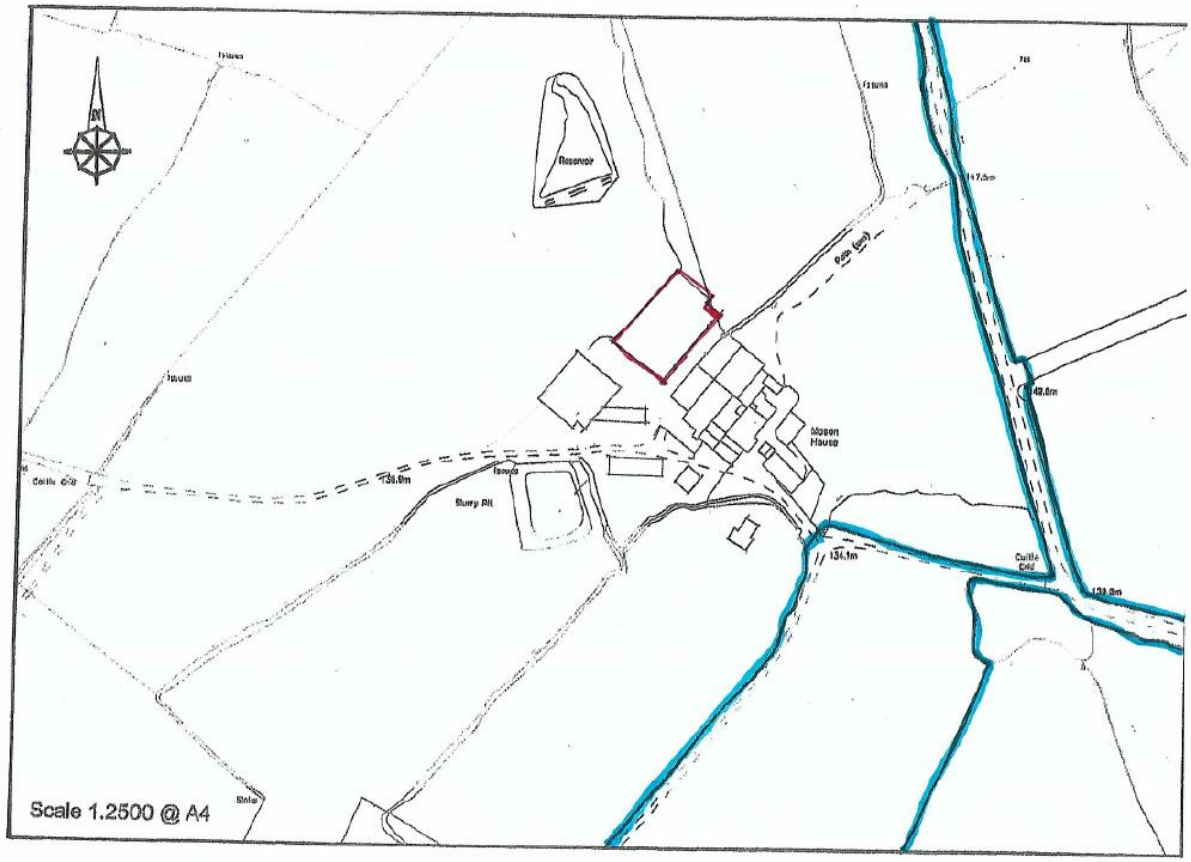
Flood Risk Assessment

IN SUPPORT OF A PLANNING APPLICATION AT
J & S Hartley, Mason House Farm BB7 3DD



Graeme Surtees and Associates LTD
The Barn,
Stodday Village,
Aldcliffe,
Lancaster, LA2 0AG

Contents

1.0 Introduction

"Flood risk" refers to the likelihood of flooding occurring combined with the potential impacts it may cause. Areas considered at risk of flooding are those that could be affected by flooding from any source—either now or in the future. These sources include rivers, the sea, surface water (from direct rainfall), rising groundwater, overloaded sewers and drainage systems, reservoirs, canals, lakes, and other man-made structures. Flood risk also takes into account how these different sources can interact and compound one another.

This concept is central to applying the presumption in favour of sustainable development set out in paragraph 11 of the **National Planning Policy Framework (NPPF)**.

For river and coastal flooding, areas at risk generally include land within **Flood Zones 2 and 3**, or areas identified through a **Strategic Flood Risk Assessment (SFRA)** as being vulnerable to future flooding. It can also include land within **Flood Zone 1** if the **Environment Agency** has advised the local planning authority that the area has **critical drainage problems**.

1.1 Site Details

This report is produced to support a planning application for the construction of a covered livestock gathering area at Mason House Farm, Bashall Eaves, SD 68998 43855 (see Location Plan attached – Annex A).

The site is located approximately 1 miles north of Bashall Eaves with access to the nearest highway via a farm track. The site lies at elevation 147m AOD.

The site consists of an area of concrete yard.

