



FLOOD RISK ASSESSMENT

High House Farm
Whitehaven
Cumberland
CA28 9RB

October 2025
2025-064
Rev A

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1.0 INTRODUCTION

1.1 CONTEXT

Waterway Drainage Engineering Ltd have been instructed to prepare a Flood Risk Assessment (FRA) for the proposed erection of 5 dwellings at High House Farm, Whitehaven. CA28 9RB.

This FRA has been completed in accordance with guidance presented within the National Planning Policy Framework (NPPF) and its associated Planning Practice Guidance (PPG), taking due account of current best practice documents relating to assessment of flood risk published by the British Standards Institute (BS8533).

1.2 SITE LOCATION

The proposed development is located High House Farm, Whitehaven as shown in *Figure 1*.

The National Grid Reference location details of the proposals are shown below:

- Eastings 297368
- Northings 515642



Figure 1: Location Plan

1.3 TOPOGRAPHY

A review of the topographical data for the proposed development site indicates ground levels range between 80.595 m to 83.207 m above Ordnance Datum (AOD). The lower elevations are present to the south east of the site, and higher elevations to the north west.

1.4 HYDROLOGY AND DRAINAGE

The nearest ordinary watercourse to the site is an un-named ordinary watercourse, located approximately 43 m south west of the site, which flows in a south easterly direction towards Mirehouse Pond.

Soils at the site are described by the Cranfield Soil and Agrifood Institute, supported by the Department for Environment, Food and Rural Affairs (DEFRA), as freely draining slightly acid loamy soils.

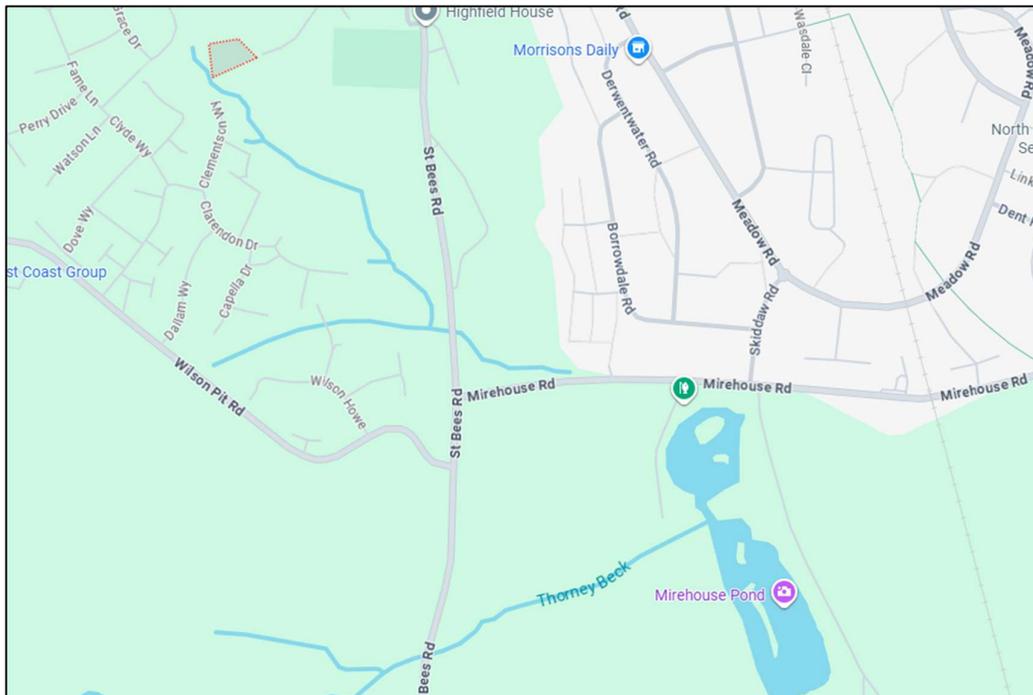


Figure 2: Location of watercourses near the Site

1.5 GEOLOGY AND HYDROGEOLOGY

British Geological Survey mapping indicates that the bedrock geology of the site consists of Pennine Middle Coal Measures Formation - Mudstone, siltstone and sandstone.

