www.jbaconsulting.com

Level 2 Strategic Flood Risk Assessment - Site SHELAA/346

Digswell, Lower Hartlip Road, Hartlip, ME9 7SX

Final

Prepared for
Swale Borough Council

Date
October 2026

Contents

1 Background 4
1.1 Site details 4
1.2 Topography 4
1.3 Geology and soils 5

2 Sources of flood risk 6
2.1 Existing drainage features 6
2.2 Flood Zones 6
2.3 Fluvial present day defended risk 6
2.4 Tidal/coastal present day defended risk 6
2.5 Surface water present day risk 7
2.6 Reservoir 7
2.7 Groundwater 7
2.8 Sewer 8
2.9 Flood history 8

3 Climate change 9
3.1 Flood Zones plus climate change 9
3.2 Fluvial 9
3.3 Tidal 9
3.4 Surface water 10

4 Flood risk management infrastructure 11
4.1 Defences 11
4.2 MEAS Hold the Line Benefit Area 11
4.3 Residual risk 11

5 Coastal Change Management Area 11

6 Emergency planning 12
6.1 Flood warnings and alerts 12
6.2 Access and escape 12
6.3 Dry islands 12

7 Requirements for drainage control and impact mitigation 13

7.1 Assessment of possible SuDS constraints 13
7.2 Recommended approach to SuDS design 13

8 NPPF and planning implications 15
8.1 Exception Test requirements 15
8.2 Requirements and guidance for site-specific Flood Risk Assessment 15
8.3 Guidance for site design and making development safe 15

9 Conclusions 17

A Sources of information 19

B Flood Risk Mapping 20

1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for site SHELAA/346. The content of this Level 2 SFRA site screening report assumes the reader has already consulted the Swale Borough Council Level 1 SFRA and read the Swale Borough Council Level 2 SFRA main report and is therefore familiar with the terminology used in this report.

1.1 Site details

- Location: Digswell, Lower Hartlip Road, Hartlip, ME9 7SX
- Site area: 0.36ha
- Existing site use: Brownfield with existing buildings
- Proposed site use: Residential
- Proposed use flood risk vulnerability classification: More Vulnerable

The site is situated in Hartlip and comprises industrial land. The site is bounded by a garden centre in the north, greenfield land in the east and south and Lower Hartlip Road in the west.

1.2 Topography

Figure 1-1 shows the topography of the site represented by the Environment Agency 1m resolution LiDAR flown in 2023. The majority of the site is relatively low lying and gently slopes down to the northeast corner, from the south and the northwest. The maximum elevation at the site is 26.3mAOD in the south and 24.3mAOD in the northwest corner.

Approximately 125 m north of the site, London Road is situated at a higher elevation. Further north, a railway line runs parallel to London Road on an embankment. The railway crosses Breach Road via a bridge approximately 250m to the northwest of the site and crosses an access track via another bridge approximately 300m to the northeast.

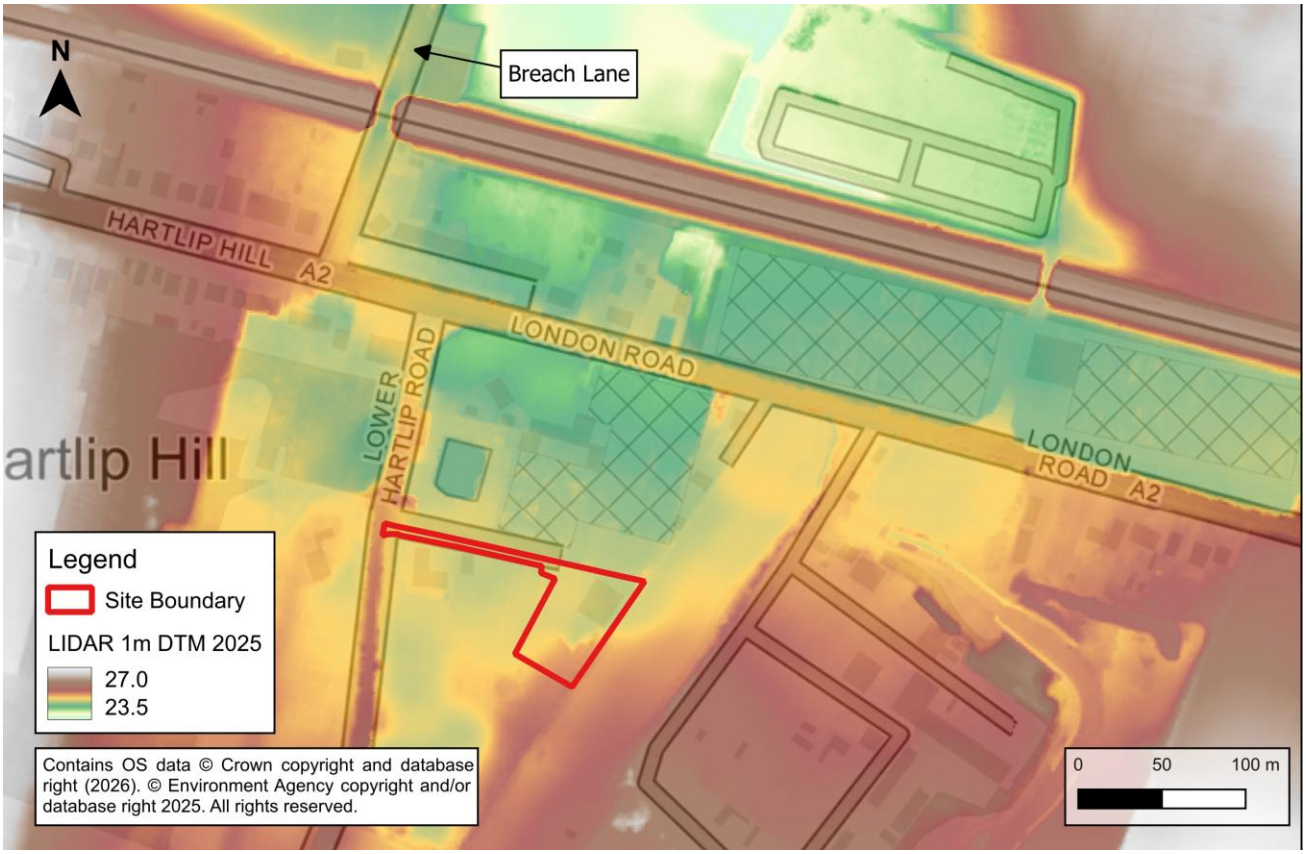


Figure 1-1: Topography of the site

1.3 Geology and soils

Geology at the site consists of:

- Bedrock - Thanet Formation consisting of Sand, silt and clay
- Superficial - Head-Gravel, sand, silt and clay

Soils at the site consist of:

- Freely draining slightly acid loamy soils

The potential influence of the site's geology and soil conditions on drainage is discussed in Section 7.

2 Sources of flood risk

2.1 Existing drainage features

The site is not located in close proximity to any mapped watercourses. The nearest mapped watercourse is 1.7km north of the site.

2.2 Flood Zones

2.2.1 Available data

The Environment Agency's Flood Map for Planning (FMfP) has been used within this assessment to determine Flood Zones 2 and 3a. Flood Zones 2 and 3a do not consider defences.

Flood Zone 3b in this area has been defined using the Environment Agency's River and Sea 3.3% AEP defended flood risk extents – present day dataset. The mapping in this location is based on generalised modelling.

2.2.2 Description of risk to the site

According to the Flood Map for Planning and North Kent Coastal model, the entire site is located within Flood Zone 1.

Table 2-1: Existing fluvial and tidal flood risk based on Flood Zones

Flood Zone 1 (%)	Flood Zone 2 (%)	Flood Zone 3a (%)	Flood Zone 3b (%)
100	0	0	0

2.3 Fluvial present day defended risk

There are no watercourses located in close proximity of the site, therefore the fluvial flood risk is considered to be negligible.

2.4 Tidal/coastal present day defended risk

2.4.1 Available data

The North Kent Coast modelling study (2024) has been used to understand the tidal flood risk.

2.4.2 Description of risk to the site

According to the North Kent Coast model, the site is not predicted to flood during the present day defended 3.3% AEP (1 in 30-year), 0.5% AEP (1 in 200-year) or the 0.1% AEP (1 in 1000-year) events.

2.5 Surface water present day risk

2.5.1 Available data

The Environment Agency's Flood Map for Planning – Surface Water Spatial Planning map has been used within this assessment to inform the extent and depth of surface water risk. Velocity and hazard data is not currently available from the Environment Agency for this dataset.

2.5.2 Description of risk to the site

The mapping shows that most of the site excluding the southeastern corner is inundated during the 3.3% (1 in 30-year) event, associated with a flow path originating south of the site and ponding against London Road and the railway embankment to the north of the site. The westernmost area of the site is at risk during the 0.1% AEP (1 in 1000-year) and 1% AEP (1 in 100-year) events.

Table 2-2: Existing surface water flood risk based on the Flood Map for Planning map – Surface Water Spatial Planning map

Event	<0.1% AEP (1 in 1000-year) (%)	0.1% AEP (1 in 1000-year) (%)	1% AEP (1 in 100-year) (%)	3.3% AEP (1 in 30-year) (%)
Percentage of site at risk* (%)	21	79	70	63
Maximum depth (m)	N/A	0.90-1.20	0.60-0.90	0.60-0.90

** The percentage of surface water extents quoted show the percentage of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 1% AEP (1 in 100-year) includes the 3.3% AEP (1 in 30-year) percentage). The <0.1% AEP event shows the area of the site not predicted to be impacted by surface water flooding.*

2.6 Reservoir

The site is not shown to be at risk of reservoir flooding during the 'dry day' or 'wet day' scenario from the Environment Agency reservoir flood maps.

2.7 Groundwater

The JBA Groundwater Emergence Map shows that the site has groundwater levels between 0.025m and 0.5m below the ground surface during the 1% AEP (1 in 100-year) groundwater flooding event.

