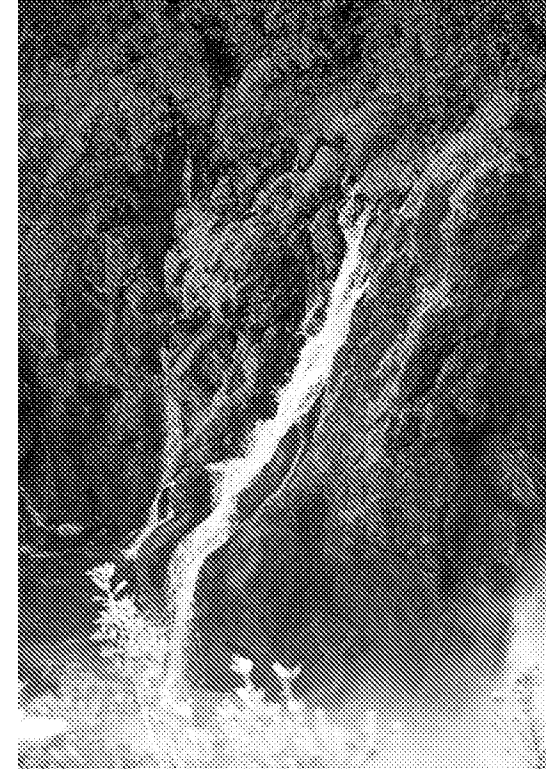
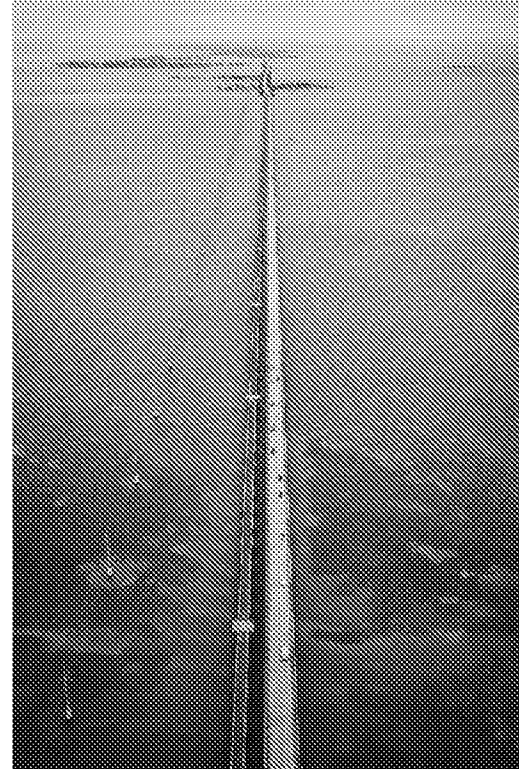
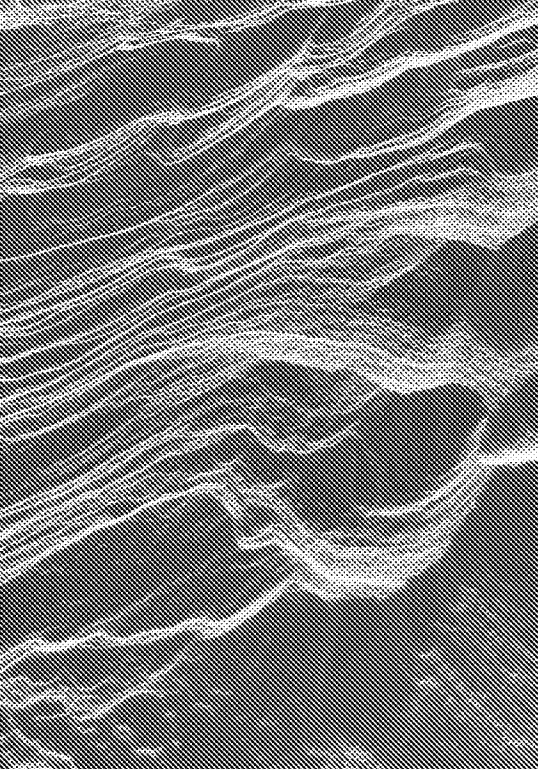




