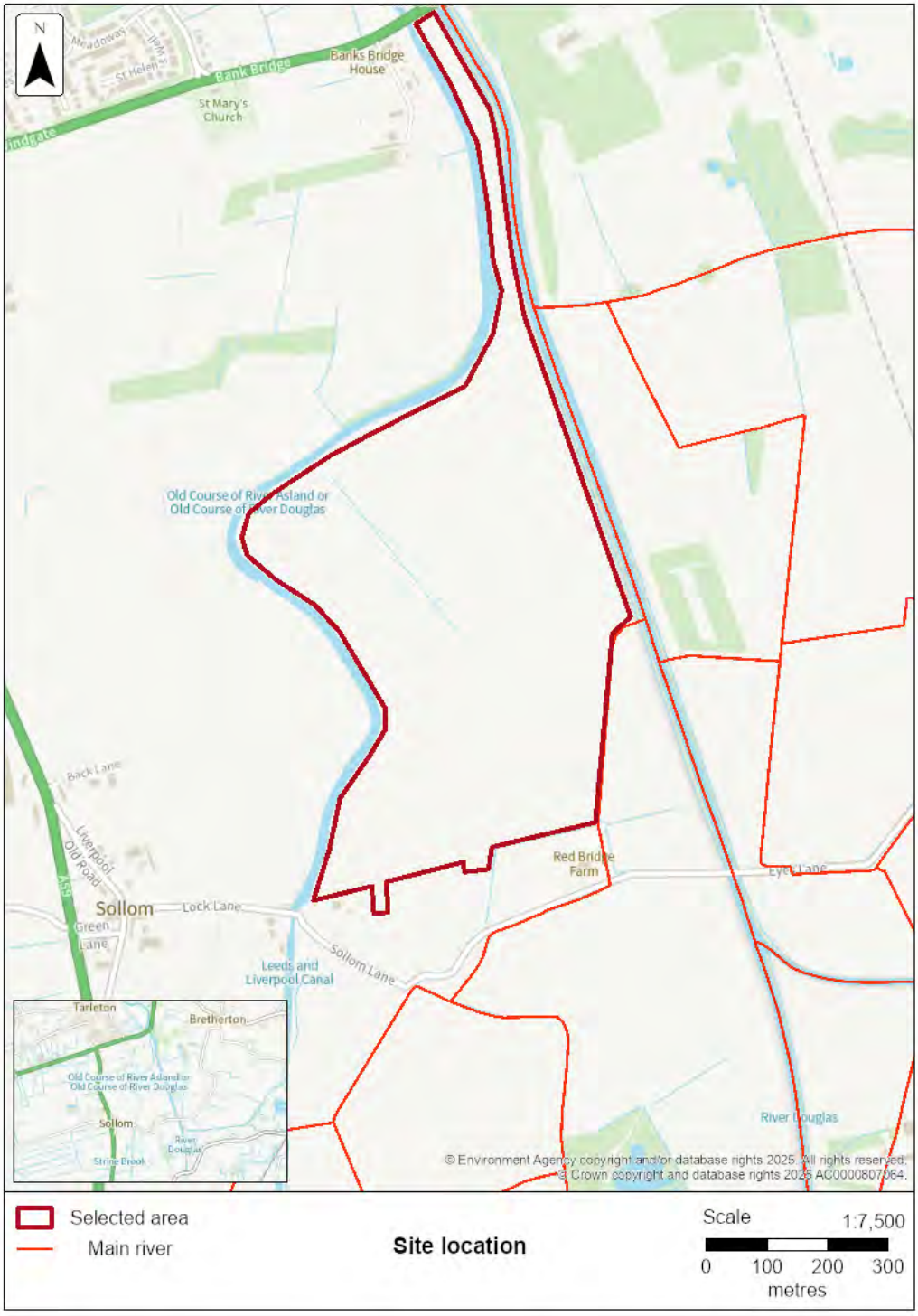
DRAWN BY	DATE	DRAWING NO
Geoffrey Bracewell	28th May '76	102

APPENDIX C – ENVIRONMENT AGENCY PRODUCT 4 DATA

Flood risk assessment data

Location of site: 346072 / 419291 (shown as easting and northing coordinates)
Document created on: 2 May 2025
This information was previously known as a product 4.
Customer reference number: FATBKN37NJRK

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)
- past floods
- 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
- 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

When using the surface water map on the check your long term flood risk service the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- reservoir flood risk
- groundwater flood risk - you could use the British Geological Survey groundwater flooding data, groundwater: current status and flood risk and the guide on mining and groundwater constraints for development - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is Lancashire County.

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

About the models used

Model name: Ribble Estuary_Tidal 2014
Scenario(s): Defended tidal, defences removed tidal, defended climate change tidal, defences removed climate change tidal
Date: 30 July 2014

Model name: Ribble-Douglas 2010
Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial
Date: 1 August 2010

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 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:

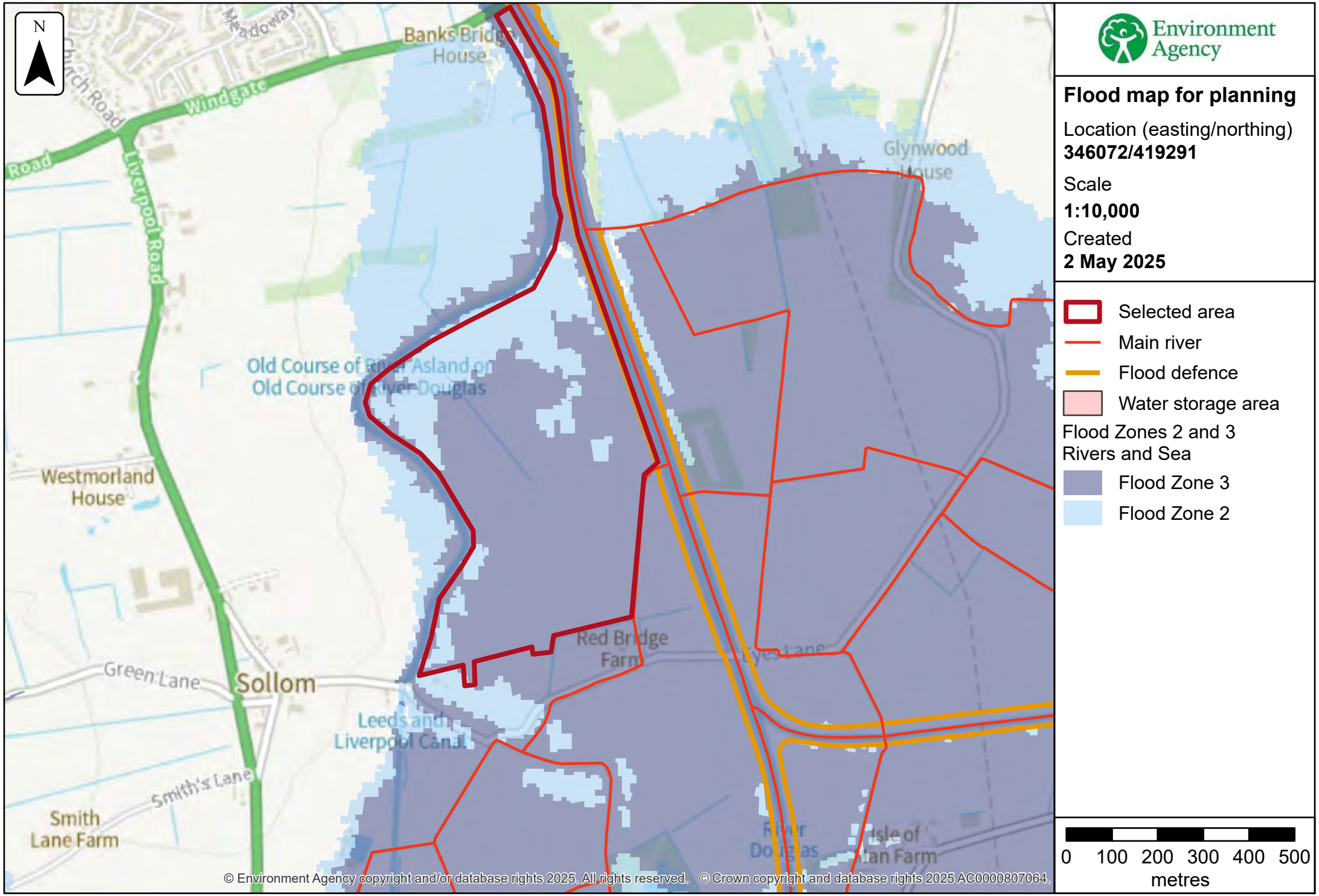
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

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


N
Banks Bridge House
Windgate
Road
Liverpool Road
Glynwood House
Old Course of River Asland or Old Course of River Douglas
Westmorland House
Red Bridge Farm
Green Lane
Sollom
Leeds and Liverpool Canal
Smith's Lane
Smith Lane Farm
River Douglas
Environment Agency
Flood map for planning
Location (easting/northing)
346072/419291
Scale
1:10,000
Created
2 May 2025
Selected area
Main river
Flood defence
Water storage area
Flood Zones 2 and 3
Rivers and Sea
Flood Zone 3
Flood Zone 2
0 100 200 300 400 500
metres
© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Past floods

Past flood events included in this document

The recorded flood outlines included in this document are for areas of land local to your site location that have been flooded by any of these sources:

- ephemeral water
- main rivers
- ordinary watercourses
- the sea
- unknown

Data limitations

The outlines do not include flooding from:

- drainage where rainfall has led to surface water ponding or overland runoff
- artificial, water-bearing sewer, water supply and wastewater treatment pipelines

Changes to flood defences

The defences (also known as assets) that were in place may also have changed. For example, assets may have been built more recently than the last recorded flood outline.

What the recorded flood outlines dataset is

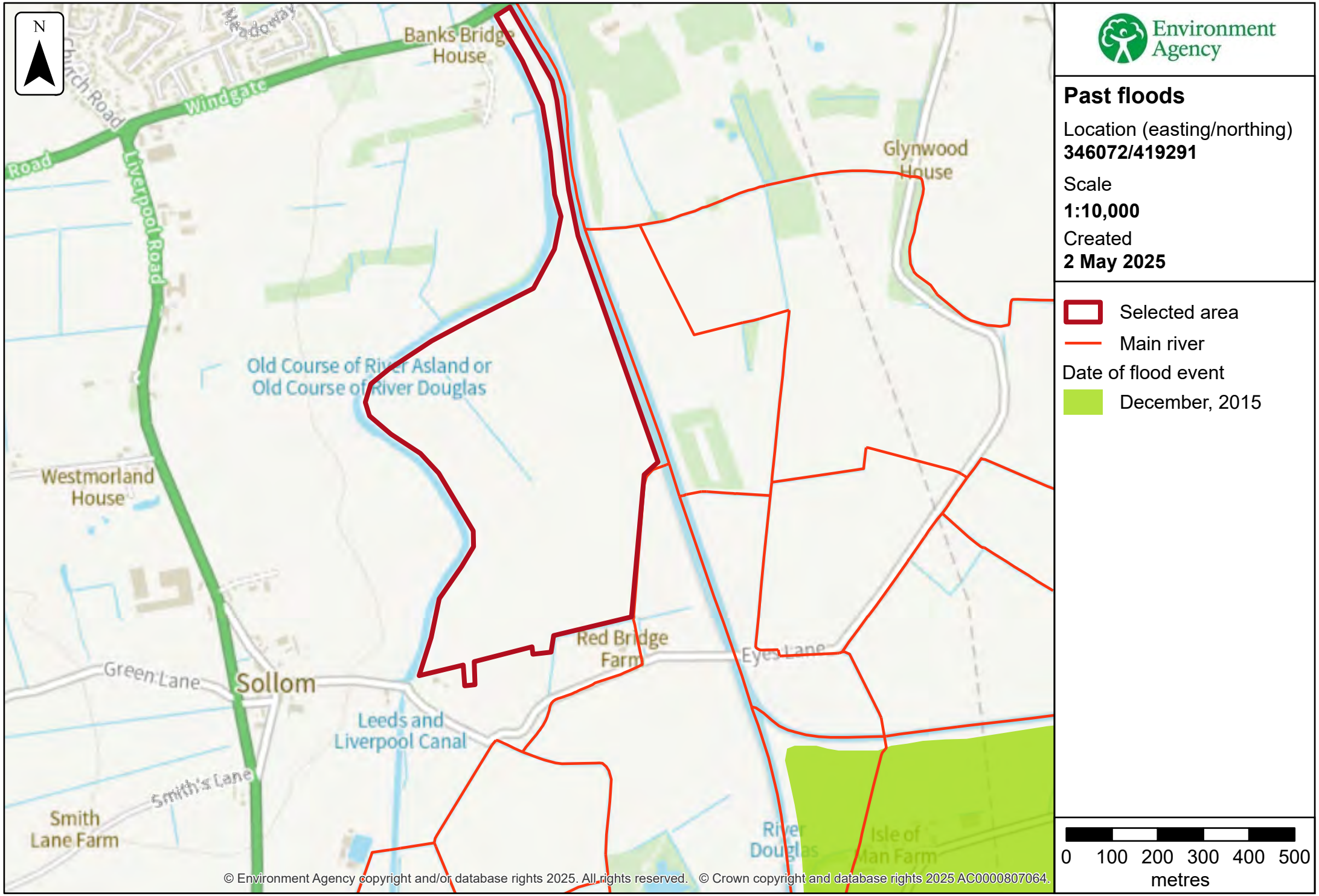
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- rivers
- the sea
- groundwater
- surface water

Download the complete recorded flood outlines dataset, which includes data quality flags for outlines recorded after April 2020. This indicates the confidence we have in an outline.

Get flood information from other organisations

Contact Lancashire County Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.