1.0 FLOOD RISK POLICY STATUS

1.1 DEVELOPMENT PROPOSALS

The proposals are for the proposed erection of 5 dwellings at High House Farm, Whitehaven. CA28 9RB.

1.2 FLOOD ZONE CLASSIFICATION

The definition of the Environment Agency Flood Zone is provided within PPG Table 1: Flood Zones and is included for reference below:

- *Flood Zone 1 – Low probability. Is defined as land which could be at risk of flooding from fluvial or tidal events with less than 0.1% annual probability of occurrence (1:1,000 year).*
- *Flood Zone 2 – Medium probability. Is defined as land which could be at risk of flooding with an annual probability of occurrence between 1% (1:100 year) and 0.1% (1:1,000 year) from fluvial sources and between 0.5% (1:200 year) and 0.1% (1:1,000 year) from tidal sources.*
- *Flood Zone 3a – High probability. Is defined as land which could be at risk of flooding with an annual probability of occurrence greater than 1% (1:100 year) from fluvial sources and greater than 0.5% (1:200) from tidal sources.*
- *Flood Zone 3b – the Functional Floodplain. Is defined as land where water has too flow or be stored in times of flood. Local Planning Authorities should identify in their Strategic Flood Risk Assessment areas of functional floodplain in agreement with the Environment Agency. In the absence of definitive information, it is often defined as land that would flood with an annual probability of occurrence of 5% (1:20) or greater.*

In assessing the Flood Zone, the protection offered by any flood defence structures, and other local circumstances, is not considered by the Environment Agency.

Based upon the Environment Agency Flood Map for Planning (illustrated in *Figure 3*), the site lies within Flood Zone 1 (Low Probability) throughout the Site.

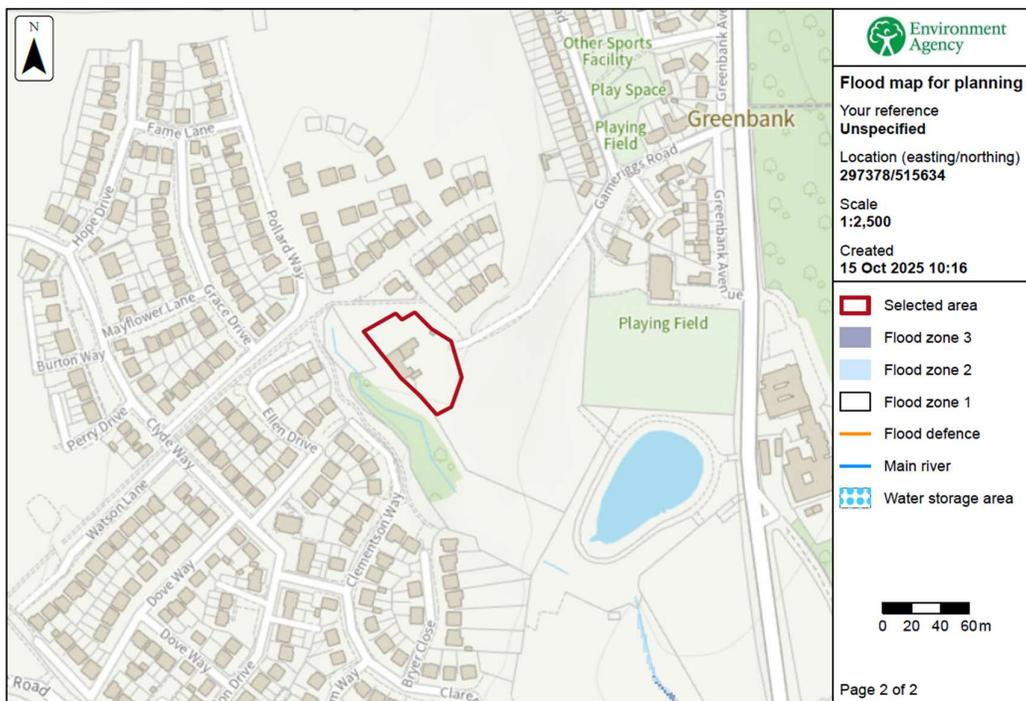


Figure 3: Flood Zone Mapping

2.3 NATIONAL PLANNING POLICY

The FRA has been completed in accordance with the guidance presented within the NPPF and with reference to the PPG.

