



RAB

Stanford End Farmhouse, Wellington Estate, RG7 1SY

Flood Risk Assessment

13/01/2025

Version 2.0

RAB: 3058_FRD



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Quality Control

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Revision History

Version	Date	Amendments	Issued to
1.0	21/12/2022	First issue	Stuart Mackay
2.0	13/01/2025	Addition of text relevant to drainage	Stuart Mackay



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1.0 Introduction

RAB Consultants has prepared this Flood Risk Assessment (FRA) in support of the proposed residential development at Stanford End Farmhouse, Wellington Estate, RG7 1SY.

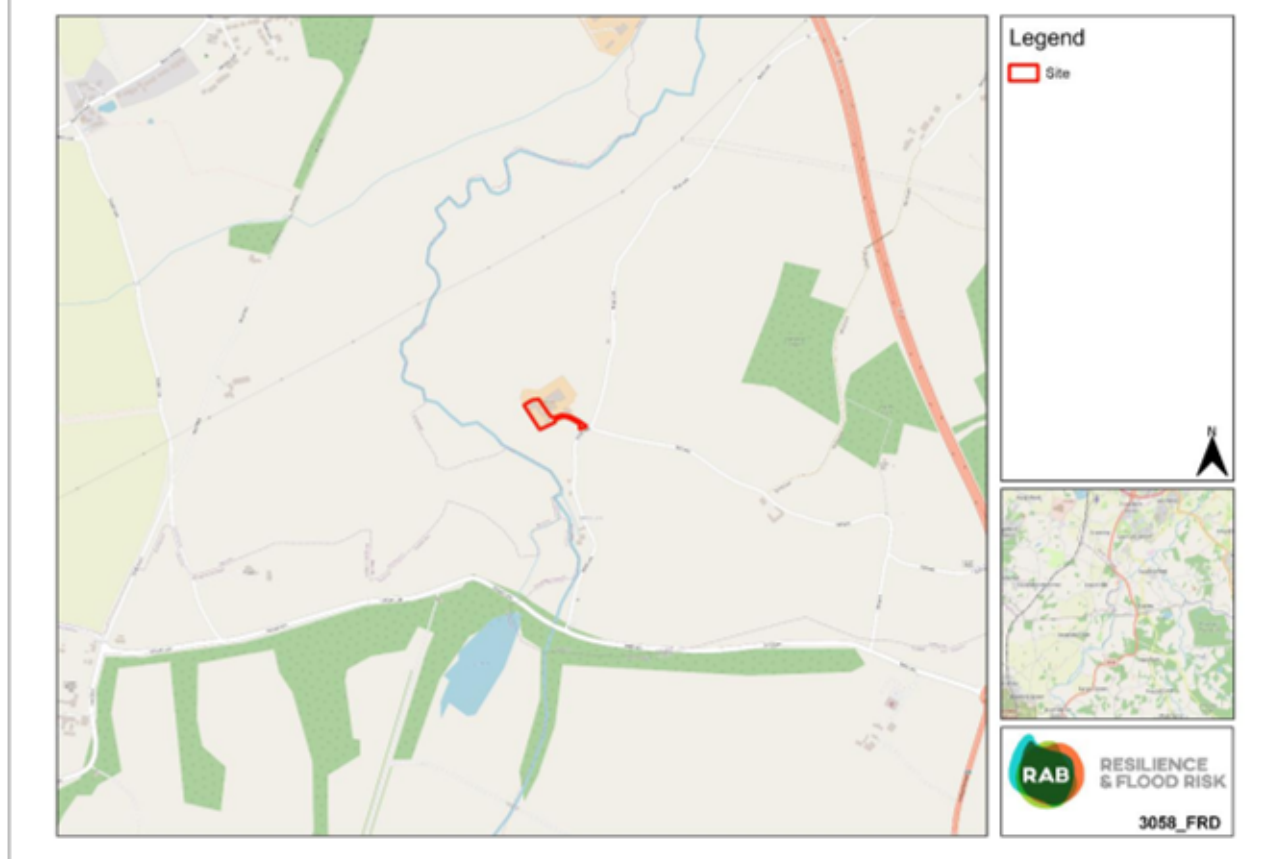
The development site is located in Flood Zone 1 and 2 according to the Environment Agency's Flood Map for Planning (Rivers and Sea). A Flood Risk Assessment for this site is required under the Planning Practice Guidance for the National Planning Policy Framework (NPPF), as it is classed as a residential development within Flood Zone 2. The site-specific FRA is required to ensure that the development is safe from flooding and will not increase the risk of flooding elsewhere.

