

MERIDIAN

CIVIL ENGINEERING CONSULTANCY

WICKENDEN MANOR
EAST GRINSTEAD
RH19 4JB

FLOOD RISK ASSESSMENT

SEPTEMBER 2025

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Client: Netherhall Educational Association

Rev	Date	Prepared by	Checked by	Approved by
-	11/09/25	GH	SL	MN

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1.0 INTRODUCTION

- 1.1 Meridian Civil Engineering Consultancy LTD (MCEC) has been instructed by Netherhall Educational Association to prepare a site-specific Flood Risk Assessment (FRA) for the development at Wickenden Manor, East Grinstead, RH19 4JB.
- 1.2 It is understood that the proposal is for development to three separate buildings and some external areas:
- Three storey extension to the Manor building to include introducing sleeping accommodation at basement level
 - Redesign of the internal spaces and construction of a conservatory at the Lodge building
 - Extension and change of use of existing stables to introduce a church and sleeping accommodation
 - New hard surface basketball court, tennis court and Installation of solar panel arrays within the walled garden.
- 1.3 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site consists of Ashdown Formation – Sandstone and siltstone (Source: BGS).
- 1.4 The site is located within an area shown within Flood Zone 1 however there are areas at high chance of surface water flooding across the site. Locations in flood zone 1 have a low probability of flooding from rivers or sea. This means in any year land has a less than 0.1% chance of flooding from rivers or the sea. High chance of surface water flooding means that each year this area has a chance of flooding of more than 3.3%.
- 1.5 As the site is shown to have areas at risk of surface water flooding, the Environment Agency (EA) modelled RoFSW depths data has been reviewed in greater detail to understand the severity of flood risk on site.
- 1.6 Following a detailed review of GIS data, model outputs show that there is an identified surface water flood risk to the manor and the stables. Flood depths are shown to reach up to 300mm at the north-eastern extent of the Manor and less than 200mm at the eastern edge of the stables during the design 1 in 100 + 45%CC event, in accordance with NPPF guidance.
- 1.7 Therefore, these developments should consider mitigation measures, as defined in this report.
- 1.8 This report has been produced broadly in accordance with the National Planning Policy Framework (NPPF), West Sussex County Council Local Flood Risk Management Strategy, Mid Sussex District Council local guidance.

2.0 POLICY COMPLIANCE

- 2.1 The purpose of this assessment is to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per the:
- National Planning Policy Framework
 - West Sussex County Council Local Flood Risk Management Strategy
 - Mid Sussex District Council local guidance

3.0 SITE LOCATION

- 3.1 The site is located at Wickenden Manor, East Grinstead, RH19 4JB. The existing site consists of a corporate venue and event space with accommodation.

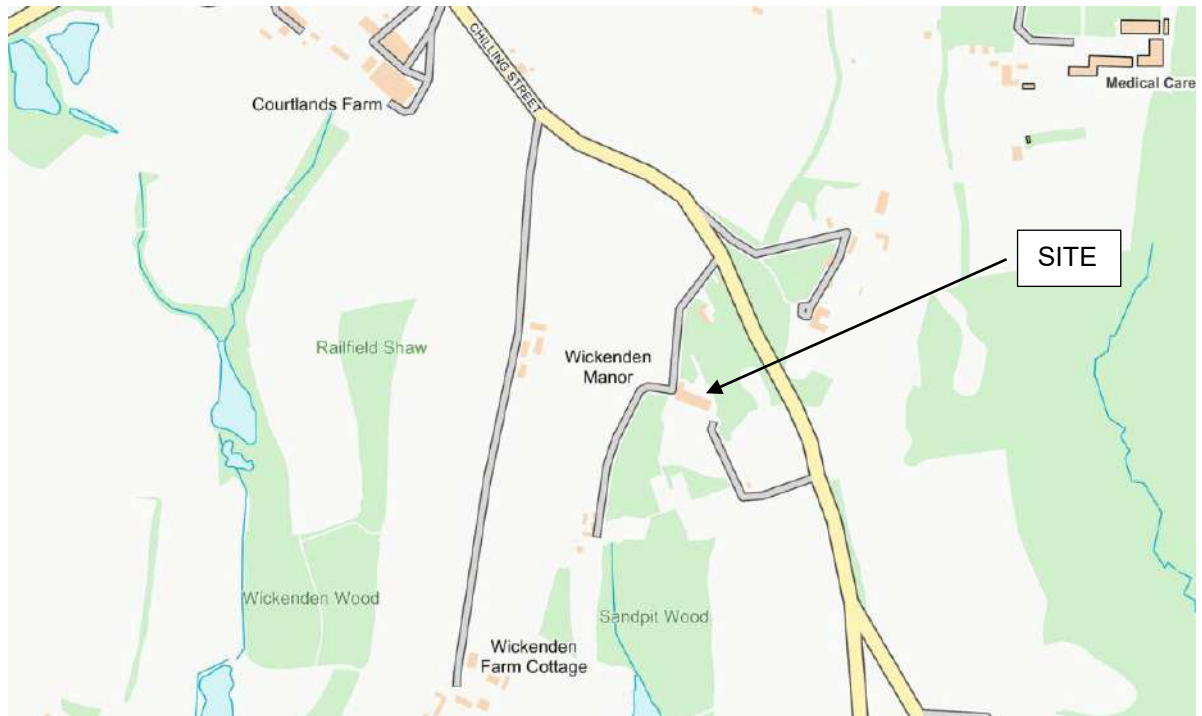


Figure 1: Site location plan

- 3.2 It is understood that the proposal is for development to three separate buildings and some external areas:

- Three storey extension to the Manor building to include introducing sleeping accommodation at basement level
- Redesign of the internal spaces and construction of a conservatory at the Lodge building
- Extension and change of use of existing stables to introduce a church and sleeping accommodation
- New hard surface basketball court, tennis court and Installation of solar panel arrays within the walled garden.

