



# Elmfield Lodge

## - Proposed Outbuilding

### Flood Risk Assessment

Job Number: 1270

Date	Version	Notes/Amendments
November 2022	1	For Information

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<b>Acronyms</b>	
<b>AOD</b>	Above Ordnance Datum
<b>CIRIA</b>	Construction Industry Research and Information Association
<b>EA</b>	Environment Agency
<b>FRA</b>	Flood Risk Assessment
<b>NPPF</b>	National Planning Policy Framework
<b>PPG</b>	Planning Practice Guidance
<b>SFRA</b>	Strategic Flood Risk Assessment

## Introduction

Flume Consulting Engineers have been appointed to undertake a Flood Risk Assessment (FRA) for the proposed development at Elmfield Lodge, Lees Road, Laddingford, Maidstone, ME18 6DB.

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change' (PPG). This FRA also incorporates advice and guidance from the Environment Agency (EA), the Strategic Flood Risk Assessment (SFRA) produced by Maidstone Borough Council and CIRIA documents.

The Environment Agency's (EA) indicative floodplain map shows that the site is partly located in Flood Zone 3. This assessment will therefore focus on the flood risk to the site from watercourses, as well as from other sources.

## Site Description and Location

The existing property consists of a detached dwelling with associated detached double garage. There are also a number of stables and storage buildings relating to equestrian use that are grazed in adjoining land. There are no significant trees on the site, although there is an existing evergreen hedgerow that is located along the front (Eastern) boundary and along part of the northern boundary. The property has pedestrian and vehicular access directly onto Lees Road.

The building itself is approximately 0.1km east of the Lower Teise, and would appear to be the primary source of flood risk associated with the development.

The site postcode is ME18 6DB and the OS grid reference is TQ 69073 49060.



**FIGURE 1. SITE LOCATION**

## Development Proposal

The proposals consist of the introduction of a small single storey detached outbuilding to accommodate associated domestic facilities including a gym and home office.

The proposed outbuilding will be accessed via main entrance. Vehicular access will be maintained and remain unchanged from the existing case (via Lee's Road). Pedestrian street access is also unaffected. Refer to Appendix A for the Architectural drawings.