2.0 Site details

2.1 Site location

TABLE 1: SITE LOCATION

Site address:	Stanford End Farmhouse, Wellington Estate, RG7 1SY
Site area:	3.57ha
Existing land use:	Farm
OS NGR:	SU 70639 63374
Local Planning Authority:	Wokingham Borough Council



2.2 Site description

The site is located to the north of Stanford End and is accessed from Barge Lane. The site is bounded by fields to the north, east, south and west. The River Loddon is located approximately 85m south west of the site. It is understood that the site actively manages surface water runoff via a private drainage network.

2.3 Development proposal

Permission is sought to demolish the outbuildings and rebuild an additional single-storey accommodation, including a basement, for the Farmhouse. It should be noted that there will be no sleeping (or living) accommodation in the basement.

3.0 Flood Risk

3.1 Sequential test

According to the Environment Agency's Flood Map for Planning the site lies in Flood Zone 2, which is described in the NPPF as land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (between 1% AEP and 0.1% AEP); or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (between 0.5% AEP and 0.1% AEP).

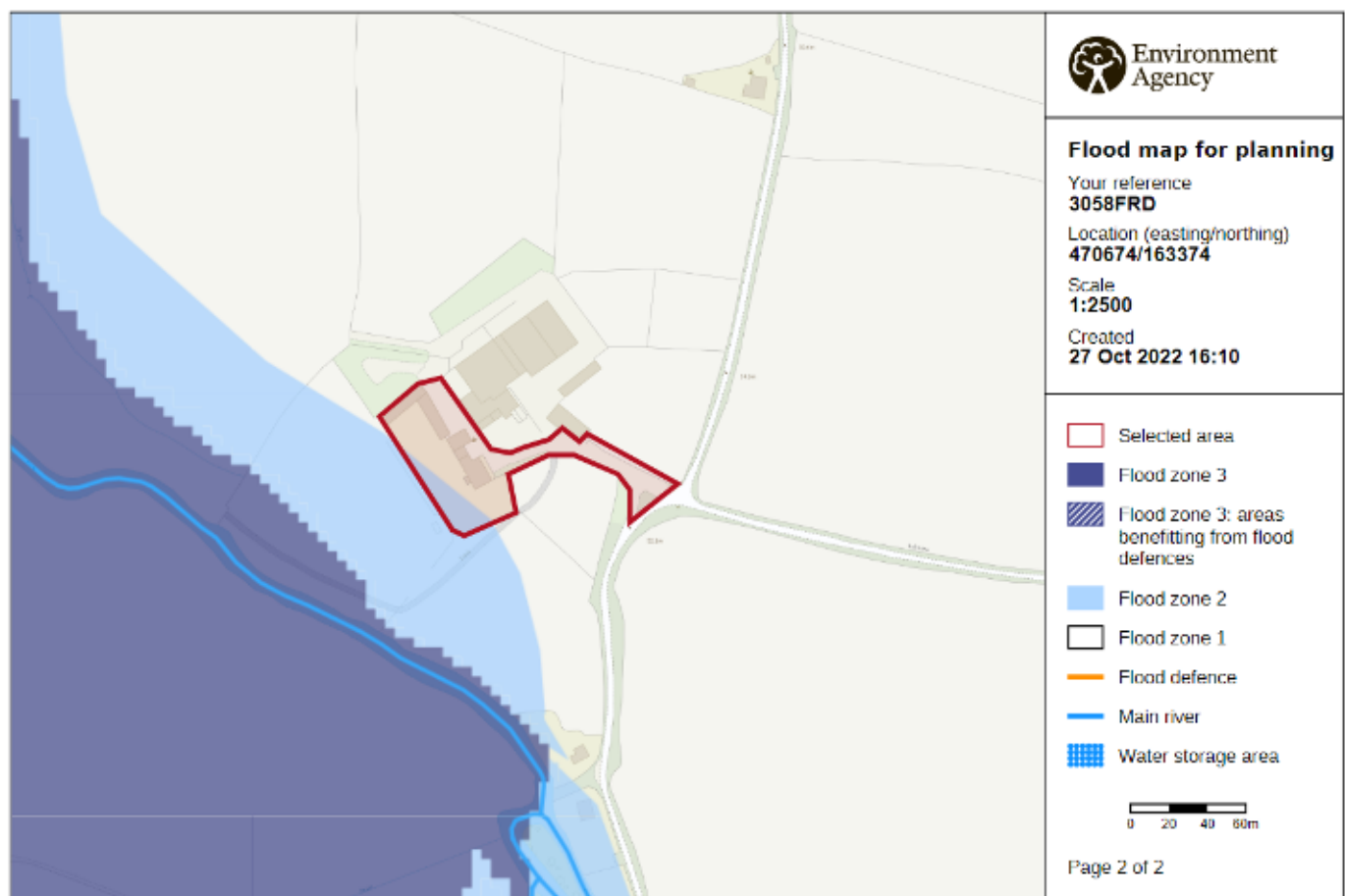


FIGURE 1: ENVIRONMENT AGENCY FLOOD MAP FOR PLANNING

The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas. NPPF Planning Practice Guidance (PPG) Table 2 confirms the 'Flood risk vulnerability classification' of a site, depending upon the proposed usage. This classification is subsequently applied to Table 3 'Flood risk vulnerability and flood zone compatibility' to determine whether:

- The proposed development is suitable for the flood zone in which it is located; and

- Whether an Exception Test is required for the proposed development

The proposed development is classed as a 'more vulnerable' development in accordance with NPPF PPG. Part of the development site is located within Flood Zone 2 however, the site follows the sequential approach, as all the buildings and proposed development areas are located within Flood Zone 1 and therefore, the sequential test can be deemed acceptable (given the adopted sequential approach and following the latest NPPF updates – see paragraph 175) and the exception test is not applicable, under NPPF PPG.

3.2 Flooding history

According to the Environment Agency's historic flood records, the River Loddon has flooded once in 1991. The historic flood extent matches the extent of Flood Zone 2 (see Figure 1) and suggests that parts of the site experienced flooding during that event. However, the building seems to have not been impacted during that event, based on the extent.

There is minimal information from the Wokingham Borough Council 2020 Strategic Flood Risk Assessment (SFRA) on flooding history in relation to the area the site is located.

The client mentioned that the basement level of the existing structure has flooded in the past but not from fluvial flooding. This is likely due to a high groundwater level at the site with it being in close proximity to the River Loddon.

3.3 Fluvial (Rivers)

The Environment Agency do not hold modelled flood data for the section of the River Loddon adjacent to the site however, based on the Flood Zone extents (Figure 1), the development areas and existing buildings are located in Flood Zone 1, which is described in the NPPF as land having a less than 1 in 1,000 annual probability of river or sea flooding (less than 0.1% AEP). The southwest of the site is shown to be within Flood Zone 2, however no development is being proposed within this extent.

3.3.1 Climate change Impact on Fluvial Risk

The Environment Agency guidance document 'Flood risk assessments: climate change allowances' was released in February 2016 and updated in August 2022 and includes statistical increases in peak fluvial flows by river basin district and allowance categories based on epochs and development vulnerability classification. Given that the proposed development will be located in Flood Zone 1, the climate change allowances do not apply in this instance.

3.4 Flood defence breach or overtopping

3.4.1 Breach risk

There are no defences present along the stretch of the River Loddon adjacent to the site and as such, the site is not at risk of flooding from a defence failure.

3.4.2 Overtopping risk

There are no defences present along the stretch of the River Loddon adjacent to the site and as such, the site is not at risk of flooding from an overtopping of the defences event.

3.5 Coastal/tidal

The site is located at a considerable distance from the coast and is therefore not at risk of flooding from this source.

3.6 Pluvial (Surface water)

When the infiltration capacity of land or the drainage capacity of a local sewer network is exceeded, excess rainwater flows overland. This water will collect in topographic depressions and at obstructions, which can inundate development in low lying areas. The severity of the rainfall event, the degree of saturation of the soil before the event, the permeability of soils and geology, and the gradient of the surrounding land and it's use; all contribute to and affect the severity of overland flow.

The Environment Agency Flood Map for Surface Water (Figure 2), can be used to see the approximate areas that would experience surface water flooding from a range of AEPs, which is used to categorise the risk (Table 2).