2.3.1 Flood Risk Vulnerability

With reference to paragraph 66 of PPG Table 2: Flood Risk Vulnerability Classification, the proposed development relating to:

‘Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.’

is considered ‘more vulnerable’ in terms of flood risk classification.

2.3.2 Flood Risk Compatibility

As discussed in Section 2.2, the site lies within Flood Zone 1. With reference to PPG Table 2: Flood risk vulnerability and flood zone compatibility confirms that the development use is appropriate, and the Exception test need not be applied.

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test Required	✓	✓
Zone 3a	Exception Test Required	✓	X	Exception Test Required	✓
Zone 3b Functional Floodplain	Exception Test Required	✓	X	X	X

Figure 4: PPG Table 2

3.0 POTENTIAL SOURCES OF FLOODING

3.1 METHODOLOGY AND BEST PRACTICE

This report has been prepared in accordance with the advice and requirements prescribed in current best practice documents relating to management of flood risk in development published by the Construction Industry Research and Information Association (CIRIA), BS85333, and the Environment Agency's National Standing Advice on Development and Flood Risk.

A screening study has been completed to identify whether there are any potential sources of flooding at the Site which may warrant further consideration. If required any potential flooding issues identified in the screening study would then be considered in subsequent sections of the assessment.

3.2 SCREENING STUDY

There are several potential sources of flooding, and these include:

- Flooding from rivers or fluvial flooding.
- Flooding from the sea or tidal flooding.
- Flooding from surface water and overland flow.
- Flooding from groundwater.
- Flooding from sewers.
- Flooding from reservoirs, canals, and other artificial sources; and
- Flood from infrastructure failure.

The flood risk from each of these potential sources is discussed below.

3.2.1 Flooding from Fluvial and Tidal Sources

Mapping published by the Environment Agency indicates that the proposed development lies entirely within an area where flooding is considered to have a 'very low probability of occurrence'. Flood Zone 1 represents a risk of flooding from fluvial sources of less than 0.1% each year, which is continuous in the 2036 and 2069 scenario.

Therefore, as the risk of fluvial and tidal flooding on site is considered to be very low; this risk factor is not considered further.

3.2.2 Flooding from Surface Water and Overland Flow

Mapping published by the Environment Agency illustrates that the proposed development site is within an area considered to be at a very low risk of surface water flooding. A very low risk of surface water flooding represents a risk of flooding of less than 0.1% each year.

It is also noted that the yearly chance of flooding at the development site between 2040 and 2060 remains as a very low risk. Therefore, as the risk of surface water flooding on site is considered to be very low; this risk factor is not considered further.

3.2.3 Flooding from Groundwater

Groundwater flooding can occur where sites are located on permeable ground, particularly where there are significant variations in local topography and geology. After a prolonged period of rainfall and groundwater recharge, a considerable rise in the water table can result in this intersecting the ground surface, resulting in flooding. Due to the slow response of groundwater systems any resulting flows and inundation could persist for an extended period.

The Environment Agency flood risk mapping, available online, consider the risk of flooding from groundwater to be unlikely in the area of the proposed development. This is primarily due to the sandy nature of the soils on site.

Flooding from this source is therefore considered to be Low and is not considered further.

3.2.4 Flooding from Sewers and Water Mains

No public sewers flooding is noted within the Cumbria Local Flood Risk Management Strategy for the proposed development Site. This the risk of flooding from sewers and water mains is considered negligible.

3.2.5 Flooding from Reservoirs, Canals, and Artificial Sources

With reference to the risk of flooding from reservoirs, the Environment Agency consider that flooding from reservoirs is unlikely in the proposed vicinity of the development Site.

