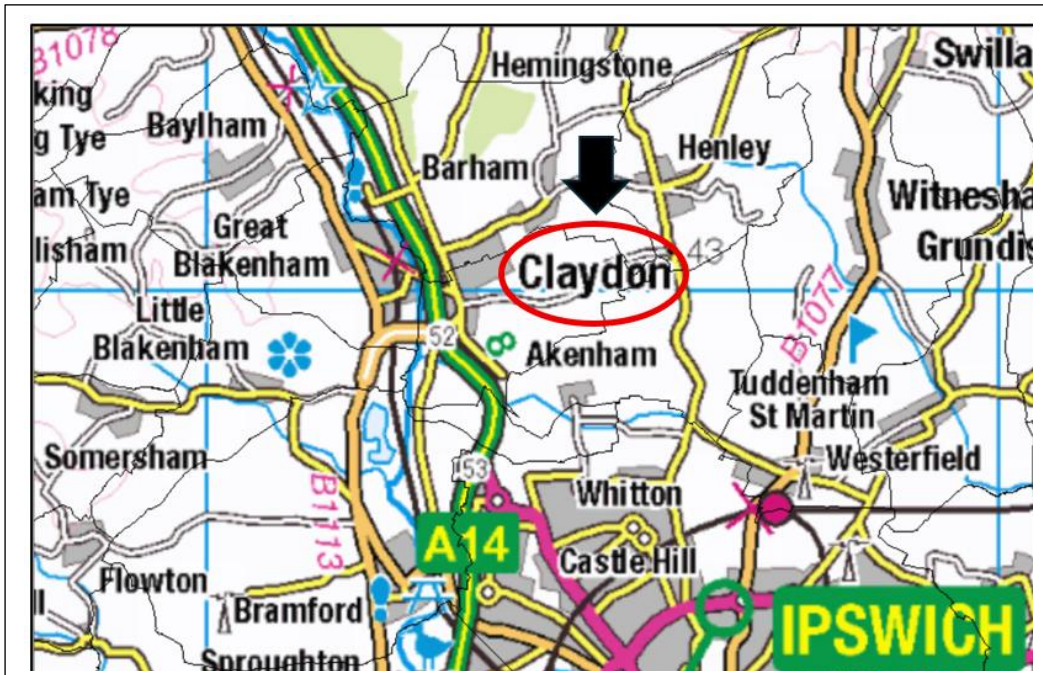


## Section 19 Flood and Water Management Act 2010

### Claydon Flood Investigation



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## Executive Summary

An educational facility in Claydon has experienced internal flooding on multiple occasions. Suffolk County Council, as Lead Local Flood Authority, have therefore undertaken a Section 19 Flood Investigation. The resulting report will:

- highlight the probable causes of flooding
- identify options to reduce future flood risk and increase property resilience
- make recommendations for actions by relevant responsible organisations, landowners or homeowners.

The impacted property is situated in an area classified as having a low surface water flood risk, however the surrounding topography and land cover contribute to localised susceptibility in certain parts of the site.

This report provides a comprehensive overview of the context and impact of the flooding events. It also outlines a series of short-, medium-, and long-term recommendations, each offering potential to enhance resilience and reduce the risk of future flooding in the affected areas.

In the short term, key actions include registering for Met Office weather alerts to improve preparedness for potential flood events. Medium- to long-term recommendations focus on implementing property flood resilience measures to help prevent water ingress into internal spaces. Additionally, the report explores opportunities to modify the site's land cover by increasing permeable surfaces and reducing impermeable ones to help minimise surface water runoff.

## Justification for Investigation

Suffolk County Council, Lead Local Flood Authority (LLFA) has determined that in accordance with our criteria, it is considered necessary and appropriate to carry out an investigation into this flood event.

This is in accordance with Section 19 (1) of the Flood and Water Management Act 2010, and in accordance with Section 19 (2) of the Flood and Water Management Act 2010, to publish the results and notify the relevant risk management authorities (RMAs).

### *Section 19 Local authorities: investigations*

*(1) On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate—*

*(a) which risk management authorities have relevant flood risk management functions, and*

*(b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.*

*(2) Where an authority carries out an investigation under subsection (1) it must—*

*(a) publish the results of its investigation, and*

*(b) notify any relevant risk management authorities*

<b>Criteria for an investigation (as per Appendix D of the Suffolk Flood Risk Management Strategy):</b>	✓
There was a risk to life because of flooding?	
Internal flooding of one property (domestic or business) has been experienced on more than one occasion?	✓
Internal flooding of five properties has been experienced during one single flood incident	
Where a major transport route was closed for more than 10 hours because of flooding	
Critical infrastructure was affected by flooding	
There is ambiguity surrounding the source or responsibility of a flood incident	

# Understanding the flood context

## 1. Location of flooding

The area of investigation is an educational facility situated in the village of Claydon, approximately 4.8 miles northeast of Ipswich town centre. The site lies east of the A14, within the jurisdiction of Babergh and Mid Suffolk District Council (see Figure 1).

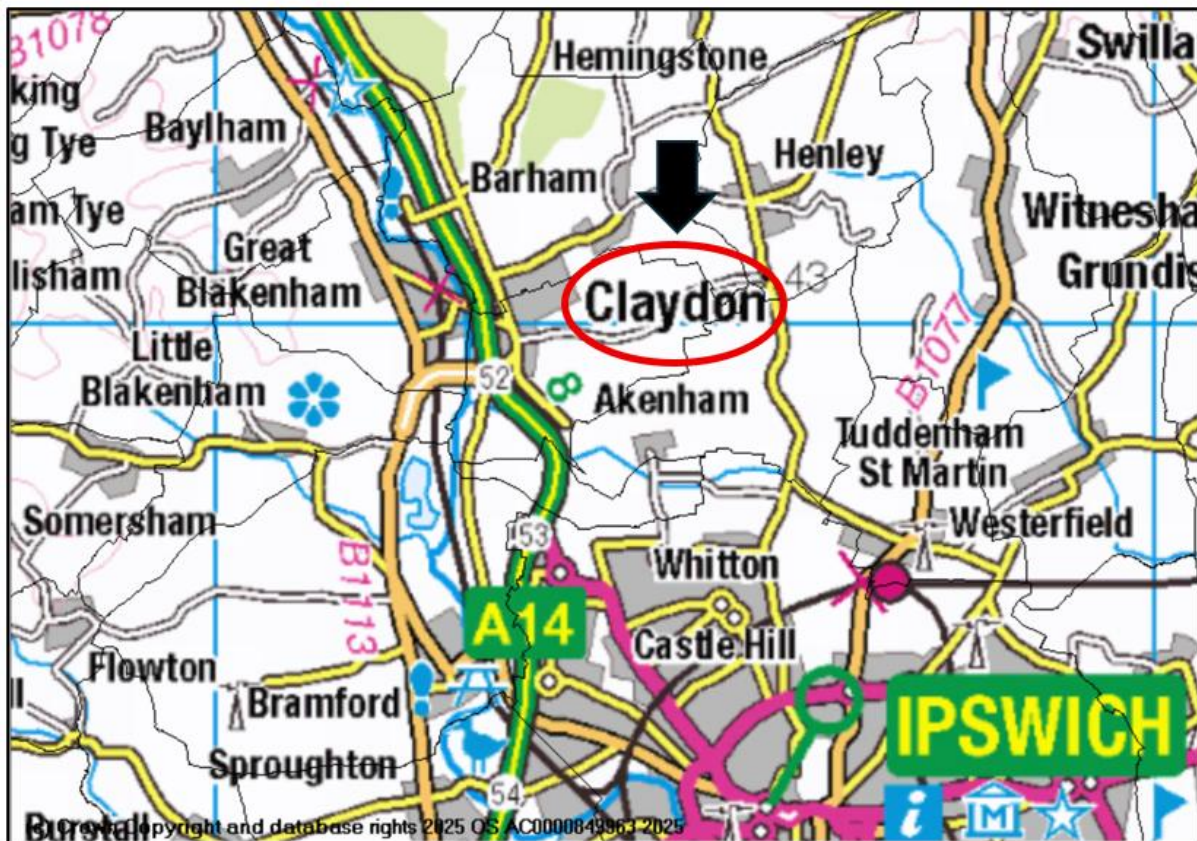
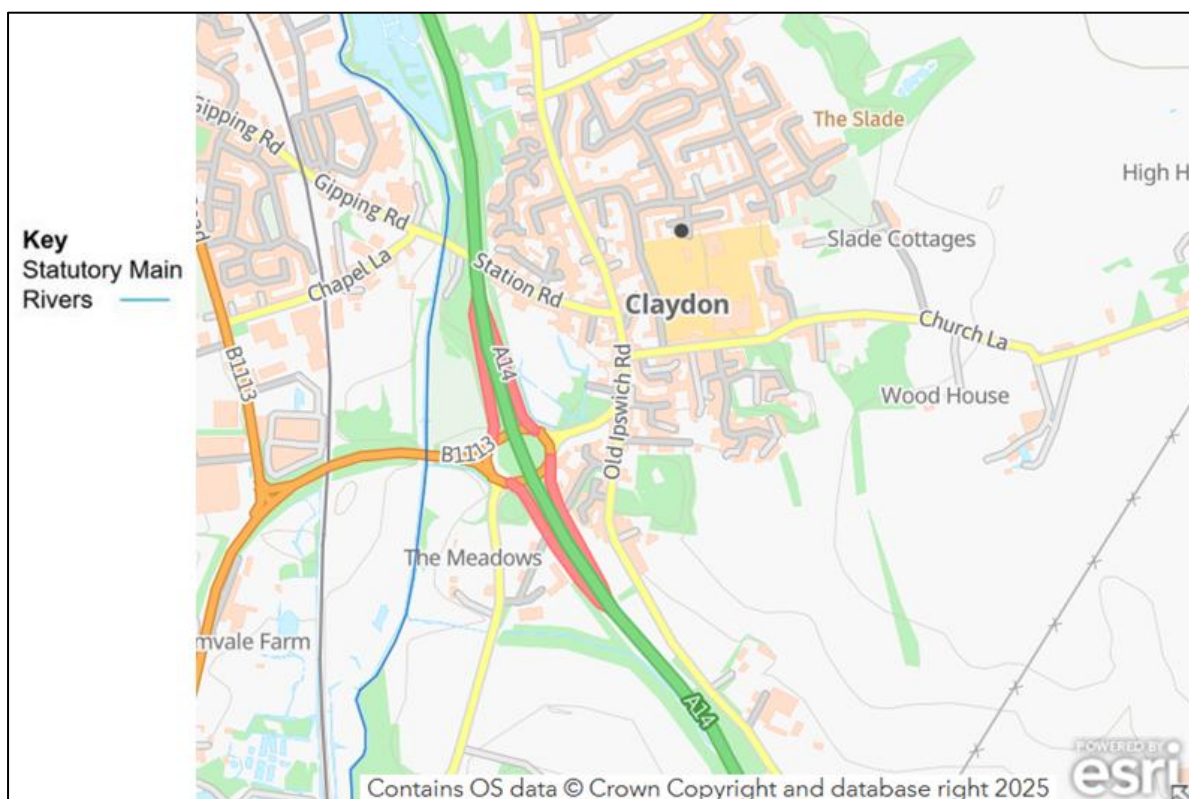


Figure 1: Investigation area map.

The Environment Agency has permissive powers to carry out maintenance, improvement or construction work on main rivers to manage flood risk. The Internal Drainage Boards (IDBs) have similar permissive powers but instead relate to ordinary watercourses within their board area.

Lead Local Flood Authorities (LLFAs) and Internal Drainage Boards (IDBs) manage the flood risk from ordinary watercourses but responsibility for maintaining watercourses rests with the Riparian landowners, defined as those who have a river, stream or ditch which runs next to or through their land or property.

Figure 2 shows the location of main river (River Gipping) and significant unnamed ordinary watercourses in the vicinity of Claydon. Neither of which have a role in the observed flooding.



**Figure 2 shows the most significant watercourses in and around Claydon.**

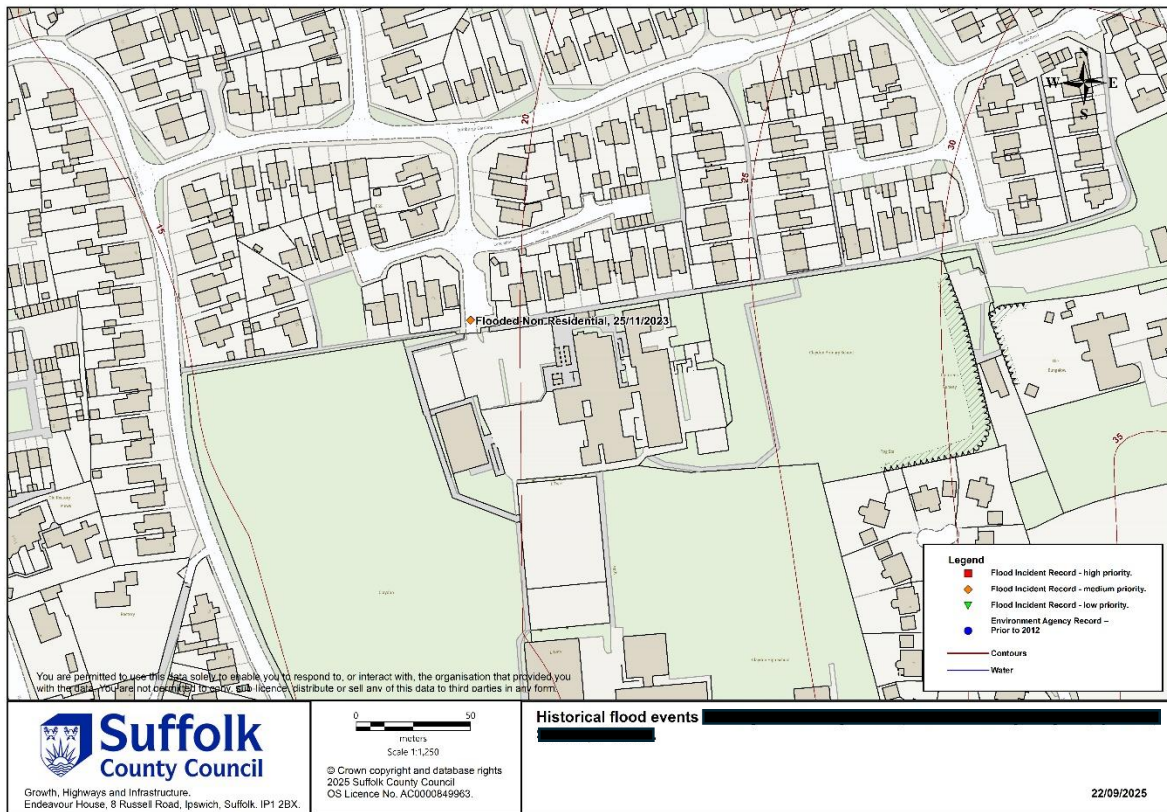
## 2. Records of any historical flooding

A report was submitted via the LLFA mailbox and another through the Suffolk Highways online reporting tool, both describing surface water runoff entering the affected building through the main entrance and a secondary emergency exit. Upon contacting the landowner, it was confirmed that similar flooding incidents had occurred on other occasions as well (see Table 1).

However, no official records of flooding in the surrounding area are held by the LLFA, as shown on the map of historic incidents in Figure 3.

**Table 1: Historical Flood Incidences**

Date of incident	Evidence
9 <sup>th</sup> May 2023	Anecdotal evidence from the operator of the facility
12 <sup>th</sup> December 2023	Anecdotal evidence from the operator of the facility
14 <sup>th</sup> November 2023	Third party report via the floods inbox
15 <sup>th</sup> April 2024	Anecdotal evidence from the operator of the facility
23 <sup>rd</sup> May 2024	Anecdotal evidence from the operator of the facility
4 <sup>th</sup> June 2024	Third party report via the online reporting tool

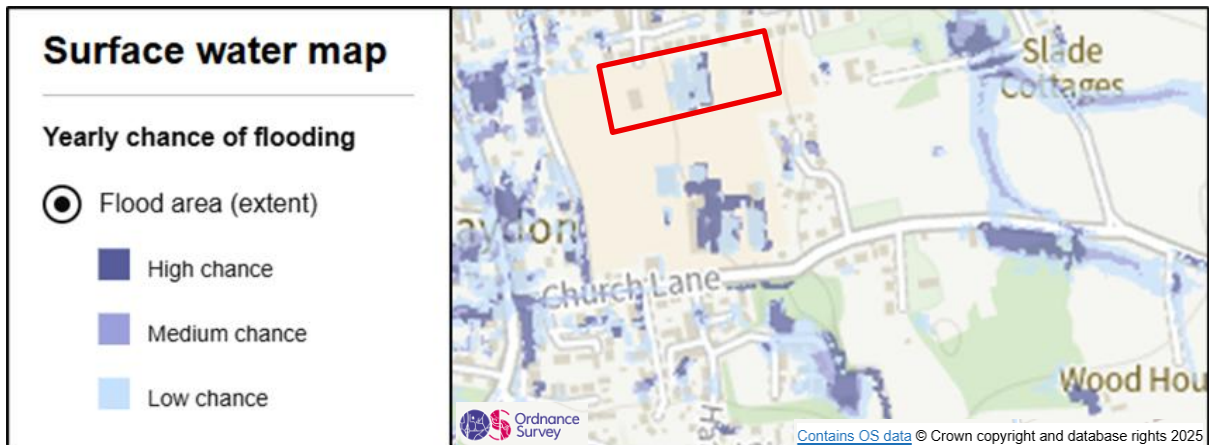


**Figure 3: Recorded historical flood event near the location as at 22/09/2025.**

### 3. Predicted Flood Risk

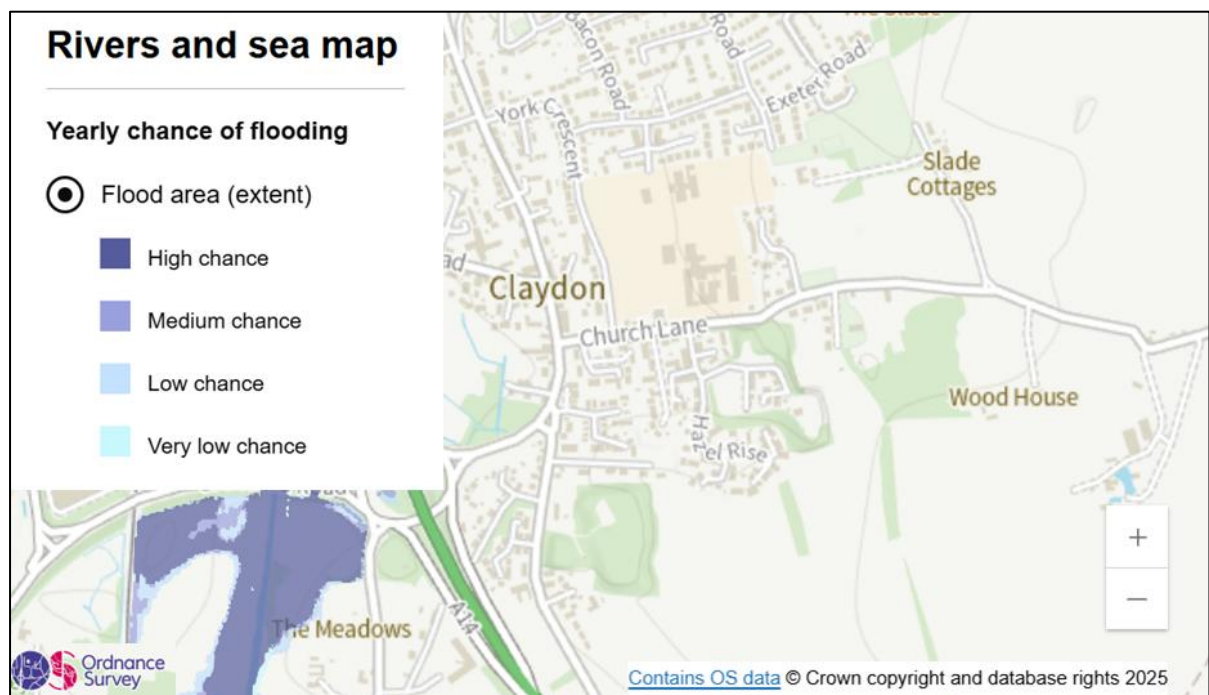
Several areas within the vicinity of the impacted property are at risk of flooding from pluvial sources (surface water run-off from surrounding land and highways).

Figure 4 highlights the predicted pluvial flood risk in the area. There are isolated areas of surface water flooding across the site, however the site is characterised as having a low probability of flooding each year. A low flood risk rating indicates a yearly flood probability between 0.1% and 1%. A small area of high flood risk is located behind the original building, as shown in Figure 4.



**Figure 4: Predicted flood risk from surface water (pluvial)**

Figure 5 shows the projected fluvial (from designated main river and ordinary watercourses) flood risk in Claydon. The entire site is predicted to be at very low risk of flooding from rivers and the sea and was not a cause of internal flooding at this location.



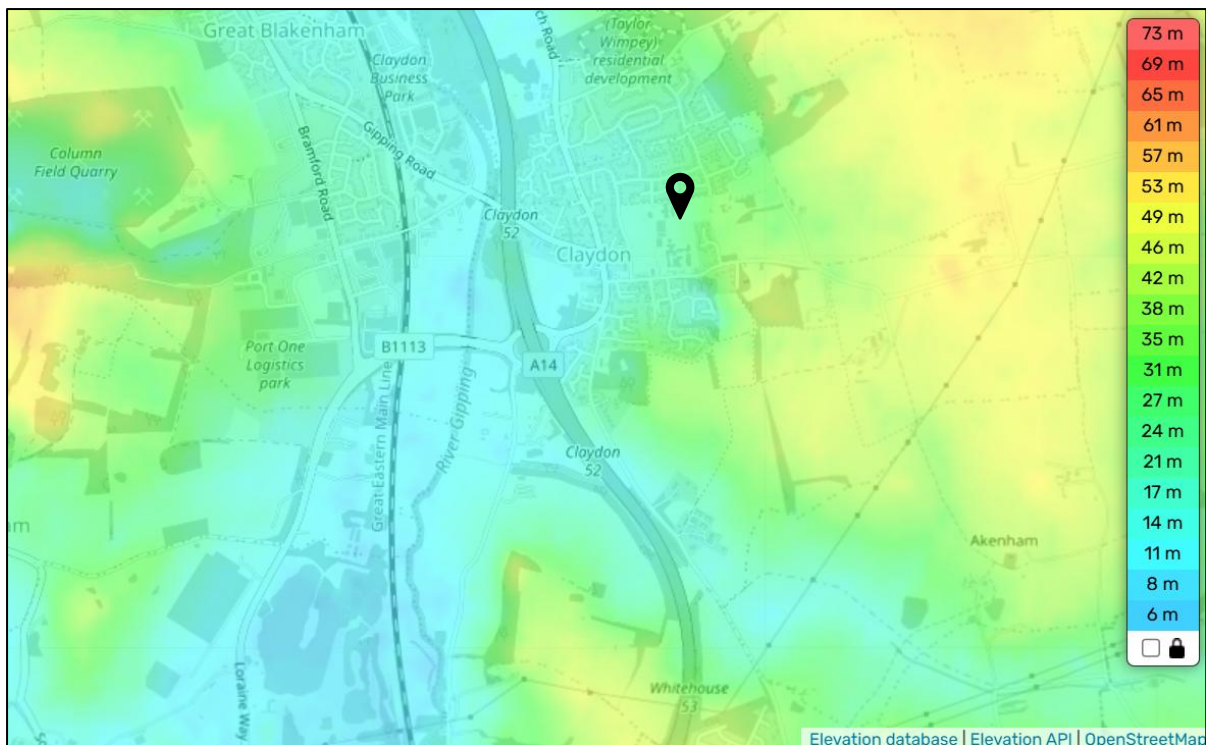
**Figure 5: Predicted flood risk from rivers.**

Groundwater and reservoir flooding are also considered unlikely.

## 4. Catchment characteristics

### Topography

Figure 6 shows the topography surrounding Claydon with gradient changes across the parish. The gradient slopes from east to west, towards the River Gipping. There are topographic changes across the impacted site with the newer building being situated at the lowest point within the site boundary. The car park areas slope moderately towards the new building, and surface water naturally flows across the site from east to west.



**Figure 6: Claydon and surrounding topography (TessaDEM as cited in topographic-map.com)**

### Soils and Geology

The site is underlain by freely draining, slightly acidic loamy soils, which discharge to local groundwater and watercourses. No data is available for this location from the British Geological Survey's geology viewer regarding superficial deposits.

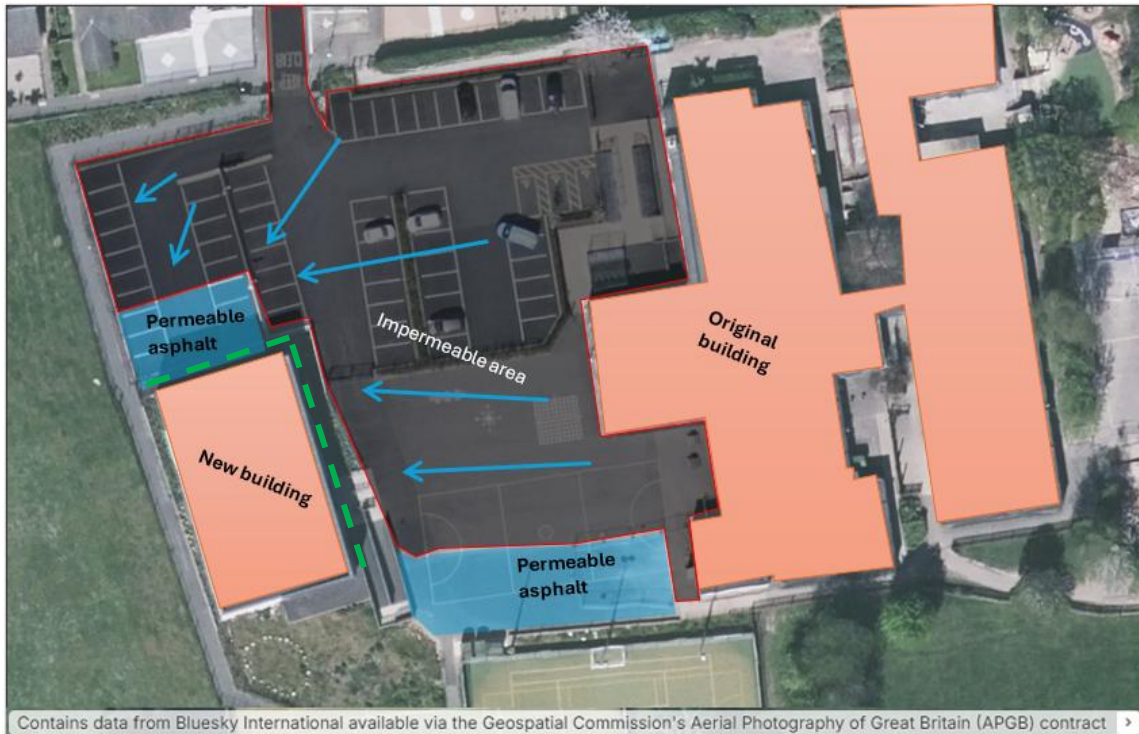
The bedrock geology consists of the Newhaven Chalk Formation (see Figure 7). While this formation is known to function as a good aquifer, its capacity for surface water infiltration may vary depending on site-specific conditions. Infiltration testing conducted during the planning application for the newly constructed building confirmed that the site is suitable for infiltration-based drainage (Drainage Strategy 15-0363).



**Figure 7: The underlying/bedrock geology at the location.**

### **Land cover**

The types of land cover within the property boundary are predominantly artificial, consisting mainly of buildings and paved surfaces, including the car park. Most of these surfaces are impermeable, except for two areas identified in the drainage strategy (produced to support the design of the recent additions to the site) as being constructed of porous asphalt (see Figure 8). As a result, most of the site is considered largely impermeable and therefore generates large amounts of surface water runoff.



**Figure 8: Land cover at the location highlighting areas with permeable and impermeable surfaces.**

## **Flooding Source(s), Pathway(s) & Receptor(s)**

Pluvial flooding caused by surface water run-off from surrounding land was identified as the primary source of flooding at the affected location. The nearest rain gauge, monitored by the Environment Agency (EA), is situated approximately four miles away in Needham Market.

Rainfall data from this station has been obtained for the dates on which the Lead Local Flood Authority (LLFA) received third-party reports of flooding:

- 14 November 2023: 8.2 mm of rainfall was recorded over a 24-hour period, all of which fell within a 5-hour window.
- 4 June 2024: 1.8 mm of rainfall was recorded over a 24-hour period.

However, we acknowledge that due to the distance between the rain gauge and the investigation site, the recorded data may not accurately represent localised rainfall conditions.

The recorded dates of internal flooding at this location coincide with periods of prolonged rainfall. During the flooding event, water flowed from the impermeable areas surrounding the building that was impacted, overwhelmed the current drainage system and entered through the doors.

The description of the flood events described below will discuss the probable sources of flooding, the observed flow paths through the site and the receptors which have been affected.

As previously noted, the site is predominantly impermeable, with extensive paved areas including the car parks. Rainfall on these surfaces runs off rapidly towards the site's lowest points, as illustrated by the blue arrows in Figure 8. According to the approved drainage strategy, some areas are surfaced with porous asphalt. Approximately 22% (110 m<sup>2</sup>) of the car park adjacent to the new building is porous, while the remaining 390 m<sup>2</sup> is impermeable asphalt (Figure 8).

The newly constructed building is equipped with ACO drains along its sides as represented by the green dashed lines in Figure 8. These drains are designed to collect roof and surface runoff before it reaches the building and convey it via pipework to a soakaway located beneath the impermeable section of the car park. However, anecdotal evidence suggests that surface water runoff from the car park flows toward the site's low points where the new building is situated, overwhelming the ACO drains and entering the building through the main entrance and emergency exit doors.

The section of the building located adjacent to the porous asphalt area (Figure 8), is the most frequently affected part of the building, with floodwater entering through the emergency exits. In theory, the porous asphalt should infiltrate most of the runoff, with any excess directed into the ACO drains, thereby preventing flooding. However, this does not appear to be occurring in practice.

Hydraulic modelling of the drainage system indicated that it should accommodate rainfall events up to the 1-in-100-year storm, plus a 40% allowance for climate change. This capacity exceeds the intensity of all rainfall events that have caused flooding at the school.

A preliminary (non-standard) on-site test of the porous asphalt involving pouring a bucket of water and timing infiltration, revealed that the surface was not functioning as a permeable one. As a result, it is unlikely to have been capable of absorbing surface runoff or preventing water from reaching and flooding the building.

In summary:

- The extensive area of impermeable surfaces on higher ground accelerated the generation of surface water runoff.
- Prolonged rainfall exceeded the capacity of the drainage system (ACO drain channels) surrounding the building, resulting in surface water flooding through the doors.
- The porous asphalt, intended to absorb most of the runoff and prevent it from overwhelming the drainage channels around the building, did not perform as expected resulting into flooding.

Recommended Actions:

- Facility operator to sign up for weather alerts by the Met Office to be better prepared for potential flooding occurrences.
- Facility operator to consider installing Property Flood Resilience (PFR) measures to building to reduce damage caused by flooding
- Facility operator to undertake further testing of the porous surfaces to determine to what extent they are functioning as designed and if confirmed to be underperforming then consider remedial works to restore full functionality.
- Facility operator to replace the areas meant to be covered by porous asphalt with a suitably graded surface to encourage infiltration of surface run-off.
- Facility operator to investigate options to disconnect large contributing roof areas of all buildings i.e. rainwater harvesting and upgrading of existing impermeable surfaces with permeable materials, to encourage infiltration across the site and reduce surface water run-off.

## Risk Management Authorities, Non-Risk Management Authority and flood risk function(s)

<b>Risk Management Authority</b>	<b>Relevant Flood Risk Function(s)</b>
Suffolk County Council	Lead local Flood Authority, Highways Authority & Asset Owner
Environment Agency	lead organisation for providing flood risk management under its permissive powers and warning of flooding from main river
Anglian Water	Asset Owner
Internal Drainage Board	Asset Owner
Babergh & Mid Suffolk District Council	Local Planning Authority & Asset Owner
<b>Non-Risk Management Authority</b>	<b>Relevant Flood Risk Function(s)</b>
Private Landowners	Riparian Responsibilities of watercourses
Private Homeowners	Improving flood resilience to property
Facility Operator	Management of the property

### Action(s) completed prior to publication:

The following section acknowledges actions that RMA's and Non-RMAs have implemented or are currently in progress prior to publishing of this report.

<b>Action</b>	<b>Risk Management Authority</b>	<b>Progress</b>
Assessing the infiltration potential of the porous asphalt via a non-standard test to gain an understanding of the	Suffolk County Council	A preliminary test of the functionality of the porous asphalt was tested on 26/08/2025. Results showed

performance of existing drainage structures.		that the porous asphalt was not functioning as expected.
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## LLFA Recommended Action(s):

The following section provides a range of flood mitigation measures that could be implemented to reduce the risk of flooding at this location. They have been derived from data and evidence collated as part of the report and have been included having been considered realistic in their implementation. The implementation of actions falls to the responsible party. Progress on the action will be monitored by Suffolk County Council, but it should be acknowledged that the council has limited powers to enforce the implementation of recommended actions.

Action	Responsible Party	Timescale for response	Latest Progress Update for Actions
<b>Short Term Actions</b> (e.g. standard maintenance activity and initial investigation of options that can be undertaken with limited need for forward planning)			
Sign up for weather alerts by the Met Office to be better prepared for potential flooding occurrences.	Facility Operator	1-2 months	<b>Completed.</b>
<b>Medium Term Actions</b> (e.g. longer planning timescales and potential need to source funding but potential for greater impact)			
Undertake further testing of the porous surfaces to determine to what extent they are functioning as designed and if confirmed to be underperforming then consider remedial works to restore full functionality.	Facility Operator	3-6 months	<b>Ongoing:</b> Quotations for drainage investigations have been secured, and the facility operator will review and appoint a contractor.
Consider installing Property Flood Resilience (PFR) measures to buildings to reduce damage caused by flooding	Facility Operator	3-6 months	Further information on PFR measures can be found within SCC published "Flood Smart Living" handbook. There are currently no active PFR schemes being managed by

			the LLFA in Suffolk.
Investigate options to disconnect large contributing roof areas of all buildings i.e. rainwater harvesting.	Facility Operator	6 months	<b>Ongoing:</b> Drains at the facility have been cleared. More options are yet to be explored.
Investigate upgrading of existing impermeable surfaces with permeable materials, to encourage infiltration across the site and reduce surface water run-off. .	Facility Operator	6 months	<b>Ongoing:</b> Subject to the findings of the appointed contractor, a decision on this will be made.
<b>Long Term actions</b> (significantly longer timescale and budget required with potentially greater positive impact)			
Replace the areas meant to be covered by porous asphalt with suitably graded surface to encourage infiltration.	Facility Operator	TBC	
Convert other impermeable surfaces onsite to permeable surfaces to minimise the amount of surface water run off generated.	Facility Operator	TBC	
Deliver improvements to site surfaces (i.e. land cover) if investigation work suggests beneficial and viable.	Facility Operator	TBC	
Deliver interventions to disconnect large contributing roof areas of all buildings to reduce pressure on existing drainage systems if investigation works suggests beneficial and viable.	Facility Operator	TBC	

## Approval

This report will be reviewed and updated every 6 months until actions are marked as complete.

Reviewer	Date of Review
Arinaitwe Byamukama	19/05/2026

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## **Disclaimer**

This report has been prepared and published as part of Suffolk County Council's responsibilities under Section 19 of the Flood and Water Management Act 2010. It is intended to provide context and information to support the delivery of the local flood risk management strategy and should not be used for any other purpose.

The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and therefore while all reasonable efforts have been made to gather and verify such information may not include all relevant information. As such it should not be considered as a definitive assessment of all factors that may have triggered or contributed to the flood event. Should there be additional information available to develop the report, please email to [floods@suffolk.gov.uk](mailto:floods@suffolk.gov.uk).

The opinions, conclusions and recommendations in this Report are based on assumptions made by Suffolk County Council when preparing this report, including, but not limited to those key assumptions noted in the Report, including reliance on information provided by third parties.

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The implications for producing Flood Investigation Reports and any consequences of blight have been considered. The process of gaining insurance for a property and/or purchasing/selling a property and any flooding issues identified are considered a separate and legally binding process placed upon property owners and this is independent of and does not relate to Suffolk County Council highlighting flooding to properties at a street level. Property owners and prospective purchasers or occupiers of property are advised to seek and rely on their own surveys and reports regarding any specific risk to any identified area of land.

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