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Flood risk, water and environment

Flood Risk Assessment AEG0179_HaylingIsland

Laurie Scott

Site Address: 81 Eastoke Avenue
Hayling Island
PO11 9QP

**UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage
Strategies**

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fra@aegaea.com
02081 640 550
02081 641 282
www.aegaea.com

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Prepared for: Laurie Scottt

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Site Location: 81 Eastoke Avenue, Hayling Island, PO11 9QP

Proposed Development: It is understood that the proposed development is that to turn current garden space into a garage.

Consultant		Date	Signature
Author	Miriam Warren	11/10/2021	
Document Check	Daniel Cook	15/10/2021	
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Contents

1.	Summary.....	4
2.	Policy Compliance.....	6
3.	Development Description and Site Area	7
	<i>Proposed Development and Location.....</i>	<i>7</i>
	<i>Vulnerability Classification.....</i>	<i>8</i>
	<i>Geology.....</i>	<i>8</i>
4.	Sequential Test/Exception Test.....	9
5.	Site Flood Hazards	9
	<i>Sources of Flooding.....</i>	<i>9</i>
	<i>Mechanisms and History of Flooding.....</i>	<i>9</i>
	<i>Fluvial.....</i>	<i>10</i>
	<i>Surface Water (Pluvial).....</i>	<i>10</i>
	<i>Groundwater</i>	<i>12</i>
	<i>Sewer</i>	<i>12</i>
	<i>Surface Water Drainage Strategy.....</i>	<i>12</i>
	<i>Records of Historical Flooding.....</i>	<i>12</i>
	Probability of Flooding.....	13
6.....		13
	<i>Flood Zones.....</i>	<i>13</i>
	<i>Climate Change on Site.....</i>	<i>13</i>
7.	Residual Risks.....	13
	<i>Identification of Residual Risks.....</i>	<i>13</i>
	<i>Defence Breach/ Overtopping.....</i>	<i>14</i>
	<i>Reservoir Failure.....</i>	<i>14</i>
	Flood Risk Management Measures.....	14
8.....		14
	<i>Flood Risks.....</i>	<i>14</i>
	<i>Flood Alert and Warning Service.....</i>	<i>14</i>
	<i>Flood Evacuation Plan.....</i>	<i>15</i>
9.	Off Site Impacts.....	15
	<i>Impact to Flood Risk Elsewhere.....</i>	<i>15</i>
	<i>Generation of Runoff.....</i>	<i>15</i>
10.	Conclusion	15
	Appendix A – Site Location Plan.....	15
	Appendix B – Site Topographic Survey.....	15

1. Summary

- 1.1 Aegaea has been appointed by the applicant to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development of a current garden space into a garage within the curtilage of the current residential property.
- 1.2 The site is currently a garden space within the curtilage of the residential dwelling which is aiming to be developed into a garage space, thus meaning that the development can be identified as a minor development that is unlikely to impact flood risk according the National Planning Policy Framework guidelines.
- 1.3 The site is located within Flood Zone 3, however it is benefiting from flood defences which in turn makes the risk to the property very low risk.
- 1.4 Surface water is viewed to be low risk for the proposed development itself but access is limited within the low risk event (0.1% AEP).
- 1.5 As the development is a minor development the NPPF states that the impact to flood risk elsewhere is minimal and thus not a concern.
- 1.6 As such the proposed garage should be considered suitable for development.

Development Description	Existing	Proposed
Development Type:	Garden space within Residential Curtilage	Garage
EA Vulnerability Classification:	More Vulnerable	More Vulnerable
Existing Ground Level:	3.5 mAOD	No changes proposed
Impermeable Surface Area:	N/A ¹	N/A ¹
Surface Water Drainage:	N/A ¹	N/A ¹
Site Size:	N/A	6.5m x 3.4m
Risk to Development	Summary	Comment
EA Flood Zone:	3	The property is located within Flood Zone 3 in a region that is protected by defences. 2018 - Hampshire SFRA, Havant - 2018
Flood Source:	Tidal	
SFRA Available:	Yes	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels:	Yes	N/A ¹
Safe Access/Egress Route:	N/A ¹	
Flood Resilient Design:	N/A ¹	
Site Drainage Plan:	N/A ²	
Flood Warning & Evacuation Plan:	N/A ¹	
Offsite Impacts	Summary	Comment
Displacement of floodwater:	N/A ¹	Development is a minor development with a footprint of less than 250m ² so therefore this is negligible N/A ¹
Increase in surface run-off generation:	N/A ¹	
Impact on hydraulic performance of channels:	None	

Table 1 Summary of flood risks, impacts and proposed flood mitigation measures.
N/A¹ not required for this assessment; N/A² data not available.