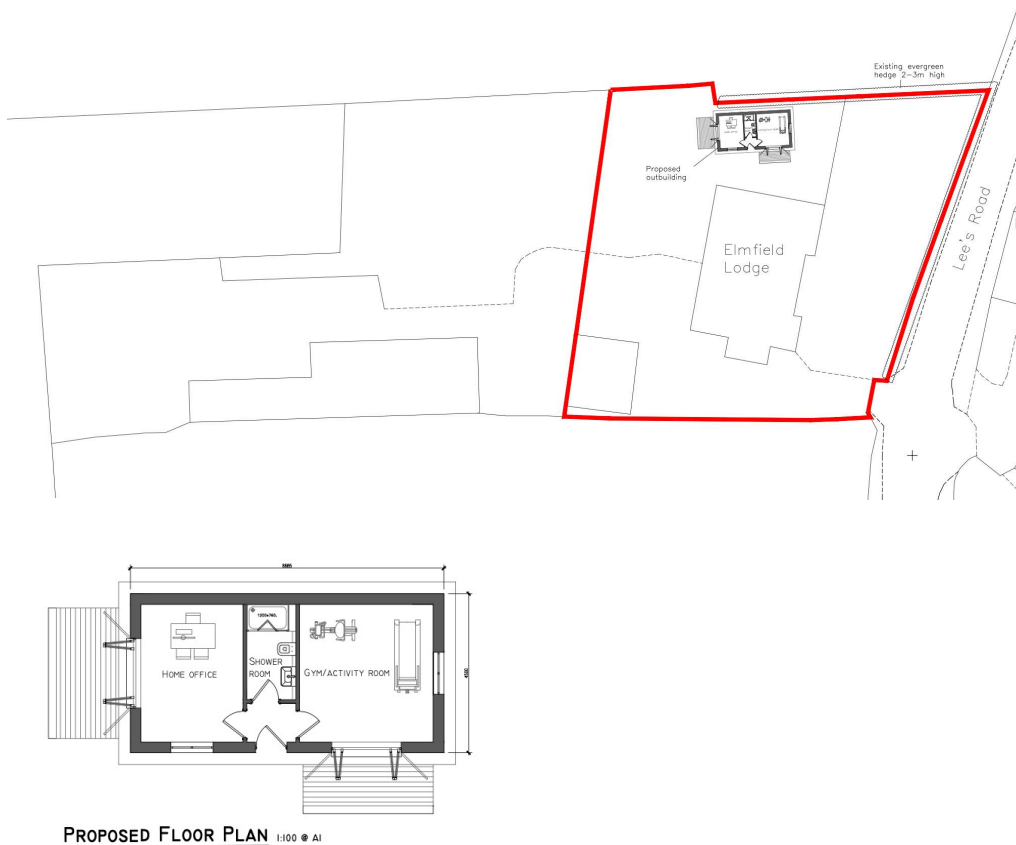


FIGURE 2. PROPOSED OUTBUILDING

## Flood Risk Assessment

The National Planning Policy Framework states that *minor developments* such as *householder development*, are unlikely to raise significant flood risk issues. The NPPF refers applications to the Environment Agency's (EA) 'Standing Advice' for further guidance<sup>1</sup>. The guidance further states that “a pragmatic approach should be taken to the scope and level of detail of the assessment – a shorter, simpler assessment is likely to be sufficient in most such cases”.

### Flood Risk from Watercourses

The EA's indicative floodplain map shows that the site is located in Flood Zone 3 (High flood risk) and is at risk of flooding from the Lower Teise and other nearby ordinary watercourses. Land in this flood zone is assessed as having annual probability of river flooding greater than 1%. The EA's indicative fluvial/tidal flood risk maps, Figure 3, suggest that the site is in an area which does not have flood defences, however the EA's website also states that not all defences are shown on the map, and the site does appear to be in close proximity to regions which benefit from flood defences.