- 3.3 Architectural plans are included in Appendix I.

4.0 GEOLOGY AND INFILTRATION POTENTIAL

- 4.1 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site consists of Ashdown Formation – Sandstone and siltstone (Source: BGS).

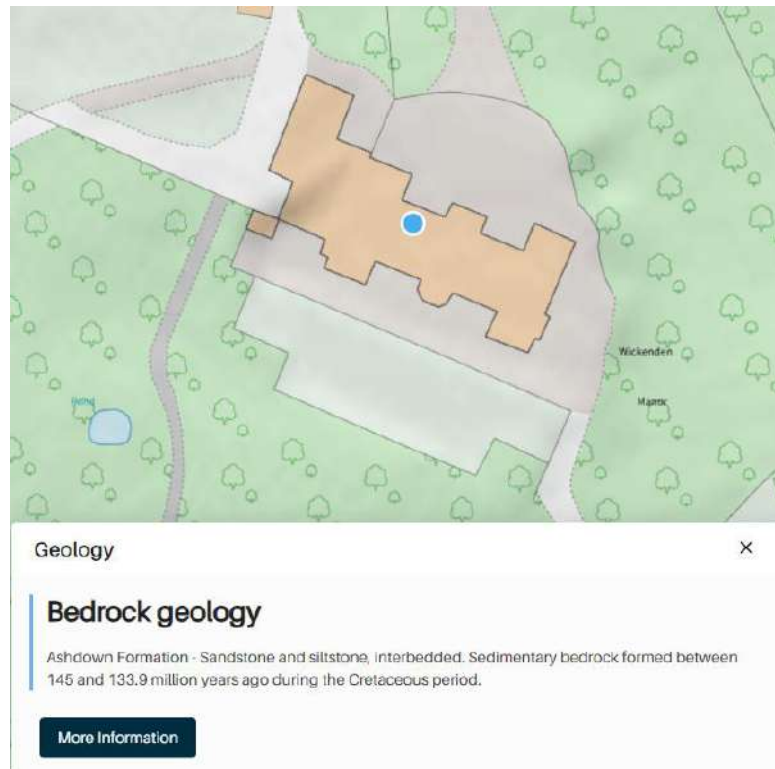


Figure 2: BGS geology map extract

- 4.2 Given the BGS geology viewer shows the site to be underlain by sandstone and siltstone, infiltration may be feasible. It is recommended that infiltration testing to BRE365 is conducted to confirm this assumption

5.0 SEQUENTIAL TEST/EXCEPTION TEST

- 5.1 Under the NPPF, all new planning applications should undergo a Sequential Test. This test should be implemented by local planning authorities or developers (if the site is not allocated) with a view to locating particularly vulnerable new developments (e.g. residential, hospitals, mobile homes etc.) outside of the floodplain. A full sequential test document is deemed to be outside the scope for this report.
- 5.2 As there is potential for surface water flood risk on site, it is recommended that any extension or refurbishment works are carried out in a flood resilient manner in line with Ciria guidance document - Code of practice for property flood resilience C790.
- 5.3 The development would still need to apply the principles of flood risk assessment to the development and the standing advice for Flood Risk assessment for development would apply.
- 5.4 The NPPF Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table is reproduced below;

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

Table 1: The NPPF Sequential Test: Flood Risk Vulnerability and Flood Zone Compatibility

- 5.5 Using the principles of the Sequential Test outlined above, the proposed development is classed as 'More Vulnerable' under the NPPF due to the development providing accommodation. The development areas are shown to be located within Flood Zone 1 (as defined by the EA flood map for planning) and therefore, in accordance with Table 1 above the proposed development would not need an Exception Test.

6.0 CLIMATE CHANGE ALLOWANCES

- 6.1 Making an allowance for climate change in the design of surface water drainage systems will help to minimise vulnerability and provide resilience to flooding and coastal change in the future. Climate Change allowances vary across the UK subject to catchment conditions and are based on climate change projections and different scenarios of carbon dioxide (CO₂) emissions to the atmosphere.

1% annual exceedance rainfall event

Epoch		
	Central allowance	Upper end allowance
2050s	20%	45%
2070s	25%	45%

Figure 3: Adur and Ouse Management Catchment peak rainfall allowances

- 6.2 The site is located in the Adur and Ouse Management Catchment. On the basis of the climate change table above, the Peak rainfall allowance should therefore be 45% for development with a 100yr design life. The site is outside of the tidal and fluvial flood risk areas.

