

FLOOD RISK ASSESSMENT

For Planning Application

**6 Webb Close
HAYLING ISLAND
PO11 9JG**

28 July 2023

Submitted By:

RS Architecture Ltd.
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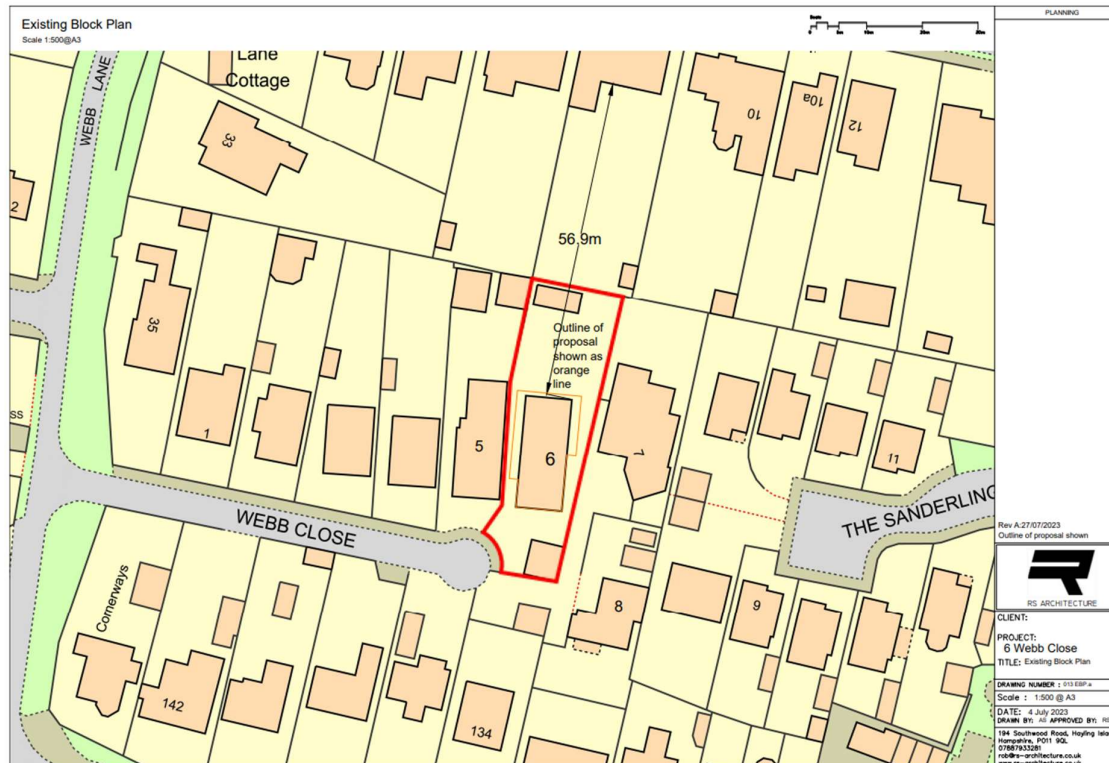


1.0 Development site:

The proposed development site is located at 6 Webb Close, Hayling Island PO11 9JG (henceforth referred to as “the site”) and is currently in use as a four-bedroom detached bungalow dwelling over ground floor with off street parking, garage, and a summer house outbuilding to the rear of the site.

The EA has designated the site lies within Flood Risk Zone 2. (Ref flood map and text)

Below is a ‘not to scale’ OS location plan of the application site (outlined in red). The orange line indicates areas of proposed extension to the existing plan.