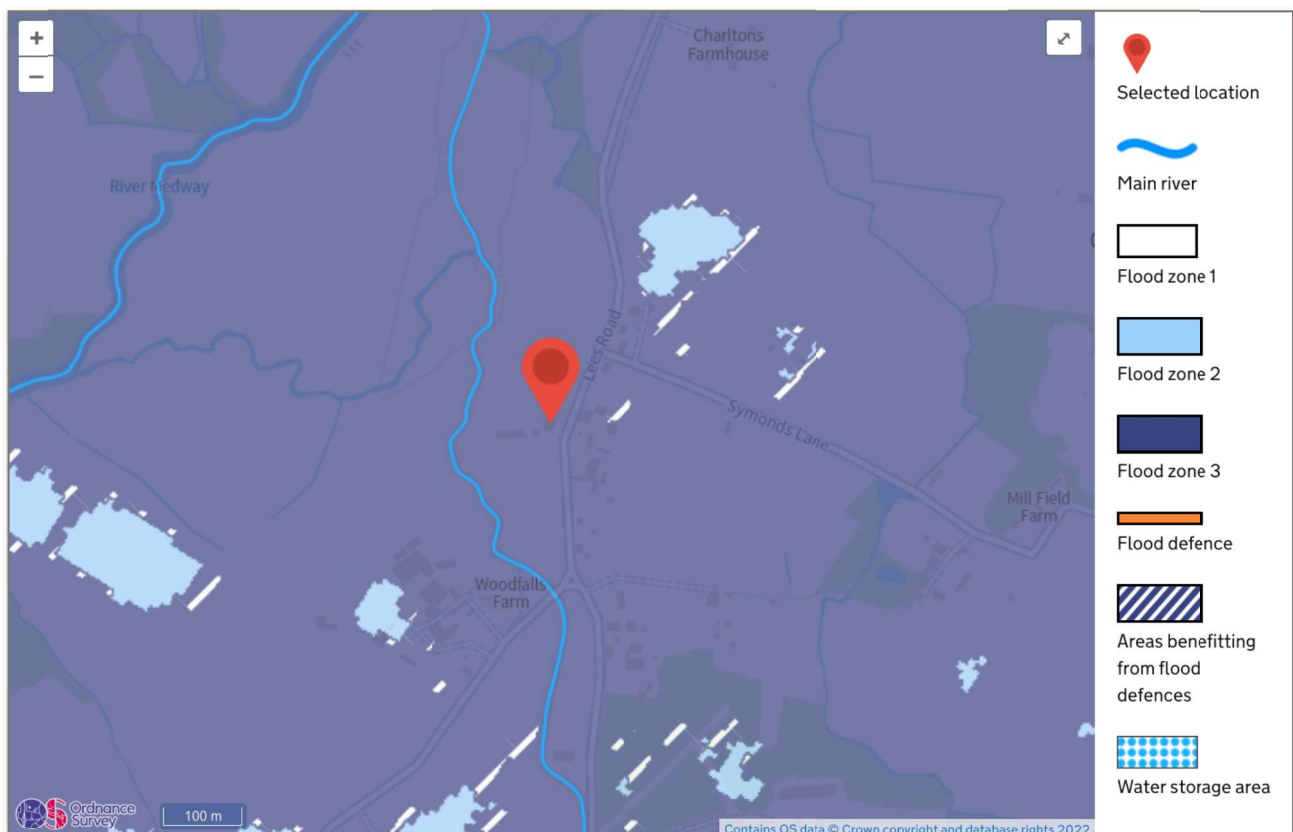


FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2022)

<sup>1</sup> <https://www.gov.uk/guidance/flood-risk-and-coastal-change#para51>

It can also be seen that the Gov.uk/EA's long-term flood risk maps<sup>2</sup> indicated in Figure 4, shows the site is at *Medium* risk of flooding from rivers or the sea.

