

ML PLANNING CONSULTANCY LTD

FLOOD RISK ASSESSMENT

Proposed Development: Erection of an agricultural storage/livestock building following demolition of existing dilapidated building.

Location: Orchard Cottage, Fluke Hall Lane, Pilling PR3 6HP

Author - Mr Luke Godden

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SCOPE OF THE ASSESSMENT

The National Planning Policy Framework (NPPF) sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Support in the Planning Practice Guidance is also available.

The NPPF sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.

The NPPF also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.

As set out in the NPPF, local planning authorities should only consider development in flood risk areas appropriate where informed by a site-specific Flood Risk Assessment. This document will identify and assess the risk associated with all forms of flooding to and from the development. Where necessary it will demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account.

In investigating the flood risk relating to the site, the Environment Agency flood mapping has been reviewed and has confirmed that the site lies within Flood Zone 3. Flood Zone 3 is identified as land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. The flood zones categorisation refers to the probability of river and sea flooding, ignoring the presence of defences.

STRATEGIC FLOOD RISK ASSESSMENT

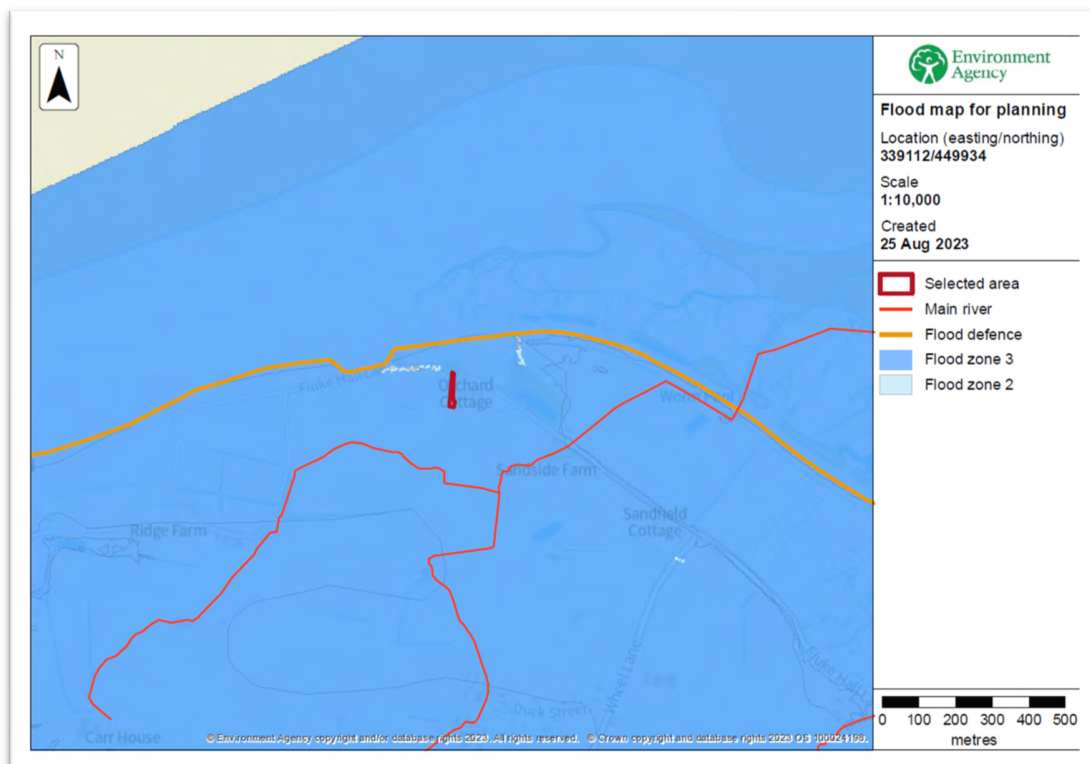
The Strategic Flood Risk Assessment for Wyre Borough Council is dated April 2007 and was produced by Wyre Borough Council.

The SFRA states this area is very low lying and flat with the majority of the area in Flood Zone 3. The area is predominately agricultural in nature with sporadic larger villages.

The main risk of flooding within the area is from tidal sources, in a breach of the coastal or estuary defences scenario. This would lead to significant areas being flooded. The area is also susceptible to flooding from fluvial sources due to the low gradients and difficulty in discharging into Morecambe Bay. This is compounded by rising beach levels at the discharge points. Similarly, sewer flooding, groundwater and highway drainage systems can result in flooding problems as they are interconnected to the watercourses and suffer from poor hydraulics and overcapacity in the urban area.

CONSULTATION & GUIDANCE

The site is identified on the Environment Agency's flood mapping as lying within Flood Zone 3 defended. The main risk of flooding is tidal.



The site benefits from the tidal defences at Knott End & Garstang. These defences offer protection to the development area for a 1 in 200 year storm event.

The site lies within a flood warning area where free flood warnings are issued to homes and businesses when flooding is expected. Product 4 Data has been requested and provided which gives a full picture of Flood Risks applicable to this site.

The Proposed Development

The proposal for planning concerns a new ancillary annex following demolition of an existing agricultural building of a similar size. Access to the site is in place and leads south into the site from Fluke Hall Lane.

