

Flood Risk Assessment
AEG4531_PE12_Spalding_01

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Site Address: The Poplars
Chapel Drove
Spalding
PE12 0PT

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

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Document Issue Record

Project: Flood Risk Assessment

Prepared for: Mark Rumble

Reference: AEG4531_PE12_Spalding_01

Site Location: The Poplars, Chapel Drove, Spalding, PE12 0PT

Issue	Date	Author	Check	Auth.	Comments
1	16/04/2024	Oliver Manston	JA	OH	First issue
2	03/06/2025	Daniel Cunningham	DS		Second Issue – client comments and updated report to reflect changes to EA flood mapping

Please Note:

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Summary

Development Description	Existing	Proposed
Development Type	Derelict brownfield site	Residential dwelling
EA Vulnerability Classification	N/A	More Vulnerable
Ground Levels	Existing ground levels vary between 1.35m AOD and 1.85m AOD across the site based on topographic survey.	It is recommended that the FFLs of the dwelling are set 300mm above the existing ground.
Level of Sleeping Accommodation	N/A	First Floor Level
Surface Water Drainage	N/A[1]	SuDS recommended to be included as a part of the surface water drainage strategy for the development
Site Size	Approximately 1000m^2	No change
Risk to Development	**Summary**	**Comment**
EA Flood Zone	Flood Zones 1 and Flood Zone 2	
Flood Source	Fluvial (Residual Risk)	River Welland/Nene
SFRA Available	South East Lincolnshire Strategic Flood Risk Assessment (South East Lincolnshire Joint Strategic Planning Committee, 2017)	
Management Measures	**Summary**	**Comment**
Ground floor level above extreme flood levels	Recommended to raise FFLs	It is recommended that the FFLs of the dwelling are set 300mm above the existing ground.
Safe Access/Egress Route	Possible under actual (defended) conditions	Safe access/egress via Chapel Drove should be possible.
Flood Resilient Design	Recommended	Flood resilience and resistance techniques to be included in accordance with 'Improving the flood

		performance of new buildings' DCLG (2007)
Site Drainage Plan	N/A[1]	SuDS recommended to be included as a part of the surface water drainage strategy for the development
Flood Warning and Evacuation Plan	Yes	Recommended to sign up to the Holbeach, Fleet, Gedney and surrounding areas Environment Agency (EA) flood warning service.
Offsite Impacts	**Summary**	**Comment**
Displacement of floodwater	Negligible	The site is shown to lie outside the extent of each of the modelled extents provided by the EA and in the SFRA mapping and therefore, in isolation, the proposals should not increase flood risk elsewhere.
Increase in surface run-off generation	N/A[1]	SuDS recommended to be included as a part of the surface water drainage strategy for the development
Impact on hydraulic performance of channels	LLFA/IDB Consultation Recommended	Given the proximity of the proposed development to the drains bordering the site it is recommended that the Internal Drainage Board (IDB) responsible for the site location is consulted on any planning application. The IDB for the site area is the South Holland IDB.

[1] not required for this assessment

[2] data not available.

1. Introduction

1.1. Aegaea were commissioned by Mark Rumble to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development. 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.

1.2. 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

1.3. The site of the proposed development is The Poplars, Chapel Drove, Spalding, PE12 0PT (Figure 1).

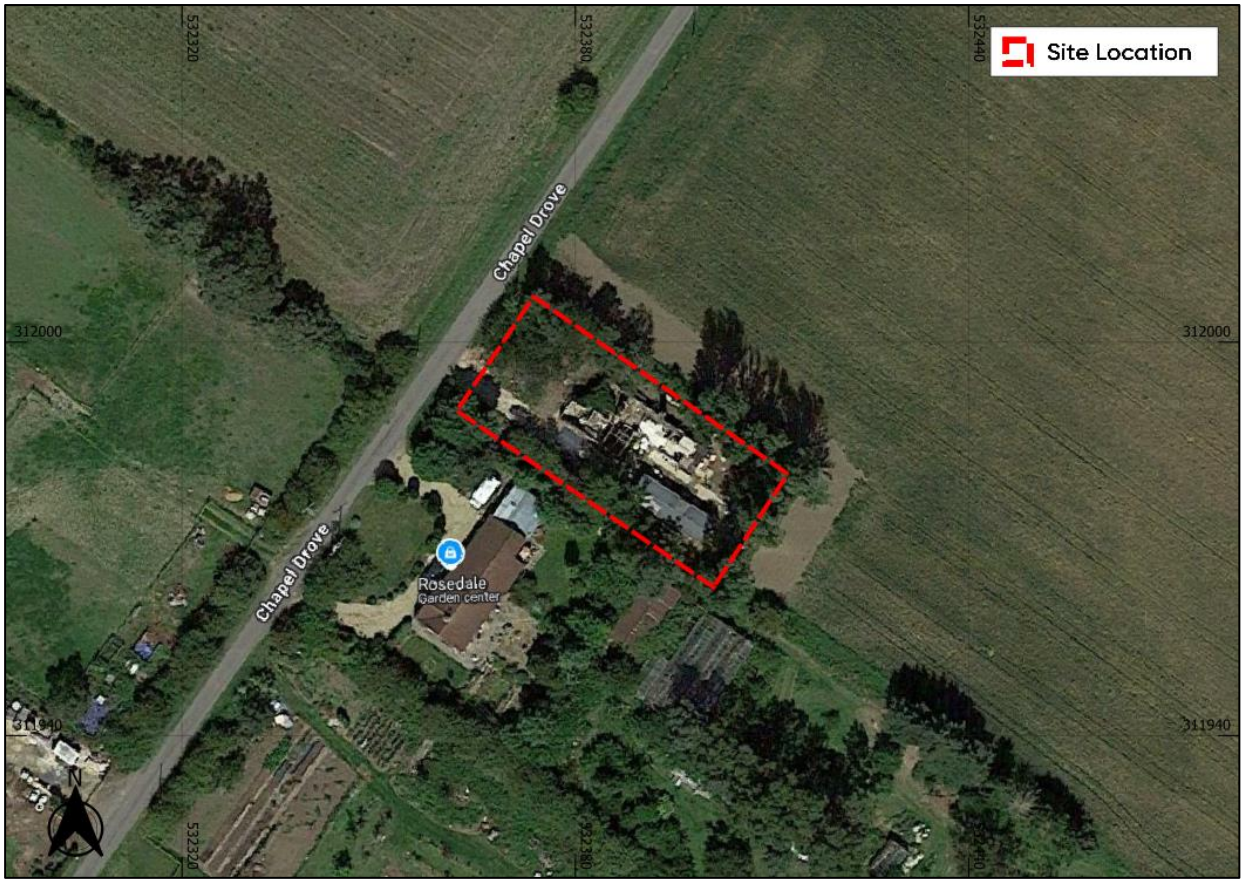


Figure 1: Site Location and Wider Ownership Boundary (Base map and data from Google Satellite Imagery ©)

1.4. It is understood that the proposed development is for the construction of single residential dwelling, following the demolition of the existing derelict building on site. A copy of the proposed development plans are included in Appendix A of this report.

1.5. A topographic survey of the site has been completed and has been provided by the client which details the existing ground levels across the site. Based on this survey, site levels vary between 1.35m Above Ordnance Datum (AOD) and 1.85m AOD with the site generally falling from west to east. The topographic survey also has picked up the various drainage ditches which runs around the north, east and southern perimeter of the redline boundary.

1.6. Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model (1m resolution) has been utilised to visualise the existing ground levels on the site and within the surrounding vicinity (Figure 2).

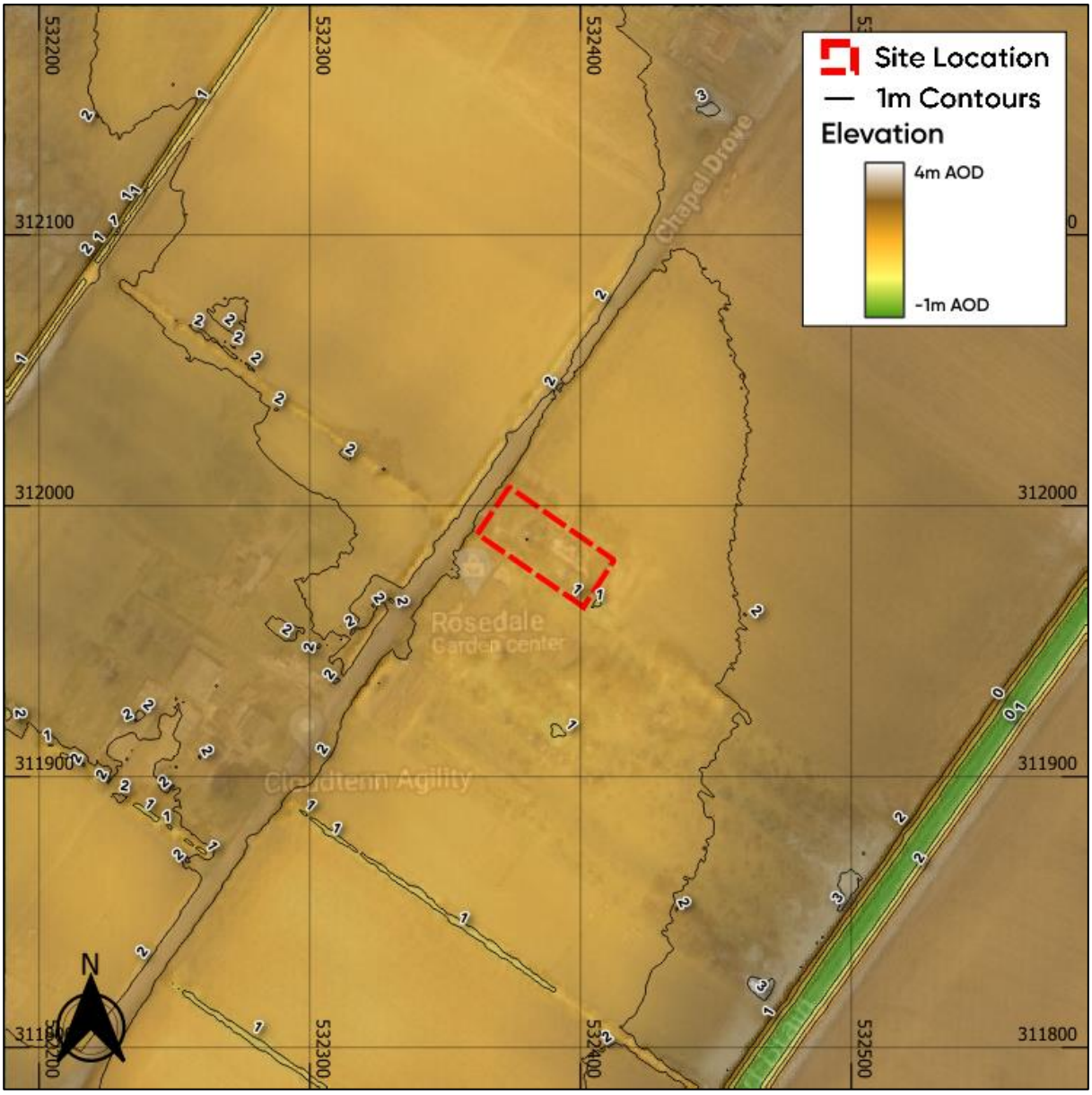


Figure 2: Site Topography (Base map and data from Google Satellite Imagery ©). Contains public sector information licensed under the Open Government Licence v3.0)

1.7. South Holland District Council is the Local Planning Authority (LPA) for the site and Lincolnshire County Council is the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Lincolnshire and Northamptonshire region.