This assessment does not negate the requirement that an appropriate assessment of the groundwater regime should be carried out at the site-specific Flood Risk Assessment (FRA) stage.

2.8 Sewer

Southern Water has not provided any additional information regarding sewers at the site.

2.9 Flood history

There have been no recorded flood incidents at the site according to the Environment Agency's Recorded Flood Outlines.

The Kent County Council historic flood data was provided as point data with an easting and northing. Due to the protection of data, the eastings and northings were plotted on GIS and the number of incidents recorded within a 0.85km^2 area was calculated. Kent County Council's records indicate that the site lies within a reporting area that contains 7 recorded flood incidents.

According to Southern Water's Sewer Incident Report Form (SIRF), there have been 28 sewer flood incidents in the ME9 7 postcode area since 2015.

3 Climate change

Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial, tidal and surface water flooding.

Climate change allowances are determined by the management catchment in which the site is located. The site lies within the Medway Management Catchment. Please see Section 6 of the Swale Borough Council Level 2 SFRA main report for information on climate change allowances.

Development proposals at the site must address the potential changes associated with climate change and be designed to be safe for the intended lifetime. The provisions for safe access and escape must also address the potential increase in severity and frequency of flooding.

3.1 Flood Zones plus climate change

3.1.1 Available data

The Environment Agency's Flood Map for Planning (FMfP) plus climate change has been used within this assessment. This shows the combined extent of Flood Zones 2 and 3 using the following climate change allowances:

- 'Central' allowance for the 2080s epoch (2070-2125) for risk of flooding from rivers
- 'Upper End' allowance for risk of flooding from the sea, accounting for cumulative sea level rise to 2125.

3.1.2 Description of risk to the site

The site is not impacted by flooding within the Flood Zones plus climate change dataset.

3.2 Fluvial

3.2.1 Available data

There are no watercourses located in close proximity of the site, therefore the fluvial flood risk due to climate change is considered to be negligible.

3.3 Tidal

3.3.1 Available data

The North Kent Coast flood risk modelling study (2024) has been used to understand the tidal flood risk within the Local Plan area. The mapping provides information for present day and for the Upper End climate change event for the years 2100 and 2125. Only the 2125

event has been assessed in this site summary sheet due to the likely lifetime of development (100-years) for residential sites.

3.3.2 Description of risk to the site

According to the North Kent Coast model climate change extents, the site is not predicted to flood during the defended 0.5% AEP (1 in 200-year) 2125 Upper End climate change event.

3.4 Surface water

3.4.1 Available data

The Environment Agency's Surface Water Spatial Planning Dataset, released in May 2026, has been used within this assessment to inform the extent and depth of surface water risk with climate change. Climate change outputs are available for the 3.3%, 1%, and 0.1% AEP events with the Upper End climate change allowance for the 2070s epoch. There is currently no available velocity or hazard information to use within this assessment.

It should be noted that the Environment Agency's Upper End allowance for the 2050s epoch for the 1% AEP (1 in 100-year) event in the Medway Management Catchment is greater than the 2070s epoch for the 1% AEP (1 in 100-year) event so the climate change uplift may be slightly underestimated.

3.4.2 Description of risk to the site

The extent of surface water flooding in the 3.3% AEP (1 in 30-year) plus climate change event is predicted to increase slightly in the northwest of the site, along the access road, compared to the 3.3% AEP (1 in 30-year) event. This may affect access into the site. The extent of surface water flooding in the 0.1% AEP (1 in 1000-year) plus climate change event is predicted to increase compared to the 0.1% AEP (1 in 1000-year) event, particularly in the southeastern area of the site. The 1% AEP (1 in 100-year) surface water risk is predicted to only increase slightly in the south with climate change. The 1% AEP (1 in 100-year) plus climate change maximum flood depth is predicted to be between 0.6m and 0.9m.

Table 3-1: Comparison of surface water flood risk to the site between the 1% AEP present day and 1% AEP climate change events

Event	1% AEP	1% AEP plus climate change
Percentage of site at risk (%)	71	75
Maximum depth (m)	0.60-0.90	0.60-0.90

4 Flood risk management infrastructure

4.1 Defences

The Environment Agency AIMS (Asset Information Management System) dataset shows that the site does not benefit from any defences.

4.2 MEAS Hold the Line Benefit Area

The Medway Estuary and Swale flood and coastal risk management Strategy (MEAS) sets out the Environment Agency's plan to sustainably manage the coastline and tidal defences in the Medway estuary and Swale area. It aims to protect people, properties, designated habitat and agricultural land over the next 100 years.

The site is not located within a MEAS Hold the Line Benefit area.

4.3 Residual risk

The railway embankment to the north of the site includes a series of bridges that allow flood water to pass underneath. Approximately 250m northwest of the site Breach Lane passes through the railway embankment under a bridge and approximately 300m northeast of the site there is another tunnel passing through the embankment. In the event of a blockage to the bridges, flood water could back up and cause increased flooding to the site.

5 Coastal Change Management Area

The site is not located within the Coastal Change Management Area (CCMA). The implications of the CCMA can be found within Appendix J of the Level 1 SFRA.

6 Emergency planning

6.1 Flood warnings and alerts

The site is not located within an Environment Agency Flood Warning or Alert Area.

6.2 Access and escape

Safe access and escape will need to be demonstrated in the 1% AEP (1 in 100-year) plus climate change surface water event. Site drainage proposals should address the requirements for access routes, avoid impeding surface water flows and preserve the storage of surface water to avoid exacerbation of flood risk elsewhere on the site and in the wider catchment.

6.2.1 Current and potential access to the site

Current access to the site can be achieved through the access road coming off of Lower Hartlip Road, west of the site.

6.2.2 Fluvial

There is flood free access and escape during the fluvial 1% AEP (1 in 100-year) plus 22% climate change event via Lower Hartlip Road to the west of the site.

6.2.3 Tidal

There is flood free access and escape during the tidal 0.5% AEP (1 in 200-year) 2125 Upper End Climate change event via Lower Hartlip Road to the west of the site.

6.2.4 Surface water

During the 1% AEP (1 in 100-year) surface water climate change event, there is extensive flooding predicted in the west of the site on the site access road and along Lower Hartlip Road and London Road to the north. Maximum flood depths are predicted to be between 0.60m and 0.9m which may mean safe access and escape is not possible.

6.3 Dry islands

A dry island is a parcel of land that is elevated above surrounding areas at risk of flooding and is not at risk of flooding itself.

The site is not located on a dry island.

7 Requirements for drainage control and impact mitigation

7.1 Assessment of possible SuDS constraints

- Groundwater levels are indicated to be less than 1m below ground level during a 1% AEP (1 in 100-year) event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.
- BGS data indicates that the underlying geology is gravel, clay, silt and sand, permeability is therefore likely to be highly variable across the site. This should be confirmed through infiltration testing. Off-site discharge in accordance with the SuDS hierarchy is likely to be required to discharge surface water runoff from the site as infiltration potential is limited by the extent of flood risk.
- The site is located within a Zone II - Outer Protection Zone Groundwater Source Protection Zone. Infiltration techniques may not be suitable and should only be used following the granting of any required environmental permits from the Environment Agency for Zones 2, 3 and 4, although it is possible that infiltration may not be permitted. Proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible opportunities and constraints.
- The site is not located within a historic landfill site.

7.2 Recommended approach to SuDS design

- Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity and biodiversity. This could provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (Local Planning Authority, Lead Local Flood Authority, and the Environment Agency) at an early stage to understand possible constraints.
- Development at this site should not increase flood risk either on or off site. The design of the surface water management proposals should take into account the impacts of future climate change over the projected lifetime of the development.
- Mapping suggests that permeable paving may have to use non-infiltrating systems given the possible risk from groundwater. This must be confirmed via site investigations to assess the potential for infiltration techniques across the whole site.

- Opportunities to incorporate filtration techniques such as filter strips, filter drains and bioretention areas must be considered.
- Opportunities to incorporate source control techniques such as green roofs, permeable surfaces and rainwater harvesting must be considered in the design of the site.
- The Environment Agency's Flood Map for Planning - Surface Water Spatial Planning Extents map indicates the presence of a surface water flow path through most of the site during all events. Existing flow paths should be retained and integrated with blue-green infrastructure and public open space.
- The potential to utilise conveyance features such as swales to intercept and convey surface water runoff should be considered. Conveyance features should be located on common land or public open space to facilitate ease of access.
- Surface water discharge rates should not exceed pre-development discharge rates for the site and should be designed to be as close to greenfield runoff rates as reasonably practical in consultation with the LLFA. It may be possible to reduce site runoff by maximising the permeable surfaces on site using a combination of permeable surfacing and soft landscaping techniques.
- If it is proposed to discharge runoff to a watercourse or sewer system, the condition and capacity of the receiving watercourse or asset should be confirmed through surveys and the discharge rate agreed with the Lead Local Flood Authority alongside confirmation with the asset owner of the available capacity.

8 NPPF and planning implications

8.1 Exception Test requirements

The Local Planning Authority has confirmed that the Sequential Test has been carried out in line with national guidelines. The Sequential Test needs to be passed before the Exception Test is applied.

Annex F of the NPPF classifies residential development as "More vulnerable".

The Exception Test is not required for this site because it is in Flood Zone 1. However, consideration needs to be given to the high surface water flood risk to ensure that development remains safe and flood risk is not increased elsewhere.

8.2 Requirements and guidance for site-specific Flood Risk Assessment

At the planning application stage, a site-specific FRA will be required as the proposed development site is:

- within Flood Zone 1 and the flood map for planning shows it is at risk of flooding from surface water, now or in future

All sources of flooding should be considered as part of a site-specific FRA.

Consultation with the Local Authority, Lead Local Flood Authority, Southern Water, and the Environment Agency should be undertaken at an early stage.