There are no canals or other artificial water sources located near the site.

3.2.6 Flooding from Infrastructure Failure

The site is not within an area benefitting from flood defences.

As such, flooding from this source is therefore considered to be low and is not considered further.

3.3 SUMMARY OF FLOODING

A summary of potential sources of flooding and the flood risk arising from them is presented in *Figure 5*.

Potential Flood Source:	Potential Flood Risk of site:
Fluvial and tidal sources	Very Low
Surface water and overland flow	Very Low
Groundwater	Low
Sewers and water mains	Low
Reservoirs, canals, and artificial sources	Low
Infrastructure failure	Low

Figure 5: Summary of potential sources of flood risk

4.0 CLIMATE CHANGE

4.1 ANTICIPATED LIFETIME OF THE DEVELOPMENT

PPG and best practice recommend that, in the absence of more specific information, a 80 year lifetime is assumed for a residential development.

4.2 CLIMATE CHANGE REVIEW

In May 2022, the Environment Agency issued updated guidance on the impacts of climate change on flood risk in the UK to support the NPPF. This advice sets out that peak rainfall intensity, sea level, peak river flow, offshore wind speed, and extreme wave heights are all expected to increase in the future.

PPG recommends that considerations for future climate change are included in FRA's for proposed developments. The consideration of climate change for the proposed development site considers the possible changes in peak rainfall intensity and peak river flow. The guidance acknowledges that there is considerable uncertainty with respect to the absolute level of change that is likely to occur. As such the document provides an estimate that reflect a range of different emissions scenarios.

4.2.1 Peak Rainfall Intensity Allowance

For peak rainfall intensity the guidance states that flood risk assessments should assess both the 'central' and 'upper end' allowances to understand the range of impact. As detailed, these equate to uplifts of 35% and 50% respectively. For the purposes of this assessment the 1% annual exceedance rainfall event upper end allowance is to be utilised (50%) for all surface water drainage calculations.

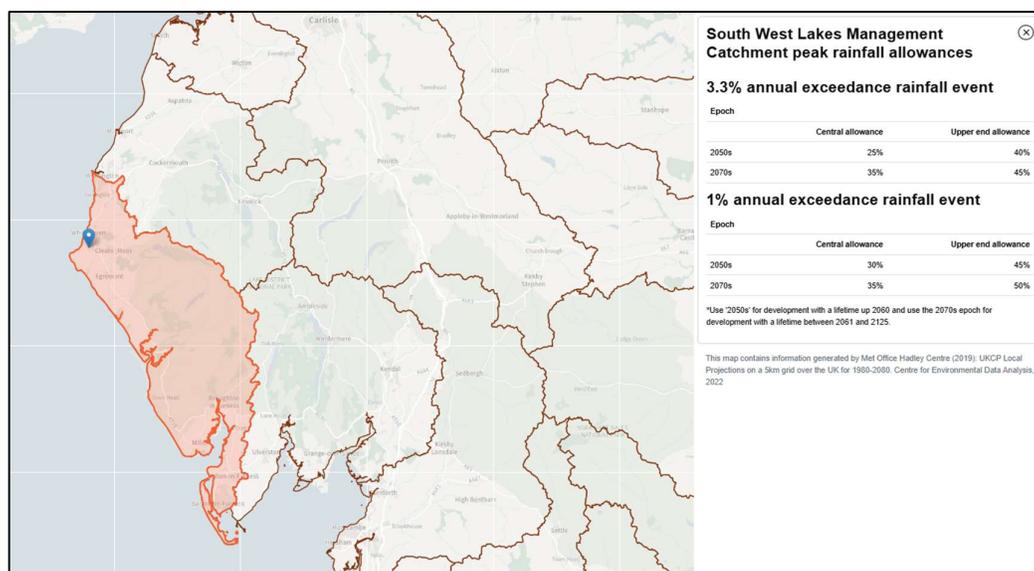


Figure 6: Peak rainfall intensity allowance

4.2.2 Peak River Flow Allowance

Peak river flow allowances show the anticipated changes to peak flow by management catchment. Management catchments are sub-catchments of river basin districts. The peak river flow allowances are for management catchments.

