Essex County Council | Environment and Climate Action

Tendring District Council

Strategic Flood Risk Assessment

Tendring District Council Local Plan

July 2026

Version Control

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Glossary of Acronyms

Annual Exceedance Probability	AEP	Annual Exceedance Probability (AEP) The probability of a rainfall or flood event occurring in a given year. A 1% AEP event is likely to occur on average once every 100 years.
Biodiversity Net Gain	BNG	Biodiversity Net Gain (BNG) is a development approach that requires projects to deliver a measurable 10% improvement for biodiversity.
Climate Change Risk Assessment	CCRA	Climate Change Risk Assessment (CCRA) required by the Climate Change Act, the Government must produce an updated CCRA every 5 years to evaluate the risks to the UK from current and predicted changes in climate.
Critical Drainage Area	CDA	Critical Drainage Area (CDA) is a smaller catchment area identified within a wider Surface Water Management Plan (SWMP) study area as being at higher risk of surface water flooding.
Catchment Flood Management Plan	CFMP	Catchment Flood Management Plan (CFMP) is a strategic plan produced by the EA to develop complementary policies for the long-term management of flood risk within a river catchment area over the next 50 years taking into account the likely impacts of changes in climate, the effects of land use and land management, and to seek to identify multiple benefits and to contribute overall towards sustainable development.
Environment Agency	EA	The Environment Agency (EA) is an authority responsible for managing the risk of flooding from main rivers and the sea.
Essex SuDS Design Guide	ESDG	Essex SuDS Design Guide (ESDG) was produced by the Essex County Councils LLFA. It was produced to highlight the standards and expectations in regard to surface water drainage schemes for all new developments in Essex. It is referred to when the LLFA review surface water drainage schemes.
Flood Risk Assessment	FRA	Flood Risk Assessments (FRA) are reports evidencing and highlighting the different types of flood risk associated with a specific site. They also can be accompanied by mitigation proposals if associated with a development.
Flood and Coastal Erosion Risk Management	FCERM	Flood and Coastal Erosion Risk Management (FCERM) is the term for activities and actions undertaken by RMA's to reduce flood risk and coastal erosion.
Flood Risk Management Plan	FRMP	Flood Risk Management Plan (FRMP) explain the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs and set out how Risk Management Authorities will manage them over the next 6 years. They are a requirement of the EU Floods Directive 2007 and cover river basin districts.
Flood and Water Management Act 2010	FAWMA	The Flood and Water Management Act 2010 (FAWMA) that implemented the recommendations of the Pitt Review 2008 and created Lead Local Flood Authorities.

Green Infrastructure	GI	Green Infrastructure (GI) is a network of multi-functional green space and other green features, urban and rural, which can deliver quality of life and environmental benefits for communities.
Ground Investigations	GIs	Ground Investigations (GIs) include investigations such as soil type and makeup, ground water monitoring, stability investigations, infiltration testing and soil contamination investigations.
Greenfield Runoff Rate	GRR	Greenfield Runoff Rate (GRR) is the peak rate of runoff from a given area of land for a specified return period rainfall event. It is used to determine the rate that flow from a new development should be restricted to.
Groundwater Sources Protection Zones	GSPZ	Groundwater Protection Zones (SPZs) are designated areas around drinking water sources (wells, boreholes, springs) that identify risks of pollution
Local Plan	LP	A Local Plan (LP) is a document prepared by a local planning authority (like a council) that sets out a vision and policies for the future development of an area.
Local Development Plan	LDP	The Local Development Plan (LDP) is a plan for the future development of the local area, drawn up by the Local Planning Authority. It guides decisions on whether or not planning applications can be granted. In law it is described as the development plan documents adopted under the Planning and Compulsory Purchase Act 2004. A Local Plan can consist of one or more documents.
Local Flood Risk	LFR	Local Flood Risk (LFR) is the risk of flooding from ordinary watercourses, surface water and groundwater, as defined by the Flood and Water Management Act 2010. Strategic management of Local Flood Risk lies with the LLFA.
Local Flood Risk Management Strategy	LFRMS	A Local Flood Risk Management Strategy (LFRMS) is a strategic document produced by a LLFA as a requirement of the Flood and Water Management Act 2010. It sets out how local flood risk will be managed.
Lead Local Flood Authority	LLFA	A Lead Local Flood Authority (LLFA) is a unity authority or county council with responsibility for managing local flood risk.
Local Nature Recovery Strategy	LNRS	Local Nature Recovery Strategy (LNRS) are statutory plans designed to identify priorities and opportunities for nature recovery within a specific area. They provide a spatial framework that maps existing habitats, highlights areas for restoration or enhancement, and sets out actions to improve biodiversity. LNRSs aim to create a connected, resilient natural environment by guiding investment and collaboration between local authorities, landowners, and communities, supporting national biodiversity targets and climate adaptation goals.
Local Planning Authority	LPA	Local Planning Authority (LPA) are a unitary authority or district council whose duty it is to carry out specific planning functions (producing Local Plans and determining planning applications) for a particular geographical area.

National Flood and Coastal Erosion Risk Management Strategy	NFCERMS	National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) is a strategy produced by the EA as a requirement of the **Flood and Water Management Act 2010**. It sets out the overarching framework for future action by all risk management authorities to tackle flooding and coastal erosion in England, embedding localism at the heart of the strategy.
National Planning Policy Framework	NPPF	**The National Planning Policy Framework (NPPF)** sets out the UK government's current planning policies for England and how they are to be implemented by Local Planning Authorities.
National Planning Policy for Waste	NPPW	**The National Planning Policy for Waste (NPPW)** sets out the UK governments current waste planning policies for England and how they are to be implemented by minerals planning authorities.
Planning Practice Guidance	PPG	**Planning Practice Guidance (PPG)**, which exists online to provide guidance that supports the NPPF.
Risk Management Authority	RMA	Risk Management Authority (RMA) is any authority with a responsibility for managing flood or coastal erosion risks.
Risk of Flooding from Surface Water	RoFSW	Risk of Flooding from Surface Water (RoFSW) is the latest Environment Agency digital mapping showing the risks of flooding from surface water. These are split into three layers showing the 3.33%AEP, 1%AEP and 0.1% AEP events.
Sustainable Drainage	SuDS	**Sustainable Drainage (SuDS)** are drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes and sewers. SuDS are designed to manage stormwater locally, to mimic natural drainage and encourage infiltration, attenuation, and passive treatment.
Strategic Flood Risk Assessment	SFRA	Strategic Flood Risk Assessment (SFRA) is a study assessing the flood risk from all types of flooding within a Local Planning Authorities administrative area, taking into account predicted changes in the climate. It guides LPAs in applying the sequential and exception tests required by the NPPF. These tests seek to guide new development to the area of lowest flood risk and, if, following the application of the Sequential Test, development has no alternative other than to go ahead in areas of higher flood risk, then the SFRA provides advice on how to manage that risk.
Surface Water Management Plan	SWMP	A Surface Water Management Plan (SWMP) is a district wide study into surface water flood risk which identifies **Critical Drainage Areas (CDAs)** that are considered for receipt of a flood alleviation scheme.
Shoreline Management Plan	SMP	A Shoreline Management Plan (SMP) is a strategic document that sets out policies to assist decision-making on flooding from the sea and coastal erosion risk management over the next 20, 50 and 100 years.
Water Framework Directive	WFD	The Water Framework Directive (WFD) is a national strategy which assesses the condition of waterbodies and aims to improve those conditions.

[End of Glossary of Acronyms]

Foreword:

This Strategic Flood Risk Assessment (SFRA) has been prepared by Essex County Council (ECC) to provide Tendring District Council (TDC) with robust evidence base for managing flood risk in accordance with its statutory responsibilities as a Local Planning Authority (LPA). The SFRA is a key component of the planning process, ensuring that development within the district is sustainable, resilient, and aligned with national policy requirements under the National Planning Policy Framework (NPPF).

An SFRA is a strategic study that assesses flood risk from all sources fluvial, tidal, surface water, groundwater, and reservoirs across the entire administrative area. It incorporates the latest climate change allowances and flood modelling data to inform spatial planning decisions. By identifying areas at risk and evaluating potential impacts, the SFRA enables the Council to apply the **Sequential Test** and, where necessary, the **Exception Test**, steering development towards areas of lowest flood risk and ensuring that any development in higher-risk locations is safe for its lifetime without increasing risk elsewhere.

This document is intended to support strategic planning and decision-making by:

- Providing comprehensive flood risk information for Tendring District Council's Local Plan.
- Guiding the allocation of sites through the application of the Sequential and Exception Tests.
- Informing site-specific Flood Risk Assessments (FRAs) and mitigation strategies.
- Promoting sustainable drainage and climate adaptation measures in line with national and local policy.

By integrating flood risk considerations into the planning process, the SFRA helps Tendring District Council deliver development that is safe, sustainable, and capable of adapting to future climate challenges, while also supporting wider objectives such as biodiversity enhancement, green infrastructure (GI), and community resilience.

[End of Foreword]

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Executive Summary:

This Strategic Flood Risk Assessment (SFRA) outlines flood risk within the Tendring District administrative area, Essex to support the Local Plan (LP) development and aid with future planning and development decisions. This document includes site-specific information for 62 preferred option sites, as provided for assessment by Tendring District Council (TDC).

The National Assessment of Flood Risk 2024[1] undertaken by the Environment Agency (EA) ranked the East of England as one of the regions with a significant number of properties in areas at high risk from surface water and properties at risk from coastal erosion.

This Tendring SFRA is designed to replace existing Level 1 SFRAs. This replacement is required to ensure the Council has robust and current evidence base when making future development decisions and strategies for their LP.

The assessment outlines flood risks from all sources to allow strategic planning and ensure future development within the 62 sites meet NPPF flooding and drainage requirements. As such it requires sustainable development to mitigate flood risks, whilst encouraging wider socio-environmental benefits in relation to public health, GI, local nature recovery, biodiversity and multifunctionality.

National and local level planning policies have been reviewed, as well as relevant strategic and supplementary planning documents, to ensure a holistic approach is applied to mitigating against flood risk whilst also encouraging new developments where possible within the Tendring District.

The sites provided by TDC have been assessed using existing surface water, fluvial and coastal flood modelling, from the EA's NaFRA2 mapping. This mapping data has been used to review and help assess the on-site flood risk as well as the intrusion into sites of floodwater from surface water, fluvial, river and sea, and reservoirs. Further to this, the sites within this SFRA have been identified for potential future development and therefore within this report have been assessed individually for their flood risk.

[End of Executive Summary]

[1] **National Assessment of Flood Risk 2024 |** https://www.gov.uk/government/publications/national-assessment-of-flood-and-coastal-erosion-risk-in-england-2024

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1.0 Introduction:

1.1 Report Purpose:

This SFRA outlines flood risk from all sources across the Tendring District administrative area, providing site-specific risk assessment for the 62 preferred option sites. The most current flood modelling data has been reviewed to ensure the latest information is available for both strategic planning policy decisions and assessment of individual applications.

It summarises documentation and policies regarding planning and flood risk mitigation to highlight information relevant to future development within the area. This assessment should not be used as a tool to prevent development in the area, but to ensure that any development is properly mitigated against flood risk and that maximum benefit to the local area is achieved.

A review and assessment have been undertaken of the existing modelling and other flood risk information to summarise flood risks in the area. This review then leads to the production of recommendations in line with local, regional, and national planning policies to ensure robust and SuDS plans and flood mitigation plans can be produced and to ensure that development is located in the most appropriate locations.

1.2 Scope and Limitation:

An SFRA provides a strategic-level understanding of flood risk across a local planning authority area. Its scope includes assessing risk from all sources of flooding, the cumulative impact of development, and the effects of climate change. It identifies opportunities to reduce flood risk, highlights land needed for current or future flood management infrastructure, and supports decisions on the location and design of development, flood risk management features, and wider planning policy;

- Flood risk from main rivers, other rivers and streams, surface water, groundwater the sea, reservoirs, and sewers all including the impacts of climate change.
- The impact that land use changes and development in an area will have on wider flood risk.

The SFRA informs a wide range of planning processes, including the Local Plan, sequential and exception tests, site allocations, infrastructure planning, SuDS strategies, emergency planning, and adaptation to climate change. It is used by numerous stakeholders' developers, flood risk consultants, the Environment Agency, emergency services, and other council departments to guide site-specific flood risk assessments, identify where development can be made safe, and ensure that proposed development does not increase risk elsewhere. It also supports cross-boundary coordination and contributes to broader strategies such as shoreline management plans, green infrastructure strategies, and minerals and waste plans.

However, an SFRA has limitations. It is a strategic evidence base, not a detailed site-specific study, and cannot replace the need for site-specific Flood Risk Assessments where required. It relies on available datasets and modelling, which may vary in accuracy, resolution, or completeness, and cannot fully predict future changes in flood behaviour or land use. While it helps identify risk and opportunities, it does not design mitigation measures, guarantee the

safety of individual developments, or eliminate uncertainty, particularly regarding future climate impacts. Instead, it provides a framework to guide planning decisions and further detailed analysis.

The 62 sites have been subjected to a full GIS (mapping software) assessment of flood risk. The Sequential test has been applied to all sites, with Exception Tests also undertaken on those interacting with Flood Zones 2 and 3.

An SFRA is also used as part of a wider flood risk evidence base during the assessment and determination of all planning applications. The latest fluvial and surface water flood risk mapping is included in this report.

1.3 SFRA Outputs:

Tendring District Council (TDC) is in the process of producing an updated LP in order to meet its obligations as a LPA.

The LP forms part of the Statutory Development Plan for Tendring which delivers the spatial planning strategy for the area. Each Plan, including the LP, has to undergo a Sustainability Appraisal (SA) which assists TDC in ensuring their policies fulfil the principles of sustainability. The SFRA is one of the documents to be used as the evidence base for planning decisions and forms a component of the SA process.

This SFRA incorporates changes to planning policy and climate change allowances since the last update, as well as up to date flood risk information published by the EA.

References to new legislation, policies and strategies emerging during this period and relevant to the study area, such as the Flood and Water Management Act 2010 (FAWMA), have been incorporated into this SFRA where appropriate.

1.4 Definition of Event Frequencies:

Rainfall and flood events are defined based on the frequency at which they are predicted to occur. Historically this has been expressed as a return period with a form of 1 in x; so, a 1 in 20-year storm is likely to occur on average once every 20 years, and a 1 in 100-year storm on average once every 100 years.

To reduce confusion this has subsequently been redefined to become Annual Exceedance Probability (AEP) by the EA. This method details the probability of an event happening each year as a percentage, with a 1 in 20-year storm becoming a 5% AEP event and a 1 in 100-year storm a 1% AEP event. Thus, events with a higher likelihood of happening have correspondingly higher AEP numbers.

It should be noted that the AEP of an event is linked to the flood risk source, with surface water flooding AEP determined by the likelihood of the rainfall event causing it, river flooding AEP determined by the flow within the channel, and coastal flooding AEP determined by the water level height above mean sea level. As such AEP of events from different sources are not directly comparable, with a 10% AEP surface water flooding event not being the same as a 10% AEP river flooding event.

This flood risk appraisal refers to flood risk in the form of AEP. All flood risk and rainfall probabilities should be expressed in this format to comply with EA best practice[2].

[End of Section 1.0]

[2] **Environment Agency Fluvial Design Guide (February 2021) |** Fluvial design guide - GOV.UK

2.0 Flood Risk Planning, Policy & Strategy:

2.1 Introduction:

The purpose of this section is to identify all high-level and strategic documents relating to planning and development within Tendring District, as well as any other specific documentation that should be considered when assessing flood risk.

Relevant aspects of each document are outlined to provide an overview of the requirements and policies that must be applied when assessing flood risk in relation to strategic or site-specific development decisions.

2.2 National Planning Policy Framework (NPPF) (updated 2024)[3]:

The NPPF sets out the Government's planning policies for England and details how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced. The NPPF states that when determining any planning application, Local Planning Authorities should ensure that flood risk is not increased on or off site.

Sub paragraph 170 states that 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.

Sub paragraph 171 states that strategic policies should be informed by a SFRA assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the EA and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.

The NPPF also stipulates that all plans should apply sequential testing to the location of development outlined in **sub paragraphs 172, 173, 174, 175, 178, 179, 180** NPPF document:

> **172. –** All plans should apply a sequential, risk-based approach to the location of development –considering all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:
>
> a) applying the sequential test and then, if necessary, the exception test as set out below;
>
> b) safeguarding land from development that is required, or likely to be required, for current or future flood management;
>
> c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding,

[3] **The National Policy Planning Framework |** National Planning Policy Framework

(making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and

d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

173. – A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in future from any form of flooding, by following the steps set out below.

174. – Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The SFRA will provide the basis for applying this test.

175. – The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific FRA demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).

178. – The application of the exception test should be informed by a strategic or site-specific FRA, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

179. – Both elements of the exception test should be satisfied for development to be allocated or permitted.

180. – Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.

Sub paragraph 181, footnote 63 of the NPPF states that any major developments, or any developments proposed in Flood Zones 2 or 3 (major or minor) are required to be accompanied by a site-specific FRA. Developments should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;

c) it incorporates Sustainable Drainage Systems (SuDS), 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.

Further to this, sub paragraph 182 explains that any major development should incorporate SuDS unless there is clear evidence that this would be inappropriate. The systems used should:

a) take account of advice from the Lead Local Flood Authority

b) have appropriate proposed minimum operational standards;

c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and

d) where possible, provide multifunctional benefits.

As well as mitigating against flood risk, the NPPF goes further to say in sub paragraph 187 (d, e, f) that planning policies and decisions should contribute to and enhance the natural and local environment by:

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, considering relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

2.3 Flood Risk and Coastal Change Planning Practice Guidance (PPG)[4]:

The Flood Risk and Coastal Change Planning Practice Guidance (PPG) supports the application of NPPF policies.

It advises users on how to take account of and address the risks associated with flooding and coastal change in the planning process. The section defines flood risk and how to address all sources of risk. It provides information on how flood risk should be taken into account in the preparation of LPs and what SFRAs should include.

It is managed by Department for Levelling Up, Housing and Communities and the Ministry of Housing, Communities & Local Government and they published refreshment to this guidance on the 25th of August 2022.

The updates included:

- adding further weight to the use of above ground, multifunctional SuDS on all new developments
- Greater focus has been given to surface water flood risk so it should be considered earlier and more holistically than before.
- For any planning application for major development where the LPA is minded to grant permission and the proposal is either within Flood Zones 2 or 3, or on land within Flood Zone 1 which has been notified to the LPA as having critical drainage problems; and is the subject of a sustained objection by the EA on flood-risk grounds, the LPA must follow the procedure provided for in the Town and Country Planning (Consultation) (England) Direction 2021. This means that the authority must refer the application to the Secretary of State for possible call-in.

2.4 Climate Change Allowance (2016)[5]:

The NPPF (2021) requires climate change allowances to be included as part of any FRA to ensure future development is both, resilient and sustainable[6].

Climate change allowances are predictions of anticipated change for:

- peak river flow
- peak rainfall intensity
- sea level rise

[4] **Flood Risk and Coastal Change Planning Practice Guidance (PPG) |** Flood risk and coastal change - GOV.UK

[5] **Flood Risk Assessments: Climate Change Allowances |** Flood risk assessments: climate change allowances - GOV.UK

[6] **National Planning Policy Framework (July 2021) Section 14 |** National Planning Policy Framework

2.4.1 – Surface Water Climate Change Allowances:

Surface water climate change allowances apply to peak rainfall intensity and the subsequent surface water flooding that the storms cause.

For new developments, the Peak Rainfall Allowances map[7] should be used and shows anticipated changes in peak rainfall intensity.

The EA states that peak rainfall allowances should be used for site-scale applications (for example, drainage design), and for surface water flood mapping in small catchments (less than 5 square kilometres) and urbanised drainage catchments. From here the development lifetime guidance should be used to work out the lifetime of your development.

For development with a lifetime beyond 2100 (all residential), FRAs and SFRA's should assess the upper end allowances. This must be done for both the 1% and 3.3% AEP events for the 2070s epoch (2061 to 2125). Any development should be designed so that for the upper end allowance in the 1% AEP event:

- there is no increase in flood risk elsewhere
- the development will be safe from surface water flooding

For development with a lifetime between 2061 and 2100, the same approach should be taken but the central allowance should be used for the 2070s epoch (2061 to 2125).

For development with a lifetime up to 2060, the same approach should be taken but the central allowance should be used for the 2050s epoch (2022 to 2060).

It is recommended that the LLFA or the EA be consulted where there is uncertainty over which allowance should be used.

For Tendring District, the following peak rainfall allowances should be used:

3.3% Annual Exceedance Rainfall Event		
Epoch	Central Allowance	Upper End Allowance
2050s	20%	35%
2070s	20%	35%

Table 2.4.1 | Surface Water Climate Change Allowance 3.3% Annual Exceedance Rainfall Event

1% Annual Exceedance Rainfall Event		
Epoch	Central Allowance	Upper End Allowance
2050s	20%	45%
2070s	25%	40%

Table 2.4.2 | Surface Water Climate Change Allowance 1% Annual Exceedance Rainfall Event

[7] **Peak Rain Fall Allowance Map |** Climate change allowances for peak rainfall

2.4.2 – Fluvial Climate Change Allowances:

Peak river flow allowances show the anticipated changes to peak flow by management catchment. Management catchments are sub-catchments of river basin districts.

For FRAs and SFRAs, the EA, as a statutory consultee, uses the management catchment climate change allowances from the peak river flow map as benchmarks. For Tendring, this can be seen in **[Table 2.4.3]**.

For SFRAs, it is recommended that both the central and higher central allowances are assessed.

The EA state that you should apply the peak river flow allowances to developments and allocations where a SFRA shows an increased risk of flooding in the future. This includes locations that are currently in flood zone 1 but might be in flood zone 2 or 3 in the future.

Combined Essex Management Catchment Peak River Flow Allowances			
Epoch	Central	Higher	Upper
2020s	7%	13%	27%
2050s	8%	16%	37%
2080s	25%	38%	72%

Table 2.4.3 | Combined Essex Management Catchment Peak River Flow Allowances

2.4.3 – Sea Level Climate Change Allowances:

There are a range of allowances for each River Basin District and epoch for sea level rise. Tendring is within the Anglian River Basin District. The allowances are set out in **Table 2.4.4** and are based on percentiles.

The higher central allowance is based on the 70th percentile and the upper end allowance is based on the 95th percentile.

An allowance based on the 70th percentile is exceeded by 30% of the projections in the range. At the 95th percentile it is exceeded by 5% of the projections in the range.

For FRAs and SFRAs it is recommended that both the higher central and upper end allowances are assessed.

The EA will also want to see whether it is appropriate to apply the H++ allowances for FRAs or SFRAs. Where applicable (generally only applied to applications for Nationally significant infrastructure projects, new settlements or significant urban extension), H++ allowance assessments should be done as well as assessing the sea level rise allowances in **Table 2.4.4**.

For the change to relative mean sea level use the H++ scenario of 1.9m for the total sea level rise to 2100.

Region	Allowance	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (m)
Anglian	Higher Central	5.8 (203)	8.7 (261)	11.6 (348)	13 (390)	1.20
Anglian	Upper End	7 (245)	11.3 (339)	15.8 (474)	18.1 (543)	1.60

Table 2.4.4 | Annual Sea Level Climate Change Allowance for Anglian River Basin District

2.4.4 – Coastal Erosion Risks:

The EA expects sea level rise to increase the rate of coastal erosion. The coastal erosion risk maps[8] should be used to plan for any changes in the position of the coastline, together with any designated coastal change management areas and relevant policies in LPs.

Coastal erosion risk maps are based on the best available data. They show the shoreline management plans (SMP) for each stretch of coast and erosion predictions where there is no policy to maintain defences.

2.4.5 – Essex and South Suffolk Shoreline Management Plans:

The Essex and South Suffolk SMP[9] is split into 10 areas. Their boundaries have been set based on analysis of coastal processes and the character of the shoreline.

Tendring has 4 SMP areas on the perimeter of its district boundary, which are labelled below:

- A – Stour and Orwell Estuaries
- B – Hamford Water
- C – Tendring Peninsula
- D – Colne Estuary

The outcomes of the SMP are to develop an 'intent of management' for the shoreline that achieves the best possible and achievable balance of all the values and features around the shoreline for the coming 100 years. These are categorised into 4 policy labels;

- **Hold the line (HtL);** Maintaining the defences in their current physical position. No detail is given on the specific standard of protection.
- **Advance the line (AtL);** Building new defences seawards of the existing defence line.
- **Managed realignment (MR);** Allowing or enabling the shoreline to move, with associated management to control or limit the effect on land use and environment.

[8] **Coastal Erosion Risk Map |** https://environment.data.gov.uk/shoreline-planning/coastal-erosion

[9] **Essex and South Suffolk Shoreline Management Plan |** Essex and South Suffolk SMP8 | Shoreline Management Plans

This can take various forms, all characterised by managing change, either technically, for land use or for the environment. This is divided into 2 measures as detailed below.

- **No active intervention (NaI);** No further investment in coastal defences or operations.

Further subdivisions of managed retreat exist, and indications are given as to whether the standard of protection should be improved;

- **HtL+, AtL+, MR+;** Maintain or upgrade the standard of protection, including considering the impacts of climate change.
- **MR1;** Allow local and limited intervention to limit the risks of erosion as long as negative impacts are minimised. This may involve small scale works. And
- **MR2;** Breach of the frontline defence after building any necessary new landward defence line and counter walls to limit flooding to adjacent areas.

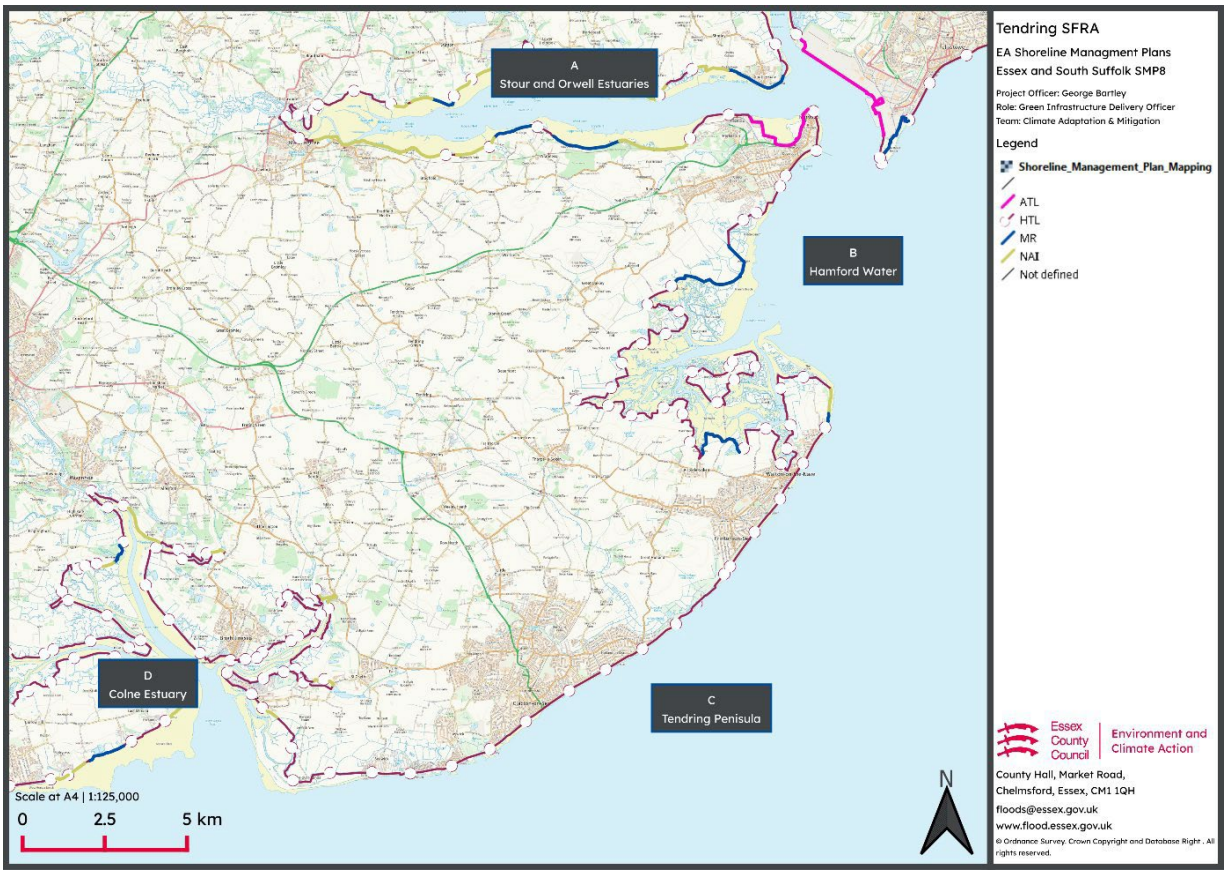


Figure 2.4.5 | Essex and South Suffolk Shoreline Management Plan [UK Government, OS, QGIS]

2.5 Flood and Water Management Act (2010):

The 2008 Pitt Review[10] investigated the severe flooding across England and Wales in the summer of 2007 and identified a number of measures and changes to the way organisations in the UK adapt and react to the increased risk of flooding.