Any FRA should be carried out in line with latest guidance including the National Planning Policy Framework (NPPF), Flood Risk and Coastal Change Planning Practice Guidance (PPG), and Swale Borough Council Local Plan Policies.

The development should be designed with mitigation measures in place where required as outlined in Section 8.3.

8.3 Guidance for site design and making development safe

- A sequential approach to the location of development within the site should be undertaken. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding.
- Where development cannot avoid areas at risk of flooding, then flood resilience and resistance measures e.g. raising of floor levels, including property flood resistance and resilience measures should be implemented, where appropriate. These measures should be assessed to make sure that flooding is not increased either on or off the site.
- Detailed surface water modelling will be required to assess the flood risk and mitigation approach. This should also consider the residual risk of blockage from the railway bridges north of the site

- No underground development such as car parks should be permitted due to groundwater flood risk.
- The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, runoff magnitudes from the development should not be increased and development across any ephemeral surface water flow routes should not increase flood risk elsewhere. A drainage strategy should help inform site layout and design. Surface water discharge rates should not exceed pre-development discharge rates for the site and should be designed to be as close to greenfield runoff rates as reasonably practical in consultation with the LLFA.
- Opportunities to further reduce discharge rates should be considered and agreed with the LLFA. It may be possible to reduce site runoff by maximising the permeable surfaces on site. Areas of surface water ponding should be used as open space and SuDS or water compatible/essential infrastructure uses only.
- Off-site discharge in accordance with the SuDS hierarchy is likely to be required to discharge surface water runoff from the site as infiltration potential is limited by the extent of flood risk.
- A Flood Response Plan will be required. Arrangements for safe access and escape will need to be provided for the 1% AEP (1 in 100-year) surface water with an appropriate allowance for climate change, considering depth, velocity, and hazard. Design and access arrangements will need to incorporate mitigation measures, to ensure the development and occupants are safe.
- Provisions for safe access and escape should not impact on surface water flow routes or contribute to loss of floodplain storage. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.

9 Conclusions

According to the FMfP, the entire site is located within Flood Zone 1.

According to the North Kent Coast model, the site is not predicted to flood during the present-day or climate change tidal flood events.

In terms of surface water flood risk, most of the site excluding the southeastern corner is inundated during the 3.3% (high risk) event, associated with a flow path originating south of the site and ponding against London Road and the railway embankment. The extent of surface water flooding in the 0.1% AEP (1 in 1,000-year) plus climate change event is predicted to increase slightly compared to the 0.1% AEP (1 in 1,000-year) event, particularly in the southeastern corner of the site. The maximum flood depth is predicted to increase to between 0.6m and 0.9m.

There have been 28 sewer flood incidents in the ME9 7 postcode area since 2015.

There have been no recorded flood incidents at the site according to the Environment Agency's Recorded Flood Outlines.

The following points should be considered in development of this site:

- A site-specific Flood Risk Assessment including detailed surface water modelling will be required to demonstrate that residential development can be safely accommodated on the site and remain safe for its lifetime. This should include consideration of surface water flooding, as well as residual risk from the railway culverts north of the site. The FRA should demonstrate that development will not increase flood risk on or off site and should incorporate an appropriate allowance for climate change.
- Where development cannot avoid areas at risk of flooding, then flood resilience and resistance measures e.g. raising of floor levels, including property flood resistance and resilience measures should be implemented, where appropriate. These measures should be assessed to make sure that flooding is not increased either on or off the site.
- SuDS (filtration techniques or conveyance features such as swales) should be incorporated throughout the site to manage runoff, provide climate change resilience and deliver wider water quality, biodiversity and amenity benefits. Off-site discharge in accordance with the SuDS hierarchy is likely to be required to discharge surface water runoff from the site as infiltration potential is limited by the extent of flood risk.
- A Flood Response Plan will be required. Arrangements for safe access and escape will need to be provided for the 1% AEP surface water event with an appropriate allowance for climate change, considering depth, velocity, and hazard. Design and access arrangements will need to incorporate mitigation measures, to ensure the development and occupants are safe.

- No underground development such as car parks should be permitted due to groundwater flood risk.

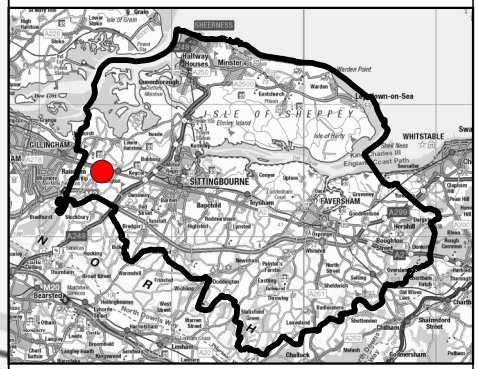
A Sources of information

- National Planning Policy Framework (NPPF)
  https://www.gov.uk/guidance/national-planning-policy-framework
- Planning Practice Guidance (PPG), Flood Risk and Coastal Change
  https://www.gov.uk/guidance/flood-risk-and-coastal-change
- Swale Borough Local Plan
  https://services.swale.gov.uk/media/files/localplan/adoptedlocalplanfinalwebversion.pdf
- Swale Borough Council Sequential and Exception Tests for Planning Applications
  https://swale.gov.uk/planning-and-regeneration/local-plans/local-plan-review-evidence/flood-risk#h2
- Swale Borough Council Level 1 SFRA
  https://swale.gov.uk/planning-and-regeneration/local-plans/local-plan-review-evidence/flood-risk#h2
- Kent County Council Local Flood Risk Management Strategy
  https://www.kent.gov.uk/__data/assets/pdf_file/0016/205621/Local-Flood-Risk-Management-Strategy-2024-2034.pdf
- Flood risk assessments: applying for planning permission
  https://www.gov.uk/guidance/flood-risk-assessments-applying-for-planning-permission
- Kent County Council's Drainage and Planning Policy Statement
  https://www.kent.gov.uk/about-the-council/strategies-and-policies/service-specific-policies/economic-regeneration-and-planning-policies/planning-policies/flooding-drainage-and-water-management-policies-and-guidance
- Defra's National standards for sustainable drainage systems (SuDS)
  https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds
- Flood Map for Planning - Flood Zones dataset
  https://environment.data.gov.uk/dataset/04532375-a198-476e-985e-0579a0a11b47
- Flood Map for Planning - Flood Zones plus Climate Change
  https://environment.data.gov.uk/dataset/59065c43-257e-4867-8798-fd2366156a6b
- British Geological Survey (BGS) Geology Viewer
  https://geologyviewer.bgs.ac.uk/
- Flood Warning sign up
  https://www.gov.uk/sign-up-for-flood-warnings

B Flood Risk Mapping



Location Plan



Legend

- Swale Borough Outline
- Site boundary

Watercourses

- Statutory Main Rivers
- Ordinary watercourses
- North Kent Marshes Water Level Management Board Watercourses
- North Kent Marshes Water Level Management Board

0 90 180 m

Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
WATERCOURSES - SHELAA-346

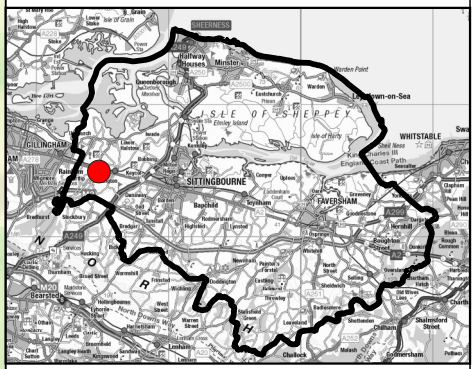
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

Swale Borough Outline

Site boundary

Topography

LIDAR 1m DTM (mAOD)

29.89

23.04

Notes

The LIDAR Composite DTM (Digital Terrain Model) is a raster elevation model covering ~99% of England at 1m spatial resolution. The DTM (Digital Terrain Model) is produced from the last or only laser pulse returned to the sensor. We remove surface objects from the Digital Surface Model (DSM), using bespoke algorithms and manual editing of the data, to produce a terrain model of just the surface.

Produced by the Environment Agency in 2022, the DTM is derived from a combination of the EA's Time Stamped archive and National LIDAR Programme surveys, which have been merged and re-sampled to give the best possible coverage. Where repeat surveys have been undertaken the newest, best resolution data is used. Where data was resampled a bilinear interpolation was used before being merged.

The 2025 LIDAR Composite contains surveys undertaken between 6th June 2000 and 1st August 2025.