Environment Agency

Past floods

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Selected area

Main river

Date of flood event

December, 2015

0 100 200 300 400 500
metres

Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
26 December 2015	27 December 2015	main river	operational failure/breach of defence	No

Flood defences and attributes

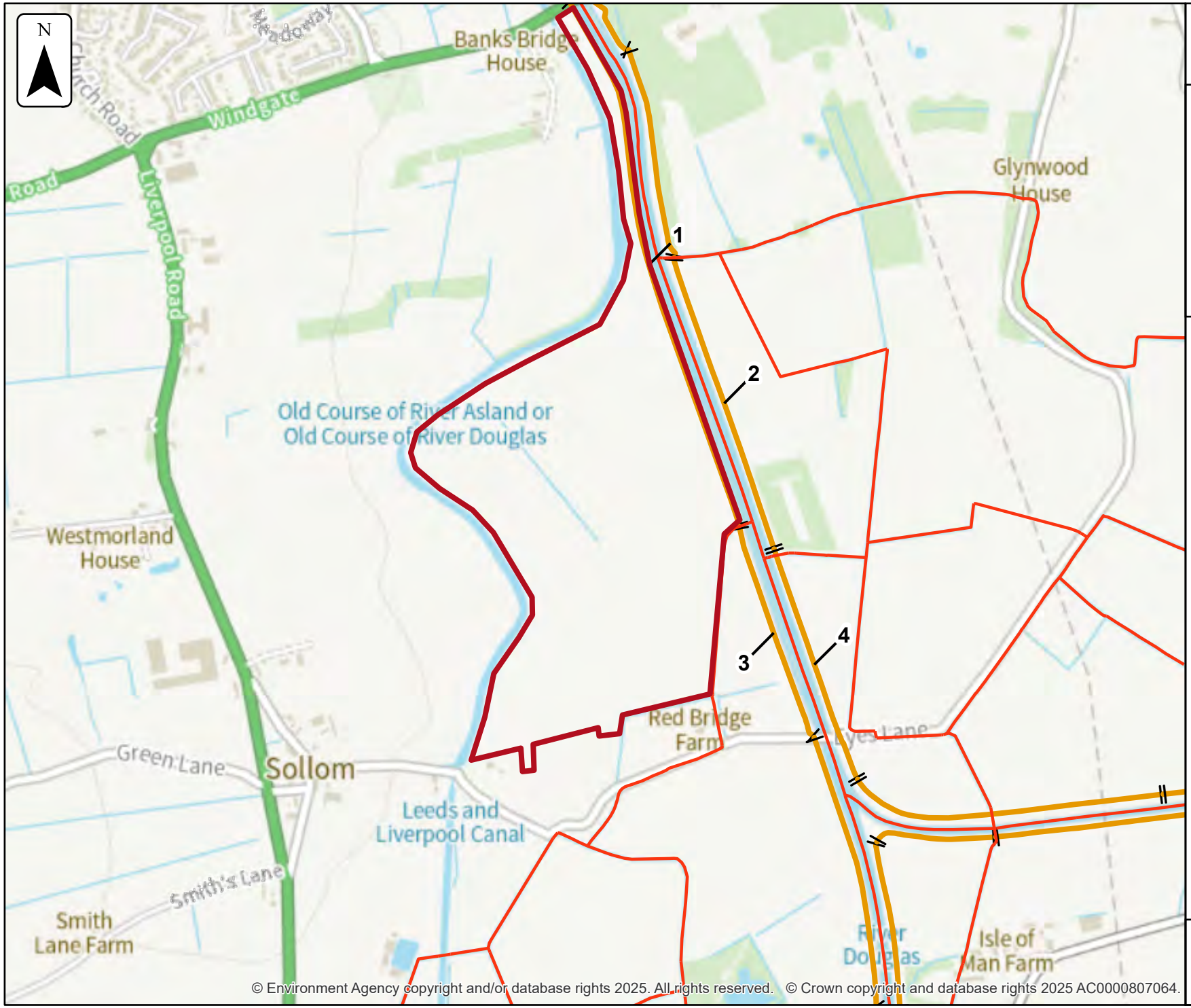
The flood defences map shows the location of the flood defences present.

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



Environment Agency

Flood defences

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

- Selected area
- Main river
- Flood defence

0 100 200 300 400 500
metres

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	80273	Embankment	100	Fair	7.30	7.30	7.30
2	165424	Embankment	100	Fair	7.30	7.30	7.30
3	80274	Embankment	100	Fair	6.78	6.78	6.78
4	165425	Embankment	100	Fair	6.78	6.78	7.68

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

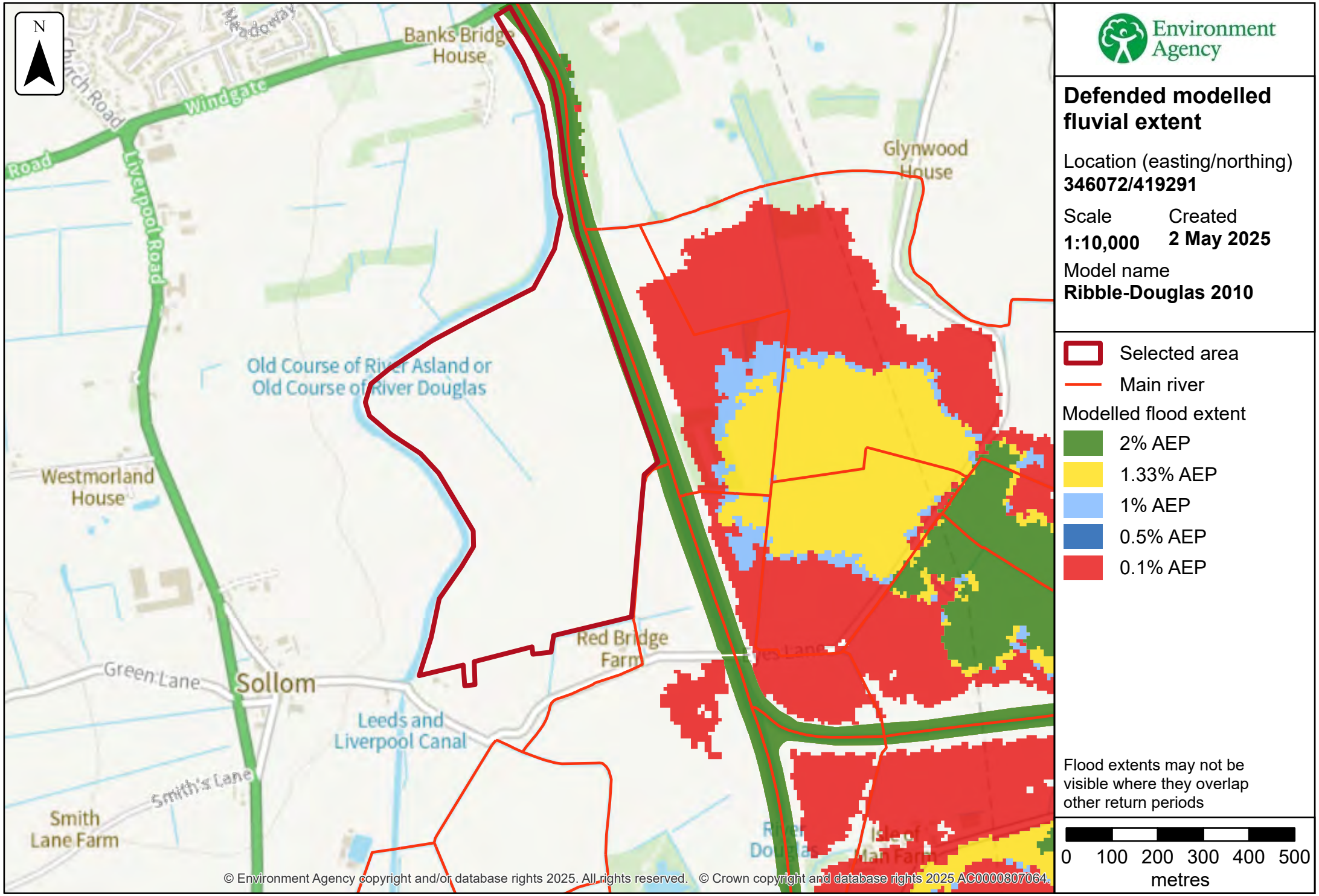
The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

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



Environment Agency

Defended modelled fluvial extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble-Douglas 2010

- Selected area
- Main river

Modelled flood extent

- 2% 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

Defended climate change modelled fluvial extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble-Douglas 2010

Selected area

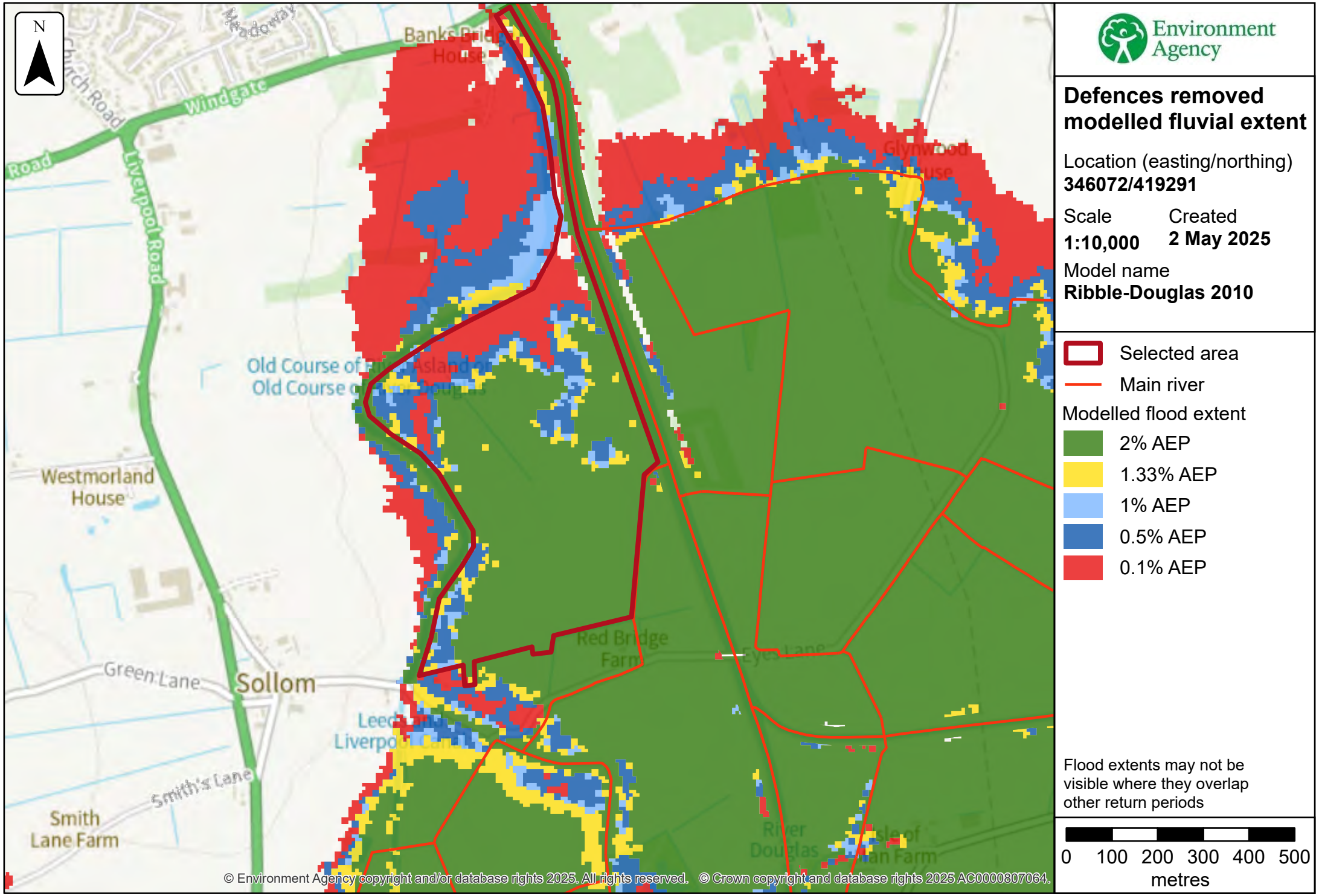
Main river

Modelled flood extent

- 1% AEP (+20%)
- 1% AEP (+30%)
- 1% AEP (+35%)
- 1% AEP (+70%)

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

0 100 200 300 400 500
metres


N
Environment Agency
Defences removed modelled fluvial extent
Location (easting/northing)
346072/419291
Scale
1:10,000
Created
2 May 2025
Model name
Ribble-Douglas 2010
Selected area
Main river
Modelled flood extent
2% 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
Windgate
Liverpool Road
Church Road
Westmorland House
Green Lane
Sollom
Smith's Lane
Smith Lane Farm
Red Bridge Farm
Eyes Lane
Old Course of
Banks
House
Glynwood
House
River Douglas
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Environment Agency

Defences removed climate change modelled fluvial extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble-Douglas 2010

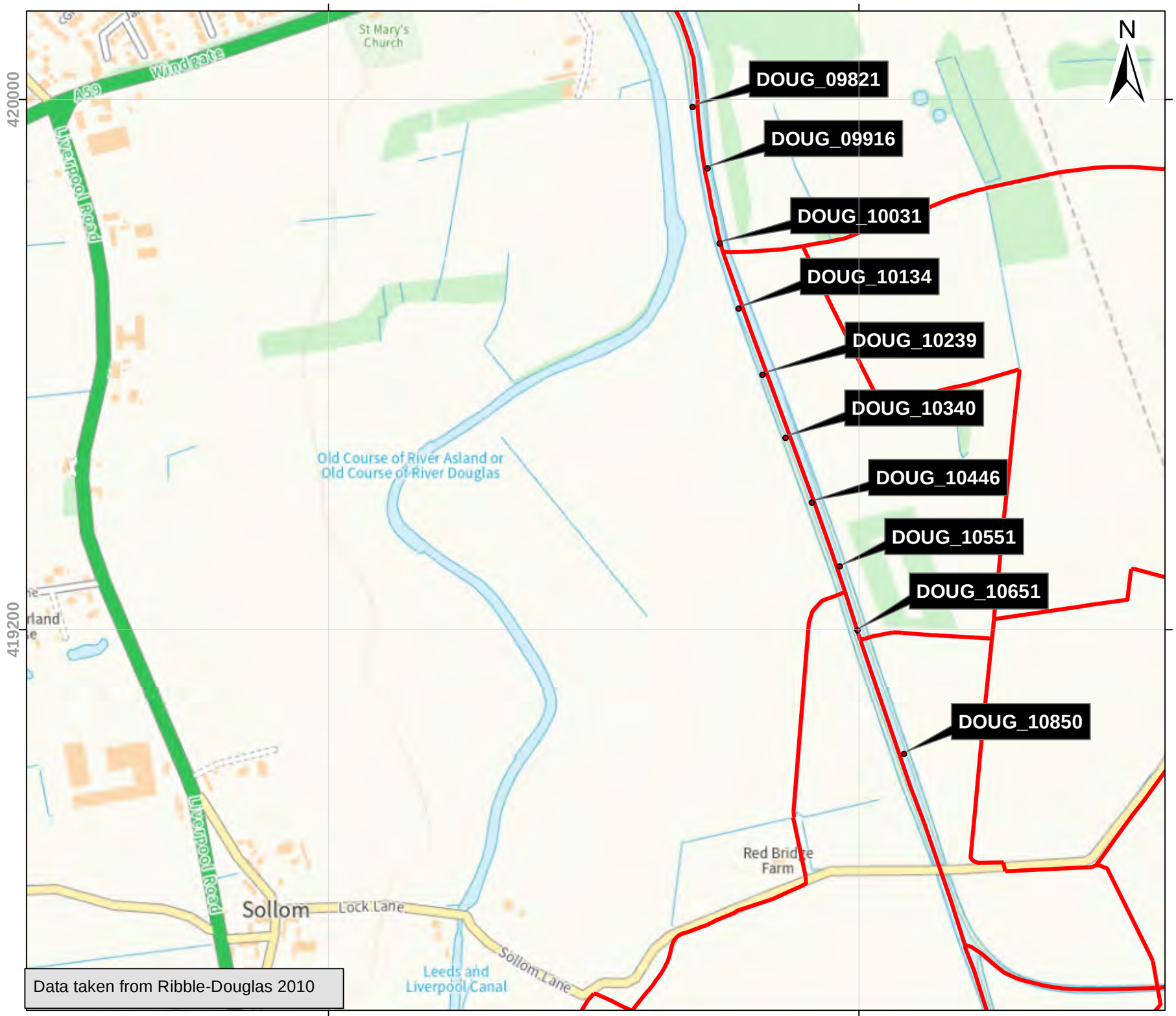
- Selected area
- Main river

Modelled flood extent

- 1% AEP (+20%)
- 1% AEP (+30%)
- 1% AEP (+35%)
- 1% AEP (+70%)

