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FLOOD RISK ASSESSMENT

HOLME CROFT FARM

BRAYSTONES

BECKERMET

CUMBRIA

CA21 2YL

FOR THE ERECTION OF A NEW FARM BUILDING AT HOLME CROFT FARM

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SCOPE OF THE ASSESSMENT

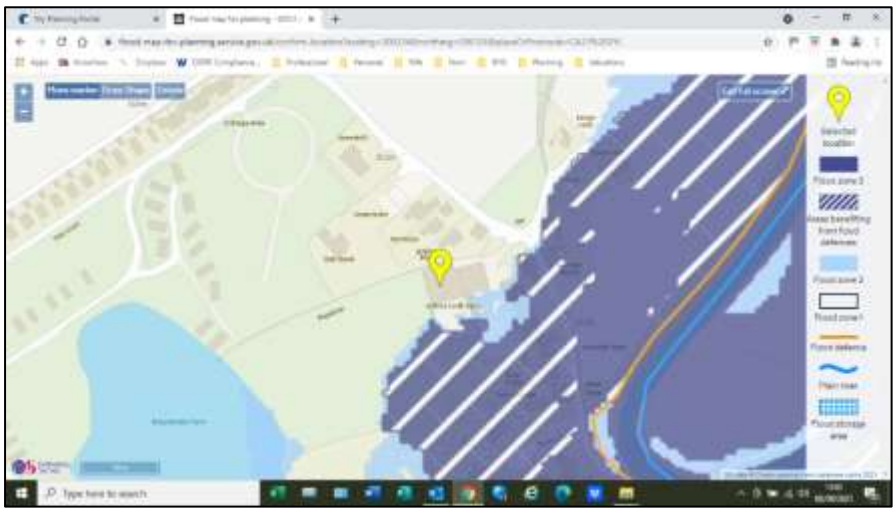
The National Planning Policy Framework (NPPF) sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Supporting Planning Practice Guidance is also available.

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.

