



FLOOD RISK ASSESSMENT

SUBMITTED IN SUPPORT OF A PLANNING APPLICATION

FOR

THE ERECTION OF A MACHINERY STORE

AT

LAND TO THE SOUTH WEST OF KEXBY HOUSE,
YORK ROAD, WILBERFOSS, YO41 5LE

ON BEHALF OF

MR R WILLIS

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Summary

This report and flood risk assessment (FRA) is submitted to support a minor planning application for the erection of a maintenance / machinery storage unit to serve a tourist log cabin development at land known as Ten Acres to the south west of Kexby House.

It has been produced to meet the statutory requirements of the Environment Agency (EA) and aims to enable both the EA and the local planning authority to satisfy themselves that it is feasible and suitable to use the site in a manner that accords with the guidelines provided in the National Planning Policy Framework (NPPF) which normally indicates that a sequential test should be undertaken in Flood Zones 2 & 3.

The NPPF states that “*A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding*”.

The findings of this report can be summarised as follows:-

- The site of the new building is just located in Flood Zone 1 on the boundary of Flood Zones 2 & 3 as identified on the EA’s indicative flood risk maps (see **Appendix 1**).
- The application site is not in excess of 1 ha
- The proposed use is considered to be a “less vulnerable” use in Table 3 of the Flood Risk Vulnerability Classification
- The actual site of the maintenance unit is located 1-2 m from Flood Zone 2 and anecdotal evidence suggests it only ever very rarely floods in Flood Zone 2 so the site of the building has a negligible probability of flooding.
- The project will ensure that surface water will naturally soakaway into the ground
- The existence of the proposed small structure and the fact that it is on the edge of the flood area means that the scheme will not displace land that is currently used for flood drainage; and the development will not increase flood risk elsewhere.
- It is considered that the welfare unit will not contribute to the overall increase in flood risk to the surrounding area.
- As well as demonstrating this, recommendations have been made in order to ensure that the property remains at a low risk of flooding for its lifetime - the floor level will be set 100mm above the ground level and an appropriate basic warning and evacuation plan will be kept posted in the building if required.

The development proposal is considered to be fully acceptable in this context. The flood risk assessment has been prepared in a format that meets with NPPF guidelines.

1.0 Introduction

This Flood Risk Assessment has been prepared on behalf of Mr R Willis, the landowner, in support of the owners planning application for the erection of a small machinery storage and maintenance shed on land to the south west of Kexby House. The proposed site is located within the boundary of the East Riding of Yorkshire Council.

This report has been formatted in accordance with the requirements outlined in the NPPF to assess the Flood Risk both to the development itself and the impact on the surrounding area.

This report has been submitted following informal discussions with the landowner and research of the locality and covers the issues set out in the local authorities validation checklist.

2.0 Site Location / Description

The site is located to the south west of the nearby dwelling known at Kexby House and forms part of a separately owned holding extending to around 10 acres. The land is down to grass and is bounded to the south by the A1079 road, to the north and west by the River Derwent and to the east by woodland and grazing land around Kexby House. The grid reference of the site is SE707512.

A site location plan (edged red) has been submitted with the planning application and **Figure 1** below (not to scale) shows the site and its general locality. The plan at **Appendix 2** shows the proposed site layout (ref. 1024.502 1:100 @ A1).



Figure 1

The nearest watercourse is the River Derwent which is located approx. 160 m to the north of the development site. The watercourse has been known to flood but very rarely floods into the wider zone of Flood Zone 3 away from the river. The location of the proposed maintenance shed is at 8.75m above sea level just in Flood Zone 1, well away from the lower land that has a risk of flooding which is below 6m above sea level.

3.0 Flood Risk Assessment

A site-specific flood risk assessment is carried out to assess the flood risk to and from a development site. Where necessary, the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users (Table 3 – Flood Risk Vulnerability (see Section 6).

The objectives of a site-specific flood risk assessment are to establish:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- the evidence for the local planning authority to apply (if necessary) the Sequential Test, and;
- whether the development will be safe and pass the Exception Test, if applicable.

4.0 Sequential Test

The operational development, namely the siting of a maintenance shed would be located just in Flood Zone 1. The access to the site is in Flood Zone 2 and the land to the west in Flood Zone 3. Land and property in flood zone 3 has a high probability of flooding.

Normally a sequential test needs to be conducted if a proposed development is in Flood Zone 2 or 3 and a test has not already been done for a development of the type being planned. The EA flood map for the locality is provided at **Appendix 1**.

The Sequential Test ensures that a sequential approach is followed to steer new development to areas with the lowest probability of flooding. Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2.

The specific site for the building is just in Flood Zone 1. The local planning authority have already granted planning permission for the erection of a timber log cabin for tourist use and a proposed services hut to house the electric and water meters and provide a dry and secure store for tools and other essential equipment.

In this case the proposed small building (circa 5.5 x 10m) appears be ideally located just in Flood Zone 1 as this would be just away from the working areas of the site and easily accessible off the highway and main point of access.

In this case it is considered that the sequential test is not required. The building will be sited in Flood Zone 1.

