



# Flood Risk Assessment

Re: Prior Approval Change of Use from Class E Office to Residential  
at 15A Village Drive, Canvey Island, SS8 0LJ

## 1.0 OVERVIEW OF THE SITE

- 1.1 According to Environment Agency Flood Map, it can be established that the property is within a flood risk zone 3 (Refer to Appendix A).  
However, although the site is located within Flood Zone 3, it is protected by the Tidal flood defences with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.
- 1.2 The proposal is for a conversion/ change of use from an existing office building of 44.7m<sup>2</sup> to residential which is considered minor.
- 1.3 We have provided mitigation measures in this report against any risk of potential flooding.

## 2.0 RELEVANT PLANNING POLICY

### 2.1 National Planning Policy Framework and South Essex Level 1 Strategic Flood Risk Assessment April 2018

#### South Essex Level 1 Strategic Flood Risk Assessment April 2018

##### 5.2 Tidal Flooding

The Borough of Castle Point comprises two distinct portions of land; Canvey Island, with an area of approximately 16km<sup>2</sup> and a portion of the mainland covering approximately 27km<sup>2</sup>. These two areas are divided by the Benfleet Creek, a tidal estuary that runs from the A130 south easterly to meet the River Thames. The River Thames borders the southern edge of Canvey Island. The remaining sides of Canvey are bordered by the Holehaven Creek and East Haven Creek.

The Thames Estuary is a potential source of tidal flooding to the Castle Point Borough. Tidal flooding is most likely to occur during storm surge conditions characterised by wind driven waves and low atmospheric pressure coupled with high spring tides. In areas protected from flooding by sea defences, tidal flooding can occur as a result of a breach in the defences, failure of a mechanical barrier or overtopping of defences.

Much of Canvey Island is at or below mean high tide level and in response to this, formal raised sea defences protect the entire island. In addition to these defences, the Benfleet Creek, East Haven Creek and Fobbing Horse Barriers are operated by the Environment Agency to protect the Borough in times of flood.

The Environment Agency flood zone map incorporates both tidal and fluvial flood risk extents, excluding the presence of defences. The Environment Agency flood zone map, shown in Appendix A Figure 5.1, identifies that the majority of Canvey Island, the Hadleigh Marshes and

an area to the south west of South Benfleet are within Flood Zone 3. The definition of tidal Flood Zone 3a is based on the 0.5% AEP (1 in 200 year flood event), rather than the 1% AEP (1 in 100 year event) used for fluvial Flood Zones.

The Environment Agency AIMS data shows that the majority of Canvey Island is protected by a concrete wall that spans the southern coastline of the island, with a design SOP of 1 in 1000 year. Embankments are located along the southern edge of Hadleigh Marsh, an area to the south west of South Benfleet and the western coastline of Canvey Island, with a design SOP of 1 in 1000 year.

### **Cumulative Impact of Minor and Permitted Development**

The PPG advises that minor developments (as defined in Section 8.3) are unlikely to result in significant flood risk issues unless:

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

In parts of the study area there is potential for both minor development as well as permitted development to be considered to be having a cumulative impact on flood risk in the local area as a result of impacts on local flood storage capacity and flood flows. Given the small scale of the development in the context of the wider fluvial catchments it is not possible to undertake modelling to confirm the impact of such development.

There is opportunity for LPAs to consider making an Article 4 direction 58 to remove national permitted development rights for developed areas of land within Flood Zone 3b where cumulative impact is considered to be a problem. The removal of permitted development

rights will ensure that a planning application and site specific FRA will be required for any development in these areas.

FRAs for all minor development within Flood Zone 3 should demonstrate that the proposal is safe and will not increase flood risk elsewhere by not impeding the flow of flood water, reducing storage capacity of the floodplain. Details of flood mitigation measures to reduce the impact of flooding on the proposed development and ensure that the proposed development does not result in an increase in maximum flood levels within adjoining properties should be provided.

This may be achieved by ensuring (for example) that the existing building footprint is not increased, that overland flow routes are not truncated by buildings and/or infrastructure, hydraulically linked compensatory flood storage is provided within the site (or upstream), and/or the incorporation of floodable voids (more information will be provided in the Level 2 SFRA). It is acknowledged that full compensation may not be possible on all minor developments, however, an applicant must be able to demonstrate that every effort has been made to achieve this and provide full justification where this is not the case.

