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FLOOD RISK ASSESSMENT

IN RESPECT OF;

Sage Cottage, Bank Road, Pilning, Bristol, BS35 4JQ

Job reference: 1804

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1. INTRODUCTION

This Flood Risk Assessment is in respect of our Household planning application for the proposed replacement rear extensions at Sage Cottage, Bank Road, Pilning, BS35 4JQ for Mr Cemery and Ms Coulbert.

The rear extensions already exist but are add ons, to add ons. Our client wishes to demolish them and tidy them up, creating an improved aesthetic appearance. In doing so it increases the floor area by 7.5sqM, due to an infill.

This assessment provides a review of the application site and proposed development. It then considers the relevant policy and reviews the flood risk at the site in respect of the proposal.

2. THE SITE AND THE PROPOSED DEVELOPMENT

2.1. Application Site

The application site comprises Sage Cottage, BS35 4JQ which is for a replacement rear extension. The proposal is for a similar footprint of building as is currently on site. The dwelling already has the benefit of a flood refuge on the first floor. The existing building is constructed in inappropriate materials and has little or no thermal qualities within the structure.

The site is within a residential area. This Not a new dwelling or residential area. The floor area is an additional 7.5sqM and therefore is not dramatically increasing any risk. By reducing corridors and inferior construction it decreases the risk to life.

The site is highly sustainable as it is situated within the settlement boundary of Pilning and, as such, there is a shop, a doctors surgery, several public houses and is surrounded on two sides by a Primary school.

2.2. Application Proposals

This application is seeking planning permission for the proposed replacement rear extension to an existing dwelling.

Vehicular access – will be as existing, which is substantial for a dwelling.

The extension of the dwelling will be constructed to a high standard to include the flood resilient measures noted in paragraphs 3.4.

It will be recommended that the owner and/or occupier of the dwelling, will continue to sign up to the local Flood Warning Protection Scheme, and also to Floodline Warnings Direct (0845 988 1188), as they do at present.

3. POLICY CONTEXT

This section of the Flood Risk Assessment sets out the relevant policy in respect of flood risk.

3.1. Local Policy

The statutory development plan for South Gloucestershire currently comprises the Core Strategy and Policies, Sites and Places Plan.

On the Council's Policies Map the site is located within the settlement boundary of Pilning and also the Severn Estuary Coastal Zone. It is also situated within Flood Zone 3 and an area that benefits from flood defences.

In this regard, the policy of most relevance is Policy PSP20 (Flood Risk, Surface Water and Watercourse Management) within the Policies, Sites and Places Plan.

The site is shown to be within Flood Zone 3 of the Environment Agency's indicative flood plain maps and is therefore defined as at risk from fluvial flooding within a 1 in 100-year annual probability and with a 1 in 200-year annual probability of tidal flooding. Predicted Future (2110)

Actual Flood Risk Depths for the area are as follows:

1-1.5m, Flood Hazard (Figure 7.3a, Capita Symonds' Strategic Flood Risk Assessment Summary report, March 2011 for Bristol City Council, South Gloucestershire Council & the Lower Severn Drainage Board).

1 - 2m, Tidal Event (Figure 7.5a, Capita Symonds' Strategic Flood Risk Assessment Summary report, March 2011 for Bristol City Council, South Gloucestershire Council & the Lower Severn Drainage Board).

The primary sources of flooding to the site are from tidal flooding of the River Severn. The site lies within tidal Flood Zone 3. Flood Zone 3 comprises land assessed as having a 0.5% (1 in 200) or greater annual probability of flooding from the sea in any year.

Tidal Flood Defences are constructed of earth bund and concrete retaining walls with a coastal crest level of 9.76mAOD. Work is due to commence in the Autumn of 2020 to increase the flood defences to the Avonmouth and Severnside area by 2.5 metres in height by the Environment Agency in anticipation of rising sea levels resulting from climate change. The extract from the 'Flood Zone Map' below shows the location of the site within the historic Flood Zone. The hatched area shows land benefitting from existing flooding defences. As noted above, there are widespread strategic flood defences along the Severn, with further improvements currently taking place.