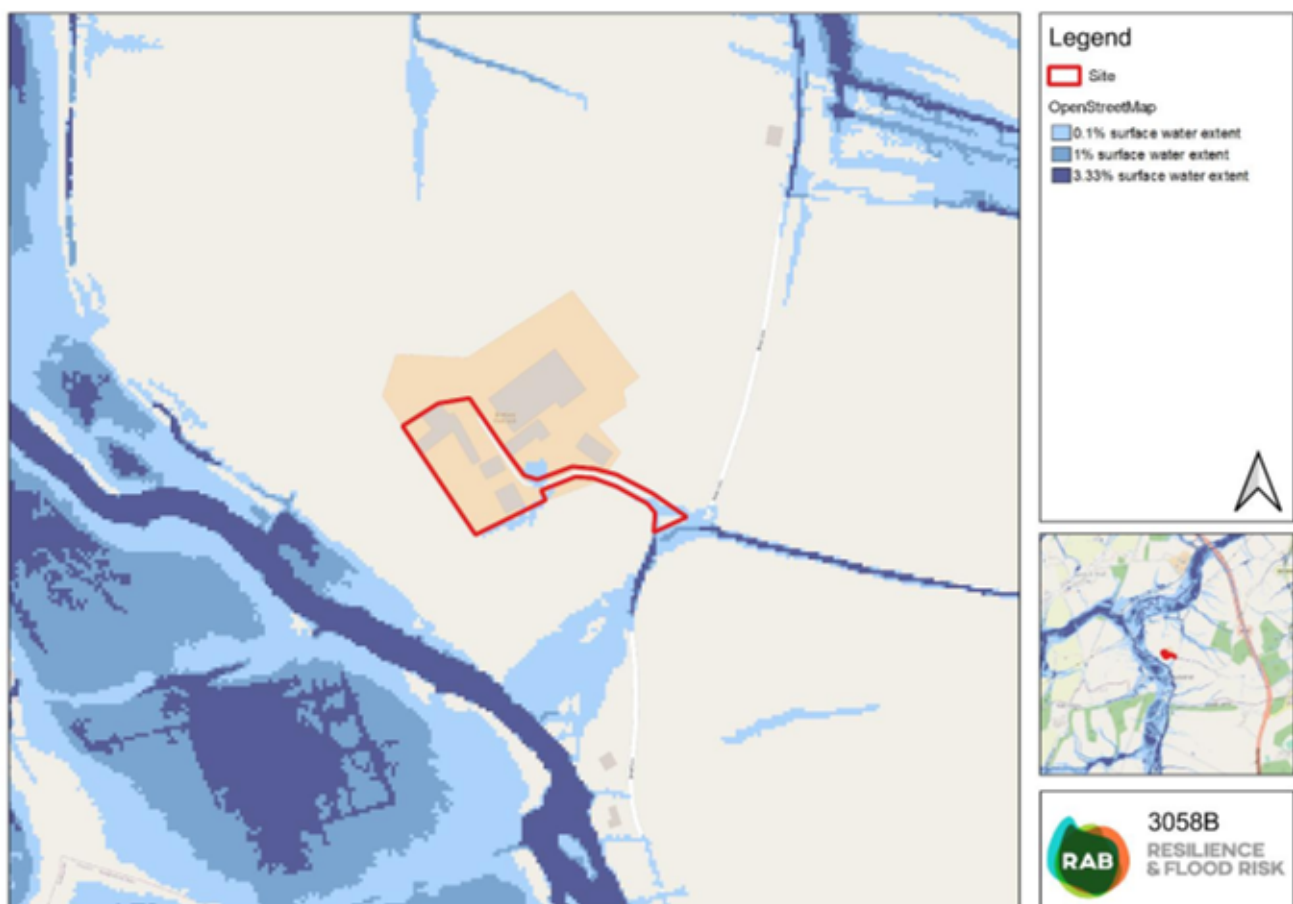


FIGURE 2: ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER

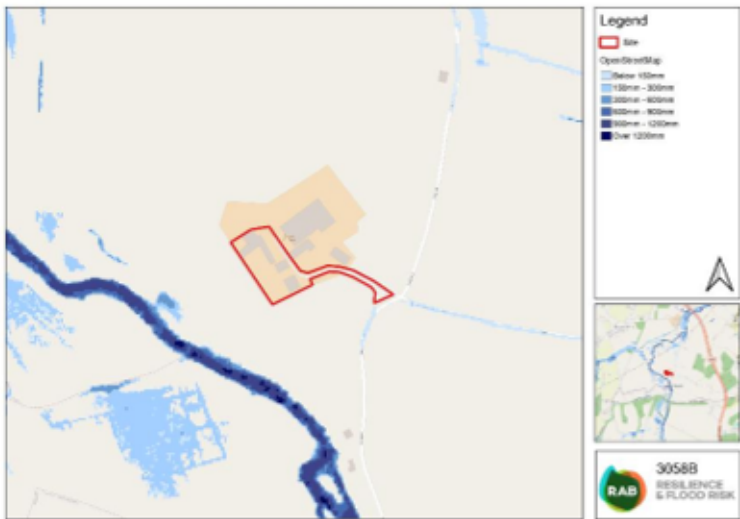
TABLE 2: ENVIRONMENT AGENCY SURFACE WATER RISK CATEGORIES

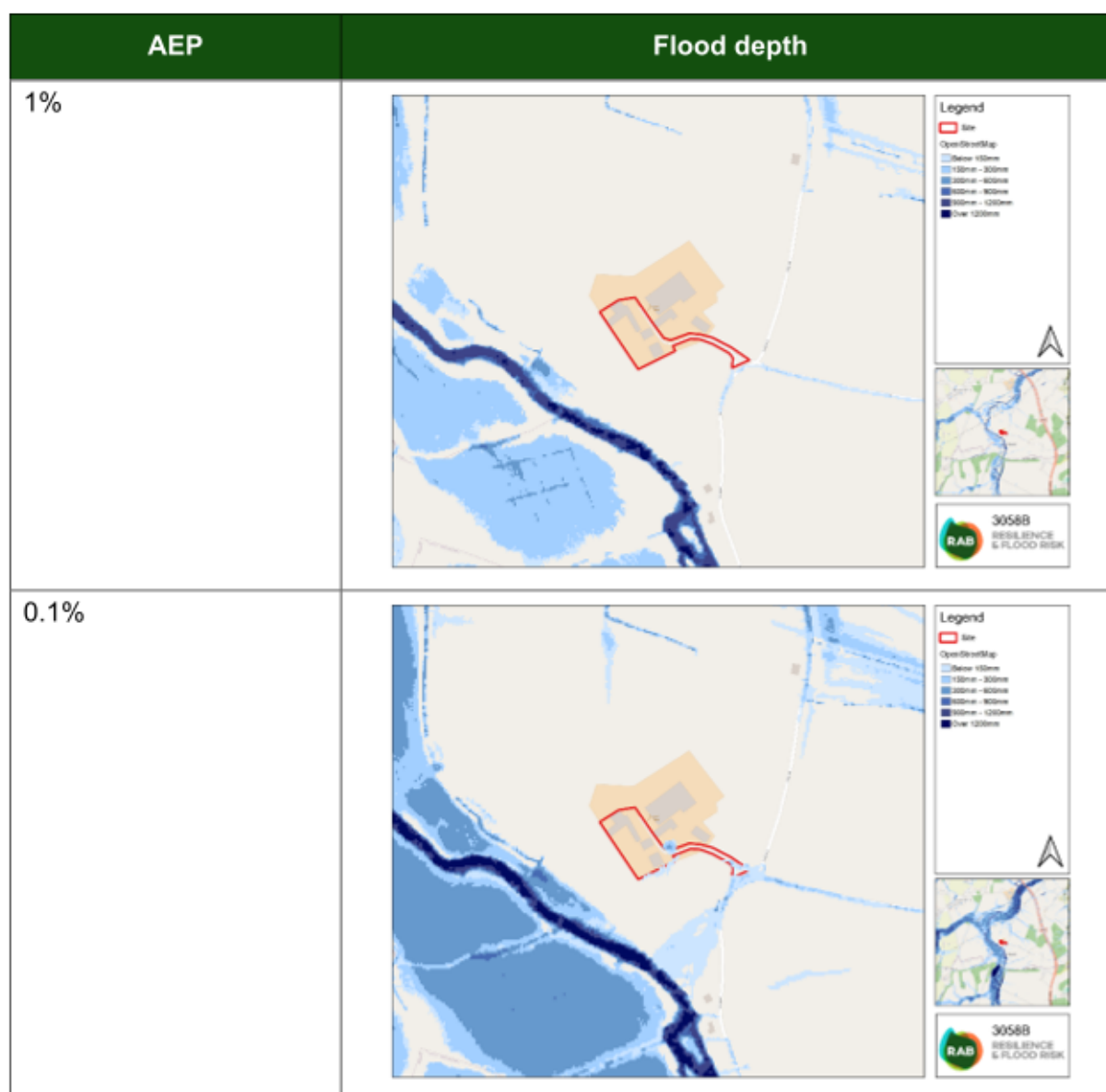
Surface Water Risk Category	Surface water flooding Annual Exceedance Probability
Very Low	< 0.1%
Low	Between 1% and 0.1% (1 in 100 years and 1 in 1000 years)
Medium	Between 1% and 3.3% (1 in 100 years and 1 in 30 years)
High	> 3.3% (1 in 30 years)

The site is shown not to flood during the 3.33% AEP or the 1% AEP event in Figure 2.

During the 0.1% AEP the access road could flood to depths of between 150mm – 300mm. There is an area which is shown to flood to depths of between 300mm – 600mm within Table 3 however this is just outside the site boundary. Therefore, the site is at low risk from surface water flooding.

TABLE 3: SURFACE WATER FLOOD DEPTHS FOR A RANGE OF AEP'S

AEP	Flood depth
3.33%	



3.7 Artificial water bodies

According to the Environment Agency's reservoir flood map, the site is not at risk of flooding from reservoirs.

According to the Canal and River Trust, the closest canal to the site is the Kennet & Avon canal which is approximately 4.83 miles away. As such, the site is at low risk of flooding from this source.

3.8 Groundwater

Groundwater flooding is water originating from sub-surface permeable strata which emerges from the ground, either at a specific point or over a wide diffuse location and inundates low lying areas. A groundwater flood event results from a rise in groundwater level sufficient for the water table to intersect the ground surface and inundate low lying land.



British Geological Survey (BGS) records indicate that the proposed development site overlies bedrock composed of London Clay Formation – clay, silt and sand. There is no information surrounding the superficial deposit consistency. There are no nearby borehole records to support this, listed on the BGS records.

The 2020 SFRA does not provide information on the groundwater risk of the area the site is located.