[10] **The Pitts Review |** [ARCHIVED CONTENT] Final Report

The Flood and Water Management Act of 2010[11] (FWMA) enacts the recommendations of the Pitt Review and designated County Councils and Unitary Authorities as Lead Local Flood Authorities (LLFA's). As LLFA for Essex, ECC has responsibility to lead and co-ordinate local flood risk management; defined as the risk of flooding from surface water (RoFSW), groundwater and ordinary watercourses.

Section 9 of the Act requires LLFAs to produce a Local Flood Risk Management Strategy (LFRMS) to set out a county-wide approach to the management of local flood risk. Further information on this can be found in **[Section 2.10]**.

The FWMA proposed the establishment of SuDS Approval Boards within LLFAs to assess SuDS within planning applications and manage adoption and maintenance. Following consultation this has not yet been enacted, and the implementation and delivery of SuDS is presently achieved through the planning process.

In April 2015 LLFAs became statutory consultees on surface water drainage and SuDS for all major planning applications. ECC has produced a SuDS Design Guide[12] to demonstrate how new developments can accommodate SuDS, the standards expected of them, so they are suitable for approval in the county of Essex and provide advice on maintenance.

The Act also changed and formalised the activities of other flood risk management authorities. The responsibility to lead and co-ordinate the management of flooding from Main Rivers and the sea remains with the EA

2.6 National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) (2020)[13]

The FWMA places a statutory duty on the EA to develop a National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England. This strategy describes what needs to be done by all risk management authorities (RMAs) involved in FCERM for the benefit of people and places. This includes:

- the Environment Agency
- lead local flood authorities
- district councils
- internal drainage boards
- highways authorities
- water and sewerage companies

They must exercise their FCERM activities, including plans and strategies, consistently with the strategy.

[11] **Flood and Water Management Act 2010 |** Flood and Water Management Act 2010

[12] **Essex SuDS Design Guide 2020 |** suds | Essex Design Guide

[13] **National Flood and Coastal Erosion Risk Management Strategy for England |** National Flood and Coastal Erosion Risk Management Strategy for England - GOV.UK

The strategy provides a framework for guiding the operational activities and decision making of practitioners. It supports the direction set by government policy which includes its FCERM policy statement[14] The strategy sets out the long-term delivery objectives the nation should take over the next 10 to 30 years. It also includes shorter term; practical measures RMAs should take working with partners and communities.

This strategy's long-term vision is for a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100.

It has 3 long-term ambitions, underpinned by evidence about future risk and investment needs. They are:

- climate resilient places: working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change.
- today's growth and infrastructure resilient in tomorrow's climate: making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as infrastructure resilient to flooding and coastal change.
- a nation ready to respond and adapt to flooding and coastal change: ensuring local people understand their risk to flooding and coastal change and know their responsibilities and how to act.

2.7 North Essex Catchment Flood Management Plans (CFMPs) (2009)[15] :

A Catchment Flood Management Plan (CFMP) is a high-level strategic document produced by the EA to provide an overview of the main sources of flood risk and recommend measures to mitigate this over the subsequent 50 to 100 years.

CFMP's are used to inform local planning policy and support the implementation of Water Framework Directive objectives. Policies are outlined based on levels of flood risk and future management intentions.

Due to its location Tendring District falls within the North Essex CFMP.

The catchments are assigned one of six policies detailing the preferred approach to managing flood risk. These are;

Policy 1: Areas of little or no flood risk where the EA will continue to monitor and advise.

Policy 2: Areas of low to moderate flood risk where RMAs can reduce existing flood risk management actions.

Policy 3: Areas of low to moderate flood risk where RMAs are generally managing existing flood risk effectively.

[14] **FCERM Policy Statement (Defra, 2020) |** https://www.gov.uk/government/publications/flood-and-coastal-erosion-risk-management-policy-statement

[15] **Anglian River Basin District Flood Risk Management Plan |** Catchment flood management plans - GOV.UK

Policy 4: Areas of low, moderate or high flood risk where RMAs are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.

Policy 5: Areas of moderate to high flood risk where RMAs can generally take further action to reduce flood risk.

Policy 6: Areas of low to moderate flood risk where RMAs will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits.

Within the North Essex CFMP, Tendring District falls within Sub-area 8 Harwich and Clacton-on-Sea. The preferred policy for this sub-area is Policy 3, and the following key messages are provided:

- The current level of flood risk management should be continued.
- Continue current flood risk management activities.

2.8 Flood Risk Management Plans (FRMPs) (2021-2027)[16]:

Flood risk management plans (FRMPs) set out how organisations, stakeholders and communities will work together to manage flood risk in England.

FRMPs explain the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs and are a requirement of the Flood Risk Regulations 2009 **[Section 2.18]**. They set out how Risk Management Authorities (RMA's) will manage flood and coastal erosion risks and should be used in conjunction with River Basin Management Plans.

FRMP's align with the EA River Basin Districts and as such Tendring District is covered by the Anglian FRMPs.

2.8.1 – Anglian River Basin District Flood Risk Management Plan (2021-2027)[17]:

River basin management plans (RBMPs) aim to enhance nature and the natural water assets that are the foundation of everyone's wealth, health and wellbeing. The plans summarise measures that will help nature to recover and adapt to future climate impacts.

The updated RBMPs[18] set out the environmental objectives for the water environment and a high-level summary of the measures needed to achieve those objectives. The plans summarise billions of pounds that will be invested in the water environment to 2027.

The Anglian River Basin District (RBD) covers 27,900km2. It extends from Lincolnshire in the north to Essex in the south and from Northamptonshire in the west to the east coast of Norfolk, Suffolk, and Essex. The Anglian RBD includes the Tendring area.

Within the Anglian RBD there are:

[16] **Flood Risk Management Plans 2021-2027 |** https://www.gov.uk/government/collections/flood-risk-management-plans-2021-to-2027

[17] **Anglian River Basin District FRMPs 2021-2027 |** Anglian river basin district flood risk management plan - GOV.UK

[18] **River Basin Management Plans Updated 2022 |** https://www.gov.uk/guidance/river-basin-management-plans-updated-2022

- 16 Flood Risk Areas for significant risk of flooding from main rivers and the sea.
- 12 Flood Risk Areas for significant risk of flooding from surface water.

The Tendring District does not sit within any of the above Flood Risk Areas.

2.9 Environment Act (2021)[19]:

The Environment Bill was passed in November 2021 to become the Environment Act and is now in force. It should therefore be considered as part of any new development being designed. The main aim of the legislation is to stop the decline in species by 2030.

This Act will help tackle biodiversity and climate change. This legislation requires new developments to provide 10% BNG. Local legislation may ask for greater than 10% improvement however this is the minimum national standard. This improvement should be delivered on site wherever possible in this first instance however if this is demonstrated this is not possible there is scope to deliver this in a suitable off-site location.

2.10 Essex Local Flood Risk Management Strategy (2018)[20]:

The Local Flood Risk Management Strategy (LFRMS) sets out a county-wide approach to the management of local flood risk, defined as the RoFSW, groundwater, and ordinary watercourses.

An outcome of the LFRMS is the production of Surface Water Management Plans (SWMP's) which investigate local flood risk on smaller scales. This allows flooding processes to be better understood, highlighting potential mitigation measures and opportunities for joint working with partner Risk Management Authorities (RMA's).

SWMP's identify Critical Drainage Areas (CDA's), which are sub-catchments within the wider SWMP study area at higher risk of surface water flooding. In Essex these are prioritised county-wide based on a range of factors to determine which are taken forward for further analysis and the potential provision of flood alleviation schemes.

In Essex 12 SWMP's have been completed and a review was undertaken in 2019 to update and standardise all underlying hydraulic modelling.

It should be noted that for Essex, SWMPs contain more localised information and detail than FRMPs.

More information on Tendring District and SWMPs can be found in **[Section 3.6]**.

2.11 Essex SuDS Design Guide (updated 2020)[21]:

In April 2015, as the Lead Local Flood Authority (LLFA) for Essex, Essex County Council (ECC) became a statutory consultee for surface water drainage on all major developments. ECC also comment on minor applications and discharge of conditions applications through Service Level Agreements with Local Planning Authorities.

[19] **The Environment Act 2021 |** Environment Act 2021

[20] **Essex Local Flood Risk Management Strategy 2018 |** essex-local-flood-risk-management-strategy.pdf

[21] **Essex SuDS Design Guide 2020 |** suds | Essex Design Guide

SuDS are a range of site-specific measures that mimic natural processes. They aim to manage rainwater run-off from site to reduce the quantity and improve the quality of water entering the downstream surface water networks. Whilst providing this function they can also deliver a multitude of further benefits, especially around enhancing biodiversity and amenity.

To aid the incorporation of well designed, beneficial SuDS into developments and to ensure developments meet the requirements of the NPPF, the Essex SuDS Design Guide (ESDG) was created. This guide provides comprehensive information on the planning, design, and delivery of attractive and high-quality schemes that offer multiple benefits to the environment and communities. The philosophy and concepts contained within the ESDG is based upon those within the CIRIA Manual C753[22]. The guide seeks to complement the CIRIA Manual, and both should be used when designing SuDS for any development.

The ESDG provides detailed information on the standards and delivery of SuDS required in Essex and it will form the basis for all responses to applications ECC are consulted on. It is strongly recommended that the guide be used at the earliest opportunity to avoid unnecessary delays to planning applications, ultimately saving time and money for developers and the LPA.

The ESDG highlights that the following drainage hierarchy should be followed:

a) Rainwater re-use (rainwater harvesting/greywater recycling)

b) An adequate soakaway or other infiltration system

c) Hybrid solution of infiltration and discharging to a surface water body

d) To a surface water body (e.g. an ordinary watercourse)

e) To a surface water sewer, highway drain, or other drainage system

f) To a combined sewer

Therefore, first and foremost, rainwater reuse should be considered, if this is not viable or is to be used partially then a detailed site investigation should be undertaken to determine the suitability of discharging to ground via infiltration. This should be based on detailed infiltration testing and ground water monitoring in line with BRE365[23] and the methods outlined in the CIRIA Manual C753[24].

For all cases where infiltration is not possible and a positive outfall is required, the ESDG specifies that all sites should limit discharge rates to the 100% AEP (1 in 1 year) greenfield rates for all storm events up to and including the 1% AEP (1 in 100 year) (plus climate change) storm event. Alternatively, matched discharge rates can be used with the inclusion of long-term storage.

For brownfield sites the ESDG states that discharge rates should at first be limited to the 100% AEP greenfield rate. Where this is proven not to be possible, discharge rates should be limited

[22] **The CIRIA SuDS Manual C753 |** https://www.ciria.org/ItemDetail?iProductCode=C753&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91

[23] **BRE365 (Soakaway Design) |** https://bregroup.com/web/bre-group/store/bookshop/soakaway-design-dg-365-2016-download?p_l_back_url=https%3A%2F%2Fbregroup.com%2F

[24] **The CIRIA SuDS Manual C753 |** https://www.ciria.org/ItemDetail?iProductCode=C753&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91

to as close as feasibly possible to the 100% AEP greenfield rate, with an absolute last resort being a 50% betterment on the 100% AEP brownfield rate.

For all sites, the ESDG asks that above ground green features are considered before proprietary devices. This is because they provide a large range of benefits such as enhancing biodiversity, amenity, surface water treatment, sustainability, and climate change mitigation.

One benefit which above ground green features can be very proficient at is the provision of interception storage. As stated in the ESDG, interception storage should be provided for the first 5mm of rainfall as much as possible in order to closely mimic greenfield scenarios. Interception and evaporation can account for 15-50% of yearly precipitation. Interception should be utilised to closely reflect the greenfield runoff behaviour, and to decrease the risk of pollution downstream further.

The ESDG also states that when providing storage not only does it need to be able to provide storage for all storm events up to and including the 1% AEP plus climate change storm event (plus a 10% urban creep allowance if it is residential) but it also needs the ability to cater for consecutive events. It should be shown that all storage features can half drain within 24 hours of a 3.33% AEP plus climate change storm event. Alternatively, it should be shown that all storage features have the capacity to store a 10% AEP storm event, 24 hours after a 3.33% AEP plus climate change storm event.

Another important feature in which the LLFA look for and in which the ESDG discusses, is the need for surface water treatment. It states that all surface water should be treated before leaving the site (and ideally before storage, in order to maintain capacities) in line with the Simple Index Approach found within the CIRIA Manual C753. If proprietary devices are proposed, then their mitigation indices should be provided along with detailed information about the device. This can be provided from the manufacturer.

The SuDS features and philosophies contained within the ESDG have heavily influenced the basis of this FRA to allow consistency with planning policies and ensure the appropriate consideration of SuDS for developments with Tendring.

2.11.1 – National Standard for Sustainable Drainage Systems (2025):

The National Standards for SuDS was published on 19th June 2025. These standards are intended for application in the design of surface water drainage systems for new infrastructure and development. There are 7 non-statutory standards that aim to make SuDS mandatory for major developments, ensuring they deliver multifunctional benefits such as improved water quality, habitat creation, biodiversity and amenity.

These 7 standards set the minimum design criteria that all surface water drainage systems should satisfy in relation to the design, maintenance and the operation of SuDS. The standards aim to create a consistent approach to surface water drainage system design, highlighting the importance of long-term performance and resilience of SuDS, for both Greenfield and/or Brownfield sites.

2.12 Essex Green Infrastructure Strategy (2020)[25]:

The Essex Green Infrastructure Strategy, steered by the Essex Green Infrastructure Partnership, describes the need for change in Essex and sets out a vision and objectives for the delivery of GI. This strategy provides a clear plan to guide the future planning and delivery of GI in Essex considering increased development and population growth.

The Green Infrastructure Strategy[26] has the following vision:

"We will protect, develop and enhance a high-quality connected GI network that extends from our city and town centres, and urban areas to the countryside and coast and which is self-sustaining and is designed for people and wildlife."

The Green Infrastructure Strategy aims to deliver its vision through the seven objectives below[27]:

- Protect existing green infrastructure, especially designed sites
- Improve existing infrastructure so it is better functioning for people and wildlife
- Create more high-quality multi-functional green infrastructure especially in areas of deficiency
- Improve the connectivity of green infrastructure for people and wildlife
- Increase use and inclusivity of green infrastructure across all user groups, social groups, and abilities
- Provide green infrastructure facilities to promote health and wellbeing
- Working with partners to build and secure funding, effective governance, and stewardship for new and existing green infrastructure to ensure their long-term sustainability.

If considered at an early stage, the viability of using green infrastructure is increased and the easier it is to benefit from its inclusion. For example:

- Green infrastructure can make construction easier and more cost effective whilst additionally providing higher returns on properties.
- Green infrastructure can be multifunctional such as flood attenuation through SuDS, biodiversity enhancement, aesthetic and amenity value, public open spaces, etc.
- Green infrastructure can be cheaper than installing conventional grey infrastructure structures such as pipes and tanks for flood management

[25] **Essex Green Infrastructure Strategy 2020 |** Essex Green Infrastructure Strategy (2020) | Essex Design Guide
[26] **Essex Green Infrastructure Strategy 2020 |** Section 3.1
[27] **Essex Green Infrastructure Strategy 2020 |** Section 3.2

Section 8.1.1[28] of the GI Strategy states that GI can be incorporated on any scale and should be integral to planning the layout and design of new buildings and developments from the outset.

It is a common perception that the requirements for development sites to protect and enhance biodiversity, protect local landscapes, provide for informal recreation, and facilitate SuDS, are all separate issues and therefore all incur additional costs. This is incorrect; by combining these aspects together and using a multi-functional approach, such as through the delivery of SuDS, developers can reduce their costs while at the same time delivering a high-quality development.

2.13 Essex Green Infrastructure Standards (2022)[29]:

The Essex Green Infrastructure Standards are guidance which provides support to professionals in the built environment, highways, health, and environment to deliver better GI. Essex's Nine GI standards have been developed to support policy and development management in the planning and delivery of multifunctional GI for placemaking and peacekeeping. These standards are written as a form of assessment criteria to enable policy and development management to go beyond the statutory requirements, to create great places for people and wildlife to thrive. The standards will help with policy and strategy writing, master-planning, design, and implementations of developments. They can be applied to GI projects and to the management and maintenance of GI.

This document brings together existing guidance, examples of good practices and information on how to meet the GI Standards. This will be laid out in the Essex Design Guide.

It is the intention of the Essex GI Standards Framework to embed GI within new developments, retrofitting into our towns, cities, and villages and for GI to become an integral part of the day-to-day considerations and decision making in other key sectors and services (i.e. health and wellbeing, highways etc.) to ensure that future planning, design, management, and maintenance is coherent, structured, and focused.

ECC's GI team will apply the Essex GI Principles and Standards to consultations. These standards can be applied to major developments as outlined in the NPPF. Conclusions drawn will inform the responses to planning policy and application consultations.

This approach to GI design, planning and delivery will be promoted where possible and will be the foundation of comments. It is recommended that the principles and standards are applied as early as possible at the design and feasibility stage of policy development and for strategic documents/plans, developments, or projects.

[Table 2.13] defines the 9 GI principles which are the core components needed for delivering better placemaking and place-keeping.

In relation to this SFRA for Tendring, Principles and Standards 3, 4, 7, and 9 are especially important. This is because, as previously mentioned, SuDS can be extremely effective and cost-efficient ways to manage surface water flood risk and are extremely strong at providing multifunctional features on site in terms of flood risk, biodiversity, and amenity. They

[28] **Essex Green Infrastructure Strategy 2020 |** Section 8.1

[29] **Essex Green Infrastructure Standards 2022 |** Essex Green Infrastructure Standards | Essex Design Guide

therefore are excellent examples of multifunctional GI features. This however is dependent on good, early planning as well as robust maintenance planning. It is recommended that early engagement with relevant stakeholders and planning bodies are held.

Creating GI connectivity through developments proposals will help to reconnect existing and fragmented nature areas; for instance, through green corridors, through an integrated suds network, and/or green bridges, as well as improving the general ecological quality of the wider environment. It is therefore highly recommended that all areas to be developed (larger than single dwellings) within Tendring, look to have connecting and interrelating GI and where possible SuDS.

	GI Principles	GI Standards
1.	Mainstreaming and Integration	The Placemaking and Place-keeping policies in Local Plans recognise GI as a key delivery mechanism. GI functions and associated benefits are recognised and valued in key strategic documents and policies, beyond those with an environmental scope.
2.	Evidence-Led	The planning, design and delivery of GI is evidence-led using natural capital and ecosystem service assessments, and GI GIS mapping to ensure appropriate place-based GI interventions are being implemented and enhanced.
3.	Multifunctionality	GI interventions are designed, planned, and delivered to enhance multifunctionality and deliver multiple benefits to people and biodiversity in both rural and urban areas.
4.	Early Engagement	There are early collaboration and engagement with all relevant stakeholders, partners, and communities to support the delivery of effective and connected GI.
5.	Managing Different Expectations	Differing views need to be identified early and managed effectively and in a transparent manner to secure both short- and long-term outcomes.
6.	Heath, Wellbeing and Social Equity	GI is designed to meet different people's needs (including physical and mental health), providing accessibility to GI, green spaces, and local amenities, while ensuring GI us inclusive to all. This includes: • Targeting GI interventions to those groups and areas most in need as part of a place-keeping agenda. Reducing health and wellbeing inequalities between different populations e.g. access to green space and ecosystem service benefits.

7.	Connectivity	GI interventions are designed, planned, and delivered and connected across multiple scales; from the wider landscape scale network to more local and neighbourhood scales including green corridors habitat and nature recovery networks to enhance connectivity for people, wildlife, and habitats.
8.	Strong Policy Wording and Commitment	Policy for GI is strongly worded with a commitment to positive action(s) as reflected in statutory plans and industry/local guidance and supported by incentives and clear guidance about what success looks like.
9.	Stewardship	The long-term management and stewardship plans are identified at the early stage with the necessary funding and monitoring components in place.

Table 2.13 | Essex Green Infrastructure Standards 2022
Principles Corresponding GI Standards for Essex

2.14 Water Strategy for Essex (2024)[30]:

Essex is a water-stressed area. On average Essex consume larger volumes of water per person than most of England. Only three fifths of the drinking water consumed here comes from the county itself. The rest has to be imported from elsewhere. Apart from domestic use, water is needed by business sectors, such as:

- agriculture and horticulture
- food processing
- power
- leisure

The situation can be expected to get worse due to:

- climate change
- population growth
- the need to restore, protect and enhance the natural environment

By 2050 the East of England could see a public water supply shortage of around 730 million litres of water per day (Ml/d). This is equal to over a third of the predicted future need.

In addition to this, Essex water quality is below the national average. This is as a result of:

- storm overflows discharging sewage into the water supply

[30] **Water Strategy for Essex 2024 |** Water strategy for Essex 2024

- pollution from fertilisers and poor livestock management
- runoff from construction and traffic

Essex County Council's water strategy highlights some of the work already being done across Essex to improve:

- water resources
- water quality

It aims to provide an important starting point for more conversations around the risks and opportunities in Essex.

To aid these conversations, ECC have also developed the Essex Water Your Future online explorer[31].

The explorer provides a high-level overview of the issues raised in the strategy. It is a more interactive way to see what is going on with water where you live. This works by showing how complicated the integrated water system can be and then breaking this down to explain each element of the cycle. There are also direct links to Essex case studies and further resources.

2.15 Essex Local Nature Recovery Strategy (2025)[32]:

Introduced in the Environment Act 2021, the Local Nature Recovery Strategy (LNRS) is a statutory requirement. It is part of Nature Recovery Network (NRN), made up of 48 Local Nature Recovery Strategies. Together they form a nationwide network full of opportunities for nature recovery.

Local Nature Recovery Strategies (LNRSs) are designed to:

- deliver the necessary action to reverse the current path of decline in our biodiversity
- bring about a recovery for nature

The primary purpose of our LNRS is to find locations for the creation of habitat. It aims to identify the locations most likely to provide the greatest benefit for nature and the wider environment.

Greater Essex is one of the 48 regions across England creating an LNRS. Essex County Council (ECC) is the Responsible Authority appointed to deliver the LNRS for this location. In collaboration with the Essex Local Nature Partnership (LNP), we have created the Essex LNRS. To do this we worked alongside a range of key local stakeholders, including:

- farmers and landowners
- environmental and community groups
- parish and town councils

[31] **Essex Water Your Future** | Essex Water Your Future | Essex County Council

[32] **Essex Local Nature Recovery Strategy 2025** | Essex Local Nature Recovery Strategy

- Supporting Authorities

The Essex LNRS is a tool designed to drive nature recovery action and bring about benefits for nature and the wider environment. The improvement, enhancement, and creation of habitats can deliver multiple benefits. These benefits include, but are not limited to:

- carbon capture
- absorption of water to reduce flooding
- protection soil of quality and agricultural production
- provision of spaces for nature and wildlife

2.16 Biodiversity Net Gain:

Biodiversity net gain (BNG) is a way of creating and enhancing our current biodiversity by requiring developments to have a positive impact ('net gain') on biodiversity. BNG is required under a statutory framework introduced by Schedule 7A of the Town and Country Planning Act 1990 (inserted by the Environment Act 2021), referred to as 'biodiversity net gain' in PPG and has been live since February 2024.

Granting of planning permission is given subject to the condition that the biodiversity gain objective is met ("the biodiversity gain condition"), where a development is required to deliver at least a 10% increase in biodiversity value relative to the pre-development biodiversity value of the onsite habitat.

BNG uplift can be achieved through onsite biodiversity gains, registered offsite biodiversity gains and lastly statutory biodiversity credits.

There is a hierarchy to BNG with a key goal of achieving net gain within the development site. This hierarchy must be adhered to as follows:

- Avoid any on-site loss.
- Minimise unavoidable habitat loss.
- Remediate lost or damaged biodiversity on-site.
- Compensate any on-site loss through off-site markets.

2.17 Redacted Regional Planning Policy:

2.17.1 – East of England Plan (Regional Spatial Strategy for the East of England):

Regional Spatial Strategies were removed as part of the implementation of the Localism Act 2011[33], which gave councils and communities greater control over planning decision making. The supply of housing is delivered through LPA LPs, with a requirement for a continuous,

[33] **The Localism Act 2011** | Localism Act 2011

deliverable 5-year land supply[34]. This must be updated annually with numbers agreed by the Planning Inspectorate.

2.18 Additional Documents of Relevance:

2.18.1 – Flood Risk Regulations (December 2009):

The Flood Risk Regulations 2009 transpose the 2007 EC Floods Directive (2007/60/EC)[35] into UK law. They require LLFA's to prepare Preliminary FRAs (PFRA's) to identify significant areas of surface water and groundwater flood risk. Where such areas are highlighted, a FRMP must be undertaken to produce mapping showing the associated risks and hazards.

Essex County Council published the Essex PFRA in 2011[36] and reviewed the document in 2017[37] in line with the requirements to update on a 6-year cycle. This review found no new changes to the assessment of risk as carried out in the 2011 report and all annexes of the 2011 PFRA have been updated to reflect this 2017 review. As such the PFRA (2011) should still be considered during all relevant planning policy and development decisions along with the 2017 addendum.

The Flood Risk Regulations also require all EU member states to produce FRMPs for each river basin district. These are produced by the EA in England, more information on FRMPs covering Essex can be found in **[Section 2.8]**.

2.18.2 – UK Climate Change Risk Assessment (CCRA) (2017)[38]:

As required by the Climate Change Act, established in 2008, the Government must publish a Climate Change Risk Assessment (CCRA) every five years to evaluate the risks to the UK from the current and predicted impacts of climate change.