### **Changes of Use**

Where a development undergoes a change of use and the vulnerability classification of the development changes, there may be an increase in flood risk. For example, changing from industrial use to residential use will increase the vulnerability classification from Less to More Vulnerable (Table 8-3).

For change of use applications in Flood Zone 2 and 3, applicants must submit a FRA with their application. This should demonstrate how the flood risks to the development will be managed so that it remains safe through its lifetime including provision of safe access and egress and preparation of Flood Warning and Evacuation Plans where necessary. Further guidance will be provided within the Level 2 SFRA Report.

As changes of use are not subject to the Sequential or Exception Tests, the South Essex Authorities should consider when formulating policy what changes of use will be acceptable, having regard to paragraph 157 (6th bullet) of the NPPF: “identify areas where it may be necessary to limit freedom to change the uses of buildings, and support such restrictions with a clear explanation” and taking into account the findings of this SFRA. This is likely to depend on whether developments can be designed to be safe and that there is safe access and egress.

### 3.0 CLIMATE CHANGE ADAPTION

- 3.1 In accordance with NPPF, developments must demonstrate how flood risk will be managed now and over the developments lifetime, taking climate change into account. In previous SFRA's and site specific Flood Risk Assessments an allowance of 20% was added to the 1% AEP return period to account for increases in flood risk due to climate change.

In February 2016 the Environment Agency published updated guidance on climate change allowances in an update to the document 'Adapting to Climate Change: Advice to Flood and Coastal Erosion Risk Management Authorities'.

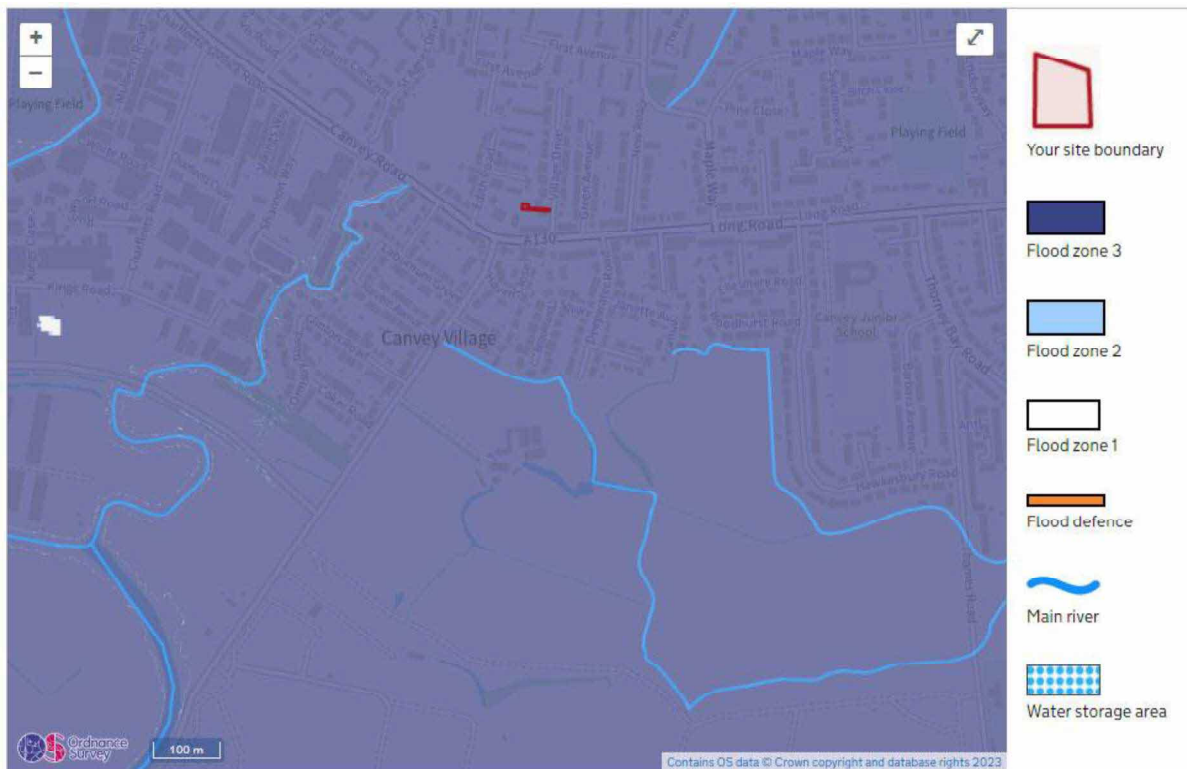
The guidance reflects an assessment completed by the Environment Agency between 2013 and 2015 using United Kingdom Climate Projections 2009 (UKCP09) data to produce more representative climate change allowances across England. The updated guidance includes predictions of anticipated change for:

- Peak river flow by river basin district
- Peak rainfall intensity
- Sea level rise
- Offshore wind speed and extreme height

- 3.2 The proposed change of use does not increase the hard standing of the site and as a result will not increase surface run-off rates in the area.

## 4.0 FLOOD RESILIENCE MEASURES

- 4.1 The site is located within flood risk zone 3, which means it has a high probability of flooding from rivers and the sea. However, the site does benefit from effective flood defences. Flood defences have been built to protect against flooding from rivers or the sea.



- 4.2 The following advice from Environmental Agency has been followed:

### *Advice for minor development*

*Make sure the floor levels are either no lower than existing floor levels or 300 millimetres (mm) above the estimated flood level. If they are not, ask your local planning authority if you also need to consider extra flood resistance and resilience measures.*

*State in your assessment all levels in relation to Ordnance Datum (the height above average sea level). You may be able to get this information from the Ordnance Survey. If not, you'll need to get a land survey carried out by a qualified surveyor.*



*Your plans need to show how you're going to ensure the development is not flooded by surface water. An example of this could be to divert surface water away from the property or by using flood barriers.*

4.3 Since the existing internal ground floor level is already higher by 320mm from the natural external floor level. Hence, this already acts as flood defense measure as per the advice above.

4.4 The proposed conversion will incorporate standard flood resistant and resilient measures, where feasible, such as materials/ finishes with low permeability, resilient to water damage or deformation and easy to clean. To mitigate against flood damage, the following flood resilience features will be applied:

- The proposed conversion will make use of non-return valves and other suitable devices to avoid the risk of backflow from sewers;
- Utility services such as fuse boxes, meters, main cables, gas pipes, phone lines and sockets will be positioned as high as practicable;
- Kitchen units will be made of solid, water resistant materials;
- Airbricks at lower level will have automatic closures to stop water from coming in. Suitable product called Anti-flood Airbrick, which is BSI and PAS certified.
- Where applicable, water-resistant render will be applied to all concrete features;
- A chemically injected damp proof course will be inserted at the base of existing external walls to avoid rising damp;
- The internal finish floor level will be higher than the external floor level (the existing internal FFL is already 320mm higher than the natural external FFL);

- The use of MDF carpentry (i.e. skirting, architrave etc.) will be avoided;

#### 4.5 What is a Surface Water Management Plan?

Surface Water Management Plans (SWMPs for short) identify various flood risks and outline the preferred strategy to mitigate these risks. The plans include a detailed long-term co-ordinated action plan to influence planning, investments, maintenance and community engagement.

SWMPs help identify Critical Drainage Areas (CDAs).

What are the benefits of SWMPs?

- helps to meet the requirements of the Water Framework Directive and Flood Risk Regulation 2009
- Increased understanding of the causes, probability and consequences of surface water flooding;
- Increased understanding of where surface water flooding will occur which can be used to inform spatial and emergency planning functions;
- A co-ordinated action plan, agreed by all partners
- Identifying opportunities where SuDS can play a more significant role in managing surface water flood risk;
- Increased awareness of the duties and responsibilities for managing flood risk of different partners and stakeholders;
- Improved public engagement and understanding of surface water flooding.

#### **South Essex**

The South Essex SWMP spans the administrative areas of Basildon, Castle Point and Rochford District Councils. The study area is ranked highest within the county in terms of properties at risk of surface water flooding and is also recognised nationally as a Flood Risk Area (FRA) by the Environment Agency.

Canvey Island is located within the study area and is an FRA in its own right. This is due to the nature of flood risk, arising from multiple flooding sources and complex asset maintenance requirements.

There are multiple and interlinked sources of flooding across the three administrative areas, which require a holistic approach to management. Some primary mechanisms of flooding identified, include river valleys (i.e. The River Crouch, Nevendon Brook, North Benfleet Brook, Basildon Brook, Prittle Brook, Rawreth Brook and the River Roach.), low lying areas, railway embankments and cuttings, topographical low points and local drainage network capacity.

### Map of South Essex Study Area



The SWMP shows that the site is not located within a critical drainage area. In addition, it demonstrates that it has not been flagged to have any risk of flooding from surface water.

## 5.0 CANVEY ISLAND FUTURE FLOOD DEFENCE WORKS

### 5.1 Environment Agency has begun work to renew flood defence revetment with improvements to the seafront and shoreline.

The Environment Agency is set to begin a £75 million project to keep homes and businesses in Canvey Island protected from flooding. Much of Canvey Island lies below the daily high-water level in the Thames Estuary. The tidal defences play a critical role in reducing the risk of flooding to people, property and infrastructure on the island.

**A 3 kilometre stretch of the island's existing tidal flood defence revetment will be renewed on its southern shoreline between Thorney Bay and the Island Yacht Club. Sections of the current revetment over the project area date back to the 1930s and need replacing.**

**Once completed the island's tidal defences will continue to provide protection for 6,097 properties on the island for another 50 years. The works will also take into account the effects of rising sea levels due to climate change.**

As well as refurbishing the existing tidal defences, additional enhancements will be made to the Canvey Island shoreline. These will include improved public access along the seaward walkway.

New steps to the beach and foreshore as well as project information boards will be installed. The surface of the pathway along the landward side of the seawall between Thorney Bay and Chapman Sands will also be improved.

Flowering grass seed mixes will be planted. This is to improve biodiversity on the defence and rock pools will be created to boost habitat in select locations along the foreshore.

The works are part of the Thames Estuary Asset Management (TEAM) 2100 Programme. This is a 10 year capital investment programme to refurbish and improve existing tidal flood defences. As the single largest flood risk management programme in the UK, the TEAM 2100 Programme is refurbishing, repairing and replacing defences in the Thames Estuary where required.



*A concept sketch of what the proposed works to renew erosion protection on the seaward side of the existing tidal defences will look like once complete*

James Mason, Operations Manager for the Environment Agency, said:  
*“This project is essential to managing the risk of flooding for thousands of people, homes and businesses on Canvey Island.*

*The existing revetment along the southern shoreline is starting to reach the end of its useful life. This investment in Canvey Island’s tidal defences will ensure they continue to benefit the community on Canvey Island to 2070.*

*We are already seeing the impacts of climate change in the UK. Which is why schemes such as this are needed.*

*Everyone should know their flood risk and sign up for free flood warnings by going to <https://www.gov.uk/check-flood-risk> or calling Floodline on 0345 988 1188. You can also follow @EnvAgency on Twitter for the latest flood updates.”*

Contractors working on behalf of the Environment Agency will begin setting up site from January with work beginning on the tidal defences from late March. The project is expected to take until summer 2025 to complete.

*\*Source: <https://www.gov.uk/government/news/canvey-island-flood-defence-work-to-begin>*

## 6.0 CONCLUSION

- 6.1 Based on the above, we consider that the proposed development meets the requirements of the NPPF, local plan and advice provided by the Environmental Agency.

## APPENDIX A



# Flood map for planning

Your reference  
<Unspecified>

Location (easting/northing)  
578067/183261

Created  
16 Dec 2023 16:52

**Your selected location is in flood zone 3  
– an area with a high probability of flooding.**

## This means:

- you may need to complete a flood risk assessment for development in this area
- you should ask the Environment Agency about the level of flood protection at your location and request a Flood Defence Breach Hazard Map (You can email the Environment Agency at: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk))
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (find out more at [www.gov.uk/guidance/flood-risk-assessment-standing-advice](http://www.gov.uk/guidance/flood-risk-assessment-standing-advice))

## Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



# Flood map for planning

Your reference  
<Unspecified>

Location (easting/northing)  
578067/183261

Scale  
1:2500

Created  
16 Dec 2023 16:52

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