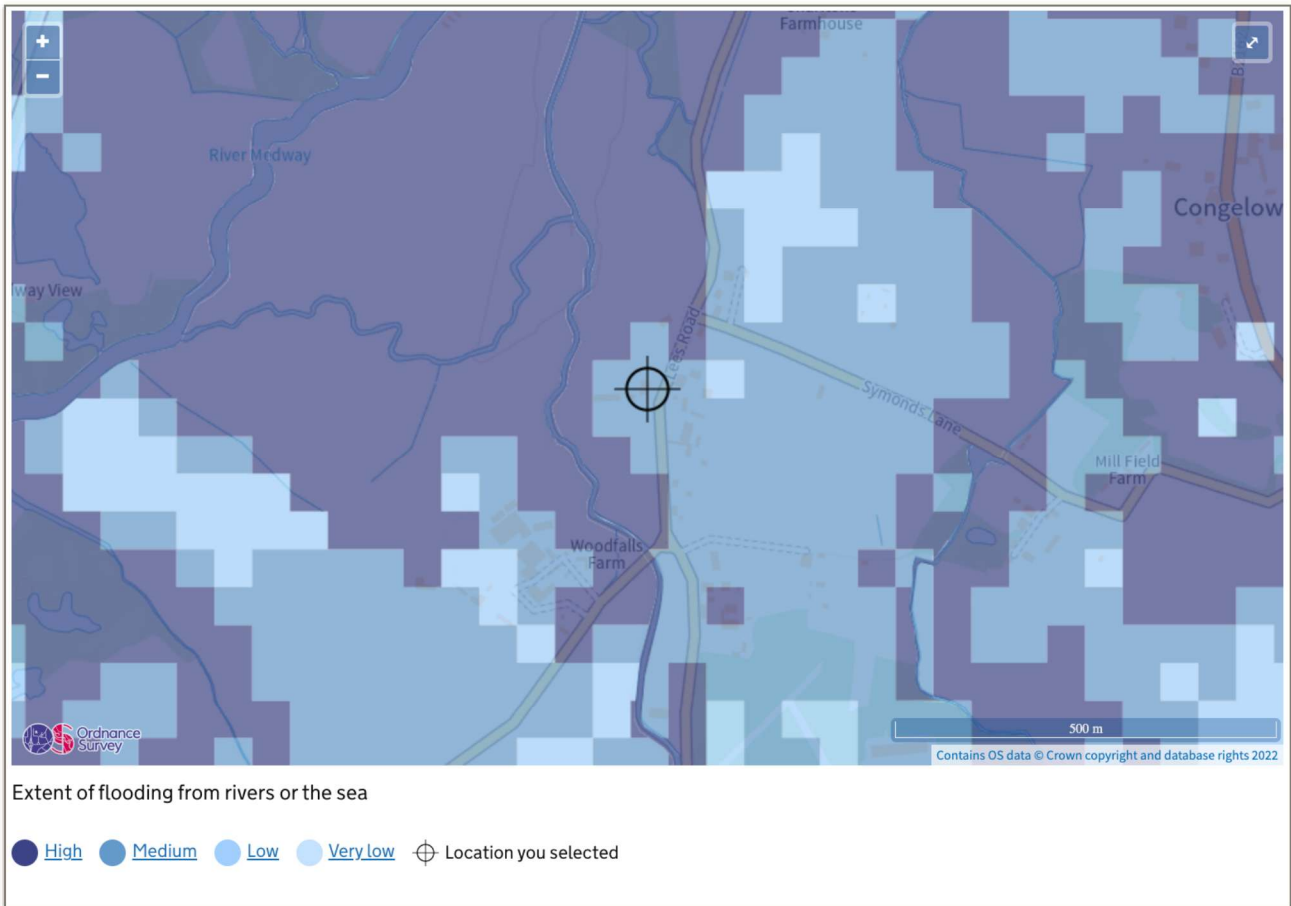


FIGURE 4. ENVIRONMENT AGENCY LONG-TERM FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2022)

<sup>2</sup> <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

## Sequential and Exception Test

### The Sequential Test

In accordance with the NPPF, before planning permission can be granted the risk-based Sequential Test should be applied and accepted. This needs to be done for those developments in Zone 2 or 3, and for all but *minor* developments<sup>3</sup>. The Planning Practice Guidance (PPG) “Flood Risk & Coastal Change” states that “*The Sequential Test does not need to be applied for individual developments on sites which have been allocated in development plans through the Sequential Test, or for applications for minor development or change of use*”.

### The Exception Test

PPG goes on further to say “*the Exception Test does not need to be applied to minor developments and changes of use*”.

As this development constitutes a *minor development / householder development*, the Sequential and Exception Tests do not need to be applied to this development.

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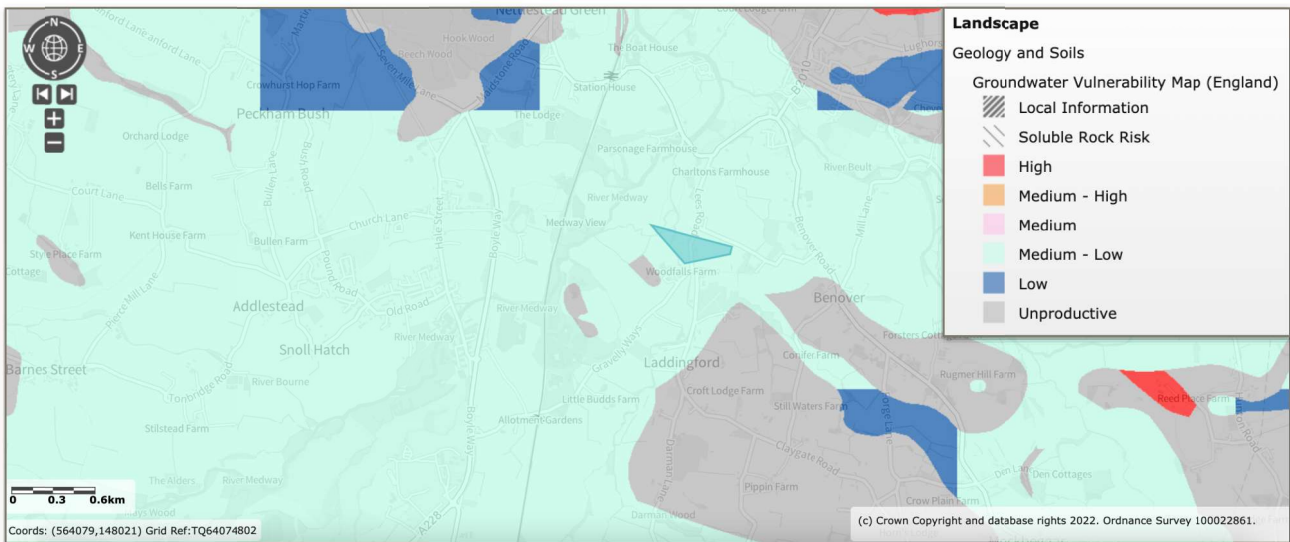
<sup>3</sup> National Planning Policy Framework (para.164) and associated Technical Guidance (para.10)



### Flood Risk from Groundwater

Flooding from groundwater typically occurs following prolonged periods of wet weather within low laying areas underlain by permeable aquifers. When aquifers are fully saturated, flooding at surface level can occur from the sub-surface strata.