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

0 100 200 300 400 500
metres



Environment Agency

Fluvial Flood Levels Map: Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

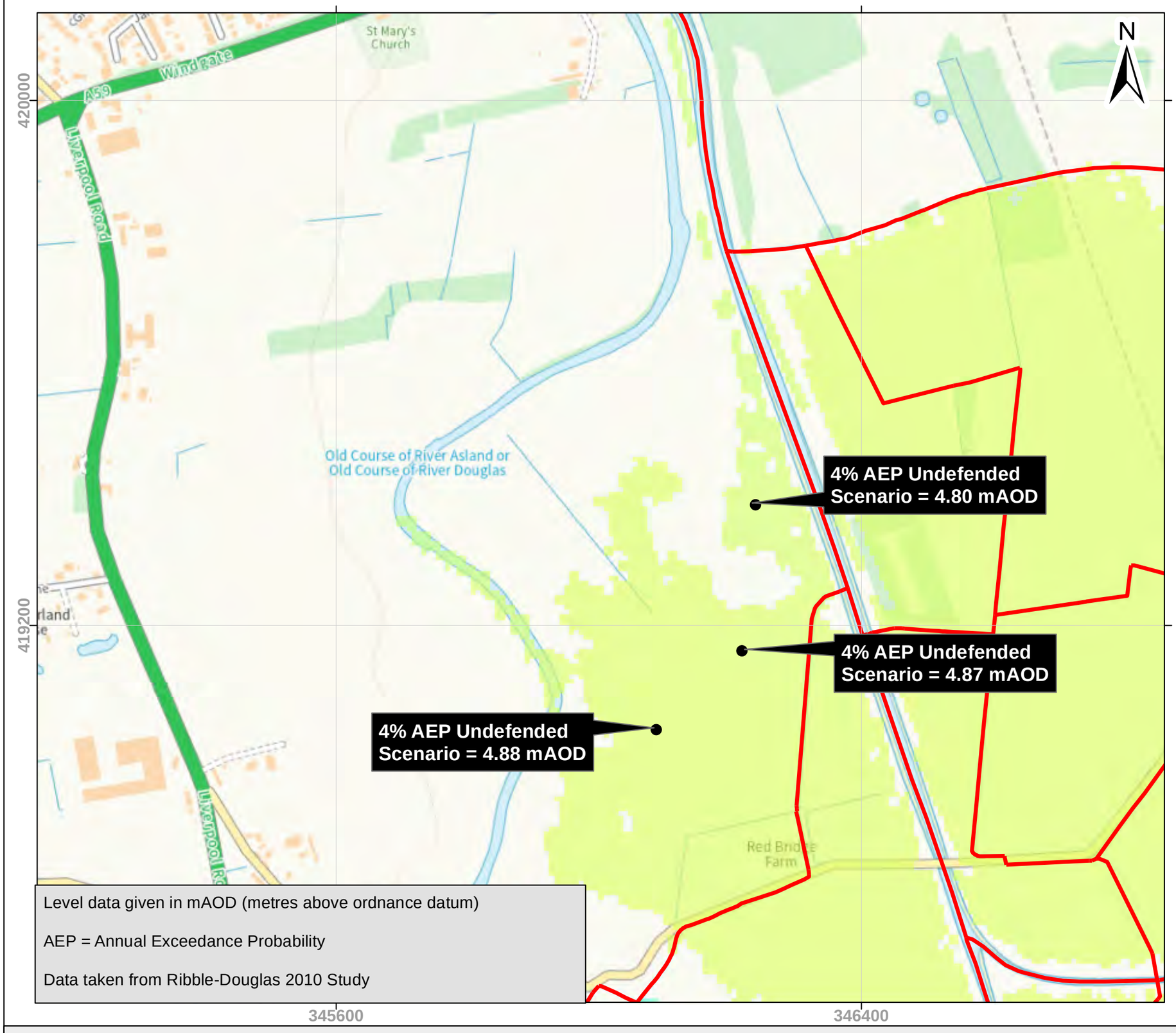
- Node Points
- Statutory Main Rivers

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

NODE POINT	DEFENDED(D)/ UNDEFENDED(U)/ CLIMATE CHANGE(CC)	AEP (%)	WATER LEVEL (mAOD)	FLOW (cumecs)
DOUG_10850	Doug2010_U	4	4.88	47.22
DOUG_10850	Doug2010_D	4	6.28	150.35
DOUG_10850	Doug2010_U_20%CC	1	5.44	38.66
DOUG_10850	Doug2010_D_20%CC	1	6.37	155.89
DOUG_10850	Doug2010_U	1	5.15	44.97
DOUG_10850	Doug2010_D	1	6.35	154.57
DOUG_10850	Doug2010_U_30%CC	1	5.58	38.98
DOUG_10850	Doug2010_D_30%CC	1	6.41	157.89
DOUG_10850	Doug2010_U_35%CC	1	5.64	39.1
DOUG_10850	Doug2010_D_35%CC	1	6.42	159.53
DOUG_10850	Doug2010_U_70%CC	1	6.03	44.29
DOUG_10850	Doug2010_D_70%CC	1	6.47	159.58
DOUG_10850	Doug2010_U	0.1	5.86	40.67
DOUG_10850	Doug2010_D	0.1	6.43	160.55
DOUG_10651	Doug2010_U	4	4.84	67.33
DOUG_10651	Doug2010_D	4	6.24	150.34
DOUG_10651	Doug2010_U_20%CC	1	5.43	65.87
DOUG_10651	Doug2010_D_20%CC	1	6.33	155.5
DOUG_10651	Doug2010_U	1	5.11	66.64
DOUG_10651	Doug2010_D	1	6.31	154.49
DOUG_10651	Doug2010_U_30%CC	1	5.56	65.15
DOUG_10651	Doug2010_D_30%CC	1	6.37	156.77
DOUG_10651	Doug2010_U_35%CC	1	5.63	64.47
DOUG_10651	Doug2010_D_35%CC	1	6.38	158.16
DOUG_10651	Doug2010_U_70%CC	1	6.02	62.25
DOUG_10651	Doug2010_D_70%CC	1	6.43	159.58
DOUG_10651	Doug2010_U	0.1	5.85	62.65
DOUG_10651	Doug2010_D	0.1	6.39	160.02
DOUG_10551	Doug2010_U	4	4.82	67.23
DOUG_10551	Doug2010_D	4	6.2	150.33
DOUG_10551	Doug2010_U_20%CC	1	5.41	72.69
DOUG_10551	Doug2010_D_20%CC	1	6.3	155.5
DOUG_10551	Doug2010_U	1	5.08	73.58
DOUG_10551	Doug2010_D	1	6.27	154.55
DOUG_10551	Doug2010_U_30%CC	1	5.55	73.65
DOUG_10551	Doug2010_D_30%CC	1	6.34	156.77
DOUG_10551	Doug2010_U_35%CC	1	5.62	73.7
DOUG_10551	Doug2010_D_35%CC	1	6.35	157.98
DOUG_10551	Doug2010_U_70%CC	1	6.02	72.43
DOUG_10551	Doug2010_D_70%CC	1	6.4	159.58
DOUG_10551	Doug2010_U	0.1	5.85	72.41
DOUG_10551	Doug2010_D	0.1	6.36	159.13
DOUG_10446	Doug2010_U	4	4.8	68.87
DOUG_10446	Doug2010_D	4	6.18	150.33
DOUG_10446	Doug2010_U_20%CC	1	5.4	74.28

DOUG_10446	Doug2010_D_20%CC	1	6.28	155.5
DOUG_10446	Doug2010_U	1	5.06	75.59
DOUG_10446	Doug2010_D	1	6.26	155.67
DOUG_10446	Doug2010_U_30%CC	1	5.54	74.35
DOUG_10446	Doug2010_D_30%CC	1	6.32	156.77
DOUG_10446	Doug2010_U_35%CC	1	5.61	74.31
DOUG_10446	Doug2010_D_35%CC	1	6.33	157.41
DOUG_10446	Doug2010_U_70%CC	1	6.01	72.93
DOUG_10446	Doug2010_D_70%CC	1	6.38	159.58
DOUG_10446	Doug2010_U	0.1	5.84	73.66
DOUG_10446	Doug2010_D	0.1	6.34	159.04
DOUG_10340	Doug2010_U	4	4.79	66.96
DOUG_10340	Doug2010_D	4	6.16	150.32
DOUG_10340	Doug2010_U_20%CC	1	5.38	78.65
DOUG_10340	Doug2010_D_20%CC	1	6.25	155.5
DOUG_10340	Doug2010_U	1	5.05	75.33
DOUG_10340	Doug2010_D	1	6.23	155.44
DOUG_10340	Doug2010_U_30%CC	1	5.52	78.84
DOUG_10340	Doug2010_D_30%CC	1	6.29	156.76
DOUG_10340	Doug2010_U_35%CC	1	5.59	79.11
DOUG_10340	Doug2010_D_35%CC	1	6.31	157.22
DOUG_10340	Doug2010_U_70%CC	1	6.01	79.22
DOUG_10340	Doug2010_D_70%CC	1	6.36	159.58
DOUG_10340	Doug2010_U	0.1	5.83	77.76
DOUG_10340	Doug2010_D	0.1	6.32	158.64
DOUG_10239	Doug2010_U	4	4.78	70.92
DOUG_10239	Doug2010_D	4	6.13	150.32
DOUG_10239	Doug2010_U_20%CC	1	5.34	94.31
DOUG_10239	Doug2010_D_20%CC	1	6.22	155.5
DOUG_10239	Doug2010_U	1	5.03	81.08
DOUG_10239	Doug2010_D	1	6.2	154.41
DOUG_10239	Doug2010_U_30%CC	1	5.48	99.99
DOUG_10239	Doug2010_D_30%CC	1	6.27	156.76
DOUG_10239	Doug2010_U_35%CC	1	5.55	100.66
DOUG_10239	Doug2010_D_35%CC	1	6.28	157.21
DOUG_10239	Doug2010_U_70%CC	1	5.99	98.87
DOUG_10239	Doug2010_D_70%CC	1	6.33	159.58
DOUG_10239	Doug2010_U	0.1	5.81	96.33
DOUG_10239	Doug2010_D	0.1	6.29	157.89
DOUG_10134	Doug2010_U	4	4.76	71.69
DOUG_10134	Doug2010_D	4	6.1	150.31
DOUG_10134	Doug2010_U_20%CC	1	5.32	96.3
DOUG_10134	Doug2010_D_20%CC	1	6.19	155.49
DOUG_10134	Doug2010_U	1	5	84.3
DOUG_10134	Doug2010_D	1	6.17	154.41
DOUG_10134	Doug2010_U_30%CC	1	5.46	100.3
DOUG_10134	Doug2010_D_30%CC	1	6.24	156.76
DOUG_10134	Doug2010_U_35%CC	1	5.53	100.78
DOUG_10134	Doug2010_D_35%CC	1	6.25	157.2

DOUG_10134	Doug2010_U_70%CC	1	5.97	102.15
DOUG_10134	Doug2010_D_70%CC	1	6.3	159.58
DOUG_10134	Doug2010_U	0.1	5.79	98.22
DOUG_10134	Doug2010_D	0.1	6.26	157.56
DOUG_10031	Doug2010_U	4	4.74	71.69
DOUG_10031	Doug2010_D	4	6.06	150.31
DOUG_10031	Doug2010_U_20%CC	1	5.29	97.55
DOUG_10031	Doug2010_D_20%CC	1	6.15	155.49
DOUG_10031	Doug2010_U	1	4.98	84.4
DOUG_10031	Doug2010_D	1	6.13	154.94
DOUG_10031	Doug2010_U_30%CC	1	5.43	101.61
DOUG_10031	Doug2010_D_30%CC	1	6.2	156.76
DOUG_10031	Doug2010_U_35%CC	1	5.5	102.69
DOUG_10031	Doug2010_D_35%CC	1	6.22	157.19
DOUG_10031	Doug2010_U_70%CC	1	5.95	104.78
DOUG_10031	Doug2010_D_70%CC	1	6.27	159.59
DOUG_10031	Doug2010_U	0.1	5.76	100.29
DOUG_10031	Doug2010_D	0.1	6.23	157.57
DOUG_09916	Doug2010_U	4	4.72	71.69
DOUG_09916	Doug2010_D	4	6.02	150.31
DOUG_09916	Doug2010_U_20%CC	1	5.26	100.75
DOUG_09916	Doug2010_D_20%CC	1	6.12	155.49
DOUG_09916	Doug2010_U	1	4.95	84.63
DOUG_09916	Doug2010_D	1	6.09	155.22
DOUG_09916	Doug2010_U_30%CC	1	5.4	106.65
DOUG_09916	Doug2010_D_30%CC	1	6.16	156.76
DOUG_09916	Doug2010_U_35%CC	1	5.47	108.79
DOUG_09916	Doug2010_D_35%CC	1	6.18	157.18
DOUG_09916	Doug2010_U_70%CC	1	5.92	108.7
DOUG_09916	Doug2010_D_70%CC	1	6.24	159.59
DOUG_09916	Doug2010_U	0.1	5.72	110.83
DOUG_09916	Doug2010_D	0.1	6.2	157.57
DOUG_09821	Doug2010_U	4	4.7	71.69
DOUG_09821	Doug2010_D	4	5.99	150.31
DOUG_09821	Doug2010_U_20%CC	1	5.24	100.04
DOUG_09821	Doug2010_D_20%CC	1	6.09	155.49
DOUG_09821	Doug2010_U	1	4.93	84.63
DOUG_09821	Doug2010_D	1	6.06	154.44
DOUG_09821	Doug2010_U_30%CC	1	5.38	106.09
DOUG_09821	Doug2010_D_30%CC	1	6.14	156.76
DOUG_09821	Doug2010_U_35%CC	1	5.45	108.55
DOUG_09821	Doug2010_D_35%CC	1	6.16	157.17
DOUG_09821	Doug2010_U_70%CC	1	5.89	113.87
DOUG_09821	Doug2010_D_70%CC	1	6.21	159.59
DOUG_09821	Doug2010_U	0.1	5.7	113.44
DOUG_09821	Doug2010_D	0.1	6.17	157.58



Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from Ribble-Douglas 2010 Study

Environment Agency

Fluvial Flood Levels Map: Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

Statutory Main Rivers

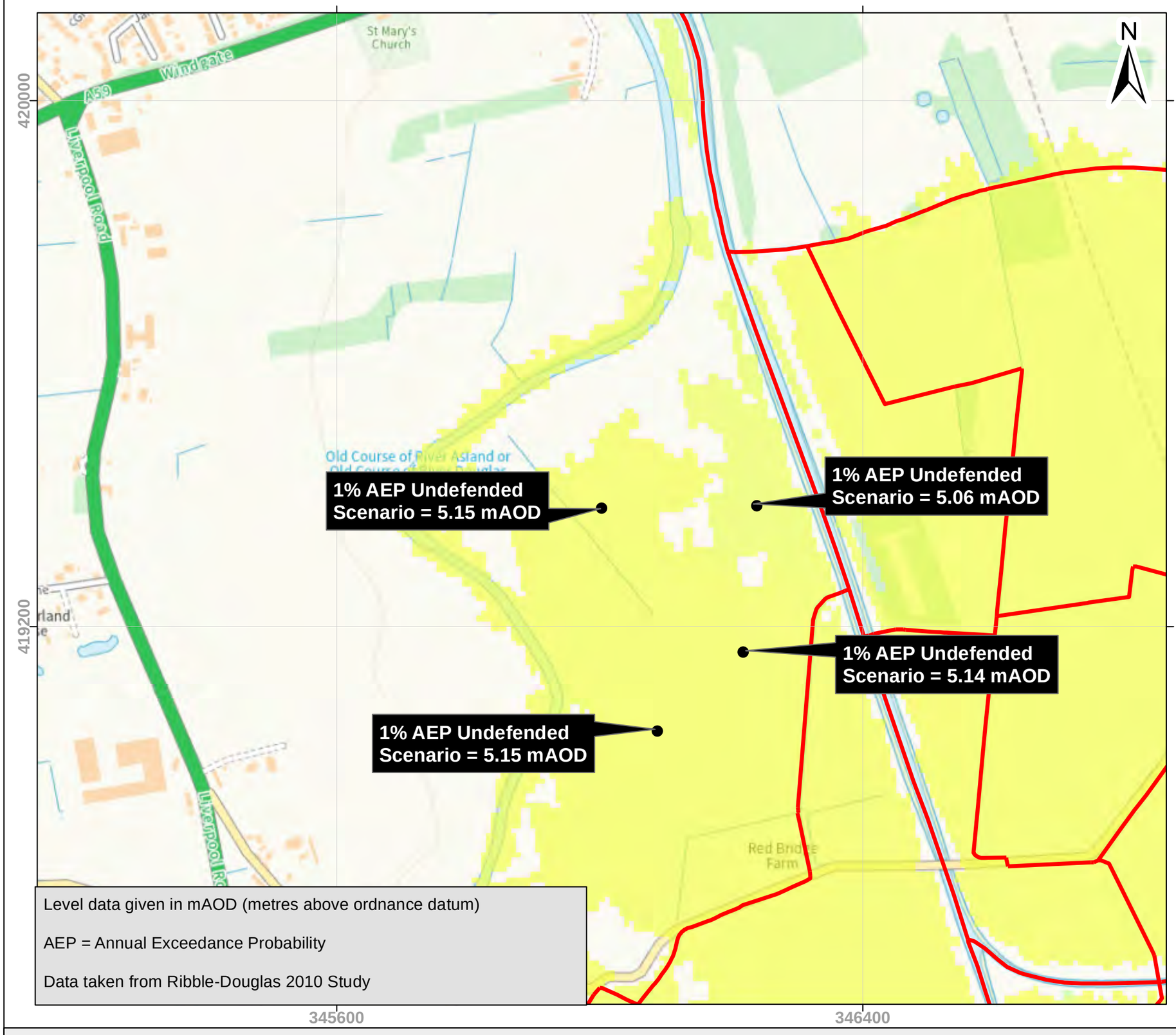
4% Annual Exceedance Probability Undefended Scenario

mAOD

High : 7

Low : 2

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



Environment Agency

Fluvial Flood Levels Map:
Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

Statutory Main Rivers

1% Annual Exceedance Probability Undefended Scenario

mAOD

High : 7

Low : 2

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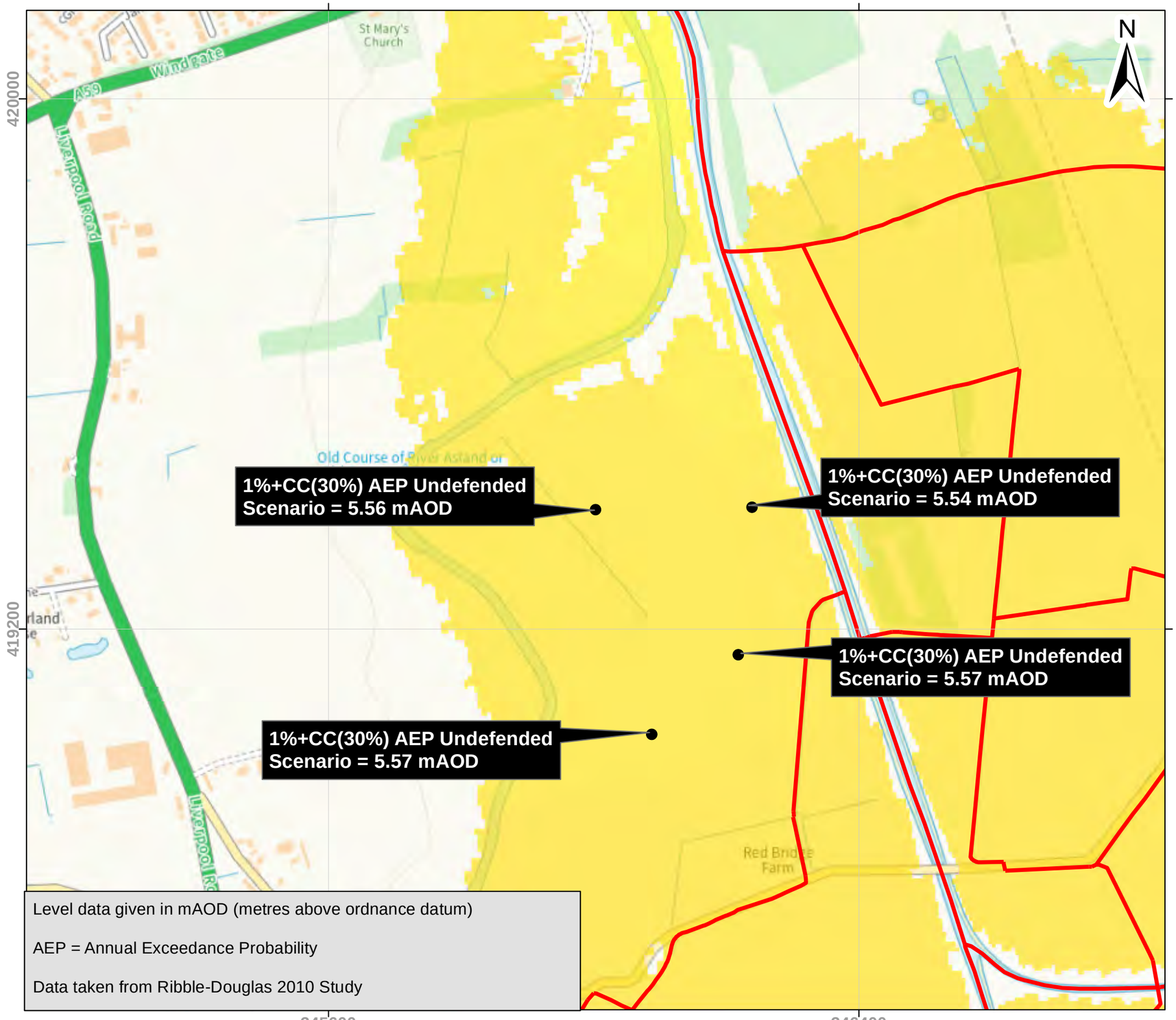

Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from Ribble-Douglas 2010 Study

Environment Agency

Fluvial Flood Levels Map: Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

Statutory Main Rivers

1% Annual Exceedance Probability Undefended Scenario + Climate Change (30%)

mAOD

High : 7

Low : 2

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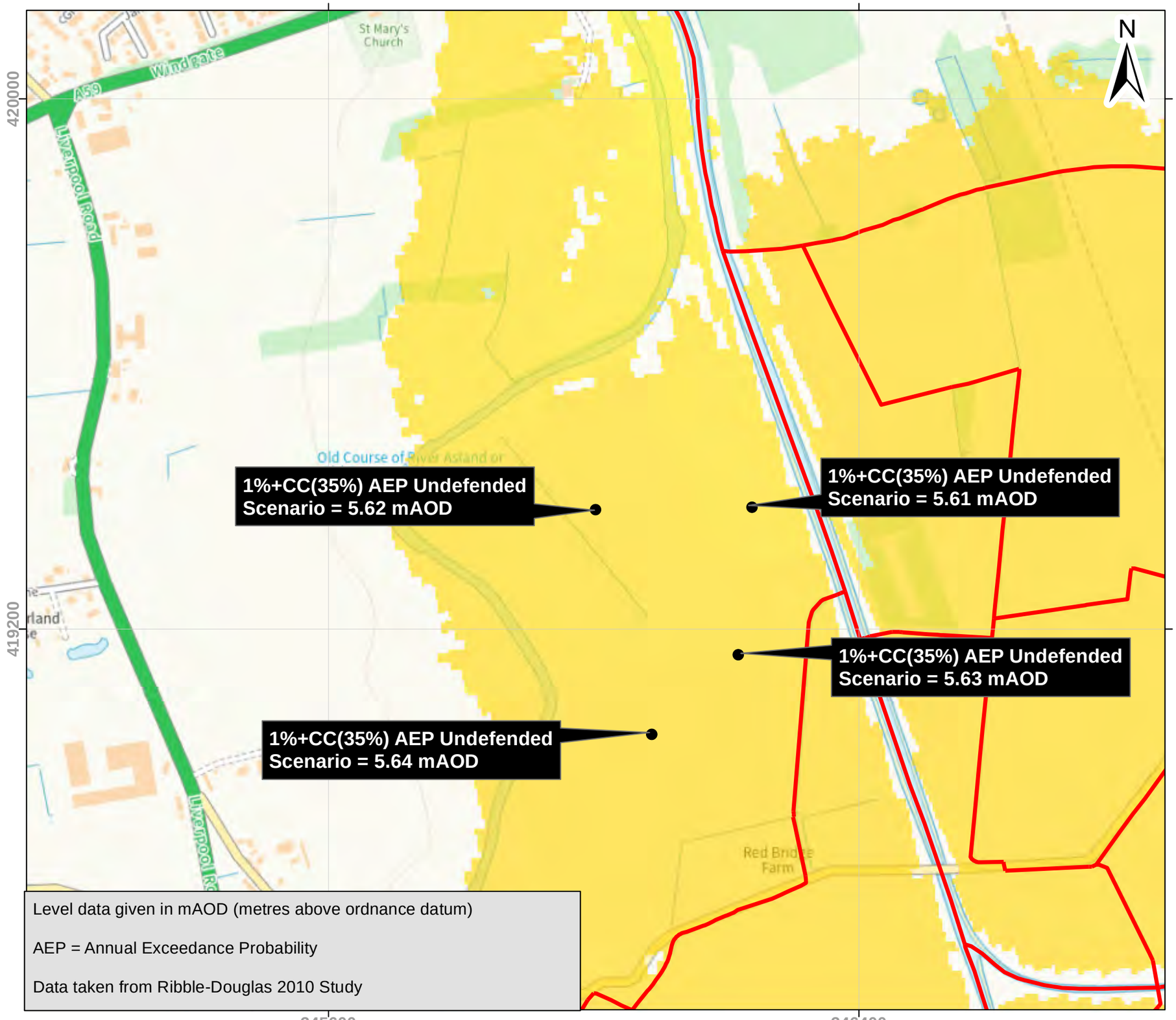

Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from Ribble-Douglas 2010 Study