2.0 Executive Summary:

- This FRA has been carried out in accordance with the National Policy Framework and NPPG to assist the council, Coastal Partners and the EA in their assessment of the planning application.
- The proposed development is to replace and extend existing living spaces located on the northern side of the current dwelling without changing the existing number of bedrooms (4 nos.) nor their placement relative to elevation AOD. The replacement living spaces will align with the existing floor level which is 5.029m AOD. (See Appendix A)
- EA approved worst case new 2125 extreme climate change design flood level of 4.67mAOD – this is greater than the PUSH SFRA 2115 extreme flood level.
- **Ground floor level will remain at 5.029m AOD which is 0.359 above the 2115 extreme event. (See Appendix A: Site Survey Information)**

- All habitable areas are above the extreme flood event.
- All site users have access to above the extreme flood level for the lifetime of the scheme.
- The residual risks are not unacceptable based on the assessment of the data, site, and scheme and as per PUSH SFRA analysis and guidance.
- Site is within PUSH SFRA climate change extents (no site-specific flood levels available)
- Within NO-VERY LOW surface water hazard based on site specific mapping
- Reduces flood risk overall by increasing site permeability and with resilient and resistant measures.
- This assessment considers the Exception Test is passed regardless based on the site and scheme specifics.

The hazard is a confirmed residual risk in accordance with NPPF (Paragraph: 041 Ref ID: 7-041- 20140306); the proposed operation is site and scheme specifically appropriate. Given the residual risk flood setting, the level, extent and depth of flooding on the site can be managed in terms of resistant and resilient measures and precautionary mitigation measures. Based on the likely flooding risk and small scale of the proposed development, it is considered that the proposed development can be constructed and continue to be operated safely in flood risk terms, without increasing flood risk elsewhere; it is therefore considered appropriate development in accordance with the NPPF / PPG.

3.0 Introduction:

The FRA combined a desktop study, review of available information and an assessment of all sources of flooding posed to and from the site and proposed development, in accordance with NPPF & NPPG. Appropriate flood mitigation measures were then considered, either as already incorporated within the scheme or recommended for inclusion at detailed design stage. The suitability of the proposed development was also reviewed in the context of the NPPF/NPPG and any relevant technical guidance accompanying the NPPF.

4.0 Purpose of the Report:

This FRA has been carried out in accordance with National Planning Policy Framework (NPPF) & PPG. The report provides the following information in accordance with the NPPF:

- An assessment of the flood risk posed to the site based on flood information and mapping provided by the EA and Strategic Flood Risk Assessment (SFRA)
- An assessment of the proposed development in terms of surface water run-off; and
- Proposals for measures to mitigate the flood risks posed to and from the development where appropriate.

5.0 Report Information Sources

The information source used to undertake this FRA has been collected from the following sources:

- British Geological Survey Website & Geology App
- EA Website & Data
- Havant Council Strategic Flood Risk Assessment (2018 Plan Allocations and as updated)
- PUSH SFRA & climate change mapping (2016 Update and as updated)
- Havant Flood Risk Sequential Test & Exception Test Guidance for Development Management Havant Borough Council - Planning Policy October 2020
- Havant Preliminary Flood Risk Assessment (2011 and as updated);
- Hampshire County Council as the Lead Local Flood Authority (LLFA) SUDS Policies and Guidance
- North Solent Shoreline Management Plan
- HAYLING ISLAND EMERGENCY PLANNING FRAMEWORK
- Internet mapping and searches

6.0 Consultation:

Where appropriate, the EA and local council have been contacted to request any available and relevant flooding data relative to the previous FRA prepared for the neighbouring site to the south, located at 134 Sea Front, Hayling Island, PO119HW.

7.0 Overview of British Legislation

7.1 National Planning Policy:

The National Planning Policy Framework (NPPF) and NPPG supercede all Planning Policy Statements (PPS's) and Planning Policy Guidance (PPG's). Flood risk is retained as a key development consideration.

The Sequential and Exception Tests are retained. The accompanying NPPF Technical Guidance / NPPG also include Tables 2 and 3 to assist with flood risk vulnerability classifications and development suitability.

New Climate Change Allowances and Government SUDS guidance compliant.