The susceptibility or vulnerability of the particular area, is highlighted on the groundwater vulnerability map (Figure 5), which indicates a *Medium-Low* risk of groundwater flooding in the area.



**FIGURE 5. DEFRA'S GROUNDWATER VULNERABILITY MAP (DEFRA.GOV.UK, 2022)**

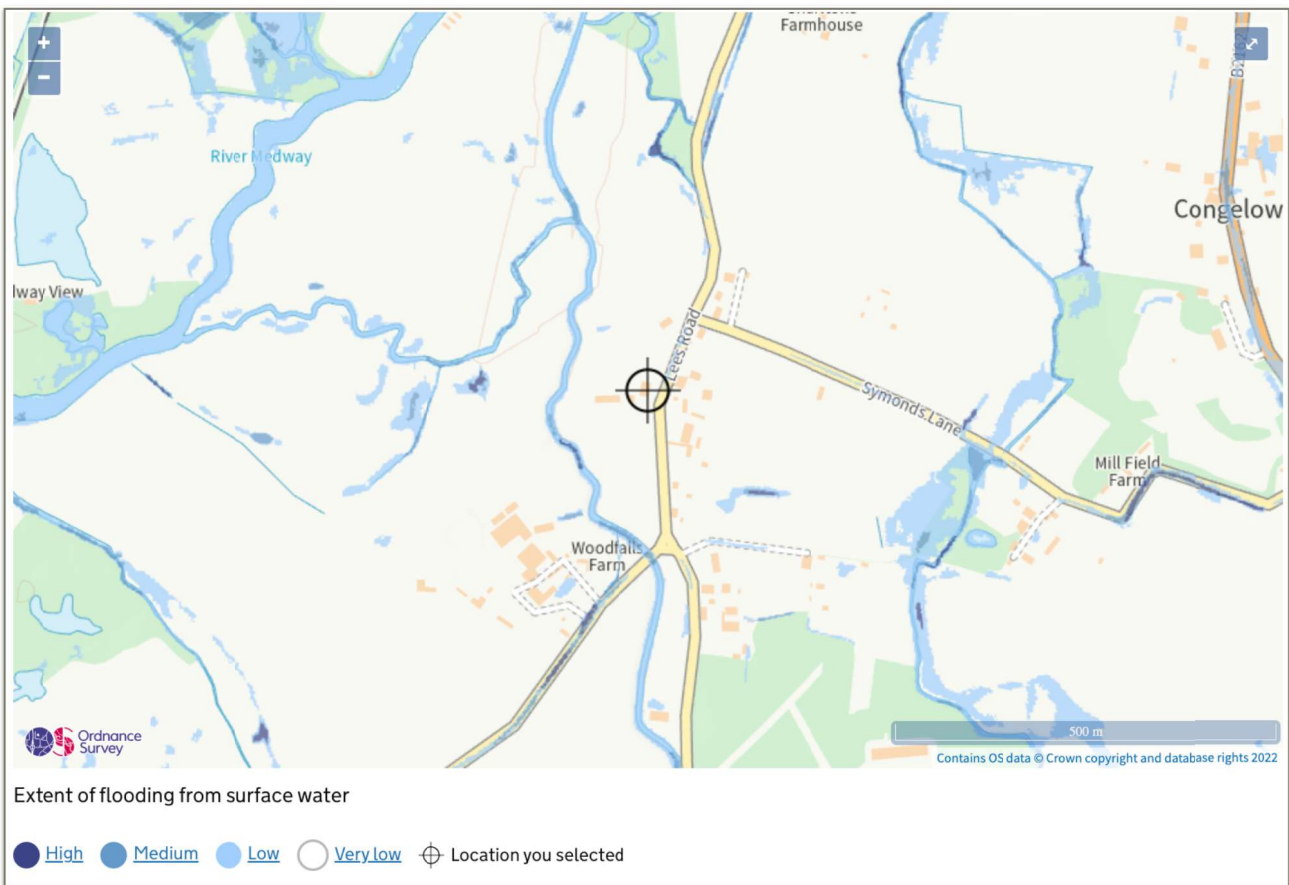
However, these maps consider very large areas of the underlying geology, and ignore subtle shifts in local geology and ground levels. Furthermore, there are no recorded instances of flooding relating to groundwater in the vicinity of the proposed site.