5.0 Exception Test

Where a sequential test shows that it is not possible to use an alternative site, it may be necessary to do another test called the “exception test” but only where the development is:

- Highly vulnerable and in Flood Zone 2
- Essential infrastructure and in Flood Zone 3a or 3b; or
- More vulnerable in Flood Zone 3a.

In the case of the proposed development, it is not considered to be highly vulnerable and is only for storage and maintenance of machinery.

6.0 Flood Risk Vulnerability Classification

The proposed site of the building falls just inside Flood Zone 1. Sites in these locations have a low probability of flooding and the site is under 1 ha.

In terms of flood risk vulnerability classification, buildings used for storage purposes are less vulnerable as the building / shed will not be occupied by anyone permanently; and a basic warning and evacuation plan can be kept posted in the building if required.

Table 3 of the national guidance is provided on the following page:

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Key:

✓ Development is appropriate

X Development should not be permitted.

It can be seen that the proposed development is **appropriate** in terms of flood risk vulnerability.

We have also reviewed the local Strategic Derwent Flood Risk Assessment (see **Appendix 3**) which indicates that the site falls within a **lower risk** area for flooding.

7.0 Exception Test Analysis

Paragraph 102 of the Framework states that for the exception test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community and a flood risk assessment (this report) must demonstrate that the development will be safe for its lifetime taking into account the vulnerability of its users, without increasing flood risk elsewhere.

The proposed maintenance unit is only 5.5 x 10m in size and is located in a wider area defended from flood risk, being on higher land outside the flood plain which puts the building at lower risk. Zone 1 has the lowest risk, indicating a less than 0.1% probability of flooding. Low risk is defined as flood risk between the 1% (1 in 100) AEP and the 0.1% (1 in 1000) AEP events. The access to the building is equivalent to Flood Zone 2, where an exception test is not required.

The building is adjacent to the services shed which has already been approved and at a similar height above sea level.

The access route and any hardstanding are already designed to be permeable to mimic natural ground in response to rainfall; and are also located at a higher ground level.

Based on available information the site does not appear environmentally sensitive. The proposed development is consistent with current use of the land and approved tourism use adjacent to the site.

The consequences of any flooding, in the very unlikely event that this should occur, will be mitigated using flood resilient construction.

It is proposed that rainfall run-off from the building is disposed of to soakaway naturally into the ground and the access routes have porous surfacing.

8.0 Site Checklist

The following checklist is based on the key objectives as set out in Section 3 above:

- a) **Is the site likely to be affected by current or future flooding from any source?** – the site (footprint) of the building lies in Flood Zone 1 and is sited on free draining land. The land directly around the maintenance unit has never flooded. The project is located close to the edge of Flood Zone 2 but even if within Flood Zone 2 the use would be acceptable (see **Appendix 1**).
- b) **Will the project increase flood risk elsewhere?** – the size of the proposed building is very small circa 55m² and is outside the flood plain. This will not increase flood risk elsewhere.
- c) **Measures proposed** – the area of the site which supports the machinery / maintenance unit will have an impermeable concrete base which will sit above ground level. Development levels for access and ground will be as existing ground level. Finished floor levels will be on the basis of a slight step-up entry with the proposed internal levels being around 100 mm above exterior ground levels. The raised floor will assist in future proofing the unit from a flood risk perspective but it is highly unlikely the site will ever flood.

- d) The sequential test is not required and the exception test shows that the use is one of less vulnerable risk of flooding. Anecdotal evidence shows that other properties exist in the locality at this height above sea level and have not suffered from flooding; being outside the flood plain area.
- e) **Whether the development will be safe and pass the Exception Test?** – the site is an agricultural and rural tourism property. These types of property are less vulnerable. The use is only proposed as being a maintenance / machinery shed which is less vulnerable.
- f) The nearby watercourse does have flood defences in terms of embankments. Despite the fact that the maintenance unit falls close to a zone with a risk of flooding, the topography of the land with an extensive and wide flood plain is such that the River Derwent poses a minimal threat to the proposed building. Water breaching the banks of the river would flow over low-lying farmland and not reach a level where the unit could be adversely harmed.
- g) In terms of further recommendations, the design of the unit is such that the design proposals remain flood resilient for the lifetime of the development. This includes managing any localised accumulation of storm water, storm surcharge and any construction occurring below and at ground level, should include less permeable building materials. The floor can be set at 100mm above ground level and the unit is accessible via an existing permeable stoned access. The maintenance unit is not a permanently habitable structure and as such the risk of harm from flooding is very low and the area of the building is so small that it will not displace any flood storage area even if within the flood plain.

9.0 Existing site drainage system

The existing drainage system involves water percolating into the soil. The land is free draining.

The soils over the wider land at the site are reasonably free draining and have not required extensive underdrainage.

Any waste water will be directed to an existing septic system.

10.0 Conclusion

In conclusion, due to the location and topography of the site of the maintenance unit, the development should not be adversely affected by surface water flooding. It is proposed to utilise source control techniques to reduce the storm water discharge from the proposed development in order to minimise the impact of the development on the existing drainage system and the surrounding area and to comply with EA guidelines.