The annex is purpose designed, built from bricks and mortar with a slate roof.

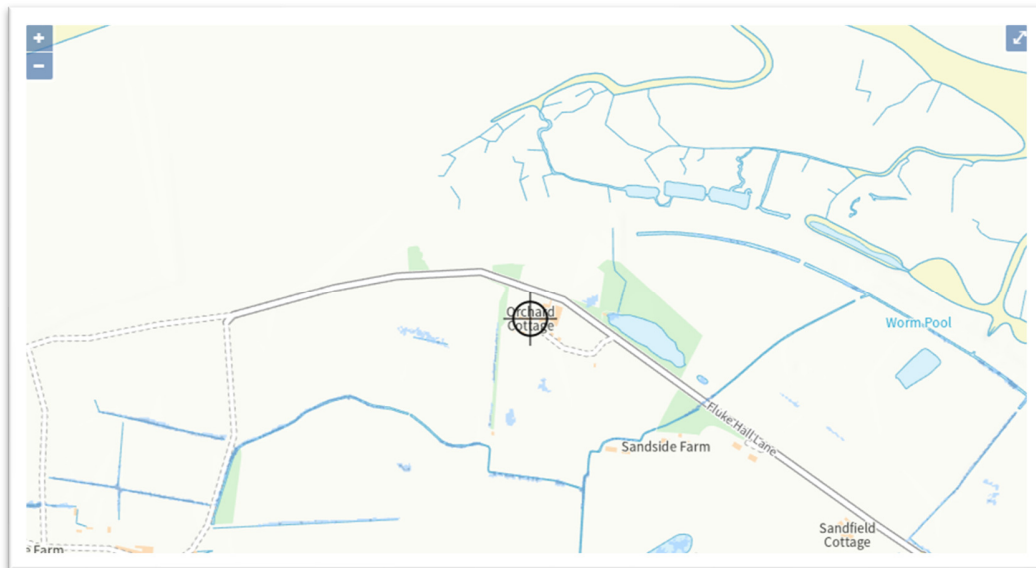
Existing Ground Levels and Finished Levels

Site levels have been taken within the area where the proposal is located. The ground levels are in the region of 6.4m AOD.

A building of this type do not normally have a finished floor above an established slab base, (bases) are generally set at a maximum of 203mm above external ground levels. In this case this will result in a finished floor level of **6.6m AOD.**

Image to show typical agricultural building construction and relation to land levels.

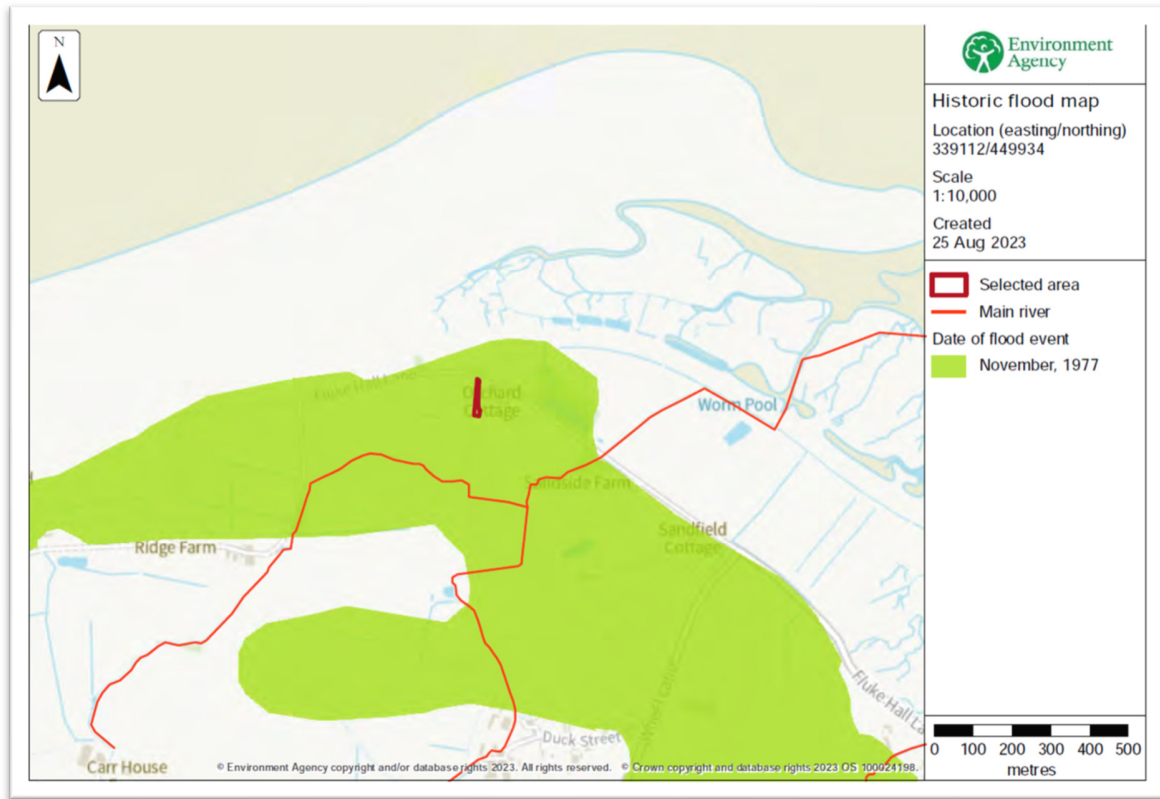
Surface Water Flooding



The risk from Surface Water Flooding on this site is deemed to be Low Risk by the environment agency.

