ML PLANNING CONSULTANCY LTD

FLOOD RISK ASSESSMENT

PROJECT: New roof covering to existing silage clamp.

LOCATION: Roe Farm House, Catterall Lane, Catterall, PR3 0PA

Introduction

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 that countryside areas within the Fylde plain are 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 2. The main risk of flooding is tidal. A further assessment of Product 4 data acquired from the Environment Agency is included in this assessment.

The Proposal

1. The proposal comprises a roof covering an existing silage clamp. The silage clamp sits on the northern end of a range of buildings used for storage on the farm. The structure at present is formed by a concrete base, the walls are formed by concrete panels between stanchions. There is no roof to the structure.

	Image to show existing silage clamp. Silage is a grass crop that is stored in this manner, and used as fodder for dairy cows.
	Image to show walls formed by concrete panels between stanchions, there is no roof covering to the structure.

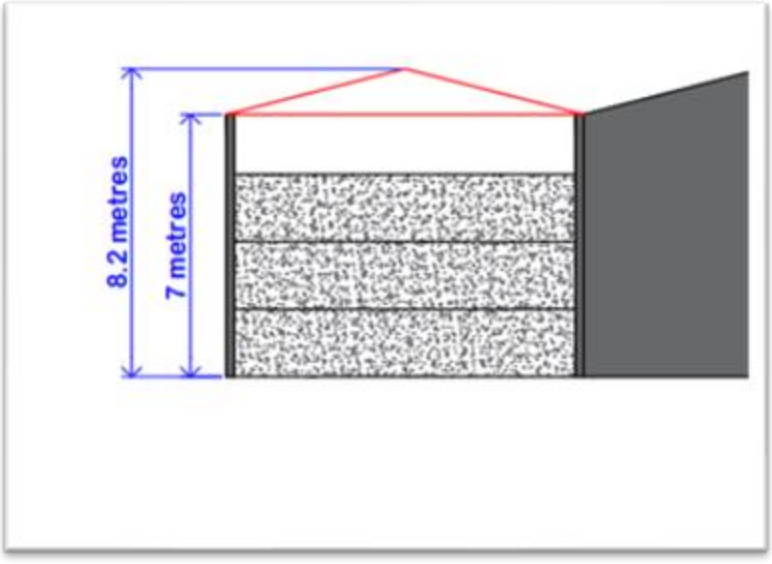
	Image to show adjoining building range.

Existing Ground Levels and Finished Floor Levels

2. There is an established OS datum point adjacent to the site which shows the existing ground level of 11m AOD. The topography of the farm is very flat with little change to levels across the yard and building range.

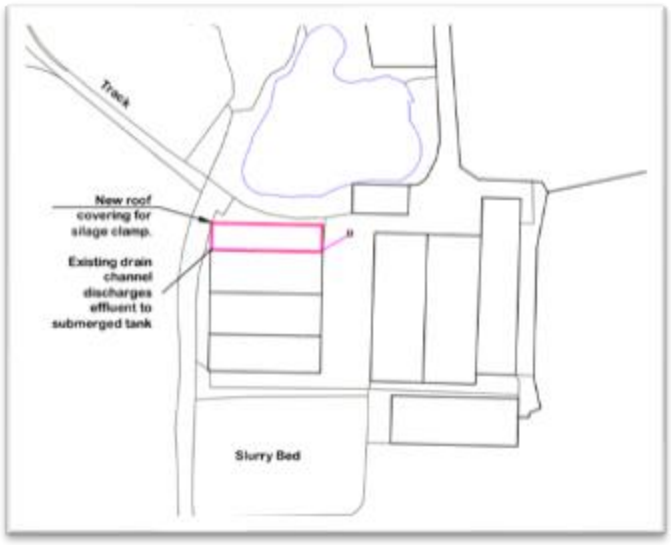
3. The building is extant, and no ground works or ground level changes are required to implement the roof covering, in terms of flood risk this means that the development applied for has a very low impact.

4. The roof is to be on top of the existing stanchions at 7 metres above ground level, the finished height to the roof is 8.2 metres above ground level.



Site Drainage

5. The need to cover the building is recognised as a means of pollution control, protecting other nearby waterbodies from contaminaton via leachate and dirty water run-off. The devleopment Is supported by a grant scheme with Natrual England offering funds to farms to impropve pollution management.