The site has a slight slope approximately 300mm west to east and 200mm south to north. There are no watercourses within 70 metres (NW). The closest water course is 1 metre below the level of the proposed building.

The site is accessed by a single lane stone track off Clitheroe Road. The access point at the highway is at elevation 142m AOD and falls to 134m AOD towards the site.

1.2 Flood Risk

Annex A shows site falls in Flood Zone 1. Table 1 defines land within Zone 1 as having a low probability of River and Sea flooding. Annexes B & C provides a flood risk summary of the site.

Table 1: Flood Zones

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	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)
Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

The proposal is for an agricultural building within Flood Zone 1. Flood Zone 1 is defined as land assessed as having less than a 0.1% annual probability of flooding from fluvial and tidal sources. Table 3 of the Planning Practice Guidance identifies that any development is considered appropriate within Flood Zone 1.

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable
Flood Zone 1	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exception test required	✓
Flood Zone 3a	Exception test required	✓	**x**	Exception test required
Flood Zone 3b	Exception test required	✓	**x**	**x**

Key: ✓ Development is appropriate X Development should not be permitted.

NPPF Annex 3 indicates that land and buildings used for agriculture and forestry fall into the 'Less Vulnerable' classification.

NPPF Annex 3 Flood Risk Vulnerability Classification

Less vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.

1.3 Proposed Development

The proposed development is to construct a 36.5m x 12.2m steel frame building on an existing yard.

The floor will be concrete. Wall construction is concrete panels with timber clad boards above.

2.0 Flood Defense Assessment

2.1 Present & Future Flood Risk

The site is not protected by fluvial defenses. Annex D shows the flood risk for the site with and without flood defenses for the present and with climate change.

3.0 Historical Flooding.

The site has no history of flooding. The applicant lives on the site and can report no flooding has ever occurred at the site or on the access track during his ownership of the land for over 40 years.

4.0 Sequential Test

As noted above, the NPPG states that when applying the sequential test a pragmatic approach to the availability of alternatives sites should be taken. It gives an example of a planning application for an extension to an existing business premises and suggests that it ***might*** *be* ***impractical to*** *suggest that there are more suitable alternative locations for that development elsewhere.*

.

Statement of operational circumstances

The nature of the farming business and the need for building is justified to optimise efficiency of operations.

The location of the building is in Flood Zone 1

As shown an alternative site is impractical and the sequential test is not required.

5.0 Surface Water Flooding

POTENTIAL SOURCES OF FLOOD RISK

The table below identifies the potential sources of flood risk to the site, and the impacts which the development could have in the wider catchment prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within Section 6.0.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The site is located in flood zone 1.
Tidal				X	There are no tidal influences effecting the site.
Canals				X	None present.
Groundwater			X		Ground conditions are not conducive to fluctuating groundwater levels.
Reservoirs and waterbodies				X	The site is shown to fall outside of the catchment for reservoir and waterbodies flooding.
Sewers			X		The site in question is higher than the surrounding sewers therefore there is a very low risk.
Pluvial runoff		X			The site is within a pluvial flooding area
Effect of Development on Wider Catchment				X	The impermeable area of the site is not being altered.

5.1 FLUVIAL FLOOD RISK

As previously mentioned, the site is shown to be within Flood Zone 1 and therefore poses a low risk to the proposed development.

The risk of flooding posed to the proposed development is low. This is because there is only one watercourse near the site that can pose a threat. However, the watercourse is 75m away from the site and is it a lower level.

Mitigation measures to address the residual risk posed by the watercourses surrounding the site are discussed within Section 3.0 of this report.

5.2 GROUNDWATER FLOOD RISK

Subject to completion of site investigation to confirm we would assume that natural ground water level is located well below the site surface and the nature of the strata means it is unlikely that there will be perched water above this level.

We therefore do not consider there is a risk of groundwater flooding affecting the development subject to final confirmation upon completion of suitable site investigation.

5.3 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES

Mapping demonstrates the site and possible access routes are far removed from the flood extent associated with flooding from large reservoirs. There is no risk from reservoir flooding.

5.4 FLOOD RISK FROM SEWERS

The site in question lies above any main roads which is potentially where any United Utilities sewers will lie. As such, it is considered that there is no risk of flooding from sewers.

5.5 PLUVIAL FLOOD RISK

Risk of flooding from surface water mapping has been prepared by the Environment Agency, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. The mapping produced by the Environment Agency shows that the extension is just at risk of surface water flooding. These areas encroach on the existing building.

Therefore, the risk posed by this threat is considered medium.

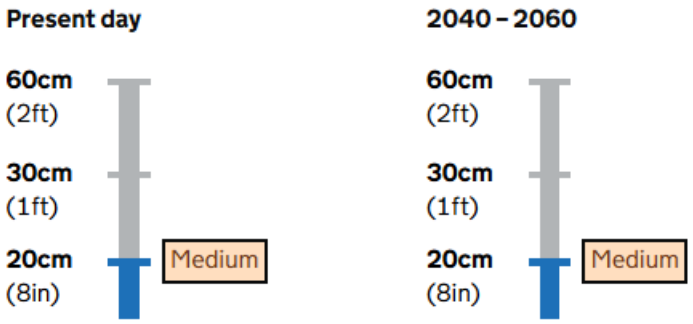
Surface water flood maps showing the predicted depth of flooding for the period to 2040 and for the period 2040 – 2060 are shown as Annex E.