Environment Agency

Fluvial Flood Levels Map: Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

Statutory Main Rivers

1% Annual Exceedance Probability Undefended Scenario + Climate Change (35%)

mAOD

High : 7

Low : 2

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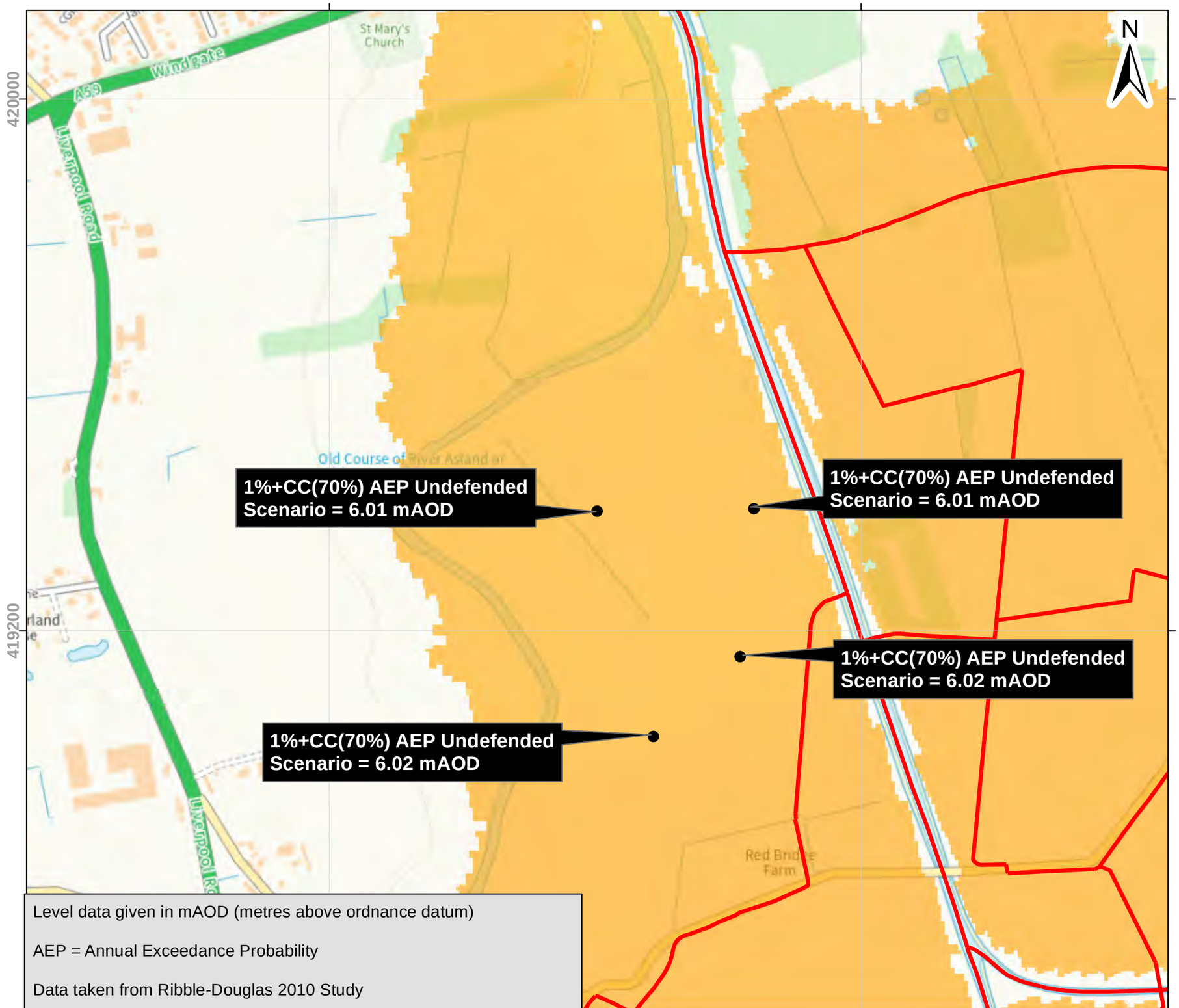

Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from Ribble-Douglas 2010 Study

Environment Agency

Fluvial Flood Levels Map: Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

Statutory Main Rivers

1% Annual Exceedance Probability Undefended Scenario + Climate Change (70%)

mAOD

High : 7

Low : 2

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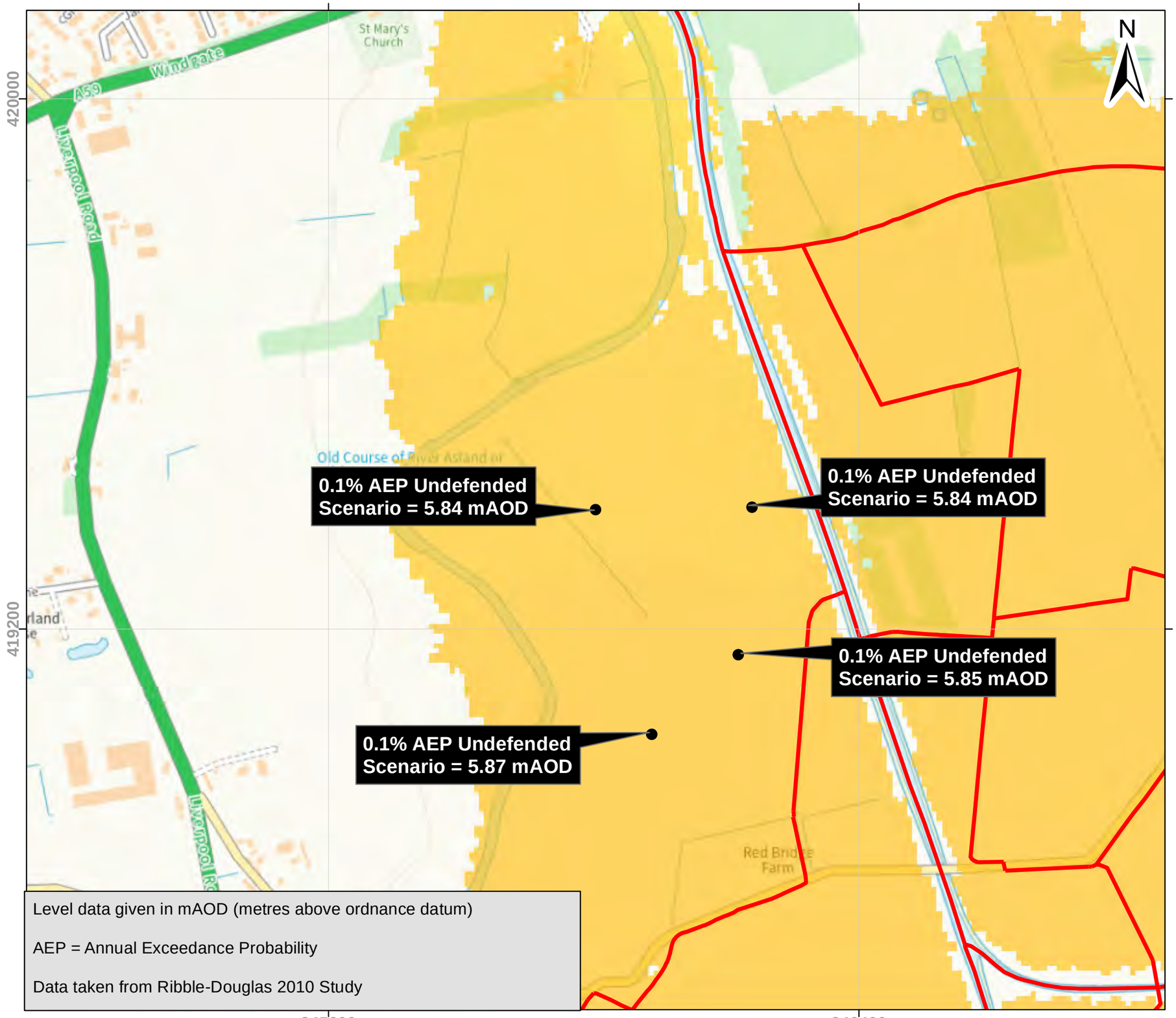


Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from Ribble-Douglas 2010 Study

Environment Agency

Fluvial Flood Levels Map: Sollom

Location (easting/northing)
346072/419291
Model Name
Ribble-Douglas 2010 Study
Created 07/05/2025

Key

Statutory Main Rivers

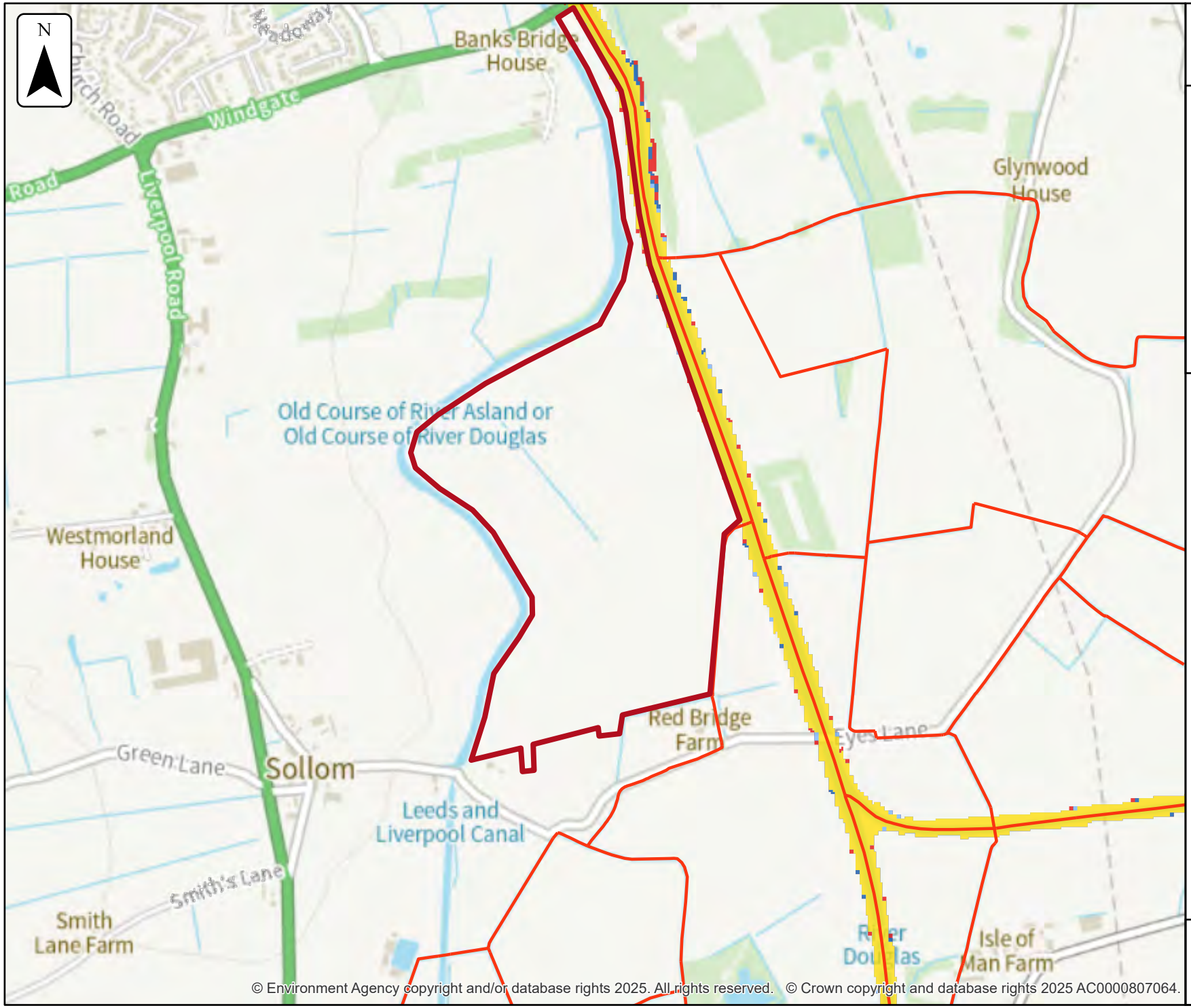
0.1% Annual Exceedance Probability Undefended Scenario

mAOD

High : 7

Low : 2

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



Environment Agency

Defended modelled tidal extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble Estuary Tidal 2014

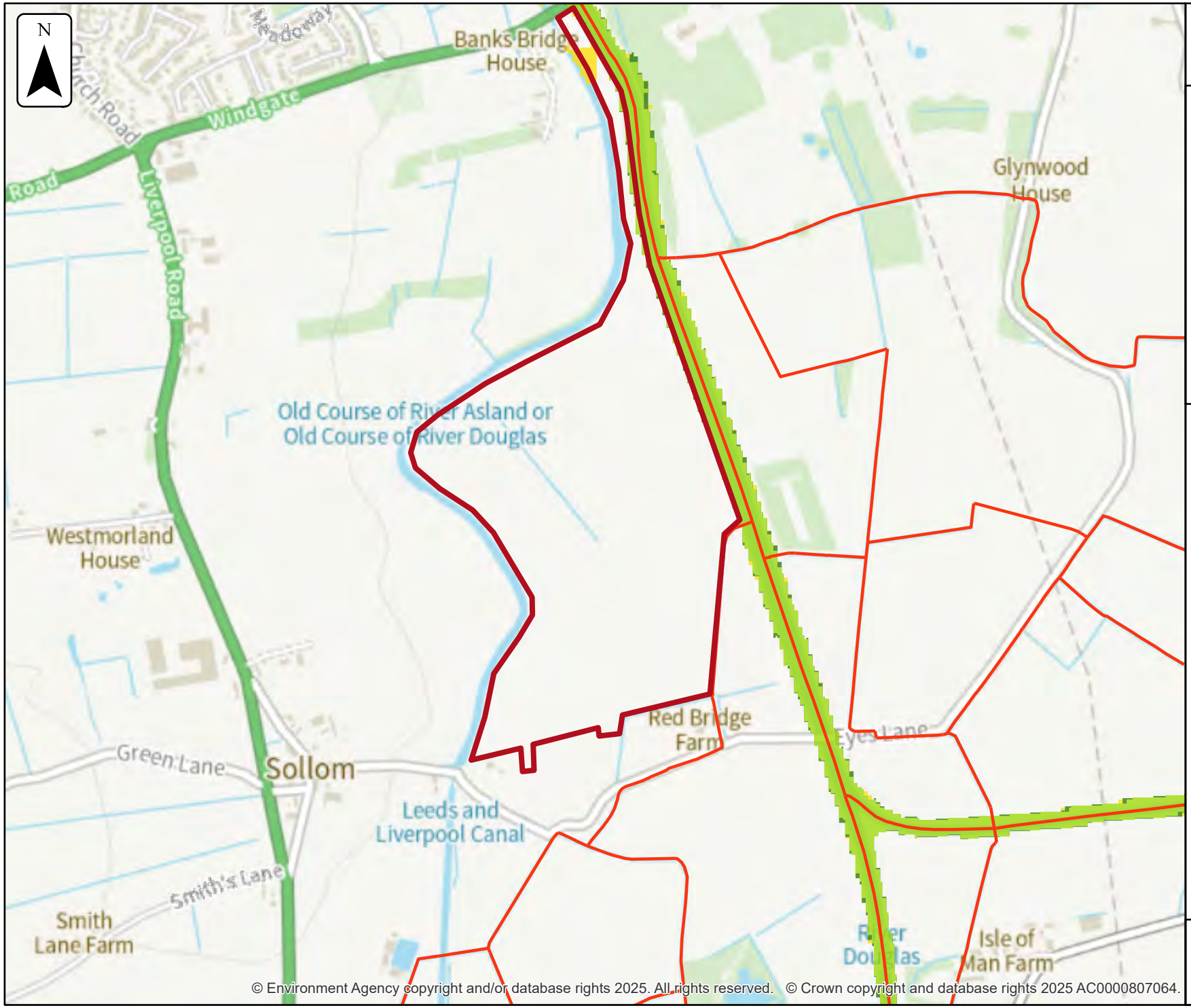
- Selected area
- Main river

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

0 100 200 300 400 500
metres



Environment Agency

Defended climate change modelled tidal extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble Estuary Tidal 2014