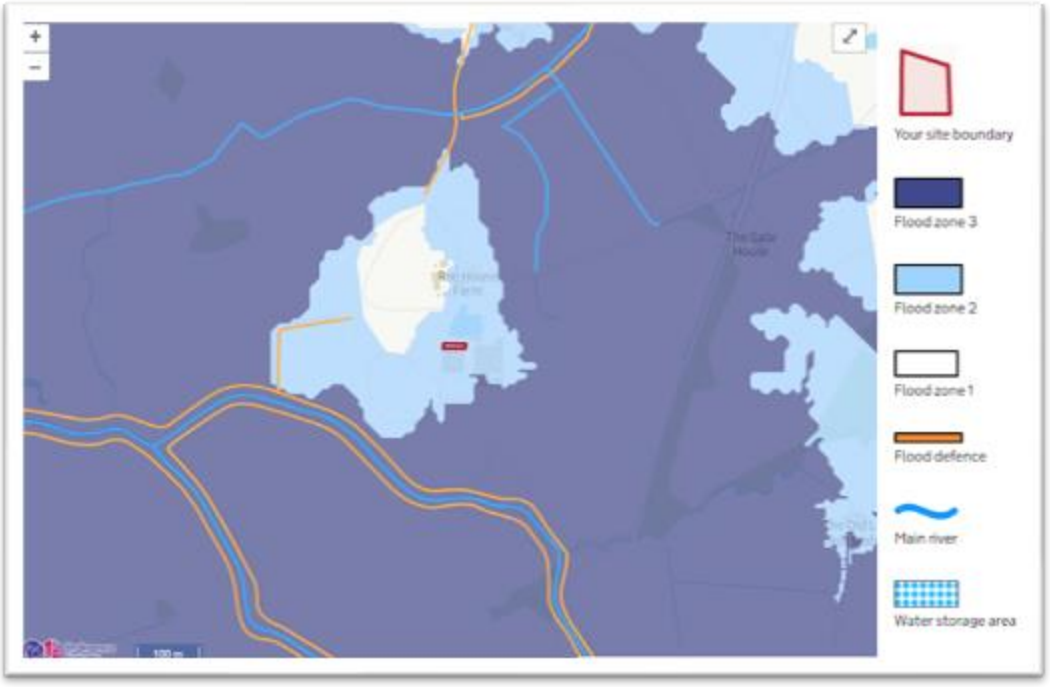


6. There is an existing natural pond to the north of the building, historically this has been used for discharge of surface water and any treated water from package treatment plant serving a dwelling on site.

7. There is a drainage channel system in place, in line with SSAFO regulations, which collects and discharges any leachate from the silage storage to a submerged tank that has a 48 cubic meter capacity, which is indicated on the submitted plans.

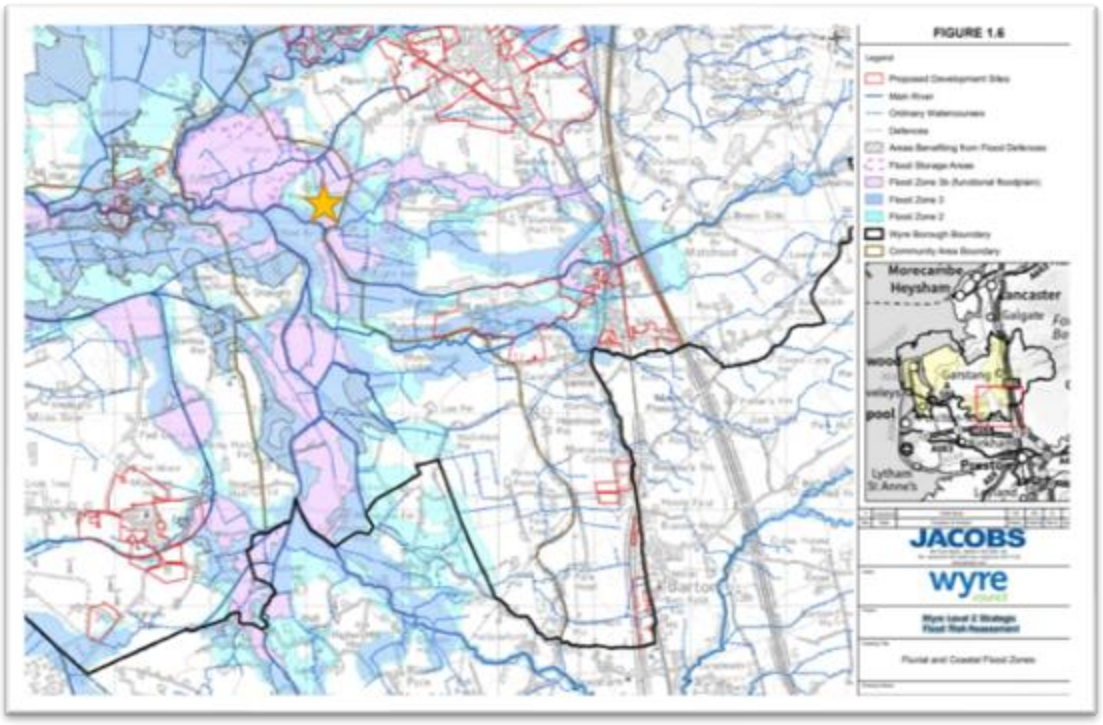
	Image to show channel drain at permiter of the silage storage area, in place to capture and manage pollution.

Flood Map for Planning



8. Flood map for planning (rivers and the sea) The selected location is in flood zone 2. Flood zone 2 shows the area at risk of flooding for an undefended flood event with a: Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)

Wyre Council Strategic Flood Risk Assessment



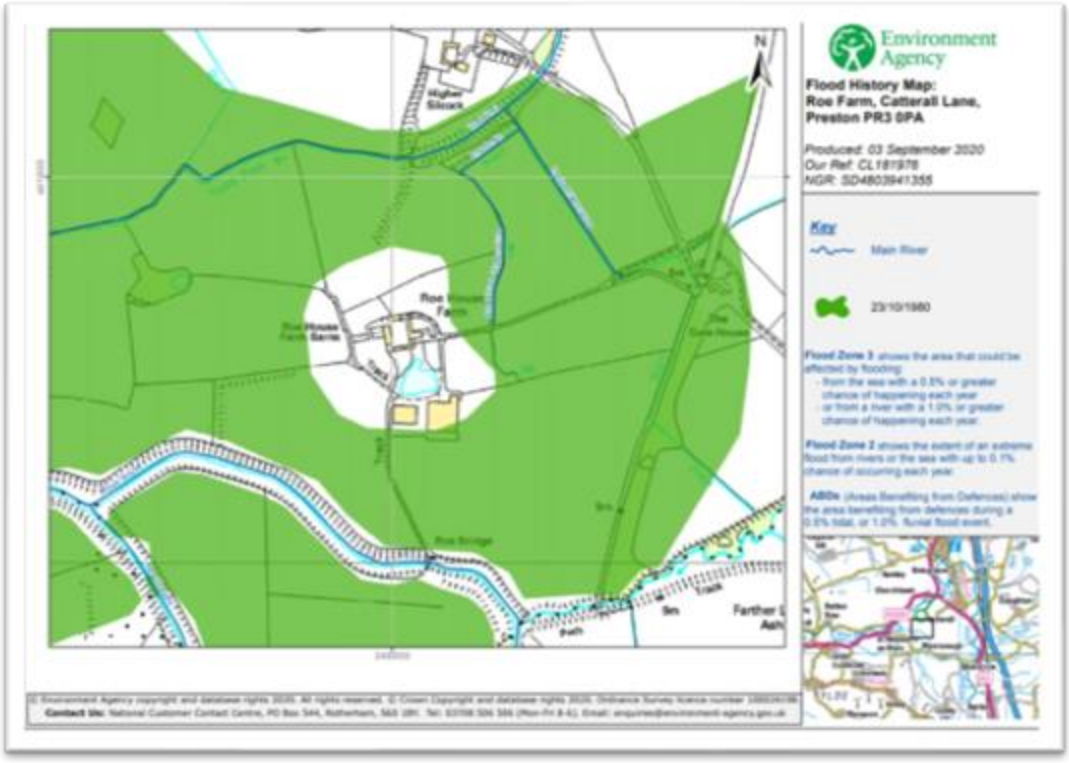
9. Excerpt from figure 1.6 shows that the built core of the site falls within flood zone 2 and benefits from defences. The figure matches the flood map for planning. The River Wyre and its embankments are to the south of the site.