The historic maps in the SFRA show that there is no history of the site flooding. Parts of Severn Beach were flooded most recently in 1981. The applicant can confirm that

there have been no incidences of on-site flooding or flooding caused by surface water drainage from the site since their purchase of the site.

3.2. Bank Road Flood Risk Flooding History

Environment Agency data shows that the site has no history of flooding.

3.3. Future Climate Change and Development

Government guidance regarding future flood risk and development is detailed in the technical guide to the NPPF. This guidance predicts that annual rainfall is expected to gradually increase over the years such that it will have increased by approximately 30% by 2115.

This increase is expected to result in potential increases in peak fluvial flows of up to 20% for a given return period. Within the southwest region, sea levels are expected to rise by up to 3.5mm/yr by 2025, 8.0mm/yr from 2025 to 2055 and 11.5mm/yr from 2055 to 2085.

The Level 1 SFRA confirms that this part of the district is categorised as Flood Zone 3.

Where raised defences are present, the river channel up to the top of the banks or flood defence is classified as functional floodplain (Flood Zone 3b), whilst providing the defences are of a high enough standard, the land behind the defences is classified as Flood Zone 3a.

The Flood Zone Map shows the location of the property within the Historic Flood Zone. The hatched area shows land protected by existing flooding defences.

Planning permission has been granted for improvements to the existing flood defences along the River Severn, which are currently under construction. The project comprises delivery of significant flood defence and ecological assets designed to unlock and safeguard development at Avonmouth-Severnside Enterprise Area (ASEA). The flood defence element of the project will primarily enhance and upgrade existing flood defence infrastructure along a 17km stretch. The Avonmouth and Severnside Enterprise Area Coastal Inundation model, has since been produced by the Environment Agency. This provides scenarios for both pre and post development of the defences. The EA data for the 1 in 200-year scenario shows a 2.52m predicted level for predevelopment, dropping to 1.49m for post-development, as noted below.

<u>Pre-Development 2076 (with existing defences)</u>

Pre-Development 2076 0.5% (1 in 200 year) AEP Depth	1.27m	Depth
Pre-Development 2076 0.5% (1 in 200 year) AEP Level	2.52m	Level
Pre-Development 2076 0.1% (1 in 1000 year) AEP Depth	7.04mAOD	Depth
Pre-Development 2076 0.1% (1 in 1000 year) AEP Level	8.2700005mAOD	Level

<u>Post-Development 2076 (new defences in place)</u>

Post-Development 2076 0.5% (1 in 200 year) AEP Depth	0m	Depth
Post-Development 2076 0.5% (1 in 200 year) AEP Level	1.49m	Level
Post-Development 2076 0.1% (1 in 1000 year) AEP Depth	0mAOD	Depth
Post-Development 2076 0.1% (1 in 1000 year) AEP Level	7.27mAOD	Level

Post-Development 2098 (new defences in place)

Post-Development 2098 0.5% (1 in 200 year) AEP Depth	0m	Depth
Post-Development 2098 0.5% (1 in 200 year) AEP Level	3m	Level
Post-Development 2098 0.1% (1 in 1000 year) AEP Depth	0mAOD	Depth
Post-Development 2098 0.1% (1 in 1000 year) AEP Level	8.4200001mAOD	Level

Post-Development Breach of new defences 2098

Post-Development 2098 0.5% (1 in 200 year) AEP Depth (Breach Composite)	0.87m	Depth

The overtopping of the sea defences is the primary source of flood risk for this site. The site is considered low risk of fluvial flooding.

3.4. Flood Resilient Measures

The risk of flooding in the area would only be in the event of the overtopping of the strategic flood defences and is considered to be low.

The levels of the existing site are as follows:

Ground Level – 6.40mAOD
Ground floor level - 6.60mAOD
First floor level - 9.20mAOD

Flood proofing of the proposed development has been incorporated where appropriate, as listed below:

1. The ground floor will be raised not less than 150mm, with additional insulation and screed, finished with impervious floor tiles which are to be laid with cementitious adhesive and waterproof grouting.

2. Any fitted base units are to be constructed in nonpermeable material.

3. The internal walls are to have waterproof plaster, after the walls have received three coats of bitumen linked to the new dpm.