2. Policy Compliance

- 2.1 The proposed development site is located within Flood Zone 2 and Flood Zone 3 based on the EA Flood Map for Planning. As such, under the National Planning Policy Framework, a Flood Risk Assessment is required in support of the planning application for the proposed development.
- 2.2 The National Planning Policy Framework (NPPF) (DCLG, 2021) includes Government policy on development and flood risk stating that:

159. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future).

Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

164. The application of the exception test should be informed by a strategic or site specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

165. Both elements of the exception test should be satisfied for development to be allocated or permitted.

167. When determining any 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 this assessment (and the sequential and exception tests, as applicable) 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 such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;

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. ...

3. Development Description and Site Area

Proposed Development and Location

The proposed development is for the construction of a garage building on current garden space within the southern section of the property located at 81 Eastoke Avenue, Hayling Island, PO11 9QP (Figure 1 and 2).

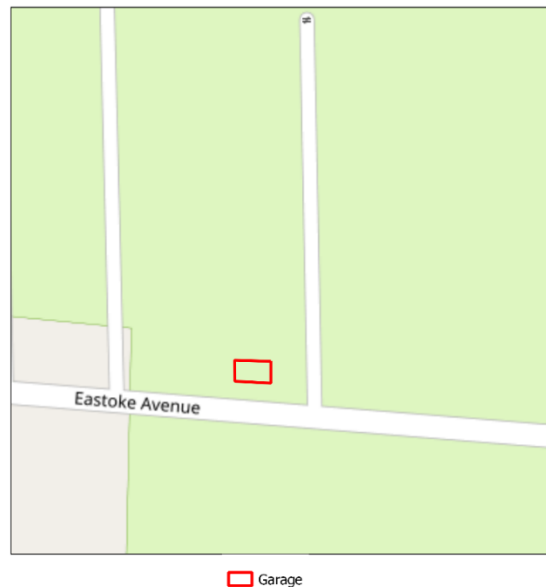


Figure 1: Redline Application Boundary of the Development (Source: OS)

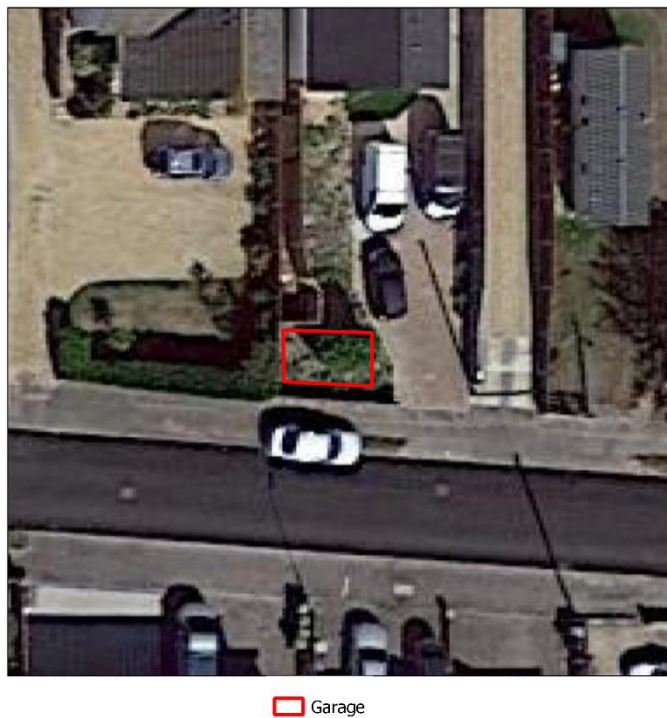


Figure 2: Redline Application Boundary of the Development (Source: Google Satellite)

Vulnerability Classification

- 3.1 The Environment Agency (EA) Flood Map for Planning displays the development location within Flood Zone 3 in an area benefiting from flood defences (Figure 3).



Figure 3: EA Flood Risk Map from Fluvial/Tidal Sources with property location

- 3.2 According to current NPPF guidelines, the proposed development would be classed as a minor development as it is on current property grounds and can be considered as a household development.