10. Excerpt from figure 1.6 shows that the built core of the site falls within flood zone 2 and flood zone 1 within the Council's SFRA. Areas of Flood zone 3B are to the north.

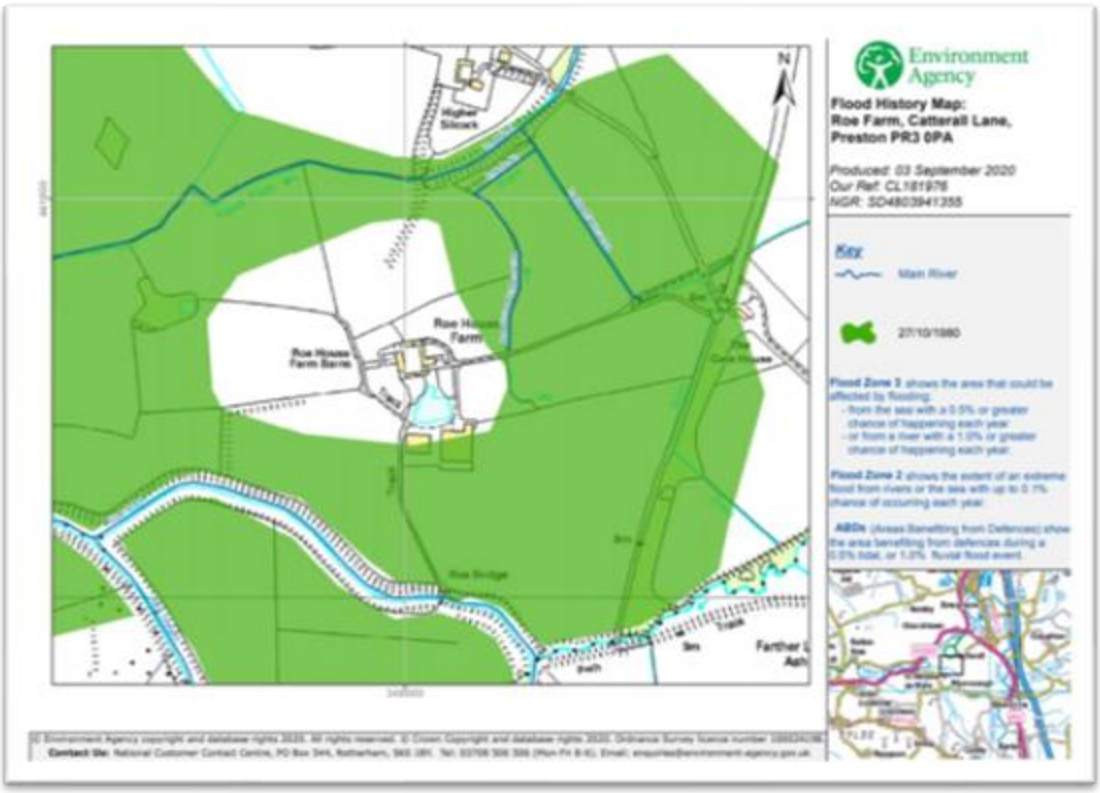
Surface Water Flooding

11. The risk of flooding from surface water is considered very low on this site.

Historic Flooding



12. The flood event in 1980 did not affect the site.