7.2 Local Policy:

The Strategic Flood Risk Assessment (SFRA) is a key source of flood risk specific information for the area. The SFRA provides a more detailed review of flood risks and recommendations for ensuring developments can be constructed and operated safely in accordance with the

NPPF. Greater detail of the SFRA is provided in the report where appropriate. LLFA SUDS guidance compliant.

8.0 Site Status and Environmental Setting

8.1 Site Location and Status

The site is a Brownfield site, currently occupied by an existing dwelling and outbuildings, soft and hard landscaping.

The location plan is shown on the map/diagrams of this report.

8.2 Existing Flood Risk

Flood Sources	Site Status	Comment on flood risk posed to / from the development
Fluvial / Tidal	Site is within EA FZ2 Site is within PUSH SFRA climate change extents • Not in a breach or wave action extent • Not in a rapid inundation zone Edge of the future tidal floodplain; immediate access to unrestricted FZ1 even in climate change extents EA official LOW risk	No additional bedrooms, replacement & extension of existing living areas only <u>Floor Level of 5.029m AOD is 0.359m above maximum flood event of 4.67m AOD</u> The scheme can incorporate suitable mitigation measures to address residual surface water risk and access to FZ1 in always LOW hazard. Results in better protected and flood future proofed dwelling than the existing dwelling
Groundwater	SWMP indicates site not in potential elevated future groundwater risk	The proposed development will not increase the risk of groundwater flooding; New slabs can be engineered / waterproofed appropriately to industry standard. Low Risk
Artificial Sources	No artificial sources within 250m	Low Risk
Surface Water / Sewer Flooding	Site is in NO – VERY LOW hazard area Evacuation route which is to the north always in NO – VERY LOW hazard Condition	Scheme can REDUCE FLOOD RISK OVERALL: see main sections below Scheme replaces much paving with permeable surfaces, and will utilise existing connection to sewers, gravity drainage and non-return valves Development will not increase the peak flow or volume of discharge from the site: Low Risk No further drainage assessment required
Climate Change including new allowances	Included in the flood modelling extents Site not within climate change flood extent area	Development will not increase the peak flow and volume of discharge from the site Low risk posed to and from the development

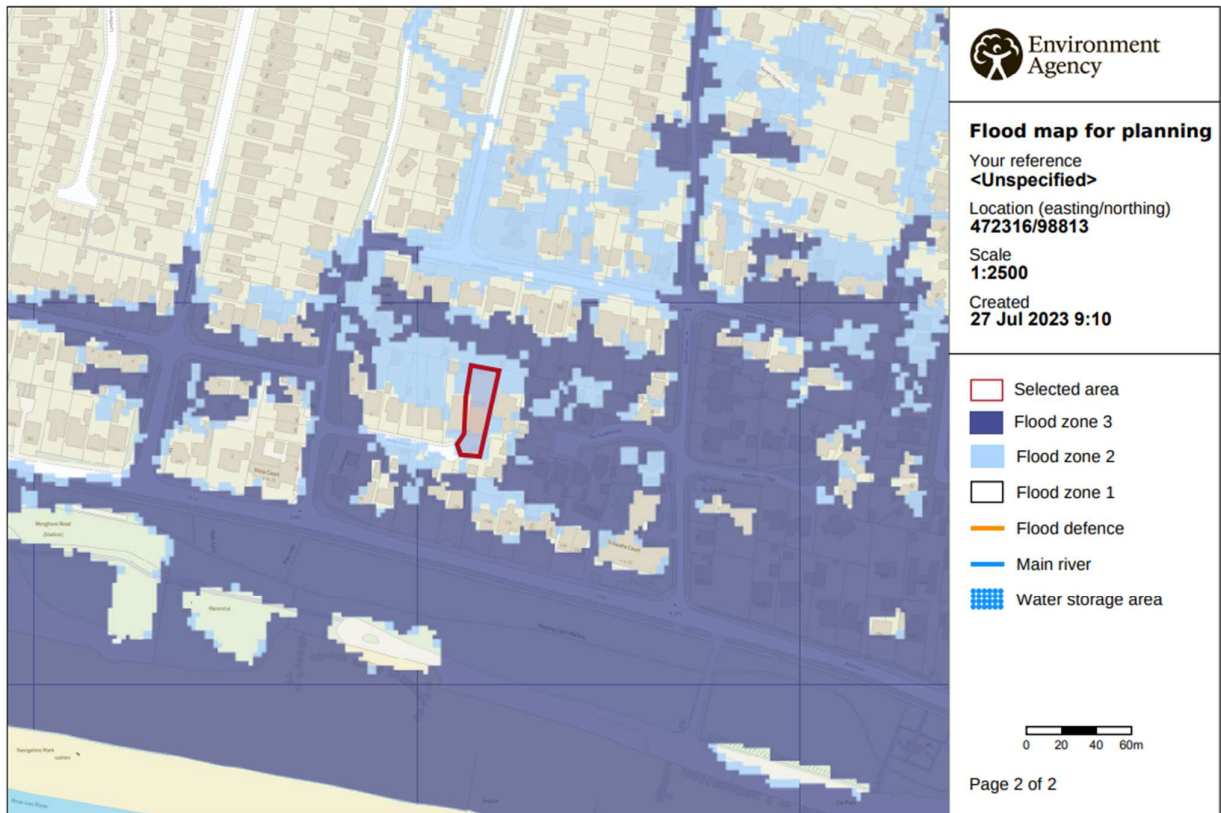
Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
472316/98813