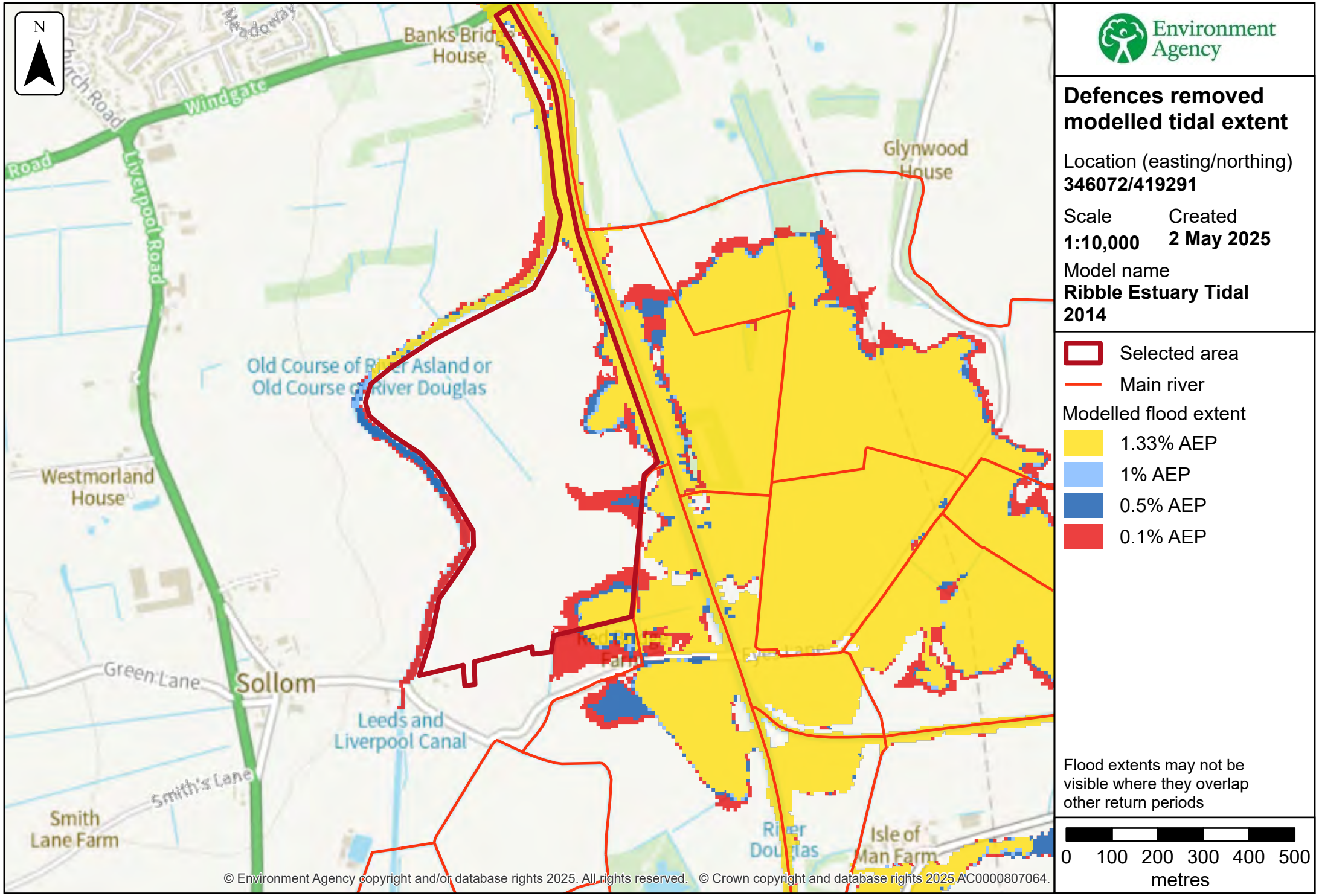
- Selected area
- Main river

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

0 100 200 300 400 500
metres



Environment Agency

Defences removed modelled tidal extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble Estuary Tidal 2014

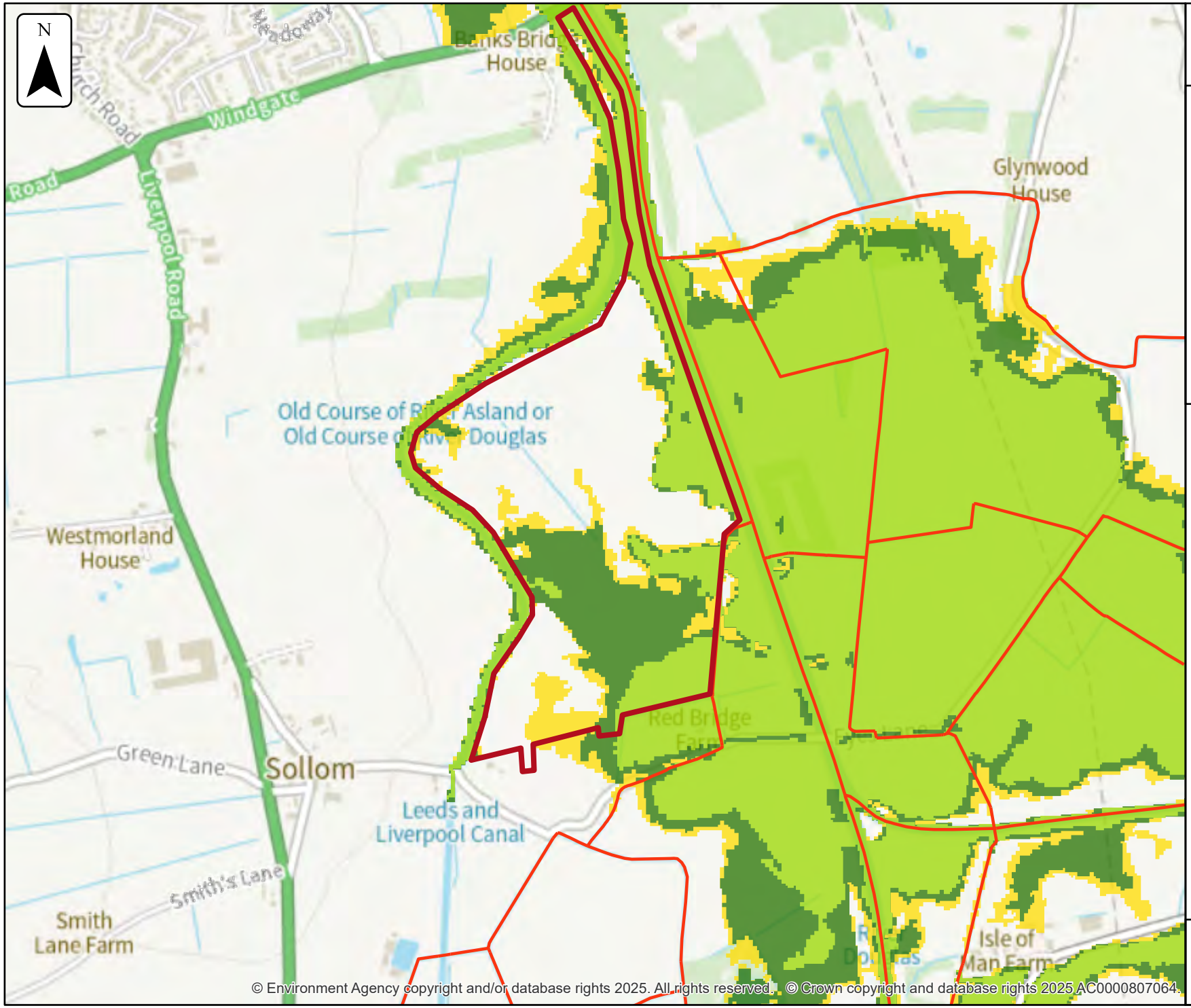
- Selected area
- Main river

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

0 100 200 300 400 500
metres



Environment Agency

Defences removed climate change modelled tidal extent

Location (easting/northing)
346072/419291

Scale
1:10,000

Created
2 May 2025

Model name
Ribble Estuary Tidal 2014

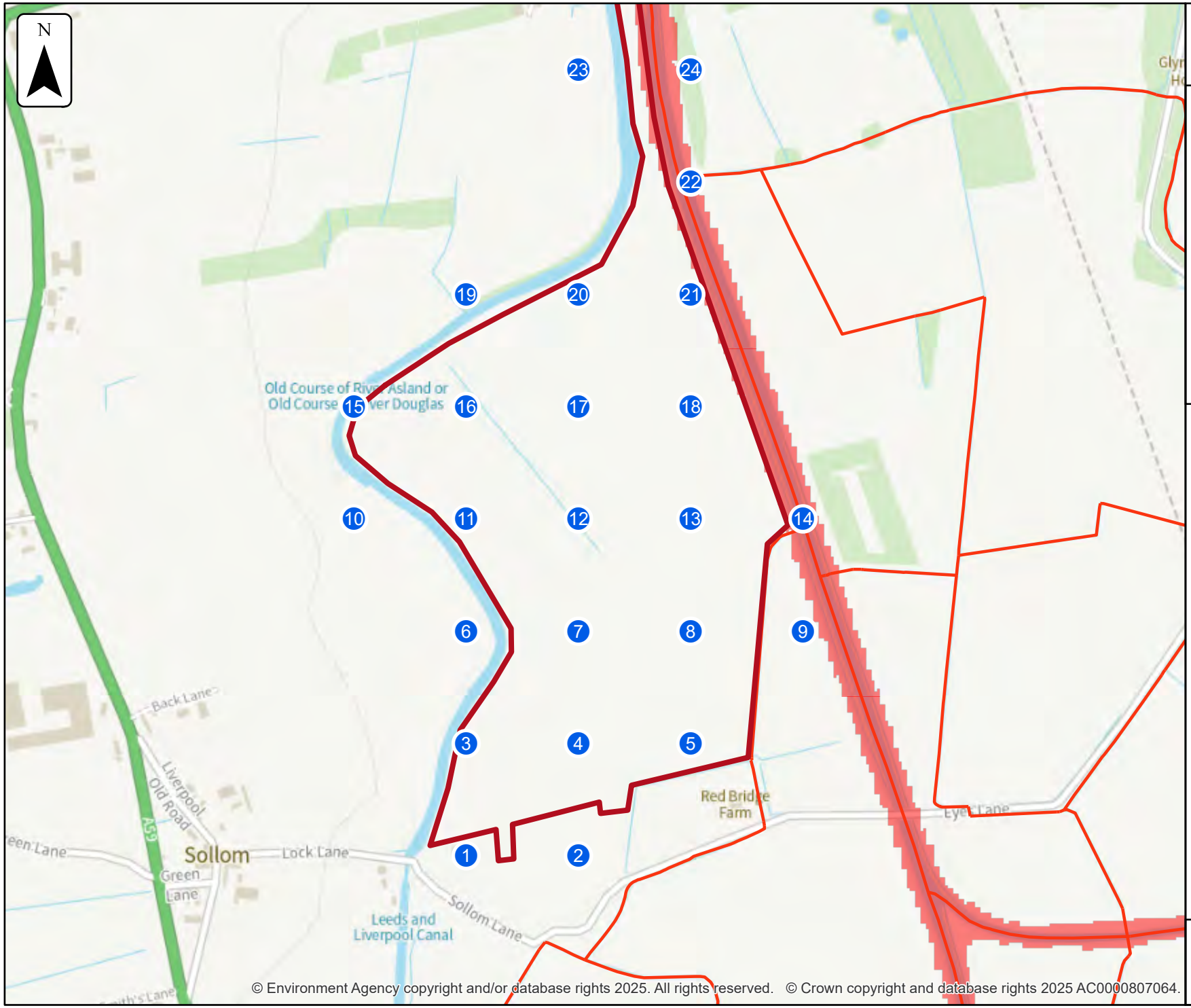
- Selected area
- Main river

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

0 100 200 300 400 500
metres



Environment Agency

Defended modelled tidal extent and height

Location (easting/northing)
346072/419291

Scale
1:7,500

Created
2 May 2025

Model name
Ribble Estuary Tidal 2014

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 0.0
- 0.0 - 0.75
- 0.75 - 1.5
- 1.5 - 2.25
- 2.25 - 3.0
- 3.0 - 3.75
- 3.75 - 4.5
- 4.5 - 5.25
- 5.25 - 6.0

This map shows the 0.1% AEP height data

0 100 200 300
metres

Sample point data

Defended

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
1	345884	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	346048	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	345884	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	346048	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	346212	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	345884	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	346048	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	346212	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	346376	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	345720	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	345884	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	346048	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
13	346212	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	346376	419269	2.50	2.73	2.88	3.01	3.04	3.15	3.39
15	345720	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	345884	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
17	346048	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	346212	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	345884	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	346048	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	346212	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	346212	419761	NoData	NoData	NoData	0.41	0.42	0.47	0.57
23	346048	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData
24	346212	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
25	346048	420089	NoData	NoData	NoData	NoData	NoData	NoData	NoData
26	346048	420253	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			1.82	1.99	2.10	2.20	2.22	2.30	2.49

Data in this table comes from the Ribble Estuary Tidal 2014 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.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