The purpose of the CCRA is to form the basis of climate change adaptation policy making over the next five years and identify risk and opportunities for businesses and infrastructure providers.

The latest 2017 CCRA was informed by an evidence report produced by the Adaptation Sub-Committee (ASC) of the Climate Change Committee (CCC) and identifies six priority risk areas including flooding and coastal change. There is compelling evidence to suggest that climate change will lead to increased severity and frequency of rainfall events which means an increased RoFSW and fluvial sources.

The report recommends more ambitious approaches to flood risk adaptation and to ensure there are:

- Long term strategies in place to address projected risk to people, communities and buildings and to;

[34] **The National Planning Policy Framework |** Sub Paragraph 78 Maintaining Supply and Delivery

[35] **EC Floods Directive (October, 2007) |** Directive - 2007/60 - EN - EUR-Lex

[36] **Essex County Council PFRA 2011 |** PSD0025 Essex County Council Preliminary Flood Risk Assessment - January 2011

[37] **Essex County Council PFRA Addendum 2017 |** PFRA_Essex_County_Council_2017.pdf

[38] **UK Climate Change Risk Assessment 2017 |** UK Climate Change Risk Assessment 2017 - GOV.UK

- Deliver a more integrated approach in high-risk catchments through the use of more natural flood management to recognise wider environment enhancements such as carbon reduction and habitat creation.

2.18.3 – Roles and Responsibilities for Flood Risk Management within Tendring District Council's Administrative Areas:

There are different organisations that cover Tendring District Council's Administrative Area that have responsibilities for flood risk management, known as Risk Management Authorities (RMAs). These are shown in **[Table 2.18]**, with a summary of their responsibilities.

It is important to note that land and property owners are responsible for the maintenance of watercourses either on or next to their properties. Property owners are also responsible for the protection of their properties from flooding as well as other management activities, for example by maintaining riverbeds/ banks, controlling invasive species and allowing the flow of water to pass without obstruction. More information can be found in the EA publication 'Owning a Watercourse' (2018)[39].

When it comes to undertaking works to reduce flood risk, the EA and ECC as LLFA, have permissive powers and limited resources are prioritised and targeted to where they can have the greatest effect. Permissive powers mean that Risk Management Authorities are permitted to undertake works on watercourses but are not obliged.

Risk Management Authority	Strategic Level	Operational Level	Planning Role
Environment Agency	• Strategic Overview for all sources of flooding. • National Strategy • Reporting and General Supervision	• Main Rivers (e.g. River Stour and Colne) • Reservoirs • Category 1 Responder under Civil Contingencies Act 2004	• Statutory consultee for development in Flood Zone 2 and 3
Essex County Council (Lead Local Flood Authority)	• Preliminary Flood Risk Assessment • Local Flood Risk Management Strategy	• Surface Water • Ground Water • Ordinary Watercourses (consenting and enforcement) • Section 19 FWMA Flood Investigations and Reporting • Category 1 Responder under Civil Contingencies Act 2004 (Emergency Planning Support)	• Statutory consultee for major developments
Tendring District Council (Local Planning Authority)	• Local Plans (Local Planning Authority)	• Determination of Planning applications	• As Left

[39] **Environment Agency Owning a Watercourse 2018 |** https://www.gov.uk/guidance/owning-a-watercourse

		(Local Planning Authority) • Ordinary Watercourses (works) • Category 1 Responder under Civil Contingencies Act 2004	
Affinity Water - East **Anglian Water**	• Price Reviews (Business Plans) which support investment in the Asset Management Periods (AMP) • Develop Drainage and Wastewater Management Plans	• Public sewers • Category 2 Responder under Civil Contingencies Act 2004	• Non-statutory consultee • Statutory consultee (Local Plans)
Highways Authorities **Highways England** (Motorways and Trunk Roads) **Essex Highways** (for non-trunk roads)	• Highways Drainage policy and planning	• Highways Drainage • Category 2 Responder under Civil Contingencies Act 2004	• Statutory consultee regarding highways design standards and adoptions

Table 2.18 | Roles and Responsibilities for Risk Management Authorities

2.18.4 – Tendring Strategic Flood Risk Assessment Addendum (2017)[40]:

The Tendring SFRA Addendum (2017) updates the district's 2009 Strategic Flood Risk Assessment to reflect new national policy, updated Environment Agency climate change allowances, legislative changes under the Flood and Water Management Act, and the evolving Local Plan. It provides revised flood mapping, updated evidence, and climate change guidance to support sustainable development and decision-making. The document is intended to be used alongside the original SFRA and does not replace it.

Flood risk in Tendring is influenced by coastal flooding, surface water flooding, groundwater emergence, and fluvial risk from rivers such as the Kirby Brook, Ramsey River, and estuarine systems. The EA's 2016 climate change allowances significantly increase predicted peak river flows (up to 65%) and rainfall intensity (up to 40%), meaning existing flood models often underrepresent future conditions. Where models pre-date the new allowances, the Addendum advises using higher return-period model outputs or requiring site-specific modelling to assess risk.

The Addendum applies these data sources to conduct Sequential Test assessments for SHLAA sites. 18 sites were classed as high flood risk, due to substantial overlap with Flood Zone 3, and 11 sites were medium flood risk, typically due to surface water pathways or small areas of Zones 2–3. High-risk sites require the Exception Test and robust flood mitigation planning.

[40] **Tendring Strategic Flood Risk Assessment Addendum 2017 |** Essex County Council, 2017

Surface water, fluvial, and groundwater datasets are used collectively to highlight where further investigation or SuDS-led risk reduction is necessary.

Overall, the Addendum reinforces that development in Tendring must be directed toward areas of lowest flood risk, incorporate Sustainable Drainage Systems, and fully account for climate change impacts to remain safe and sustainable. It stresses the need for updated modelling, careful site layout, and close coordination with LLFAs, the Environment Agency, and coastal policies. The findings provide essential evidence for the Local Plan, site allocation decisions, and planning application assessments.

2.18.5 – Jaywick Sands Strategic Flood Risk Assessment (2023)[41]:

The SFRA for Jaywick Sands updates the 2015 assessment using the latest Environment Agency data and climate change allowances to inform safe and sustainable development. It evaluates flood risk from coastal/tidal, fluvial, surface water, groundwater, sewers, and reservoirs, and considers climate change impacts on rainfall, river flows, and sea level rise. The study aligns with national and local planning policy, including the NPPF, Tendring Local Plan, ESDG, and the Essex GI Strategy, and supports the regeneration objectives set out in Policy PP14.

Jaywick lies almost entirely within Flood Zone 3 and is currently protected by coastal defences designed for up to 0.5% AEP events, though overtopping and breach risks remain significant. Climate change greatly increases these risks, with potential flooding depths of 3–5m during breaches by 2115. Fluvial flooding from the Jaywick Ditch catchment is limited, affecting only small areas near Martello Beach Holiday Park during higher-probability events. Surface water flooding affects several roads and properties, particularly along Meadow Way, Golf Green Road, and Crossways Park. Groundwater susceptibility is high across much of the area due to clay soils and a shallow water table. Sewer flooding is a concern and should be verified with Anglian Water, while reservoir flooding is not considered significant.

Climate change allowances indicate increased rainfall intensity (20–40%), higher river flows (up to 72% by the 2080s), and sea level rise of up to 1.6m by 2125. As a result, development must follow the Sequential Test to steer proposals toward the lowest-risk areas within the Jaywick policy boundary. Most development will require the Exception Test, demonstrate wider sustainability benefits and ensure safe occupation for its lifetime. Designs should include raised floor levels, resilient construction, and refuge above the 0.1% AEP plus climate change level.

Recommended measures include integrating SuDS such as rainwater harvesting, green roofs, bioretention, swales, permeable paving, and attenuation basins—alongside multifunctional green infrastructure that supports flood mitigation, biodiversity, and amenity. Emergency planning will require robust flood warning, evacuation planning, and safe access/egress routes. Early engagement with the EA, ECC, Anglian Water, and Tendring DC is essential.

Within the development areas, Area 1 (north) has low surface water risk but high groundwater susceptibility, with coastal breach depths potentially reaching 5m under climate change conditions. Area 2 (south) has very low surface water risk but similar coastal breach vulnerability, with groundwater risk varying across the site. Overall, Jaywick faces significant and increasing flood risk, and development can proceed only with strong mitigation,

[41] **Jaywick Sands Strategic Flood Risk Assessment 2023 |** Essex County Council, 2023

compliance with planning policy, and long-term resilience planning, alongside continued investment in coastal defence improvements.

2.18.6 – Minerals Local Plan Flood Risk Appraisal (Essex County Council) (2023)[42]:

The Strategic Flood Risk Assessment (SFRA) reviews flood risk across 52 potential mineral extraction sites in Essex, using the latest national datasets, climate change allowances, and local policy frameworks. It assesses fluvial, coastal, surface water, and groundwater flood risks, applying the Sequential Test to steer minerals development toward the safest available locations. The SFRA is a core evidence base for the Minerals Local Plan, ensuring that all allocations are compatible with national planning policy, particularly the National Planning Policy Framework (NPPF), which requires new development to remain safe over its lifetime and avoid increasing flood risk elsewhere.

Assessment results indicate a varied flood risk profile: 10 sites are classified as high risk, 29 as medium risk, and 17 as low risk, with many influenced by surface water flow paths, proximity to main rivers, or groundwater susceptibility. No sites fall within designated Critical Drainage Areas, though several lie within or near Surface Water Management Plan (SWMP) areas, where early engagement with the Lead Local Flood Authority is recommended. Climate change allowances will significantly affect both surface water and fluvial risk, requiring that all sites particularly those in Flood Zones 2 and 3 demonstrate robust mitigation through site-specific Flood Risk Assessments.

The SFRA places strong emphasis on mitigation and design requirements for medium and high-risk sites. Sustainable Drainage Systems (SuDS), watercourse buffers, erosion control, safe access planning, and strict pollution prevention are highlighted as essential operational measures. Post-extraction restoration is treated as a major opportunity to deliver multifunctional benefits, including floodplain reconnection, wetlands, natural flood management, biodiversity net gain, and alignment with the Essex Green Infrastructure Strategy and emerging nature recovery priorities. Well-designed restoration can help address not only flood risk, but also water scarcity, habitat quality, and wider climate resilience across local catchments.

Overall, the SFRA concludes that mineral extraction remains feasible across the county, with no sites ruled out solely on the grounds of flood risk. However, appropriate mitigation, careful site layout, and detailed hydraulic understanding will be required to ensure that risks are fully managed and that development proceeds safely and sustainably. The assessment strengthens the evidence base for the Minerals Local Plan by identifying where risks exist, how they should be mitigated, and how mineral sites can contribute positively to environmental outcomes during restoration.

[End of Section 2.0]

[42] **Minerals Local Plan Flood Risk Appraisal 2023 |** Essex County Council

3.0 Study Area

3.1 District Location

Tendring district is a local government district in northeastern Essex, England. Its council is based in Clacton-on-Sea, the largest town, other towns in Tendring are, Brightlingsea, Harwich, Dovercourt, Frinton-on-Sea, Walton-on-the-Naze, and Manningtree.

Tendring's land approximately covers 33,760 hectares, and is bordered by South Suffolk, and Colchester District Council. Tendring is located next to the North Sea and is near numerous tributaries the most notable include the River Stour, River Colne, and Walton Channel.

[Figure 3.1] shows Tendring District Councils geographical location.

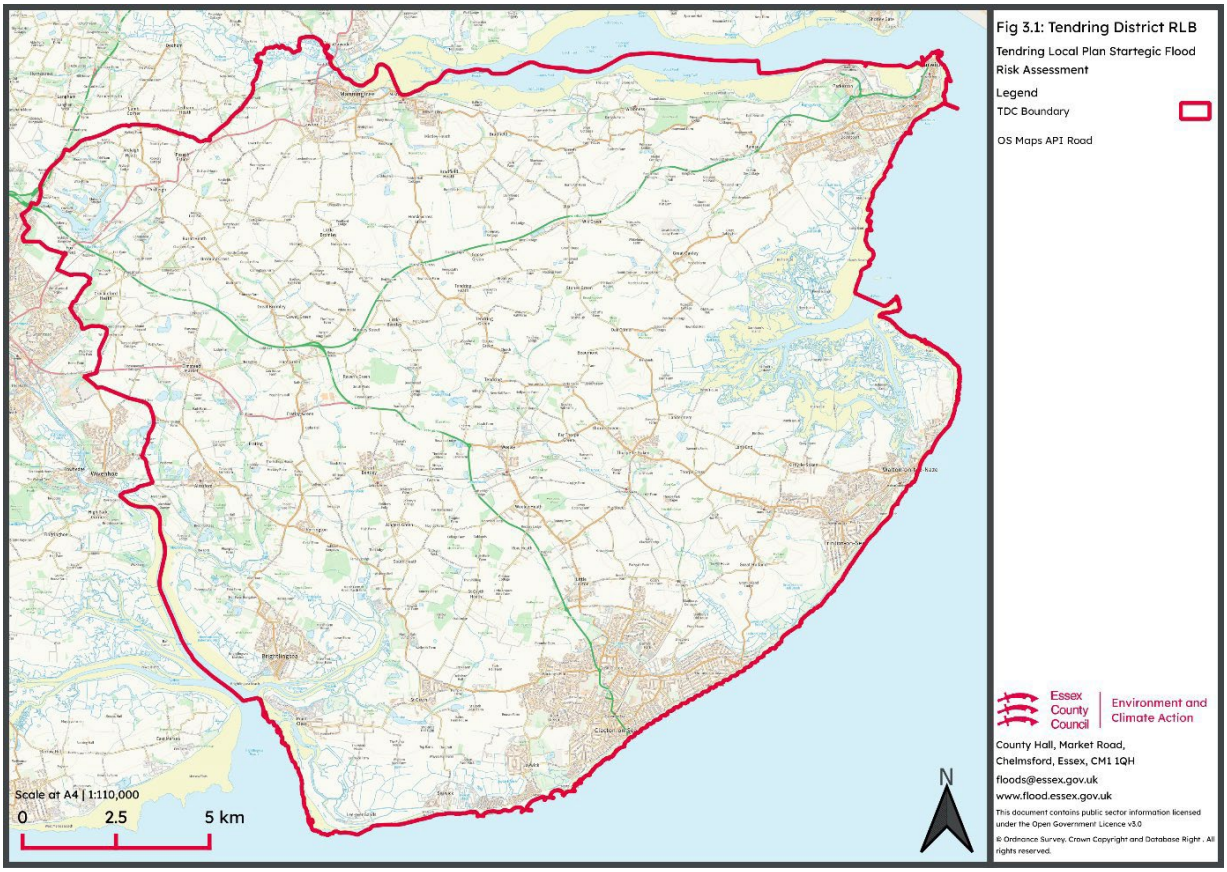


Figure 3.1 | Tendring District Red-Line Boundary
[UK Government, OS, QGIS]

3.2 Site Locations

Tendring District Council has identified 62 sites for inclusion in this SFRA. This document evaluates each site against potential flood risk from all sources, including fluvial, tidal, surface water, groundwater, and drainage systems. The sites vary significantly in size, location, and characteristics, and are distributed across the entire district rather than concentrated in a single area.

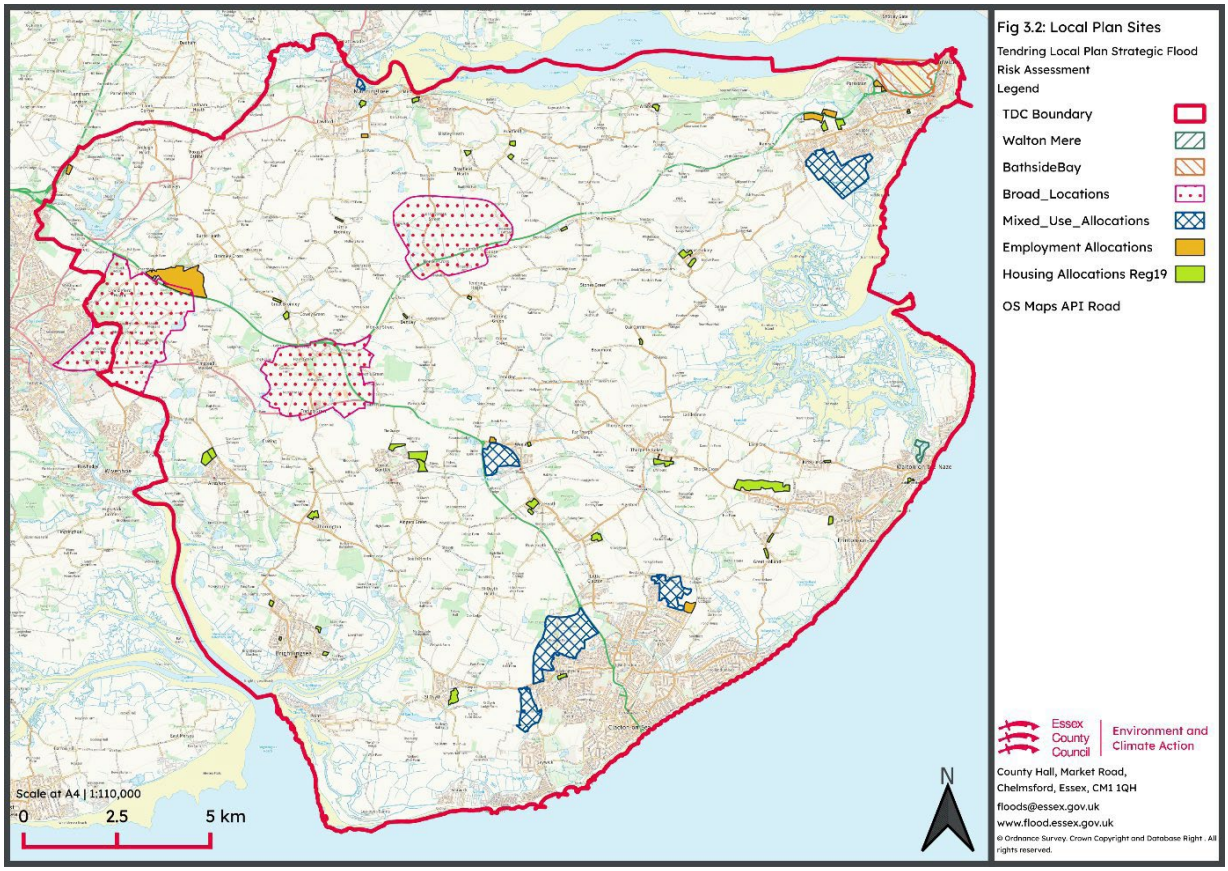


Figure 3.2 | Tendring District Local Plan Sites
[Tendring District Council, OS, QGIS]

3.3 Topography

Tendring District has a varying topographical landscape. The highest point of Tendring District is a low ridge which runs West to East at an elevation of **35.00m Above Ordnance Datum (AOD)** this location is approximately 2 miles south of the River Stour. The lowest point in Tendring District is **-4.00m AOD**, which is below sea level. This is likely due to Tendring coastal geography and presences of tidal flats and estuaries. The average AOD across Tendring is between **10.00m AOD** and **20.00m AOD**. [Figure 3.3] shows the topographical landscape of Tendring District.

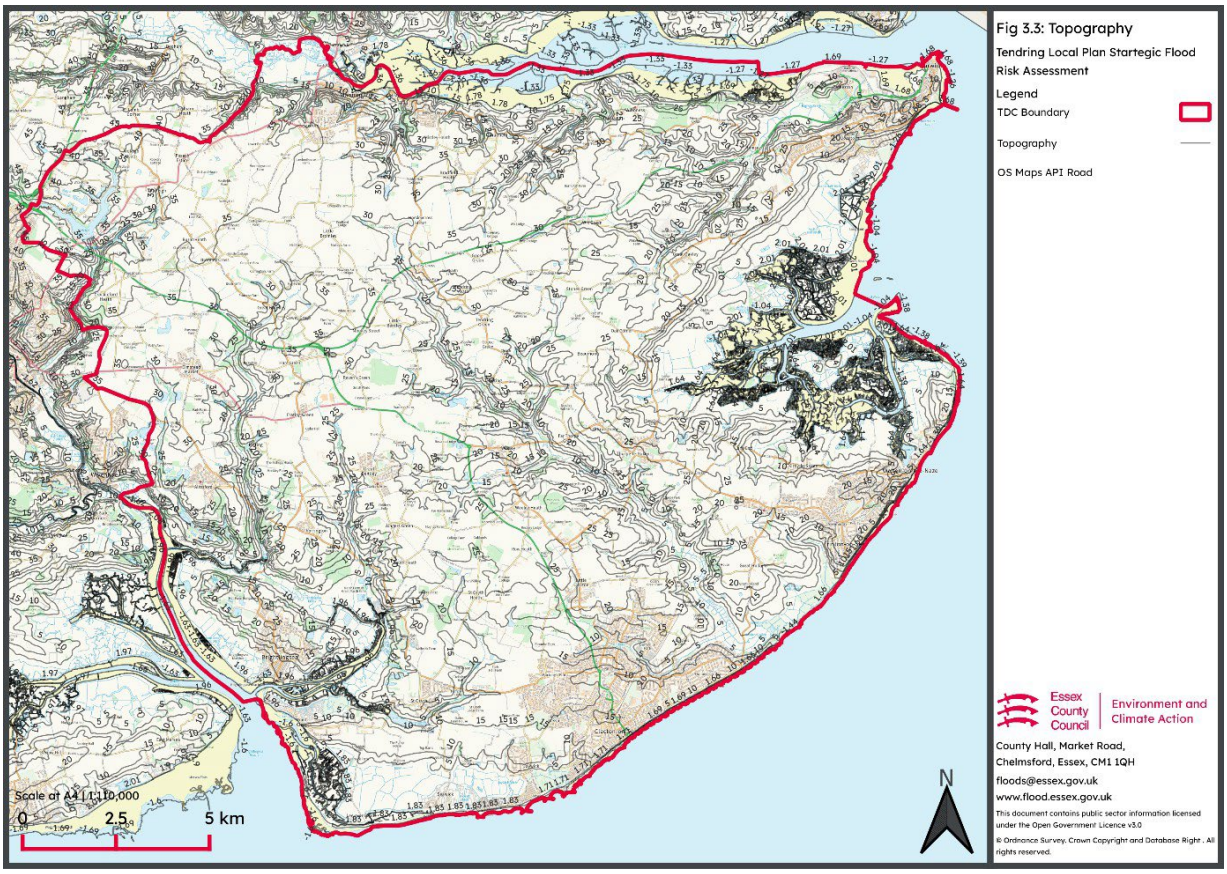


Figure 3.3 | Tendring District Topographical Landscape
[Essex County Council, OS, QGIS]

3.4 Hydrology

Tendring district council has numerous tributaries[43] across its district area. These tributaries are located in varying locations and different in size and capacity. The larger tributaries can be seen in [Figure 3.4]. A Tabulated version of the tributaries are shown in [Table 3.4].

It is highly likely that these tributaries are piped for short periods of time in multiple locations around Tendring.

[43] **Environment Agency Statutory Main River Map |** Statutory Main River Map

Tabulated Notable Tributaries include (please note this is not all nameable tributaries):

Statutory Main River	Coastal/Creeks	Brook	Canal	Ditch
River Stour	Hamford Water	Holland Brook	Beaumont Cut	Pickers Ditch
River Colne	Ray Creek	Holland Viaduct Brook	Chelmer and Blackwater Navigational Canal	New Moze-Hall Ditch
Ramsay River	Brightlingsea Creek	Great Holland Hall Brook		Burrs Farm Ditch
	Walton Channel	Lower Farm Brook		South Hall Ditch
	Flag Creek	Beaumont Brook		Foulton Hall Ditch
	St Osyth Creek	Weeley Brook		Marsh Farm Ditch
	Cormorant Creek	Bentley Brook		
	Landermere Creek	Little Bentley Brook		
	Boat Creek	Elmstead Brook		
	Oakley Creek	Tenpenny Brook		
	Kirby Creek	Sixpenny Brook		
	Cattawade Creek			
	Alresford Creek			

Table 3.4 | Statutory Main River and Ordinary Watercourse Lists

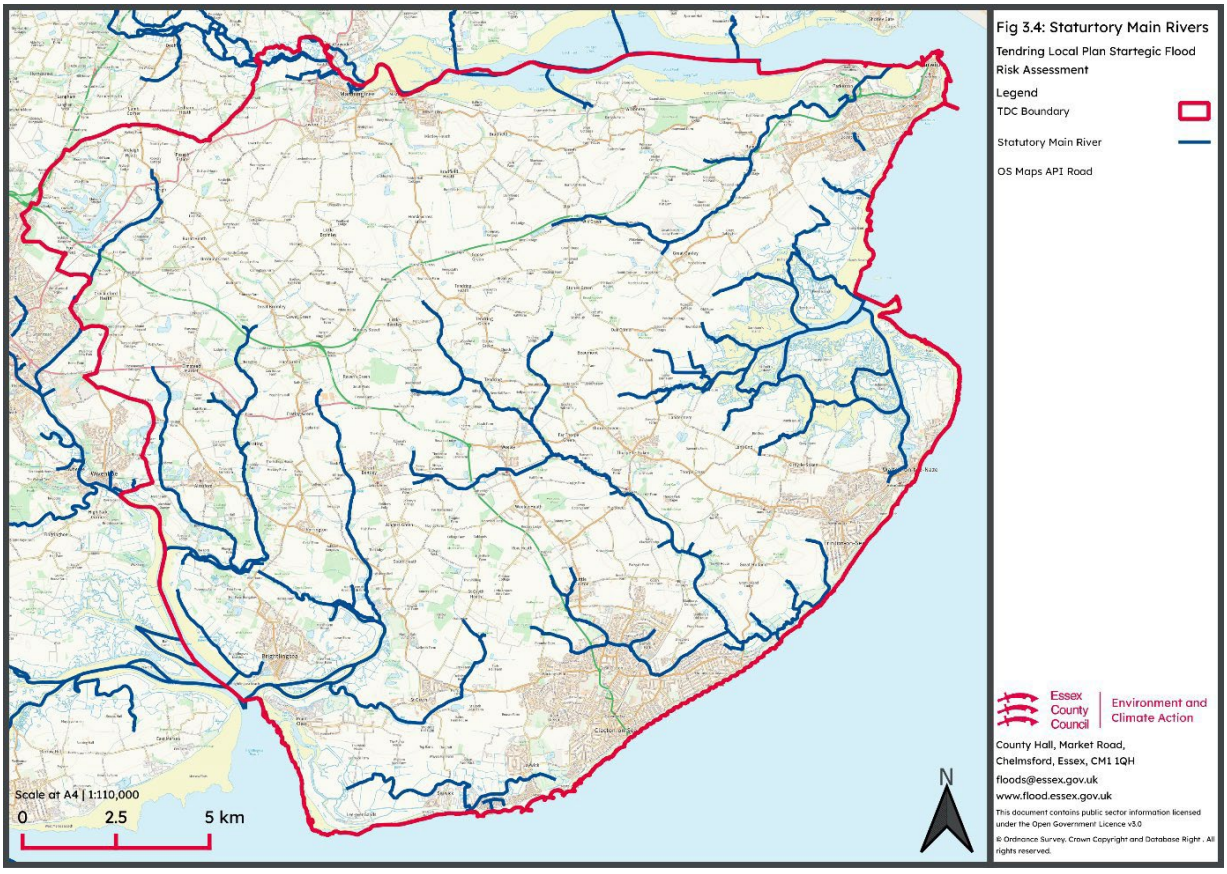


Figure 3.4 | Tendring District Statutory Main Rivers [Essex County Council, OS, QGIS]

3.5 Geology and Hydrogeology

The Bedrock Geology of Tendring District is a mixture of multiple classifications majority of which is Soilscape8[44]:

- **Soilscape8:** Slightly acid loamy and clayey soils with impeded drainage.
- **Soilscape18:** Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.
- **Soilscape21:** Loamy and clayey soils of coastal flats with naturally high groundwater.
- **Soilscape1:** Saltmarsh Soils.