7.0 SOURCES OF FLOODING

7.1 Design Flood

This is a flood event of a given annual flood probability, which is generally taken as:

- river flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year); or
- tidal flooding with a 0.5% annual probability (1 in 200 chance each year); or
- surface water flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), plus an appropriate allowance for climate change.
- Climate change allowance in this case is 45%, according to the EA climate change allowances data, due to the site being located within the Adur and Ouse management catchment.

7.2 Tidal and Fluvial

The Environmental Agency (EA) mapping for Flood Risk shows the site located within Flood Zone 1 (Low risk of fluvial or tidal flooding). Locations in flood zone 1 have a low probability of flooding. This means in any year land has a less than 0.1% chance of flooding from rivers or the sea.

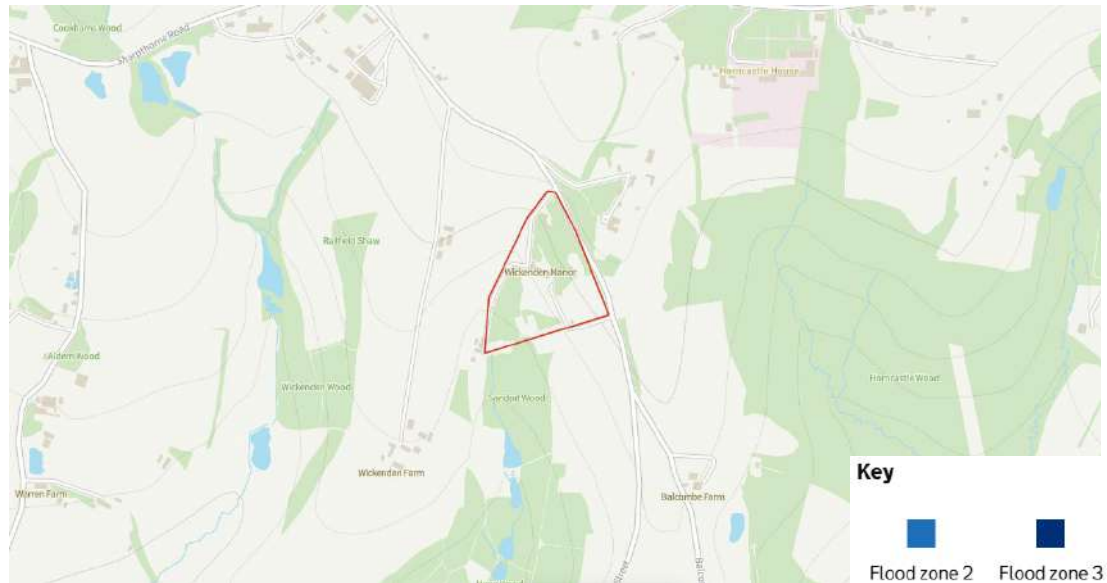


Figure 4: EA Flood map for Planning extract

7.3 EA Long Term Flood Risk map

According to the EA Long Term Flood Risk map, the site is at a very low risk of tidal and fluvial flooding, staying at very low risk between 2036 to 2069. Very low risk means that each year this area has a chance of flooding less than 0.1%. It is understood that the EA Long Term Flood Risk map uses a 15m boundary to determine the flood risk to a development.



Figure 5: EA Long term risk of flooding map extract – Rivers and the Sea

7.4 Surface Water

7.4.1 According to the EA Long Term Flood Risk map, the site is shown at a high risk of surface flooding, staying at a high risk between 2040 to 2060. High risk means that each year this area has a chance of flooding of more than 3.3%.



Figure 6: EA Long term risk of flooding map extract – Surface Water

7.4.2 As the site is shown to be at risk of surface water flooding, the EA RoFSW depths data has been reviewed in greater detail to understand the severity of flooding risk onsite. It is noted the medium risk (1 in 100 year +45%cc) event is considered the design event for the proposed development with the 1in1000yr low risk considered a residual risk.