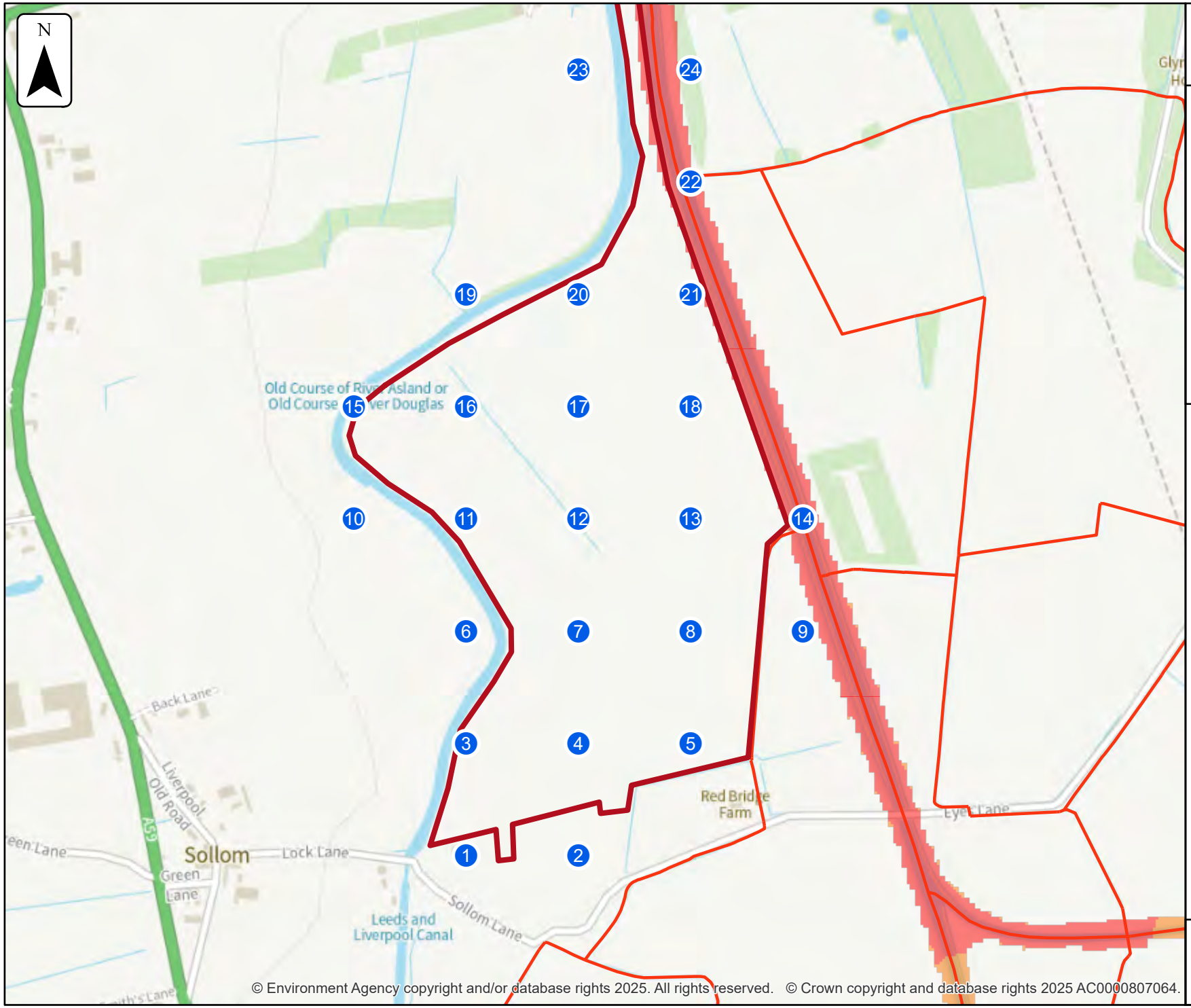
Defended

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
1	345884	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	346048	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	345884	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	346048	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	346212	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	345884	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	346048	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	346212	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	346376	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	345720	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	345884	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	346048	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
13	346212	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	346376	419269	4.80	5.04	5.18	5.31	5.35	5.45	5.69
15	345720	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	345884	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
17	346048	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	346212	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	345884	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	346048	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	346212	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	346212	419761	NoData	NoData	NoData	5.39	5.42	5.53	5.76
23	346048	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData
24	346212	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
25	346048	420089	NoData	NoData	NoData	NoData	NoData	NoData	NoData
26	346048	420253	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			4.87	5.12	5.28	5.43	5.46	5.57	5.82

Data in this table comes from the Ribble Estuary Tidal 2014 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.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Environment Agency

Defended climate change modelled tidal extent and height

Location (easting/northing)
346072/419291

Scale
1:7,500

Created
2 May 2025

Model name
Ribble Estuary Tidal 2014

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 0.0
- 0.0 - 0.875
- 0.875 - 1.75
- 1.75 - 2.625
- 2.625 - 3.5
- 3.5 - 4.375
- 4.375 - 5.25
- 5.25 - 6.125
- 6.125 - 7.0

This map shows the 0.5% AEP +970mm height data

0 100 200 300
metres

Sample point data

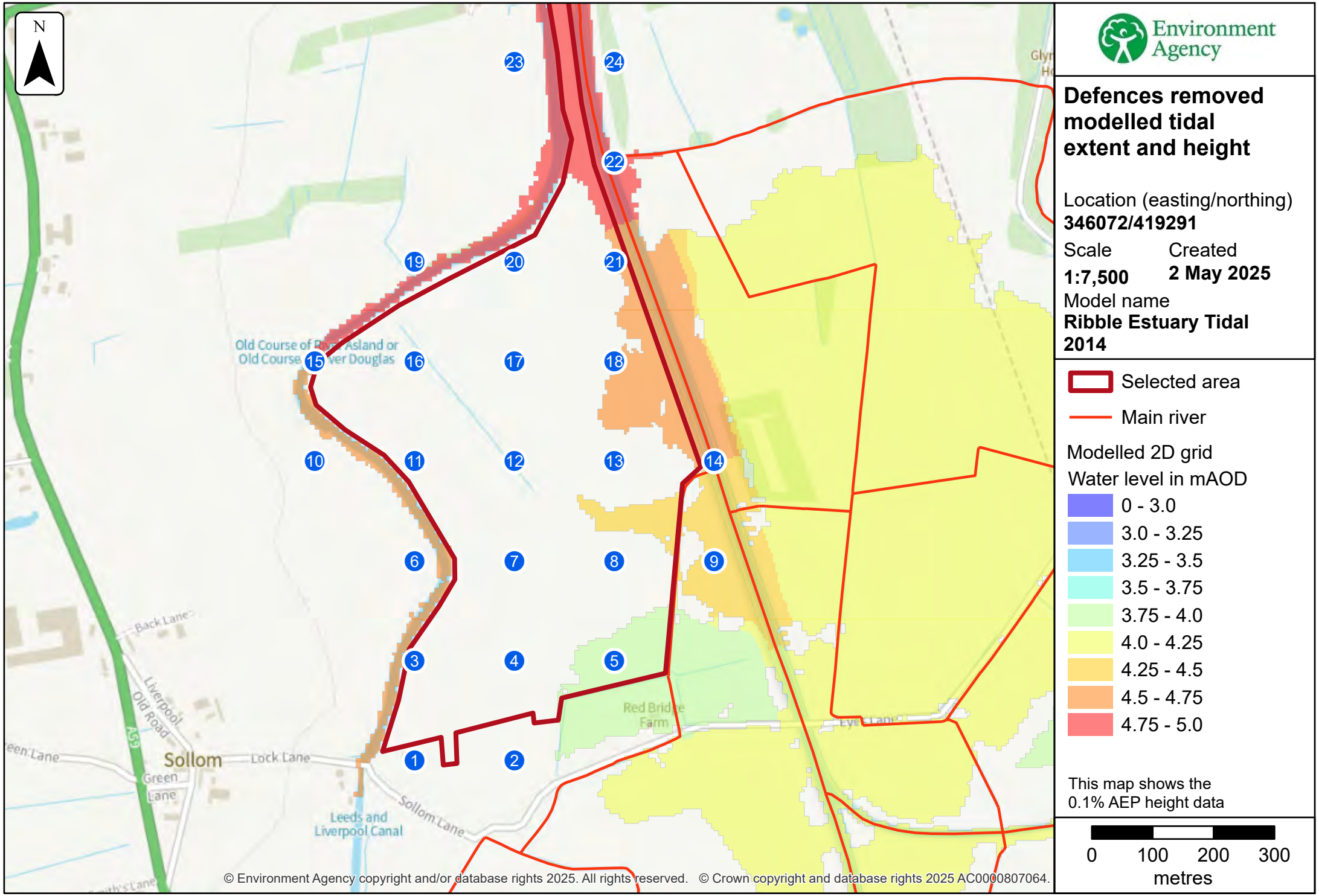
Defended climate change

Label	Easting	Northing	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)
			Depth	Depth	Depth	Height	Height	Height
1	345884	418777	NoData	NoData	NoData	NoData	NoData	NoData
2	346048	418777	NoData	NoData	NoData	NoData	NoData	NoData
3	345884	418941	NoData	NoData	NoData	NoData	NoData	NoData
4	346048	418941	NoData	NoData	NoData	NoData	NoData	NoData
5	346212	418941	NoData	NoData	NoData	NoData	NoData	NoData
6	345884	419105	NoData	NoData	NoData	NoData	NoData	NoData
7	346048	419105	NoData	NoData	NoData	NoData	NoData	NoData
8	346212	419105	NoData	NoData	NoData	NoData	NoData	NoData
9	346376	419105	NoData	NoData	NoData	NoData	NoData	NoData
10	345720	419269	NoData	NoData	NoData	NoData	NoData	NoData
11	345884	419269	NoData	NoData	NoData	NoData	NoData	NoData
12	346048	419269	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)
			Depth	Depth	Depth	Height	Height	Height
13	346212	419269	NoData	NoData	NoData	NoData	NoData	NoData
14	346376	419269	3.51	3.79	3.96	5.79	6.09	6.24
15	345720	419433	NoData	NoData	NoData	NoData	NoData	NoData
16	345884	419433	NoData	NoData	NoData	NoData	NoData	NoData
17	346048	419433	NoData	NoData	NoData	NoData	NoData	NoData
18	346212	419433	NoData	NoData	NoData	NoData	NoData	NoData
19	345884	419597	NoData	NoData	NoData	NoData	NoData	NoData
20	346048	419597	NoData	NoData	NoData	NoData	NoData	NoData
21	346212	419597	NoData	NoData	NoData	NoData	NoData	NoData
22	346212	419761	0.41	0.76	0.57	5.87	6.18	6.34
23	346048	419925	NoData	NoData	NoData	NoData	NoData	NoData
24	346212	419925	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)
			Depth	Depth	Depth	Height	Height	Height
25	346048	420089	NoData	NoData	NoData	NoData	NoData	NoData
26	346048	420253	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			2.78	2.92	3.24	5.93	6.24	6.39

Data in this table comes from the Ribble Estuary Tidal 2014 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.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Sample point data

Defences removed

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
1	345884	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	346048	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	345884	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	346048	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	346212	418941	NoData	NoData	0.01	0.12	0.14	0.22	0.67
6	345884	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	346048	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	346212	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	346376	419105	NoData	NoData	0.02	0.05	0.06	0.08	0.14
10	345720	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	345884	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	346048	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
13	346212	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	346376	419269	1.88	1.98	2.03	2.07	2.08	2.12	2.19
15	345720	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	345884	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
17	346048	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	346212	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	345884	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	346048	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	346212	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	346212	419761	NoData	NoData	NoData	0.39	0.40	0.45	0.57
23	346048	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData
24	346212	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
25	346048	420089	NoData	NoData	NoData	NoData	NoData	NoData	NoData
26	346048	420253	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			1.65	1.77	1.84	1.90	1.92	1.97	2.10

Data in this table comes from the Ribble Estuary Tidal 2014 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.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

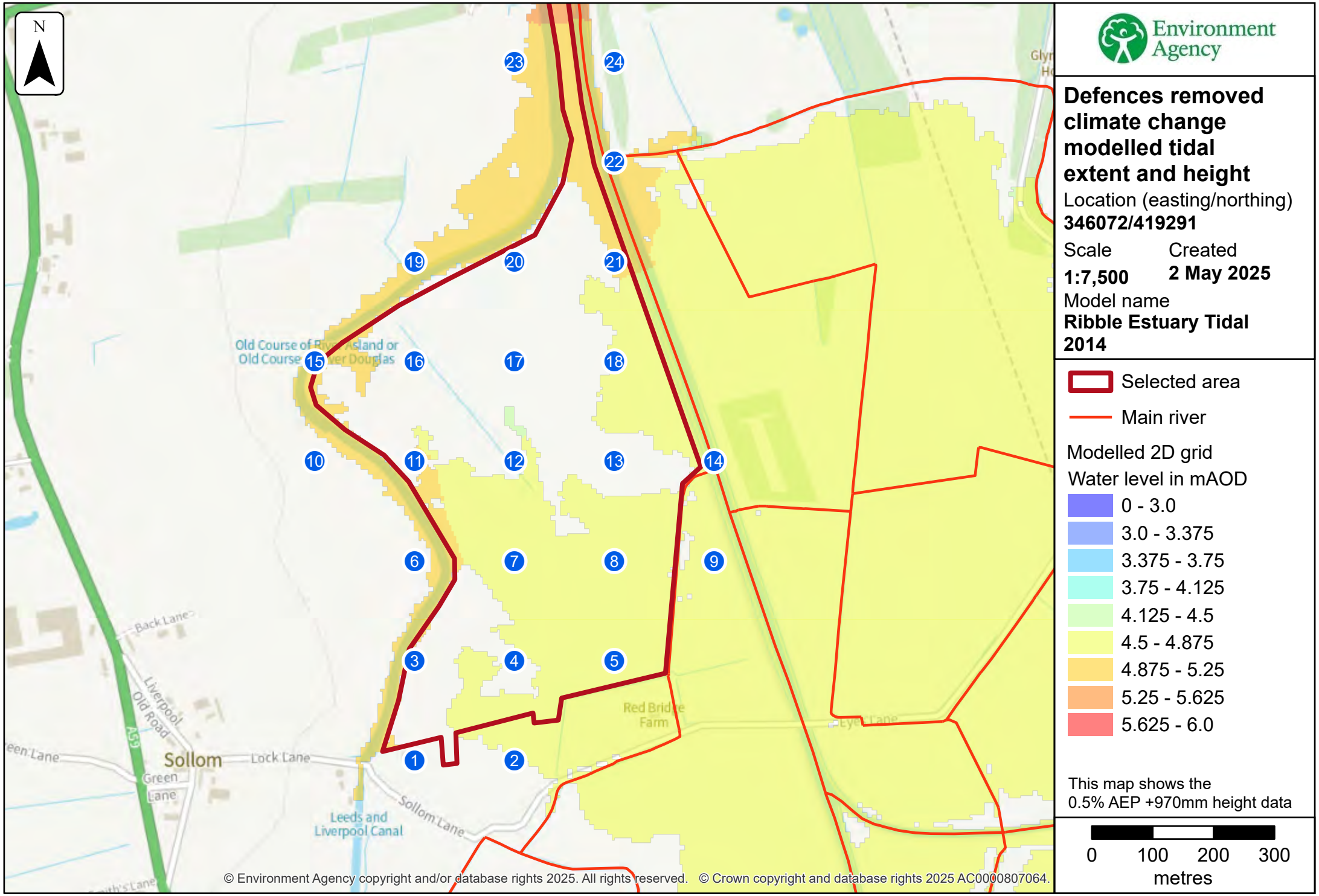
Defences removed

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
1	345884	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	346048	418777	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	345884	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	346048	418941	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	346212	418941	NoData	NoData	3.22	3.32	3.34	3.43	3.88
6	345884	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	346048	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	346212	419105	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	346376	419105	NoData	NoData	4.23	4.26	4.27	4.30	4.35
10	345720	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	345884	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	346048	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
13	346212	419269	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	346376	419269	4.19	4.28	4.34	4.37	4.39	4.43	4.50
15	345720	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	345884	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
17	346048	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	346212	419433	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	345884	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	346048	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	346212	419597	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	346212	419761	NoData	NoData	NoData	4.63	4.64	4.69	4.81
23	346048	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData
24	346212	419925	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	50% AEP	10% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
25	346048	420089	NoData	NoData	NoData	NoData	NoData	NoData	NoData
26	346048	420253	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			4.44	4.57	4.63	4.70	4.71	4.76	4.90