Created
27 Jul 2023 9:10

Your selected location is in flood zone 2, an area with a medium probability of flooding.



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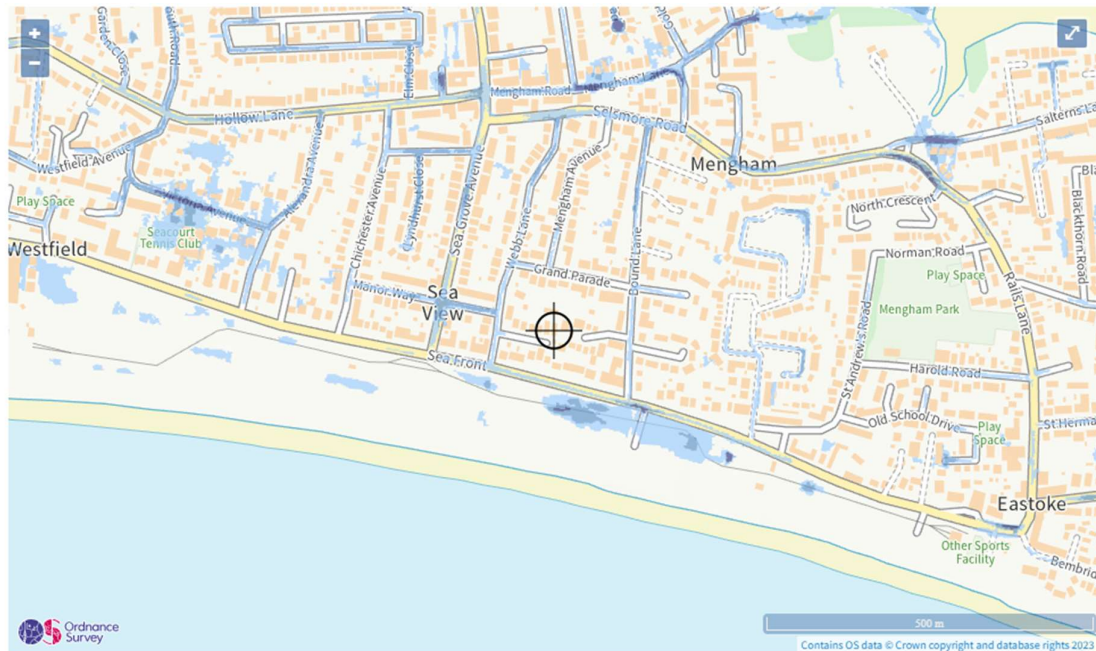
8.3 Geology:

Based on BGS mapping and surrounding adjacent boreholes:

- Bedrock: Wittering Formation - Sand, Silt and Clay.
- Superficial: Storm Beach Deposits - Gravel No lost / underground rivers documented at the site or near the site nor identifiable by the local geology mapping.