Groundwater flooding is an important consideration for subterranean basements. However, this is a small outbuilding and no basements are proposed in this instance. Therefore the likelihood of groundwater flooding is considered to be low risk.

### Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to infiltrate into the ground or overwhelms the drainage system. This surface water runs across the surface of the ground causing flooding. The Environment Agency’s Surface Water Flood Risk Map can also reflect surface water flooding along the line of small ordinary watercourses. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water.

The EA’s indicative Surface Water Flooding Map, Figure 6, shows that the site is at *Very low* risk of surface water flooding.



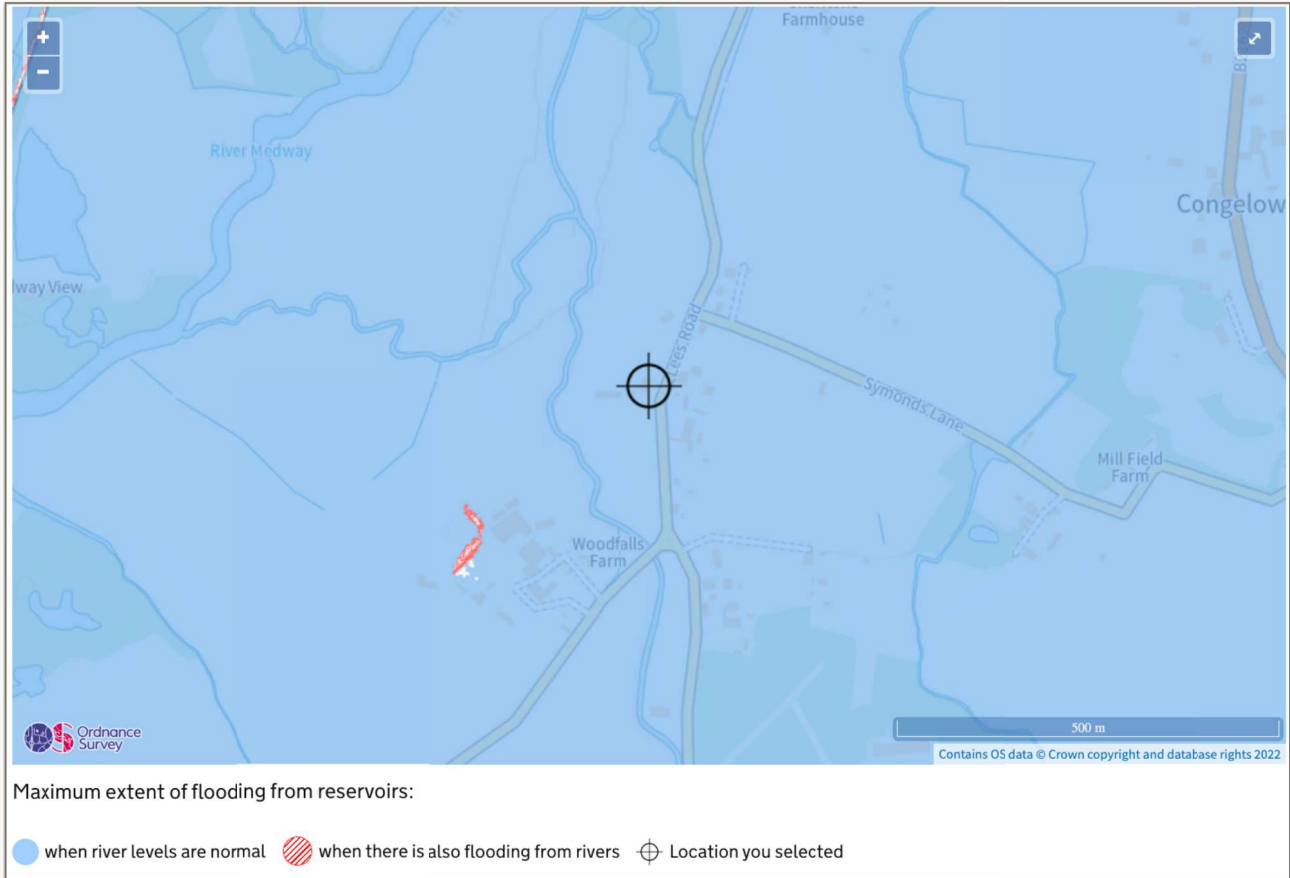
**FIGURE 6. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER MAP (GOV.UK, 2022)**

*Very Low* risk means that each year this area has a chance of flooding less than 0.1% Annual Exceedance Period (AEP). Furthermore, ground levels on site will be encouraged to fall away from the building thresholds and positively drained.