It is considered that the intention to utilise the maintenance unit to serve the existing site will not contribute to the overall increase in flood risk to the surrounding area.

As well as demonstrating this, recommendations have been made in order to ensure that the property remains at a low risk of flooding for its lifetime. This includes the following:

- Any drainage ditches, watercourses and systems are routinely maintained
- Any construction occurring below and at ground level, should include less permeable building materials.
- Finished floor levels will be at least 100 mm above minimum ground level
- An appropriate basic warning and evacuation plan will be kept posted in the building if required

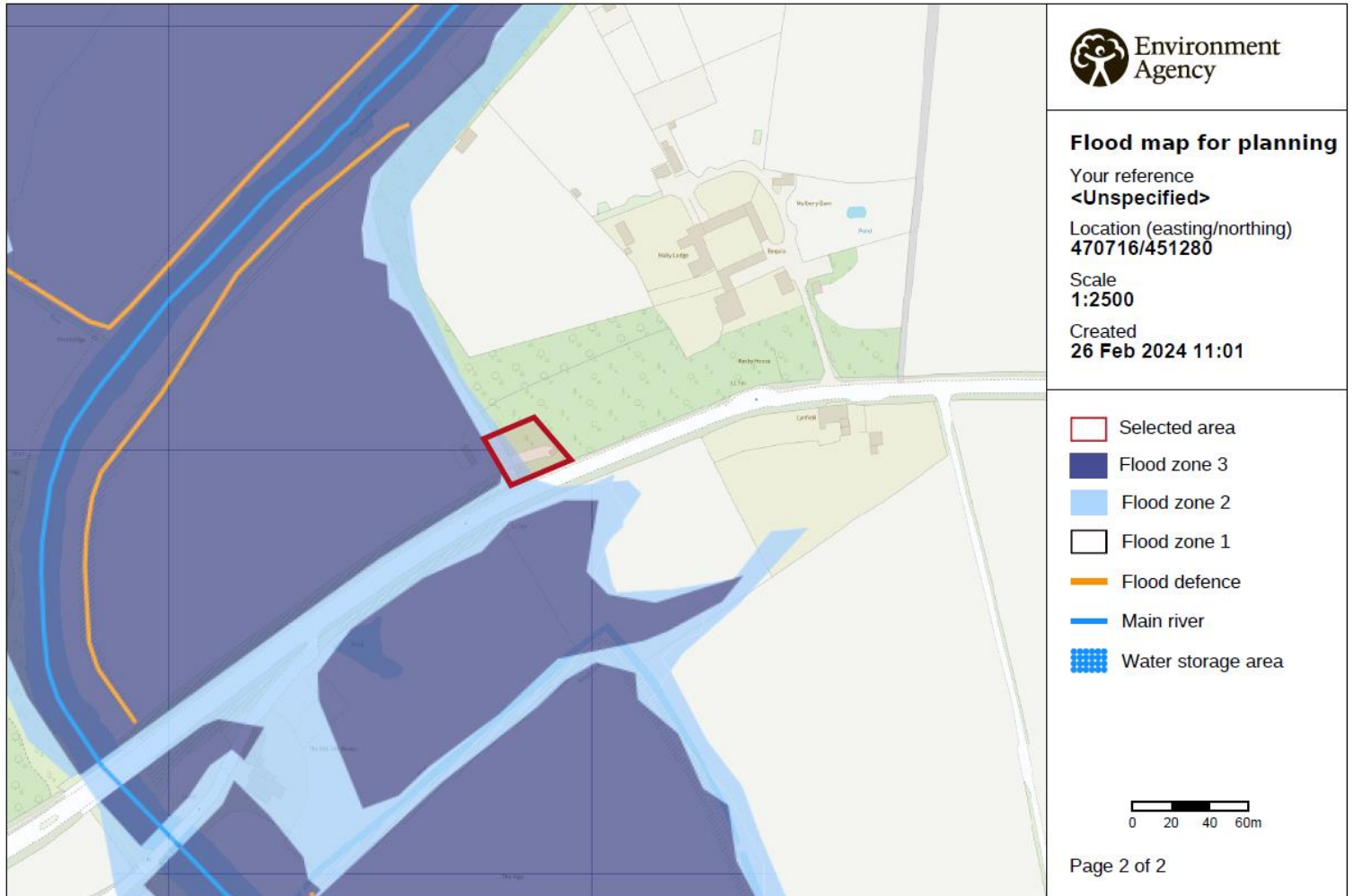
Based on the above, we would conclude that the proposed maintenance / machinery storage unit falls within the guidelines of the NPPF with regard to flood risk and there should be no objection to the proposed scheme on the grounds of flood risk.

With the anticipated range and type of flooding events in the location, local topography, existing development thereon and proposed use, it is considered that the residual risk from all types of flooding is deemed to be low.

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Appendix 1

EA Flood Risk Map



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Appendix 2

Proposed Site Layout



Proposed site layout plan (not to scale)

Appendix 3

EA Derwent Catchment Flood Management Plan Map