Historic Flooding

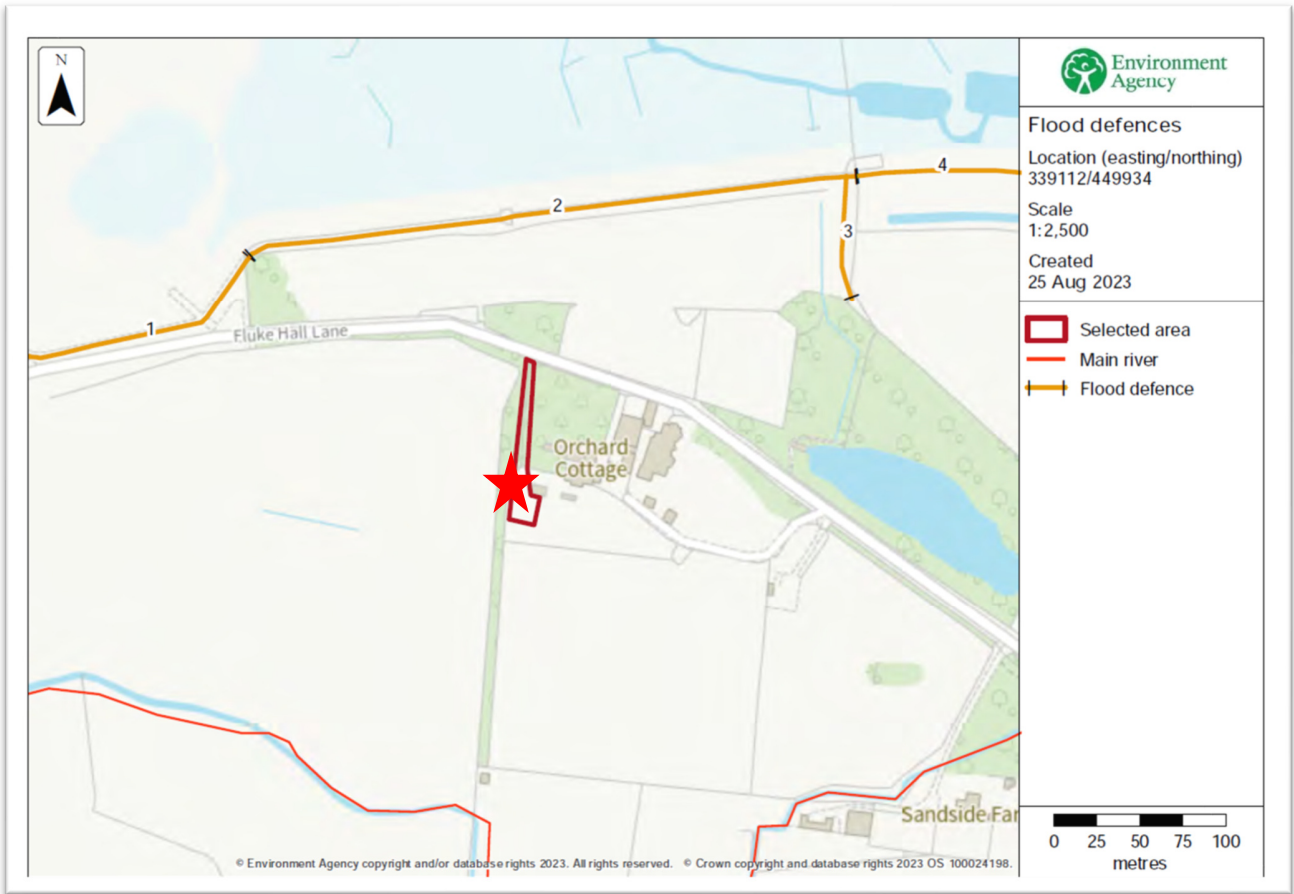
The Environment Agency records are incomplete for the area but do show one flood event that occurred in 1977. The flood event is noted as a failure of the defences.



Product 4 Assessment

Tidal flood defences

The SFRA states the main risk of flooding within the area is from tidal sources, in a breach of the coastal or estuary defences scenario. The site is identified on the Environment Agency's flood mapping as lying within Flood Zone 3 defended. The main risk of flooding is tidal and the area is protected by coastal defences that provide protection to the site. The walls and embankments provide protection from a 1 in 200 year event. The figure below from the Environment Agency indicates the location of flood defences (marked in red) within the vicinity of the application site.