7.5 The Manor

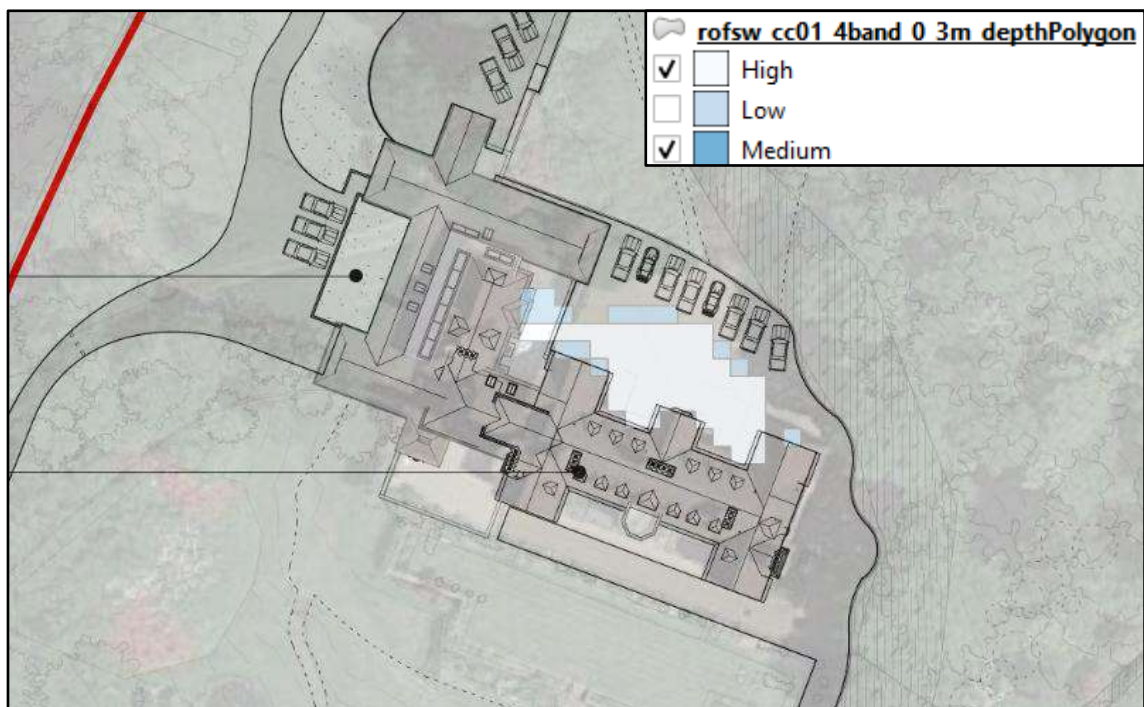


Figure 2 - Figure showing 300mm flood depth extents to the proposed manor (post-works) during the 1 in 100 +CC (medium risk) and 1 in 30 +CC (high risk) storm events

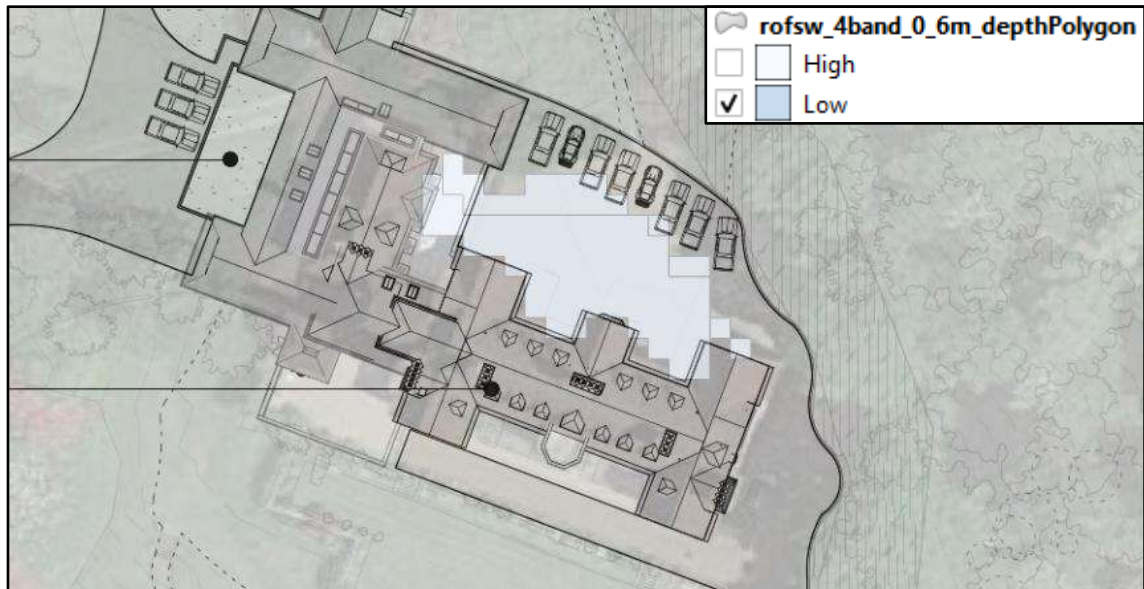


Figure 3 - Figure showing 600mm flood depth extents to the proposed manor (post-works) during the 1 in 1000 (low risk) storm event

- 7.5.1 Following a detailed review of RoFSW data for the Manor, model outputs show that there is an identified surface water flood risk onsite during the design event of 300mm and up to 600mm during the low risk event, along the north-eastern extent of the building and carpark area.
- 7.5.2 As the potential surface water risk is localised against the rear of the building (and is not a wider flow path) and the extension offers opportunity to provide betterment to the existing surface water drainage to reduce potential for surface water flood risk.
- 7.5.3 As basement accommodation is proposed in the extension the client should consider implementing an overland flow pathway around the existing manor to the east to reduce the risk of ponding at the rear of the existing building due to potential blockage of underground drainage.