Flood Risk Assessment

degadea

Flood risk, water and environment

AEG0504_PO22_Elmer Sands_01

Site Address: 9 Ancton Way
Elmer Sands
PO22 6JN

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

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ARUN DISTRICT COUNCIL PO22 6JN Flood risk, water and environment

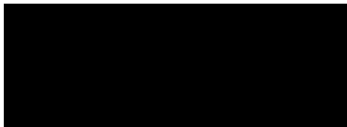
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Project: Flood Risk Assessment

Prepared for: Les Maddams

Reference: AEG0504_PO22_Elmer Sands_01

Site Location: 9 Ancton Way, Elmer Sands, PO22 6JN

Consultant		Date	Signature
Author	Chris Cameron-Hann	01/06/2022	
Document Check			
Authorisation	Nick Darling-Drewett	01/06/2022	

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Summary

Development Description	Existing	Proposed
Development Type	A residential dwelling	Construction of attached extension to provide garage/storage (non-habitable).
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Floor Level	N/A ²	Same as existing
Level of Sleeping Accommodation	First Floor	No Change
Impermeable Surface Area	N/A ²	Minor increase with footprint
Surface Water Drainage	N/A ¹	Existing
Site Size	N/A ²	No change
Development Size	Existing	~5m ² garage extension
Risk to Development	Summary	Comment
EA Flood Zone	FZ1 and FZ2 tidal.	The existing dwelling is in Flood Zone 1, the intended extension is in Flood Zone 2 tidal.
Flood Source	Tidal	
Management Measures	Summary	Comment
Safe Access/Egress Route	N/A ¹	Same as existing
Flood Resilient Design	Yes	Given some potential for groundwater, suggest solid slab construction.
Offsite Impacts	Summary	Comment
Impact on hydraulic performance of channels	None	Site at least 16m from nearest EA Main River

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Les Maddams to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development at 9 Ancton Way, Elmer Sands, PO22 6JN.
- 1.2. This FRA has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.3. This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.4. The site of the proposed development is shown in Figure 1.



Figure 1: Site Location © Google Imagery

- 1.5. The proposed development is for the construction of an attached extension to the existing dwelling on site that will comprise a garage. No habitable or sleeping accommodation is to be provided. The proposed development is to be single storey.
- 1.6. Arun District Council is the Local Planning Authority (LPA) for the site, and West Sussex County Council is the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Solent and South Downs region.

Planning Policy and Guidance

1.7. UK government planning guidance states¹ that an FRA is required for sites which are:

- *In Flood Zone 2 or 3 including minor development and change of use*
- *More than 1 hectare in Flood Zone 1*
- *Less than 1 ha in Flood Zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than river and the sea (for example surface water drains or reservoirs)*
- *In an area within Flood Zone 1 which has critical drainage problems as notified by the Environment Agency*

1.8. An FRA might be required - if it is on land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use then according to NPPF Footnote 55 an FRA is required.

1.9. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:

- Fluvial flood risk
- Surface water flood risk
- Risk of flooding from other sources

1.10. Based on the proposal type, the development is considered a "minor development" and should be assessed against paragraph 046 of the PPG.

¹ <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment>

2. National Planning Policy Framework

- 2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.
- 2.2. The National Planning Policy Framework² (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.

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*

² <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated July 2021

e) *safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

168. Applications for some minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 55. "

2.3. Paragraph 046 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

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.*

2.4. As such, the proposal would be considered a Minor Development under the PPG.

2.5. Footnote 55 of the NPPF states:

"A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."

2.6. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

- 2.7. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.
- 2.8. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account.
- 2.9. The Planning Practice Guidance, which was substantially revised in March 2015 in relation to drainage, requires that sustainable drainage systems (SuDS) should be considered and included where practicable, in line with DEFRA Technical Standards³.