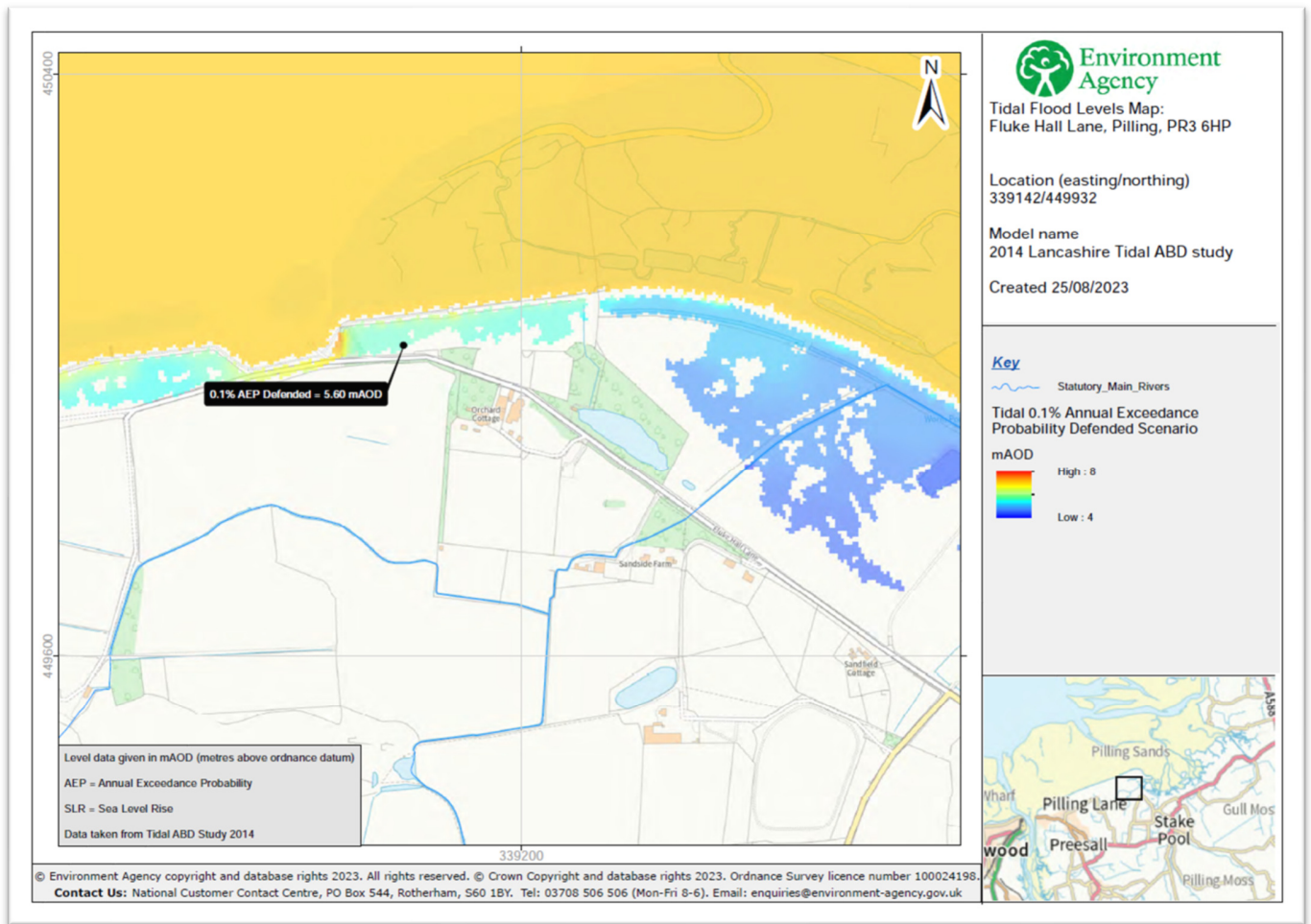


Modelled scenarios

The following scenarios are included:

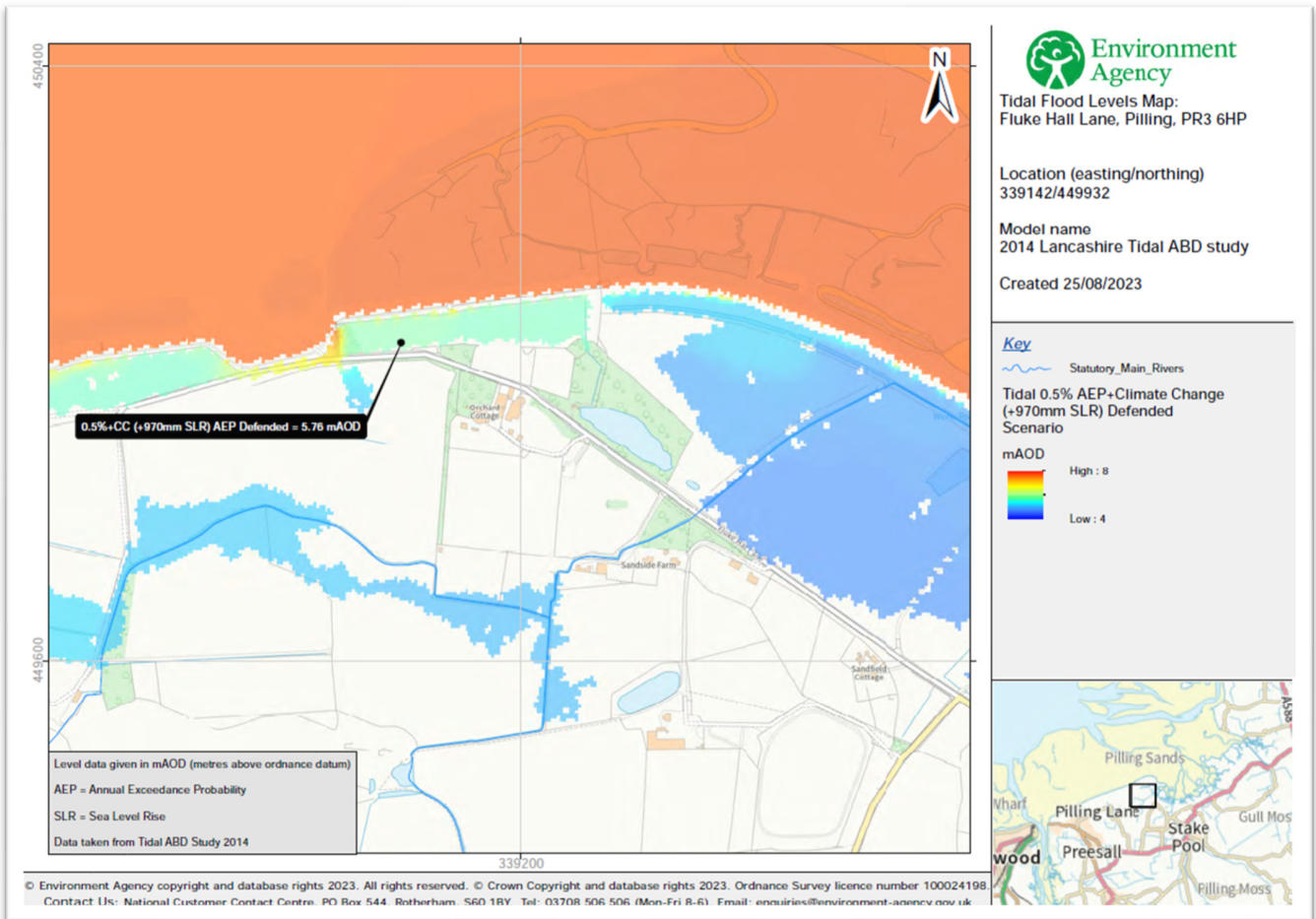
1. Defended modelled fluvial: risk of flooding from rivers where there are flood defences.
2. Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed.
3. Defended modelled tidal: risk of flooding from the sea where there are flood defences.
4. Defences removed modelled tidal: risk of flooding from the sea where flood defences have been removed.
5. Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change.
6. Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change.
7. Defended climate change modelled tidal: risk of flooding from the sea where there are flood defences, including estimated impact of climate change.
8. Defences removed climate change modelled tidal: risk of flooding from the sea where flood defences have been removed, including estimated impact of climate change.

Defended modelled tidal: risk of flooding from the sea where there are flood defences.



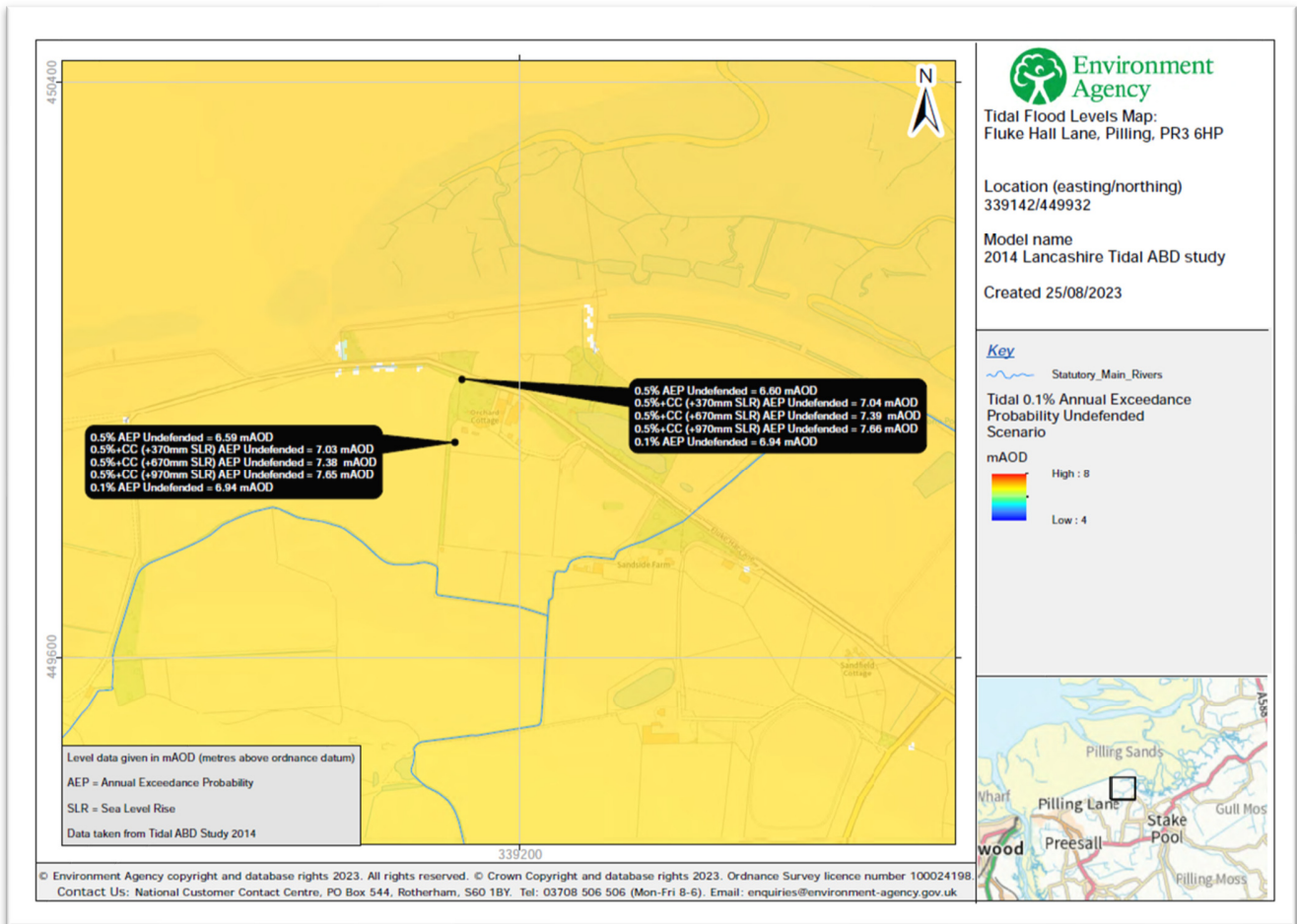
The return period for this scenario is 1 in 1000 and indicates flood waters affecting land to the north of the site. The site is unaffected in this scenario.