7.6 The Lodge



Figure 4 - Figure showing no modelled flood risk to the proposed lodge (post-works) during the 1 in 100 +CC (medium risk) and 1 in 30 +CC (high risk) storm events

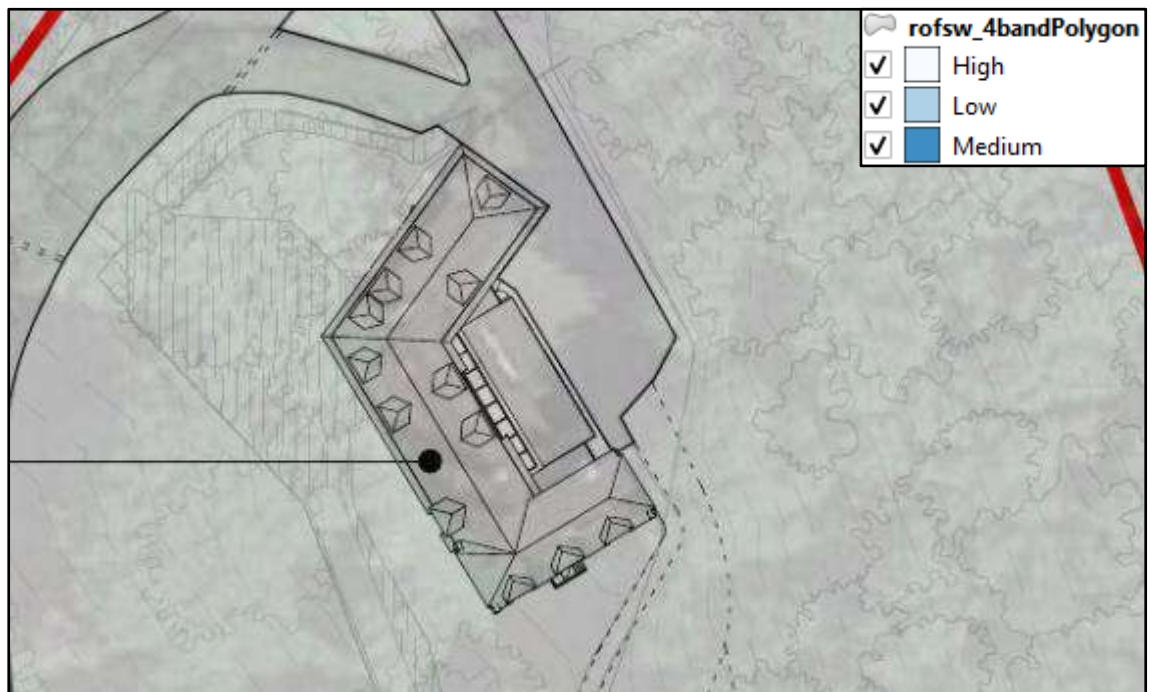


Figure 5 - Figure showing no modelled flood risk to the proposed lodge (post-works) during the 1 in 30 (high risk), 1 in 100 (medium risk) and 1 in 1000 (low risk) storm events

7.6.1 Model outputs show that there is a very low risk of flooding to the proposed lodge development. The very low risk event represents less than a 1 in 1000 year chance and as such requires no mitigation measures.

7.7 The Stables

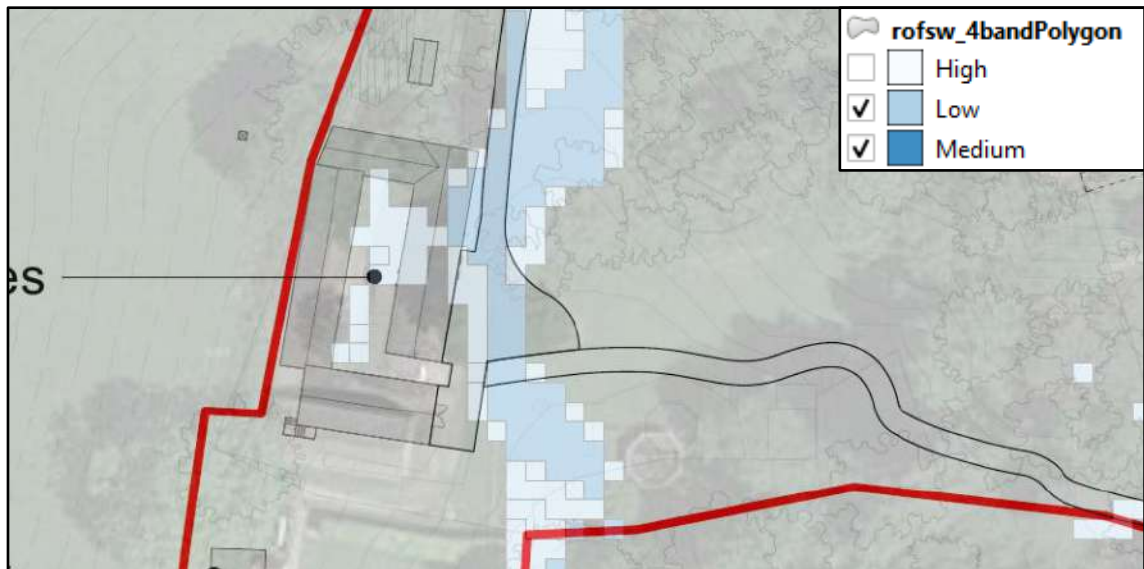


Figure 7 - Figure showing extents of less than 200mm flood depths during to the proposed Stables (post-works) during the 1 in 100 (medium risk) and 1 in 1000 (low risk) storm events