3 Technical Standards Accessed Online

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

Local Plan

- 2.10. The Local Plan (2018)⁴ prepared by the Local Planning Authority, Arun District Council, sets out the policies for development in the local area.
- 2.11. Policy “W DM2 Flood Risk” outlines the requirements for new development within the Arun District Council area. It states the following:

Flood risk Development in areas at risk from flooding, identified on the latest Environment Agency flood risk maps and the Council's Strategic Flood Risk Assessment (SFRA), will only be permitted where all of the following criteria have been satisfied:

- a. The sequential test in accordance with the National Planning Policy Guidance has been met.*
- b. A site specific Flood Risk Assessment demonstrates that the development will be safe, including access and egress, without increasing flood risk elsewhere and reduce flood risk overall.*
- c. The sustainability benefits to the wider community are clearly identified.*
- d. The scheme identifies adaptation and mitigation measures.*
- e. Appropriate flood warning and evacuation plans are in place; and*
- f. New site drainage systems are designed to take account of events which exceed the normal design standard i.e. consideration of flood flow routing and utilising temporary storage areas.*

The reports prepared as part of the criteria above must take into account contingency allowances, taking climate change into account as set out in Flood Risk Assessments: climate change allowances section of the NPPG.

⁴ <https://www.arun.gov.uk/download.cfm?doc=docm93jjm4n12844.pdf&ver=12984>

In locations where strategic flood defence or resilient and resistant construction measures are necessary within the site itself, proposals will be required to demonstrate how measures have been incorporated as an intrinsic part of the scheme in a manner which is compatible with the latest Strategic Flood Risk Assessment.

All development proposals must take account of relevant Surface Water Management Plans, Catchment Flood Management Plans and related Flood Defence Plans and strategies such as the Lower Tidal River Arun Strategy. The council may require financial contributions from development on sites where measures to address flood risk or to improve the environmental quality of watercourses have been identified by these Plans and Strategies.

- 2.12. Policy W DM2 is targeted towards larger developments rather than minor, permitted development however, the development is in line with the guidance.
- 2.13. The Local plan also identifies policies W DM3 and W DM4 that relate to flood risk, however these policies are not applicable to the specific development.

Sequential and Exception Tests

- 2.14. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.
- 2.15. Since the development is considered as "minor development", the sequential and exception tests do not apply as per the NPPF.

Exception Test

- 2.16. The Exception Test is applied to sites based on the Flood Zone and the nature of the development. As the proposed development consists of residential development buildings it would be classed as "more vulnerable" in line with government development use classes.

- 2.17. The Flood Risk Vulnerability Classification table⁵, provided below in Table 1 shows which vulnerabilities are appropriate in each Flood Zone.
- 2.18. The proposed development sits partially within Flood Zone 2. The main residential dwelling is classified as “more vulnerable” and sits within flood zone 1. The extension would also be considered as “more vulnerable” and would be within flood zone 2.
- 2.19. Table 2 shows Flood Zone 2 is an appropriate location for “more vulnerable” uses without the need for an Exception Test.

Table 1: Flood Risk Vulnerability Classification Table

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	x	Exception Test required	✓	✓
Zone 3b	Exception Test required	x	x	x	✓

Summary

- 2.20. This flood risk assessment has been prepared with due consideration to the above local and national policy and finds that the minor development plan is compatible with the local and national planning guidance documents.

5

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/575184/Table_3_-_Flood_risk_vulnerability_and_flood_zone_compatibility_.pdf

3. Consultation and Review

Sources of Information

Consultation

- 3.1. The site is within the remit of West Sussex County Council as Lead Local Flood Authority (LLFA). No specific consultation has been undertaken with West Sussex County Council, the EA Solent and South Downs regions or Portsmouth Water.
- 3.2. For the scale of development, review of existing planning policy and publicly available reports is considered commensurate with the scope of the FRA.