Defended climate change modelled tidal: risk of flooding from the sea where there are flood defences, including estimated impact of climate change.



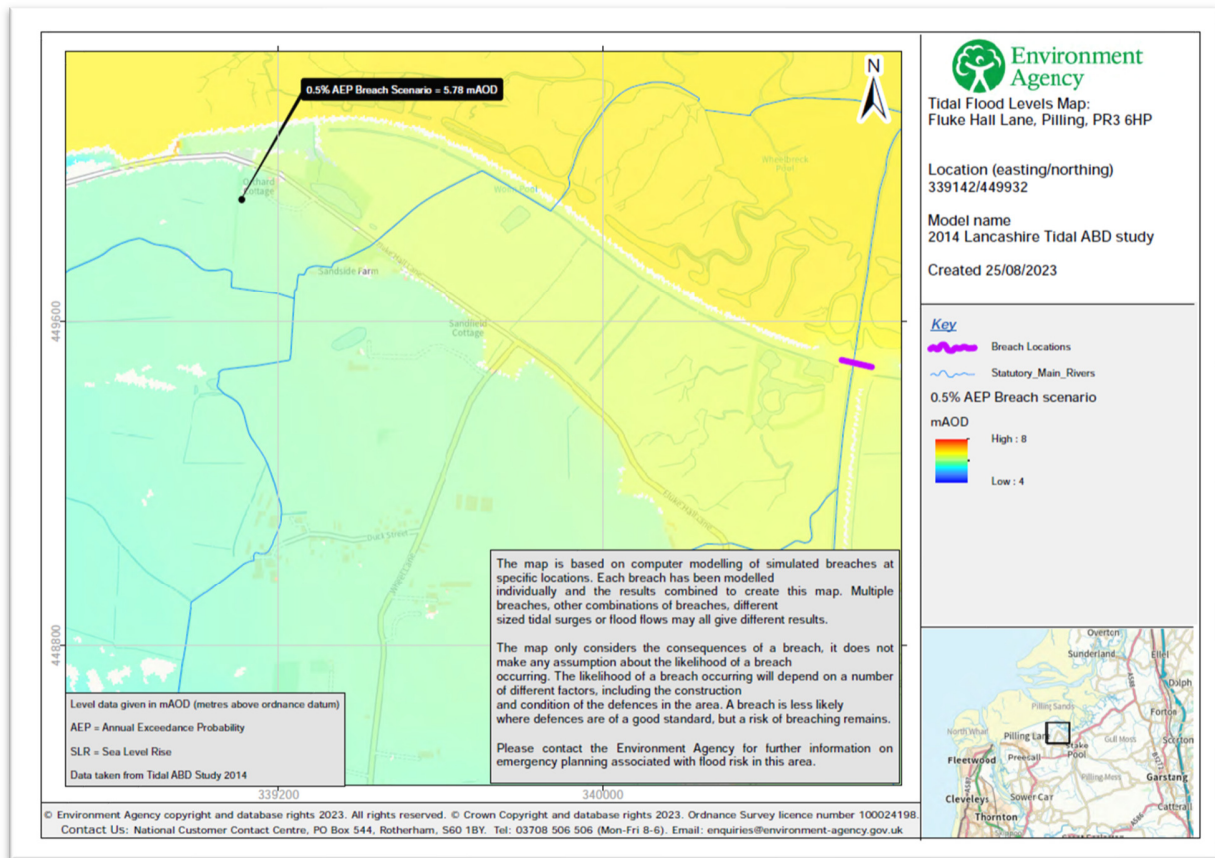
The return period for this scenario is 1 in 200 and indicates flood waters affecting land to the north of the site. The site is unaffected in this scenario.