Planning Policy and Guidance

1.8. UK government planning guidance states[1] that an FRA is required for developments which are:

- *in flood zone 2 or 3 including minor development and change of use*
- *more than 1 hectare (ha) 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 rivers and the sea (for example surface water drains, reservoirs)*
- *in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency*

1.9. The site is in Flood Zone 2 therefore the NPPF states that an FRA is required.

1.10. 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/tidal flood risk
- Surface water flood risk
- Risk of flooding from other sources

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

2. Planning Policy

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.

National Planning Policy Framework (NPPF)

2.2. The National Planning Policy Framework[2] (NPPF) (MHCLG, 2024) which includes UK Government policy on development and flood risk states:

> *170. 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.*
>
> *176. Applications for some minor development and changes of use should also not be subject to the sequential test, nor the exception test [set out below], but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.*
>
> *181. 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;*

[2] https://www.gov.uk/guidance/national-planning-policy-framework, **last updated Dec 2024**

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.

2.3. Footnote 59 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.

2.4. 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 from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be

Flood Zone	Definition
	defined solely on rigid probability parameters. Functional floodplain will normally comprise: land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). 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)

2.5. 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.

2.6. 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.

2.7. 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 Standards[4].

Local Planning Policy

2.8. The Local Plan prepared jointly by Boston Borough Council and Lincolnshire County Council, sets out the policies for development in the South Holland District Council boundary. The proposed site lies under the jurisdiction of the South Holland District Council LPA and therefore

[4] **Technical Standards Accessed Online**
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

will be required to adhere to the Local Plan policies. The Local Plan 2011-2036[5] (Adopted March 2019) document provides the following policies on flood risk management and sustainable drainage;

> *Policy 4: Approach to Flood Risk*
>
> *Development proposed within an area at risk of flooding (Flood Zones 2 and 3 of the Environment Agency's flood map or at risk during a breach or overtopping scenario as shown on the flood hazard and depths maps in the Strategic Flood Risk Assessment) will be permitted, where:*
>
> *1. It can be demonstrated that there are no other sites available at a lower risk of flooding (i.e. that the sequential test is passed). The sequential test will be based on a Borough or District wide search area of alternative sites within the defined settlement boundaries, unless local circumstances relating to the catchment area for the development justify a reduced search area, i.e. there is a specific need for the development in that location. The sequential test is not required for sites allocated in the Local Plan, minor development or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site).*
>
> *2. It can be demonstrated that essential infrastructure in FZ3a & FZ3b, highly vulnerable development in FZ2 and more vulnerable development in FZ3 provide wider sustainability benefits to the community that outweigh flood risk.*
>
> *3. The application is supported with a site-specific flood risk assessment, covering risk from all sources of flooding including the impacts of climate change and which:*
>
> > *a. demonstrate that the vulnerability of the proposed use is compatible with the flood zone;*
> >
> > *b. identify the relevant predicted flood risk (breach/overtopping) level, and mitigation measures that demonstrate how the development will be made safe and that occupants will be protected from flooding from any source;*

[5] **https://www.southeastlincslocalplan.org/wp-content/uploads/2019/02/Local-Plan-text-March-2019.pdf**

c. propose appropriate flood resistance and resilience measures (following the guidance outlined in the Strategic Flood Risk Assessment), maximising the use of passive resistance measures (measures that do not require human intervention to be deployed), to ensure the development maintains an appropriate level of safety for its lifetime;

d. include appropriate flood warning and evacuation procedures where necessary (referring to the County's evacuation routes plan), which have been undertaken in consultation with the authority's emergency planning staff;

e. incorporates the use of Sustainable Drainage Systems (SuDS) (unless it is demonstrated that this is not technically feasible) and confirms how these will be maintained/managed for the lifetime of development (surface water connections to the public sewerage network will only be permitted in exceptional circumstances where it is demonstrated that there are no feasible alternatives);

f. demonstrates that the proposal will not increase risk elsewhere and that opportunities through layout, form of development and green infrastructure have been considered as a way of providing flood betterment and reducing flood risk overall;

g. demonstrates that adequate foul water treatment and disposal already exists or can be provided in time to serve the development;

h. ensures suitable access is safeguarded for the maintenance of water resources, drainage and flood risk management infrastructure.

Development in all flood zones, and development over 1 hectare in size in Flood Zone 1, will need to demonstrate that surface water from the development can be managed and will not increase the risk of flooding to third parties.

Change of use of existing buildings will be supported providing they do not pose an increase in risk to people. Change of use that would result in self-contained ground floor residential accommodation in areas of hazard rating 'danger for some', 'danger for most' and 'danger for all' will not be supported. In these areas unrestricted access to a habitable room above the flood level and an emergency evacuation plan will be required.

Caravans, mobile homes and park homes intended for permanent residential use will not be permitted in areas at risk of flooding. Caravan, chalet, log cabin, camping and touring sites at risk of fluvial flooding where there is a 'danger for most' and 'danger for all' will not be permitted. Occupancy of caravan, chalet, log cabin, camping and touring sites at risk of tidal flooding will not be permitted to open between 1st November in any one year and the 14th March in the succeeding year.

No development will be permitted within a 50m buffer from the toe of the raised Witham Haven Banks (flood defences), as shown on the indicative Plan contained in Appendix 10, to allow access for construction and maintenance.

Flood risk management infrastructure shall be provided at the strategic level, where development opportunities allow, to reduce the hazard and probability of flooding.

Sequential and Exception Tests

2.9. 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.

Sequential Test

2.10. Under the NPPF all new planning applications should undergo a Sequential Test unless a Minor Development or a change of use application in accordance with paragraph 176 and footnote 63.

2.11. It should be noted that the proposed development provides an opportunity to for a betterment over the existing scenario by redeveloping an existing brownfield site with the inclusion of flood mitigation measures which the previous buildings which populate the site do not include. The site is also shown to lie outside each of the modelled flood events and is therefore understood to be sequentially located.

Exception Test

2.12. The Flood Risk Vulnerability Classification table[6] provided below in Table 2 shows which vulnerabilities are appropriate in each Flood Zone.

2.13. The proposed development lies wholly within Flood Zone 2 and the proposed development consist of 'More Vulnerable' uses (residential dwelling). Table 2 shows that 'More Vulnerable' developments within Flood Zone 2 is permissible without the need for an Exception Test.

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

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

2.14. This flood risk assessment has been prepared with due consideration to the above local and national policy.

[6] **https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2**

3. Consultation and Review

Consultation

3.1. The site sits within the Environment Agency's Lincolnshire and Northamptonshire region. The EA were contacted in February 2024 and asked to provide detailed flood modelling data in relation to the site address. In response the EA have provided Product 4 and 6 data which has been used in Section 4 of this report in order to analyse the flood risk to the site. A full copy of the Product 4 data will be included in Appendix B of this report.

Documents and Online Mapping

3.2. 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.

3.3. The following sources of information have been reviewed for this assessment:

- Flood Map for Planning on the Environment Agency website *https://flood-map-for-planning.service.gov.uk/*
- Long Term Flood Risk Information on the Environment Agency website *https://www.gov.uk/check-long-term-flood-risk*
- National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023)
- Planning Practice Guidance - Flood Risk and Coastal Change (Department for Levelling Up, Housing and Communities, 2022)
- Geoindex Onshore (British Geological Survey, 2023)
- South East Lincolnshire Local Plan 2011-2036 (South East Lincolnshire Joint Strategic Planning Committee, 2019)

- Lincolnshire County Council Preliminary Flood Risk Assessment[7] (Lincolnshire County Council, 2011)
- South East Lincolnshire Strategic Flood Risk Assessment[8] (South East Lincolnshire Joint Strategic Planning Committee, 2017)

Preliminary Flood Risk Assessment (PFRA)

3.4. The PFRA is a high-level appraisal of flood risk across Lead Local Flood Authority Lincolnshire County Council. The flood risk from all sources, including fluvial, surface water, groundwater, and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy is produced.

3.5. The PFRA summarises historical flood incidents in Lincolnshire County Council. The site is not recorded as having been affected by any flood event.

Strategic Flood Risk Assessment (SFRA)

3.6. The SFRA, published in 2017, provides the evidence base for the Local Planning Authority South Holland District Council Local Plan and guidance for consideration when determining planning applications.

3.7. The SFRA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.

3.8. The SFRA mapping provided by South Holland District Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

[7] **https://www.lincolnshire.gov.uk/downloads/file/4382/preliminary-flood-risk-assessment-report**

[8] **https://www.southeastlincslocalplan.org/wp-content/uploads/2018/01/SE-Lincolnshire-SFRA-2017-v6-24th-Jan-2018.pdf**

4. Sources of Flood Risk

Fluvial

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.