8.4 Surface Water Risk and Hazard Summary

- Property itself is not inundated: In No hazard in all EA risk scenarios
- Access & Egress is always in NO hazard (low – very low)
- Scheme will reduce this flood risk by increased permeability on site reducing surface water discharge through removal of hard paving surfaces in the garden and removal of the redundant driveway to the west side of the existing house.



Extent of flooding from surface water

● High ● Medium ● Low ○ Very Low ⊕ Location you selected

8.5 SFRA / LFRMS Surface Water Mapping & Hazard

NOTE: the resolution of the SFRA and SWMP mapping is not appropriate to be site specific.

The mapping corroborates the data in the more detailed mapping and EA data.

8.6 EA Data & New Climate Change

The site is in FZ2 surrounded by areas of FZ1 / FZ3. Partnership for South Hampshire's Strategic Flood Risk Assessment (PfSH SFRA) suggest a 2115 1in200year including for climate change extreme event flood level of 4.5mAOD.

We also use 2125 as the lifetime year of the scheme.

EA Data:

Tidal flood levels for the 0.5% (1:200) and the 0.1% (1:1000) annual exceedance probabilities relevant to your site are provided in the table below. These levels have been taken from the East Solent Coastal Model which was produced in 2018 by JBA Consulting.

Year	Tide Level (mAOD*)	
	0.5% annual exceedance probability/1 in 200 Year (Flood Zone 3)	0.1% annual exceedance probability/1 in 1000 Year (Flood Zone 2)
2015	3.32	3.55
2070	3.70	3.86
2115	4.13	4.32

* Levels in metres above Ordnance Datum Newlyn.

The UKCP18 Sea Level Rise Allowances for the Southeast are used to account for the impacts of climate change. This suggests sea levels in this area to rise by c. 1.12m over the lifetime of the proposed development (Higher Central allowance from 2015 to 2125).

This would result in a design (0.5% AEP) flood level of 4.44mAOD in the 2125 epoch.

The 0.1% AEP (2125 epoch) flood level is estimated to be 4.67mAOD.

8.7 Topography, Site Levels vs EA Data

1in1000year+NEWcc for Year 2125 = 4.67mAOD

- Ground floor existing & proposed level is 5.029mAOD: fully compliant with the data and EA guidance
- Access & Egress to the front/street is at a minimum of 4.887mAOD; 0.217m above extreme flood event and therefore LOW hazard (See Survey Plan and detail Appendix A)

8.8 Design Response: address climate change

- All habitable areas to be retained at existing floor level of 5.029mAOD; 0.359m above the 2125 extreme flood event including for climate change
- All site users have access above the extreme flood level for the scheme lifetime
- Access & egress to front (south) remains a minimum of 0.107m above the extreme event

REDUCE FLOOD RISK OVERALL

- Maximise porous and permeable areas by removing redundant driveway on the west side of the existing house and other hard surfaces within the garden areas to the north and east – a significant betterment
- Oversized attic/loft storage & plant for betterment and flood future-proofing
- Betterment as will attenuate for areas currently unattenuated
- Mandatory and standard resilient measures

8.10 Breach Flood Scenario

There are no raised defences in this area; no breach scenarios need to be assessed.

9.0 Assessment of Proposed Development:

9.1 Proposed Development

The proposed development can be seen in Appendix B.