The allowances are based on percentiles from UKCP18 data. A percentile is a measure used in statistics. They describe the proportion of possible scenarios that fall below an allowance level. The:

- Central allowance is based on the 50th percentile.
- Higher central allowance is based on the 70th percentile.
- Extreme allowance is based on the 95th percentile.

An allowance based on the 50th percentile is exceeded by 30% of the projections in the range. At the 70th percentile it is exceeded by 39%. At the 95th percentile it is exceeded by 63%.

For the South West Lakes Management catchment, the guidance for peak river flow allowances are shown below within *Figure 7*.

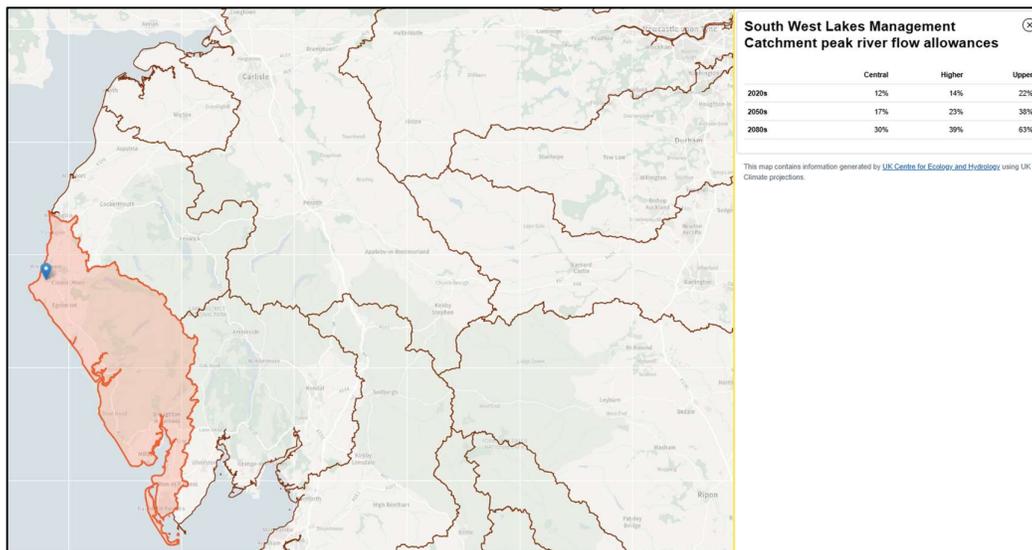


Figure 7: Peak River flow allowance

5.0 ASSESSMENT OF FLOOD RISK

5.1 POTENTIAL SOURCES OF FLOOD RISK

The flood screening assessment reported in Section 3.0 indicates that the development site is at a very low risk from all sources of flooding.

5.2 HISTORICAL FLOODING

No historical flooding has been noted on Site.

6.0 FLOOD RISK MANAGEMENT MEASURES

6.1 SITE DRAINAGE

A drainage system is already provided to manage all potential rainfall and subsequent surface water flows at the Site from the existing farm buildings. The existing drainage network discharges into the ground via a soakaway which is to remain as existing.

7.0 CONCLUSION

Waterway Drainage Engineering Ltd have been instructed to prepare a Flood Risk Assessment (FRA) for the for the erection of 5 dwellings at High House Farm, Whitehaven. CA28 9RB.

With reference to the site-specific flood data provided by the Environment Agency, the Site is considered to lie within Flood Zone 1. Planning Practice Guidance defines the proposed development as a 'More Vulnerable' use. This type of development is considered appropriate for the Flood Zone classification.

The technical assessment of risk presented within this flood assessment demonstrates that the flood risks present at the Site are manageable and that development on the site could be designed in a way that, subject to approvals and appropriate ongoing management, is 'safe' in flood risk terms throughout its lifetime without increasing flood risk elsewhere.