Main Rivers and Ordinary Watercourses

4.2. The nearest EA Main River to the site is the River Welland located approximately 7.41km west of the redline boundary. The River Nene (EA Main River) is located approximately 10.75km south of the site.

4.3. There are several drains/watercourses located within the vicinity of the site including the Lambert Drain located approximately 150m east of the redline boundary. Within the immediate vicinity of the site there are shown to be drainage ditches located on the north, east, and southern perimeter of the site (Figure 3).

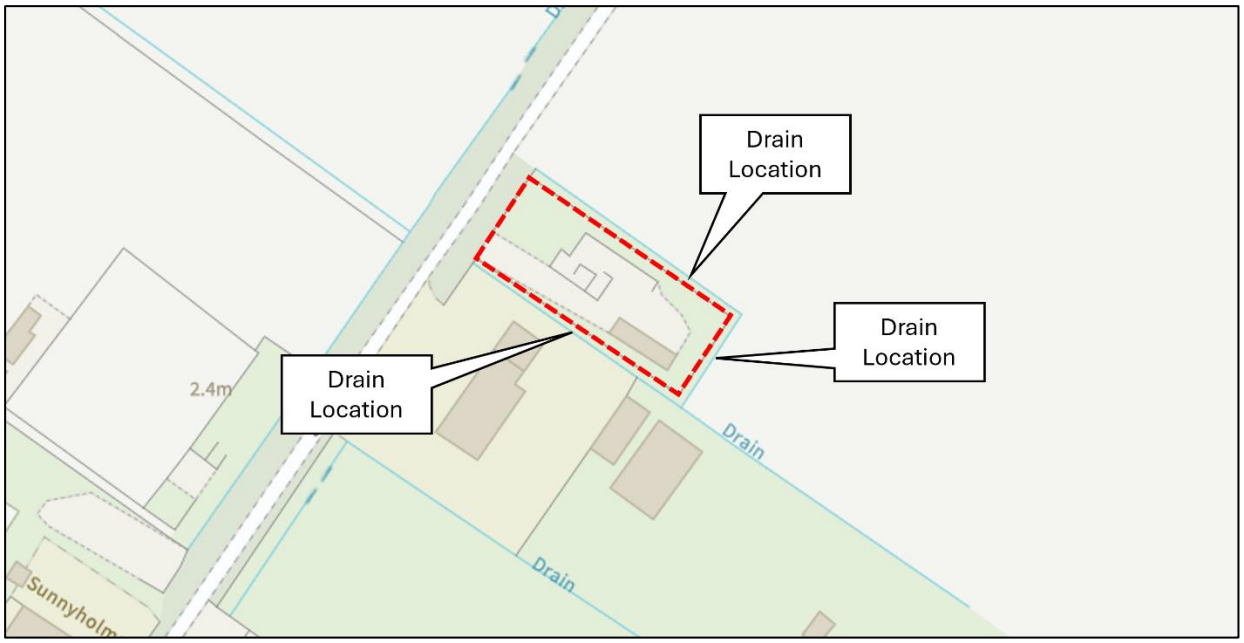


Figure 3: Drains within the Vicinity of the Site (Source: Heritage England Mapping, Contains OS data © Crown Copyright and database rights 2023 © Historic England)

4.4. Given the proximity of the proposed development to the drains bordering the site it is recommended that the Internal Drainage Board (IDB) responsible for the site location is consulted on any planning application. The IDB for the site area is the South Holland IDB.

EA Flood Map for Planning

4.5. The majority site is located within Flood Zone 2, though part of the southern extent of the site is shown to lie within Flood Zone 1 (Figure 4) (updated March 2025). Flood Zone 2 denotes a risk of flooding from fluvial sources between a 1 in 100 (1%) and 1 in 1,000 (0.1%). Flood Zone 1 is denoted as land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).

Figure 4: EA Flood Map for Planning (Base map and data from Google Satellite Imagery ©). Contains public sector information licensed under the Open Government Licence v3.0)

EA Product Data Analysis

4.6. The EA was consulted to obtain modelled flood level data. The data provided is from Welland Strategic Catchment Model (2016) and the Lower Nene Model (2013).

4.7. The Welland Strategic Catchment Model (2016) provides both 1D in-channel levels and flood extents for several return periods in addition to scenarios including various climate change allowances.

4.8. The site is located within the Nene Management Catchment, which has peak flow river allowances for the central scenario of: -2% for the 2020s, -7% for the 2050s, and 4% for the 2080s. As the development is for residential use with a development lifetime of 100-years, the peak flow allowance of 4% for the 2080s would be required for fluvial flood flows.

4.9. The data provided by the EA did not include a +4% climate change scenario but does include a +20%CC allowance scenario which has been used a conservative estimate of the impact of climate change on the site location.

4.10. The site is shown to lie outside the extent of each of the modelled undefended events from the Welland Strategic Catchment Model (2016) (Figure 5). This includes both baseline events for the 1.0%AEP and 0.1%AEP scenarios and climate change allowance events (+20%CC) for the 1.0%AEP and 0.1%AEP scenarios.

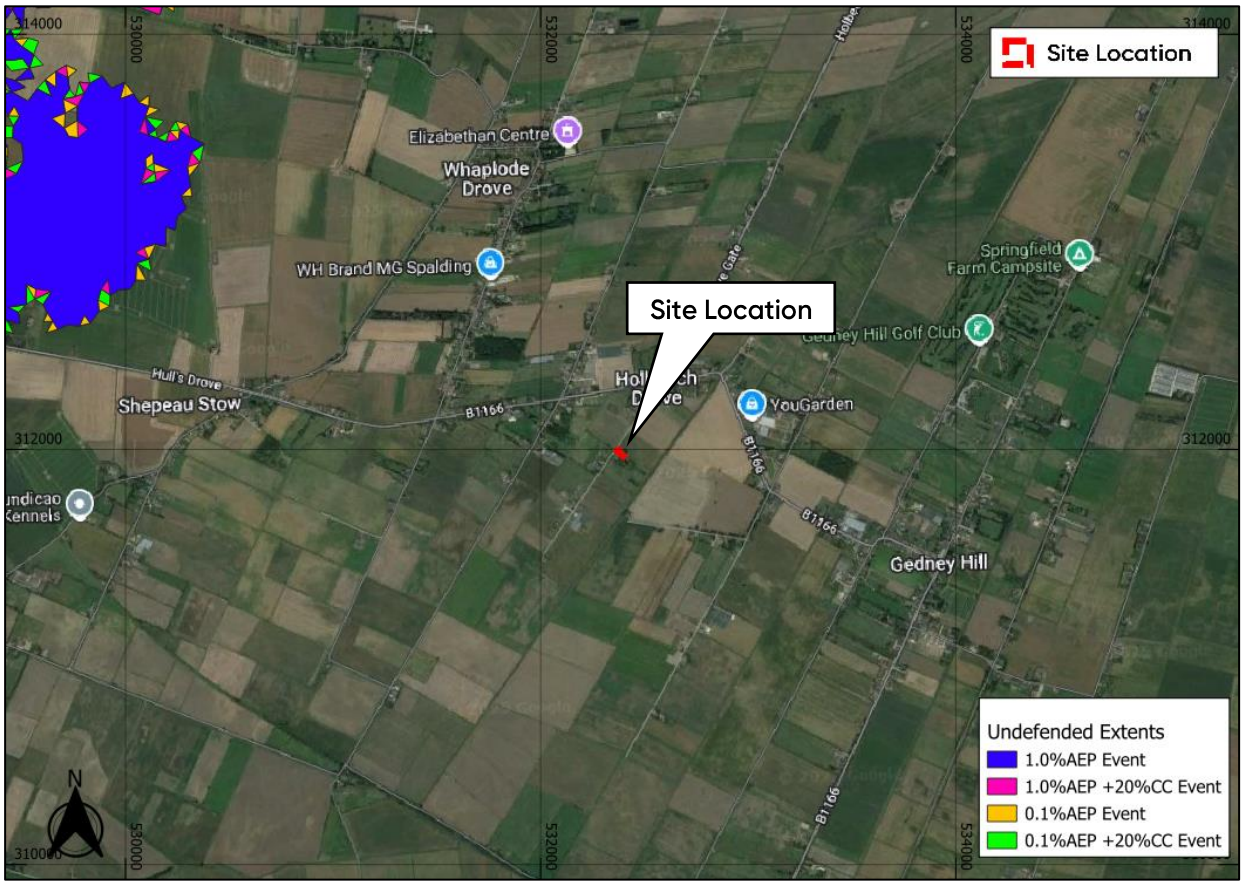


Figure 5: Modelled Flood Extents (Welland Strategic Catchment Model (2016) - Base map and data from Google Satellite Imagery ©). Contains public sector information licensed under the Open Government Licence v3.0)

4.11. Similarly, the Lower Nene Model (2013) provides both 1D in-channel levels and flood extents for several return periods in addition to scenarios including various climate change allowances.

4.12. The site is shown to lie well outside the vicinity of all the flood extents (including climate change allowance scenarios) provided by the EA for the Lower Nene model (<18km). The EA were asked to confirm whether the correct flood extents had been provided in relation to the site location, in response the EA stated that the data was provided was the correct information for the site area.

4.13. 1D in-channel node locations and flood levels were also provided for the River Nene. However, given that the watercourse is located <10km from the redline boundary at its nearest extent, it is understood that the in-channel flood levels would not be representative of the flood level at the site.

4.14. Moreover, interrogation of the nearest 1D nodes to the site (ref: mo83500), the Standard of Protection of the left bank defences (near bank to the site) are given up to and including the 0.1%AEP event. The right bank defences (far bank from the site) Standard of Protection is stated as up to and including the 0.5%AEP event – therefore in the event of overtopping of these defences, it is expected that floodwater would spill over the right side embankment, away from the site location before overtopping of the defences on the near bank to the site would occur.

South East Lincolnshire SFRA - Residual Risk Mapping

4.15. The SFRA (2017) includes mapping to show the residual flood risk to the district. The residual risk modelled outputs include the consequences of both overtopping and breaching of flood defences.