The proposed development comprises:

- Brownfield site of existing dwelling
- No change of use required: remains “More Vulnerable”
- Removal of current impermeable areas of redundant driveway and garden paving
- Erect replacement living spaces and replacement of conservatory with best practice and up to date building regulations
- Ground floor remains at 5.029m AOD: fully compliant with the data and EA guidance
- All site users have access to above the extreme flood level for the scheme lifetime
- Reduces flood risk overall

New porous / permeable materials an appropriate response, the site will operate as existing with an improvement based on the design: 1) robust resilient construction techniques in order to minimise the damage caused by water entry and also to reduce the time taken to return the property to use after a flood (see later sections) 2) Reduce flood risk overall with new lower water demand white goods: betterment of surface water management on the site as a result of the scheme where feasible retained.

9.2 Drainage Connections

Foul

The existing connections will be retained but with the addition of non-return valve(s).

Surface Water

Improved permeability of the site achieved through:

- Removal of redundant driveway to the west of the site along the existing house (see appendix A)
- Removal of impermeable garden paving to the north and east
- The proposed decks and walkways will allow rainwater through them to soak away.

9.3 Flood Resilience

The proposed development will utilize the flood resilient techniques recommended in the NPPF Technical Guidance where appropriate and also the recommendations that have previously been issued by various local authorities:

The FRA provides the recommended resilient measures that can be incorporated, it will depend on the construction team as to what construction will actually need to be undertaken and what materials are used exactly. This does not invalidate the point and recommendations of this FRA. The FRA cannot simply specify the exact measures that need to be incorporated; they are not required of planning.

- Non-return valves as standard for basement and ground
- Basement to be fully waterproofed (tanked) and waterproofing to be tied in to ground floor slab as appropriate; details to be provided at detailed design to building regulations requirements: to reduce the turnaround time for returning the property to full operation after a flood event.
- Waterproofing to be installed above ground level as appropriate
- Plasterboards will be installed in horizontal sheets on basement and ground levels rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event
- Wall sockets will be raised to as high as is feasible and practicable in order to minimise damage if flood waters inundate the property
- Any wood fixings on basement and ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event
- Airbricks will be raised to as high as is feasible and practicable

- The Damp Proof Membrane / ground waterproofing will be installed above the main floor slab and tied in to the walls where appropriate, to reduce the turnaround time for returning the property to full operation after a flood event.
- As necessary: the concrete sub floor will likely be laid to fall to drains or gullies which will remove any build-up of ground water to a sump pump where it will be pumped into the mains sewer. This pump will be fitted with a non-return valve to prevent water backing up into the property should the mains sewer become full.
- Insulation to the external walls will be specified as rigid board which has impermeable foil facings that are resistant to the passage of water vapour and double the thermal resistance of the cavity.

9.4 Refuge and Evacuation

HAYLING ISLAND EMERGENCY PLANNING FRAMEWORK

EA Flood Warning

Based on the likely flood risk and associated warning time, evacuation is usually preferred and feasible at this site, floodwaters are also not likely to enter the building; refuge is a preferred flood response.

Range of Flood Events

- Not in a breach or wave action extent
- Not in a rapid inundation zone All site users have access to the ground floor and upper attic floor (via pull down staircase); all are above the extreme event for lifetime of the scheme.
- Egress from the front above the extreme event of 4.67mAOD (site minimum of 4.887mAOD to front access) and....
- ...Continue west on Webb Close and then north into FZ1
- It is therefore considered likely that there would be sufficient time to seek refuge and/or evacuate to an area outside of the extreme flood event for the lifetime of the scheme. The property itself will be a modern protected and resilient dwelling as a result of the scheme and based on the available mapping is not likely to be inundated hence the site users can remain dry within the property for the duration of the likely flood event.

Site is in FZ2 present day. Future management: Follow Hayling Island Emergency Plan and follow the emergency routes as directed by the EA / emergency services.

9.5 Annual Monitoring

It is recommended that tenants should contact the EA on an annual basis to confirm the flood status of the property. If the flood status has changed, the evacuation and refuge plan should be reviewed and updated by suitable flood risk consultants as appropriate.