0 20 40 m

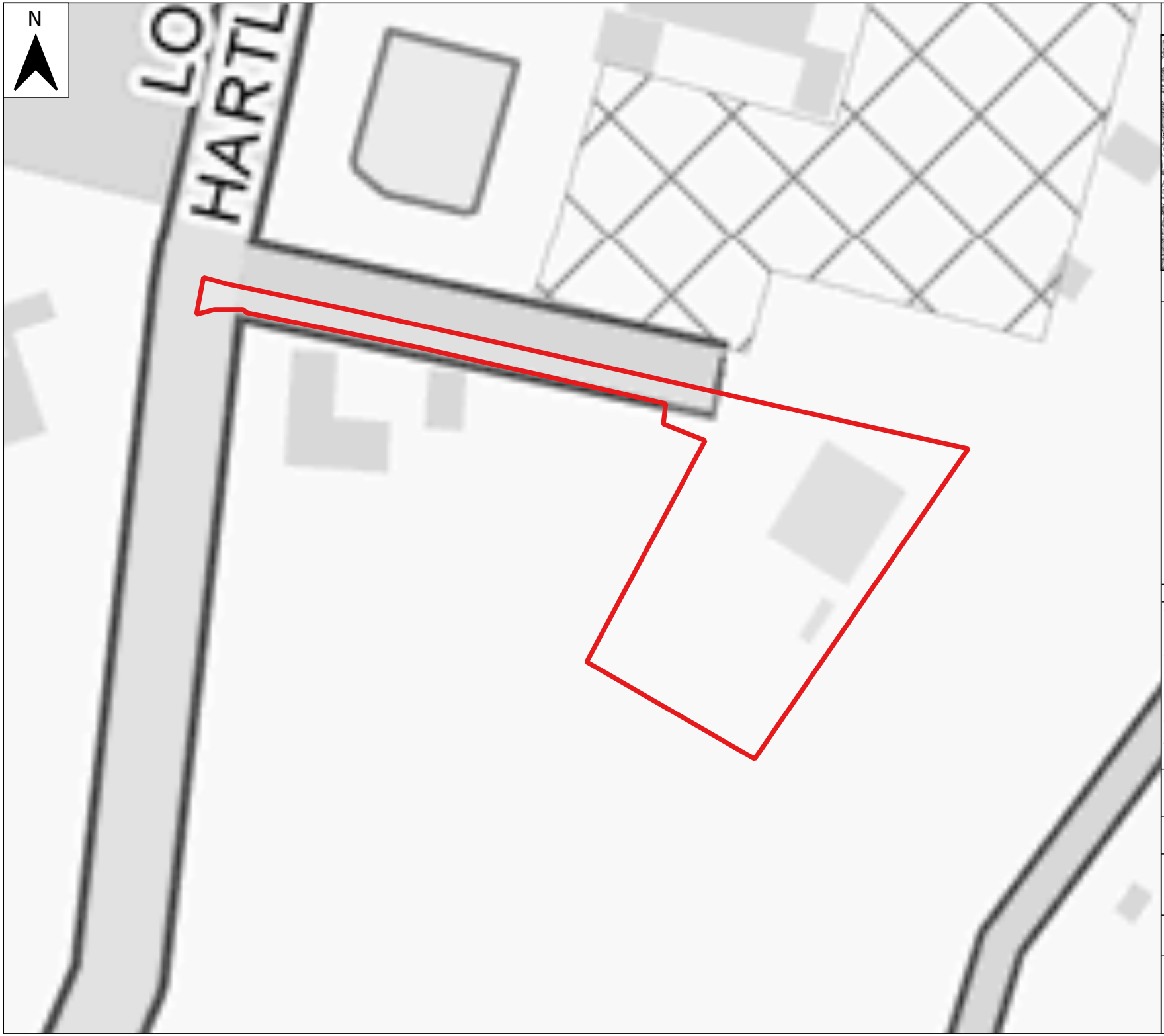
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
TOPOGRAPHY - SHELAA-346

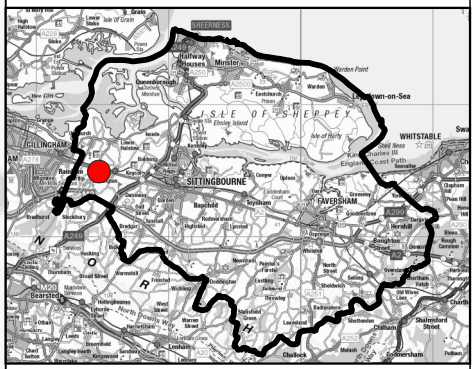
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site boundary

Environment Agency recorded flood outlines

- Main Rivers
- Sea

Notes

The Historic Flood Map shows the recorded flood outlines available from the Environment Agency. The dataset records historical flooding from rivers, the sea, groundwater and surface water.
It is possible that the pattern of flooding has changed and area would now flood or not flood under different circumstances.
Please note that not all historical records may be shown on this map, and that it is therefore advised you contact the Environment Agency for updated information.
The map does not include recorded incidents of flooding held by Kent County Council or Southern Water.

0 20 40 m

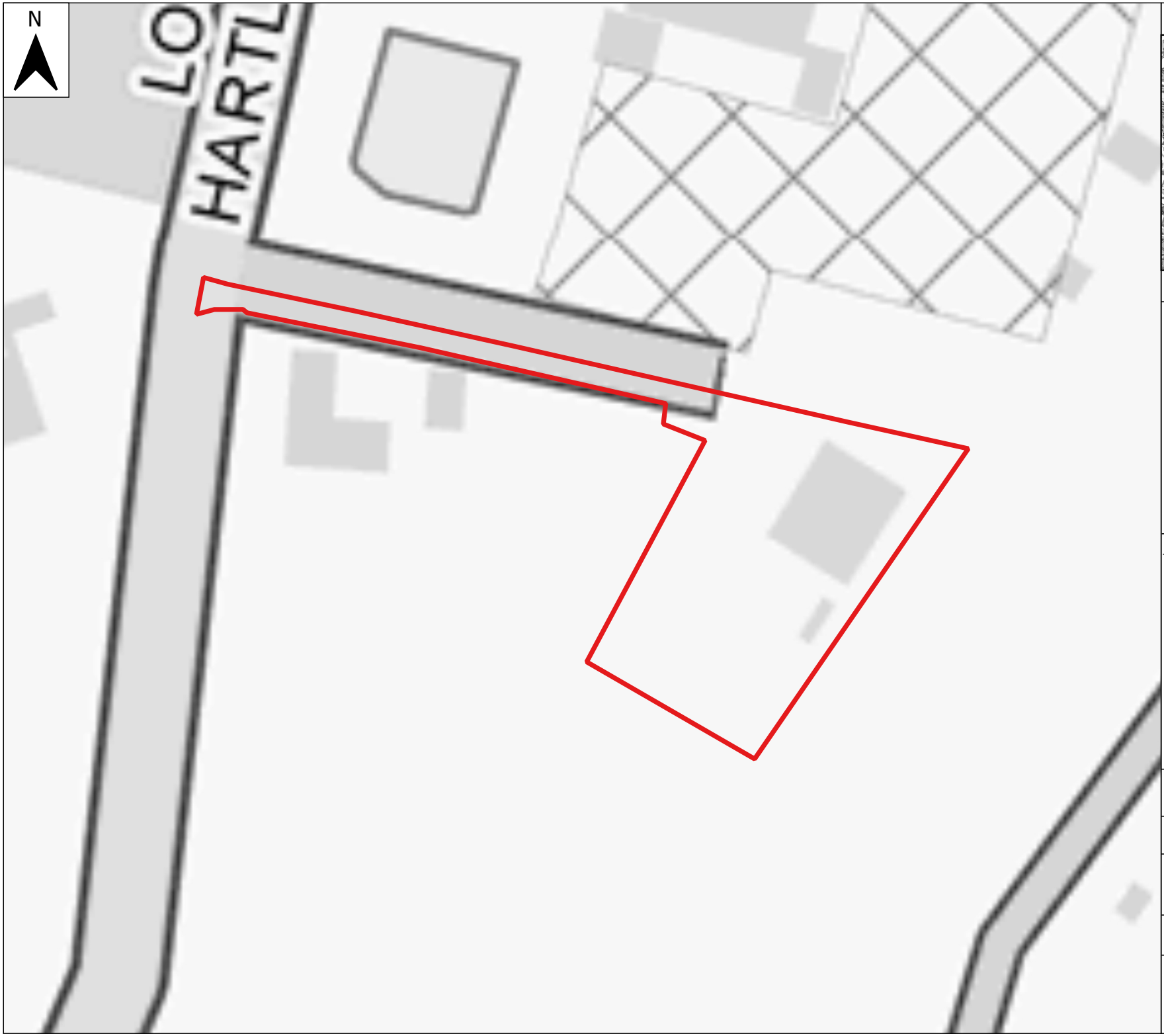
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
HISTORIC FLOODING - SHELAA-346

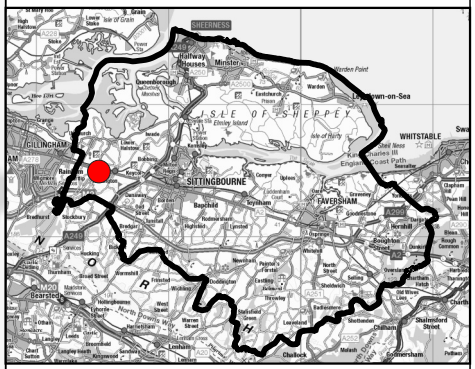
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site boundary

Flood Zone

- Flood Zone 2
- Flood Zone 3
- Flood Zone 3b
- Generalised modelling used for Flood Zone 3b

Notes

Flood Zone 1: Land assessed as having a less than 0.1% AEP of river or sea flooding.
Flood Zone 2: Land assessed as having a 0.1% - 1% AEP (1 in 1000-year and 1 in 100-year) of river flooding or a 0.1% - 0.5% AEP (1 in 1000-year and 1 in 200-year) of flooding from the sea.
Flood Zone 3a: Land assessed as having a greater than a 1% AEP (1 in 100-year) of river flooding or a greater than 0.5% AEP (1 in 200-year) of flooding from the sea.
Flood Zone 3b: Land where water has to flow or be stored in times of flood (functional floodplain). The SFRA identifies this Flood Zone as land which floods with an annual probability of 3.3% AEP (1 in 30-year) where detailed modelling exists. Where the 3.3% AEP (1 in 30-year) ouputs are not available, Flood Zone 3a is used as a surrogate as a precautionary approach. If a proposed development is in Flood Zone 3, further analysis should be undertaken in a detailed site specific FRA to define and confirm the extent of Flood Zone 3b.