4.16. The SFRA provides results for both the present day (2017) and 2115 epoch. The 2115 epoch results are inclusive of appropriate climate change allowances for both sea level rise and for fluvial flows.

4.17. The site is shown to remain unaffected in each of the modelled present day and 2115 epoch scenarios (Figure 6 and Figure 7 respectively).

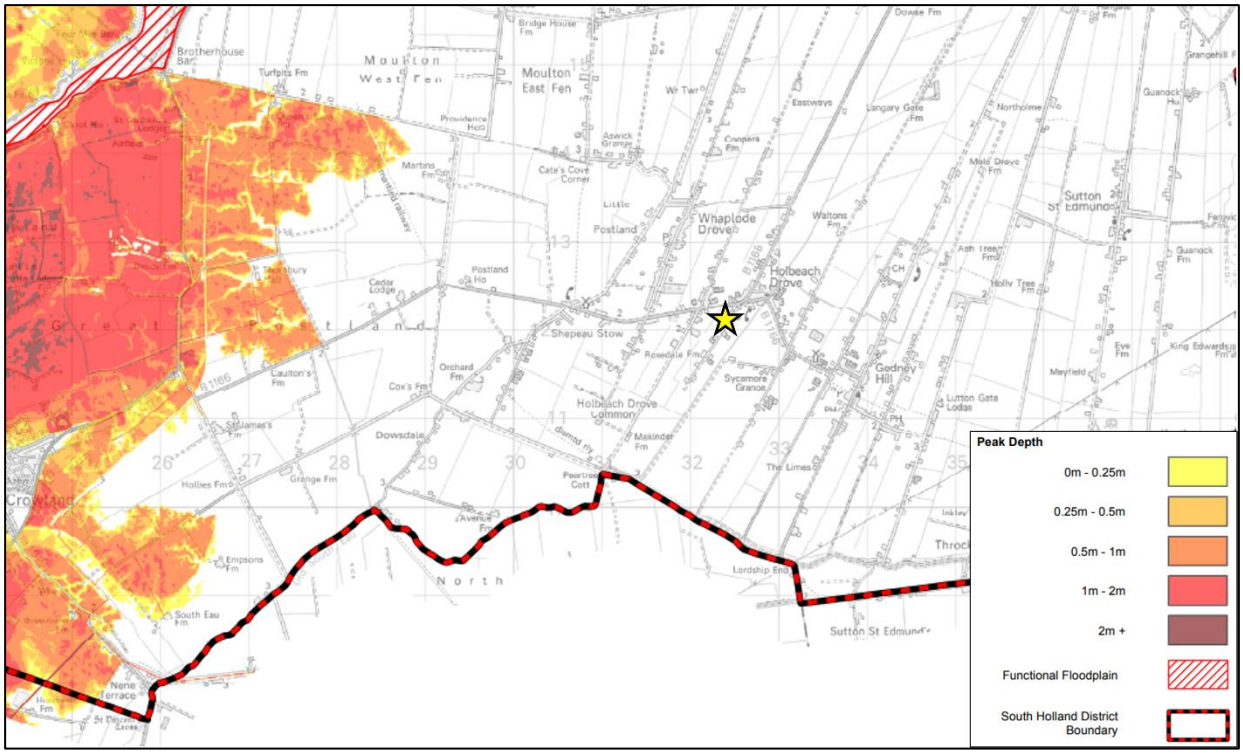


Figure 6: Residual Peak Flood Depths and Extents – 1.0%AEP Fluvial and 0.5%AEP Tidal Event – Present Day Scenario (Source: SFRA, 2017 – Site Located at Star)

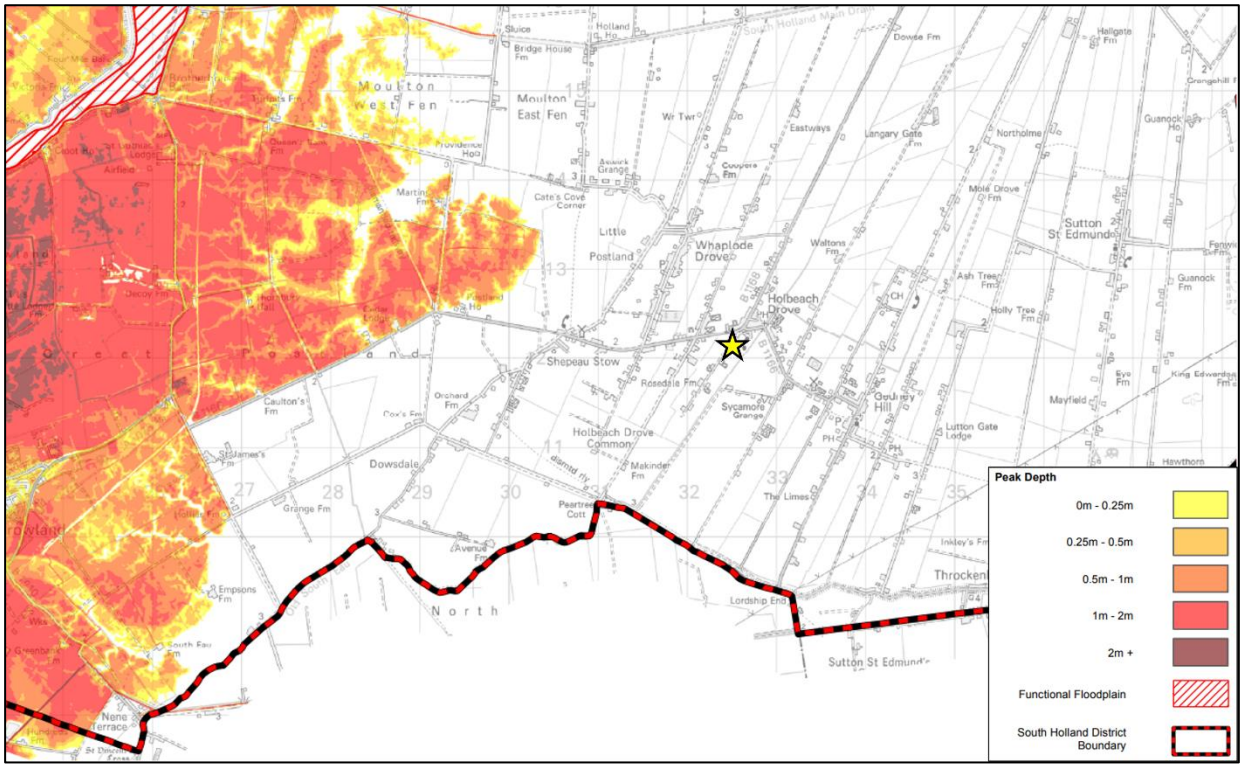


Figure 7: Residual Peak Flood Depths and Extents – 1.0%AEP Fluvial and 0.5%AEP Tidal Event – 2115 Epoch Scenario (Source: SFRA, 2017 – Site Located at Star)

Historical Fluvial Flooding

4.18. The EA Recorded and Historical Flood Outlines show that the site lies outside the extent of any recorded historical flooding events (Figure 8).

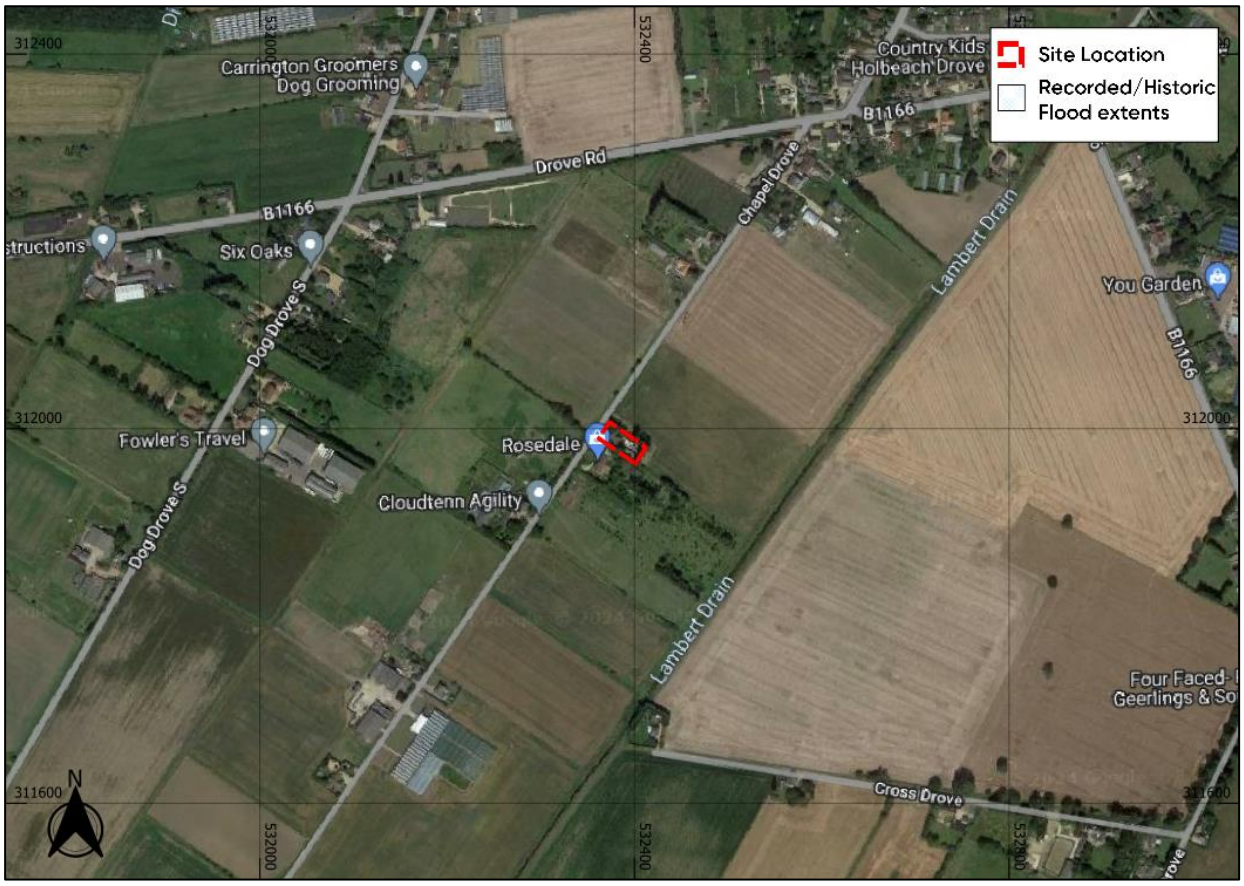


Figure 8: EA Historic Flood Mapping (Base map and data from Google Satellite Imagery ©). Contains public sector information licensed under the Open Government Licence v3.0)

Fluvial Flood Risk Summary

4.19. Based on the information above, the site is considered to be at a low of fluvial flooding, though some residual risk could be present due to the site's location within Flood Zone 2. Appropriate flood mitigation measures are recommended in Section 5 of this report.