4. Any new service entry points are to be sealed with closed cell material.

5. All pipes are to be insulated with closed cell insulation.

6. Non-return valves will be fitted to appropriate drains above predicted flood levels.

7. Electrical sockets are to be installed 900 mm above ground floor level.

8. Electric ring mains will be installed at first floor level with drops to ground floor sockets and switches.

9. Comms services will be protected by suitable insulation in the distribution ducts to prevent damage.

10. The new door to be installed will be pvcu, sealed to the perimeter with silicone pointing, all around.

11. External Utility meters are to be sited above predicted flood levels.

12. The existing first floor level will automatically create a flood safe refuge area.

13. Externally, the area will be in principle as it is but replacing any nonpermeable ground material with permeable

3.5. National Policy

The revised NPPF was published on 24 July 2019 and sets out the government's planning policies for England and how these are expected to be applied. The revised NPPF replaces the previous NPPF published in March 2012.

Paragraph 163 of the NPPF notes that when determining planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site specific flood risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of the assessment it can be demonstrated that:

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
b) the development is appropriately flood resistant and resilient;
c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
d) any residual risk can be safely managed; and
e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

The NPPF specifically states that applications for replacement dwellings should not be subject to the sequential or exception tests but should still meet the requirements for site specific flood risk assessments.

4. FLOOD RISK ANALYSIS

On the Government's Flood Map for Planning, it is acknowledged that the site is situated within Flood Zone 3, however it is also an area that benefits from substantial flood defences, including the M49 and the railway embankment. It is noted that land and property in this flood zone would have a high probability of flooding without the local flood defences.

There are widespread strategic flood defences along the River Severn, with further improvements currently taking place. The Capita Symonds' Strategic Flood Risk Assessment Summary report, March 2011 notes that current flood defences alongside the estuary offer a variety of standards of protection with some locations, such as the Binn Wall in the Severn Beach area have defence heights that may provide protection during events with a probability of 1 in 200 years or greater.

The document acknowledges that tidal flooding is the principle risk for the area, however informal & defacto flood defences along the Avonmouth / Severnside frontage may prevent tidal flooding from occurring at the present time. The existing tidal flood defences include wave walls, concrete surfacing and earth bund. As noted above, the embankments are also expected to be increased in height by the Environment Agency in anticipation of rising sea levels resulting from climate change.

The proposed rear extension creates a similar footprint to the existing. There will be no increase in hardstanding, in fact the proposals introduce permeable materials to the external surface area of the site, removing all none permeable surfacing materials.

As such, it is considered that the proposals will not increase surface water runoff in the area. The NPPF specifically states that applications for domestic extensions should not be subject to the sequential or exception tests.

5. CONCLUSION

The site is situated within Flood Zone 3, however, it is also an area that benefits from substantial flood defences of the River Severn. It is noted that land and property in this flood zone would have a high probability of flooding without the local flood defences. This report identifies the dangers from flood risk, which given the defences is deemed to be very low.

This FRA demonstrates that the proposed works is sustainable in terms of flood risk, and can be summarised as follows:

a) The site has very adequate defences against both tidal and fluvial flooding, and the tidal sea defences are considered to be sufficient to eliminate flood risk. The area around the proposed works is permeable and, as described above, a number of flood resilient measures will be incorporated into the design and final construction.

b) The site is defended against both, as stated in the Level 1 and Level 2 Strategic Flood Risk Assessments carried out by South Gloucestershire Council. The tidal sea defences are considered to be sufficient to eliminate this source of flood risk.

c) In the event that defences are breached, the proposed works will be designed to minimise the impact of flooding and an evacuation strategy will be adopted.

The site is defended against both tidal and fluvial flooding, and the tidal sea defences are considered to be sufficient to eliminate flood risk. Notwithstanding this, the development simply involves the replacement of part of the existing ground floor, with flood prevention design and products installed as part of the conversion works. It does not involve the creation of any substantial new floorspace (only 7.5sqM) at ground floor level, or increase in hardstanding.

As a result of our proposal, we are also not increasing flood risk to any other area as a similar rear extension already exists with a similar footprint.