The Soilscales application details the area that the site is located at to have a naturally high-water table, which is likely due to the close proximity to the River Loddon.

Given the close proximity of the site to the River Loddon, the groundwater levels will likely mirror the fluvial level of the watercourse and as such, the risk of flooding from groundwater will match the risk of flooding from fluvial sources which has been discussed in Section 3.3. Nevertheless, it is expected that the site will experience high groundwater levels throughout its design life and as such, suitable mitigation measures should be employed.

As there is a high degree of variability when considering groundwater flooding, using historic flooding is not a robust measure of the risk of flooding in future years.

3.9 Sewers

Thames Water is responsible for the adopted surface and foul sewer networks within the District and maintain a DG5 register of sites affected by sewer flood incidents on a post code basis. The 2020 SFRA does not hold relevant sewer flooding data for the site area.

Given the location of the site, surface and foul water is likely managed on site without a formal connection to a public sewer and therefore the risk of sewer flooding will be solely dependent on the current condition of the site's drainage system.

It is important to note that previous sewer flood incidents, or the lack thereof, do not indicate the current or future risk to the site. Upgrade work could have been carried out to alleviate any issues or conversely, in areas that have not experienced sewer flooding incidents, the local drainage infrastructure could deteriorate leading to future flooding.

4.0 Mitigation measures

4.1 Risk to buildings

4.1.1 Finished floor levels

In accordance with BS8533:2017 'Assessing and managing flood risk in development – code of practice', in order to afford a level of protection against flooding it is recommended that finished floor levels should be set at a nominal 300mm above either the 1% AEP of fluvial flooding or the 0.5% AEP of tidal flooding depending on which is greater (both including climate change).

The development proposals include the re-construction of some existing buildings and re-development of other structures and therefore, finished floor levels of the existing structures cannot be altered. It is however, recommended to raise the finished floor level of all new structures 150mm from the surrounding ground level to mitigate the unpredictable risk of infrastructure failure.



4.1.2 Flood resistance

Flood resistance is a strategy of temporary or permanent measures taken to reduce the amount of flood water that will enter buildings.

Flood resistant products should conform to BS 851188:2019 **OR** PAS 1188-1:2014. They should be designed to resist flood depths up to 600mm (assuming a suitable wall construction is present) after which a water entry strategy (or 'recoverability') should be adopted so as not to affect the structural integrity of the building.

For this property, the design could implement the following measures to ensure that the property is protected from a high groundwater table.

- Tank basement up to the ground floor finished floor level (assumes basement construction is appropriate for adoption of tanking)

4.1.3 Flood recoverability

It is not considered appropriate to adopt a flood recoverability strategy given the assessed likelihood of flooding to the building.

4.1.4 Limitations

It is important that the homeowner/developer recognises and acknowledges the following:

1. Please note, formal measured surveys should be undertaken by the appointed contractor prior to manufacture/installation.
2. Third party consultations may be required prior to installation:
 - a. For listed properties, a heritage expert will need to be consulted to discuss the feasibility of installing the recommended measure(s).
 - b. Where visual observations have indicated that the property is in poor condition or should the homeowner wish to increase the use of resistance measures above 600mm, a full structural survey should be undertaken to confirm the structural soundness of the building and suitability.
3. The future homeowner will be responsible for the use and future maintenance of any measures installed.

4.2 Risk to occupiers

4.2.1 Safe access/egress

The site buildings should not flood during the 0.1% AEP for surface water or fluvial flooding however, Barge and Bull Lane are predicted to flood to depths of up to 300mm during the 1% and 0.1% AEP for surface water flooding. It is important to note that this is the case for the existing property and no change will be made to the site access.

Using the BS8533:2017 method within the FD2320 report from DEFRA, a category of *Danger for some* is recognised for the site meaning that there is a risk to the young and elderly of the general public. A safe evacuation route towards the closest village of Riseley can be found in Figure 4.

Table 13.1 Danger to people for different combinations of depth and velocity

Velocity (m/s)	Depth of flooding (m)											
	0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.00												
0.10												
0.25												
0.50												
1.00												
1.50												
2.00												
2.50												
3.00												
3.50												
4.00												
4.50												
5.00												

Key:

- Danger for some
- Danger for most
- Danger for all

FIGURE 3: EXTRACT FROM DEFRA FD2320 REPORT



FIGURE 4: ACCESS/EGRESS ROUTE

4.2.2 Flood warning and evacuation plan

The proposed site is included in an Environment Agency Flood Warning area 'River Loddon at Sherfield-on-Loddon'.

The free service offers a minimum 30-minute lead time before the onset of flooding within the area. Residents should register to receive a Flood Warning for this area from the Environment Agency, by the channels identified in Table 4. A choice is provided on how they are to be contacted by the Environment Agency in the event of a flood, such as an automated telephone call, fax or email.