As part of the development proposals, permeable paving and other SuDS features should be promoted within the design. External ground levels immediately outside of the outbuilding will fall away from the building thresholds, ensuring the minimisation of storm water ingress. This can be achieved by either reducing the external ground levels below internal floor levels, and/or incorporating channel drainage system along the entrance into the building to positively drain overland flows.

### Flood Risk from Reservoir and Infrastructure Failure

The EA's information states that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Reservoir Act of 1975 ensures that reservoirs are inspected regularly and essential safety work is carried out.



**FIGURE 7. ENVIRONMENT AGENCY FLOOD RISK FROM RESERVOIRS MAP (GOV.UK, 2022)**

The Environment Agency dataset 'Risk of Flooding from Reservoirs' identifies areas that could be flooded if a large reservoir was to fail and release the water it holds. The site is identified as having the potential to be inundated should a reservoir fail (Figure 7).

Reservoirs in the UK have an extremely good safety record. The Environment Agency is the enforcement authority for the Reservoirs Act 1975 in England and Wales. All large reservoirs must be inspected and supervised by reservoir panel engineers. It is assumed that these reservoirs are regularly inspected and essential safety work is carried out. These reservoirs therefore present a minimal risk.

Post Code	Number of Recorded Flood Incidents	Post Code	Number of Recorded Flood Incidents
ME14 2	9	ME17 1	4
ME14 3	1	ME17 2	4
ME14 4	4	ME17 3	3
ME14 5	3	ME17 4	3
ME15 0	5	ME18 5	5
ME15 6	4	ME18 6	28
ME15 7	8	TN12 0	22
ME15 8	9	TN12 5	1
ME15 9	2	TN126	2
ME16 0	2	TN12 9	41
ME16 8	4	TN27 9	22
ME16 9	2		
<b>Total: 188</b>			
Note: based on information exported on 28/04/2016			

**FIGURE 8. RECORDED INCIDENCES OF SEWER FLOODING IN THE AREA (SFRA, 2016)**

The site is located in postcode ME18 6. Figure 8 shows the site lays within an administrative boundary with 28 reported sewer flooding events. However, there is no evidence from Figure 8 to suggest that the site itself has experienced previous recorded incidents of sewer flooding. As such, the risk of flooding from sewer sources could be considered relatively low.

## Flood Mitigation Measures

The proposed outbuilding will not increase the flood risk to the building users, as it will not introduce more people into a flood risk area. The outbuilding will also be used for living space only, and will not be used for sleeping accommodation.

Flume requested the latest flood levels for the development under a Product 4 information request, and were provided the raw Product 6 data instead. According to the flood model extents extracted from the Medway Model 2018 Mapping Study, the site inundates up to and including the 1 in 1000 year return period.



FIGURE 9. ENVIRONMENT AGENCY PRODUCT 6 INFORMATION - FLOOD LEVEL PROFILE EAST-WEST (GOV.UK, 2022)

According to the EA's Standing Advice, finished floor levels should be a minimum of whichever is higher of 300mm above the:

- I. average ground level of the site - *approximately 12.45m AOD.*
- II. adjacent road level to the building - *11.11m AOD*
- III. estimated river or sea flood level - *approximately 13.34m AOD using the 1 in 100 year plus 35% allowance for climate change i.e the design flood level (Figure 9).*

Therefore, the proposed finished floor levels for the outbuilding will be set at a minimum of 13.64m AOD.

It is recommended that external ground levels immediately outside the building entrance are set to fall away from the building thresholds, ensuring the minimisation of storm water ingress. If this is not possible, channel drainage along the building thresholds at the entrance should be introduced to positively drain overland flows. All drainage systems should be routinely maintained to reduce the risk of blockage and surface water flood risk.