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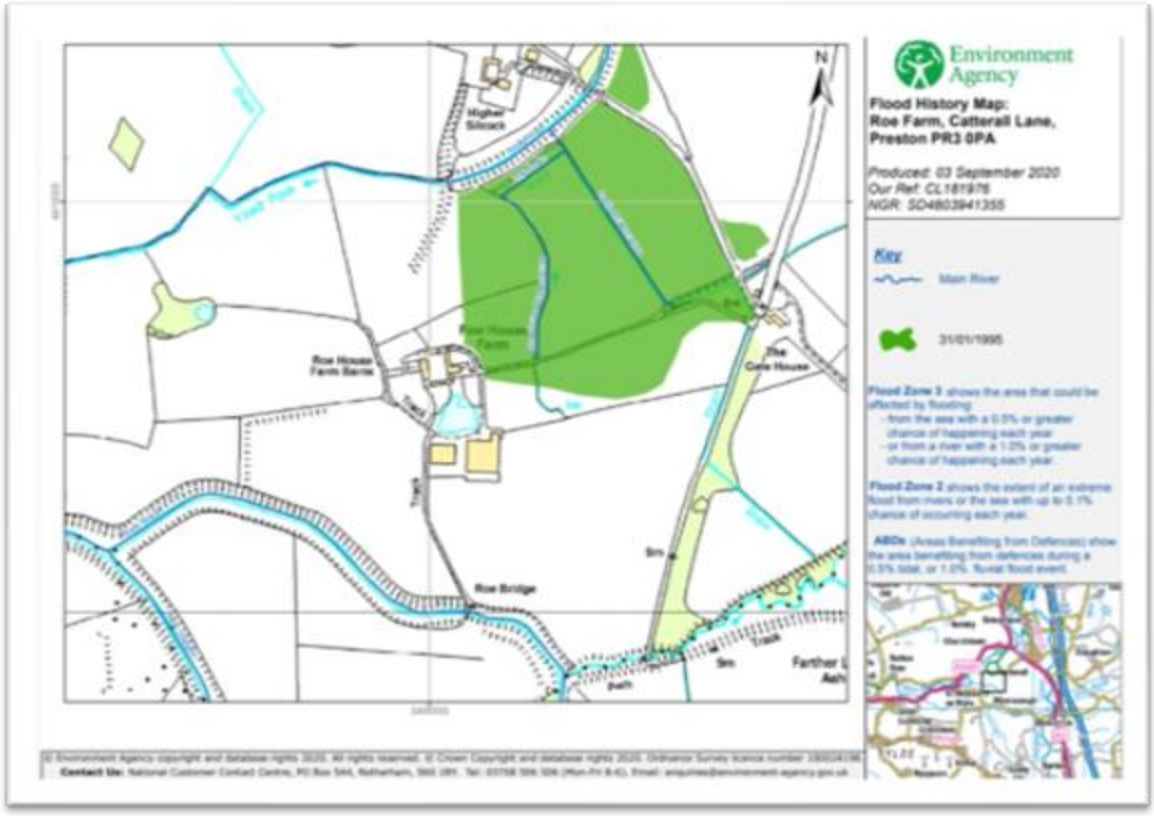


14. The flood event in 1995 did not affect the site.

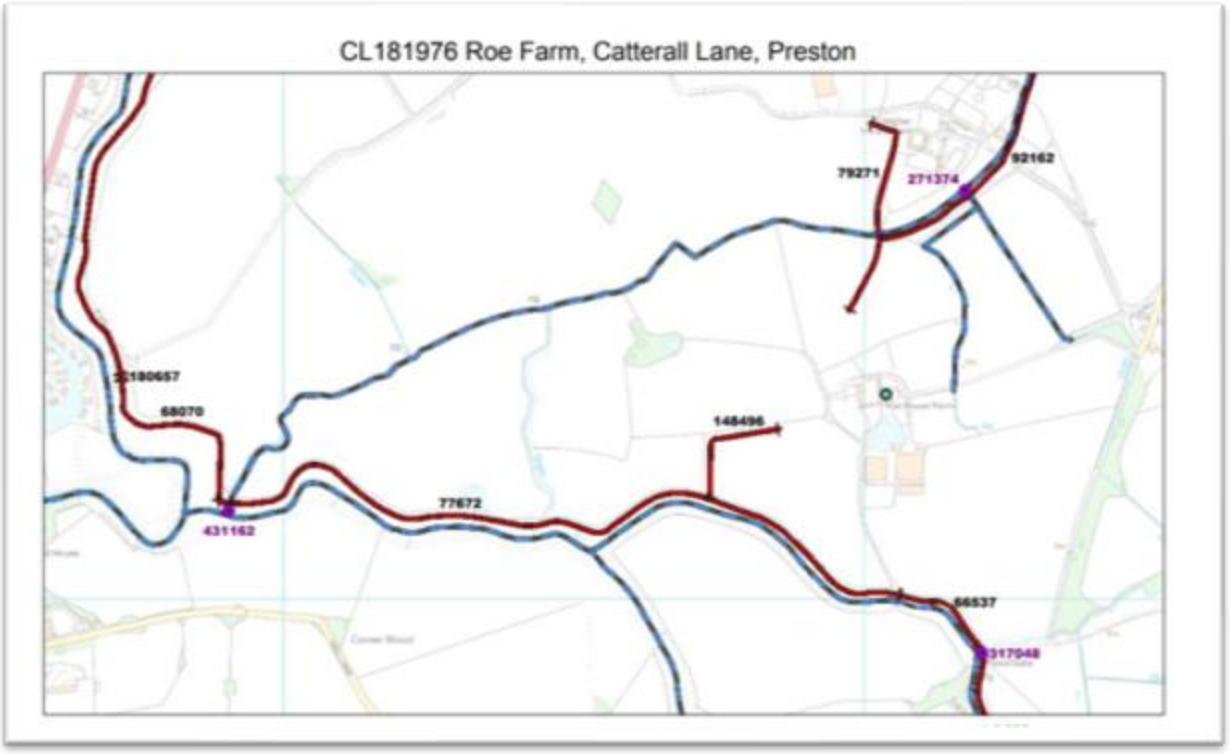
Fluvial Levels Map

15. The fluvial levels data gives predicted levels for a set of node points in a range of scenarios. Guidance on climate change allowances indicates a further 84mm of potential flood water level needs to be added to the data.