TABLE 4: FLOOD WARNING INFORMATION

Channel	Details
Register for Flood Warnings	https://www.gov.uk/sign-up-for-flood-warnings
Floodline	0345 988 1188 (Quick Dial Code: 173219)
Typetalk	0845 602 6340
Live information	https://flood-warning-information.service.gov.uk/

In addition, residents have the option to monitor the Met Office Severe Weather Warnings and the 5-day flood risk. This will enable them to make appropriate decisions to safeguard their health and safety. Table 5 includes a list of useful links residents can use to monitor flood risk and weather warnings.

Residents should be aware of water levels near Stanford End Farmhouse and adjacent roads and maintain visual observations of the surroundings to check for flooding. In an emergency, if evacuation is not possible, residents should seek refuge on the first floor of the dwelling.

TABLE 5: USEFUL WEBSITE LINKS

USEFUL WEBSITE LINKS	
Description	Website Link
Weather Warning Guide	https://www.metoffice.gov.uk/weather/guides/warnings
EA Live Flood Alert information	https://flood-warning-information.service.gov.uk/
Flood Guidance Statement User Guide	http://www.fcc-environment-agency.metoffice.gov.uk/services/FGS_User_Guide.pdf
Guide to email alert service	https://www.metoffice.gov.uk/about-us/guide-to-emails
5-day flood risk for England and Wales	https://flood-warning-information.service.gov.uk/5-day-flood-risk
5-day flood risk for England and Wales – What the Risk Types Mean	https://flood-warning-information.service.gov.uk/5-day-flood-risk/things-you-should-do
Severe Weather Warning Service including weather warning impacts and what they mean	https://www.metoffice.gov.uk/weather/guides/severe-weather-advice
Met Office Live Severe Weather Warnings	https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-warnings#?date=2020-10-02

USEFUL WEBSITE LINKS	
Description	Website Link
BBC Weather	https://www.bbc.co.uk/weather

4.3 Risk to others

4.3.1 Floodplain compensation

The proposed buildings are outside of the 0.1% AEP and therefore, floodplain compensation is not required.

4.3.2 Surface water run-off

It is unknown whether the existing site has any formal surface water drainage arrangements designed to manage the climate change scenarios.

Information surrounding potential methods to further reduce surface water run-off, such as through the incorporation of Sustainable Drainage Systems (SuDS), can be found within the drainage design developed by Archibald Shaw Ltd. It is understood that this design will be provided by the client as part of the planning application submission package.

5.0 Conclusion

The proposed development at Stanford End Farmhouse is located in Flood Zone 1 and 2 as defined in the NPPF. The proposal includes the demolition of an existing barn and construction of residential facilities (Appendix A).

As the site buildings are outside of the Flood Zone 2 and 3 extents, the sequential approach can be considered successful and the exception test is not applicable. Nevertheless, the Local Authority may request a sequential test.

On the basis of the available information from the Environment Agency and Wokingham Borough Council, the proposed and existing structures should be safe from flooding during events up to and including the 0.1% AEP fluvial and surface water. Groundwater flooding is unlikely to occur however basement levels could encounter seepage from a high groundwater table if not properly tanked.

The proposed development will incorporate SuDS as per the design provided by Archibald Shaw Ltd.

The proposed development can be deemed appropriate, provided that the recommendations in this report are adhered to, it will not increase the flood risk to other people, and it will provide multiple benefits with respect to the sustainable management of surface water runoff.

6.0 Recommendations

- No development should take place within the Flood Zone 2 extent.
- Proposed finished floor levels should be set 150mm above surrounding ground level to mitigate the unpredictable occurrence of infrastructure failure.



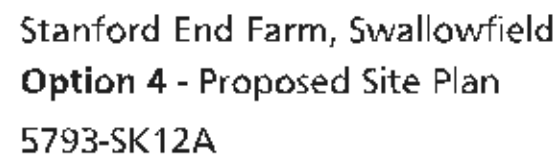
- Consider retrofitting all existing basement levels with appropriate tanking membranes to prevent intrusion of groundwater into the property. Any proposed basement levels should be tanked up to the ground floor level.
- Residents should sign up to receive flood warnings from the Environment Agency as described in Section 4.2.2.



Appendix A – Development proposals

To be provided by the client.