Department for Environment and Rural Affairs (DEFRA) mapping for vulnerability for groundwater identifies Tendring District as multiple classifications, although majority of the district falls within **[Unproductive]** and **[Medium – Low]**[45]:

- **[High]:** areas that can easily transmit pollution to groundwater. They are characterised by high-leaching soils and the absence of low-permeability superficial deposits.
- **[Medium]:** areas that offer some groundwater protection. Intermediate between high and low vulnerability.
- **[Low]:** This shows that the area provides great protection to groundwater from pollution and is characterised by low leaching soils and/or the presence of low permeability superficial deposits.
- **[Unproductive]:** These rocks have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. They consist of bedrock or superficial deposits with low permeability that naturally offer protection to any aquifers that may be present beneath.

3.6 Clacton-on-Sea Surface Water Management Plan (SWMP)[46]:

The Clacton on Sea SWMP is within the administrative area of Tendring District Council and is ranked ninth within the county in terms of properties at risk of surface water flooding.

The catchment is characterised by a valley topography with areas of high elevation in the North-east and North-west, falling to the South onto the floodplain of the Holland Brook. The area is underlain by Clayey Loams, Sandy Loams and Clay to Silt, which vary from relatively freely draining (Sandy Loams) soils to those that impede flows (Clayey Loams). The urban extent comprises a mix of permeable and impermeable land cover. Apart from the coastline along the Eastern boundary, this is enclosed by a larger rural upper catchment, that is categorised mainly as grass and parkland.

The Holland Brook and Pickers Ditch run through to the Eastern extent of Clacton on sea. The Holland Brook is the largest watercourse within the study area, at approximately 10km in length and flows North to South, combining with Pickers Ditch, East of Clacton on Sea, before

[44] **LandIS Soilscapes** | LandIS - Land Information System - Soilscapes soil types viewer

[45] **DEFRA Vulnerability to Groundwater** | Magic Map Application

[46] **Clacton-on-Sea SWMP** | https://www.essexdesignguide.co.uk/suds/surface-water-management-plans/clacton-on-sea/

discharging to the sea at Holland on Sea. Picker's Ditch is approximately 7km in length from its tributary with the Holland Brook to its upstream extent, North-west of Clacton on Sea.

Three CDA's have been identified within the study area and around 250 residential properties identified as being at risk of surface water flooding during a 1 in 100-year storm, or 1% AEP. This has potential to increase to around 580 residential properties should the upper limit of 40% be considered to account be considered to account for future climate change. There is a history of surface water flooding within the area that reinforces the LLFA's decision to conduct a more detailed study here.

3.6.1 – Summary of Clacton-on-Sea SWMP Flood Risk Study Area:

The SWMP Study Area represents the extent of the LLFA's hydraulic modelling and detailed modelling data can be made available within this area. The RoFSW mapping should continue to be referenced for an indication of surface water flood risk outside of the SWMP Study Area boundary.

A CDA is a discrete geographic area (usually a hydrological catchment), within the SWMP Study Area where multiple or interlinked sources of flood risk cause flooding during a severe rainfall event thereby affecting people, property, or local infrastructure.

AEP*	Residential †	Non-Residential ‡	Critical Service §	Total
10%	30	0	0	30
5%	-	-	-	-
3.33%	80	5	0	85
1.33%	192	8	0	200
1%	246	14	0	260
0.50%	402	19	0	421
1% CCL**	429	19	0	448
1% CCU ***	577	29	0	606

Table 3.6.1 | Clacton-on-Sea SWMP Flood Risk Summary Table

* Annual Exceedance Probability (AEP) = Chance of a rainfall event occurring or being exceeded in any one year.

** Climate Change Lower (CCL) = Lower Climate Change increase, taken as 20% additional rainfall.

*** Climate Change Upper (CCU) = Upper Climate Change increase, taken as 40% additional rainfall.

† Residential Property = a building used, or is suitable for use as, a dwelling.

‡ Non-Residential Property = property other than residential, such as office buildings, shopping centres, businesses, churches, hotels, hospitals, schools or government buildings.

§ Critical Service = includes services such as power, water, sewer, wastewater treatment, communications, education, and emergency medical care.

No.	CDA Ref.	CDA Name.	Residential Properties	
			1% AEP	1% AEP+CCU
1	CLT_001	Valley Road	80	163
2	CLT_002	South West Clacton-on-Sea	62	176
3	CLT_003	North Clacton-on-Sea	72	211

Table 3.6.1 | Clacton-on-Sea SWMP CDA's Flood Risk Summary Table

[End of Section 3.0]

4.0 Flood Risk Data and Information:

4.1 Flood Zones (River and the Sea):

Fluvial and coastal flood risk information is created and managed by the EA. Historically fluvial flood zones have been created and used to define the risk of flooding from rivers and the sea for the purposes of planning and development. The definition of each Flood Zone can be found in [Table 4.1].

The flood zone mapping is termed the "Flood Map for Planning (Rivers and Sea)" and is available online for land use planning purposes and to align with the NPPF sequential and exception tests[47]. It should be noted that the zones are theoretically defined based on national modelling and have been revised in some areas where more refined modelling has been completed or errors have been found.

The maps also highlight areas with each Flood Zone that benefit from existing flood defences up to the 0.5% AEP tidal flood event and up to the 1% AEP fluvial flood event. The presence of these areas should be used to inform planning decisions by identifying areas where a flood risk exists but protection up to a certain level is currently in place.

Flood Zone	Probability of Flooding	Definition
Flood Zone 1	Low	Land having a less than 0.1% annual probability of flooding from rivers or the sea. These areas are shown as being clear on the online flood mapping.
Flood Zone 2	Medium	Land having a 0.1 - 1% annual probability of flooding from rivers, or a 0.1 - 0.5% annual probability of flooding from the sea, estuaries or tidal waters. This is shown as light blue on the online flood mapping.
Flood Zone 3a	High	Land having a greater than 1% annual probability of flooding from rivers, or a greater than 0.5% % annual probability of flooding from the sea, estuaries or tidal waters. This is shown as dark blue on the online flood mapping.
Flood Zone 3b	The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map). An indicative value for this zone is land that is susceptible to a 5% or greater annual probability of flooding.

Table 4.1 | Environment Agency Flood Zone Definitions[48]

Separate fluvial flood risk mapping has been produced by the EA to take account of defences and present un-zoned risk. The latest version is the "Risk of Flooding from Rivers and the Sea".

[47] **Environment Agency Flood Zone Maps** | Get flood risk information for planning in England - Flood map for planning - GOV.UK

[48] **Environment Agency Flood Zone Definitions** | Flood risk and coastal change - GOV.UK

These are updated quarterly with the mapping available to view online[49] or to use in GIS via a WMS layer.

The flood areas are created from national modelling using 50m grids. As such there are limitations to the resolution and as such the mapping cannot be used to determine flood risks for individual properties. It should be used only to indicate the general risk of an area, and whether further analysis and FRAs may be needed.

4.2 Surface Water Flood Risk Areas:

The responsibility for managing surface water flooding lies with LLFAs, however, to ensure standardised mapping nationwide the EA produced surface water flood risk mapping covering the entire UK. This used a national model updated in those areas where LLFAs had more accurate information to better take account of local topography and historic flood data.

The latest version of mapping detailing surface water flood risk is the "Risk of Flooding from Surface Water" which replaced the previous "Updated Flood Map for Surface Water" mapping. This is available to interrogate though an online viewer[50] or to use in GIS via a WMS layer.

Probability of Flooding	Definitions
Very Low	Areas with a less than 0.1% chance of flooding each year
Low	Areas with a 0.1 - 1% chance of flooding each year
Medium	Areas with a 1 – 3.3% chance of flooding each year
High	Areas with a greater than 3.3% chance of flooding each year

Table 4.2 | Environment Agency Surface Water Flood Risk Area Definitions[51]

The EA's Integrated Height Model (IHM) 2019 dataset provides the basis for the Digital Terrain Model (DTM) used in the hydraulic modelling. This assigns a ground level to every 2m x 2m topographical train model cell.

Various rainfall events were modelled to represent differing storm severities, durations and regional variations across the UK. These were adjusted to consider the effects of formal drainage systems, which are not specifically modelled themselves, and to differentiate the ways in which water infiltrates into the ground in rural and urban areas.

The output map areas show overall risk of surface water flooding and include details on depths and velocities. Risks are categorised into four bands; Very High; High; Medium; and Low, the definitions of which are outlined in **[Table 4.2]**.

As with the mapping for fluvial flood zones the areas shown are based on national modelling with a significant number of simplifications and assumptions. They cannot be used to

[49] **Environment Agency River and Sea Flood Mapping |** https://check-long-term-flood-risk.service.gov.uk/map

[50] **Environment Agency Risk of From Surface Water Flooding Map |** https://check-long-term-flood-risk.service.gov.uk/map

[51] **Environment Agency Flood Zone Definitions |** Flood risk and coastal change - GOV.UK

determine the risk for individual properties and should only be used for spatial planning to assess whether an area is at risk and to what extent.

4.3 Ground Water Flood Risk Areas:

Groundwater flood risk aligns directly with the underlying soils, geology and hydrogeological conditions and the British Geological Survey (BGS) have produced datasets to shows risks across the country.

The EA utilised this data to create "Areas Susceptible to Groundwater Flooding[52]" hazard maps showing the likelihood of groundwater flooding which is issued to LLFA's as the body responsible for the management of groundwater flooding. Maps have a spatial resolution of 50m and are updated bi-annually. They are available online to use in GIS via a WMS layer.

A detailed assessment of the county-wide groundwater flood risk is outside of the scope of this SFRA, however the hazard maps have been reviewed on a site-specific basis to establish respective susceptibility to groundwater sources for each Tendring District LP site.

[End of Section 4.0]

[52] **BGS Areas Susceptibility to Groundwater Flooding |** https://www2.bgs.ac.uk/groundwater/datainfo/GFSD.html

5.0 Fluvial Flood Risk:

5.1 Introduction:

This section defines the Fluvial Flood Zones and highlights the fluvial flood risk of the specified Tendring District LP sites using the information detailed in [Section 4.1]. The impacts of the fluvial Flood Zones for each Tendring District LP site, if relevant, are shown in [Section 9.2].

Information surrounding flood warning services and existing flood defences does not fall within the scope of this report. The majority of flood defences within the county of Essex provide protection for tidal flooding and have not changed significantly since the creation of the existing SFRA. As such this document should be consulted when assessing the impacts of these on strategic planning decisions, or when determining planning applications, until an updated SFRA is produced.

5.2 Fluvial and Coastal Flood Risk:

Fluvial flood risk is defined as the risk of flooding from main rivers. It occurs when intense or prolonged rainfall is unable to be contained by drainage channels and water spills out onto adjacent areas. The risk of fluvial flooding is primarily determined by the rainfall duration, topography, proximity to a drainage channel and prior ground conditions.

This type of flooding tends to involve high depths of water with high velocities nearer the main river channels which decrease with distance. Water tends to rise and dissipate more slowly than other types of flooding and as such some measures can be taken to minimise its impact once it commences. Appropriate planning and development decisions, such as adjusting site layouts to accommodate flooding, can have a significant impact on who and what is impacted within a development.

The Fluvial Flood Zone mapping for Tendring District during a Flood Zone 3 can be seen in [Appendix 4] and for Flood Zone 2 [Appendix 5].

5.2.1 – Existing Fluvial Hydraulic Models:

The available EA county-wide fluvial, tidal/coastal, and surface water models relevant to this SFRA can be found in [Appendix 3]. These model extents have been incorporated into the aforementioned NaFRA2 Fluvial Flood Zone extents. Therefore, the impact of modelling on the respective Tendring LP sites can be found in [Section 9.2] and is also shown in the tabulated results of the Sequential Testing exercise carried out as part of this SFRA in [Annex A].

Where no models exist, or no model output grid data was available for analysis in the SFRA, the existing flood zones should be used to determine whether a site is influenced by Flood Zone 2 or 3. Site specific modelling and supporting flood risk information will then be required in these areas to ensure the climate change allowances can be fully appropriately incorporated into planning decisions.

5.2.2 – Other Main Rivers and Major Watercourses:

[Figure 3.4] shows the location of all statutory main rivers and major watercourses within Tendring District.

The latest mapping can be found: Environment Agency Statutory Main River Map

5.3 Fluvial Flood Defences

In general, within the tidal extents of the main watercourses (the Stour, and Colne), tidal defences[53] dominate. Tendring is situated between the two estuaries of the Stour and Colne, but there is a network of other tributaries outlined in **[Table 3.4]**, many of which many of flow through rural areas and are undefended as flooding will not result in damage to buildings or put people at risk. However, flow control structures such as sluices, weirs and gates are present and offer some protection against flooding from fluvial sources. Other fluvial defence measures include embankments and levees, and various storage facilities such as Ardleigh Reservoir.

The level of protection offered by the fluvial defences varies throughout the region although in general is to the 1 in 100-year return period standard. This standard is typically exceeded within tidal extents where tidal flooding presents a greater flood risk. As such, tidal protection typically offers protection against a level of water not realistically reached following fluvial events.

5.4 Effects of Climate Change on Fluvial Flood Risk:

The current guidance on fluvial climate change allowances is detailed in **[Section 2.4]** and states a 25%, 38%, and 72% increase for the Anglian region; over the next 50-100 years for the central, higher, and upper end scenarios respectively.

As such predicted flow volumes and associated flood depths are greater, which increases risk and reduces usable space where potential developments contain or abut a main river.

For climate change to be incorporated into planning policy and the decision-making process, updated or site-specific modelling will be necessary to ensure it is appropriately considered and to assure appropriate development, sustainability and the minimising of flood risk.

5.5 Effects of EA Policy on Fluvial Flood Risk:

The objectives and measures contained within the Anglian River Basin FRMP[54] should be referred to during all planning policy and decision-making activities. The key measures of the Anglian and Thames FRMPs are outlined in **[Section 2.8]** of this report.

[End of Section 5.0]

[53] **Environment Agency Asset Management |** https://environment.data.gov.uk/asset-management/index.html

[54] **Anglian River Basin District FRMPs 2021-2027 |** Anglian river basin district flood risk management plan - GOV.UK

6.0 Flood Risk from Other Sources:

6.1 Surface Water Flood Risk:

Surface water flooding occurs following intense or prolonged rainfall when the ground is unable to absorb it causing water to flow over the land surface. The risk of flooding is primarily determined by the rainfall intensity and duration, topography, surface types and prior ground conditions.

This type of flooding tends to involve lower depth but higher velocity flows which initiate and dissipate quickly. As such it is hard to stop surface water flooding once it commences and it is best mitigated through the prior installation of protective measures. Appropriate planning and development decisions, such as the implementation of SuDS and the layout of the development can have a significant impact on the depths, extents and risks of surface water flooding.

Surface water flood risk is determined using the EA RoSFW mapping. Further details on this data source can be found in **[Section 4.2]** of this report.

[Appendix 4] shows the 3.3% AEP Surface Water Flood risk for the county of Essex with the 1% AEP risk shown in **[Appendix 5]**, and the 0.1% AEP risk shown in **[Appendix 6]**. Due to the resolution of the model used to create the mapping and the assumptions it contains this mapping cannot be used to determine flood risk to specific sites. As such it should be used only to highlight where surface water flood risk may be relevant to a site and whether further investigations or specific mitigation measures may be required.

The 3.3%, 0.1%, and 1% flood risk mapping has been used to inform the risk of surface water flooding to all of the Tendring District Council LP sites, further details of which can be found in **[Section 7.0]**.

Information on Tendring District Council's only SWMPs, which are located in Clacton-on-Sea, can be found in **[Section 3.6]**.

6.2 Ground Water Flooding:

Groundwater flooding occurs when seasonal or very prolonged rainfall occurs causing the water table to rise above the ground surface. The risk of flooding from this source is primarily determined by the underlying geological conditions and existing groundwater levels.

Groundwater flooding tends to involve lower depth, lower velocity flows which initiate and dissipate slowly. As such some measures can be taken once it commences, though due to the subsurface origin of the water, the specific occurrence of it can be hard to predict.

Groundwater flooding is rare in areas without porous bedrock, though the potential risks of it should be considered when designing and assessing developments as the influences of groundwater may impact the effectiveness of other flood mitigation measures.

The risk of flooding from groundwater is determined using the EA Areas Susceptible to Groundwater Flooding mapping. Further details on this data source can be found in **[Section 4.3]** of this report.

Due to the resolution of the model used to create the mapping (1km grids) and the assumptions it contains, this mapping cannot be used to determine flood risk to specific sites. As such it should be used only to highlight where groundwater flood risk may be relevant to a site and whether further investigations or specific mitigation measures may be required.

This mapping has also been used to inform the Sequential Testing of all the TDC LP sites (further details of which can be found in **[Section 9.0]** of this SFRA).

Classification	Definition
A (Low)	Limited potential for groundwater flooding to occur.
B (Medium)	Potential for groundwater flooding of property situated below ground level.
C (High)	Potential for groundwater flooding to occur at surface.

Table 6.2 | Susceptibility to Ground Water Flooding Classifications [British Geology Survey]

Note* Site that fall within areas that have no classification for Susceptibility to Groundwater Flooding are classified as 'Very Low'.

6.3 Reservoir Flooding:

Reservoirs with an impounded volume exceeding 25,000 m³ are subject to statutory control under the Reservoirs Act 1975[55] and are recorded on a register maintained by the EA. The 11 reservoirs shown on EA public records are shown in **[Table 6.3]**. Compliance with the Act requires ongoing inspection and maintenance by a Supervising Panel Engineer, ensuring adherence to prescribed safety standards. These regulatory measures significantly mitigate structural failure risks, resulting in an extremely low probability of flooding attributable to reservoirs.

Flooding from reservoirs typically results from partial or complete failure of the control structures designed to retain water within the artificial storage area. This type of flooding differs significantly from other sources, as it can occur with minimal or no advance warning, necessitating immediate evacuation. Estimating the probability of such an event is challenging; however, the likelihood is considered extremely low compared to fluvial, pluvial, or coastal flooding. Due to the high energy and force of water released during a reservoir breach, buildings may become structurally compromised or unstable, making vertical refuge (e.g., moving upstairs) an unsafe option.

The EA hold mapping showing what might happen if reservoirs fail. Developers and planners should check the Long-Term Risk of Flooding[56] website before using the reservoir data shown in this SFRA to make sure they are using the most up to date mapping. Existing or new hydraulic models in locations where there are reservoirs should represent the effect of reservoirs, for example the attenuation effect on flood response, which will either be represented in the hydrology or as part of the model itself.

[55] **Reservoir Act 1975 |** https://www.legislation.gov.uk/ukpga/1975/23

[56] **Check Your Long-Term Flood Risk |** https://check-long-term-flood-risk.service.gov.uk/postcode

The EA provide two flooding scenarios for the reservoir flood maps: a 'dry-day' and a 'wet-day'. The 'dry-day' scenario shows the predicted flooding which would occur if the dam or reservoir fails when rivers are at normal levels. The 'wet-day' scenario shows the predicted worsening of the flooding which would be expected if a river is already experiencing an extreme natural flood.

The current mapping shows that there are nine above ground reservoirs located within Tendring District Council's Administrative Area these can be found in [Table 6.3] is located just outside of the study area border but would impact the study area in the 'dry-day' scenario. Additionally, there is an underground reservoir to the rear of Keene Hall in Galleywood, which is unlikely to pose a risk of flooding. [Section 8.5.3] provides further considerations for developing in the vicinity of reservoirs. The reservoir flood mapping for both the 'dry-day' and 'wet-day' scenarios in Tendring District Council's Administrative Area has been provided in the Geo-PDFs in Appendix A. A summary of the information is included in [Table 6.3].

Areas within Tendring identified to be at residual risk from reservoir flooding are broadly areas near to the Holland Brook, Beaumont Cut, St Osyth Creek, Brightlingsea Creek, Alresford Creek, Marsh Farm Ditch, Salary Brook, and The River Colne.

Reservoir	Reservoir Owner	LLFA Area	Flood Risk	Is the Reservoir within the study area?	Does the Reservoir impact LP Sites in the 'dry-day' scenario?
Spring Farm Reservoir	Cooper Bros. (Wix) Ltd	Essex County Council	High	Yes	Yes
Abberton Reservoir	Northumbria Water Ltd	Essex County Council	High	No	No
Ardleigh Reservoir	Affinity Water Ltd Anglian Water Ltd	Essex County Council	High	Yes	No
Damonts Farm Reservoir	Strutt & Parker (Farms) Ltd	Essex County Council	High	Yes	No
Dairy House Farm Reservoir	Private	Essex County Council	Low	Yes	No
Greatmarsh Farm Reservoir	Gibbon Farms	Essex County Council	High	Yes	No
Hall Farm Reservoir	HD Cobbald & Sons	Essex County Council	Low	Yes	No
Park Lane Reservoir	P G Rix (Farms) Ltd	Essex County Council	High	Yes	No
Skiphatch Reservoir	Private	Essex County Council	Unclassified by EA	Yes	Unclassified by EA
Tye Farm Reservoir	NES Visual Thinking Ltd	Essex County Council	Unclassified by EA	Yes	Unclassified by EA
Wick Lane Reservoir	Affinity Water Ltd Anglian Water Ltd	Essex County Council	Low	Yes	No

Table 6.3 | Reservoirs with Potential Risk within Tendring
Environment Agency

6.4 Sewer (Surface, Foul & Combined):

Sewer flooding across urban areas is often a result of high intensity storm events which exceed the capacity of the sewer network thus causing it to surcharge and flood. Poorly maintained sewer networks and blockages can also exacerbate the potential for sewer flooding. Surface water flooding can also occur because of overland flow across poorly drained rural areas where the local sewer network is bypassed or overwhelmed.

The sewer network is the responsibility of the local water and sewage company. Anglian Water Ltd are the statutory sewage undertaker for Tendring District Council area, and the water supply undertaker for a small area to the west of Ardleigh.

Publicly accessible records show local sewer assets within the area of interest although clarification on pipe diameters and depths should be obtained by Anglian Water Ltd. Records show that there are multiple foul water sewers running across Tendring District, the locations of which will need to be clarified and accommodated in any development design going forward. There are also records of surface water sewers to the north of the area with pumping stations directing flows to Jaywick Ditch.

Where properties have experienced sewer flooding, once they have informed their Local Water Authority, they are put on a register, known within the Water Industry as a DG5 register. This register is managed by water companies and audited periodically by the Water Services Regulation Authority (OFWAT). Anglian Water were contacted about Tendring and the DG5 register however at the time of writing this they had not responded. Therefore, Anglian Water should be contacted for further information in regard to the DG5 register.

Water Companies are set a target by OFWAT every 5 years to remove properties from the DG5 registers and use this information when determining the location of any proposed works.

Any proposed development that requires a downstream connection into the surface water sewer network would need permission from Anglian Water. This could include a s106 application that enables a connection into their sewer network and potentially an application to raise or lower any existing manhole chamber if appropriate.

For more information regarding Sewers and Surface Water Management Risk Guidance please use this link: ***Surface Water Risk Management Guidance for New and Re-Development Sites***

6.4 Historic Flooding:

Essex County Councils internal flood incident records show at least **125** recordings of flood incidents within the Tendring District boundary, with at least **6** section 19 flood investigation reports.

For more information on this please contact the LLFA: ***flood@essex.gov.uk***

[End of Section 6.0]

7.0 Surface Water Management and SuDS:

This section is here to help provide guidance and advice on managing surface water runoff and flooding, as well as sources for SuDS guidance when planning developments.

7.1 Role of the LLFA and LPA in Surface Water Management:

Since April 2015, Essex County Council, as the LLFA, has been a statutory consultee on the management of surface water for major planning applications. The LLFA provides technical advice on surface water drainage strategies and designs to ensure that proposed on-site drainage systems comply with current legislation, policy, and best practice guidance.

When determining planning applications, Tendring District Council, as the LPA, must satisfy itself that the development's proposed minimum standards of operation are appropriate. The LPA should secure, through planning conditions or obligations, clear arrangements for the long-term maintenance of surface water drainage systems over the lifetime of the development.

It is essential that developers integrate SuDS considerations at the earliest stage of the design process ideally during master planning. To support this, pre-application submissions are encouraged by Tendring District Council, subject to local requirements, to facilitate the delivery of well-designed, effective, and policy-compliant SuDS.

7.2 Sustainable Drainage Systems (SuDS):

SuDS are designed to optimise the benefits of surface water management by addressing both quantity and quality of runoff, while delivering additional amenity and biodiversity enhancements. These features can contribute towards mandatory BNG requirements; developers should refer to the latest guidance published on **GOV.UK**.

Due to their adaptable nature, SuDS can be integrated into most development scenarios, including new build schemes and retrofit applications. SuDS components can be designed to fit within constrained spaces for example, permeable paving in parking areas or rain gardens incorporated into traffic calming measures.

Under NPPF paragraph 169, all major developments are required to implement SuDS for runoff management unless there is clear evidence that this would be inappropriate. While not mandatory for minor developments, SuDS should be provided wherever feasible.

Developers are responsible for ensuring that the design, construction, and long-term maintenance of SuDS are clearly defined and secured. A robust understanding of the existing catchment hydrology and current drainage arrangements is essential to inform effective design. The SuDS management train is a useful concept in the development of SuDS, focusing on using drainage techniques in series in order to change the characteristics of runoff across a number of stages, beginning with prevention and then dealing with the runoff at source before focusing on larger downstream site and regional controls. Further information on the SuDS management train concept is available from **susdrain**.

7.3 Guidance Sources for SuDS:

7.3.1 – Essex County Council SuDS Guidance:

Essex County Council published their dedicated website **The Sustainable Drainage Systems Design Guide for Essex in 2020**. This includes a summary of what SuDS is, the design principle to consider such as volume control, construction and maintenance requirements and, planning application requirements. The website also provides case study examples. See **[Section 2.11.1]** for National Standards for Sustainable Drainage Systems 2025

7.3.2 – Essex Green Infrastructure Strategy, Principles and Standards:

Essex County Council's 2020 Green Infrastructure Strategy seeks to protect, create, and improve GI for biodiversity and people, improve connectivity and inclusivity by supporting healthier, more active lifestyles; and contribute to economic growth. In 2022 Essex County Council produced **Green Infrastructure Principles and Standards** to demonstrate good practice and align with other national standards.

7.3.3 – Tendring District Council Planning Policy:

Tendring District Council leads consultation on planning policy for any works within the Administrative Area. The overarching policies are those based on the LP and specific consultation responses can be made through the dedicated **Consultation Portal for Planning Policy**. Additional information on current consultation documents is also available here.

7.3.4 – C753 CIRIA SuDS Manual (2015):

The **C753 CIRIA SuDS Manual (2015)** provides guidance on planning, design, construction and maintenance of SuDS. The manual is divided into five sections ranging from a high-level overview of SuDS, progressing to more detailed guidance with progression through the document.

7.3.5 – Non-statutory Technical Standards, DEFRA (March 2015):

Non-Statutory Technical Standards provides non-statutory standards on the design and performance of SuDS. It outlines peak flow control, volume control, structural integrity, flood risk management and maintenance and construction considerations.

7.3.6 – Non-statutory Technical Standards for Sustainable Drainage: Practice Guidance, LASOO (2016):

The Local Authority SuDS Officer Organisation produced their **practice guidance** in 2016 to give further detail to the Non-statutory technical guidance. Further guidance on the National Standards for Sustainable Drainage 2025 can be found in **[Section 2.11.1]**.

7.3.7 – Anglian Water Ltd SuDS Design Standards:

Anglian water has designed standards for **SuDS Adoption Manual** which must be followed if developers request their proposed SuDS scheme to be adopted. For more information, please use the link: **Anglian Water Ltd Sustainable Surface Water Drainage**

7.4 Other Surface Water Considerations

7.4.1 – Groundwater Vulnerability Zones:

The EA published new groundwater vulnerability maps in 2015. These maps provide a separate assessment of the vulnerability of groundwater in overlying superficial rocks and those that comprise of the underlying bedrock. The map shows the vulnerability of groundwater at a location based on the hydrological, hydro-ecological and soil properties within a one-kilometre grid square.

The groundwater vulnerability maps should be considered when designing SuDS. Depending on the height of the water table at the location of the proposed development site, restrictions may be placed on the types of SuDS appropriate to certain areas. Groundwater vulnerability maps can be found on Defra's interactive mapping[57].

7.4.2 – Groundwater Source Protection Zones (GSPZ):

The EA also defines Groundwater Source Protection Zones (GSPZs) near groundwater abstraction points. These protect areas of groundwater used for drinking water. The GSPZ requires attenuated storage of runoff to prevent infiltration and contamination. GSPZs can be viewed on DEFRA's Magic Map under "Land-Based Designations- Non-Statutory".

Tendring District Council's Administrative Area is within a "Zone 3 Total Catchment" for Source Protection Zone. This is part of a large area stretching into Colchester and Suffolk, this covers majority of East Anglia England and covers the whole of the Council area.

Guidance on how GSPZs[58] are defined and considerations needed within them are available on the DEFRA website. Particular consideration will be required by developers within GPSZ's where properties are not connected mains drainage, or development proposals otherwise have potential to pollute or harm groundwater (e.g. infiltration SUDS).

7.4.3 – Nitrate Vulnerable Zones and Nutrient Neutrality:

Nitrate Vulnerable Zones (NVZs) are areas designated as being at risk from agricultural nitrate pollution. Nitrate levels in waterbodies are affected by surface water runoff from surrounding agricultural land entering receiving waterbodies. The level of nitrate contamination will potentially influence the choice of SuDS and should be assessed as part of the design process.

NVZs can be viewed on the **Environment Agency's website**. There are currently two areas designated as pre-appeal NVZs (2021-2024) within Tendring District Council's Administrative Area. This means they have been designated as Nitrate Vulnerable Zones, but online mapping does not show whether areas have subsequently been un-designated through the **appeals process**.

[57] **DEFRA Magic Map |** https://magic.defra.gov.uk/Magic_redirect.htm?aspxerrorpath=/MagicMap.aspx

[58] **Ground Source Protection Zones |** https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs

Nutrient neutrality means that the amount of a particular nutrient entering the water system as a result of a new development is offset by the removal of an equivalent amount of the nutrient. This means that additional screening of development proposals is required as excessive runoff could make these problems significantly worse.

[End of Section 7.0]

8.0 Flood Risk Management Requirements: (for Developers)

This section provides guidance on site-specific FRAs. These are carried out by (or on behalf of) developers to assess flood risk to and from a site. They are submitted with Planning applications and should demonstrate how flood risk will be managed over the development's lifetime, considering climate change and vulnerability of users.

The report provides a strategic assessment of flood risk for Tendring District Council's LP. Prior to the planning stage of any construction or development, site-specific assessments will need to be undertaken so all forms of flood risk and the actual and residual risk and standard of protection and safety at a site are considered in more detail. Developers should, where required, undertake more detailed hydrological and hydraulic assessments of watercourses to verify flood extents (including latest climate change allowances), to inform the sequential approach within the site and prove, if required, whether the Exception Test can be satisfied.

A detailed FRA may show that a site, windfall[59] or other, is not appropriate for development of a particular vulnerability or even at all. The Sequential and Exception Tests in the NPPF apply to all developments and an FRA should not be seen as an alternative to proving these tests have been met.

8.1 Principles for New Developments:

Developers should refer to Section 3 of this report for more information on how to consider the Sequential and Exception Tests. For allocated sites, Tendring District Council should use the information in this SFRA to apply the Sequential Test. For windfall sites a developer must undertake the Sequential Test, which includes considering reasonable alternative sites at lower flood risk. Only if it passes the Sequential Test should the Exception Test then be applied if required.

Developers should also apply the sequential approach to locating development within the site. The following questions should be considered:

- can risk be avoided through substituting less vulnerable uses or by amending the site layout?
- can it be demonstrated that less vulnerable uses for the site have been considered and reasonably discounted? and
- can the site layout be varied to reduce the number of people, the flood risk vulnerability or the building units located in higher risk parts of the site?

8.1.1 – Apply the Sequential and Exception Tests:

For allocated sites, Tendring District Council LP should use the information in this SFRA to apply the Sequential Test. For windfall sites a developer must undertake the Sequential Test, which includes considering reasonable alternative sites at lower flood risk. Only if it passes the Sequential Test should the Exception Test then be applied if required.

[59] 'Windfall sites' is used to refer to those sites which become available for development unexpectedly and are therefore not included as allocated land in a planning authority's development plan.

Developers should also apply the sequential approach to locating development within the site. The following questions should be considered:

- can risk be avoided through substituting less vulnerable uses or by amending the site layout?
- can it be demonstrated that less vulnerable uses for the site have been considered and reasonably discounted? and
- can the site layout be varied to reduce the number of people, the flood risk vulnerability or the building units located in higher risk parts of the site

8.1.2 – Consult with statutory consultees at an early stage to understand their requirements:

Developers should consult with the EA, Tendring District Council, Essex County Council as LLFA and Affinity Water (water supply) or Anglian Water (sewerage) at an early stage to discuss flood risk including requirements for site-specific FRAs, detailed hydraulic modelling and drainage assessment and design.

8.1.3 – Ensure that the development does not increase flood risk elsewhere:

The SFRA can be used by developers to scope out what further detailed work is likely to be needed to inform a site-specific FRA. At a site level, developers will need to check before commencing on a more detailed FRA that they are using the latest available datasets. Developers should apply the most up-to-date EA climate change guidance[60] (last updated in May 2022) and ensure the development has considered climate change adaptation measures.

8.1.4 – Ensure the development is safe for future users:

[Section 10.0] of this report sets out the requirements for taking a sustainable approach to surface water management. Developers should also ensure mitigation measures do not increase flood risk elsewhere and that floodplain compensation is provided where necessary. Developers should refer to the EA climate change guidance (last updated in May 2022) for the appropriate allowances to calculate floodplain storage compensation.

8.1.5 – Ensure the development is safe for future users:

Consideration should first be given to minimising risk by planning sequentially across a site. Once risk has been minimised as far as possible, only then should mitigation measures be considered. Developers should consider both the actual and residual risk of flooding to the site.

Further flood mitigation measures may be needed for any developments in an area protected by flood defences, where the condition of those defences is 'fair' or 'poor', and where the standard of protection is not of the required standard.

[60] **Flood Risk Assessments: Climate Change Allowances |** https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

8.1.6 – Enhance the natural river corridor and floodplain environment through new development:

Developments should demonstrate opportunities to create, enhance and link green assets. This can provide multiple benefits across several disciplines including flood risk and biodiversity/ ecology and may provide opportunities to use the land for amenity and recreational purposes. Development that may adversely affect GI assets should not be permitted. Where possible, developers should identify and work with partners to explore all avenues for improving the wider river corridor environment. Developers should open up existing culverts and should not construct new culverts on site except for short lengths to allow essential infrastructure crossings.

8.1.7 – Consider and contribute to wider flood mitigation strategy and measures in the study area and apply the relevant local planning policy:

Wherever possible, developments should seek to help reduce flood risk in the wider area e.g. by contributing to a wider community scheme or strategy for strategic measures, such as defences or NFM or by contributing in kind by mitigating wider flood risk on a development site. Developers must demonstrate in an FRA how they are contributing towards this vision.

8.2 Requirements for Site-Specific Flood Risk Assessment:

8.2.1 – When is an FRA required:

Site-specific FRAs are required in the following circumstances:

- Proposals of 1 hectare or greater in Flood Zone 1.
- Proposals for new development (including minor development such as non-residential extensions, alterations which do not increase the size of the building or householder developments and change of use) in Flood Zones 2 and 3.
- Proposals for new development (including minor development and change of use) in an area within Flood Zone 1 which has critical drainage problems (as notified to the LPA by the EA and LLFA).
- Where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.
- At locations where it is proposed to locate development in a high-risk surface water flood zone.

An FRA may also be required for some specific situations:

- If the site may be at risk from the breach of a local defence (even if the site is actually in Flood Zone 1)
- Where evidence of historical or recent flood events have been passed to the LPA
- Land identified in an SFRA as being at increased risk in the future.

8.2.2 – Objectives of a site-specific FRA:

Site-specific FRAs should be proportionate to the degree of flood risk and the scale, nature and location of the development. Site-specific FRAs should establish:

- Whether a proposed development is likely to be affected by current or future flooding from any source.
- Whether a proposed development will increase flood risk elsewhere.
- Whether the measures proposed to deal with the effects and risks are appropriate.
- The evidence, if necessary, for the LPA to apply the Sequential Test; and
- Whether, if applicable, the development will be safe and pass the Exception Test. FRAs should follow the approach recommended by the NPPF (and associated guidance) and guidance provided by the EA and Tendring District Council.

Guidance and advice for developers on the preparation of site-specific FRAs include:

- Standing Advice on Flood Risk[61] (Environment Agency)
- Flood Risk Assessment for Planning applications[62] (Environment Agency); and
- Site-specific Flood Risk Assessment: CHECKLIST[63] (NPPF PPG, Defra)

Guidance for local planning authorities for reviewing Flood Risk Assessments submitted as part of planning applications has been published by Defra in 2015 – Flood Risk Assessment: Local Planning Authorities[64].

8.3 Local Requirements for Mitigation Measures:

8.3.1 – Site layout and design:

Flood risk should be considered at an early stage in deciding the layout and design of a site to provide an opportunity to reduce flood risk within the development.

The NPPF states that a sequential, risk-based approach should be applied to try to locate more vulnerable land use away from areas of flood risk both now and in the future, while more flood-compatible development (e.g. vehicular parking, recreational space) can be located in higher risk areas. Whether lower vulnerability development in floodplains is appropriate will be based on the likely flood depths and hazard, evacuation procedures and availability of flood warning.

Waterside areas, or areas along known flow routes, can act as GI, being used for recreation, amenity and environmental purposes, allowing the preservation of flow routes and flood storage, and at the same time providing valuable social and environmental benefits

[61] **National Flood Risk Strategy Advice for LPAs |** https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities

[62] **Flood Risk Assessments: Applying for Planning Permission |** https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

[63] **Flood Risk and Coastal Change |** https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section

[64] **National Flood Risk Standing Advice for LPAs |** https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities

contributing to other sustainability objectives. Landscaping should ensure safe access to higher ground from these areas and avoid the creation of isolated islands as water levels rise.

8.3.2 – Modifications of ground levels:

Any proposal for modification of ground levels will need to be assessed as part of a detailed FRA. Modifying ground levels to raise the land above the required flood level is an effective way of reducing flood risk to a particular site in circumstances where the land does not act as conveyance for flood waters. However, care must be taken as raising land above the floodplain could reduce conveyance or flood storage in the floodplain and could adversely impact flood risk downstream or on neighbouring land. Raising ground levels can also deflect flood flows, so analyses should be performed to demonstrate that there are no adverse effects on third party land or property.

When development proposes land raising within a floodplain, in most cases it will reduce the volume of flood storage available. To avoid increases in flood risk elsewhere, compensatory storage options need to be incorporated into development plans and individual planning applications to mitigate for the lost storage volume and ideally, to increase the overall space available for water, in line with helping to increase flood resilience in the face of our changing climate. This should normally be on a level for level, volume for volume basis on land that does not currently flood but is adjacent to the floodplain (in order for it to fill and drain). It should be in the vicinity of the site and within the red line of the planning application boundary (unless the site is strategically allocated). Guidance on how to address floodplain compensation is provided in Appendix A3 of the CIRIA Publication C624[65].

The individual effect of not carrying out compensation works for the loss of floodplain storage may appear to be minor but the cumulative effect of multiple ground raising proposals within a catchment can result in more significant impacts. The EA and Tendring District Council will therefore seek the provision of compensatory flood plain storage for ground raising proposals linked to new development proposals even when the impacts, in isolation, are considered to be minor.

Where proposed development results in a change in building footprint, the developer should ensure that it does not impact upon the ability of the floodplain to store or convey water and seek opportunities to provide floodplain betterment.

Raising levels can also create areas where surface water might pond during significant rainfall events. Any proposals to raise ground levels should be tested to ensure that it would not cause increased ponding or build-up of surface runoff on third party land.

8.3.3 – Raised floor levels:

If raised floor levels are proposed, these should be agreed with Tendering District Council and the EA. The minimum Finished Floor Level (FFL) may change dependent upon the vulnerability and flood risk to the development.

The EA advises that minimum finished floor levels should be set 600mm above the 1% AEP plus climate change peak flood level, where the new climate change allowances have been used (see **[Section 2.4]** for the climate change allowances). Where a proxy for climate change

[65] **CIRIA Development and Flood Risk C624 |** https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C624

has been used, it is recommended that a site-specific FRA is undertaken to determine the flood level above which the finished floor levels should be raised. An additional allowance may be required because of risks relating to blockages to the channel, culvert or bridge and should be considered as part of an FRA.

Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels. Single storey buildings such as ground floor flats or bungalows are especially vulnerable to rapid rise of water (such as that experienced during a breach). This risk can be reduced by use of multiple storey construction and raised areas that provide an escape route.

Similarly, the use of basements should be avoided. Basement dwellings are considered 'highly vulnerable and therefore should not be permitted within Flood Zone 3 (including an allowance for climate change), whilst basement dwellings in Flood Zone 2 (including an allowance for climate change) will be required to pass the Exception Test. Access should be situated 300mm above the design flood level and waterproof construction techniques used.

For sites within flood risk areas, flood risk could be managed with the provision of a raised place of refuge for residents to shelter during flooding- this should be supported by a Flood Warning and Evacuation Plan considering the depth, velocity, hazard, and likely duration of flooding. Where appropriate, it can be preferable for residents to shelter in-situ in a safe place rather than being exposed to hazardous conditions during an evacuation, particularly where the speed of onset of flooding may present challenges to safe evacuation. Refuge areas should be internally accessible, suitably sized and designed, and be located above maximum predicted flood levels. These spaces should be designed to be able to facilitate rescue by emergency services in the event of urgent medical care being required or the duration of flooding is such that residents cannot wait until flooding recedes. Internal places of refuge are unlikely to be appropriate for long duration flooding, accounting for the potential impact on services like electricity, gas, telecommunications, water supply and sewerage.

Refuge provisions provided should ensure that people will not be exposed to hazardous flooding from any source, now or in the future, including in an extreme flood event and will be an important consideration for the safety of the development and for satisfying Exception Test requirements.

8.3.4 – Development and raised defences:

The construction of localised raised floodwalls or embankments to protect new development is generally discouraged, as a residual risk of flooding will persist even where such measures are implemented. Where raised defences result in the loss of floodplain storage, compensatory storage must be provided to maintain hydraulic capacity and avoid adverse impacts elsewhere.

For developments situated behind existing flood defences or within areas benefitting from such protection, the residual risk of flooding must be fully assessed and addressed within the design and emergency planning process. Where developers propose the installation of new flood defences, clear and enforceable arrangements must be established for the long-term management, inspection, and maintenance of these assets for the entire lifetime of the development.

8.3.5 – Development contributions:

In certain circumstances, and following successful application of the Sequential Test, it may be appropriate for developers to provide financial or in-kind contributions toward the enhancement of flood defence infrastructure. Such improvements should deliver benefits to both the proposed development and the wider local community. Developer contributions may also support the ongoing maintenance and provision of Flood Risk Management (FRM) assets, investment in flood warning systems, and measures aimed at reducing surface water flood risk, including the implementation of SuDS.

8.3.6 – Buffer strips and riparian zone management:

The incorporation of buffer strips to 'make space for water' provides additional hydraulic capacity to accommodate climate change impacts and ensures continued access to watercourses, associated structures, and flood defences for future maintenance. Buffer strips also help avoid disturbance to riverbanks, reduce ecological impacts, and eliminate the need for engineered bank protection.

A minimum buffer of 8 metres is required from any Main River, increasing to 16 metres where tidal influence is present. Where flood defences exist, these distances should be measured from the toe of the defence. Development adjacent to riverbanks can compromise the structural integrity of both the riverbank and the proposed building, while significantly hindering future maintenance operations.

Any development within these zones will typically require a Flood Risk Activity Permit from the EA, in addition to planning consent. No built development should occur within the prescribed buffer distances from Main Rivers or flood defences.

8.3.7 – Making space for water:

The PPG sets out a clear aim in Flood Zone 3 to create space for flooding by restoring functional floodplain. Generally, development should be directed away from these areas.

All new development close to rivers should consider the opportunity to improve and enhance the river environment. Developments should look at opportunities for river restoration and enhancement as part of the development. Options include backwater creation, de-silting, in-channel habitat enhancement and removal of structures. When designed properly, such measures can have benefits such as reducing the costs of maintaining hard engineering structures, reducing flood risk, improving water quality and increasing biodiversity. Social benefits are also gained by increasing green space and access to the river.

8.4 Resistance and Resilience Measures:

The consideration of resistance and resilience measures should not be used to justify development in inappropriate locations.

Having applied planning policy, there will be instances where developments, such as those that are water compatible and essential infrastructure are permitted in high flood risk areas. The above measures should be considered before resistance and resilience measures are replied on. The effectiveness of these forms of measures is often dependent on the availability of a reliable forecasting and warning system and the use of back up pumping to evacuate

water from a property as quickly as possible. Where developments are in areas of surface water risk, passive measures should be favoured overactive measures. The proposals must include details of how the temporary measures will be erected and decommissioned, responsibility for maintenance and the cost of replacement when they deteriorate. Available resistance and resilience measures are shown in [Table 8.4]. Developers should refer to the CIRIA Code of practice for property flood resilience (C790)[66] which specifies the standards which should be achieved when delivering Property Flood Resilience (PFR).

Measures	Description
Permanent Barriers	Permanent barriers can include built up doorsteps, rendered brick walls and toughened glass barriers.
Temporary Barriers	Temporary barriers consist of moveable flood defences which can be fitted into doorways and/or windows. The permanent fixings required to install these temporary defences should be discrete and keep architectural impact to a minimum. On a smaller scale, temporary snap-on covers for airbricks and air vents can also be fitted to prevent the entrance of flood water.
Community Resistance Measures	These include demountable defences that can be deployed by local communities to reduce the risk of water ingress to a number of properties. The methods require the deployment of inflatable (usually with water) or temporary quick assembly barriers in conjunction with pumps to collect water that seeps through the systems during a flood.
Flood Resilience Measures	These measures aim to ensure no permanent damage is caused, the structural integrity of the building is not compromised and the clean up after the flood is easier. Interior design measures to reduce damage caused by flooding can include electrical circuitry installed at a higher level and water-resistant materials for floors, walls and fixtures.

Table 8.4 | Available Temporary Measures

8.5 Tendring Site Assessment Methodology:

8.5.1 – Groundwater:

Groundwater flooding operates through a distinct mechanism compared to other flood sources, rendering many conventional mitigation measures ineffective. The most reliable approach to reducing risk is through development form and building design, ensuring finished floor levels are elevated above the predicted groundwater level associated with a 1% AEP event plus climate change allowance.

Site layout must also preserve existing overland flow routes for groundwater emergence to prevent increased flood risk downstream. The use of infiltration-based SuDS can exacerbate groundwater levels, potentially increasing flood risk both on-site and off-site. Developers are required to provide robust evidence demonstrating that infiltration SuDS will not pose a significant risk under prevailing hydrogeological conditions.

8.5.2 – Surface water and sewer flooding:

Developers must engage with the relevant water utility company at the earliest stage to confirm the capacity of the public sewerage network. A comprehensive Surface Water Drainage Strategy, typically prepared as part of an FRA, should demonstrate that proposed

[66] **Code of Practice for Property Flood Resilience (C790) |** https://www.ciria.org/CIRIA/Resources/Free_publications/CoP_for_PFR_resource.aspx

arrangements will not increase flood risk elsewhere and that runoff rates and SuDS requirements for new development are fully met.

Where residual surface water flood risk remains, flow routes and depths across the site should be modelled. Site design must preserve these flow paths, and building design should incorporate resilience measures to mitigate residual risk. For redevelopment of existing properties, the installation of permanent or temporary floodproofing measures can provide protection against both surface water and sewer flooding. Examples include non-return valves, which prevent backflow from drains and sewers. These valves can be installed within gravity sewers or private drains upstream of the public sewerage system; however, they require careful installation and ongoing maintenance.

Design must also account for attenuation and flow management to ensure that stormwater during a 1% AEP plus climate change event remains contained within the site if flap valves close. This requirement should be supported by appropriate hydraulic modelling to demonstrate compliance.

8.5.3 – Reservoirs:

As discussed in **[Section 6.3]** the risk of reservoir flooding is extremely low. However, there remains a residual risk to development from reservoirs which developers should consider during the planning stage:

- Developers should contact the reservoir owner for information on:
    - the Reservoir Risk Designation
    - reservoir characteristics: type, dam height at outlet, area/volume, overflow location
    - operation: discharge rates / maximum discharge
    - discharge during emergency drawdown; and
    - inspection / maintenance regime.
- The EA online Reservoir Flood Maps contain information on the extents, depths and velocities following a reservoir breach (note: only those reservoirs with an impounded volume greater than 25,000 cubic metres are governed by the Reservoir Act 1975). Consideration should be given to the extent, depths and velocities shown in these online maps.
- The GOV.UK website on Reservoirs: owner and operator[67] requirements provide information on how to register reservoirs, appoint a panel engineer, produce a flood plan and report an incident.
- In addition, developers should consult the Essex Resilience Forum[68] about emergency plans.

Developers should use the above information to:

[67] **Reservoirs: Owners and Operator Requirements |** https://www.gov.uk/guidance/reservoirs-owner-and-operator-requirements

[68] **Essex Prepared: Essex Resilience Forum |** https://www.essexprepared.co.uk/

- Apply the sequential approach to locate development within the site.
- Consider the impact of a breach and overtopping, particularly for sites proposed to be located immediately downstream of a reservoir. This should consider whether there is sufficient time to respond, and whether in fact it is appropriate to place development immediately on the downstream side of a reservoir.
- Assess the potential hydraulic forces imposed by sudden reservoir failure event and check that that the proposed infrastructure fabric could withstand the structural loads.
- Develop site-specific Emergency Plans and/ or Off-site Plans if necessary and ensure the future users of the development are aware of these plans. This may need to consider emergency drawdown and the movement of people beforehand.

Development located downstream of a reservoir can influence the reservoir's risk designation, which is determined under the Reservoirs Act 1975[69] and associated safety regulations. Where proposed development could increase the potential danger to life in the event of a reservoir failure, consideration must be given to the implications for the hydraulic capacity and structural integrity of the reservoir embankment and spillway. In such cases, commitments may be required to ensure compliance with statutory safety standards.

These obligations should be clearly identified and assessed during the planning process to confirm that they can be met if development is permitted. It is important to note that an increase in risk designation can result in significant cost implications for Reservoir Operators, including enhanced inspection, maintenance, and engineering works. Local planning authorities should therefore evaluate these factors carefully when allocating land or determining planning applications. Where a change in reservoir risk classification is likely, the Council may consider requiring developers to contribute towards any necessary safety enhancements to mitigate the increased risk.

The EA's Reservoir Safety team contactable via the email provided (***reservoirs@environmentagency.gov.uk***) should be contacted by developers and the LPA if there are plans to locate new development downstream of a large reservoir to discuss the potential for a change in that reservoir's risk categorisation as a result of the proposed development(s).

8.5.4 – Emergency Planning:

Emergency planning covers three phases: before, during and after a flood. Measures involve developing and maintaining arrangements to reduce, control or mitigate the impact and consequences of flooding and to improve the ability of people and property to absorb, respond to and recover from flooding. National Planning Policy takes this into account by seeking to avoid inappropriate development in areas of flood risk and considering the vulnerability of new developments to flooding.

The revised NPPF requires site level FRAs to demonstrate that

> "d) any residual risk can be safely managed; and

[69] **Reservoir Act 1975 |** https://www.legislation.gov.uk/ukpga/1975/23

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

Certain sites will need emergency plans:

- Sites with vulnerable users, such as hospitals and care homes
- Camping and caravan sites
- Sites with transient occupants e.g. hostels and hotels
- Developments at a high residual risk of flooding from any source e.g. immediately downstream of a reservoir or behind raised flood defences
- Situations where occupants cannot be evacuated (e.g. prisons) or where it is safer to remain "in-situ" and / or move to a higher floor or safe refuge area (e.g. at risk of a breach).

Emergency Plans will need to consider:

- The characteristics of the flooding e.g. onset, depth, velocity, hazard, flood borne debris
- The vulnerability of site occupants.
- Structural safety
- The impact of the flooding on essential services e.g. electricity, drinking water
- Flood warning systems and how users will be encouraged to sign up for them • Safe access and egress for users and emergency services
- How to manage the consequences of events that are un-foreseen or for which no warnings can be provided e.g. managing the residual risk of a breach.
- A safe place of refuge where safe access and egress and advance warning may not be possible, having discussed and agreed this first with emergency planners. Proposed new development that places an additional burden on the existing response capacity of Tendring District Council will not normally be appropriate.
- The Essex Resilience Forum provide Emergency Planning, resilience based, information that is both general and flood specific. This includes practical advice before, during and after flooding has occurred including, preparation, understanding warnings, actions to limit exposure to risk and recovery.

Further information can be found:

- **The National Planning Policy Guidance**
- **2004 Civil Contingencies Act**
- **DEFRA (2014) National Flood Emergency Framework for England**
- **FloodRe**
- The Environment Agency and DEFRA's **Standing Advice for FRAs**

- Essex County Council's 'Check if you're at risk of flooding' map
- Essex County Council's 'In an emergency'
- GOV.UK 'Prepare for flooding'
- Sign up for Flood Warnings with the Environment Agency
- The National Flood Forum
- ADEPT Flood Risk Plans for new development

[End of Section 8.0]

9.0 Sequential Test Results:

9.1 Tendring Site Assessment Methodology:

To determine the flood risk for the Tendring District Council LP the following methodology was employed. Further details on the data utilised to undertake this can be found in [Section 4.0];

1. Determine the percentage of the site within each Flood Zone using GIS software. All sites that contain over 95% within Flood Zone 1 are considered to be low risk with an exception test not required.
2. All sites with over 5% within Flood Zone 2 or 3 are considered to be high risk and are subjected to the exception test.
3. All sites are assessed against surface water flood risk and groundwater flood risk mapping using GIS software. Risk bandings are assigned to each flood source based on the findings with comments provided summarising the risks and potential impacts to the site.
4. Low risk sites with high risks of surface or ground water flooding, or those containing a watercourse, are reclassified as medium risk sites. For Groundwater Flooding classifications please refer to [Table 6.2].
5. Surface Water Flood Risk has been rated through visual assessments to determine the overall site risk. Sites have been categorised by Very Low, Low, Medium and High via EA NaFRA2 mapping for flooding from Surface Water. This can be seen in [Annex B] this shows risks from Surface Water across TDC.

Following this approach all Tendring District Council LP sites are given a flood risk classification, which has been used to visually represent the site on mapping to aid initial risk analysis. Table 9.1 below details the categories and symbology used.

Risk Category	Definition	Map Symbology
High	Sites containing Flood Zone 3	**Red Boarder and Hatching**
Medium	Sites containing that; contain smaller sections of Flood Zones 2 and 3; contain areas of significant surface water or ground water flooding; and/or sites containing a watercourse	**Orange Border and Hatching**
Low	Sites within Flood Zone 1	**Green Border and Hatching**

Table 9.1 | Tendring District Council Local Plan
Site Risk Categories and Mapping Symbology

9.2 Site Assessment Findings:

A total of 62 sites were subjected to the assessment process with **11 found to be high risk**, **11 to be medium risk** and **40 to be low risk**.

The level of risk a site is at is indicated by the text colours in line with the mapping symbology listed in **[Table 9.1]**. A table with each site location and its corresponding FRA showing the classification of the 62 sites can be found in **[Table 9.2]**.

All high-risk sites were subjected to the Sequential and Exception test. Detailed mapping and site-specific recommendations and planning considerations for each site can be found in **[Annex A]**.

The recommendations given for high-risk sites should be used to inform the site-specific FRAs for each site when they are considered for development through the planning process.

It should be noted that whilst sites classified as medium risk were not subjected to the exception test the risk of flooding has been deemed great enough to warrant more specific consideration at the planning stage.

ECC Ref	Site Name	TDC Ref	Application Number	Size (Ha)	Fluvial FZ %			SW Flood Risk	GW Flood Risk	Sequential Test Information and Flood Risk Comments
					1	2	3			
001	Tendring Colchester Borders Garden Community	SAMU1	n/a	704.53	96.5%	3.5%	2.8%	High	Very Low	**Fluvial Flood Risk:** SAMU1 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flood extents affect the western, eastern, and southern areas of the site. The site has multiple watercourses running through its perimeter. This risk is associated with the presence of multiple watercourses located within the site boundary, contributing to localised floodplain connectivity and supporting the medium-risk classification. **Surface Water Flood Risk:** SAMU1 is assessed as being at high risk of surface water flooding, with numerous patches of surface water accumulation distributed across the entire site. Flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Given the high-risk classification, any future development must incorporate robust surface water mitigation measures, including appropriate attenuation, exceedance routing, and drainage design to prevent increased pluvial flood risk both on-site and downstream. **Groundwater Flood Risk:** SAMU1 presents a very low risk of groundwater flooding, with only small, isolated patches along the eastern, south-western, and southern boundaries classified as Susceptibility Categories B and C. These areas are limited in extent and do not significantly influence overall site risk.
002	'Hartley Gardens' Land between St. John's and Little Clacton Rd	SAMU2	n/a	162.5	87.2%	12.8%	6%	High	Medium	**Fluvial Flood Risk:** SAMU2 lies partly within Flood Zones 2 and 3, indicating a high risk of fluvial flooding. Flood extents affect the central eastern to central western areas of the site, associated with Hartley Wood Brook, which flows directly through the middle of the site. This watercourse and its mapped floodplain justify the high-risk classification.

										Surface Water Flood Risk: SAMU2 is assessed as being at high risk of surface water flooding, with numerous patches of surface water accumulation across the entire site. The most significant concentrations occur in the central band, running from the western to eastern sections of the site. Surface water flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. Given the high-risk classification, any future development must incorporate robust surface water mitigation measures, including exceedance routing, on-site attenuation, and careful site layout design to prevent increased pluvial flood risk. **Groundwater Flood Risk:** SAMU2 presents a medium risk of groundwater flooding, with the southern quarter of the site containing areas classified as Susceptibility Categories B and C, indicating moderate potential for groundwater emergence that should be addressed during ground investigations and drainage design.
003	'Oakwood Park' Land to the South of Holland Rd	SAMU3	n/a	48.98	100%	0%	0%	Very Low	Medium	**Fluvial Flood Risk:** SAMU3 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. There is However a watercourse running through the middle of the site which connects to Holland Brook to the east, so this site should be categorised as a medium-risk. **Surface Water Flood Risk:** SAMU3 is assessed as being at very low risk of surface water flooding, with isolated patches of surface water accumulation mapped: • across the central area, • in several southern locations, and • in parts of the northern section of the site. These areas are associated with the 3.3%, 1%, and 0.1% AEP storm events. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to surrounding areas.

										Groundwater Flood Risk: SAMU3 presents a medium risk of groundwater flooding, with the majority of the site classified as Susceptibility Category B, indicating a moderate potential for groundwater emergence that should be considered during site design and drainage planning.
004	Rouses Farm, Jaywick Ln	SAMU4	n/a	43.02	100%	0%	0%	Low	High	**Fluvial Flood Risk:** SAMU4 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** SAMU4 is assessed as being at low risk of surface water flooding, with small, isolated patches of surface water accumulation distributed across the site. The most notable area of surface water risk is located to the north of the site, adjacent to the B1027. Surface water flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Despite the low-risk classification, any future development should include effective surface water management and mitigation measures to prevent increasing pluvial flood risk on-site or downstream. **Groundwater Flood Risk:** SAMU4 presents a high risk of groundwater flooding, with the majority of the site classified as Susceptibility Category C, and additional areas classified as Category B. This widespread susceptibility indicates a significant potential for groundwater emergence, which will require careful consideration during site layout design, ground investigation, and drainage planning.
005	Land South of Oakley Rd, Harwich, Dovercourt	SAMU5	n/a	125.57	61%	39%	38.6%	High	High	**Fluvial Flood Risk:** SAMU5 lies partly within Flood Zones 2 and 3, indicating a high risk of fluvial flooding. Flood extents affect the southern, south-eastern, and south-western areas of the site. This risk is associated with multiple watercourses running through the site and the site's proximity to the North Sea, both

										of which significantly influence local floodplain connectivity and justify the high-risk classification. **Surface Water Flood Risk:** SAMU5 is assessed as being at high risk of surface water flooding, with widespread and variable patches of flooding occurring across several parts of the site. The southern, south-eastern, and south-western areas experience the most extensive flooding, primarily during the 3.3% AEP storm event, with additional risk during the 1% and 0.1% AEP events. There are also further isolated areas of surface water risk to the north of the site. Given the high-risk designation, any future development must incorporate proactive and robust surface water mitigation measures to reduce runoff, manage exceedance pathways, and prevent increased flood risk. **Groundwater Flood Risk:** SAMU5 presents a high risk of groundwater flooding. • The southern section of the site is classified as Susceptibility Category C, indicating elevated groundwater emergence potential. • Additional sections in the north contain a mix of Categories A, B, and C, further supporting the overall High-Risk classification. This level of susceptibility will require thorough ground investigation and careful integration into site design and drainage strategies.
006	Land South of Colchester Rd, Land bounded by A133, B1033, B1441	SAMU6	16/02131/OUT	52.87	97%	3%	2.2%	Medium	Low	**Fluvial Flood Risk:** SAMU6 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flood extents affect the south-eastern and south-western corners of the site. A watercourse is present in the northern middle quarter. This risk is associated with Weeley Brook, which flows along the southern boundary, and an additional watercourse within the

										central part of the site. These watercourse interactions justify the medium-risk classification. **Surface Water Flood Risk:** SAMU6 is assessed as being at medium risk of surface water flooding, with mapped ponding and flow paths located across the: • central area, and • southern sections of the site. Surface water flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. Given the medium-risk classification, any future development must incorporate appropriate surface water management and mitigation measures to manage runoff and maintain safe access. **Groundwater Flood Risk:** SAMU6 presents a low risk of groundwater flooding, with a small portion of the north-eastern corner classified as Susceptibility Categories A and B, indicating limited potential for groundwater emergence.
007	Riverside Avenue East (Salting's Quarter)	SAMU7	Several Applications	3.72	0%	0%	100%	High	Very Low	**Fluvial Flood Risk:** SAMU7 lies entirely within Flood Zone 3, indicating a high risk of fluvial flooding. Flood extents cover the whole development site, associated with the neighbouring River Stour and Cattawade Creek, as well as additional minor watercourses adjacent to the site. These watercourse interactions and floodplain connectivity justify the High-Risk classification. **Surface Water Flood Risk:** SAMU7 is assessed as being at high risk of surface water flooding, with significant ponding and flow paths concentrated in the central part of the site, predominantly during the 0.1% and 1% AEP storm events. Additional areas of surface water risk are identified along the northern and western boundaries, during the 3.3% to 0.1% AEP events. Given the high-risk classification, any future development must incorporate proactive and robust surface water management measures to reduce runoff, manage exceedance, and prevent further flood risk.

										Groundwater Flood Risk: SAMU7 presents a very low risk of groundwater flooding, with only a small area on the western side intersected by Susceptibility Category C.
008	Tendring Central	SAMU8	n/a	496.91	98.2	1.8%	1.2%	Medium	Medium	**Fluvial Flood Risk:** SAMU8 lies partly within Flood Zones 2 and 3, indicating a medium fluvial flood risk. Flooding is associated with Tenpenny Brook along the western boundary and Bentley Brook, which flows through the central section of the site. The presence of these watercourses and their mapped flood extents supports the Medium-Risk classification. **Surface Water Flood Risk:** SAMU8 is assessed as medium risk of surface water flooding, with predicted flooding occurring at multiple points along the site's existing ditch network during the 3.3%, 1%, and 0.1% AEP storm events. This surface water hazard may pose restrictions to access and egress, particularly on: • the A120 to the north, and • Colchester Road to the east. Any future development must incorporate robust surface water management and mitigation measures to ensure safe access is maintained during extreme rainfall events. **Groundwater Flood Risk:** SAMU8 presents a medium risk from groundwater flooding. Areas in the south, west, and northeast are mapped as having Susceptibility Category C, while the southwest contains smaller areas of mixed Categories A, B, and C; a similar pattern is present in a small area in the northern part of the site. This indicates variable groundwater emergence potential across the site.
009	Land at Horsley Cross	SAMU9	n/a	453.00	99%	1%	0.5%	High	Low	**Fluvial Flood Risk:** SAMU9 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flood extents affect the south-western corner of the site, associated with the watercourse located along the central south-western boundary. This watercourse and the mapped extent of floodplain interaction support the medium-risk classification. **Surface Water Flood Risk:** SAMU9 is assessed as being at high risk of surface water flooding, with widespread patches of surface water accumulation occurring across the entire site.

										Most surface water flooding is associated with the 3.3% AEP storm event, with additional areas affected during the 1% and 0.1% AEP events. Given the high-risk classification, any future development must incorporate proactive and robust surface water management and mitigation measures to reduce runoff, manage exceedance pathways, and prevent further flood risk on-site and downstream. **Groundwater Flood Risk:** SAMU9 presents a low risk of groundwater flooding, with the site predominantly classified as Susceptibility Category B and small localized patches of Category C along the western side, indicating generally limited but present groundwater emergence potential.
010	Vicarage Farm Main Rd, Harwich	SAH1	17/01909/OUT	4.41	92%	8%	0.02%	Very Low	Low	**Fluvial Flood Risk:** SAH1 lies partly within Flood Zone 2, indicating a medium risk of fluvial flooding. Flooding affects the northern boundary, associated with the watercourse that runs adjacent to the site's northern edge. **Surface Water Flood Risk:** SAH1 is assessed as being at very low risk of surface water flooding. Minor areas of pooling are mapped in the north-eastern corner and along the south-western boundary. Although the overall risk is minimal, any future development must ensure surface water runoff is appropriately managed to avoid introducing or increasing pluvial flood risk. **Groundwater Flood Risk:** SAH1 presents a low risk of groundwater flooding, with the southern half of the site classified as Susceptibility Category A, indicating limited but present potential for groundwater emergence.
011	Land North of Thrope Rd, Kirby Cross	SAH2	n/a	32.84	99.6%	0.4%	0.2	Low	Medium	**Fluvial Flood Risk:** SAH2 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flooding affects the south-western corner of the site. An additional watercourse located in the central northern area contributes to the site's overall fluvial flood sensitivity, supporting the Medium-Risk classification.

										Surface Water Flood Risk: SAH2 is assessed as being at low risk of surface water flooding, with small, isolated patches of surface water accumulation located along the: • eastern boundary, and • southern boundary. Flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Despite the low-risk classification, any development should incorporate effective surface water management and mitigation measures to avoid increasing pluvial flood risk on-site or downstream. **Groundwater Flood Risk:** SAH2 presents a medium risk of groundwater flooding, with parts of the site classified as Susceptibility Categories B and C, indicating a moderate potential for groundwater emergence that should be considered during early site design and ground investigation.
012	Land off Cockaynes Ln, Alresford	SAH6	n/a	6.70	100%	0%	0%	Very Low	High	**Fluvial Flood Risk:** SAH6 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** SAH6 is assessed as being at very low risk of surface water flooding, with small, isolated patches of ponding identified along the: • southern boundary, • western boundary, and • eastern boundary. These areas are associated with the 3.3%, 1%, and 0.1% AEP storm events. Although the overall risk is minimal, future development should incorporate effective surface water management and mitigation measures to avoid increasing pluvial flood risk on-site or to neighbouring areas. **Groundwater Flood Risk:** SAH6 presents a high risk of groundwater flooding, with the majority of the site classified as Susceptibility Category B and a further portion as Category C.

										This combination indicates a notable potential for groundwater emergence, warranting careful consideration during site layout, drainage design, and ground investigations.
013	Land East of Admirals Green and North of Weeley Rd	SAH7	n/a	10.30	99.3%	0.7%	0.5%	Very Low	Very Low	**Fluvial Flood Risk:** SAH7 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flood extents affect the southern and eastern boundaries of the site, associated with the watercourse that runs adjacent to the eastern boundary, Weeley Brook. **Surface Water Flood Risk:** SAH7 is assessed as being at very low risk of surface water flooding, with minor areas of predicted flooding along the western and southern boundaries during the 3.3%–0.1% AEP storm events. Although the overall risk is low, development should incorporate appropriate surface water management and mitigation to avoid exacerbating local flood pathways. **Groundwater Flood Risk:** SAH7 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
014	Land West of Grove Rd, East of Amerells Rd	SAH8	23/01707/OUT	4.58	100%	0%	0%	Medium	Medium	**Fluvial Flood Risk:** SAH8 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** SAH8 is assessed as being at medium risk of surface water flooding, with mapped flooding located in the: • north-western area, • north-eastern area, and • southern parts of the site. Surface water flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. Given the medium-risk classification, any future development must incorporate appropriate surface water management and mitigation measures to manage runoff, exceedance pathways, and site access.

										Groundwater Flood Risk: SAH8 presents a medium risk of groundwater flooding, with a small area in the north-eastern corner classified as Susceptibility Category C, indicating an elevated potential for groundwater emergence.
015	Land South of Clacton Rd, St Osyth	SAH9	19/01946/OUT	7.27	93.6%	6.4%	3.6%	Low	Medium	**Fluvial Flood Risk:** SAH9 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flood extents cover the southern boundary, associated with the watercourse flowing along this edge of the site to the south, which subsequently drains toward Mill Dam Lake. This watercourse and its mapped floodplain justify the medium-risk classification. **Surface Water Flood Risk:** SAH9 is assessed as being at low risk of surface water flooding, with small areas of ponding identified: • along the southern boundary, and • through the eastern to northern boundaries. These areas are associated with the 3.3%, 1%, and 0.1% AEP storm events. Although classified as low risk, any future development must ensure surface water management and mitigation are incorporated to prevent increases in pluvial flood risk. **Groundwater Flood Risk:** SAH9 presents a medium risk of groundwater flooding. The northern boundary features areas of Susceptibility Category C with some Category B sections, indicating elevated groundwater emergence potential. A small area along the southern boundary is also classified as Category C.
016	Lifehouse Spa & Hotel, Frinton Rd	SAH11	n/a	6.09	100%	0%	0%	Low	High	**Fluvial Flood Risk:** SAH11 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** SAH11 is assessed as being at low risk of surface water flooding, with small areas of surface water accumulation located in the: • north-western corner, and • southern quarter of the site.

										Flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Despite the low-risk classification, any future development should implement appropriate surface water management and mitigation measures to avoid increasing pluvial flood risk on-site or to adjacent land. **Groundwater Flood Risk:** SAH11 presents a high risk of groundwater flooding, with the majority of the western side and southern section of the site classified as Susceptibility Category C, indicating elevated potential for groundwater emergence that must be considered in site layout, drainage design, and ground investigations.
017	Durite Works Valley Rd, Harwich	MSA1	14/01431/OUT	2.80	95.2%	4.8%	0%	Low	Medium	**Fluvial Flood Risk:** MSA1 lies partly within Flood Zone 2, indicating a medium risk of fluvial flooding. Flood extents are present along the northern boundary, associated with the nearby watercourse running close to this part of the site. **Surface Water Flood Risk:** MSA1 is assessed as being at low risk of surface water flooding. Mapped flooding occurs within the southern quarter of the site during the 0.1% AEP storm event. A small area of surface water pooling is also shown on the northern boundary during the 3.3% AEP event. Despite the low-risk classification, any future development should incorporate appropriate surface water management and mitigation measures to ensure runoff is controlled and local exceedance is safely managed. **Groundwater Flood Risk:** MSA1 presents a medium risk of groundwater flooding, with susceptibility varying across the site: • Category A in the southern extent, • a smaller Category B area to the east, and • Category C susceptibility in the northern part of the site. This variation indicates locally elevated potential for groundwater emergence in certain sections, which should be considered during future site investigation and design.

018	Land Adjacent Branscombe Cl	MSA2	n/a	2.18	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** MSA2 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA2 is assessed as being at low risk of surface water flooding, with a small area of mapped flooding located just within the western site boundary during the 1% and 0.1% AEP storm events. Although the risk is limited in extent, any future development should still incorporate suitable surface water management and mitigation measures to avoid increasing runoff or affecting adjacent land. **Groundwater Flood Risk:** MSA2 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
019	Affinity Water Site, Mill Hill	MSA3	n/a	2.13	100%	0%	0%	High	Low	**Fluvial Flood Risk:** MSA3 is located within Flood Zone 1, indicating a low probability of fluvial flooding and no identified fluvial flood risk to the site. **Surface Water Flood Risk:** MSA3 is at high risk of surface water flooding, primarily associated with the southern pond located within the site boundary. Modelled surface water flooding is present during the 3.3%, 1%, and 0.1% Annual Exceedance Probability (AEP) storm events. Access and egress via Mill Lane may become restricted during the 0.1% AEP event, and appropriate mitigation measures will be required to maintain safe access during extreme rainfall events. **Groundwater Flood Risk:** MSA3 is assessed as low risk from groundwater flooding. The western quarter of the site is classified as Susceptibility Category B, while the remainder of the site is unclassified, indicating generally limited groundwater flood potential.
020	Crisp Malting	MSA4	Several Applications	1.89	76%	24%	1.7%	Medium	Very Low	**Fluvial Flood Risk:** MSA4 lies partly within Flood Zones 2 and 3, indicating a medium risk of fluvial flooding. Flooding affects the western boundary, associated with the watercourse that runs adjacent to the western edge of the site.

										Surface Water Flood Risk: MSA4 is assessed as being at medium risk of surface water flooding, with mapped flooding located within: • the western quarter, • the south-eastern corner, and • the central portion of the site. Most of the surface water flooding is associated with the 3.3% AEP storm event, although additional areas are also affected during the 1% and 0.1% AEP events. Any future development will require appropriate surface water management and mitigation measures to reduce runoff and manage exceedance flow routes. **Groundwater Flood Risk:** MSA4 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
021	Brightlingsea Telephone Exchange	MSA5	n/a	0.09	100%	0%	0%	Very Low	Medium	**Fluvial Flood Risk:** MSA5 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA5 is assessed as being at very low risk of surface water flooding, with a small area of mapped flooding located along the southern boundary during the 0.1% AEP storm event. Although the risk is minimal, any future development should ensure surface water runoff is appropriately managed to avoid introducing or exacerbating pluvial flood risk. **Groundwater Flood Risk:** MSA5 presents a medium risk of groundwater flooding, with the majority of the site classified as Susceptibility Category B, indicating a moderate potential for groundwater emergence that should be considered during site investigation and design.
022	Land at Pannell Place, Brightlingsea	MSA6	n/a	1.24	100%	0%	0%	Very Low	Low	**Fluvial Flood Risk:** MSA6 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA6 is assessed as being at very low risk of surface water flooding. Although the mapped risk is

										minimal, any future development should ensure surface water runoff is effectively managed to avoid introducing or increasing pluvial flood risk on-site or to neighbouring areas. **Groundwater Flood Risk:** MSA6 presents a low risk of groundwater flooding, with the entire site classified as Susceptibility Category A, indicating limited potential for groundwater emergence across the site.
023	Land South-West side of Colchester Main Rd	MSA7	17/01761/OUT 19/00474/OUT	3.96	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA7 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA7 is assessed as being at very low risk of surface water flooding, with minor flooding mapped along the south-western boundary during the 1%–0.1% AEP storm events. Although the overall risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to prevent increased runoff or diversion of flows onto adjacent land. **Groundwater Flood Risk:** MSA7 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
024	Land Adjacent Village Hall, Harwich Rd, Beaumont-cum-Moze	MSA8	n/a	0.90	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA8 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA8 is assessed as being at very low risk of surface water flooding, with a small area of surface water accumulation identified in the north-eastern corner of the site during the 0.1% AEP storm event. Although the overall risk is minimal, any future development should incorporate suitable surface water management and mitigation measures to avoid increasing pluvial flood risk. **Groundwater Flood Risk:** MSA8 presents no identified risk of groundwater flooding, with no significant susceptibility indicated across the site.

025	Land South of Windmill Rd and East of Straight Rd	MSA9	n/a	1.63	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** MSA9 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA9 is assessed as being at low risk of surface water flooding, with a small area of surface water accumulation identified in the northern quarter, adjacent to Windmill Road. Although the risk is limited, any future development should implement appropriate surface water management and mitigation measures to prevent increases in pluvial flood risk on or off site. **Groundwater Flood Risk:** MSA9 presents no identified risk of groundwater flooding, with no significant susceptibility indicated across the site.
026	Land South of Weeley Rd	MSA10	n/a	5.41	82%	18%	14%	Medium	Very Low	**Fluvial Flood Risk:** MSA10 lies partly within Flood Zones 2 and 3, indicating a high risk of fluvial flooding. Flooding affects the northern and eastern boundaries, associated with the watercourse that runs adjacent to the eastern boundary, which forms part of the drainage network connected to Weeley Brook. **Surface Water Flood Risk:** MSA10 is assessed as being at medium risk of surface water flooding, with mapped flooding present along the southern, northern, and eastern boundaries during the 3.3%, 1%, and 0.1% AEP storm events. Appropriate surface water management and mitigation will be required for any future development to reduce localised flooding and manage exceedance flows. **Groundwater Flood Risk:** MSA10 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
027	Land West of Parsons Hill	MSA11	n/a	2.26	71.3%	28.7%	23.8%	Low	High	**Fluvial Flood Risk:** MSA11 lies partly within Flood Zones 2 and 3, indicating a high risk of fluvial flooding. Flooding affects the northern quarter of the site and is associated with two watercourses that flow across the northern boundary, near the sewage works. These watercourses and their mapped flood extents justify the high-risk classification.

										Surface Water Flood Risk: MSA11 is assessed as being at low risk of surface water flooding, with isolated surface water accumulation located in the central northern quarter and along the eastern boundary. Flooding is shown during the 3.3%, 1%, and 0.1% AEP storm events. Although the risk is limited, future development should include appropriate surface water management and mitigation measures to prevent increased pluvial flood risk and safely manage exceedance flows. **Groundwater Flood Risk:** MSA11 presents a very low risk of groundwater flooding, with no significant susceptibility indicated across the site.
028	Land South of Hall Rd	MSA12	n/a	2.26	100%	0%	0%	Low	High	**Fluvial Flood Risk:** MSA12 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA12 is assessed as being at low risk of surface water flooding, with mapped flooding occurring in the northern quarter of the site during the 3.3%, 1%, and 0.1% AEP storm events. Despite the low-risk classification, any future development should include appropriate surface water management and mitigation measures to ensure runoff is controlled and does not increase pluvial flood risk. **Groundwater Flood Risk:** MSA12 presents a high risk of groundwater flooding. The majority of the site is classified as Susceptibility Category C, with an additional area along the southern boundary classified as Category B. This combination of widespread Category C susceptibility and supporting Category B areas justifies the high-risk classification and will require careful consideration during any future ground investigations or development design.
029	Land West of Main Rd	MSA13	n/a	1.77	100%	0%	0%	Low	Medium	**Fluvial Flood Risk:** MSA13 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA13 is assessed as being at low risk of surface water flooding, with mapped surface water

										accumulation primarily located along the northern and southern boundaries, and a smaller isolated area within the central part of the site. Most flooding occurs during the 3.3% AEP storm event, with additional limited areas affected during the 1% and 0.1% AEP events. Despite the low-risk classification, any future development should incorporate appropriate surface water management and mitigation measures to ensure runoff is controlled and does not exacerbate pluvial flood risk. **Groundwater Flood Risk:** MSA13 presents a medium risk of groundwater flooding, as the entire site is classified as Susceptibility Category B, indicating a moderate potential for groundwater emergence that should be considered during site design and ground investigations.
030	Land East of Kirby Rd	MSA14	n/a	1.38	100%	0%	0%	High	Very Low	**Fluvial Flood Risk:** MSA14 is located within Flood Zone 1, indicating a low probability of fluvial flooding and no identified fluvial flood risk. **Surface Water Flood Risk:** MSA14 is at high risk of surface water flooding, with significant ponding and flow routes affecting the southern and central sections of the site, particularly in the direction of Larges Farm Cottage. Surface water flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Additional overland flow is shown to the northeast adjacent to The Stile, with potential to encroach onto the site during the 0.1% AEP event. **Groundwater Flood Risk:** MSA14 presents a very low risk of groundwater flooding, with no significant susceptibility indicated across the site.
031	Land North-east of Wix Rd	MSA15	n/a	4.33	100%	0%	0%	Very Low	Low	**Fluvial Flood Risk:** MSA15 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA15 is assessed as being at very low risk of surface water flooding. Although the risk is minimal, any future development should ensure that surface water

										runoff is appropriately managed to avoid introducing or exacerbating pluvial flood risk on-site or downstream. **Groundwater Flood Risk:** MSA15 presents a low risk of groundwater flooding. The majority of the site is classified as Susceptibility Category A, with a small area along the north-western boundary identified as Category B, indicating slightly higher but still limited groundwater emergence potential.
032	Land South of Orchard Cl	MSA16	n/a	2.46	100%	0%	0%	Medium	Low	**Fluvial Flood Risk:** MSA16 is located within Flood Zone 1, indicating a low probability of fluvial flooding and no identified fluvial flood risk to the site. **Surface Water Flood Risk:** MSA16 is assessed as being at medium risk of surface water flooding, with mapped surface water flow routes affecting the north-western footpath and areas adjacent to the recreational ground. These pathways may pose access and egress constraints, and any future development will require appropriate surface water management and mitigation to address this risk. **Groundwater Flood Risk:** MSA16 presents a low risk of groundwater flooding, with the site classified predominantly as Susceptibility Category A, indicating limited potential for groundwater emergence across the entire site.
033	Land North of Walton Rd, Kirby-le-Soken	MSA17	n/a	0.86	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA17 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA17 is assessed as having no surface water flood risk within the site boundary. However, surface water accumulation is present off-site, affecting: • the B1034, and • the residential estate to the west. Although the site itself is unaffected, any future development should include appropriate surface water management and

										mitigation measures to ensure it does not increase pluvial flood risk to surrounding areas. **Groundwater Flood Risk:** MSA17 presents no identified groundwater flood risk, with no mapped susceptibility across the site.
034	West of Manningtree Rd	MSA19	n/a	0.66	100%	0%	0%	High	Very Low	**Fluvial Flood Risk:** MSA19 lies within Flood Zone 1, indicating a low probability of fluvial flooding and no identified fluvial flood risk to the site. **Surface Water Flood Risk:** MSA19 is at high risk of surface water flooding, with mapped ponding located: • along the site boundary adjacent to Manningtree Road, • within the central portion of the site, and • across the northern quarter. Flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. These areas of surface water accumulation may create access and egress constraints, and mitigation measures will be required to ensure safe access during extreme rainfall events. **Groundwater Flood Risk:** MSA19 presents no identified risk from groundwater flooding.
035	Land South of Shop Rd, Little Bromley	MSA20	19/00676/FUL	0.90	100%	0%	0%	High	Very Low	**Fluvial Flood Risk:** MSA20 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA20 is assessed as being at high risk of surface water flooding, with flooding affecting the entire site. The majority of mapped flooding occurs during the 0.1% AEP event, with additional areas also affected during the 1% and 3.3% AEP storm events. Given the high-risk classification, any future development must incorporate robust surface water management and mitigation measures to manage on-site exceedance flows and ensure safe access and drainage.

										Groundwater Flood Risk: MSA20 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
036	Land East of Heckfords Rd	MSA 21	n/a	4.10	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA21 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA21 is assessed as being at very low risk of surface water flooding, with minor surface water accumulation mapped along the southeastern boundary during the 3.3%–0.1% AEP storm events. Despite the low-risk classification, any future development should incorporate suitable surface water management and mitigation measures to ensure runoff is appropriately controlled. **Groundwater Flood Risk:** MSA21 presents a very low risk of groundwater flooding, with no significant areas of susceptibility identified across the site.
037	Haulage Depot, Heath Rd	MSA22	n/a	0.77	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA22 is located entirely within Flood Zone 1 and is therefore considered to have a low probability of fluvial flooding. **Surface Water Flood Risk:** MSA22 is not itself affected by significant surface water flooding. While certain nearby properties are shown to be at risk, this does not directly impact the site; however, it may pose indirect risks to access and egress. Although classified as Low Risk, any future development should incorporate appropriate surface water management and mitigation measures. **Groundwater Flood Risk:** MSA22 is assessed as having no identified risk from groundwater flooding.
038	Land at Avocet Place, Thorrington	MSA23	n/a	4.18	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** MSA23 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA23 is assessed as being at low risk of surface water flooding, with mapped surface water accumulation located in the:

										• north-western quarter, and • south-eastern boundary. Flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. Despite the low-risk classification, any future development should incorporate appropriate surface water management and mitigation measures to ensure runoff is effectively controlled. **Groundwater Flood Risk:** MSA23 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
039	Land East of Bentley Rd, Weeley Heath	MSA24	19/01201/OUT	4.75	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA24 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA24 is assessed as being at very low risk of surface water flooding. Minor areas of surface water accumulation are present: • along the south-western to north-western boundary, • along the south-eastern to north-eastern boundary, and • within the eastern corner of the site. These areas are limited in extent and are likely to have low impact, but any future development should still incorporate appropriate surface water management and mitigation measures. **Groundwater Flood Risk:** MSA24 presents a very low risk of groundwater flooding, with no significant susceptibility indicated across the site.
040	Land South of Mill Ln	MSA25	17/01912/OUT	1.37	100%	0%	0%	Medium	Very Low	**Fluvial Flood Risk:** MSA25 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA25 is assessed as being at medium risk of surface water flooding, with flooding primarily affecting the:

										• northern boundary (towards Oak Cottage), • north-eastern boundary, and • southern boundary. Surface water flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Given the medium-risk classification, any future development will require appropriate surface water management and mitigation measures to manage runoff and maintain safe access. **Groundwater Flood Risk:** MSA25 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
041	Land South of Colchester Rd, Wix	MSA26	n/a	1.16	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** MSA26 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA26 is assessed as being at low risk of surface water flooding, with flooding primarily affecting the western quarter of the site and the northern boundary adjacent to Colchester Road. Mapped surface water flooding occurs during the 3.3%–0.1% AEP storm events. Additional off-site surface water flow paths exist in the vicinity of Fredericks Close, which may influence local drainage patterns and should be considered in any future development. **Groundwater Flood Risk:** MSA26 presents a very low risk of groundwater flooding, with no significant susceptibility identified across the site.
042	Land North Rectory Rd, Wrabness	MSA28	n/a	2.15	100%	0%	0%	Very Low	Low	**Fluvial Flood Risk:** MSA28 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA28 is assessed as being at very low risk of surface water flooding, with a small area of surface water accumulation located along the southern boundary during the 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate effective surface water management and

										mitigation measures to avoid introducing or increasing pluvial flood risk. **Groundwater Flood Risk:** MSA28 presents a low risk of groundwater flooding, with the entire site classified as Susceptibility Category A, indicating limited potential for groundwater emergence.
043	Land at Weeley Council Offices Thorpe Rd	MSA29	n/a	0.81	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA29 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA29 is assessed as being at very low risk of surface water flooding, with a small, isolated patch of surface water accumulation located in the north-eastern corner of the site. This flooding is mapped during the 3.3%, 1%, and 0.1% AEP storm events. Although the risk is minimal, any future development should include effective surface water management and mitigation measures to avoid increasing pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA29 presents a very low risk of groundwater flooding, with only a small area along the north-western boundary classified as Susceptibility Category A, indicating a very limited potential for groundwater emergence.
044	Land off Waterworks Drive	MSA30	n/a	2.30	100%	0%	0%	High	High	**Fluvial Flood Risk:** MSA30 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA30 is assessed as being at high risk of surface water flooding, with widespread and varied patches of surface water accumulation across the site. The most significant areas of flooding are located in the: • south-western part of the site, and • eastern boundary, primarily associated with the 3.3% AEP storm event, with additional flooding present during the 1% and 0.1% AEP events.

										Further isolated areas of surface water risk are also identified towards the northern boundary. Given the high-risk classification, any future development must incorporate robust and proactive surface water mitigation measures, ensure safe exceedance management and prevent increased flood risk. **Groundwater Flood Risk:** MSA30 presents a high risk of groundwater flooding, with the entire site classified as Susceptibility Category C, indicating a significant potential for groundwater emergence that must be thoroughly considered during ground investigation, site layout, and drainage design.
045	Land adjoining Harwich & Parkeston Football Club, Main Rd	MSA31	21/00926/FUL	0.63	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA31 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA31 is assessed as being at very low risk of surface water flooding, with small, isolated patches of surface water accumulation mapped along the eastern boundary during the 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA31 presents no identified risk of groundwater flooding, with no mapped susceptibility across the site.
046	Station Yard and Former Avon Works, off Station Rd	MSA32	n/a	1.17	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** MSA32 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA32 is assessed as being at low risk of surface water flooding, with isolated areas of surface water accumulation identified along the: • southern boundary, • western boundary, and • north-eastern corner.

										These areas are mapped during the 1% and 0.1% AEP storm events. Although the risk is limited, any future development should incorporate appropriate surface water management and mitigation measures to prevent increases in pluvial flood risk. **Groundwater Flood Risk:** MSA32 presents no identified risk of groundwater flooding, with no areas of mapped susceptibility across the site.
047	Well House Site, Chestnut Way, Brightlingsea	MSA33	n/a	0.46	100%	0%	0%	Low	Low	**Fluvial Flood Risk:** MSA33 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA33 is assessed as being low risk of surface water flooding, with small, isolated patch in the northern half of the site, surface water accumulation can be seen during a 3.3% to 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA33 presents a low risk of groundwater flooding with a small part of the northern boundary classified as Susceptibility Category B, indicating limited potential for groundwater emergence.
048	Vicarage Field, Church Rd, Brightlingsea	MSA34	n/a	1.41	100%	0%	0%	Very Low	Low	**Fluvial Flood Risk:** MSA34 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA34 is assessed as being low risk of surface water flooding, with small, isolated patch in the northeastern corner of the site, surface water accumulation can be seen during a 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA34 presents a low risk of groundwater flooding with the whole site classified as

										Susceptibility Category A, indicating limited potential for groundwater emergence.
049	Land North of Robinson Rd, Brightlingsea	MSA35	n/a	1.31	100%	0%	0%	Low	Low	**Fluvial Flood Risk:** MSA35 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA35 is assessed as being low risk of surface water flooding, with small, isolated patch in the northeastern corner of the site, surface water accumulation can be seen during a 3.3% to 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA35 presents a low risk of groundwater flooding with the whole site classified as Susceptibility Category A, indicating limited potential for groundwater emergence.
059	Land North of Wix Rd, Bradfield	MSA36	n/a	1.46	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** MSA36 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** MSA36 is assessed as being low risk of surface water flooding, with small, isolated patch in the southwestern corner of the site, surface water accumulation can be seen during a 3.3% to 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA36 presents no identified risk of groundwater flooding, with no areas of mapped susceptibility across the site.
051	Land East of The Street, Bradfield	MSA37	n/a	1.74	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** MSA37 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk.

										Surface Water Flood Risk: MSA37 is assessed as being at very low risk of surface water flooding, with a minor, isolated intersection of surface water accumulation located in the southwestern corner of the site. This flooding is mapped during the 0.1% AEP storm events. Although the risk is minimal, any future development should include effective surface water management and mitigation measures to avoid increasing pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** MSA37 presents no identified risk of groundwater flooding, with no areas of mapped susceptibility across the site.
052	Carless Extension, Harwich	SEA1	n/a	4.4	83.2%	16.8%	0%	Very Low	Medium	**Fluvial Flood Risk:** SEA1 the site falls within Flood Zone 2 indicating a medium risk of fluvial flooding across the site. Flood extents affect the southern and northeastern boundaries of the site, influenced by multiple adjacent watercourses such as Ramsay Creek and Bramble Creek. The site's falls mostly within a Flood Zone 2 which confirms its High-Risk classification. **Surface Water Flood Risk:** SEA1 is assessed as being at very low risk of surface water flooding, with small, isolated patch in the pond adjacent just north of the pond of surface water accumulation during a 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** SEA1 presents a Medium risk of groundwater flooding, with areas along the northern boundary classified as Susceptibility Category A and B, as well as areas to the east Categorised as C. This medium risk extent of susceptibility does not significantly elevate overall groundwater flood risk but should be closely monitored and investigated.
053	Freeport East, Bathside Bay and A120 Corridor	SEA2	n/a	135.54	12.6%	87.4%	85.3%	Medium	High	**Fluvial Flood Risk:** SEA2 is predominantly within Flood Zone 3 indicating a high risk of fluvial flooding across the site. Flood extents affect the whole site, influenced by multiple adjacent watercourses, including Holbrok Creek and River Orwell. The

										site's majority coverage by Flood Zone 3 confirms its High-Risk classification. **Surface Water Flood Risk:** SEA2 is assessed as being at medium risk of surface water flooding, with multiple areas of surface water accumulation occurring across the entire site. Flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. Given the high-risk classification, any future development must incorporate robust surface water management and mitigation measures, ensuring safe exceedance routing, on-site attenuation, and prevention of increased pluvial flood risk on or off site. **Groundwater Flood Risk:** SEA2 presents a high risk of groundwater flooding, with the majority of the site classified as Susceptibility Category C, with parts classified as B. This widespread susceptibility indicates a significant potential for groundwater emergence, requiring thorough consideration during site layout, drainage design, and ground investigations.
054	Grovewood Business Park, Collierswood Farm, Land North of A120	SEA3	n/a	78.00	100%	0%	0%	High	Very Low	**Fluvial Flood Risk:** SEA3 is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** SEA3 is assessed as being at high risk of surface water flooding, with multiple areas of surface water accumulation occurring across the entire site. Flooding is present during the 3.3%, 1%, and 0.1% AEP storm events. Given the high-risk classification, any future development must incorporate robust surface water management and mitigation measures, ensuring safe exceedance routing, on-site attenuation, and prevention of increased pluvial flood risk on or off site. **Groundwater Flood Risk:** SEA3 presents a very low risk of groundwater flooding, with only a small, isolated patch along the northern boundary classified as Susceptibility Category C. This limited extent of susceptibility does not significantly elevate overall groundwater flood risk.

055	Extension to Gorse Ln Industrial Estate, Telford Rd, Clacton	PP7a	n/a	6.91	100%	0%	0%	Very Low	Low	**Fluvial Flood Risk:** PP7a is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** PP7a is assessed as being at very low risk of surface water flooding, with small, isolated patches of surface water accumulation mapped along the northeastern, and southern boundary during the 3.3% to 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** PP7a presents a low risk of groundwater flooding, with only a small, isolated patch along the northern boundary classified as Susceptibility Category B. This limited extent of susceptibility does not significantly elevate overall groundwater flood risk.
056	Harwich Valley (Land East of Pond Hall Farm Dovercourt)	PP7b	n/a	8.43	1.3%	27.1%	98.7%	High	High	**Fluvial Flood Risk:** PP7b is predominantly within Flood Zone 3, and Flood Zone 2 indicating a high risk of fluvial flooding across the site. Flood extents affect the whole site, influenced by multiple adjacent watercourses, including Ramsay Creek. The site's majority coverage by Flood Zone 3 confirms its High-Risk classification. **Surface Water Flood Risk:** PP7b is assessed as being at High risk of surface water flooding, with large, patches of surface water accumulation distributed across the site. The most notable surface water risk is located in the north-western and north-eastern quarters, with flooding present during the 3.3%, 1%, and 0.1% AEP storm events. Due to this surface water risk, future development should incorporate appropriate surface water management and mitigation measures to avoid increasing pluvial flood risk. **Groundwater Flood Risk:** PP7b presents a high risk of groundwater flooding, with the majority of the site classified as Susceptibility Category C. This widespread susceptibility indicates a significant potential for groundwater emergence,

										requiring thorough consideration during site layout, drainage design, and ground investigations.
057	Land at Stanton Europark, Parkeston	PP7c	n/a	3.59	0%	0%	100%	High	High	**Fluvial Flood Risk:** PP7c the site falls within Flood Zone 3 indicating a high risk of fluvial flooding across the site. Flood extents affect the whole site, influenced by multiple adjacent watercourses. The site's falls wholly within a Flood Zone 3 confirms its High-Risk classification. **Surface Water Flood Risk:** PP7c is assessed as being at High risk of surface water flooding, with large, patches of surface water accumulation distributed across the site. The most notable surface water risk is located in the northern half and southern half, with flooding present mostly in 0.1% AEP and also the 3.3% and, 1%, storm events. Due to this surface water risk, future development should incorporate appropriate surface water management and mitigation measures to avoid increasing pluvial flood risk. **Groundwater Flood Risk:** PP7c presents a high risk of groundwater flooding, with the whole site classified as Susceptibility Category C. This widespread susceptibility indicates a significant potential for groundwater emergence, requiring thorough consideration during site layout, drainage design, and ground investigations.
058	Crown Business Centre, Old Ipswich Rd, Ardleigh/Colchester, Grovewood Business Park, Collierswood Farm, Land North of the A120	PP7d	n/a	2.76	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** PP7d is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** PP7d is assessed as being at very low risk of surface water flooding, with a small, isolated patch of surface water accumulation mapped in the southern quarter during the 1% to 0.1% AEP storm event. Although the risk is minimal, any future development should incorporate appropriate surface water management and mitigation measures to ensure it does not increase pluvial flood risk on-site or to neighbouring land. **Groundwater Flood Risk:** PP7d presents no identified risk of groundwater flooding, with no areas of mapped susceptibility across the site.

059	Land North of A120 Harwich	PP7e	n/a	5.33	0%	0%	100%	Low	High	**Fluvial Flood Risk:** PP7e lies entirely within Flood Zone 3, indicating a high risk of fluvial flooding across the site. Flood extents affect the western, eastern, and southern areas, influenced by multiple adjacent watercourses, including Ramsay Creek. The site's full coverage by Flood Zone 3 confirms its High-Risk classification. **Surface Water Flood Risk:** PP7e is assessed as being at low risk of surface water flooding, with small, isolated patches of surface water accumulation distributed across the site. The most notable surface water risk is located in the south-western quarter, with flooding present during the 3.3%, 1%, and 0.1% AEP storm events. Although the surface water risk is limited, future development should incorporate appropriate surface water management and mitigation measures to avoid increasing pluvial flood risk. **Groundwater Flood Risk:** PP7e presents a high risk of groundwater flooding, with the entire site classified as Susceptibility Category C. This widespread susceptibility indicates a significant potential for groundwater emergence, requiring thorough consideration during site layout, drainage design, and ground investigations.
060	Weeley Car Boot Site, Land to the North of Colchester Rd, Weeley	PP7f	n/a	2.03	100%	0%	0%	Low	Very Low	**Fluvial Flood Risk:** PP7f is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** PP7f is assessed as being at low risk of surface water flooding, with small, isolated patches of surface water accumulation identified along the: • north-eastern boundary, • eastern boundary, and • south-western boundary. These areas are mapped during the 3.3%, 1%, and 0.1% AEP storm events. Despite the limited extent of risk, any future development should incorporate effective surface water management and mitigation measures to ensure pluvial flood risk is not increased on-site or downstream.

										Groundwater Flood Risk: PP7f presents no identified risk of groundwater flooding, with no areas of mapped susceptibility across the site.
061	Land off Clacton Rd/ Dead Ln, Mistley	PP7g	n/a	1.69	100%	0%	0%	Very Low	Very Low	**Fluvial Flood Risk:** PP7g is located within Flood Zone 1, indicating a low probability of fluvial flooding and therefore no identified fluvial flood risk. **Surface Water Flood Risk:** PP7g is assessed as being at very-low risk of surface water flooding, with no recorded surface water accumulation distributed across the site. Although there are some isolated patches outside the site boundary. Despite the limited extent of risk, any future development should incorporate effective surface water management and mitigation measures to ensure pluvial flood risk is not increased on-site or downstream. **Groundwater Flood Risk:** PP7g presents no identified risk of groundwater flooding, with no areas of mapped susceptibility across the site.
062	Walton Mere	PP15	n/a	10.36	0%	0%	100%	High	High	**Fluvial Flood Risk:** PP15 lies entirely within Flood Zone 3, indicating a high risk of fluvial flooding across the site. Flood extents affect the whole site, influenced by multiple adjacent watercourses, including Walton Channel and The Twizzle. The site's full coverage by Flood Zone 3 confirms its High-Risk classification. **Surface Water Flood Risk:** PP15 is assessed as being at High risk of surface water flooding, with moderate, patches of surface water accumulation distributed across the site. The most notable surface water risk is located in the south-western and western-middle quarters, with flooding present during the 3.3%, 1%, and 0.1% AEP storm events. Due to this surface water risk, future development should incorporate appropriate surface water management and mitigation measures to avoid increasing pluvial flood risk. **Groundwater Flood Risk:** PP15 presents a high risk of groundwater flooding, with the entire site classified as Susceptibility Category C. This widespread susceptibility indicates a significant potential for groundwater emergence,

										requiring thorough consideration during site layout, drainage design, and ground investigations.

Table 9.2 | Summary Information for the Tendring Local Plan
Sites with High-Risk Sites Shown in Red, Medium-Risk in Orange, Low-Risk in Green

[End of Section 9.0]

10.0 Guidance on Future Developments:

The relevant policy recommendations can be seen in [Section 2.0] and [Section 7.0], these are policy recommendations related to managing the cumulative impacts of development from HM Government and Local Government. The below is guidance recommendations for the whole of Tendring.

10.10.1 – Reduction of flood risk through strategic site allocations and appropriate site design:

- Apply the Sequential Test in accordance with the NPPF and PPG to steer development towards areas of lowest flood risk, prioritising Flood Zone 1 and avoiding high-risk surface water areas. Incorporate climate change allowances (per EA guidance) when assessing future flood extents. Where development in Flood Zones 2 or 3 is unavoidable, undertake the Exception Test to demonstrate sustainability and safety.
- Following the Exception Test, implement a sequential approach to site layout and design to minimise residual risk. Redevelopment within flood risk areas that delivers wider sustainability benefits must provide flood risk betterment and incorporate resilient construction measures (e.g., flood-resistant materials, raised thresholds).
- Identify and safeguard functional floodplain (Flood Zone 3b) from future development, ensuring compliance with NPPF policy to make space for water and support long-term flood risk management strategies.
- Assess ordinary watercourses during site allocation and design. Where flood mapping is absent, commission hydraulic modelling to an appropriate level of detail to inform layout decisions and maintain a sequential approach.
- Ensure development is demonstrably safe for its lifetime, including provision for dry pedestrian egress and emergency vehicular access during the 1% AEP (1 in 100-year) flood event plus climate change. Undertake detailed flood hazard assessments (depth, velocity, hazard rating) in accordance with FD2320 guidance.
- Provide safe refuge areas for developments exposed to residual risks from extreme flood events or rapid inundation scenarios, ensuring compliance with emergency planning requirements.
- Raise finished floor levels (FFL) for residential and commercial properties by a minimum of 600mm above the 1% AEP plus climate change flood level, and safeguard land for future flood alleviation schemes.
- Prioritise brownfield redevelopment within the functional floodplain where risk can be reduced and betterment achieved, aligning with sustainability objectives and Essex LP policies.
- Explore opportunities for developer contributions (via Section 106 or CIL) to fund strategic flood risk management measures that reduce risk for surrounding communities.

- Integrate climate change adaptation by designing developments to make space for water, incorporating SuDS features (attenuation basins, swales, permeable paving) and supporting natural flood management principles.

10.10.2 – Promote SuDS to mimic natural drainage routes improving water quality:

- SuDS design proposals must demonstrate how site-specific constraints have been assessed and mitigated, and how the design delivers multi-functional benefits including landscape integration, biodiversity enhancement, recreational and amenity value, leisure opportunities, and the protection or enhancement of heritage assets, in line with the Environment Act 2021 and Essex GI Strategy.
- Phased developments must be supported by a comprehensive drainage strategy that adopts a strategic approach to surface water management across the entire site. The strategy should ensure adequate provision for SuDS within each phase, maintain hydraulic connectivity, and incorporate future-proofing for climate change allowances.
- Apply the SuDS management train to control water quality and prevent pollutant mobilisation, ensuring effective treatment of the 'first flush' before discharge to receiving waterbodies, in accordance with CIRIA SuDS Manual (C753)[70] and Essex SuDS Design Guide (ESDG)[71]. This guidance should be consulted during the consideration of all planning applications. Please note that the ESDG was last updated in Spring 2020 and should be consulted when assessing all major developments going forward.
- SuDS components must be designed for ease of maintenance, with clear identification of the responsible party (e.g., developer, management company, local authority) and a sustainable funding mechanism. A detailed Maintenance and Operation Manual should accompany planning submissions, specifying inspection regimes, performance monitoring, and long-term asset management requirements.

10.10.3 – Reduce Surface Water Runoff from new developments and agricultural land:

- Allocate sufficient space for SuDS integration within all site allocations, outline proposals, and full planning applications, ensuring compliance with the Non-Statutory Technical Standards for SuDS and **Essex County Council's SuDS Design Guide**. Designs should demonstrate how SuDS features are incorporated into the masterplan from the outset rather than retrofitted.
- Promote biodiversity and habitat enhancement through SuDS design and Essex GI Strategy 2020[72], and Essex GI Standards 2022[73] aligning with BNG requirements under the **Environment Act 2021**. Encourage integration with Countryside Stewardship schemes and soil conservation practices to reduce erosion and surface runoff from agricultural land, supporting Natural Flood Management (NFM) principles.

[70] **The CIRIA SuDS Manual C753 |** https://www.ciria.org/ItemDetail?iProductCode=C753&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91

[71] **Essex SuDS Design Guide 2020 |** suds | Essex Design Guide

[72] **Essex Green Infrastructure Strategy 2020 |** Essex Green Infrastructure Strategy (2020) | Essex Design Guide

[73] **Essex Green Infrastructure Standards 2022 |** Essex Green Infrastructure Standards | Essex Design Guide

10.10.4 – Enhancing and Restoring river corridors and habitats:

- Assess the condition and hydraulic capacity of existing drainage and flood risk management assets (e.g., culverts, outfalls, attenuation basins) and upgrade where necessary to ensure infrastructure can accommodate design flows and climate change allowances for the lifetime of the development, in accordance with LLFA requirements and the **2010**.
- Preserve and enhance natural drainage features such as ditches, ponds, and wetlands, integrating them into site design to support Natural Flood Management (NFM) principles and deliver biodiversity and amenity benefits.
- Identify opportunities for river restoration and channel enhancement to reinstate natural processes, improve floodplain connectivity, and make space for water, aligning with the EA's **River Basin Management Plans** and Essex GI Strategy[74].
- Apply a presumption against culverting open watercourses, except where essential for highways or critical infrastructure crossings, in line with CIRIA Culvert Design and Operation Guide (C689F)[75]. Restrict built development over culverts to maintain access for inspection and maintenance.
- Maintain an 8m development-free buffer zone from the top of bank of any Main River or watercourse, safeguarding the watercourse corridor for wildlife habitat, flood conveyance, and future maintenance or improvement works, in accordance with EA byelaws and Essex LFRMS.

10.10.5 – Mitigation against risks, involved in emergency planning and flood awareness:

- Work with emergency planning colleagues and stakeholders to identify areas at highest risk and locate most vulnerable receptors.
- Design exceedance flow routes both within and beyond the site boundary to safely convey flows during events exceeding design capacity, minimising risk to people, property, and critical infrastructure, in accordance with **CIRIA SuDS Manual (C753)** and Essex LLFA guidance.
- For pumped drainage systems, undertake a failure mode assessment to evaluate flood risk under pump failure scenarios. This should include determining the design flood level assuming pumps fail during a design storm event and attenuation storage is at capacity, ensuring resilience and contingency planning.
- Provide emergency overflow routes and structures for piped networks and storage features to accommodate flows above the predicted water level for the 1% AEP rainfall event plus climate change and urban creep allowances, ensuring compliance with Non-Statutory Technical Standards for SuDS.

[74] **Essex Green Infrastructure Strategy 2020 |** Essex Green Infrastructure Strategy (2020) | Essex Design Guide

[75] **CIRIA Culvert Design and Operation Guide |** https://www.ciria.org/CIRIA/Books/Free_publications/C689F.aspx

- Incorporate flood resilience measures for extreme events up to the 0.1% AEP (1 in 1000-year) event, including raised thresholds, flood-resistant materials, and sacrificial areas, in line with **Planning Practice Guidance (PPG)**.
- Develop robust emergency evacuation plans for major developments, including Flood Warning and Evacuation Plans for vulnerable uses and transient populations (e.g., caravan parks, campsites) located within flood risk areas, as required by NPPF and PPG.
- Promote sign-up to the EA's **Flood Warning Service** for all developments within Tendring District Council's administrative area, ensuring community preparedness and compliance with emergency planning frameworks.

10.10.6 – Other Considerations:

The **ECC Green Infrastructure (GI) Strategy (2020)**, **ECC Green Infrastructure Standards (2022)**, and the **Local Nature Recovery Strategy (2025)** should all also be considered during the assessment of all future planning applications in relation to these sites including their restoration. The strategy's aims to enhance, protect and create an inclusive and integrated network of high-quality nature recovery, GI in Essex. Please contact the Climate Adaptation and Mitigation Team at Essex County Council in the first instance at **environment@essex.gov.uk**.

The Enabling Water Smart Communities Project (an Ofwat Innovation Project) explores the relationship between integrated water management, community engagement and practices, and housing development to unlock new opportunities for cross-sector delivery and stewardship. A useful source of information for SuDS and water reuse can be found on the **Enabling Water Smart Communities website**.

[End of Section 10.0]

11.0 Concluding Statement:

This Strategic Flood Risk Assessment (SFRA) provides Tendring District Council with a comprehensive and robust evidence base to manage flood risk across the district and to support the preparation, refinement, and delivery of the Local Plan. It draws on the latest national datasets, Environment Agency flood modelling, surface water and groundwater mapping, climate change allowances, and relevant planning and environmental legislation. The SFRA establishes a clear understanding of flood risk from all sources including fluvial, tidal, surface water, groundwater, sewers, and reservoirs across the 62 assessed Local Plan sites.

In line with the National Planning Policy Framework (NPPF), the SFRA reinforces the need to steer development towards areas of lowest flood risk through application of the Sequential Test, and to apply the Exception Test where necessary to ensure that development within higher risk areas is appropriately justified and safe over its lifetime. The assessment shows that the majority of sites are located within Flood Zone 1 or have limited interaction with higher flood risk areas. However, a number of sites contain areas of medium or high flood risk associated with fluvial floodplains, surface water flow paths, or groundwater emergence. These sites will require careful master planning, site-specific Flood Risk Assessments, and proportionate mitigation measures.

Surface water flooding is identified as a widespread and significant residual risk across the district, particularly during intense rainfall events and under future climate change scenarios. The SFRA emphasises the critical role of Sustainable Drainage Systems (SuDS), green infrastructure, and natural flood management measures in reducing runoff, managing exceedance pathways, increasing storage capacity, and delivering wider benefits such as biodiversity enhancement and climate resilience.

Groundwater flooding also presents a notable risk in certain locations, with several sites identified as having medium to high susceptibility to groundwater emergence. For these areas, careful consideration will be required in relation to infiltration potential, groundwater-sensitive SuDS design, and the protection of natural drainage features to avoid increasing flood risk on- or off-site.

Tidal and coastal flood risk remains a key consideration for areas adjacent to the Rivers Stour and Colne and the wider coastline. Long-term sea-level rise and Shoreline Management Plan policies highlight the importance of adaptive planning, ongoing monitoring, and alignment with coastal management strategies.

The SFRA also recognises the importance of emergency planning, including safe access, egress, and refuge, particularly for sites located behind flood defences or downstream of reservoirs. This strategic approach ensures alignment with civil contingencies requirements and long-term resilience objectives.

Overall, the SFRA equips the Council, developers, and key stakeholders with a clear and actionable understanding of flood risk across Tendring. By embedding sequential planning, sustainable drainage, climate adaptation, and nature-based solutions into development, the district can support growth that is safe, sustainable, and resilient, protecting people, property, and the environment now and into the future.

[End of Section 11.0]

12.0 Appendices:

Appendix 1 | List of Partner Contact Details:

Organisation	Website	Email
Anglian Water Ltd (Assets & Flooding)	AW Flooding Guidance	n/a
Anglian Water Ltd (Water Connections)	AW Water Connections	connections@anglianwater.co.uk
Anglian Water Ltd (Mains Engineering, Water Mains Diversions)	AW Mains and Engineering Division	DeveloperServices-MainEast@anglianwater.co.uk
Anglian Water Ltd (Sewer Connections, Building Over/Near or Diverting Public Sewer)	AW Building Over or Near Our Asset AW Diverting a Public Sewer	drainage@anglianwater.co.uk
Anglian Water Ltd (Water Regulations)	AW Water Regulations	reg5@anglianwater.co.uk
Anglian Water Ltd (Planning & Capacity)	AW Planning & Capacity	planningliaison@anglianwater.co.uk
Affinity Water Ltd (Development Experience)	Affinity Water Development Experience	dx@affinitywater.co.uk
Environment Agency (Assets)	EA Asset Register	enquiries@environment-agency.gov.uk
Environment Agency (Flooding & Planning)	Environment Agency	enquiries@environment-agency.gov.uk
Essex County Council (Lead Local Flood Authority) (Assets & Flooding)	Essex Flood and Water Management	floods@essex.gov.uk
Essex County Council (Planning & SuDS)	Essex SuDS Design Guide	suds@essex.gov.uk
Essex County Council (Green Infrastructure)	Green Infrastructure	greeninfrastructure@essex.gov.uk
Essex County Council (Biodiversity)	Biodiversity Net Gain	greeninfrastructure@essex.gov.uk
Essex County Council (Local Nature Recovery)	Local Nature Recovery	nature.partnership@essex.gov.uk
Essex County Council (Environment)	Protecting the Environment	environment@essex.gov.uk
Essex County Council (Essex Highways)	Essex Highways	n/a

Appendix 2 | Emergency Planning and Flood Warnings:

Flood Warning Systems:

Flood warnings supplied by the Environment Agency's Flood Line Warnings Direct service can be provided to homes and businesses within Flood Zones 2 and 3. Those owning property where flood warnings can be provided, should sign up to receive them. This applies even if the development is defended to a high standard.

A guide to the Environment Agency's flood warning codes can be found here.

The Environment Agency's Flood Warning Service areas of Tendring District. The Environment Agency's thresholds for issuing warnings are taken from the reference location at Clacton-on-Sea [Table 12.1].

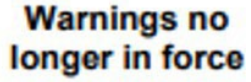
Symbol	Description
	**Flood Alerts** are used to warm people of the possibility of flooding and encourage them to be alert, stay vigilant and make early preparations. It is issued earlier than a flood warning, to give customers advice notice of the possibility of flooding, but before we are fully confident that flooding in Flood Warning Areas is expected.
	**Flood Warnings** warm people of expected flooding and encourage them to take action to protect themselves and their property.
	**Severe Flood Warnings** warm people of expected severe flooding where there is a significant threat to life.
	Informs people that river or sea conditions begin to return to normal and no further flooding is expected in the area. People should remain careful as flood water may still be around for several days.

Table 12.1 | EA Flood Warning Codes

Appendix 3 | EA Fluvial, Tidal/Coastal and Surface Water Hydraulic Models in Tendring:

Stour and Tendring Area:

2019 | River Stour & Dedham Black Brook 1D-2D linked
2015 | Kirby Brook (Frinton-on-Sea 1D-2D linked
2015 | Jaywick Ditch
2014 | Bumpstead Brook (Steeple Bumpstead) 1D
2010 | Ramsey River (Oakley & Parkeston) 1D-2D linked
2006 | Holland Brook & Pickers Ditch 1D (New 1D-2D linked model additional extents – Frist Brook, Little Clacton Brook & Weeley Brook)
2006 | Brich Brook (Rowhedge) 1D

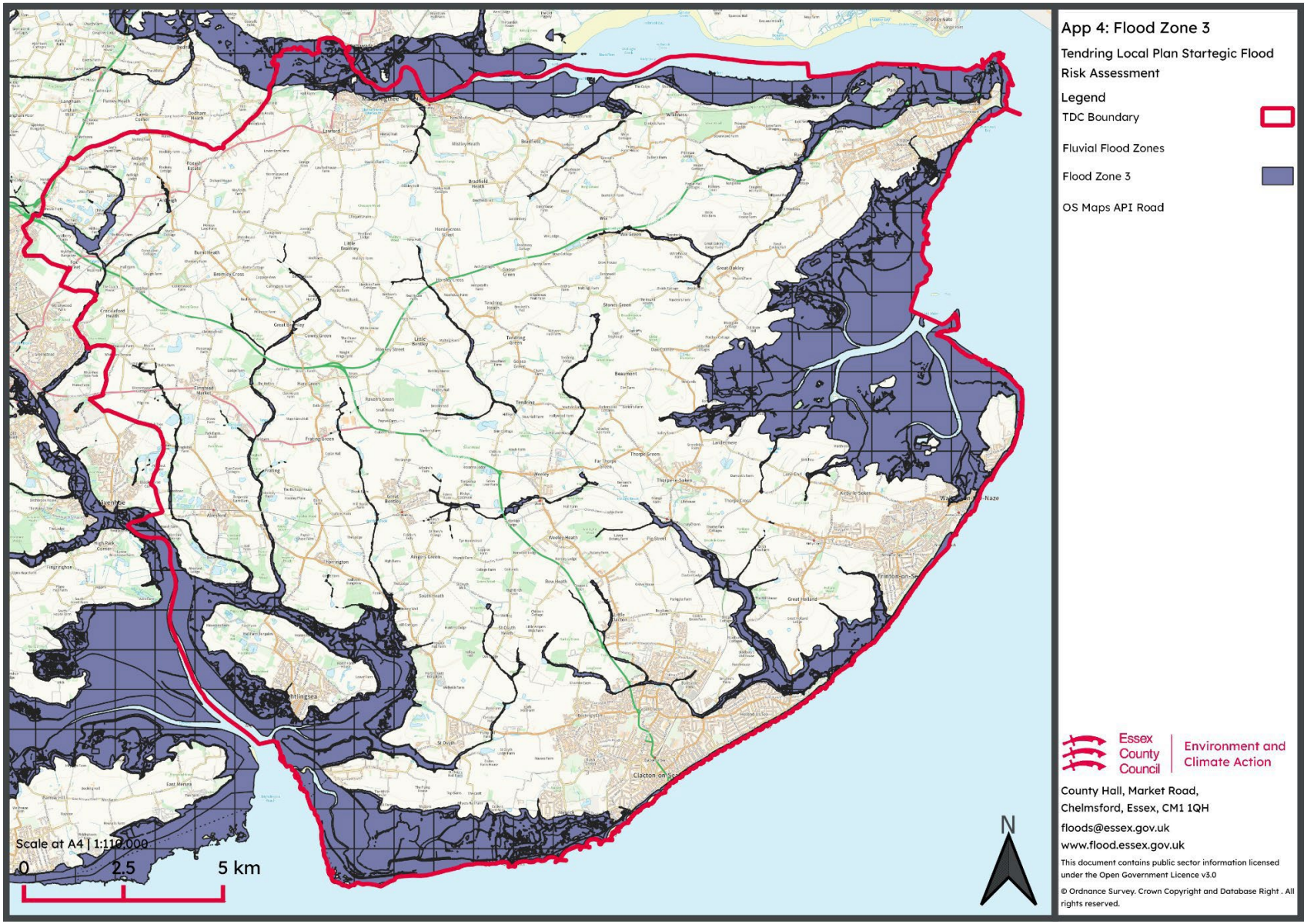
Colne Area:

2018 | Rivers Colne & Brain tributaries (Brunwin Rd, Rayne; Spring Lane, Eight Ash Green; St Boltolphs Brook, Horkesley & West Bergholt) 1D-2D
2009 | River Colne 1D-2D
2009 | Wivenhoe Town Drain 1D

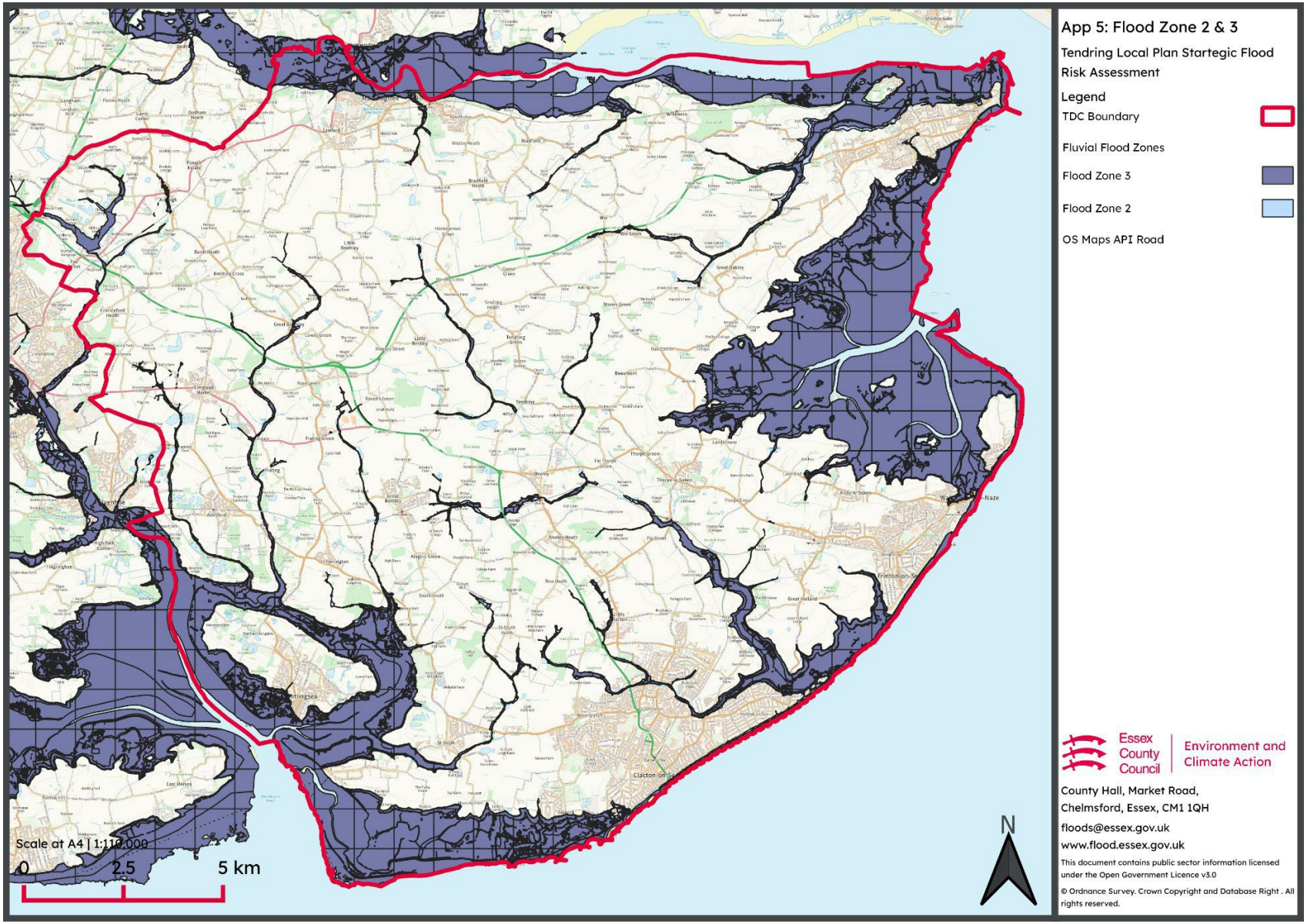
Tidal:

2018 | Stour & Orwell Estuaries 1D-2D
2018 | Clacton Coastal Frontage 1D-2D
2018 | Colne & Blackwater Estuaries 1D-2D

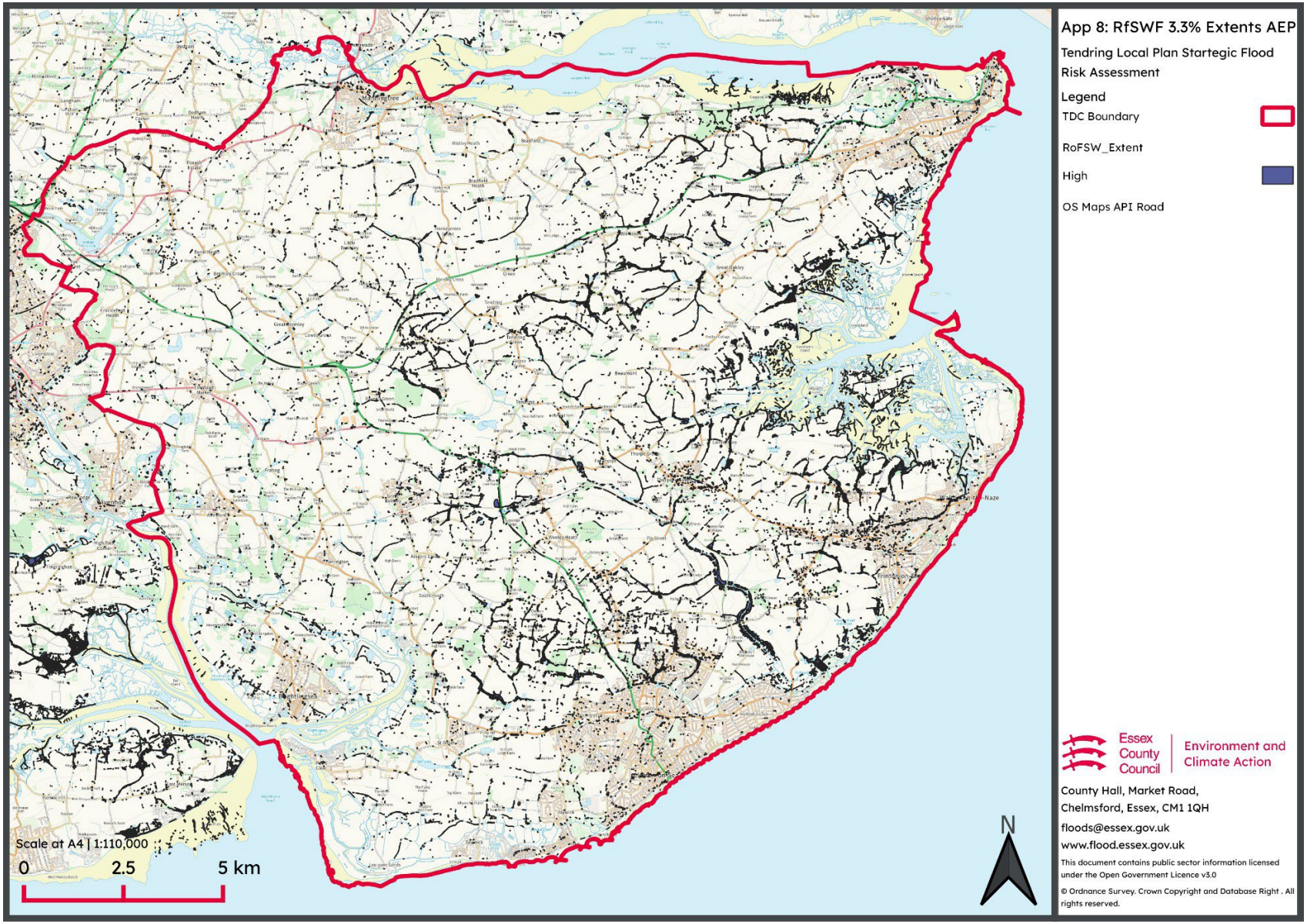
Appendix 4 | EA Tendring Fluvial Flood Zone 3:



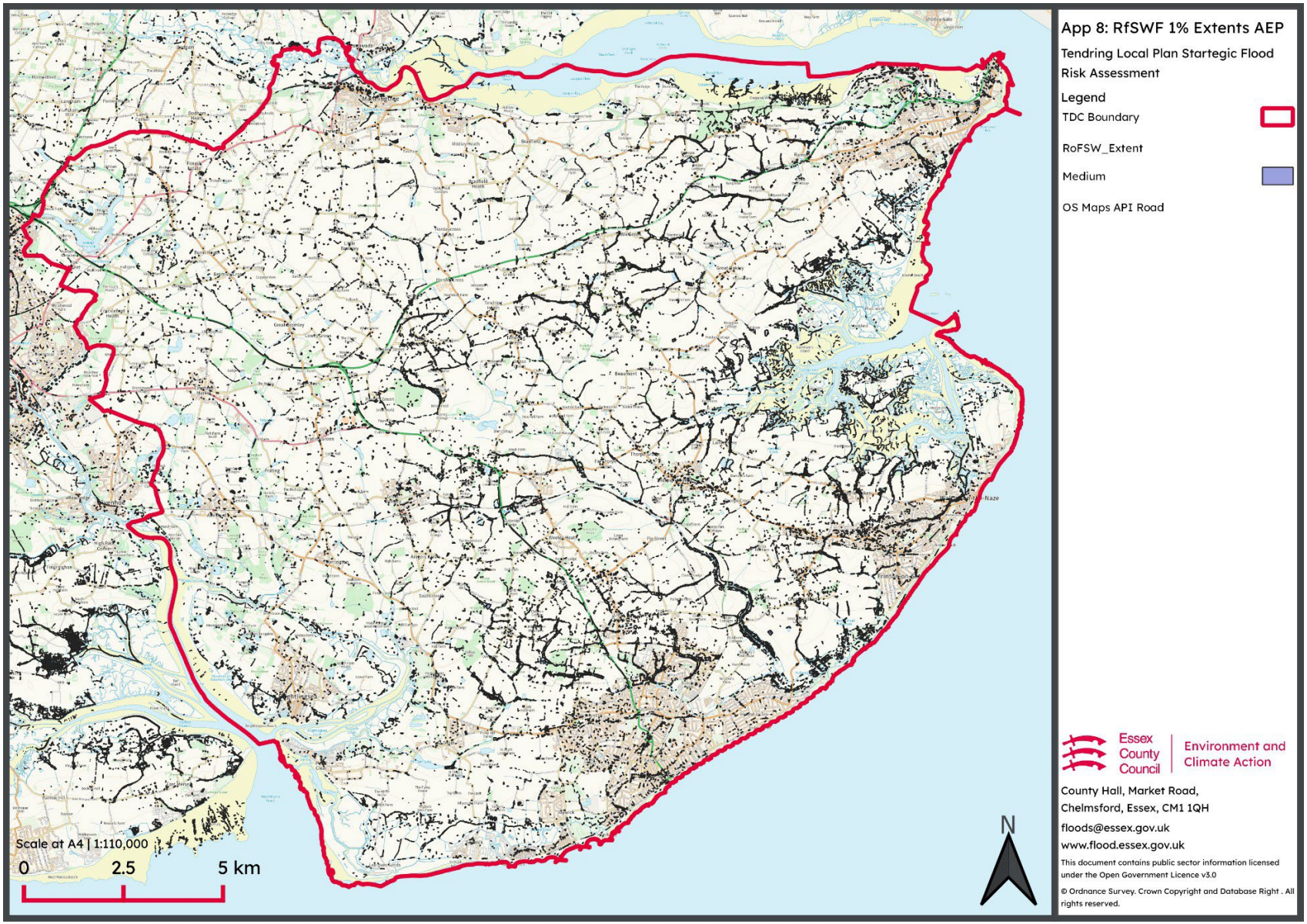
Appendix 5 | EA Tendring Fluvial Flood Zone 2 and 3:



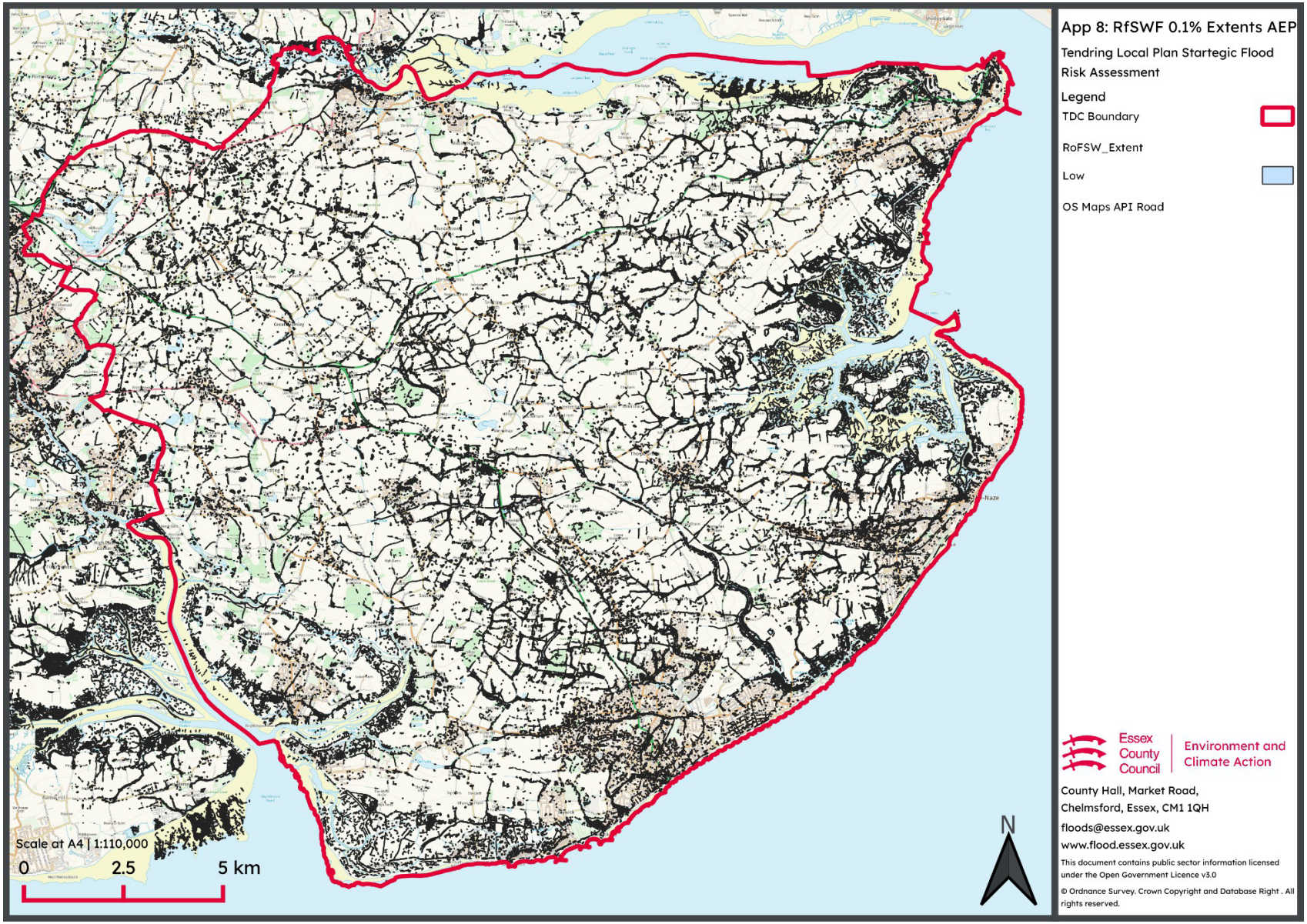
Appendix 6 | EA Tendring Surface Water Flood Extents 3.3% AEP:



Appendix 7 | EA Tendring Surface Water Flood Extents 1% AEP:



Appendix 8 | EA Tendring Surface Water Flood Extents 0.1% AEP



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