Defences removed modelled tidal: risk of flooding from the sea where flood defences have been removed.



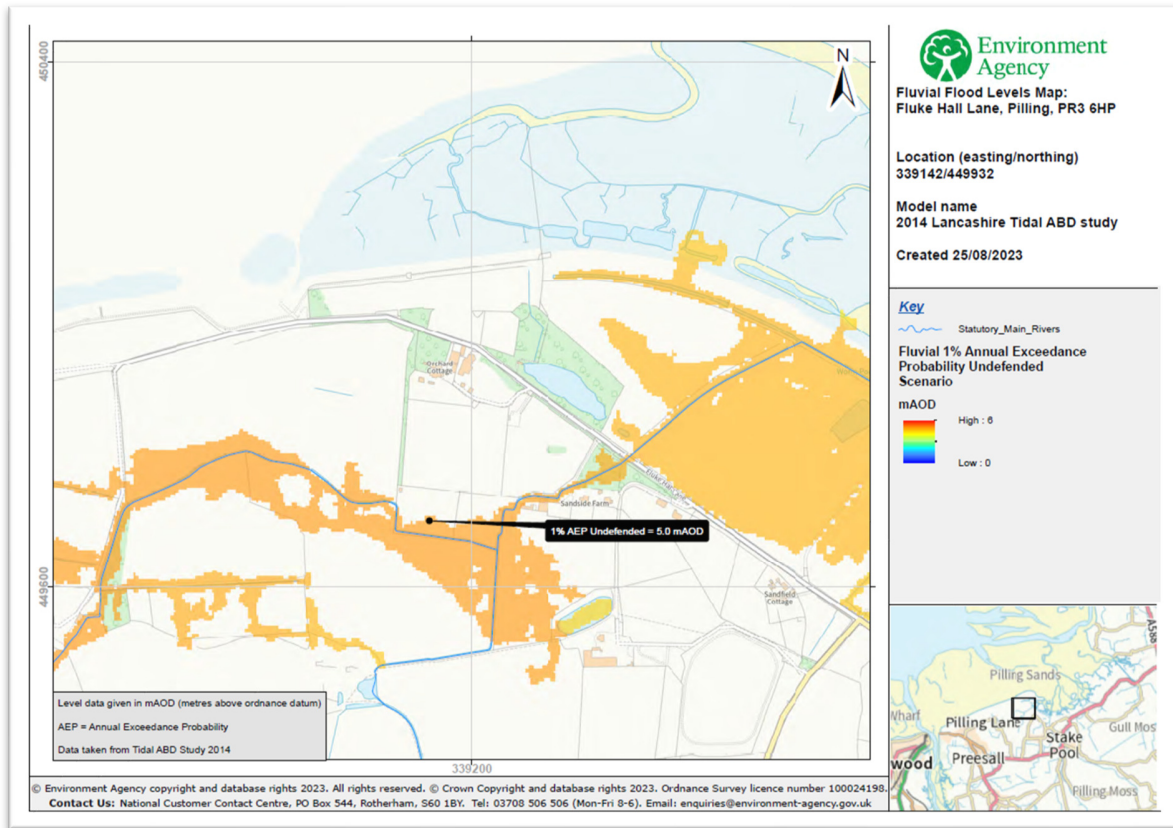
The return period for this scenario is 1 in 1000 and 1 in 200 and indicates flood waters affecting the site without the benefit of the Tidal flood defences. A range of levels are given for the undefended scenarios with adjustments for climate change. These range between 6.59 mAAD, 6.94 mAAD, 7.03 mAAD, 7.38 mAAD and 7.65 mAAD. Relative to the existing ground levels at 6.4 mAAD to 6.6 mAAD, this gives flood water depths between 200mm to 1.5 metres. However, these are hypothetical scenarios based on the assumption that the sea defences do not exist, as such this flood risk scenario is considered highly unlikely and does not trigger the need for flood resilience of resistance measures.