16. There are four node points on boundary of the site are **ea01209BROC01_0961** and **ea01209BROC01_1107** with the following levels in each scenario:-

Data taken from 2014 Wyre SFRM		
ea01209BROC01_0961		
0.1% Defended	0.1% Undefended	CC Allowance (plus 84mm)
10.21	8.87	9.71
1%+Climate Change (+20%) Defended	1%+Climate Change (+20%) Undefended	
10.17	8.73	9.57
1 % Defended	1% Undefended	
10.15	8.62	9.46
ea01209BROC01_1107		
0.1% Defended	0.1% Undefended	CC Allowance (plus 84mm)
10.22	8.88	9.72
1%+Climate Change (+20%) Defended	1%+Climate Change (+20%) Undefended	
10.18	8.73	9.57
1 % Defended	1% Undefended	
10.17	8.62	9.46

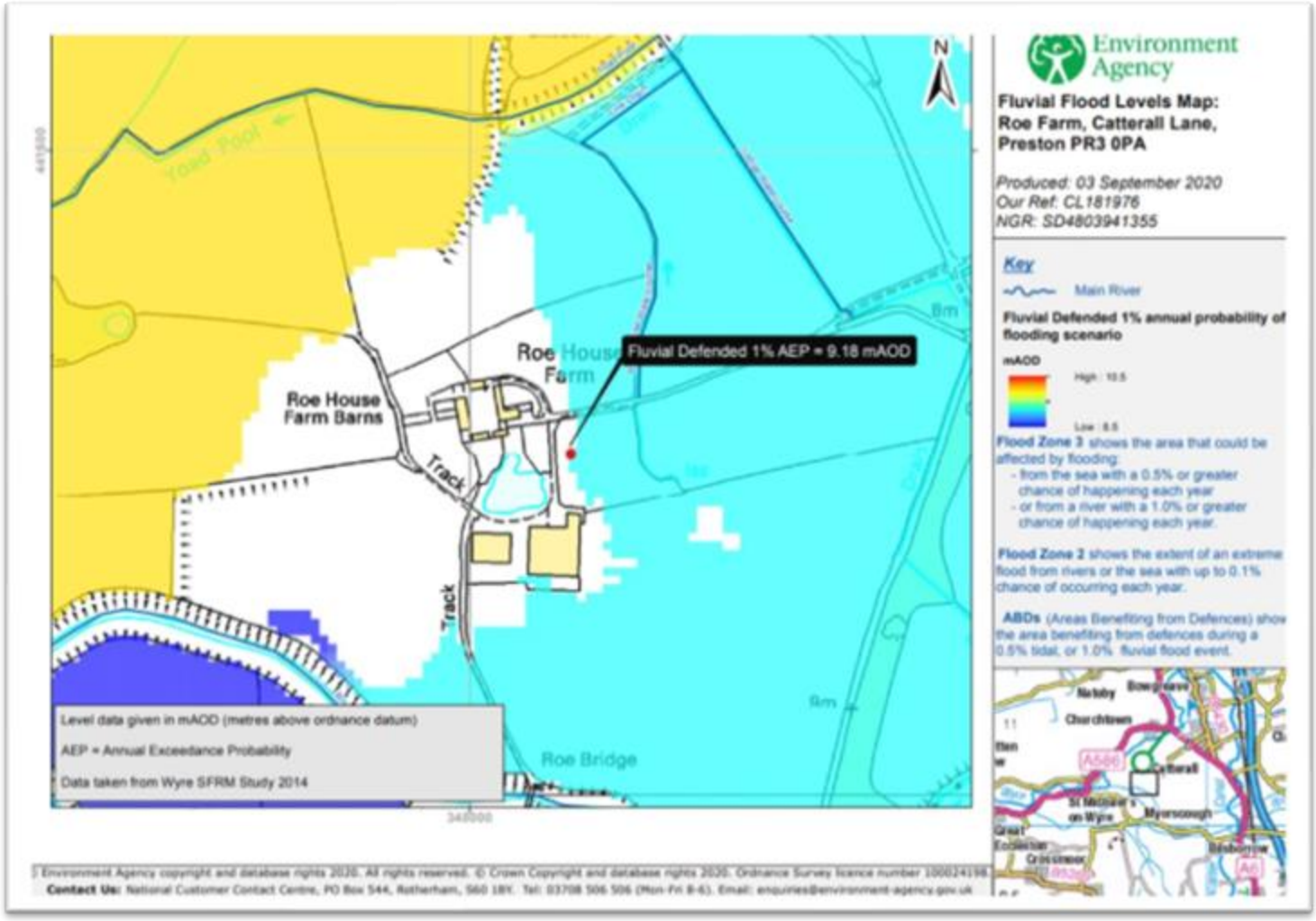
Fluvial flood defenses



17. The fluvial defences information indicates that the flood defences benefitting this site are formed by embankments on the northern side of the main channel and further on land to the north. 148496 is an embankment on land directly to the west of the site.