Geology

- 3.3 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is London Clay Formation of Clay, Silt and Sand.
- 3.4 The British Geological Survey (BGS) Geology of Britain Viewer displays no data for the property area for superficial deposits.

4. Sequential Test/Exception Test

- 4.1 In accordance with Paragraph 168 of the NPPF 2021 and footnotes 55 and 56, the proposed development is a minor development and therefore should not be subject to the sequential test or exception tests but should still meet the requirement for site specific flood risk assessments.
- 4.2 This document seeks to provide an FRA that meets the scale of the development being proposed whilst being in accordance with the NPPF, Hampshire Local Plan Policy and EA standing advice on development and flood risk.

5. Site Flood Hazards

Sources of Flooding

- 5.1 Table 2 summarises the potential sources of flooding to the site:

Source	Description
Tidal	Mengham Rithe
Fluvial	N/A
Surface	N/A
Groundwater	N/A
Sewer	N/A

Table 2 Summary of flood sources.

Mechanisms and History of Flooding

- 5.2 The EA Flood Map for planning demonstrates the proposed site within Flood Zone 3 in an area benefiting from defences. These defences reduce the risk of tidal/fluvial flooding to very low in accordance to the EA.
- 5.3 Surface water flooding is not a concern for this property, with no impact in the 0.1% AEP, 1% AEP or the 3.3% AEP to the property. Access is slightly affected within the 0.1% AEP.
- 5.4 Groundwater is indicated as a cause of flooding within the Hampshire SFRA, with the area of the property highlighted as susceptible.
- 5.5 There was no data available for sewer flooding for the property area and no historical flood events highlighted within the DEFRA sourced data.

Tidal

- 5.6 The EA Flood Map for planning identifies Tidal as the main source of flooding affecting the property site, with the nearby Mengham Rithe Bay to the north of the property site. The Flood Map for Planning does indicate that the property is protected by flood defences and as such the return period event that is of importance is the 0.5% (200 year) event.
- 5.7 As displayed in figure 3 and figure 4, the area is protected by tidal flood defences to the north of the site that reduce the flood risk to low.



Figure 4: Flood Defences and Property Location

- 5.8 These flood defences are defined as flood walls, flood gates and flood embankments with an approximate height of 3m, indicating the flood level within this area is below this value.

Fluvial

- 5.9 There is no fluvial flood risk to the property.

Surface Water (Pluvial)

- 5.10 Data obtained from the DEFRA and EA Risk of Surface Water Flooding determined the property to not be at risk from any surface water flooding, with no region of the property within the 3.3% AEP (High Risk Event), 1% AEP (Medium Risk Event) or the 0.1% AEP (Low Risk Event).