Documents

- 3.3. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.4. The following sources of information have been reviewed for this assessment:
 - The Interactive Flood Risk Mapping available on the Environment Agency (EA) website⁶.
 - The National Planning Policy Framework (NPPF) technical guide (Communities and Local Government, 2019).
 - British Geological Survey - Geology of Britain Viewer (British Geological Society, 2017).
 - Arun District Council Local Plan⁴ (2018).
 - West Sussex Strategic Flood Risk Assessment⁷ (SFRA) (2010).

⁶ Environment Agency, Flood Map for Planning, <https://flood-map-for-planning.service.gov.uk/>, 2017

⁷ http://www2.westsussex.gov.uk/mlp/eb017_vol_ii.pdf

Strategic Flood Risk Assessment (SFRA)

- 3.5. The SFRA (2010) identifies local plan policies and requirements with regards to flood risk and drainage. Policy.
- 3.6. The SFRA seeks to place new development into areas of lower flood risk, considering current flood risk, future flood risk and the effect a proposed development would have on the risk of flooding.
- 3.7. There are no policy restraints or requirements stated within the SFRA that would preclude development.

4. Sources of Flood Risk

Fluvial Flood Risk

- 4.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.
- 4.2. The site is not at risk of fluvial flooding.



Figure 2: EA Flood Mapping for Planning

- 4.3. Although the EA flood map suggests the site is in flood zone 2, the marker is at the centre of the post code. Figure 3a shows the location in more detail using EA data.



Figure 3a Detailed Site Location

Main Rivers

- 4.4. There are no main rivers within 400m of the site. The risk of flooding comes from tidal flood zones.

Ordinary Watercourses

- 4.5. The site is within approximately 123m of an ordinary watercourse, an Unnamed tributary of the Ryebank Rife. There is no flooding on site associated with the Ordinary Watercourse.
- 4.6. Additionally, the Ryebank Rife is protected using a Flapped outfall on the Aldingbourne Rife at discharge to the coast as well as with Felpham Pumping Station.

Historical Flooding

- 4.7. No historic flooding has been identified through review of EA historic flood mapping or recorded flood outlines.

Tidal Flooding

- 4.8. The site is partially at risk of tidal flooding. The existing residential dwelling is within Flood Zone 1, however the intended location of the extension is within Flood Zone 2.
- 4.9. As such, the risk of flooding from tidal sources is considered moderate based on the EA Flood Map for Planning.

Canals

- 4.10. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders and boreholes and manages water levels by transferring it within the canal system.
- 4.11. Water in a canal is typically maintained at predetermined levels by control weirs. When rainfall or other water enters the canal, the water level rises and flows out over the weir. If the level continues rising it will reach the level of the storm weirs. The control weirs and storm weirs are normally designed to take the water that legally enters the canal under normal conditions. However, it is possible for unexpected water to enter the canal or for the weirs to become obstructed. In such instances the increased water levels could result in water overtopping the towpath and flowing onto the surrounding land.
- 4.12. There are no Canals or raised waterways in the vicinity of the site.

Pluvial Flood Risk

- 4.13. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 4.14. Examination of EA surface water flood risk mapping for the modelled 3.3% (high risk), 1% (medium risk) and 0.1% (low risk) AEP flood events shows the site and its immediate vicinity is at risk of flooding in 'Low' surface water flood events. There is a surface water flow route along

Ancton Way those experiences flooding in all modelled return periods, but this does not impact the proposed extension.