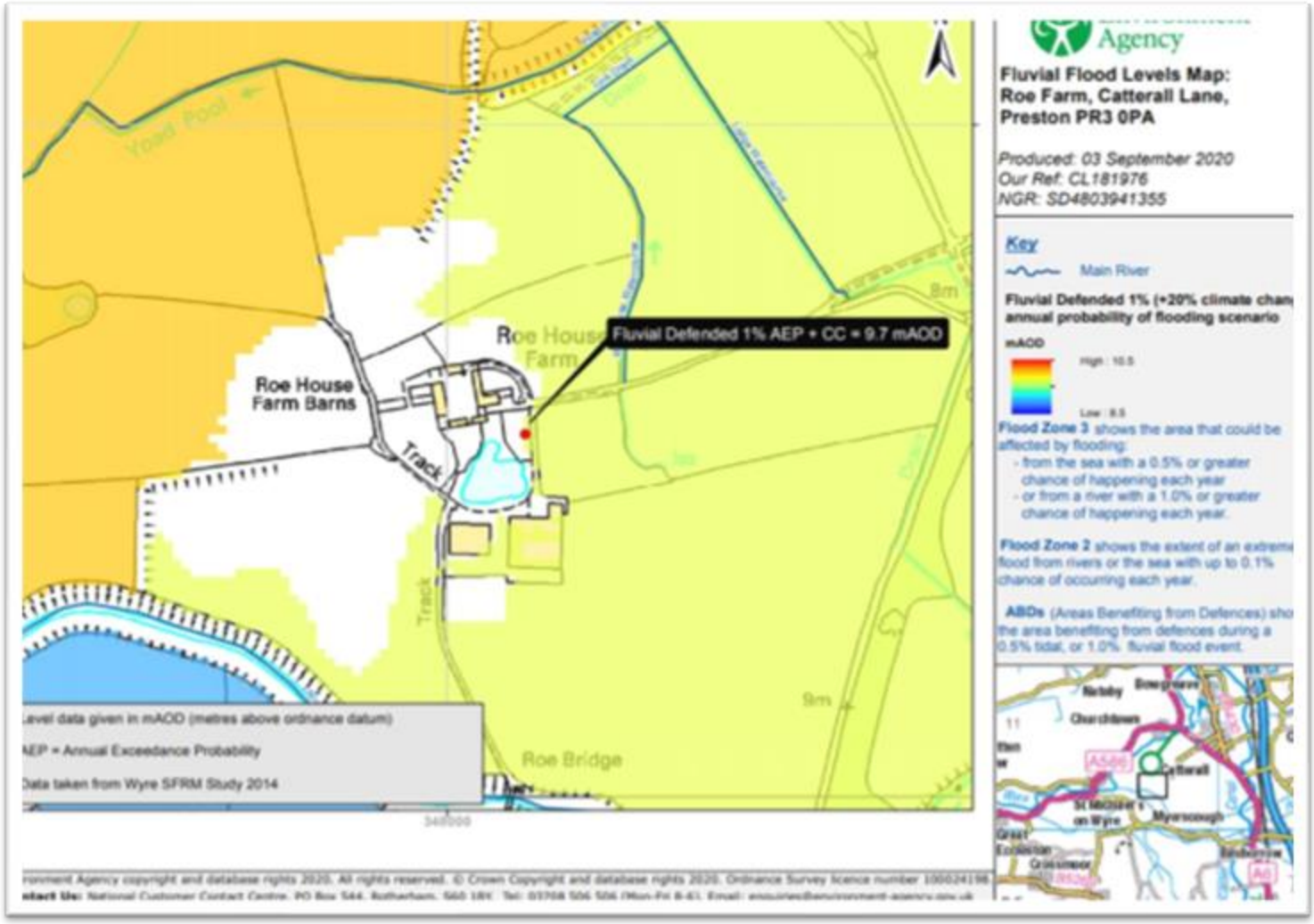
18. Effective Crest Levels in the undefended and defended scenario are given at 10.24 mAOD (UCL) and 10.28 mAOD (DCL). This gives a design flood level for a breach scenario, relating to overtopping, which is extreme event which is discussed in the FRA.

Fluvial Defended 1%



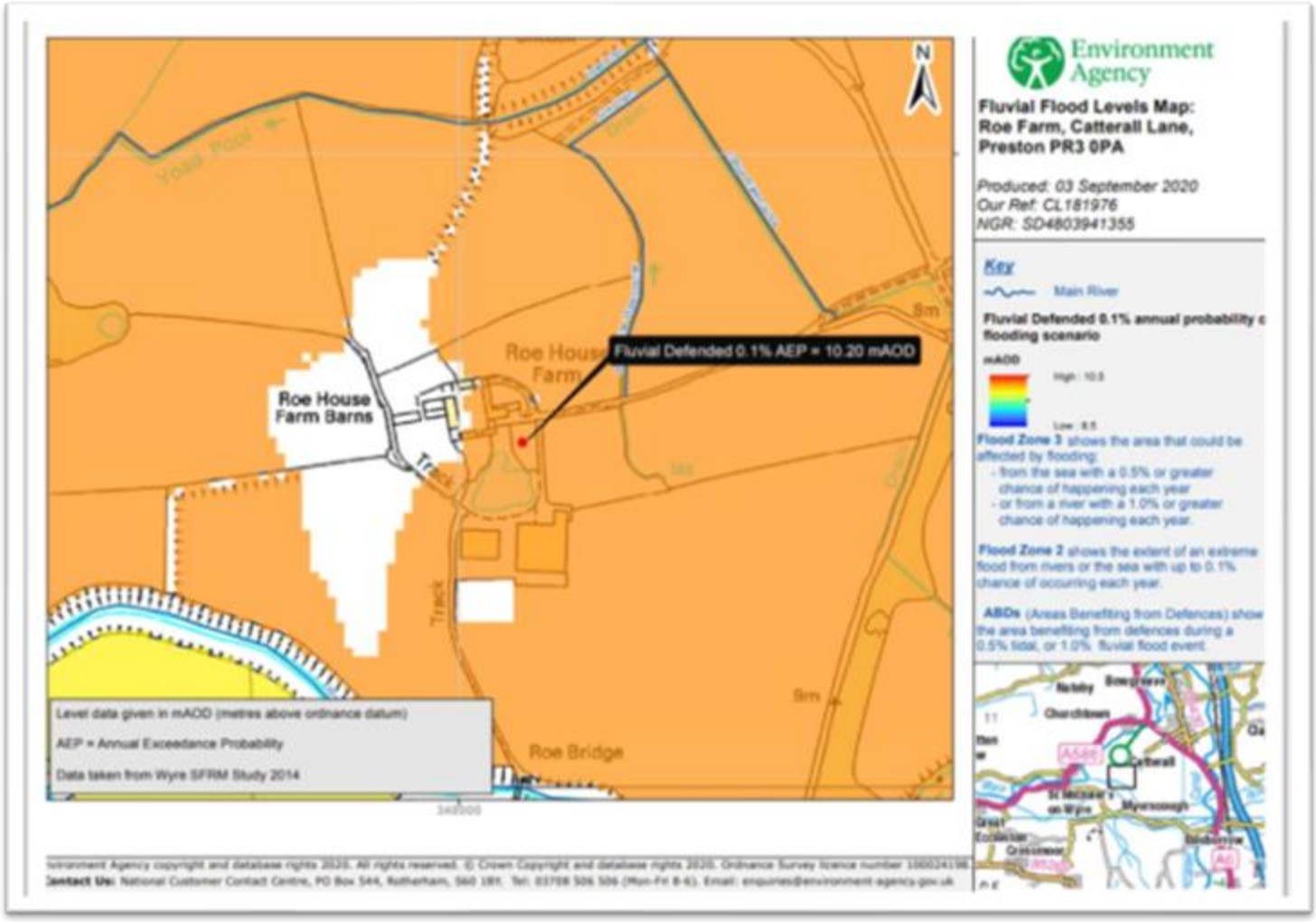
19. The site is not affected in the Fluvial 1 in 100 annual probability of flooding scenario. Existing ground levels are 11 mAOD and the modelled water levels in this flood scenario are 9.18 mAOD, and with CC Allowance (plus 84mm) equates to 10.02 mAOD.