The risk of flooding posed to the proposed development is low. This is because there is only one watercourse near the site that can pose a threat. However, the watercourse is 70m away from the site and is it a lower level.

5.6 IMPACT ON WIDE CATCHMENT AREA

The risk of annual flooding to a depth of 20cm is medium. The amount of impermeable area will not be altered. Therefore, the existing drainage systems will be suitable discharge the surface water from the site. This also means that there will be no additional run-off leaving the site.

Chance of flooding to 20cm

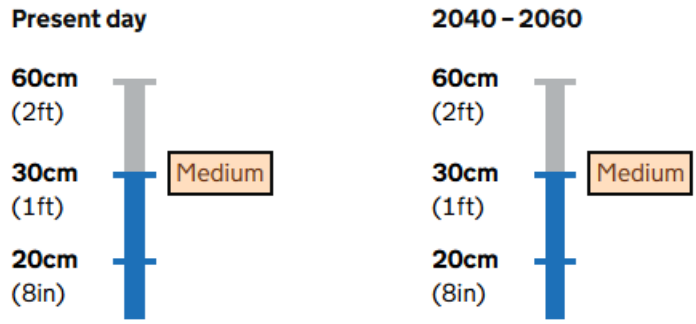


At this location there's a **Medium** chance of flooding to **20cm** (or 8 inches).

Between 2040 and 2060 this stays at a **Medium** chance of flooding to **20cm** (or 8 inches).

At 20cm, flood water can get into some homes and buildings, especially if the property has a basement. At this level, water can also damage your car or cause a breakdown.

Chance of flooding to 30cm

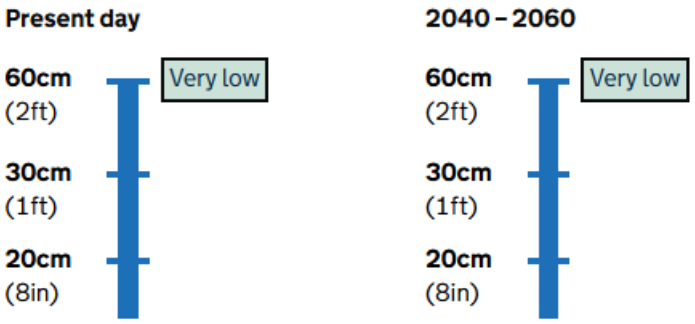


At this location there's a **Medium** chance of flooding to **30cm** (or 1ft)

Between 2040 and 2060 this stays at a **Medium** chance of flooding to **30cm** (or 1ft)

At 30cm, flood water can get into homes and buildings. Water at this level can also move a car, damage roads and cause major traffic disruption.

Chance of flooding to 60cm



At this location there's a **Very low** chance of flooding to **60cm** (or 2ft)

Between 2040 and 2060 this stays at a **Very low** chance of flooding to **60cm** (or 2ft)

At 60cm, we expect flood water to get into homes and buildings. Water at this level can float most vehicles, including 4x4s.

Flood protection measures are usually effective up to 60cm. You should not try and keep flood water out of buildings if it's over 90cm. Water at this level can cause collapse or permanent structural damage.

Return to surface water to read advice on how to manage your risk from flooding.

Mitigation measures to address the residual risk posed by the watercourses surrounding the site are discussed within Section 6.0 of this report.

6.0 Flood Precaution and Mitigation.

There is low risk of flooding at the proposed site of the building and the following measures are required to mitigate the risk of flooding.

These include the following:

- The applicant is signed up to the Environment Agency Flood Warning Alert

In the event of an extreme storm notification on the alert service the following Flood Management Plan should be put in place:

- Advise all occupiers on the site that a Flood Alert has been issued and they should prepare to vacate.
- Maintain contact with the Environment Agency and Local Authority.
- Monitor flood levels of the nearby watercourse, if water levels rise up top of the bank level, then the slurry storage building will stopped until flood levels are reduced.

7.0 Impact on Surrounding Properties

The proposal is a medium sized building with a roof area of 445.30m2. The amount of impermeable area will not be altered. Therefore, the existing drainage systems will be suitable discharge the surface water from the site. This also means that there will be no additional run-off leaving the site.

The existing soakaway system designed to SUDs standards will deal with surface water drainage.

8.0 Conclusions

- The site is located within Flood Risk Zone 1 with a low probability of flooding. The intended use is agricultural and classed as less vulnerable.
- The exception test is not required.
- The Sequential Test is not required.
- Flood precaution and mitigation measures have been identified
- The applicant has signed to the EA Flood Warning Alert.