Tidal

4.20. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through

them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high.

4.21. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change. This is supported by the residual risk mapping shown in the SFRA (Figure 6 and Figure 7).

4.22. Moreover, the EA Product 4 data provides the following comment on tidal flood risk to the site;

> *This site is not considered to be at risk from tidal flooding.*

4.23. Based on the information above, the site is considered to be at a low risk of tidal flooding.

Canals

4.24. 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.

4.25. 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.

4.26. Flooding can also occur where a canal is impounded above surrounding ground levels and the retaining structure fails.

4.27. The nearest canal to the proposed development is located at a distance of greater than 1km. Therefore, the site is considered to be at a low risk of canal flooding.

Pluvial

4.28. 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.

4.29. The new National Flood Risk Assessment (NaFRA2), published in Jan 2025, has updated the Risk of Flooding from Surface Water (RoFSW) products which show the chance of flooding from surface water to areas of land.

4.30. The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. It includes information about flooding extents and depths including the potential impact of climate change on flood risk, based on the latest UK Climate Projections (UKCP18).

4.31. Risk is displayed as one of three likelihood categories:

- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year.
- Medium – Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year.
- Low – Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year.

4.32. The new RoFSW depth mapping shows the annual chance of flooding (based on the three risk categories listed above) beyond a specific depth, for depths at the following intervals from 20cm to 120cm:

- 0.2m, 0.3m, 0.6m, 0.9m, 1.2m

4.33. As well as present day risk of flooding from surface water, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5. A near-term epoch (2040 – 2060 "2050s" epoch) and central allowances are being used initially, to support short and medium-term decisions informed by the highest flood likelihood projections.

Present Day

4.34. The EA Online 'Flood Risk from Surface Water' map (Jan 2025) indicates that the south of the site is at low and medium risk of surface water flooding (Figure 9)

4.35. Chapel Drove, which provides the access/egress route to the site, is shown to remain unaffected in each of the modelled surface water flood events within the vicinity of the site.

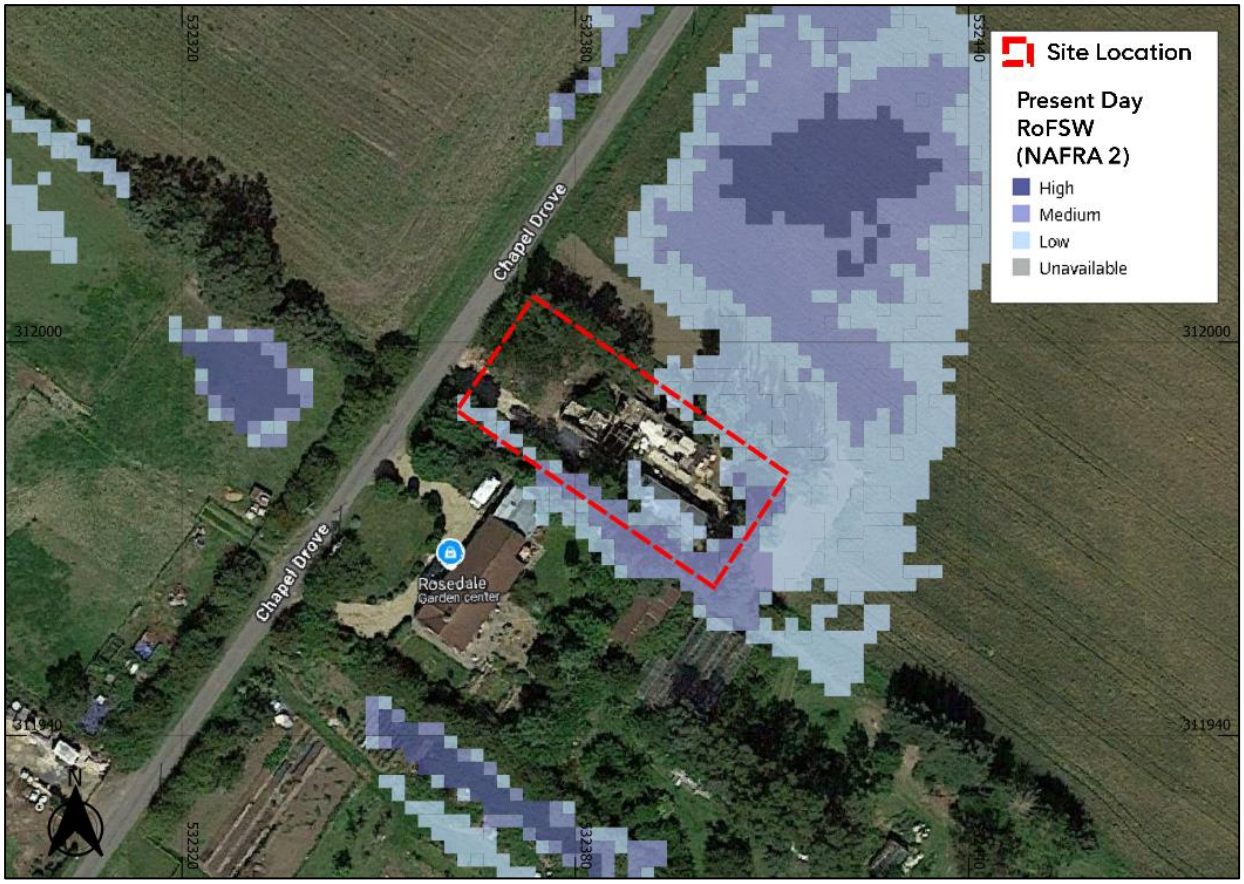


Figure 9: EA Surface Water Flood Risk Mapping Present Day Extent (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

4.36. Analysis of the present day RoFSW flood depth map shows that the south of the site is at a low and medium risk of surface water flood depths exceeding 0.3m (Figure 10).

4.37. It is worth noting that the location of the flood depths within the site curtilage and immediate vicinity correlate to the location of the existing drainage ditches located at the perimeter of the site boundary.

Figure 10: EA Surface Water Flood Risk Mapping Present Day Depth >0.3m (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

4.38. Analysis of the present day RoFSW flood depth map shows that the whole of the site not at risk of surface water flood depths exceeding 0.6m (Figure 11).

Figure 11: EA Surface Water Flood Risk Mapping Present Day Depth >0.6m (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

Climate Change

4.39. The EA Online 'Flood Risk from Surface Water -Climate Change' map (Jan 2025) indicates that the south of the site is at low, medium and high risk of surface water flooding (Figure 12).

4.40. It is worth noting that the location of the flood depths within the site curtilage and immediate vicinity correlate to the location of the existing drainage ditches located at the perimeter of the site boundary.

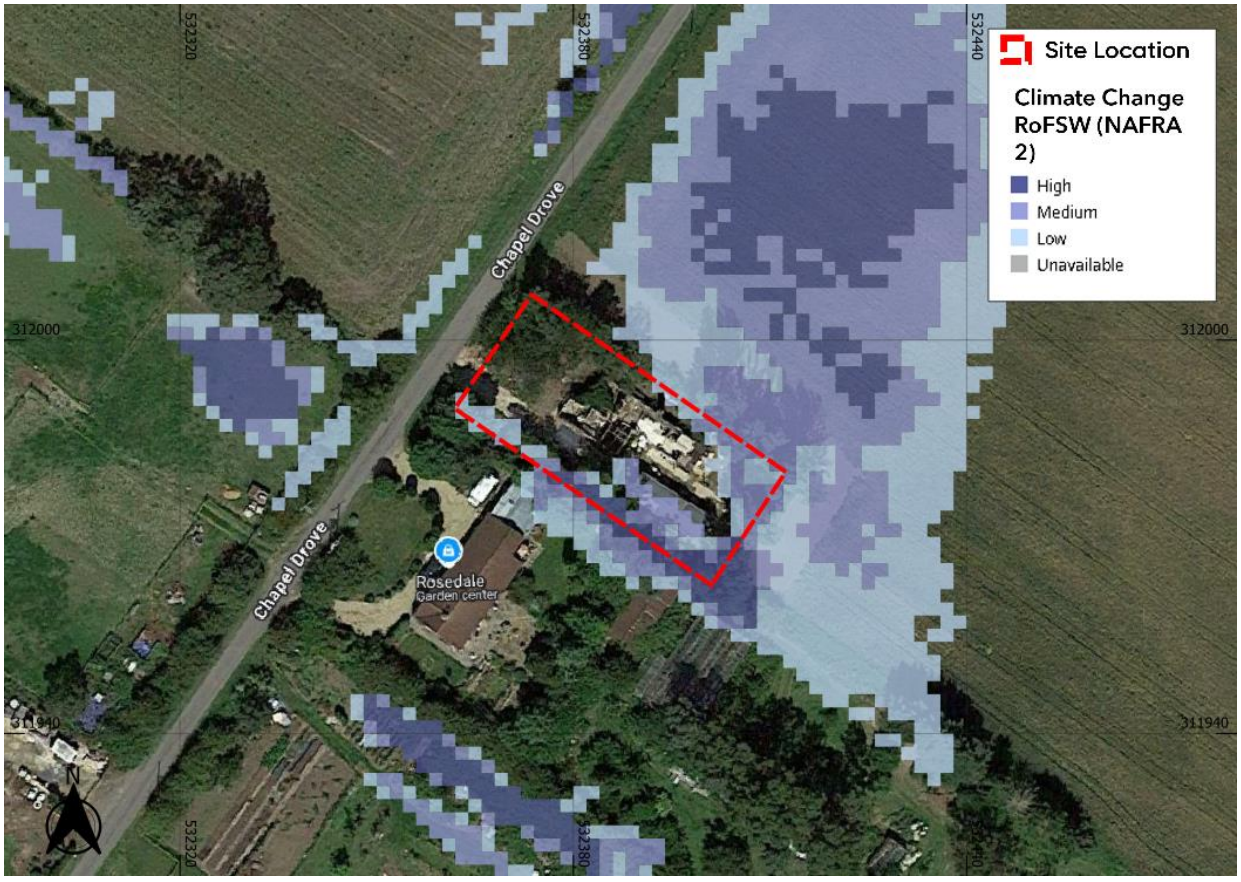


Figure 12: EA Surface Water Flood Risk Mapping Climate Change Extent (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

4.41. Analysis of the climate change RoFSW flood depth map shows that the south of the site is at a low and medium risk of surface water flood depths exceeding 0.3m (Figure 13).