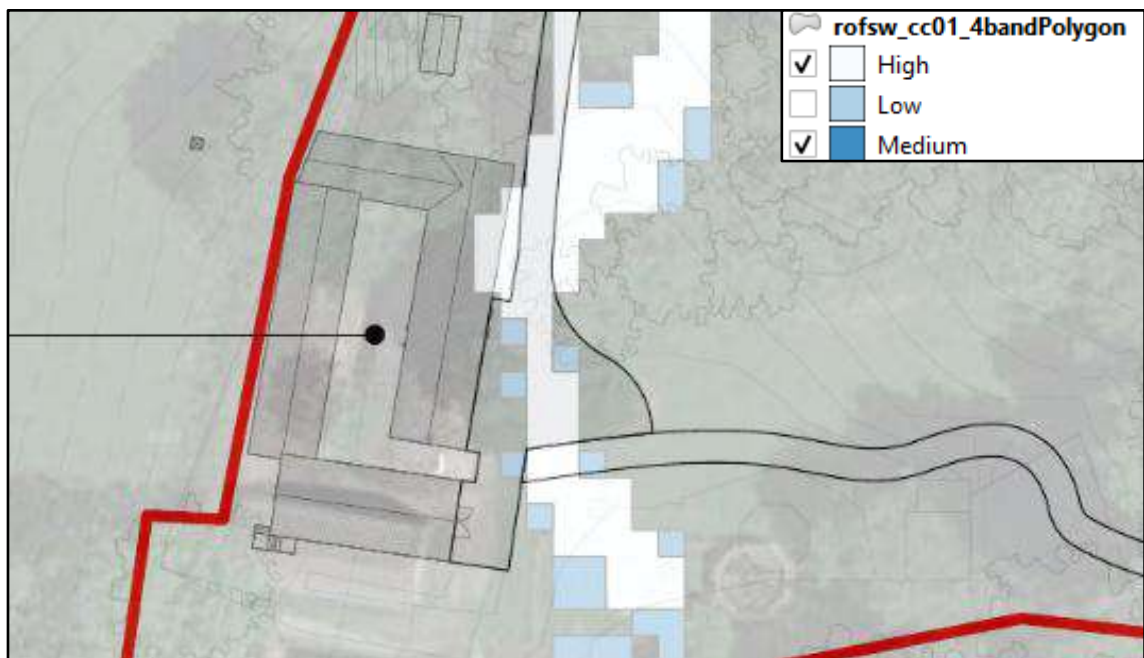


Figure 6 - Figure showing extents of less than 200mm flood depths at the proposed Stables (post-works) during the 1 in 30 +CC (high risk) and 1 in 100+CC (medium risk) storm events

- 7.7.1 Following a detailed review of EA RoFSW data for the Stables, model outputs show that there is an identified surface water flood risk onsite during the design (1 in 100 year +CC) and the low risk (1 in 1000 year) event of less than 200mm, along the eastern extent of the building.
- 7.7.2 It is recommended the client provides flood resistance and resilience measures to protect the proposed development from the risk of flooding from surface water. It is recommended that any extension or refurbishment works are carried out in a flood resilient manner in line with Ciria guidance document - Code of practice for property flood resilience C790. These measures should protect the property to at least 600mm above the floor level.

7.8 Groundwater

7.8.1 Mapping from the West Sussex County Council Local Flood Risk Management Strategy shows that the development site is located outside of groundwater flood risk areas.