0 20 40 m

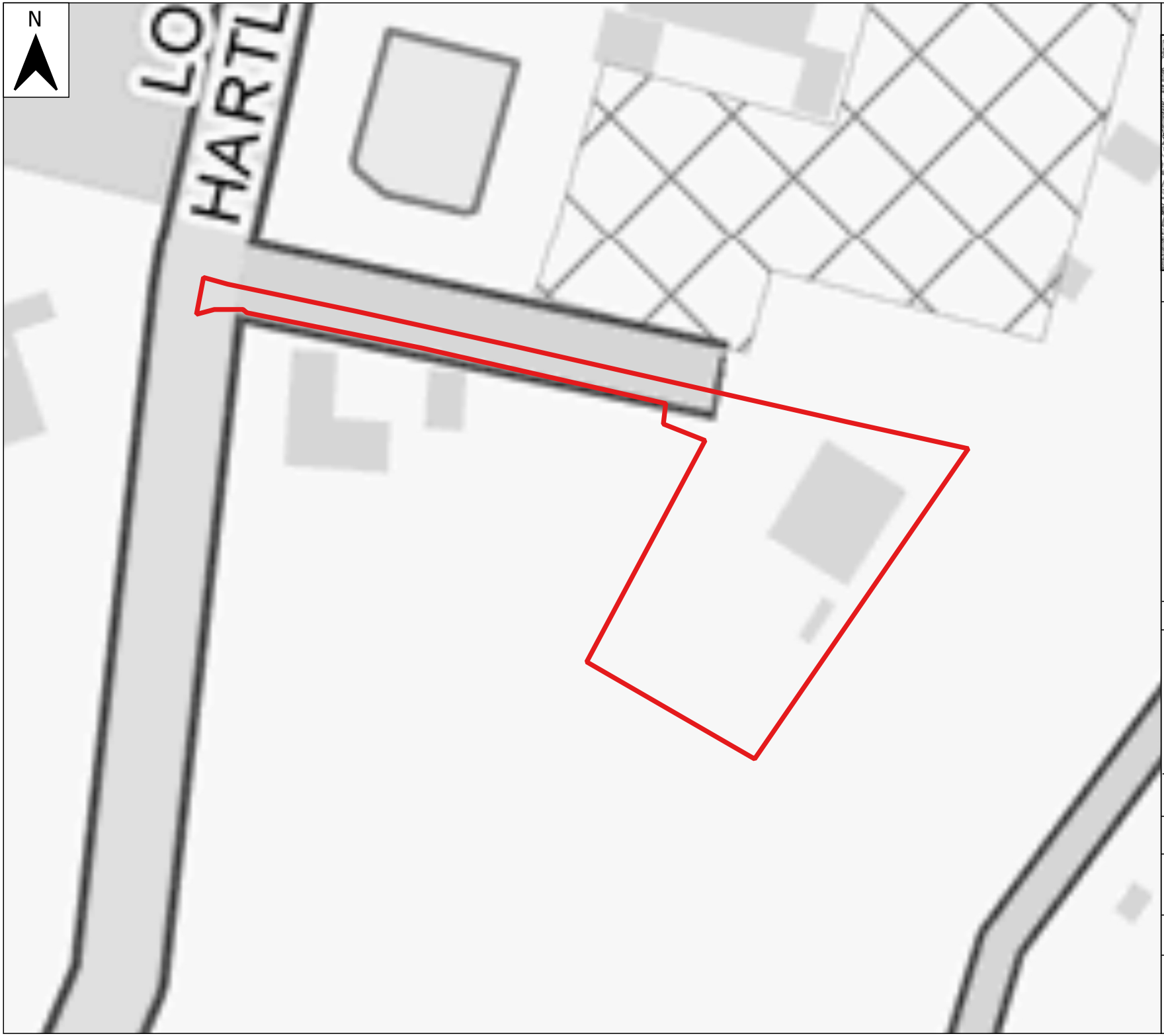
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
PRESENT DAY FLOOD RISK FROM RIVERS AND SEA (FLOOD ZONES) - SHELAA-346

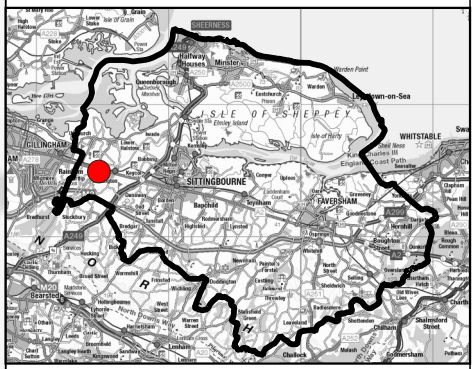
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site Boundary
- 1% AEP (1 in 100-year) and 0.1% AEP (1 in 1000-year) undefended extents under the 2125 year climate change scenario

Notes

The Flood Zone plus Climate Change mapping was produced by combining the Flood Zone 2 and Flood Zone 3 extents with the relevant climate change allowances to illustrate the potential future flood risk to the area. This represents an undefended scenario, meaning that existing flood defences are not considered in the modelling. For further information on this flood extent dataset, please refer to the guidance available on;

https://flood-map-for-planning.service.gov.uk/how-to-use-

0 20 40 m

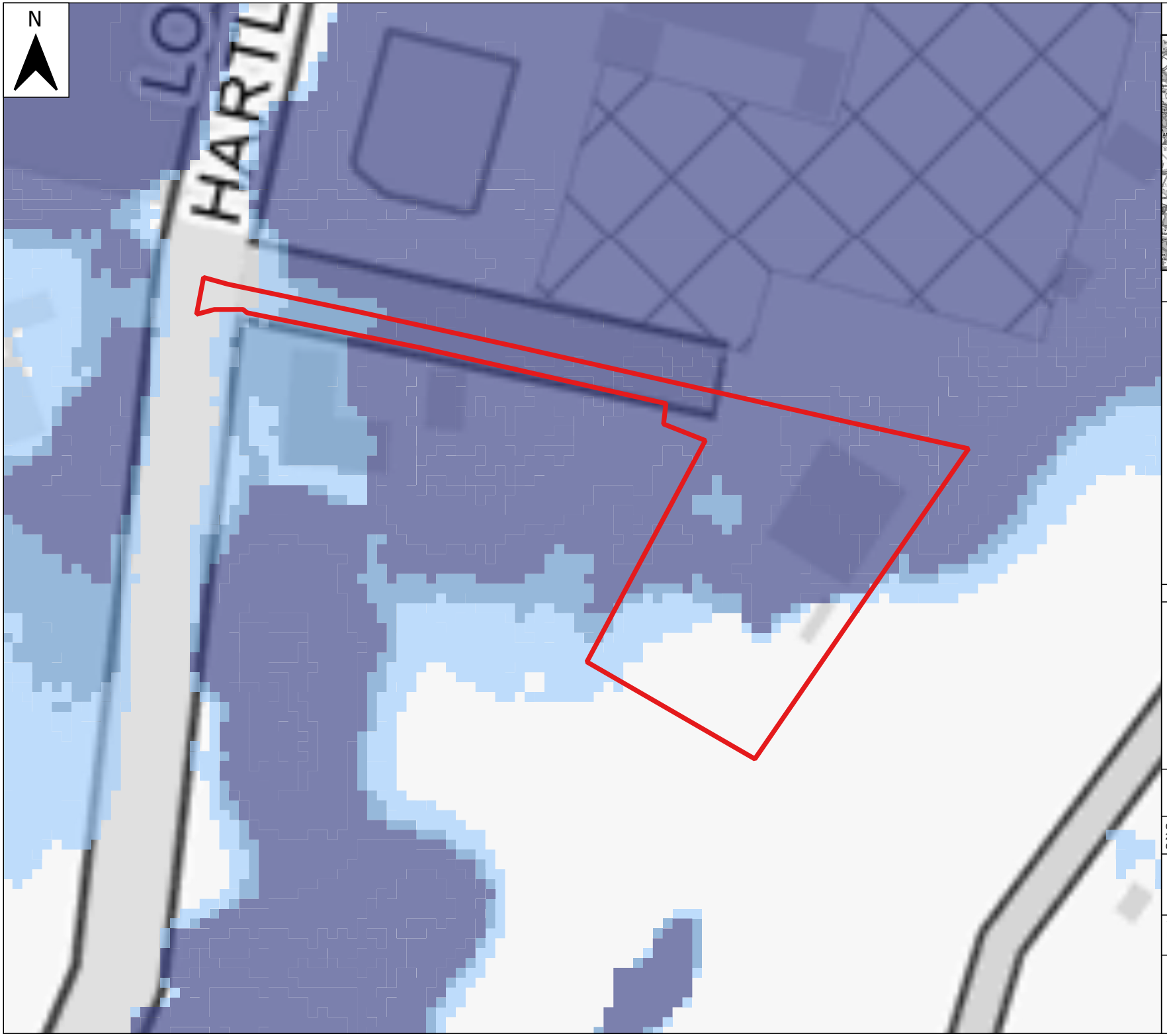
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
FUTURE FLOOD RISK FROM RIVERS AND SEA - FLOOD MAP FOR PLANNING- SHELAA-346

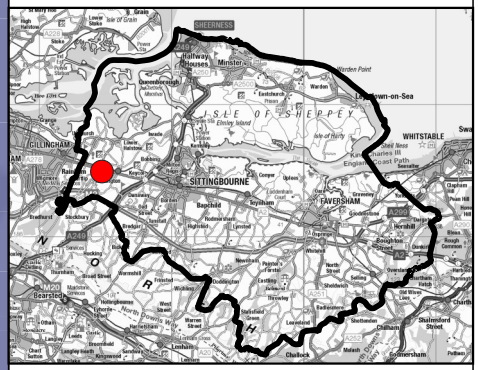
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site boundary

FMfP - Surface Water Spatial Planning Extents

- 3.3% AEP (1 in 30-year)
- 1% AEP (1 in 100-year)
- 0.1% AEP (1 in 1000-year)

Notes

The Flood Map for Planning Service includes several layers of information. This includes Surface Water Spatial Planning Extents. These datasets show the extent of land at risk of flooding from surface water to a defined annual exceedance probability (AEP) or chance of flooding each year.
These datasets are designed to only give an indication of flood risk to an area of land and are not suitable for showing whether an individual property is at risk of flooding.