Fluvial Defended 1% (+20% climate change)



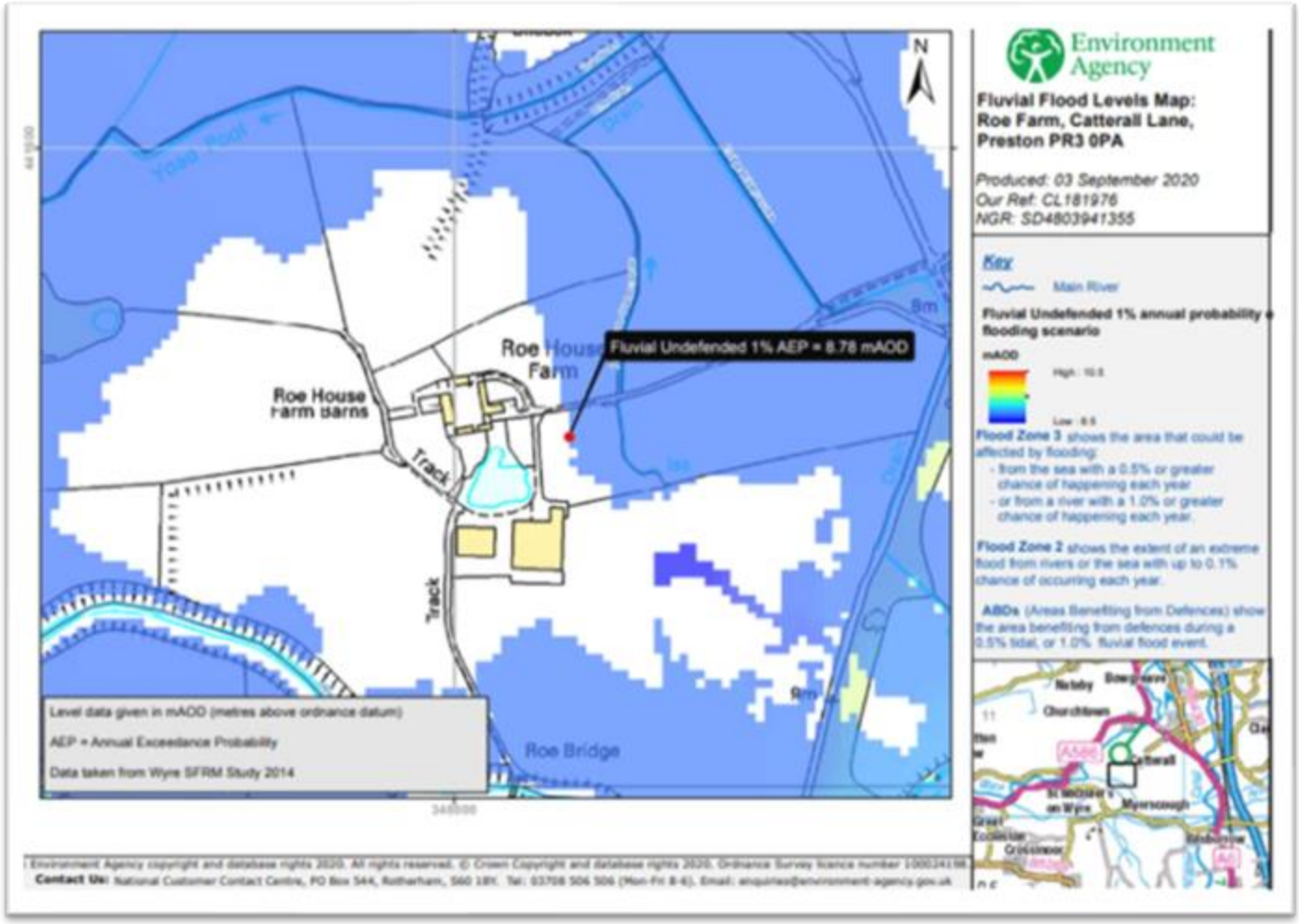
20. The site is not affected in the Fluvial 1 in 100 annual probability of flooding scenario. Existing ground levels are 11 mAOD and the modelled water levels in this flood scenario are 9.7 mAOD, and with CC Allowance (plus 84mm) equates to 10.54 mAOD.