Breach Scenario



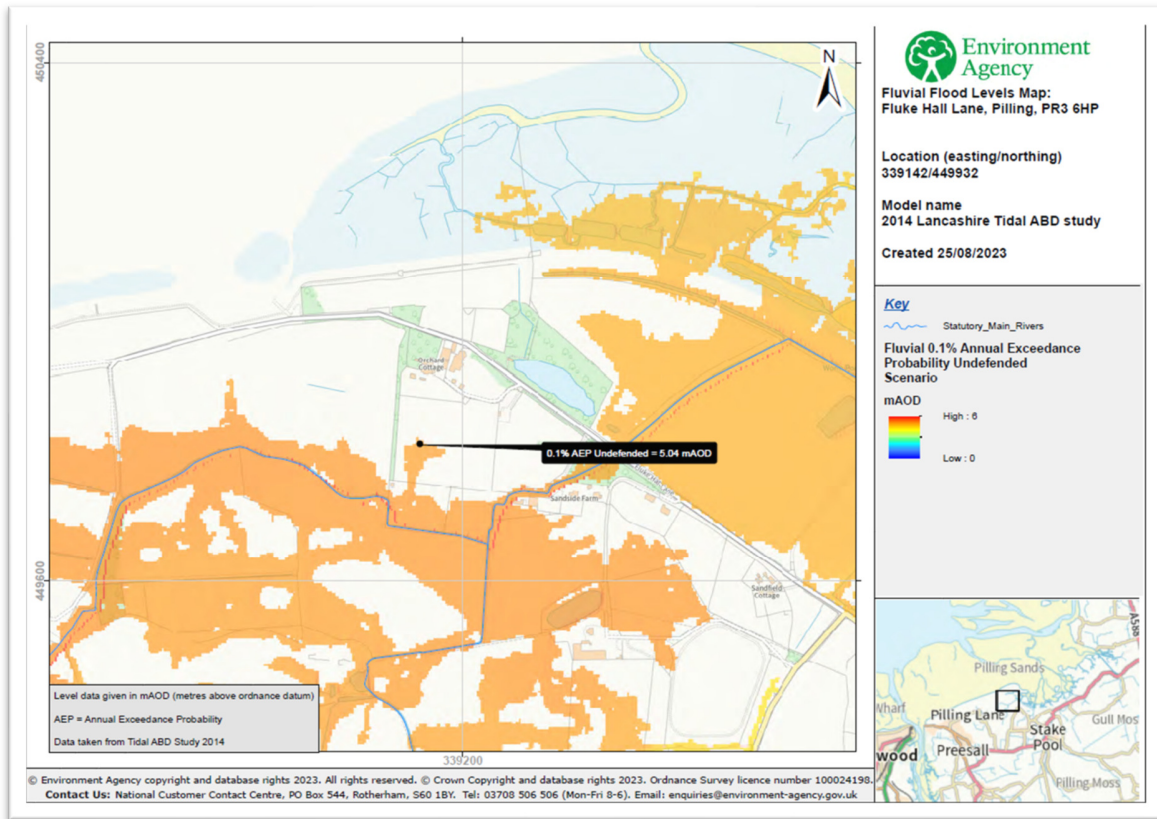
The map provided is based on modelling of simulated breaches at the location identified. The breach location is some distance from the site and is not identified on the flood defences map provided for the site. A breach is considered less likely where the defences are in good condition. The colour coding to the map indicates that the flood risk falls in the mid to lower range. A flood level of 5.78 mAOD is given for the site in this scenario, which is lower than existing ground levels and the proposed floor level.

Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change.



The return period for this scenario is 1 in 100. The modelling indicates flood water breaching riverbanks at the Main River Worm Pool. Levels given to the south of the site indicate water at 5 mAOD which does not affect the site.

Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change.



The return period for this scenario is 1 in 1000. The modelling indicates flood water breaching riverbanks at the Main River Worm Pool. Levels given to the south of the site indicate water at 5.04 mAOD which does not affect the site.

Canals, reservoirs and other sources

There are no canals or reservoirs local to the area.

Groundwater

Groundwater flooding tends to occur after much longer periods of sustained high rainfall. The areas that are at risk tend to be those low-lying areas where the water table is shallow. Flooding tends to occur in areas that are underlain by major aquifers, although groundwater flooding is also noted in localised floodplain sands and gravels. The main causes of groundwater flooding are:

- Natural groundwater rising due to tidal influence, or exceptionally wet periods leading to rapid recharge;
- Groundwater rebound due to cessation of abstraction and mine dewatering;
- Existence of confined aquifers and springs.

Pluvial runoff

The Environment Agency Risk of Flooding from Surface Water map indicates the site is at a very low risk of surface water flooding i.e. this means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%). It should be noted that surface water flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.

PREDICTED IMPACTS & MITIGATION

This section of the FRA sets out the mitigation measures recommended to reduce the risk of flooding to the proposed development and outlines any residual impacts.

It is considered that the tidal defences offer adequate protection and there is only a significant risk from the tidal undefended 1:200 and 1:1000. A range of levels are given for the undefended scenarios with adjustments for climate change. These range between 6.59 mAOD, 6.94 mAOD, 7.03 mAOD, 7.38 mAOD and 7.65 mAOD. Relative to the existing ground levels at 6.4 mAOD to 6.6 mAOD, this gives flood water depths between 200mm to 1.5 metres. However, these are hypothetical scenarios based on the assumption that the sea defences do not exist, as such this flood risk scenario is considered highly unlikely and does not trigger the need for flood resilience or resistance measures.

Safe access and egress

Access to the site will be from Fluke Hall Lane. The site is in an area benefitting from the Environment Agency's flood warning service.

CONCLUSIONS & RECOMMENDATIONS

- The site lies within Flood Zone 3 and is defended.

- The risk of fluvial flooding to the site is low and the modelled scenarios indicate no risk to the development.
- The tidal flood risk relates to a flood defence breach scenario, level of risk to the site in this scenario is highly unlikely.
- The risk of flooding from canals, reservoirs and other sources is low.
- The flood risk from surface water is low.
- The risk from sewer flooding and pluvial runoff is low.

To protect the development the following mitigation measures are to be implemented:

- The site owners are to be registered to receive free flood warnings when flooding is expected to enable the evacuation of people for a range of flooding events up to and including the extreme event.