It is proposed flood resilient<sup>4</sup> materials will be used for flooring and on the walls up to minimise the potential for damage, in the event flood water impacts the proposed ground floor.

The proposals are for a small (40m<sup>2</sup>) ancillary outbuilding which forms part of a householder development application. The site is entirely in Flood Zone 3, and therefore direct flood compensation is not feasible. Although proposals are minor, underfloor voids are proposed to ensure flood water is not displaced elsewhere.

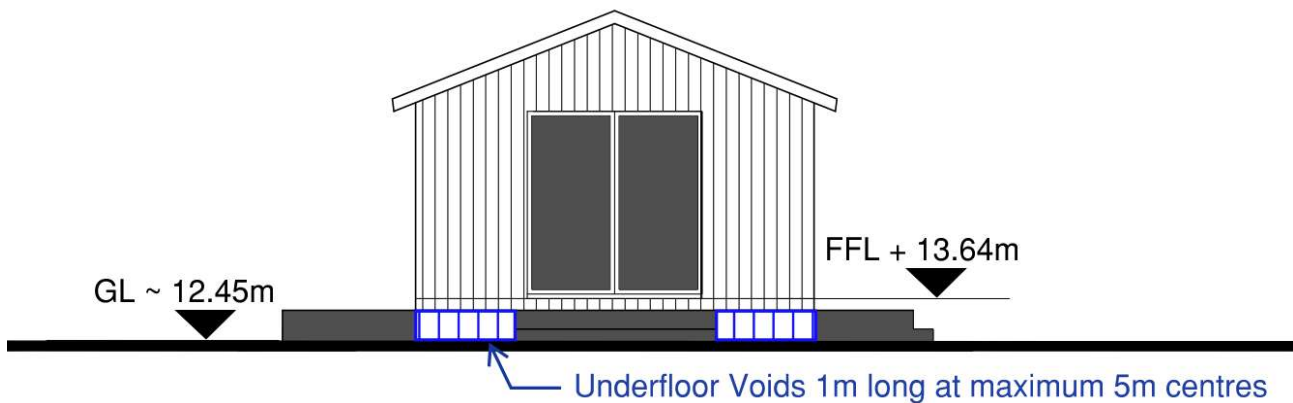


FIGURE 10. SECTION THROUGH PROPOSED OUTBUILDING

If not already listed, it is recommended that the property is registered with the EA's Flood Warning Service. If you are unsure and/or you wish to register for this free service please contact Floodline Warning Service<sup>5</sup>. Floodline is a free service operated by the EA that provides flood warnings direct to occupants by telephone, mobile phone etc.

<sup>4</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/7730/flood\\_performance.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf)

<sup>5</sup> [www.environmentagency.gov.uk/floodline](http://www.environmentagency.gov.uk/floodline)

## Conclusions

The National Planning Policy Framework (NPPF) states that minor developments such as householder development, are unlikely to raise significant flood risk issues.

In accordance with the EA's Standing Advice, the proposed outbuilding will be raised above the flood level or general ground level to ensure the development and its users remain safe during extreme flood events. The outbuilding will be raised a minimum 300mm above the design flood level. The FFL is proposed at 13.64m AOD based on the latest EA flood levels with an allowance for climate change.

The proposals are for a small (40m<sup>2</sup>) ancillary outbuilding which forms part of a householder development application. The site is entirely in Flood Zone 3, and therefore direct flood compensation is not feasible. Although proposals are minor, underfloor voids are proposed to ensure flood water is not displaced elsewhere.

If not already listed, it is recommended that the property is registered with the EA's Flood Warning Service.

The FRA has further demonstrated that the proposed outbuilding has an acceptable flood risk within the terms and requirements of NPPF and accompanying technical guidance.

**Note:**

This report has been prepared for the purposes of submitting for planning to the local planning authority for review in relation to the associated flood risk for the proposed development, and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should not be reproduced without our permission.

	<b>Prepared By</b>	<b>Checked By</b>	<b>Approved for issue</b>
<b>Name</b>	Tom Quigg BSc MSc CEng MICE	Magaly Sedeño BA	Tom Quigg BSc MSc CEng MICE
<b>Signature</b>	<b>TQ</b>	<b>MST</b>	<b>TQ</b>
<b>Date</b>	8 November 2022	8 November 2022	8 November 2022



**Appendix A - Architectural Plans**