Data in this table comes from the Ribble Estuary Tidal 2014 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.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Sample point data

Defences removed climate change

Label	Easting	Northing	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)
			Depth	Depth	Depth	Height	Height	Height
1	345884	418777	NoData	NoData	NoData	NoData	NoData	NoData
2	346048	418777	NoData	NoData	NoData	NoData	NoData	NoData
3	345884	418941	NoData	NoData	NoData	NoData	NoData	NoData
4	346048	418941	NoData	NoData	NoData	NoData	NoData	NoData
5	346212	418941	0.86	1.17	1.34	4.07	4.38	4.55
6	345884	419105	NoData	NoData	NoData	NoData	NoData	NoData
7	346048	419105	NoData	0.04	0.12	NoData	4.46	4.55
8	346212	419105	NoData	0.17	0.32	NoData	4.38	4.55
9	346376	419105	0.14	0.19	0.34	4.36	4.40	4.56
10	345720	419269	NoData	NoData	NoData	NoData	NoData	NoData
11	345884	419269	NoData	NoData	0.00	NoData	NoData	4.94
12	346048	419269	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)
			Depth	Depth	Depth	Height	Height	Height
13	346212	419269	NoData	NoData	NoData	NoData	NoData	NoData
14	346376	419269	2.24	2.27	2.33	4.52	4.58	4.61
15	345720	419433	0.28	0.36	0.53	4.80	4.97	5.06
16	345884	419433	NoData	NoData	NoData	NoData	NoData	NoData
17	346048	419433	NoData	NoData	NoData	NoData	NoData	NoData
18	346212	419433	NoData	0.03	0.05	NoData	4.72	4.76
19	345884	419597	NoData	NoData	0.07	NoData	NoData	5.11
20	346048	419597	NoData	NoData	NoData	NoData	NoData	NoData
21	346212	419597	NoData	0.12	0.17	NoData	4.86	4.92
22	346212	419761	0.51	0.78	0.75	4.87	5.03	5.11
23	346048	419925	NoData	NoData	NoData	NoData	NoData	NoData
24	346212	419925	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)	0.5% AEP (+370mm)	0.5% AEP (+670mm)	0.5% AEP (+970mm)
			Depth	Depth	Depth	Height	Height	Height
25	346048	420089	NoData	NoData	NoData	NoData	NoData	NoData
26	346048	420253	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			1.93	2.34	2.20	4.98	5.15	5.26

Data in this table comes from the Ribble Estuary Tidal 2014 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.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

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

Your Lead Local Flood Authority is Lancashire County.

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

APPENDIX D – ENVIRONMENT AGENCY PRE-APPLICATION ENQUIRY

Elizabeth Langdon
Tetra Tech Limited
3 Sovereign Square (Unit 3) Sovereign Street
Leeds
LS1 4ER

Our ref: NO/2022/114545/01-L01
Your ref: Asland Walks

Date: 01 July 2022

Dear Elizabeth

PRE-APPLICATION ADVICE IN RELATION TO PROPOSED ENERGY PARK COMPRISING A WIND TURBINE AND SOLAR ARRAYS

ASLAND WALKS, FIELD LOCATED NEAR TARLETON, LANCASHIRE, PR4 6FS (GRID REFERENCE: SD4610519237)

Thank you for your recent enquiry dated 13 June 2022 regarding the above proposal.

Having reviewed the details as submitted, we are providing you with our preliminary opinion. Our preliminary opinion outlines the key environmental issues within our remit that are relevant to the proposal and provides guidance on any actions that you will need to complete prior to the submission of a planning application. It also provides hyperlinks to any further information and advice that is available to help prepare the application. We offer one free preliminary opinion per site, per applicant / developer.

If you would like further guidance, we may be able to offer this through our charged advice service. Further details can be found at the end of this letter.

Environmental constraints

Based on our records, the proposed development site is affected by the following constraints:

- The site is located within Flood Zone 2 and Flood Zone 3, which are respectively defined as having a medium probability and high probability of flooding in the national Planning Practice Guidance.
- The proposed development site is next to the River Douglas and Strine Brook which are designated statutory main river watercourses and are both tidal in this location.
- The proposed development site is next to flood defence embankment alongside

the River Douglas.
- The proposed development is next to ordinary designated watercourse
- The proposed development is located on a Secondary Aquifer B.
- The site falls within the Water Framework Directive (WFD) catchment of the Ribble Estuary Transition Waterbody (WFD ref. GB531207112400)> which is currently afforded bad status. The aim is to achieve 'good ecological status' by 2027.
- The proposed development is adjacent to a protected fish species (Atlantic Salmon, European Eel, River Lamprey, Sea Lamprey, Smelt) migratory route, the River Douglas.
- The proposed development is adjacent to the designated Ribble Estuary Marine Conservation Zone.

Response to pre-planning enquiry

Based on the information currently available, the development raises some environmental concerns that you will need to address as part of your planning application. Further work will be needed to show how these issues can be satisfactorily addressed to ensure no environmental impacts.

Technical advice

Flood risk

The development site is located in Flood Zone 3 (high probability of flooding) and Flood Zone 2 (medium probability of flooding) and any subsequent planning application must be accompanied by a flood risk assessment (FRA). Any subsequent FRA should demonstrate that the development will not be at an unacceptable risk of flooding or increase flood risk elsewhere.

We would not require bespoke flood modelling to be undertaken to inform a FRA in this instance, however that is a decision for the applicant.

The proposed development would fall under the 'essential infrastructure' flood risk vulnerability category, as defined in Annex 3 of the National Planning Policy Framework (NPPF). This type of development can be permitted in Flood Zone 3 provided it satisfies the requirements of the sequential and exception tests.

Sequential test

In accordance with NPPF paragraph 162, development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. Where applicable, it is for the local planning authority to decide if the Sequential Test has been met. If they determine that the Sequential Test has not been met, we would not support this application. The Sequential Test is applied to ensure that development is firstly placed in areas at lowest risk of flooding. Proposals that do not satisfy the Sequential Test may not be in compliance with the NPPF.

Exception test

In accordance with NPPF paragraph 163, if you can demonstrate that is it is not possible for development to be located in an area with a lower risk of flooding (taking into account wider sustainable development objectives), the Exception Test may have to be applied. The local planning authority will determine if the proposal satisfies the

Cont/d..

Exception Test, but we will advise them whether or not we think the development meets part b) of the test, i.e. whether it will be safe without increasing flood risk elsewhere.

Preparing a FRA

The following guidance is available on the gov.uk website for use when preparing a FRA for planning applications:-

- https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications
- https://www.gov.uk/guidance/flood-risk-and-coastal-change

We recommend that the applicant refers to the site-specific FRA Checklist in the national planning practice guidance to ensure all relevant issues have been considered https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section

Data requests

We do not prepare or provide FRAs. However, you can submit a request to our Customers and Engagement team to obtain what flood risk information we have to inform your FRA, for example a Product 4 data package. This service is available free of charge and requests should be sent to inforequests.cmblnc@environment-agency.gov.uk. For further information on what flood risk information packages we offer, you should refer to the gov.uk website at https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#get-information-to-complete-an-assessment

Please be aware that our flood risk data packages (e.g. Product 4 package) can now be requested via the Flood Map for Planning service on GOV.UK: https://flood-map-for-planning.service.gov.uk/.

The local planning authority should have undertaken a Strategic Flood Risk Assessment (SFRA) which will also include local flood risk information to inform a FRA. You should contact your local planning authority to determine what information is available.

Topographic survey

We recommend that a topographic survey of the site be undertaken to establish the existing ground levels on the site, relative to metres above Ordnance Datum. Existing ground levels can then be compared to our modelled flood levels (where available).

Climate change allowances

The latest guidance on how to apply the correct, up to date climate change allowance for FRAs is available on the gov.uk website at https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

Flood proofing

Where applicable, we recommend that consideration be given to the use of flood proofing measures to reduce the impact of flooding when it occurs. Flood proofing measures may include barriers on ground floor doors, windows and access points and bringing electrical services into the building at a high level so that plugs are located above possible flood levels.

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Consultation with the building control department is recommended when determining if flood proofing measures are effective.

We recommend that you refers to the following flood resilience guidance:-

Government guidance on flood resilient construction
https://www.gov.uk/government/publications/flood-resilient-construction-of-new-buildings

CIRIA Code of Practice for property flood resilience
https://www.ciria.org/Research/Projects_underway2/Code_of_Practice_and_guidance_for_property_flood_resilience_.aspx

British Standard 85500 – Flood resistant and resilient construction
https://shop.bsigroup.com/ProductDetail/?pid=000000000030299686

Flood Risk Activity Permitting

The Environmental Permitting (England and Wales) Regulations 2016 require a permit or exemption to be obtained for any activities which will take place:

- on or within 8 metres of a main river (16 metres if tidal)
- on or within 8 metres of a flood defence structure or culverted main river (16 metres if tidal)
- on or within 16 metres of a sea defence
- involving quarrying or excavation within 16 metres of any main river, flood defence (including a remote defence) or culvert
- in a floodplain more than 8 metres from the river bank, culvert or flood defence structure (16 metres if it's a tidal main river) and you don't already have planning permission

For further guidance please visit https://www.gov.uk/guidance/flood-risk-activities-environmental-permits or contact our National Customer Contact Centre on 03708 506 506 (Monday to Friday, 8am to 6pm) or by emailing enquiries@environment-agency.gov.uk. The applicant should not assume that a permit will automatically be forthcoming once planning permission has been granted, and we advise them to consult with us at the earliest opportunity.

Where a Flood Risk Activity Permit is required, it is unlikely that our consent will be granted for works that do not allow access for maintenance / repair purpose or that have an unacceptable impact on flood risk or the natural environment.

In this case:

- a full 16 metre wide unobstructed buffer strip is required from the landward toe of the River Douglas flood defence embankment.
- an 8 metre wide (minimum) unobstructed buffer strip should be provided from the top of the bank of the Strine Brook.

Where development or works are proposed that would require a Flood Risk Activity Permit (FRAP), it is recommended that detailed planning advice is obtained from us prior to the submission of a planning application. We may object to a planning application if we do not consider that we can issue a FRAP for a development as proposed. The determination of a planning application could be delayed until our concerns are resolved.

Cont/d..

Land contamination

The NPPF seeks to prevent unacceptable risks from pollution by ensuring development is appropriate for the location. Where development is proposed on land that is or may be affected by contamination, an assessment of risk should be carried out by the applicant for consideration by the local planning authority before the application is determined.

Based on the location, scale and nature of the proposal, the development poses a low risk in relation to pollution of controlled waters and you are advised to seek the comments of the Council's Contaminated Land / Public Protection team.

We recommend that developers should:

- Follow the risk management framework provided in our Land Contamination Risk Management (LCRM) guidance when dealing with land affected by contamination.
- Refer to our Guiding principles for land contamination for the type of information that we require in order to assess risks to controlled waters from the site. The local authority can advise on risk to other receptors, such as human health.
- Consider using the National Quality Mark Scheme for Land Contamination Management which involves the use of competent persons to ensure that land contamination risks are appropriately managed.
- Refer to the contaminated land pages on GOV.UK for more information.

Fisheries and Biodiversity

Paragraphs 174 and 179 of the NPPF recognise that the planning system should conserve and enhance the environment by minimising impacts on and providing net gains for biodiversity. If significant harm resulting from a development cannot be avoided, adequately mitigated, or as a last resort compensated for, planning permission should be refused. We recommend that the developer ensures that opportunities to enhance biodiversity in and around developments are identified and incorporated into the proposed development. The developer should have regard to the latest planning practice guidance on how biodiversity net gain can be achieved as part of the proposed development https://www.gov.uk/guidance/natural-environment.

Pollution prevention

Developers should incorporate pollution prevention measures to protect ground and surface water. We would refer you to the latest Pollution Prevention Guidance targeted at specific activities, available at https://www.gov.uk/guidance/pollution-prevention-for-businesses.

Note to applicant

Should you wish us to review any technical documents or want further advice to address any of the environmental issues raised in this response, we may be able to do this as part of our charged for planning advice service.

Further engagement will provide you with greater certainty as to what our response to a planning application will be. It should also result in a better quality and more environmentally sensitive development.

Cont/d..

As part of our charged for service we will provide a dedicated project manager to act as a single point of contact to help resolve any problems. We currently charge £100 per person per hour, plus VAT. We will provide you with an estimated cost for any further discussions or review of documents. Our standard terms and conditions are available to view online at https://www.gov.uk/government/publications/planning-and-marine-licence-advice-standard-terms-for-our-charges/planning-and-marine-licence-advice-standard-terms-for-our-charges.

If you would like more information on our planning advice service, including a cost estimate, please contact us at clplanning@environment-agency.gov.uk.

Please note that the views expressed in this letter do not represent our final response in relation to any future planning application that may be made in relation to this site. We reserve the right to change our position in relation to any such application.

You should seek your own expert advice in relation to technical matters relevant to any planning application before submission.

Yours sincerely

Mr Alex Hazel
Planning Advisor - Sustainable Places Team

Tel: 020 302 51215
E-mail: clplanning@environment-agency.gov.uk

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