0 20 40 m

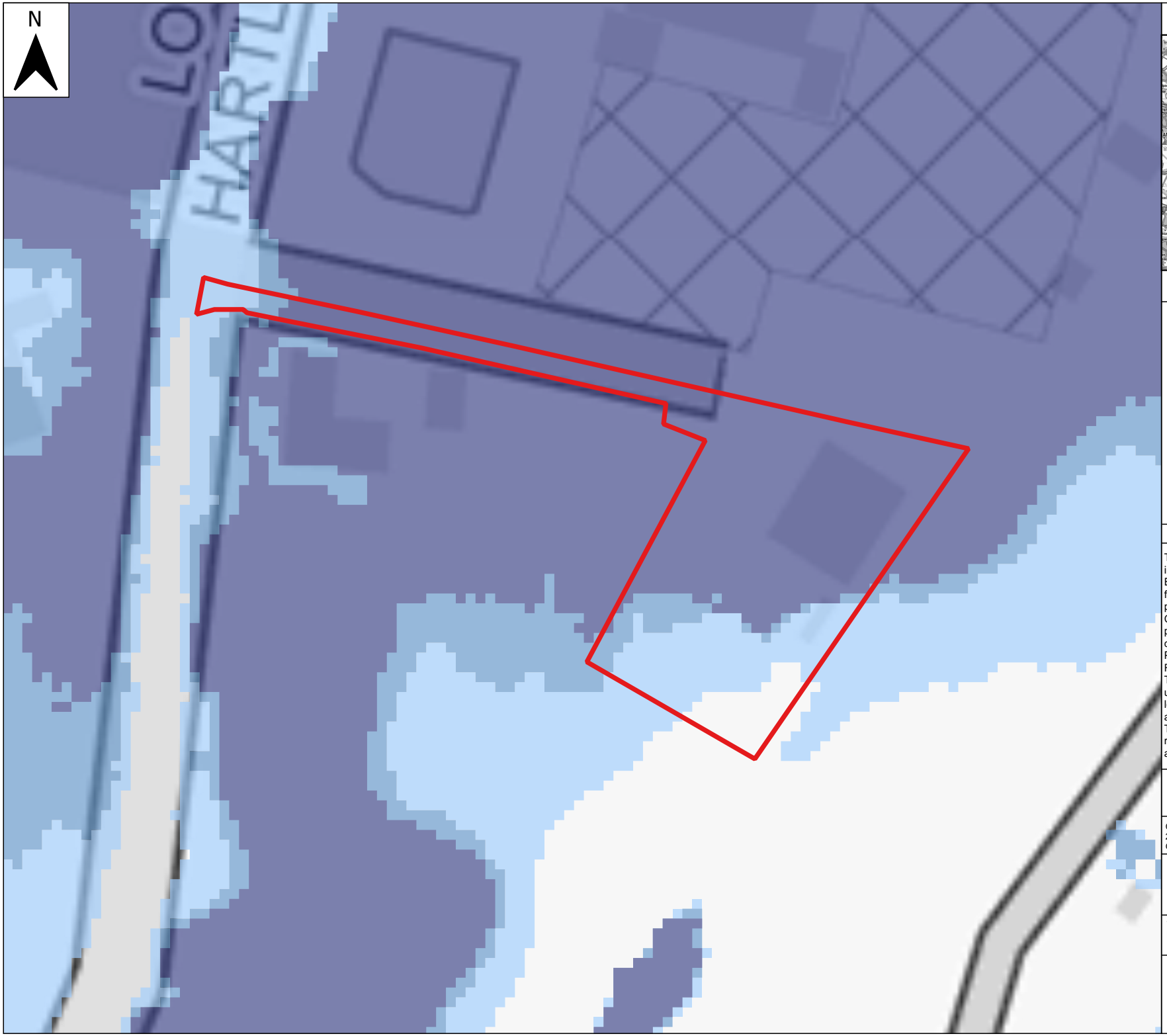
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
SURFACE WATER FLOODING - SHELAA-346

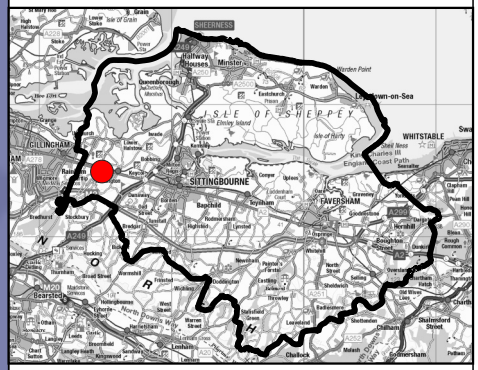
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site boundary

FMfP - Surface Water Spatial Planning Extents plus climate change

- 3.3% AEP (1 in 30-year) plus CC
- 1% AEP (1 in 100-year) plus CC
- 0.1% AEP (1 in 1000-year) plus CC

Notes

The Flood Map for Planning Service includes several layers of information. This includes Surface Water Spatial Planning Extents. These datasets show the extent of land at risk of flooding from surface water to a defined annual exceedance probability (AEP) or chance of flooding each year.
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.
The 'Upper End' for the 2070s epoch (2061-2125) has been used for the climate change scenarios. We have chosen long-term epochs appropriate to support long-term planning and development decisions.
These datasets are designed to only give an indication of flood risk to an area of land and are not suitable for showing whether an individual property is at risk of flooding.

0 20 40 m

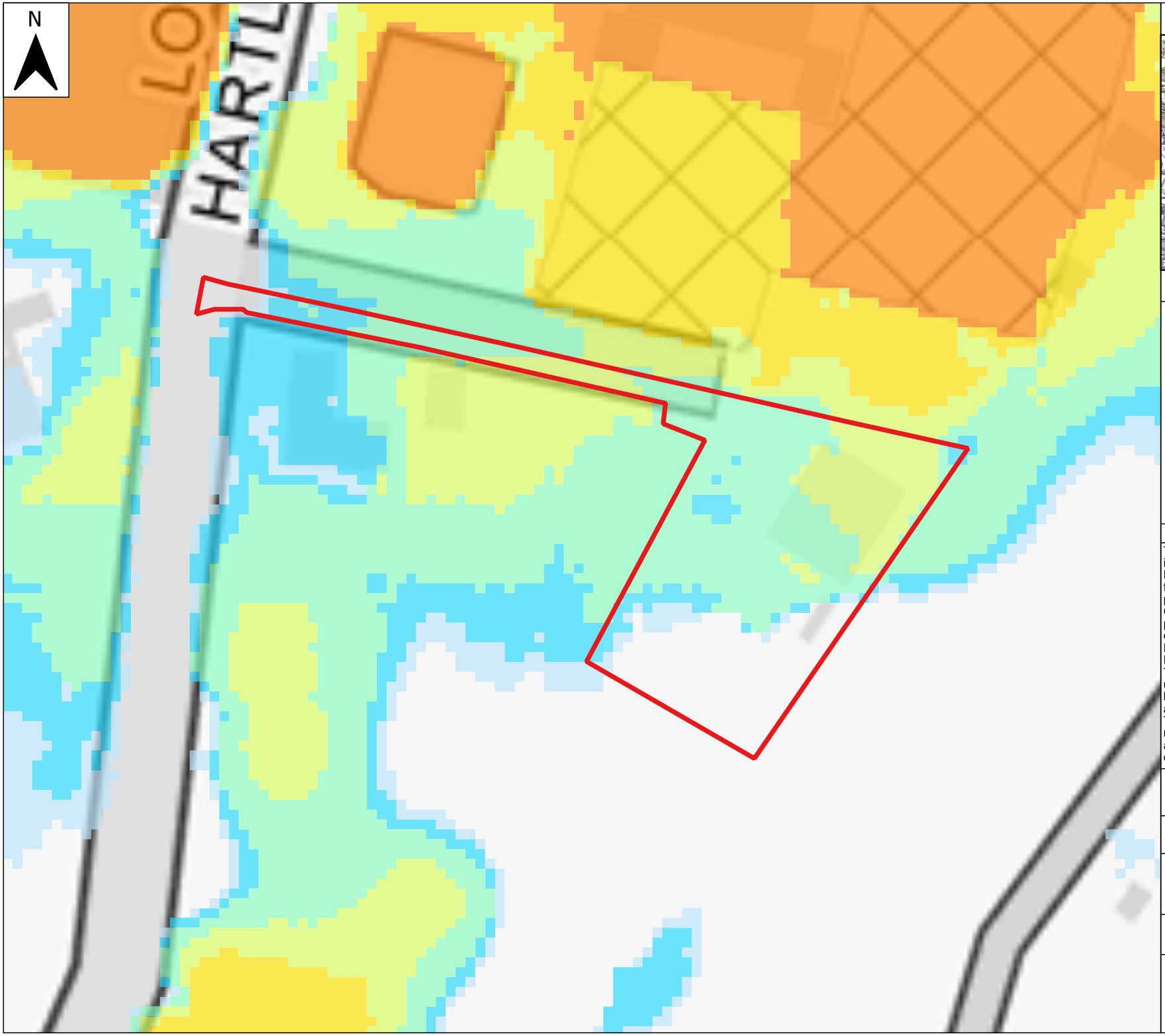
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
SURFACE WATER FLOODING PLUS CLIMATE CHANGE - SHELAA-346

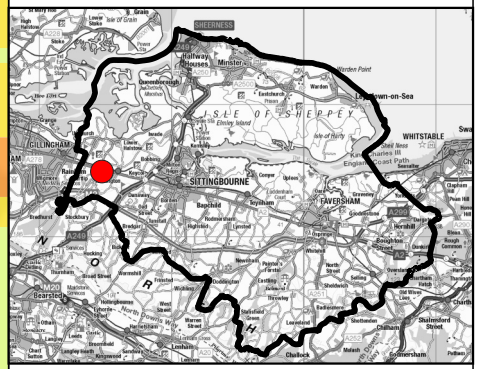
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site boundary

FMfP Surface Water Spatial Planning Depths
1% AEP (1 in 100-year) plus climate change

- <150mm
- 150-300mm
- 300-600mm
- 600-900mm
- 900-1200mm
- 1200-2300mm
- >2300mm

Notes

The Flood Map for Planning Service includes several layers of information. This includes Surface Water Spatial Planning Extents. These datasets show the extent of land at risk of flooding from surface water to a defined annual exceedance probability (AEP) or chance of flooding each year.
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.
The 'Upper End' for the 2070s epoch (2061-2125) has been used for the climate change scenarios. We have chosen long-term epochs appropriate to support long-term planning and development decisions.
These datasets are designed to only give an indication of flood risk to an area of land and are not suitable for showing whether an individual property is at risk of flooding. This is because we cannot know all the details about each property.

0 20 40 m

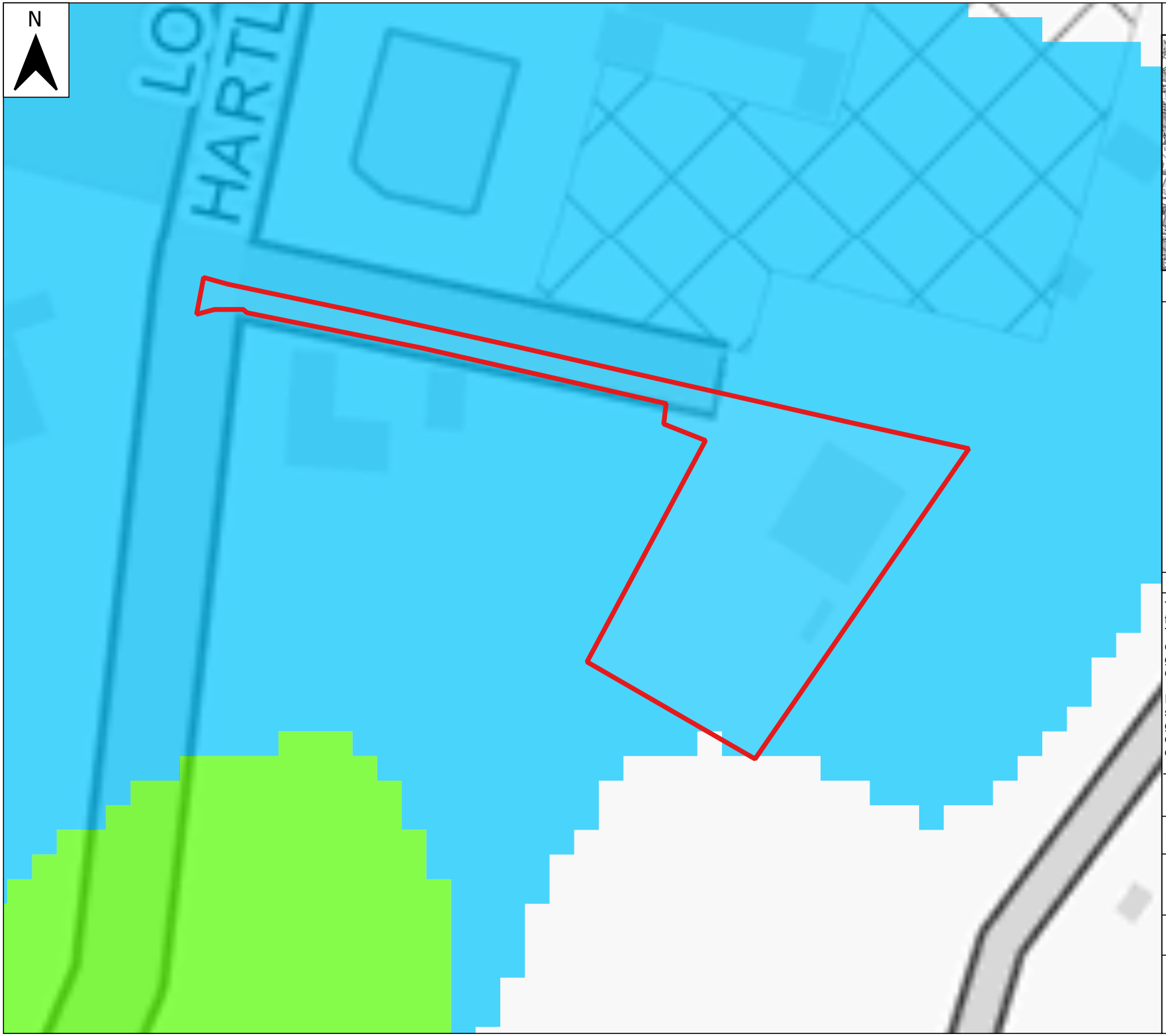
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
SURFACE WATER FLOODING PLUS CLIMATE CHANGE DEPTHS - SHELAA-346

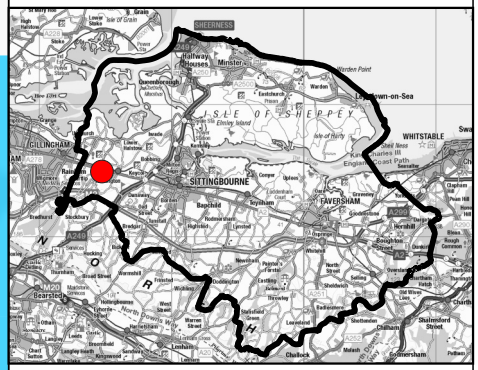
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

Swale Borough Outline

Site boundary

JBA Groundwater Flood Map Depths

Groundwater levels are either at or very near (within 0.025m of) the ground surface.

Groundwater levels are between 0.025m and 0.5m below the ground surface.

Groundwater levels are between 0.5m and 5m below the ground surface.

Groundwater levels are at least 5m below the ground surface.

Low risk.

Notes

The modelled groundwater levels are not predictions of typical groundwater levels, rather they are flood levels. The 5m resolution JBA Groundwater Flood Map categorises the head difference (m) between the predicted groundwater levels and the surface level into five feature classes based on the 100-year flood model outputs.

It should be noted that the JBA Groundwater Flood Map is suitable for general broad-scale assessment of the groundwater flood hazard in an area, but is not explicitly designed for the assessment of flood hazard at the scale of a single property.

0 20 40 m

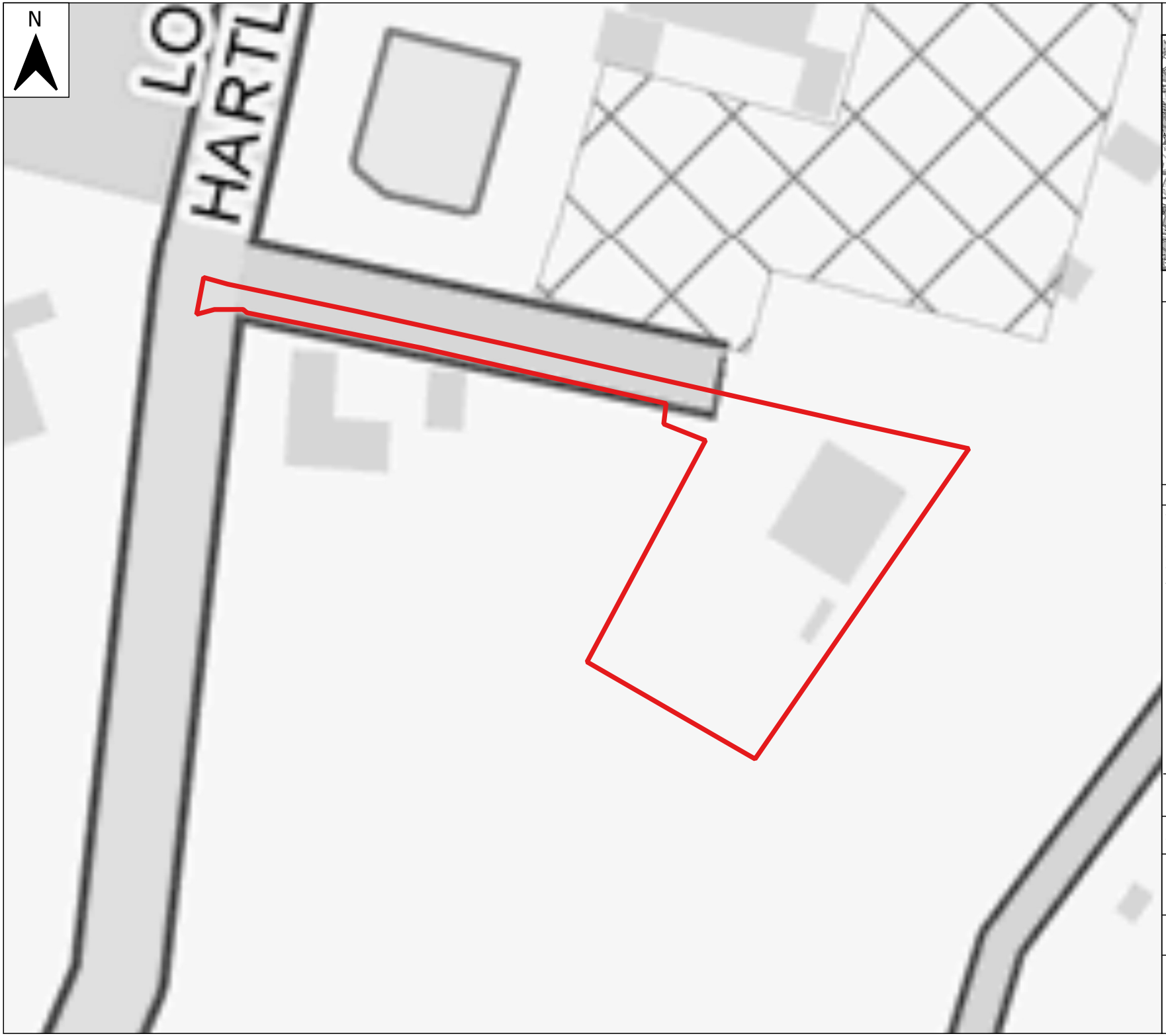
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
JBA GROUNDWATER FLOOD MAP - SHELAA-346

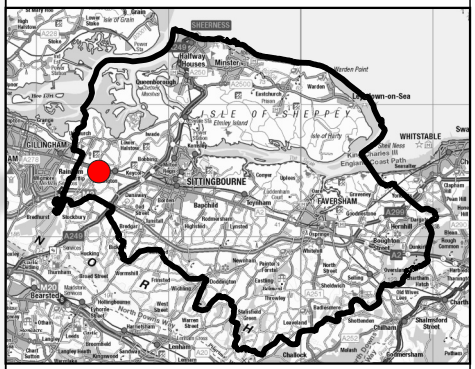
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

Swale Borough Outline

Site boundary

Environment Agency Reservoir Flood Extents

Dry Day

Wet Day

Notes

The risk of inundation due to reservoir breach or failure of reservoirs within the area has been mapped using the outlines available from the Risk of Flooding from Reservoir dataset, made available by the Environment Agency. The Environment Agency dataset includes areas of sea flooding.

0 20 40 m

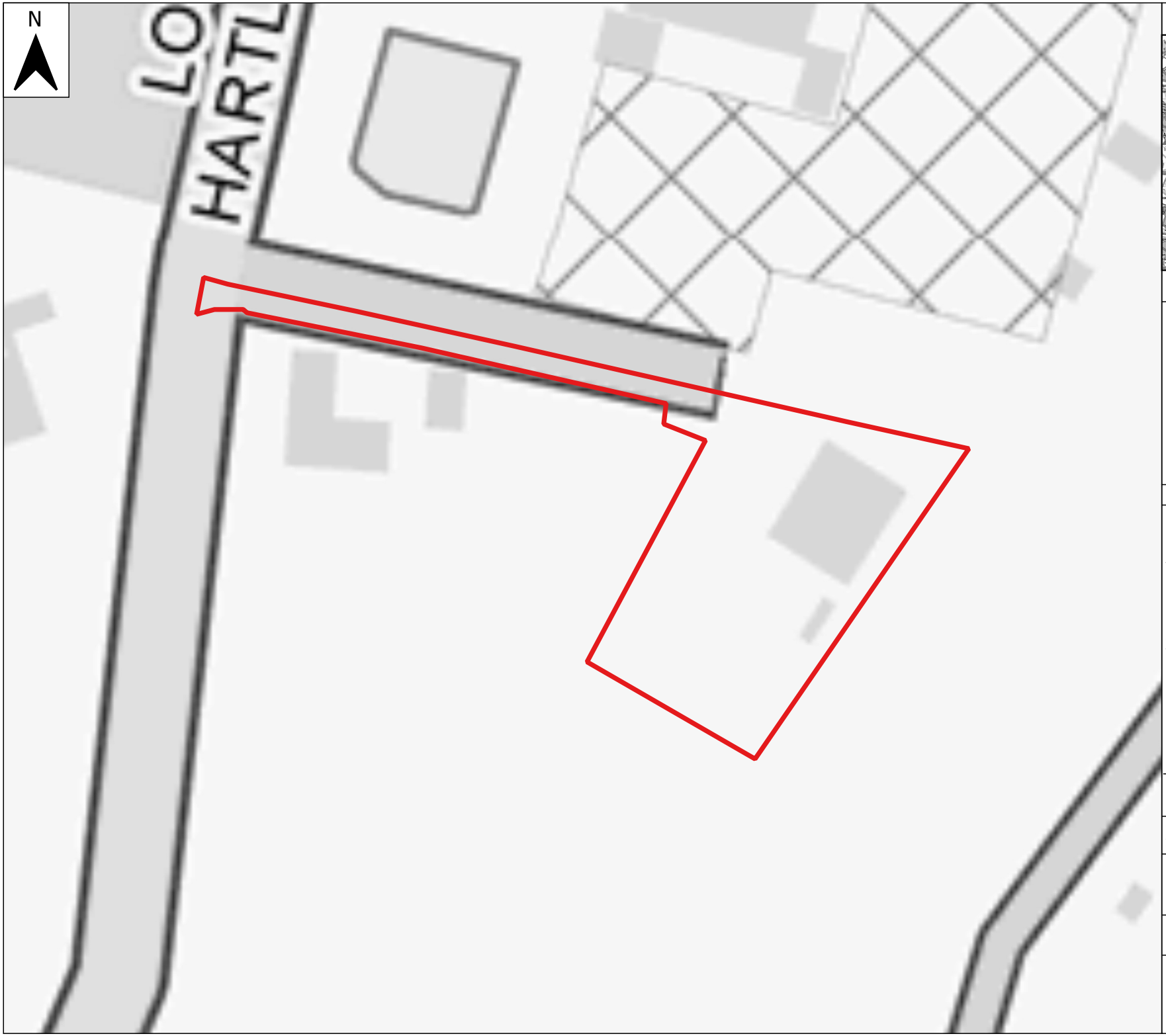
Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
RISK OF FLOODING FROM RESERVOIRS - SHELAA-346

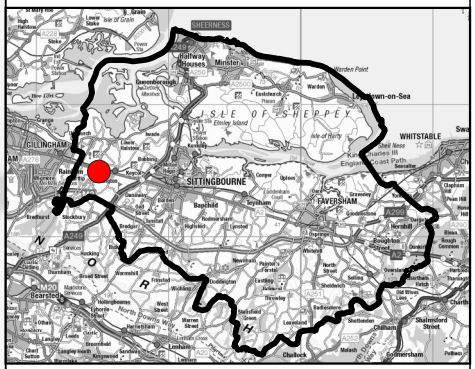
This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

Swale BOROUGH COUNCIL
Making Swale a better place



Location Plan



Legend

- Swale Borough Outline
- Site boundary

Environment Agency Flood Warning and Alerts

- Flood Alert Area
- Flood Warning Area

Notes

Flood Alerts are used by the Environment Agency to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and make early preparations. Flood Alerts are issued earlier than a flood warning to give notice of the possibility of flooding but before the Environment Agency are fully confident that flooding in Flood Warning Areas is expected.

Flood Warnings warn people of expected flooding and encourage them to take action to protect themselves and their property.

0 20 40 m

Contains Ordnance Survey data © Crown copyright and database right 2026. Contains public sector information licensed under the Open Government Licence v3.0.

SWALE BOROUGH COUNCIL
LEVEL 2 SFRA:
ENVIRONMENT AGENCY FLOOD WARNINGS AND ALERTS - SHELAA-346

This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.

JBA consulting

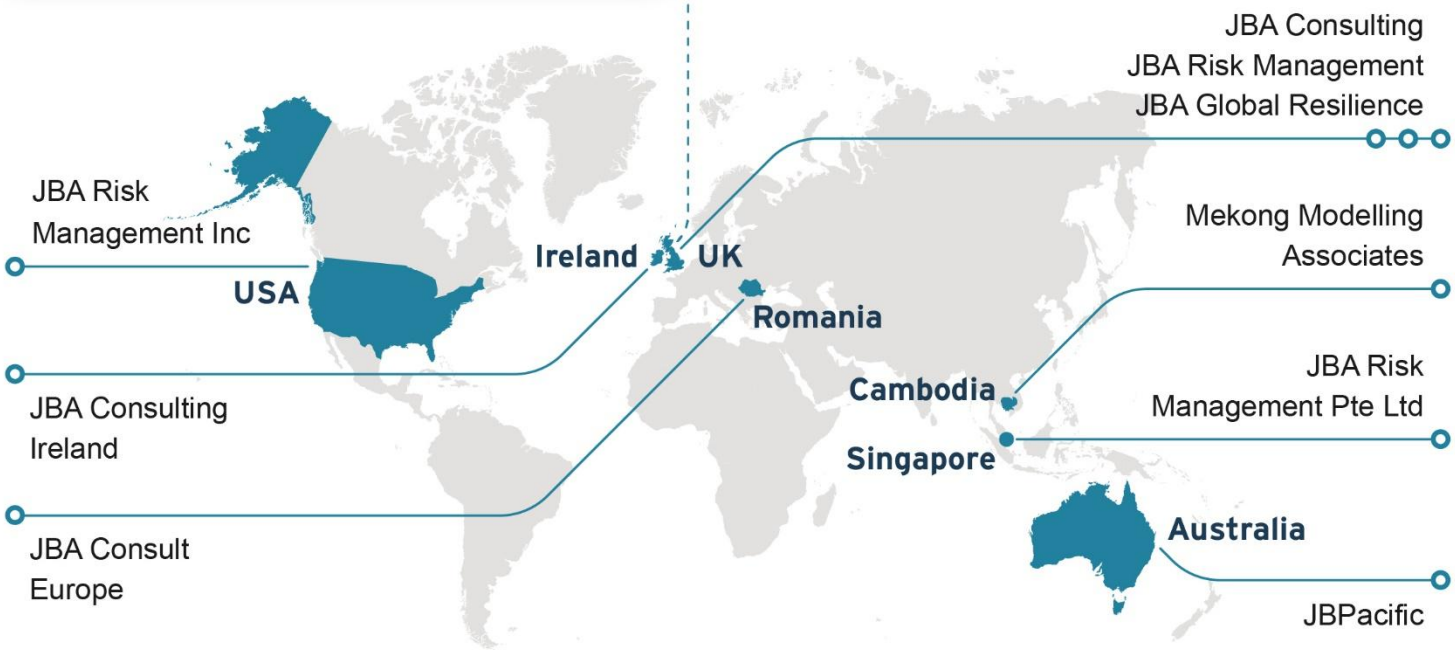
Swale BOROUGH COUNCIL
Making Swale a better place

www.jbaconsulting.com



Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on

Jeremy Benn
Associates Limited
Registered in
England
3246693

JBA Group Ltd is
certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018