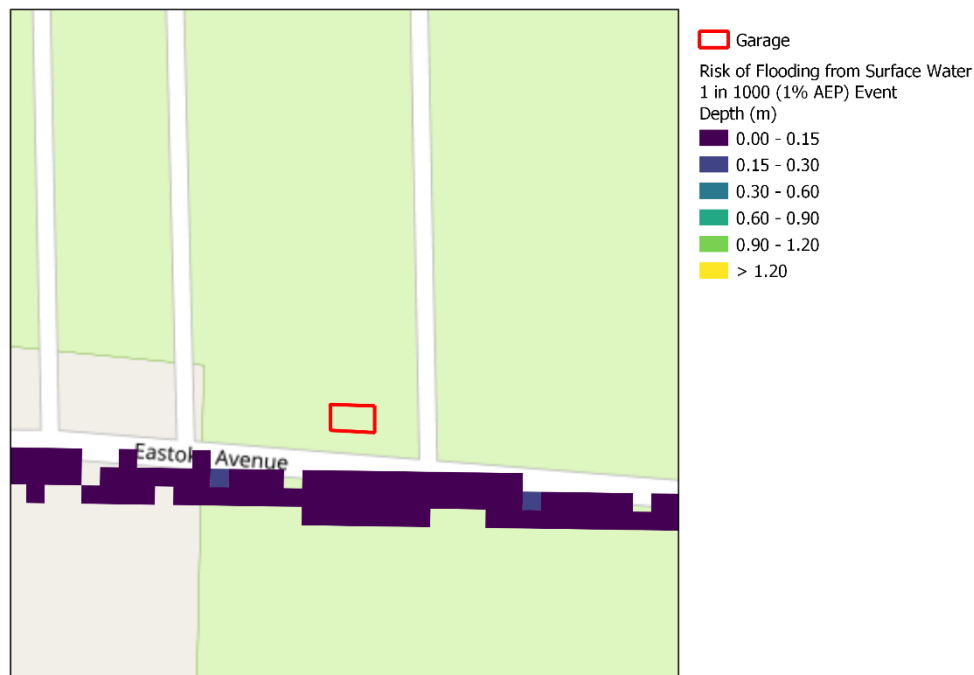


Figure 5: Site Redline Boundary and 0.1% AEP Event Extent

- 5.11 Within the 0.1% AEP (Low Risk Event), there will be an impact on access to the property, with the road leading into the property likely to experience flooding maximum levels of approximate 300mm however this doesn't not affect the property itself (Figure 5). There is no risk with the 1% AEP or the 3.3% AEP events to access or the property.
- 5.12 As such, the risk of surface water flooding to the proposed development could be considered **very low risk**.

Groundwater

- 5.13 Within the Hampshire SFRA and Flood Water Management plan, the area of Hayling Island is determined to be at risk of groundwater flooding in a region of between 50-75% susceptibility (Figure 6).

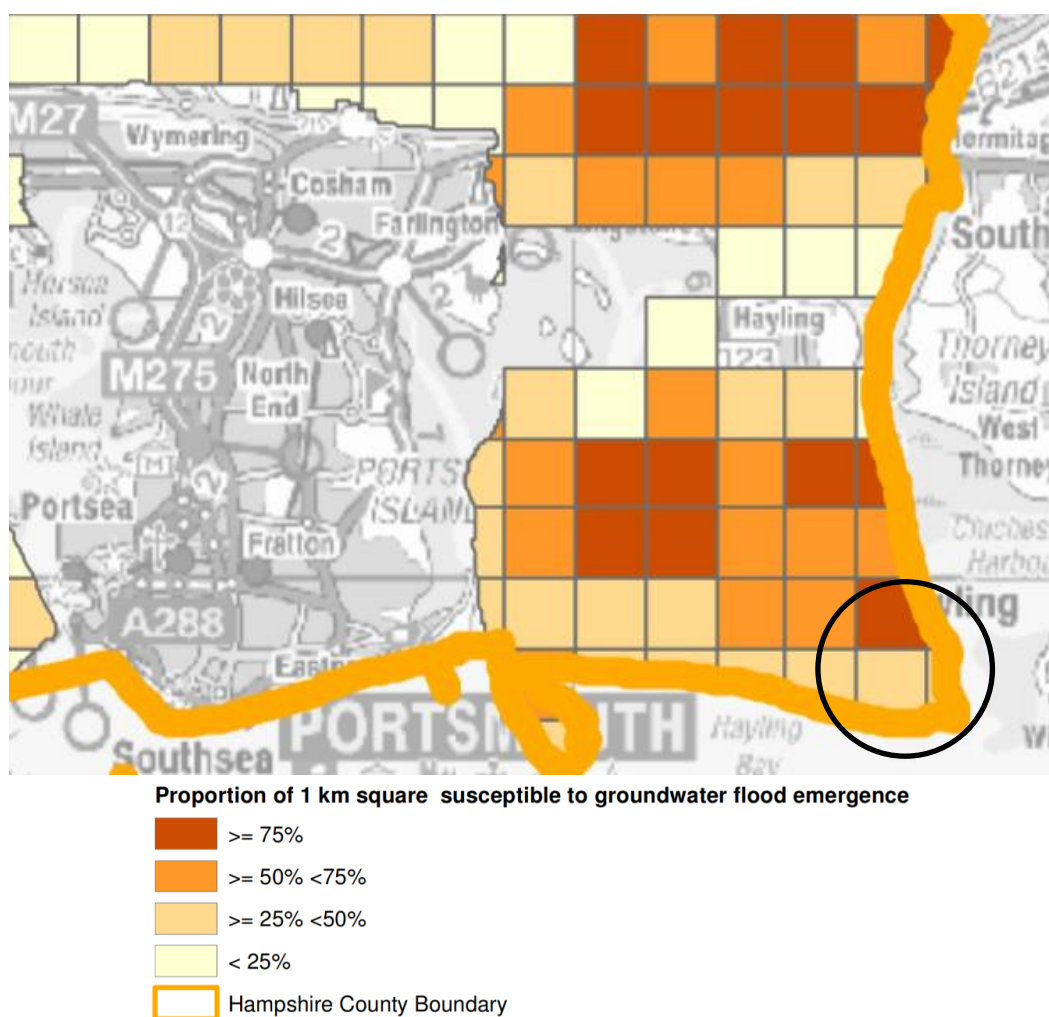


Figure 6: Groundwater Susceptibility with Property Approximate Location Circled (Source: Hampshire Council Flood Water Management)