4.42. It is worth noting that the location of the flood depths within the site curtilage and immediate vicinity correlate to the location of the existing drainage ditches located at the perimeter of the site boundary.

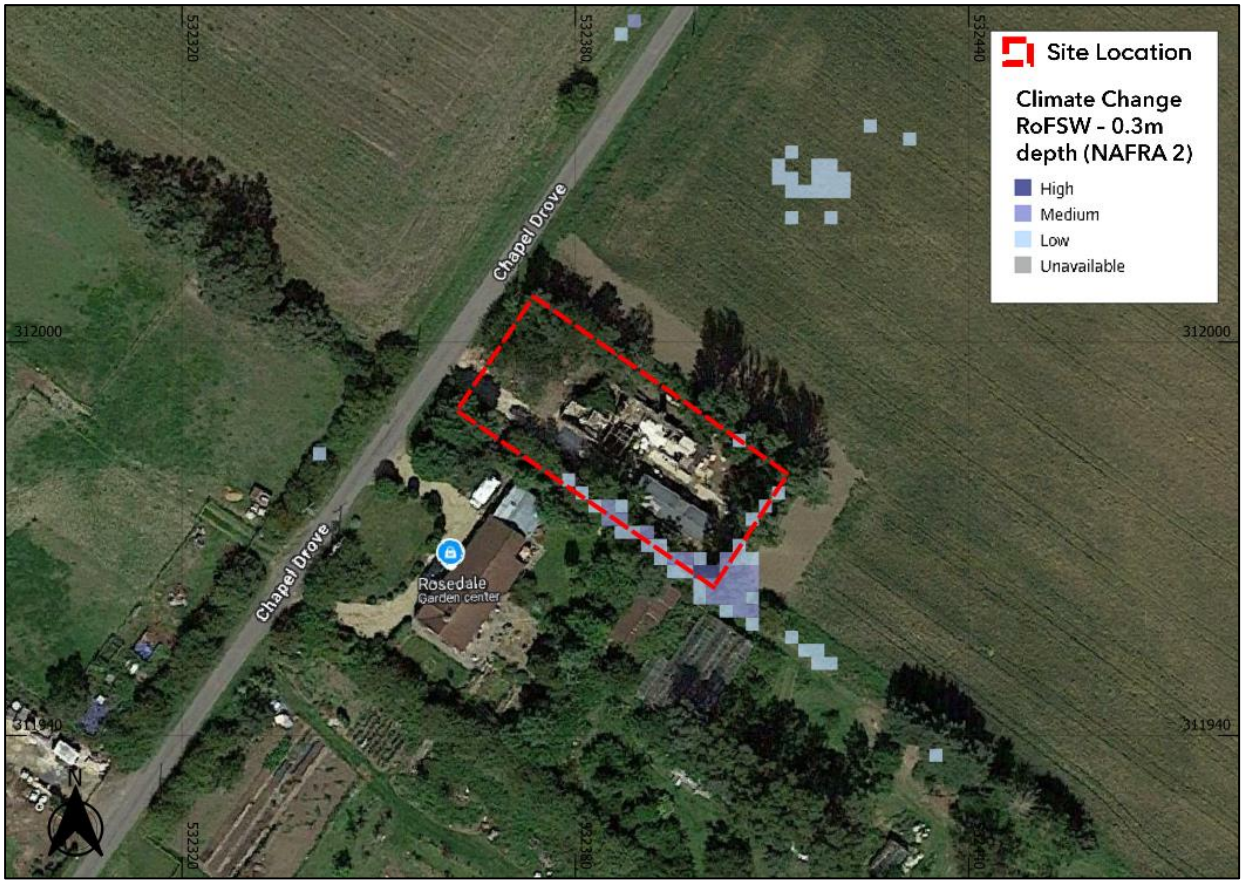


Figure 13: EA Surface Water Flood Risk Mapping Climate Change Depth >0.3m (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

4.43. Analysis of the climate change RoFSW flood depth map shows that the whole of the site not at risk of surface water flood depths exceeding 0.6m (Figure 14).

Figure 14: EA Surface Water Flood Risk Mapping Climate Change Depth >0.6m (Base map and data from Google Hybrid © Contains public sector information licensed under the Open Government Licence v3.0)

Pluvial Flood risk Summary

4.44. Based on the information above, the site is considered to be at medium risk of surface water flooding, however the depths do not exceed 600mm. As such flood resistance and resilience measures will be recommended in Section 5 of this report.

Reservoirs

4.45. Large waterbodies or reservoirs that have walls built above the surrounding ground level pose a risk of flooding. Walls could fail due to old age, accident, or because excess flood water has been added to the reservoir. Although a breach is unlikely, the consequences would be significant, leading to rapid inundation of the downstream floodplain.

4.46. According to the EA's Flood Risk from Reservoirs mapping the site is outside flood extents in the event of reservoir flooding (Figure 15).

Figure 15: EA Reservoir Flood Risk Mapping (Base map and data from Google Satellite Imagery ©). Contains public sector information licensed under the Open Government Licence v3.0)

4.47. Based on the information above, the site is considered to be at a low risk of reservoir flooding.

Groundwater

4.48. Groundwater flooding occurs in areas where underlying geology is permeable, and water can rise within the strata sufficiently to breach the surface.

4.49. The British Geological Survey's (BGS) mapping shows superficial deposits of Tidal Flat Deposits comprised of clay and silt underlying the site. The bedrock underlying the site is Oxford Clay Formation comprised of Mudstone.

4.50. Historic BGS borehole (ref: TF31SW1) located approximately 130m southeast of the site boundary extent states that groundwater was observed at 8'6" (2.60m) below ground level. It should be noted that given that the recorded borehole is located 130m from the site, this may not represent the underlying site geology.

4.51. The PFRA (2011) presents the EA's Areas Susceptible to Groundwater Flooding mapping, which assesses the risk of groundwater flooding. The site is within a 1km cell of which >= 25%<50% is at risk of groundwater flooding (Figure 16).

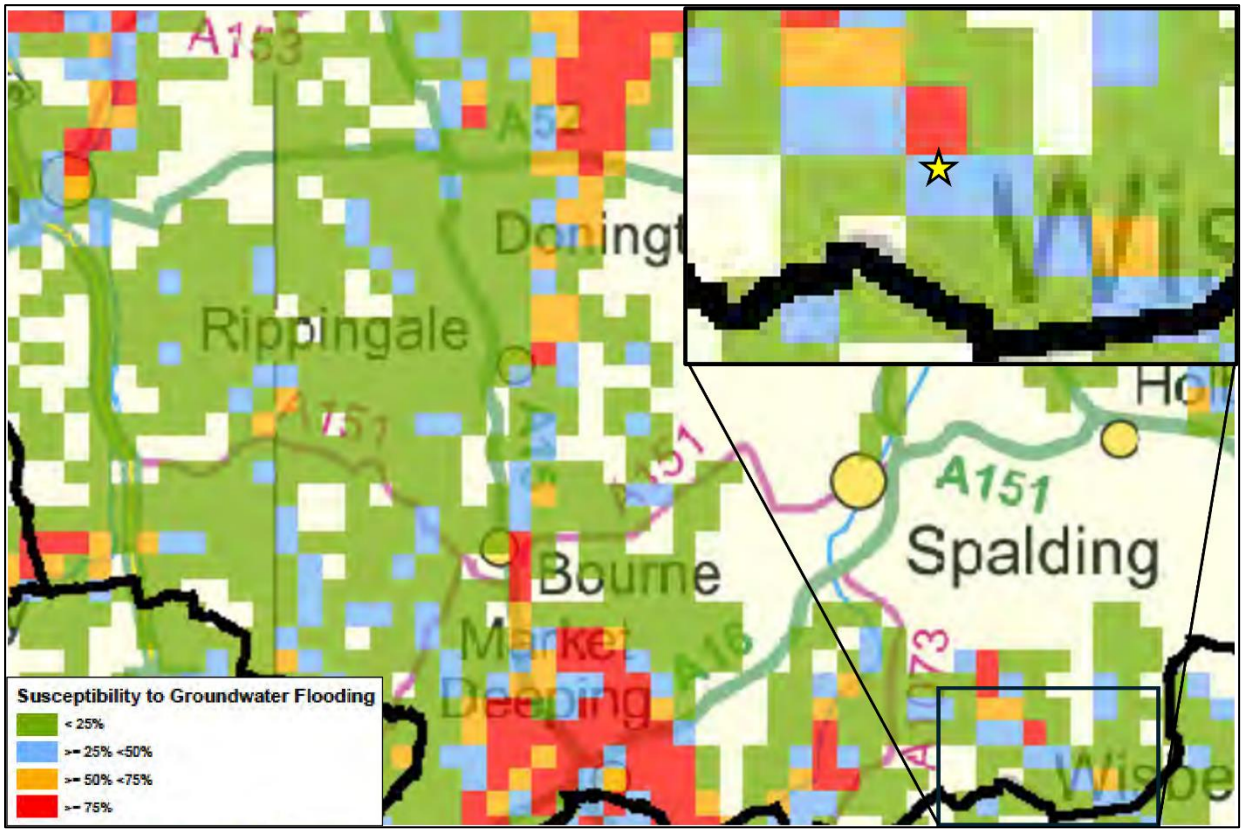


Figure 16: Susceptibility to Groundwater Flooding (Lincolnshire County Council PFRA, 2011 – Site Located at Star)

4.52. Based on the information above and considering that the proposed development does not include any subterranean elements, the groundwater flood risk to the site is considered to be low.