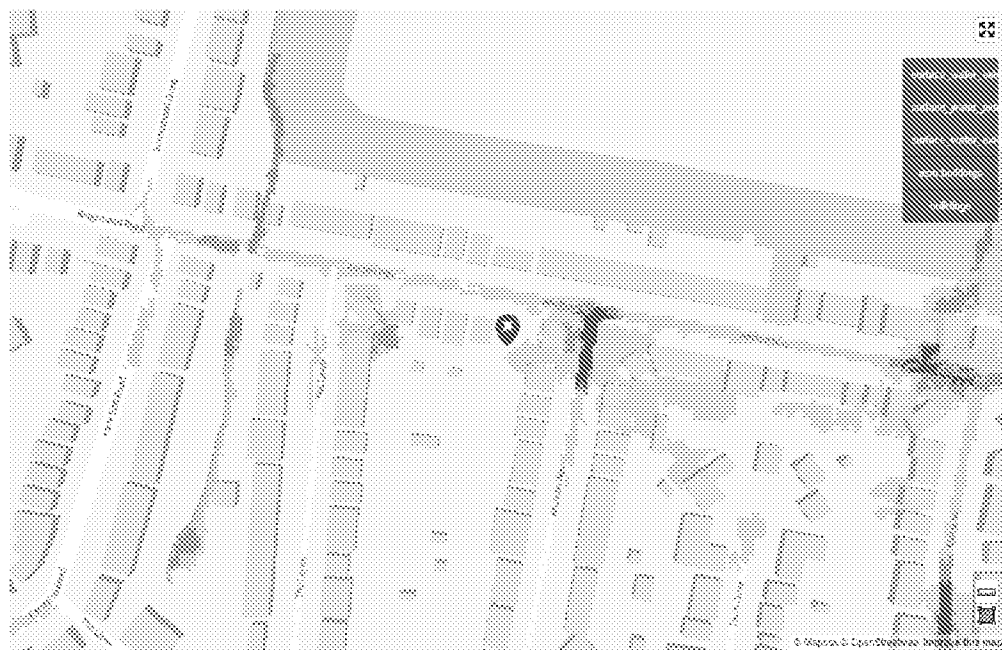


Figure 4: Water Flood Risk Mapping incorporating 3.3% to 0.1% AEPs.

Reservoirs

- 4.15. Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 4.16. According to EA flood risk from reservoirs mapping the site is outside flood extents in the event of reservoir flooding.

Groundwater

- 4.17. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 4.18. The British Geological Survey's (BGS) mapping shows superficial deposits of Brickearth -Silt underlying the site. The bedrock underlying the site is White Chalk comprising Chalk.

- 4.19. As the development proposals do not include any proposed basements, and is for a garage only, the risk from groundwater to the development is considered to be low.

Sewer Flooding

- 4.20. Sewers can be a cause of flooding where the drainage network has become overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.21. The SFRA provides mapping of historical sewer flood incident records. No historical sewer surcharging incidents have been recorded in the vicinity of the site.
- 4.22. Local policy documentation does not identify the site as being located within a Critical Drainage Area.
- 4.23. The development is therefore considered to be at low risk of flooding from sewers.

5. Flood Risk Mitigation

Fluvial and Canals

- 5.1. No fluvial flood mitigation is required.

Pluvial

- 5.2. No pluvial (surface water) mitigation is required.

Reservoirs, Groundwater and Sewers

- 5.3. Flood risk from other sources is deemed to be low, therefore mitigation is not required.

Increase to Flood Risk Elsewhere

- 5.4. The proposed development is for the construction of an extension to the existing dwelling on site. As such, the proposal constitutes a Minor Development.
- 5.5. Paragraph 047 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

Minor developments are unlikely to raise significant flood risk issues unless:

- they would have an adverse effect on a watercourse, floodplain or its flood defences;
- they would impede access to flood defence and management facilities, or;
- where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.

- 5.6. The tidal nature of the flooding also means that volumetric detriment from coastal sources can be considered negligible.
- 5.7. As such, the proposed development in isolation should have a negligible impact on flood risk elsewhere.

6. Conclusions

- 6.1. This FRA has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at 9 Ancton Way, Elmer Sands, PO22 6JN. It has been written to support a planning application and has been prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.

Source of Flooding	Flood Risk Summary
Fluvial (and Canals)	The site is located within Flood Zone 2, however its proposed vulnerability according to government guidelines ("more Vulnerable"), is considered appropriate for the Flood Zone. Flood Zone 2 is linked in this location to coastal flooding. No mitigation required.
Pluvial	The site is shown to be at low risk from pluvial flooding.
Reservoirs	The site is considered to be at low risk from other sources.
Groundwater	
Sewers	

- 6.3. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.