9.6 Surface Water Runoff – Flood Risk from the Development

In accordance with the NPPF / NPPG, this FRA also considers the risks posed from the development to surrounding areas. The scheme is compliant with LLFA SUDS policy - maximise porous and permeable areas. The proposals will incorporate new low-water demand devices such that despite no likely increase in peak flow and volume of flow, this can be managed appropriately for the lifetime of the scheme. Given the small scale of the proposed development it is considered likely that the development will have a negligible effect on surrounding infrastructure. There will not be any significant increase in overland flow from the site – in fact this will be reduced by removal of extensive impermeable surfaces from the landscape such as the redundant driveway to the west and paving to the north and east.

9.7 Climate Change including New Allowances

The impact of climate change in accordance with the NPPF / PPG is likely to be an increase in the rainfall intensity in the future, which will increase peak storm flows to sewer. The proposed development will incorporate low flush and reduced water demand showers and toilets in the newly built areas (existing will remain), such that the combined flows to sewer are likely to have a negligible/lower impact. It is considered therefore that flows in the future are not likely to have a significant impact, even with an allowance for climate change. There is unlikely to be an unacceptable impact on the receiving sewers owing to the small scale of the development and the fact that the scheme reduces discharge rates from the site. The scheme includes new porous / permeable areas to address residual surface water risk and to encourage storage within the site. The PUSH SFRA includes the required climate change tidal extents.

9.8 Exception Test (included for technical support):

Exception Test Criteria	Proposed Development
It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared.	Pass. Replacement dwelling with flood betterment for lifetime results in a better protected and flood future-proofed structure than existing property. Re-uses an existing brownfield site: sustainable. Scheme includes increased site permeability to reduce flood risk overall for the lifetime of the scheme. Scheme can operate safely even in the extreme event. Appropriate mitigation: is flood resilient and resistant measures
A FRA must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where	Pass. Refurbished dwelling with flood betterment for lifetime Results in a better protected and flood future-proofed structure than existing property. Scheme also reduces flood risk overall. As long as the flood resilient measures are incorporated, and the future occupiers sign up to the EA flood warning and understand the flood

possible will reduce flood risk overall.	response required, it is considered likely that the proposed development can be constructed and operated safely in flood risk terms, without increasing flood risk elsewhere and is therefore appropriate development in accordance with the NPPF.
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10.0 Conclusion

- EA approved worse case new 2125 extreme climate change design flood level of 4.67mAOD. This is greater than the PUSH SFRA 2115 extreme flood level.
- **Ground floor remains at 5.029mAOD which is 0.359m above the 2125 extreme event**
- All habitable areas are/remain above the extreme flood event
- All site users now have access to above the extreme flood level of the lifetime of the scheme both at the existing ground level and the stairway accessed loft which has full standing height and contains the mechanical plant equipment.
- The residual risks are not unacceptable based on the assessment of the data, site, and scheme and as per the PUSH SFRA analysis and guidance
- Site is within PUSH SFRA climate change extents (no site-specific flood levels available)
- Within NO - VERY LOW surface water hazard based on site specific mapping
- REDUCES FLOOD RISK OVERALL
 - Removes redundant drive and garden hard paving surfaces and replaces with permeable materials.
 - Results in better protected and flood future proofed dwelling than existing.
- This assessment considers the Exception Test is passed regardless, based on the site and scheme specifics

The hazard is a confirmed residual risk in accordance with NPPF (Paragraph: 041 Ref ID: 7-041- 20140306); the proposed operation is site and scheme specifically appropriate. Given the residual risk flood setting, the level, extent, and depth of flooding on the site can be managed in terms of resistant and resilient measures and precautionary mitigation measures. Based on the likely flooding risk and small scale of the proposed development, it is considered that the proposed development can be constructed and continue to be operated safely in flood risk terms, without increasing flood risk elsewhere; it is therefore considered appropriate development in accordance with the NPPF / PPG.

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