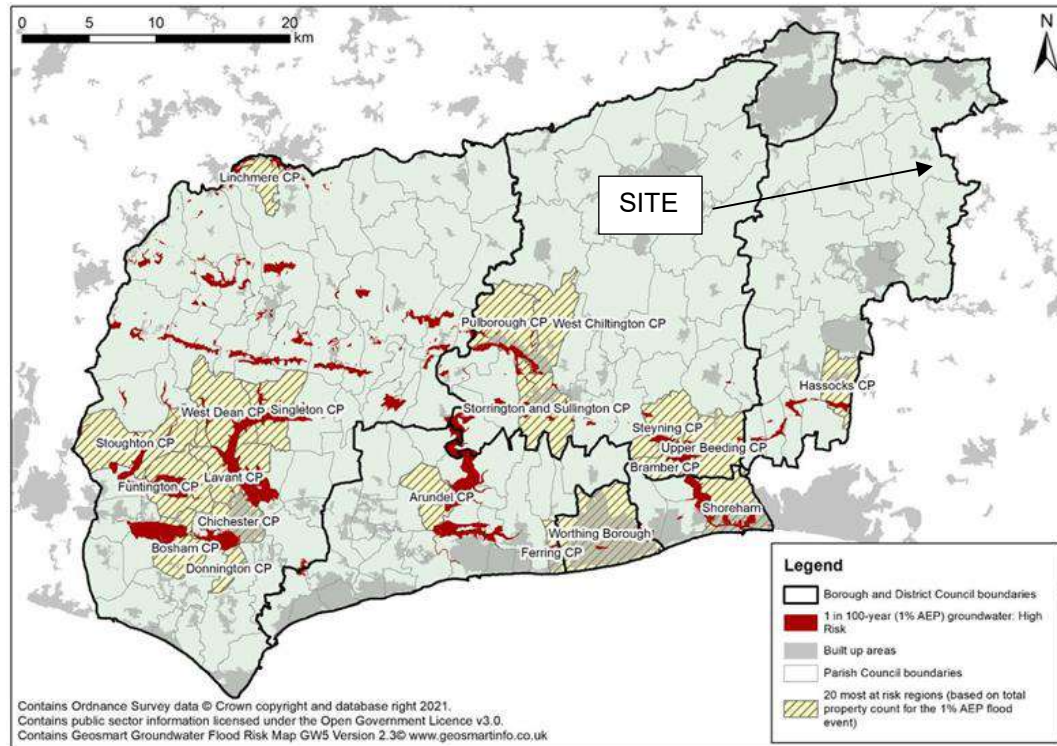


Figure 8: West London SFRA – Susceptibility to Groundwater Flooding map extract

7.9 Historic and Sewer Flooding

Mapping from the West Sussex Local Flood Risk Management Strategy shows that the development site is located in an area which has been unaffected by flooding.

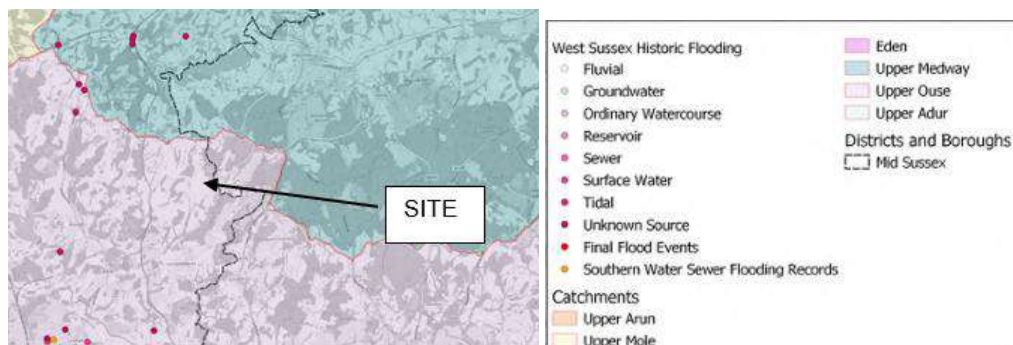


Figure 9: West Sussex County Council Local Flood Risk Management – Historic Flooding map extract

7.10 Reservoir

7.10.1 The EA Long Term Flood Risk map shows that the development is located within an area where flooding from reservoirs is unlikely.

7.10.2 In the unlikely event that a reservoir dam fails, a large volume of water would escape at once, with little or no warning. According to the EA, there has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the enforcement authority for the Reservoirs Act 1975 in England. The EA are responsible to ensure that reservoirs are inspected regularly, and essential safety work carried out.

8.0 RESIDUAL RISKS

- 8.1 Residual risks are limited to overland flow from an exceedance event and potential surface water risk.
- 8.2 EA RoFSW model outputs show that both the manor and stables have flood risk on site during the low risk, 1 in 1000 year, storm events.
- 8.3 The Manor shows up to 600mm of flood depth along the north-eastern edge of the main part of the building.
- 8.4 The lodge shows flood depths of less than 200mm during the medium and low risk storm events, along the eastern edge length of the building.
- 8.5 The low risk event represents the 1in1000 year storm event and is considered a residual risk and requires mitigation measures.
- 8.6 A surface water drainage strategy, incorporating SuDS, is recommended to mitigate against the increase in surface water runoff, and in turn elevated flood risk, on the site due to the extended hardstanding areas.

9.0 FLOOD RISK MANAGEMENT MEASURES

- 9.1 It is understood that the proposal is for development to three separate buildings and some external areas:
 - Three storey extension to the Manor building to include introducing sleeping accommodation at basement level
 - Redesign of the internal spaces and construction of a conservatory at the Lodge building
 - Extension and change of use of existing stables to introduce a church and sleeping accommodation
 - New hard surface basketball court, tennis court and Installation of solar panel arrays within the walled garden.

The Manor

- 9.2 Following a detailed review of EA RoFSW data for the Manor, model outputs show that there is an identified surface water flood risk onsite during the design event of 300mm and up to 600mm during the low-risk event, along the north-eastern extent of the building and carpark area.
- 9.3 It is recommended that additional measures are introduced to these proposals which mitigate potential flood risk. This would entail flood resilient construction at ground floor. It is recommended that ground floor be constructed in a flood resistant manner in line with Ciria C790F Code of Practice for Property Flood resilience and The Department for Communities and Local Government - Improving the Flood Performance of New Buildings: flood resilient construction (2007) to allow the building to recover in the event of flooding. Flood resilience measures could include the following:
 - using materials with low permeability to at least 900mm above FFL
 - using flood resilient materials (for example lime plaster) and design (for example raised electrical sockets) up to 900mm above FFL
 - Users sign up to flood warnings direct
 - making sure there's access to all spaces to enable drying and cleaning
 - Entrance levels to be no lower than existing
 - Flood proof doors, windows, airbricks and service penetrations.
 - Non-return valves on drainage connections as it exits the building

9.4 During the construction works, a surface water drainage strategy, incorporating SuDS, is recommended in close proximity to the proposals (building and carpark) to mitigate, as much as feasible, the surface flood risk.