Sewer

5.14 The Havant SFRA does not mention sewer flooding as a source of flooding within the region and there are no past records of sewer flooding within Hayling Island found within the Hampshire SFRA.

Records of Historical Flooding

5.15 At the time of writing no records of historical flooding have been provided. The owner of the property has stated there is no records of any historic flooding at the subject property.

5.16 Analysis of historic flood events provided through DEFRA provided no past data for flood events.

6. Probability of Flooding

Flood Zones

- 6.1 According to the EA Flood Map for Planning, the site is located within Flood Zone 3 although benefits of flood defences places the property within the very low risk category.
- 6.2 The EA Flood Map for Planning has been produced in part using a relatively coarse, national scale flood modelling strategy, and in part by detailed modelling. For reference, the definition of the NPPF flood risk zones is included below.

Zone	Description
1	Low Probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
2	Medium Probability. This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.
3a	High Probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
3b	The Functional Floodplain. This zone comprises land where water has to flow or be stored in times of flood. SFRA's should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the EA, including water conveyance routes).

Table 5 Definition of the NPPF Flood Zones. (Source: EA/PPG)

Climate Change on Site

- 6.3 Climate Change is likely to impact sea level rise and therefore there is a chance that this will impact the development, however, as the development is simply a minor development of a garage, the risk of this is negligible.

7. Residual Risks

Identification of Residual Risks

- 7.1 Residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions. Examples of residual flood risk include:
- the failure of flood management infrastructure such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system.
 - failure of a reservoir, or;

- a severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot cope with.

Defence Breach/Overtopping

- 7.2 The site does currently benefit from the presence of defences and as such may be at risk of breaching or overtopping.
- 7.3 Due to location of the property within less than 100m away from the flood defences, it is possible that this development could be impacted but as it is a non-residential building the impact is negligible.

Reservoir Failure

- 7.4 The EA Risk from Reservoir Overtopping Map demonstrates that the site is currently not within a risk area.

8. Flood Risk Management Measures

Flood Risks

- 8.1 The site is currently a residential property. The proposed development is for the construction of a garage on current garden space. As this is considered a minor development, it is not likely to affect flood risk significantly according to the NPPF.
- 8.2 The following mitigation measures are recommended:
- Site owners and occupants to sign up to the EA Flood Alert/Warning Service.

Flood Alert and Warning Service

- 8.3 The EA operates a 24-hour telephone service on 0345 988 1188 that provides frequently updated flood warnings and associated floodplain information. Further information can be found on www.environment-agency.gov.uk/floodline. Floodline Alert and Warnings Direct is a free service operated by the EA that provides flood alerts and warnings direct to occupants by telephone, mobile phone, fax or pager.
- 8.4 Aegaea have accessed the service and can confirm that flood alerts/warnings are possible within this area. It is strongly recommended that the owner signs up to these alerts to provide betterment.

9. Off Site Impacts

Impact to Flood Risk Elsewhere

- 9.1 As the proposed construction can be considered a minor development according to paragraph 168 of the NPPF 2021 and footnotes 55 and 56, there is likely no substantial impact to flood risk elsewhere due to this construction.

10. Conclusion

- 10.1 Aegaea has been appointed by the applicant to undertake a NPPF compliant FRA for the proposed development at 81 Eastoke Avenue, Hayling Island, PO11 9QP.
- 10.2 The site is currently a residential property of 'more vulnerable' uses, with the proposed development site a garden area. The development is aiming to construct a garage into this garden area, which means that the construction can be considered a minor development with low risk uses.
- 10.3 The EA Flood Map has placed the property within Flood Zone 3, however, further information obtained from the EA has defined the property as at very low risk.
- 10.4 The site is not at risk of surface water flooding, with no events likely to impact the property site.
- 10.5 Following the guidelines within the NPPF the proposed development is likely to be suitable.