Sewers

4.53. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.

4.54. The SFRA provides mapping of historical sewer flood incident records kept by the local authority and the sewerage provider for the site location (Anglian Water). The site is shown to lie outside the vicinity of any recorded sewer flooding incidents.

4.55. Due to the rural nature of the site it is unlikely that the site is currently served by public sewer infrastructure.

4.56. Based on the information above, the site is considered to be at a low risk of sewer flooding. It is recommended that all new drainage associated with the scheme be fitted with non-return valves and that any new plumbing should be constructed in a closed cell design.

5. Flood Risk Mitigation

Fluvial and Pluvial

5.1. Based on this assessment, the site is considered to be at a low risk of fluvial flooding, though some residual risk could be present due to the site's location within Flood Zone 2.

5.2. The site is considered to be at medium risk of surface water flooding, however the depths do not exceed 600mm. As such flood resistance and resilience measures will be recommended.

Finished Flood Levels (FFLs)

5.3. It is recommended that the FFLs of the dwelling are set 300mm above the existing ground levels. Standing advice[9] taken from the SFRA (2017) states that for sites located within Flood Zone 2 (Non-major, More Vulnerable developments) the LPA have 'No Comment' in relation to the provision of appropriate mitigation. Therefore, given the site is shown to lie outside the residual risk mapping for the 2115 epoch, the raising of FFLs represents a conservative measure to provide mitigation for any further residual risk at the site location not represented in the SFRA modelling.

Resilience and Resistance Measures

5.4. It is also advised that appropriate flood resilience measures could be incorporated within the proposed development (where applicable), in accordance with the CLG Report, Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007) including measures such as the below:

- *Raised wiring and power outlets at basement and ground floor level.*
- *Air brick covers to be installed.*
- *Non-return valves should be installed on all new drainage.*
- *All new plumbing insulation to be of closed cell design.*

[9] **http://www.southeastlincslocalplan.org/wp-content/uploads/2017/03/SELincs-Standing-Advice-Matrix-2016-final-agreed-matrix.xlsx**

•Finish shall be water resistant render with lime-based plaster finish, hydraulic lime coating or ceramic tiles. Plasterboard placed horizontally as a sacrificial material, not vertically.

•Insulation to be low adsorption board or semi rigid self-draining wool bats.

Safe Access/Egress

5.5. It is understood that under actual (defended) design conditions, safe access/egress via Chapel Drove should be possible.

Flood Warning Services

5.6. As a further precaution and risk reduction, the owner of the site should sign up 'Holbeach, Fleet, Gedney and surrounding areas' EA flood warning service. This service allows site owners to register an address, which is at risk of flooding, along with contact details so that in the event of a flood being forecast, the site owner will be sent an alert directly to their chosen method of contact.

5.7. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants etc, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding and the mounting of site specific flood defences.

Other Sources

5.8. Flood risk to the proposed development from tidal, pluvial, canal, reservoir, groundwater and sewer sources is considered to be low and as such, no further specific mitigation is recommended.

5.9. It is recommended that any new drainage associated with the scheme be fitted with non-return valves and that any new plumbing should be constructed in a closed cell design.

Increase to Flood Risk Elsewhere

5.10. It is understood that the proposed development is for the construction of a single dwelling following the demolition of the existing derelict buildings. The site is shown to lie outside the extent of each of the modelled extents provided by the EA and in the SFRA mapping and therefore, in isolation, the proposals should not increase 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 The Poplars, Chapel Drove, Spalding, PE12 0PT. It has been written to support a planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.

6.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Fluvial	Based on this assessment, the site is considered to be at a low risk of fluvial flooding, though some residual risk could be present due to the site's location within Flood Zone 2.
Pluvial	The site is considered to be at medium risk of surface water flooding, however the depths do not exceed 600mm.
Tidal Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from other sources.

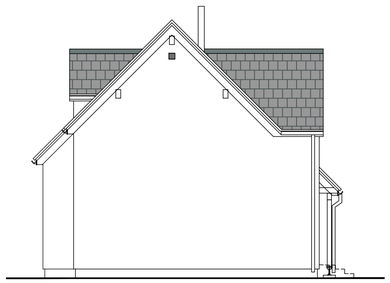
6.3. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.

6.4. Given the proximity of the proposed development to the drains bordering the site it is recommended that the Internal Drainage Board (IDB) responsible for the site location is consulted on any planning application. The IDB for the site area is the South Holland IDB.

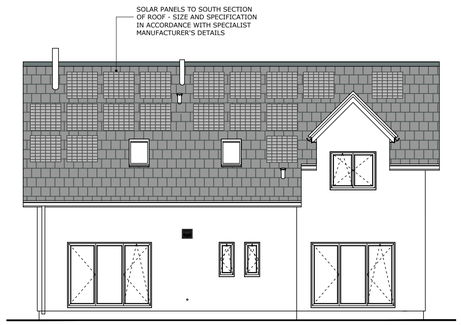
6.5. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals

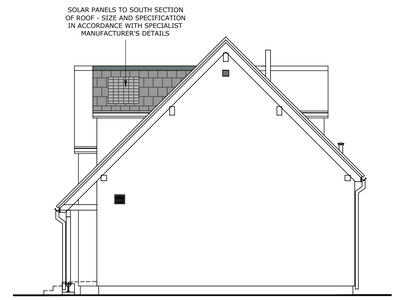
front elevation
1:100



side elevation
1:100



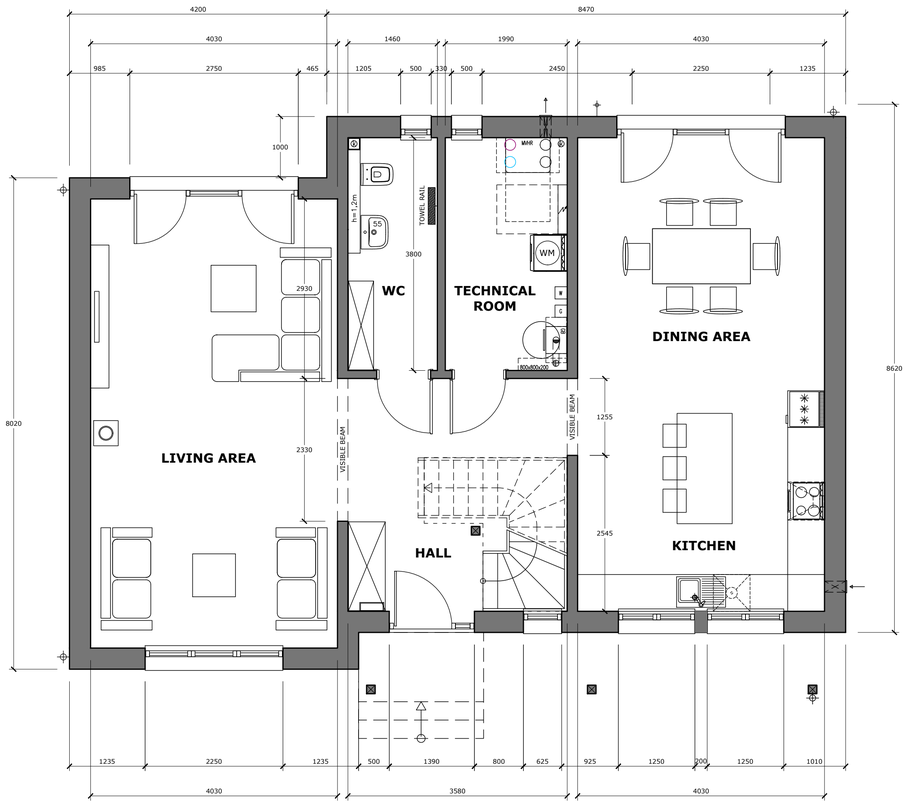
rear elevation
1:100



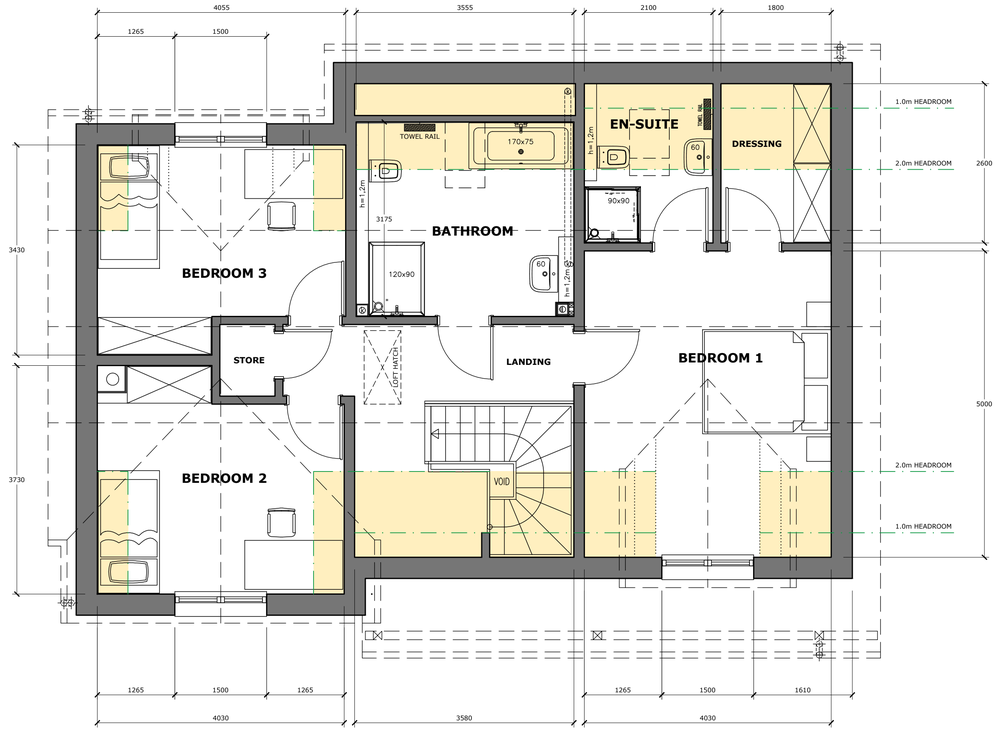
side elevation
1:100

PROPOSED FINISHES:

WALLS: RENDER - COLOUR WHITE
ROOF: MARLEY MODERN ROOF TILES - COLOUR GREY
WINDOWS: uPVC - COLOUR WHITE
GUTTERS AND RWP'S: uPVC - COLOUR WHITE
FASCIAS AND SOFFITS: WOOD - COLOUR WHITE



ground floor plan
1:50



first floor plan
1:50

0 0.5 2 4 5
0 1 3 5
SCALE BAR (M) - 1:50

PRELIMINARY FOR APPROVAL

rev	description	date
P2	AMENDED TO CLIENTS COMMENTS	28/02/2025
P1	PRELIMINARY FOR APPROVAL	29/01/2025

wireframe studio Ltd

Alpha House, 10 Carver Street, Sheffield, S1 4FS tel - 0114 266 9903 mail- andy@wireframestudio.co.uk

project title	project no	rev	scale
SELF BUILD DWELLING, THE POPLARS, CHAPEL DROVE, SPALDING, PE12 0PT	2068	P3	1:50 & 1:100 @A1

drawing title	drawing no	date	drawn
PROPOSED DWELLING PLANS AND ELEVATIONS	01	19TH JUN 2025	AJT

Appendix B - EA Product 4 Data

Lisa Slater
lisa@aegaea.com

Our ref: CCN-2024-349755

Date: 05/03/2024

Dear Lisa,

Provision of Flood Risk Information for Chapel Drove, Spalding.

Thank you for your request for our flood risk information for the above site. The information is set out below and attached. It is important you read any contextual notes on the maps provided.

If you are preparing a Flood Risk Assessment (FRA) for this site, please note this information may not be sufficient by itself to produce an adequate FRA to demonstrate the development is safe over its lifetime. Additional information may be required to carry out an appropriate assessment of all risk, such as consequence of a breach in defences.

We aim to review our information on a regular basis, so if you are using this data more than twelve months from the date of this letter, please contact us again to check it is still valid.

Please read the letter in full as the information covered has been updated in **June 2023.**

1. Flood Map for Planning

The attached map includes the current Flood Map for Planning for your area. The map indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

In some locations, such as around the fens and the large coastal floodplains, showing the area at risk of flooding assuming no defences may give a slightly misleading picture in that if there were no flood defences, water would spread out across these large floodplains. This flooding could cover large areas of land but to relatively shallow depths and could leave pockets of locally slightly higher land as isolated dry islands. It is important to understand the actual risk of the flooding to these dry islands, particularly in the event of defence failure.

The Flood Map for Planning also shows the location of formal raised flood defences and flood storage reservoirs. It represents areas at risk of flooding for present day only and does not take account of climate change.

The Flood Map for Planning only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered flooding may occur from other sources such as surface water sewers, road drainage, etc.

2. Recorded Flood Outlines

With regards to the history of flooding I can advise we do not have any records of flooding in this area. It is possible recent flooding may have occurred which we are currently investigating, therefore this information may be subject to change. It is possible other flooding may have occurred which other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist) have responsibility.

Please note, our Recorded Flood Outlines do not reflect the latest (October 2023-present) flood incidents. Due to the scale of the events, it will take time to gather the information and verify the extent of the flooding before we are able to provide this information.

3. Schemes in the area

There are no ongoing capital projects to reduce or sustain the current flood risk to this site.

4. Fluvial Flood Risk Information

This site is considered to be at risk of flooding from main rivers.

The site may also be at risk from local ordinary watercourses for which other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist) have responsibility.

4.1 Fluvial Defence Information

This site is not at risk of flooding from any main river. The site may be at risk from local ordinary watercourses for which other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist) have responsibility.

5. Tidal Flood Risk Information

This site is not considered to be at risk from tidal flooding.

6. Development Planning

If you would like local guidance on preparing a flood risk assessment for a planning application, please contact our Sustainable Places team at LNplanning@environment-agency.gov.uk. It will help if you mention this data request and attach your site location plan.

We provide free preliminary advice; additional/detailed advice, review of draft FRAs and meetings are chargeable at a rate set to cover our costs, currently £100 (plus VAT) per hour of staff time. Further details are available on our website at https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals.

General advice on flood risk assessment for planning applications can be found on GOV.UK at https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

Climate change will increase flood risk due to overtopping of defences. Please note, unless specified otherwise, the climate change data included has an allowance for 20% increase in flow. Updated guidance on how climate change could affect flood risk to new development - 'Flood risk assessments: climate change allowances' was published on GOV.UK in **July 2021**. The appropriate updated climate change allowance should be applied in a Flood Risk Assessment.

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

7. Data Licence and Other Supporting Information

We respond to requests for recorded information we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

This information is provided in accordance with the Open Government Licence which can be found here: http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Further information on flood risk can be found on the GOV.UK website at:
https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

8. Other Flood Risk Management Authorities

The information provided with this letter relates to flood risk from main river or the sea. The Flood Map for Surface Water can be viewed at https://www.gov.uk/check-long-term-flood-risk

Additional information may be available from other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist).

I hope we have correctly interpreted your request. If you have any queries or would like to discuss the content of this letter further please contact Christopher using the email address below and quoting our CCN reference number above.

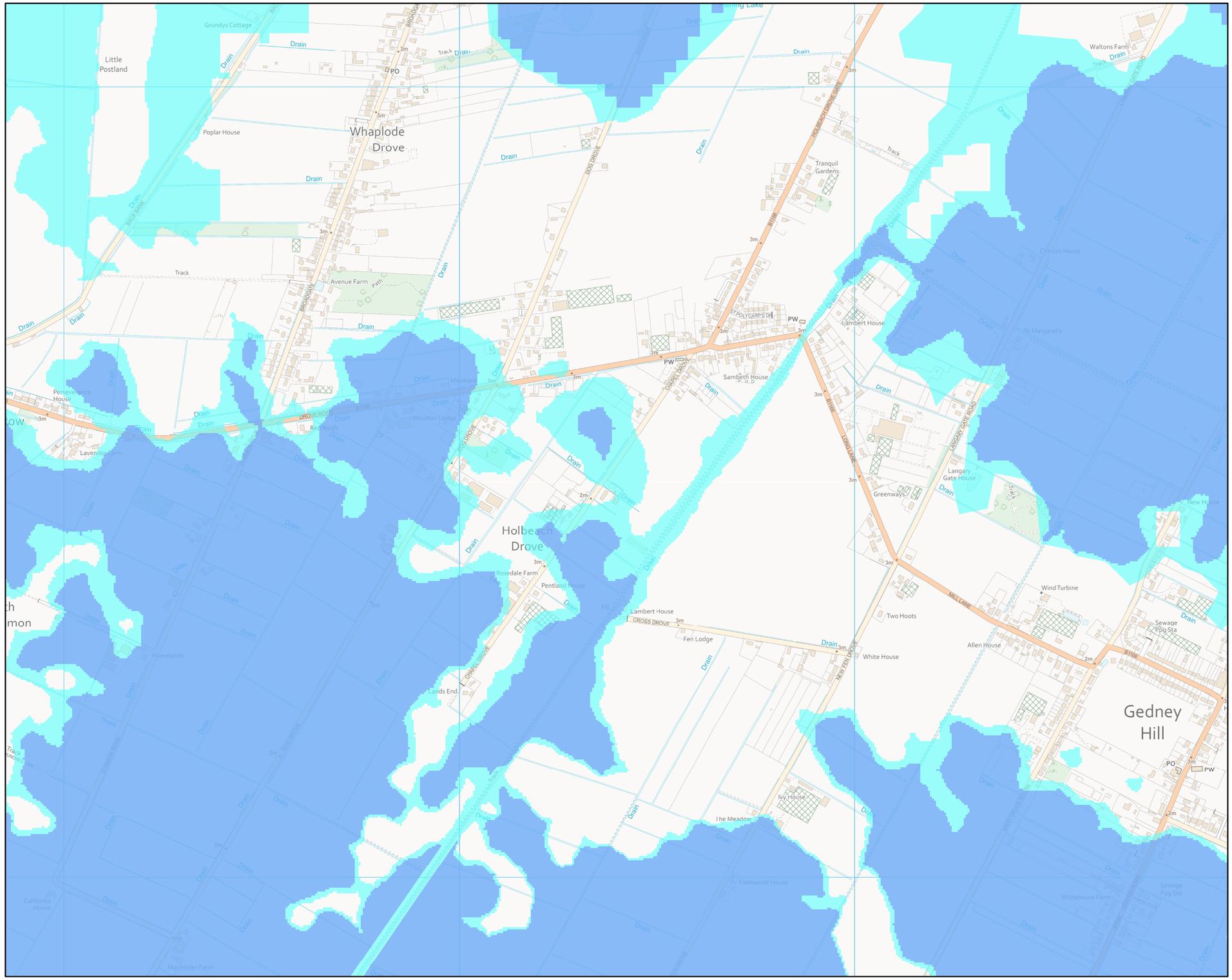
Yours sincerely,

+44 7385226602

for Ben Thornely
Area Flood and Coastal Risk Manager
e-mail PSOWN@environment-agency.gov.uk

Enc.
Flood Map for Planning

Flood Map centred on TF 32398 11980 - created March 2024 [Ref: CCN-2024-349755]



Environment Agency

Scale 1:10,000

N

Legend

- Main Rivers
- Raised Defences
- Flood Storage Areas
- Areas at Risk of Flooding from Rivers or the Sea
- Extreme Flood Outline

Dark blue shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

- from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year.

- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

Light blue shows the extent of the Extreme Flood Outline, which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Sites outside the two extents, but behind raised defences, may be affected by flooding if the defences are overtopped or fail.

Created by the Partnerships and Strategic Overview Team, Kettering

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk