

Flood Risk Assessment

In support of:

Development at Villa Farm, Hewish, Weston-Super-Mare,
BS24 6RQ

On behalf of:

Mead Realisations Ltd.

Report reference:

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1.0 Introduction

- 1.1 The following information is submitted in support of applications for proposed development at Villa Farm, Hewish, Weston-Super-Mare, BS24 6RQ. The proposed development includes a two-storey rear extension to the main dwellinghouse and the change of use of 2no. agricultural buildings to 2no. detached dwellinghouses. The development is proposed under separate planning applications; 'Prior approval: change of use – agriculture to dwellinghouse' and 'householder planning permission'.
- 1.2 In accordance with paragraph 167 (footnote 55) of the National Planning Policy Framework (the Framework), the applicants hereby submit a Flood Risk Assessment (FRA), to inform the consideration of flood risk as part of these applications.

2.0 Flood Risk

- 2.1 Based on the Environment Agency's Flood Map for Planning (Rivers and Sea), the entire proposed development site is located within Flood Zone 3 and is also within an area which benefits from flood defences.
- 2.2 Whilst the mapping does not differentiate between areas of Flood Zone 3a and Flood Zone 3b (functional floodplain), the Level 1 Strategic Flood Risk Assessment (SFRA) prepared by Jacobs in June 2020 confirms all existing 'solid buildings' are considered to be within Zone 3a for planning purposes, together with any other land prevented from flooding in a 5% (1 in 20) annual chance event by the presence of solid buildings and existing infrastructure, i.e. flood defences.
- 2.3 On the basis that the site benefits from flood defences with a standard of protection greater than 1 in 20 year event, the site is considered to be located in Flood Zone 3a. Land in Flood Zone 3a comprises of land assessed as having a 1 in 100 year or greater annual probability of river flooding (>1%) or a 1 in 200 year or greater annual probability of sea flooding (>0.5%) in any year.
- 2.4 With reference to the SFRA, the site is located on the North Somerset Levels. Surface water flooding may occur in this low lying area when water collects during times of heavy rainfall. Ponding may also occur when the infiltration capacity of the underlying strata is exceeded. This has the potential to lead to adverse effects on buildings and infrastructure. Due to the low lying ground that forms a large part of the North Somerset Levels, flood defences are maintained to provide protection to vulnerable areas. The defences nearest to the site (the site delineated by the red dot marker) are identified below:

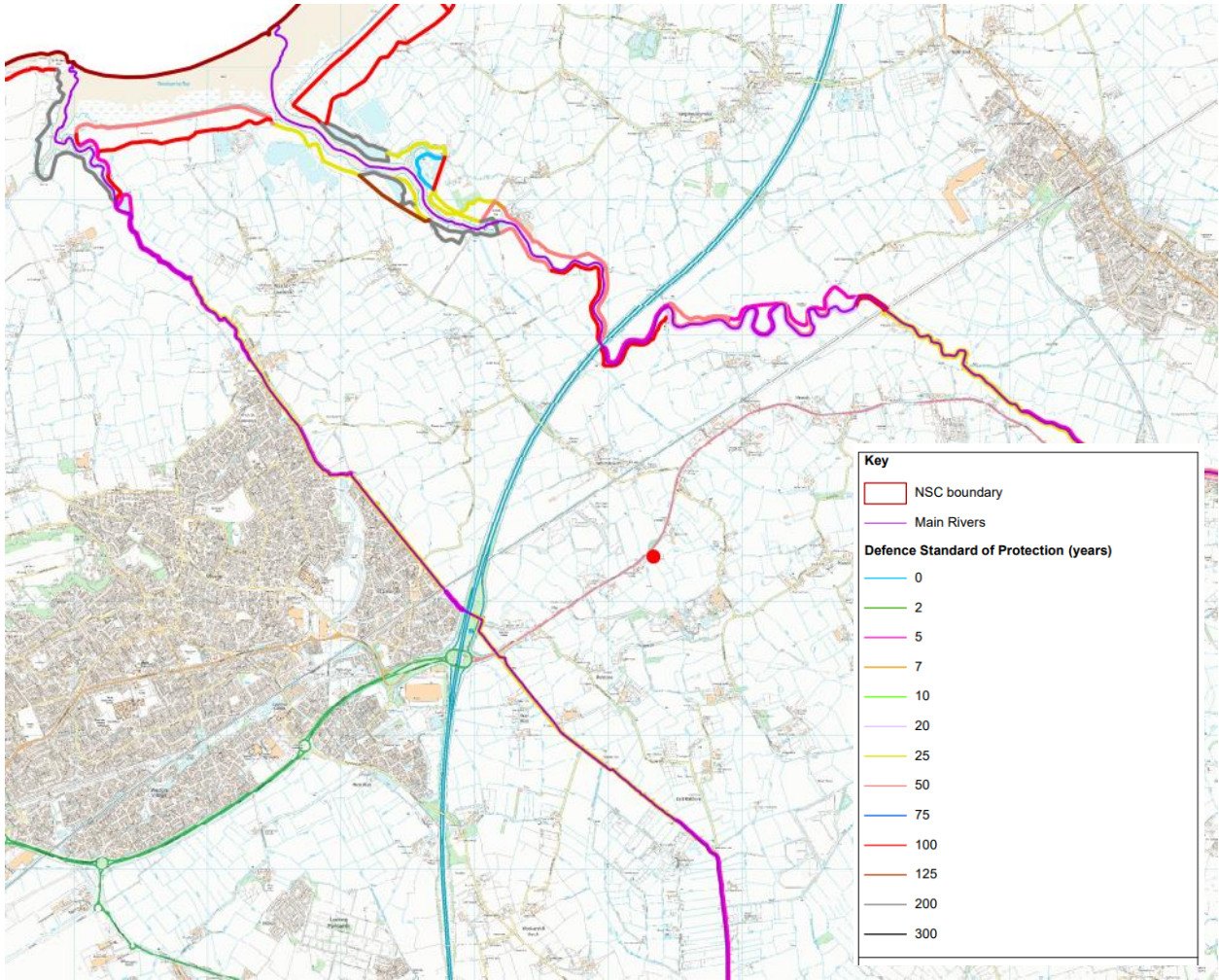


Figure 1: Flood Defences

- 2.5 The SFRA shows that the following flood defences are in place:
- 2.6 Man-Made Sea Defences:
- 14.6km in length, lowest point of 4.66mOD at Tutshill Sluice
 - Standard of Protection varies between 1 in 5yr and 1 in 100yr. The majority of the known standards of defences have been designed for a 1 in 100yr event.
 - Maintained by the EA
- 2.7 Natural Coastal Protection:
- 8.6km in length
 - Standard of Protection unknown
 - Maintained privately
- 2.8 Man-Made Coastal Protection:
- 0.6km in length, single location
 - Offers little protection to the defence behind at Blakes Pool
 - Standard of protection unknown
 - Maintained privately
- 2.9 There does not appear to be any historical evidence of flooding at the site.
- 2.10 Currently rainwater drains directly into the ground and to a network of rhyes around the site. The proposed development will not alter this arrangement as no new impermeable surfaces are proposed as part of these applications.
- 2.11 This FRA considers extant flood risk and future flood risk and applies the principles of flood mitigation to ensure the safety of residents in a flood event. The FRA concludes that the proposed development would not increase flood risk elsewhere and that adequate mitigation measures can be implemented to ensure future safety of the development.

3.0 Flood risk vulnerability, flood zone compatibility and sequential and exception tests

- 3.1 With reference to Table 2 in the Flood Risk and Coastal Change section of the National Planning Practice Guidance (NPPG), the existing dwellinghouse on the site is defined as 'More Vulnerable'; buildings used for dwelling houses. Whilst the agricultural buildings and land are defined as 'Less Vulnerable'; land and buildings used for agricultural and forestry.
- 3.2 Furthermore, Table 3 in the same section of the NPPG goes on to inform which vulnerability classifications are appropriate in each flood zone, and which should not be permitted. It is noted that more vulnerable development in Flood Zone 3a is considered appropriate subject to the flood risk Exception Test.

- 3.3 However, with reference to the Notes to Table 3, it is clear that the flood risk Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site.
- 3.4 For the purposes of flood risk, minor development means:
- *minor non-residential extensions: industrial/commercial/leisure etc extensions with a footprint less than 250 square metres.*
 - *alterations: development that does not increase the size of buildings eg alterations to external appearance.*
 - *householder development: For example; sheds, garages, games rooms etc within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling eg subdivision of houses into flats.*
- 3.5 The proposed two storey rear extension falls within the definition of householder development and as such does not need to be the subject of the flood risk Sequential and Exception tests.
- 3.6 Furthermore, the proposed change of use of the agricultural buildings on site, does not include the various exceptions listed in the notes to Table 3 and as such does also not need to meet the flood risk Sequential and Exception Tests.

4.0 Design Flood Level and Climate Change

- 4.1 The design flood (1% with climate change) should be used to ensure 'safe' development. For 'more vulnerable' development e.g. housing, the 'higher central' climate change allowance (35%) should be used, as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.
- 4.2 It is difficult to accurately assess how climate change will affect the site. The extents of floodplains are directly linked to a combination of events and each combination of events will invariably result in a different flooding outcome.
- 4.3 Whilst climate change may have an impact on future flood risk affecting the site, it has been accepted locally that current data implies that areas already at risk of flooding are not likely to experience that risk increasing significantly.

5.0 Safe Development

- 5.1 Whilst neither the flood risk sequential and exception tests are relevant to the development proposals at the site, it is still necessary to ensure that the proposed development is safe. The two elements of development on site are considered in turn:

5.2 **Change of use of agricultural buildings to dwellinghouses**

5.3 With current warning arrangements, the occupiers of the proposed dwellings will have sufficient time to self-evacuate, or otherwise would be able to move up to the internal flood refuge area within each new dwelling depending on the available advice at the time. By this time, any remaining water will be all but stationary or in retreat and if a second surge tide is predicted the occupiers would be able to evacuate the property.

5.4 The internal ground floor finished floor levels will be set 300mm above the existing ground levels to provide some resilience to flooding from all sources.

5.5 The larger of the two barns, will have an internal flood refuge area set at first floor level on a mezzanine and accessed via a staircase.

5.6 The smaller of the two barns will have a raised ground floor finished floor level in one of the bedrooms (see the submitted proposed floor plan). This will be set 600mm above the design flood level.

5.7 Both flood refuge areas will have sufficient floor space to comfortably accommodate the total number of occupants expected within each dwelling for potentially a number of hours. Each refuge area will have adequate head room and it will be powered to allow lighting and electrical points.

5.8 The buildings to which these applications relate are already present on site, therefore their conversion into dwelling houses will not result in a loss in flood plain storage capacity or an increase in runoff rate when compared to the existing situation.

5.9 The site is not near to any known locations where the flow of flood water could be a source of extra risk.

5.10 All electric points will be installed at heights of at least one metre above ground floor level and flood control boards are proposed across entrances in order to resist flood waters entering the building and also to increase the time available for safe evacuation.

5.11 **Householder Development**




5.12 In line with the Environment Agency's flood risk standing advice for minor extensions, the proposed finished floor levels on the ground floor of the extension will be no lower than the existing ground floor finished floor levels in the dwelling. The submitted plans illustrate this.

5.13 The property will be subject to a Flood Evacuation and Management plan, informed by the Environment Agency's detailed flood warning service, which will ensure safe access and egress prior to the onset of flooding. This is discussed in more detail below.

5.14 All electric points will be installed at heights of at least one metre above ground floor level and flood control boards are proposed across entrances in order to resist flood waters entering the building and also to increase the time available for safe evacuation.

6.0 Flood Evacuation and Management Plan

- 6.1 The site benefits from both a Flood Alert and a detailed Flood Warning service from the Environment Agency.
- 6.2 **Flood warnings and flood alert areas**
- 6.3 Prior to first occupation of the dwellings occupiers will sign up to the Environment Agency Flood Warning Scheme (<https://www.gov.uk/sign-up-for-flood-warnings>) and frequently monitor the official national flood warning service:
- 6.4 <https://flood-warning-information.service.gov.uk/warnings> - 0845 988 1188.
- 6.5 The following action will be taken for each flood warning:

Warning	Message	Timing	Action
 FLOOD ALERT	Flooding is possible. Be prepared.	2 hours to 2 days in advance of flooding.	<ul style="list-style-type: none"> ▪ Be prepared for flooding. ▪ Prepare a flood kit.
 FLOOD WARNING	Flooding is expected. Immediate action required.	Half an hour to 1 day in advance of flooding.	<ul style="list-style-type: none"> ▪ Act now to protect your property. ▪ Block doors with flood boards or sandbags and cover airbricks and other ventilation holes. ▪ Move pets and valuables to a safe place. ▪ Keep a flood kit ready. ▪ Move any critical equipment and information to a safe location.
 SEVERE FLOOD WARNING	Severe flooding. Danger to life	When flooding poses a significant threat to life and different actions are required.	<ul style="list-style-type: none"> ▪ Be ready should you need to evacuate from the property. ▪ Co-operate with the emergency services and call 999 if you are in immediate danger.

Warning Removed	No further flooding is currently expected for your area.	Issued when a flood warning is no longer in force.	<ul style="list-style-type: none"> ▪ Flood water may still be around and could be contaminated. ▪ If you've been flooded, ring your buildings and contents insurance company as soon as possible.
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- 6.6 Access to the site is from a layby off the A370 and on the occasions when flood waters would make it necessary to arrange safe evacuation of the dwellings then this route would also provide egress from the site. Existing footpaths along the route will allow safe passage from the site.
- 6.7 Safe evacuation of the site would involve the occupiers of the dwelling registering with the Environment Agency flood warnings system and taking all other appropriate steps to stay aware of early flood warnings.
- 6.8 Evacuation of the site will be aided by the fact that future occupiers will be acquainted with flood warning systems and familiar with the route providing egress from the site.

7.0 Impacts on flood risk elsewhere

- 7.1 The NPPG indicates that developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (flood risk betterment). Issues to consider include providing 'level for level, volume for volume' flood storage compensation, reducing impact on storage and flow routes through the layout, form and design of the building/structure; and providing surface water disposal.
- 7.2 Due to the scale of the proposed rear extension, the impact on the wider floodplain is considered negligible. It is also not possible to provide flood storage compensation, due to the absence of land outside of the floodplain on site.
- 7.3 Furthermore, the proposed built development on site (i.e. the extension) will not act to impede or alter flood flow routes within the local area due to the presence of existing buildings surrounding the site.
- 7.4 As such, the proposals are not considered to cause adverse impacts on flood risk elsewhere post development.

8.0 Residual Risks

- 8.1 There are residual flood risks at the site, including flood defences overtopping or breaching and residual risks after mitigation, including risk during an extreme 0.1% (1 in 1000 year) event. However, the detailed Flood Evacuation Management Plan will ensure

risks are minimised and occupants are safe.

9.0 Conclusion

- 9.1 As outlined above, the proposed development on the site will not increase flood risk elsewhere. The development will be appropriately flood resistant and resilient and the residual flood risk can be safely managed. Furthermore, safe access and egress are included, as part of the proposed flood evacuation management plan. As such the proposed development accords with all relevant local and national planning policies.

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