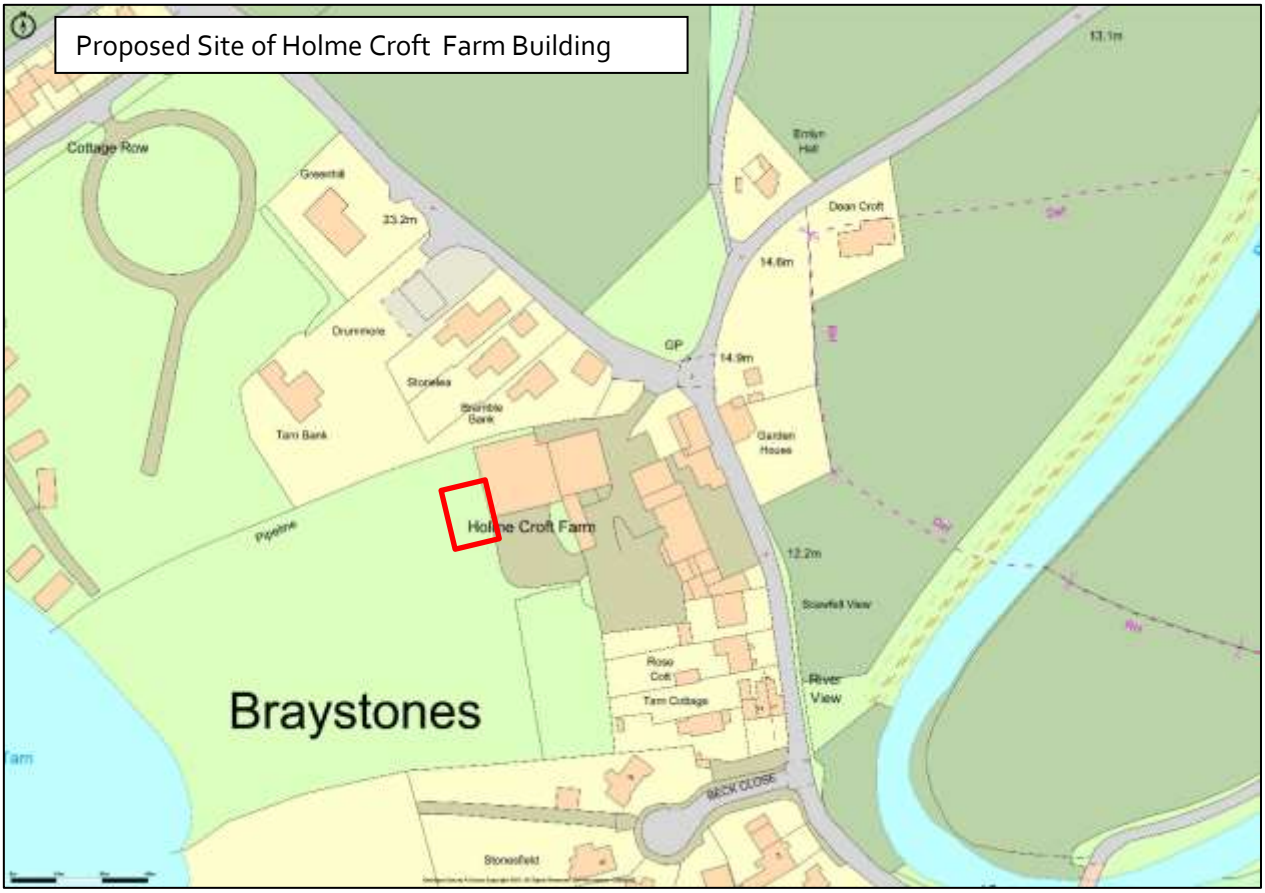


CONSULTATION & GUIDANCE

The site is identified on the Environment Agency's flood mapping as lying within Flood Zone 2(This Area does benefit from Flood Defences).

The site lies within a flood warning area where free flood warnings are issued to homes and businesses when flooding is expected.

Advice from the Environment Agency is that finished floor levels of buildings within a Flood Zone 2 area should be set a minimum of 750mm above the general ground level and that flood proofing measures should be implemented to ensure future occupants are not at an unacceptable level of flood risk.



SOURCE OF FLOOD RISK

This section of the Flood Risk Assessment looks at the flood risk to the site before any mitigation measures are put into place and hence identifies where mitigation will be required. This document will continue to explain the mitigation measures proposed and the residual risk following implementation of any proposed mitigation.

Tidal flooding

The site is identified on the Environment Agency's flood mapping as lying partially within Flood

Zone 2. The site lies within an Environment Agency flood warning area.

Fluvial flooding

The risk of fluvial flooding in this location is low.

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.

Development drainage

Surface water (including the risk of sewers and culverted watercourses surcharging) poses the highest risk of more frequent flooding. Surface water drainage from new developments is critical in reducing the risk of localised flooding.

If surface water runoff is not managed appropriately, there may be an increased risk presented elsewhere from development drainage, and the aim should be to implement appropriate sustainable drainage systems (SuDS) to treat and contain flows and mimic the existing conditions.

Where possible the preference for dealing with surface water runoff from the developed site is for it to infiltrate back into the ground or alternatively to a watercourse. Only if it is not possible for either of these options is surface water from the development to be allowed into the public sewers.

RISK OF FLOODING TO PROPOSED DEVELOPMENT

Tidal Flood Risk

It should be noted that the indicative Environment Agency Flood Zones shown on the planning maps do not take account of the existing flood defences.

Following advice from the Environment Agency, finished floor levels of a proposed development are generally to be set a minimum of 750mm above the general ground level and flood proofing measures are to be implemented to ensure future occupants are not at an unacceptable level of flood risk.

In this case, as the building is for residential purposes, and following advice from the EA, it is considered that the floor levels of the proposed building should be set no lower than 750mm above the existing ground level of the site. A hedgerow will be created around the site, which will result in the site having additional flood protection to the surrounding ground levels.

Fluvial Flood Risk

The risk of fluvial flooding is considered to be low.

Canals, reservoirs and other sources

The risk of flooding from canals, reservoirs and other sources is therefore low.

Groundwater

There are no recorded incidents of flooding associated with groundwater levels within the site. BGS data states there is limited potential for groundwater flooding to occur within the site. Therefore the flood risk from groundwater is low.

Sewer Flooding and Pluvial Runoff

Due to the nature of the adjoining areas there is only limited potential for pluvial runoff from heavy rainfall events to be conveyed towards the site. As such the risk is low.

The Environment Agency Risk of Flooding from Surface Water map indicates the site is at a very low risk of surface water flooding, and there is a low to medium risk of surface water flooding. As such the risk from sewer flooding and pluvial runoff is low.

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.

Site arrangements

Finished levels

It is considered that the current defences offer adequate protection and there is, therefore, not a significant risk from any flooding on this site.

Following advice from the Environment Agency, the finished floor levels of the proposed development building are to be set a minimum of 750mm above the general ground level and flood proofing measures are to be implemented to ensure future visitors are not at an unacceptable level of flood risk. The existing ground level of the site is 11.20m AOD. Finished site levels of the buildings are therefore to be set at 12.25m AOD.

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.

Future proofing against flooding

The building will be future proofed against future flood events. The measures can include the use of concrete floors, provision of flood barriers on ground floor doors, and access points and bringing in electrical services into the building at a high level so that plugs are located above possible flood levels.

CONCLUSIONS & RECOMMENDATIONS

The site lies partially within Flood Zone 2. The risk of fluvial flooding is low.

The tidal flood risk due to overtopping the defences or a breach scenario is low.

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.

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

- The finished ground levels of the proposed development building are to be set a minimum of 750mm above the general ground level, i.e. 12.20m AOD.
- The building 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.
- The building is to be future proofed against future flood events.