Fluvial Defended 0.1%



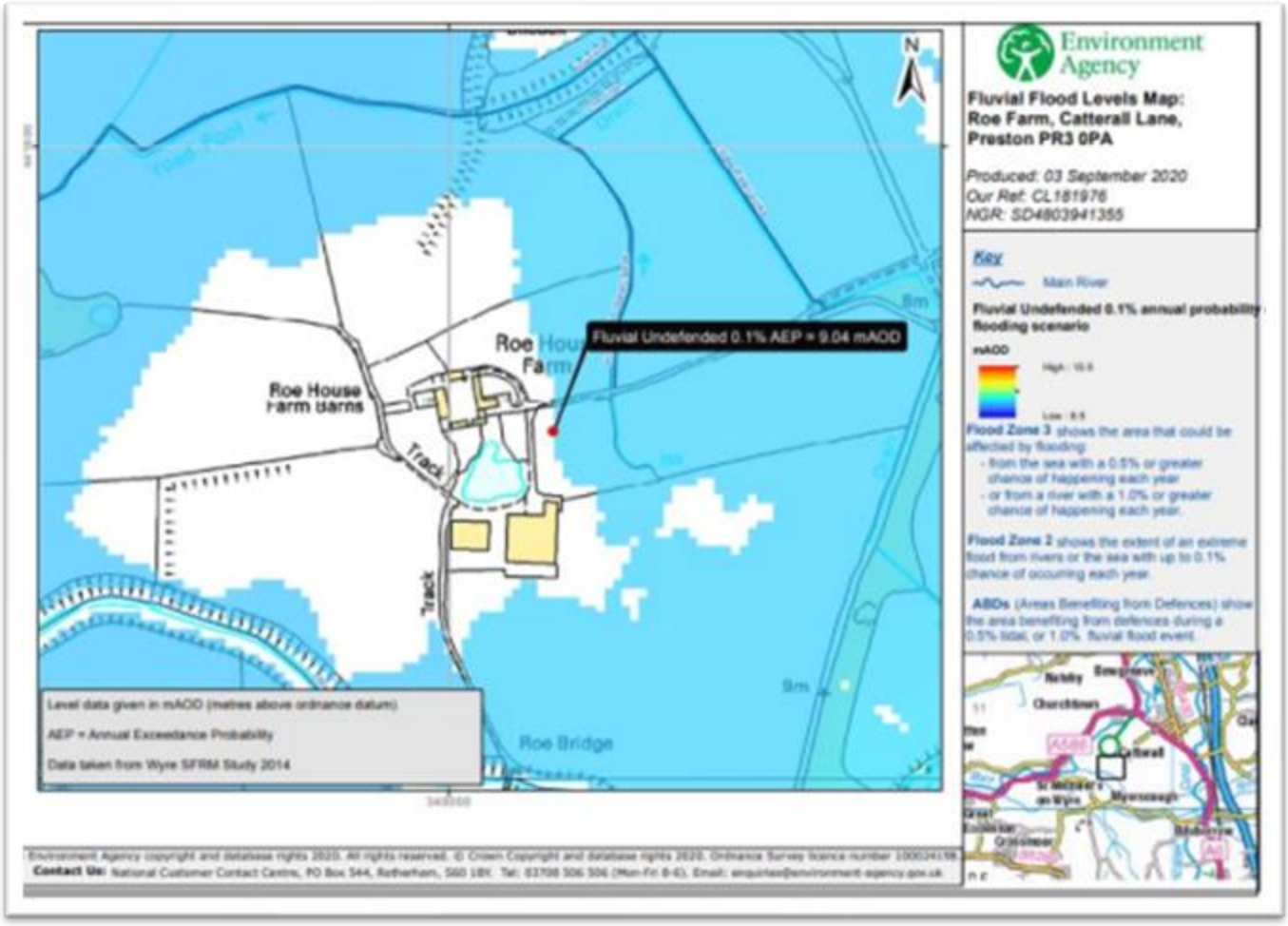
21. The flood risk in this scenario has a 1 in 1000 annual probability. The levels fall within the mid-range of the colour value chart and gives a level of 10.20 mAOD. With CC Allowance (plus 84mm) equates to 11.04 mAOD.

Fluvial Undefended 1% AEP



22. The fluvial undefended scenario has a 1 in 100 annual probability. The site for the application is outside of modelled levels in this scenario fall within the low range of 8.78 mAOD, With CC Allowance (plus 84mm) equates to 9.62 mAOD. This is below the existing site levels of 11 mAOD and therefore the proposal is free from flood risk in this scenario.

Fluvial Undefended 0.1%



23. The flood risk in this scenario has a 1 in 1000 annual probability. The levels fall within the mid-range of the colour value chart and gives a level of 9.04 mAOD. With CC Allowance (plus 84mm) equates to 9.88 mAOD.

Mitigation and Building Design

24. On review of the product 4 information, the flood risk events related to the site which need to be considered in the building design and resilience measures are as follows: -

• Defended Fluvial Scenario 0.1% modelled level 10.20 mAOD and 11.04 mOD (CC allowance) – potential flood waters between 0 m to 0.3m.

25. Considering that the development proposed is a simple roof covering, 7 metres above ground levels, with no changes to existing ground levels proposed, it is not considered that the specific development type needs to incorporate any flood resistance or resilience.

Safe access and egress

The site is in an area benefitting from the Environment Agency's flood warning service and the business operators 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.

The proposal does not concern a habitable building so no evacuation plan is required.

CONCLUSIONS & RECOMMENDATIONS

It is considered that the site, although falling within flood zone 2, benefits from defences means the likelihood of flood waters affecting the site is significantly reduced. The fluvial flood risk at this site is therefore considered to be low and below the thresholds required to incorporate flood resistance into the development.

The risk of flooding from canals, reservoirs and other sources is low. The flood risk from groundwater is low. The risk from sewer flooding and pluvial runoff is low.

Development drainage will not change the flood risk up stream or downstream of this location and as the impact of surface water flow from the site will be mitigated with minimal effect to the surrounding area, the risk of flooding from the development drainage is low.