9.5 The client should also consider implementing an overland flow route around the Manor building to provide a surface water pathway should there be any belowground blockage.

The Stables

9.6 Following a detailed review of EA RoFSW data for the Stables, model outputs show that there is an identified surface water flood risk onsite during the design (1 in 100 year +CC) and the low risk (1 in 1000 year) event of less than 200mm depth, along the eastern extent of the building.

9.7 It is recommended that additional measures are introduced to these proposals which mitigate potential flood risk. This would entail flood resilient construction at ground floor. It is recommended that ground floor be constructed in a flood resistant manner in line with Ciria C790F Code of Practice for Property Flood resilience and The Department for Communities and Local Government - Improving the Flood Performance of New Buildings: flood resilient construction (2007) to allow the building to recover in the event of flooding. Flood resilience measures could include the following:

- using materials with low permeability to at least 600mm above FFL
- using flood resilient materials (for example lime plaster) and design (for example raised electrical sockets) up to 300mm above FFL
- Users sign up to flood warnings direct
- making sure there's access to all spaces to enable drying and cleaning
- Entrance levels to be no lower than existing
- Non-return valves on drainage connections as it exits the building

The Lodge

9.8 EA RoFSW Model outputs show that there is a very low risk of flooding to the proposed lodge development. The very low risk event represents less than a 1 in 1000-year chance and as such requires no specific mitigation measures would be necessary.

10.0 CONCLUSION

- 10.1 Meridian Civil Engineering Consultancy LTD (MCEC) has been instructed by Netherhall Educational Association to prepare a site-specific Flood Risk Assessment (FRA) for the development at Wickenden Manor, East Grinstead, RH19 4JB.
- 10.2 It is understood that the proposal is for development to three separate buildings and some external areas:
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 - New hard surface basketball court, tennis court and Installation of solar panel arrays within the walled garden.
- 10.3 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site consists of Ashdown Formation – Sandstone and siltstone (Source: BGS).
- 10.4 The site is located within an area shown within Flood Zone 1 however there are areas at high chance of surface water flooding across the site. Locations in flood zone 1 have a low probability of flooding from rivers or sea. This means in any year land has a less than 0.1% chance of flooding from rivers or the sea. High chance of surface water flooding means that each year this area has a chance of flooding of more than 3.3%.
- 10.5 As the site is shown to have areas at risk of surface water flooding, the Environment Agency (EA) modelled RoFSW depths data has been reviewed in greater detail to understand the severity of flood risk on site.
- 10.6 Following a detailed review of GIS data, model outputs show that there is an identified surface water flood risk to the manor and the stables. Flood depths are shown to reach up to 300mm at the north-eastern extent of the Manor and less than 200mm at the eastern edge of the stables during the design 1 in 100 + 45%CC event, in accordance with NPPF guidance.
- 10.7 Following a detailed review of EA RoFSW data for the Manor, model outputs show that there is an identified surface water flood risk onsite during the design event of 300mm and up to 600mm during the low-risk event, along the north-eastern extent of the building and carpark area.
- 10.8 Following a detailed review of EA RoFSW data for the Stables, model outputs show that there is an identified surface water flood risk onsite during the design (1 in 100 year +CC) and the low risk (1 in 1000 year) event of less than 200mm depth, along the eastern extent of the building.
- 10.9 EA RoFSW Model outputs show that there is a very low risk of flooding to the proposed lodge development. The very low risk event represents less than a 1 in 1000-year chance and as such requires no specific mitigation measures.
- 10.10 It is recommended that additional measures are introduced to the Stable and Manor proposals which mitigate potential flood risk. This would entail flood resilient construction at ground floor (and basement for the Manor). It is recommended that ground and basement floors be constructed in a flood resistant manner in line with Ciria C790F Code of Practice for Property Flood resilience and The Department for Communities and Local Government – Improving the Flood Performance of New Buildings: flood resilient construction (2007) to allow the building to recover in the event of flooding. Flood resilience measures could include the following:
- using materials with low permeability to at least 900mm above FFL
 - using flood resilient materials (for example lime plaster) and design (for example raised electrical sockets) up to 900mm above FFL
 - Users sign up to flood warnings direct
 - making sure there's access to all spaces to enable drying and cleaning
 - Entrance levels to be no lower than existing

- Flood proof doors, windows, airbricks and service penetrations.
 - Non-return valves on drainage connections as it exits the building
- 10.11 During the construction works, a surface water drainage strategy, incorporating SuDS, is recommended in close proximity to the Manor proposals (building and carpark) to mitigate, as much as feasible, the surface flood risk shown to the rear of the existing building.
- 10.12 The client should also consider implementing an overland flow route around the Manor building to provide a surface water pathway should there be any belowground blockage.
- 10.13 A surface water drainage strategy, incorporating SuDS, is recommended to mitigate against the increase in surface water runoff, and in turn elevated flood risk, on the site due to the extended hardstanding areas. The SuDS strategy is outside the scope of this report.
- 10.14 This report has been produced broadly in accordance with the National Planning Policy Framework (NPPF), West Sussex County Council Local Flood Risk Management Strategy, Mid Sussex District Council local guidance.

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