-





Proposed Front Elevation



Proposed Rear Elevation

Stanford End Farm, Swallowfield
Option 4 - Proposed Front and Rear Elevations
 5793-SK13

September 2022

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 WEB: www.edgingtons.co.uk
 EMAIL: mail@edgingtons.co.uk

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SPINK + HYNE
 CHARTERED ARCHITECTS



Proposed Section A-A



Proposed South East Elevation

Stanford End Farm, Swallowfield

Option 4 - Proposed South East Elevation and Section A-A

5793-SK14

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Proposed Section B-B



Proposed North West Elevation

Stanford End Farm, Swallowfield

Option 4 - Proposed North West Elevation and Section B-B

5793-SK15

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1. Reception Room (Old Kitchen)
2. Hallway
3. Reception Room
4. Partition Removed
5. Stair
6. Study
7. WC
8. Store
9. Glazed Link
10. Living Room
11. Family Room
12. Sun Terrace
13. Garden
14. Visitors' Parking
15. Listed Wall



Stanford End Farm, Swallowfield
Option 4 - Proposed Farm House Ground Floor Plan
 5793-SK16

1:100 @ A3 September 2022

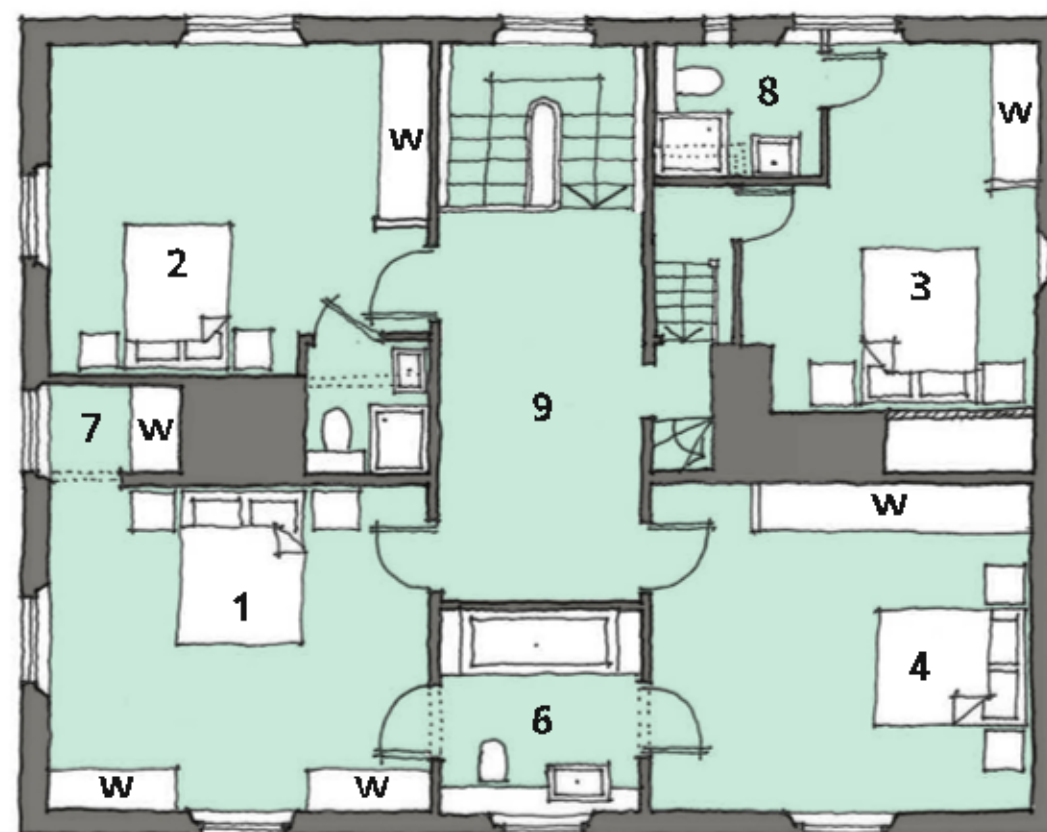
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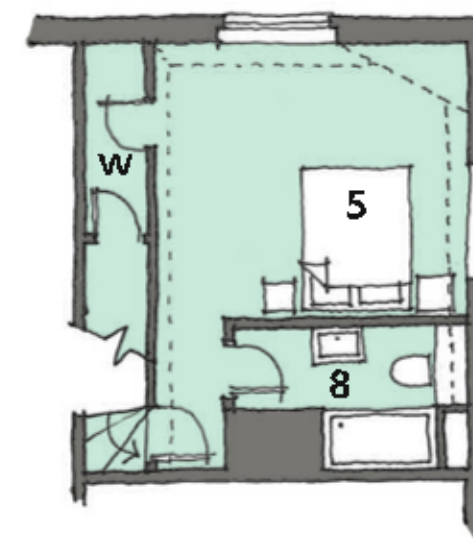
1. Master Bedroom
2. Bedroom 2
3. Bedroom 3
4. Bedroom 4
5. Bedroom 5
6. En-suite Bathroom
7. Dressing Area
8. En-suite Shower Room
9. Landing
- w. Wardrobe



New Window



First Floor



Mezzanine Level



Stanford End Farm, Swallowfield
Option 4 - Proposed Farm House First Floor Plan
 5793-SK17

1:100 @ A3 September 2022

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