

**Addendum to
Dover District Council
Strategic Flood Risk
Assessment**



In partnership with
Dover District Council

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1. Introduction

The Level 1 Strategic Flood Risk Assessment (SFRA) for Dover District Council (DDC) was prepared in 2019 and includes an appraisal of the risk of flooding from all sources across the district. Alongside the SFRA, 'Site-specific Guidance for Managing Flood Risk' was also prepared which includes a step-by-step guide for developers on how to apply the Sequential Test in the district.

Since the SFRA and accompanying guidance was published, the National Planning Policy Framework (NPPF) and the Environment Agency's (EA) guidance on climate change allowances have both been updated (released in July 2021). Herrington Consulting Ltd has therefore been commissioned by Dover District Council to appraise the changes and to prepare an addendum to the SFRA. The key aims are as follows;

- highlight any changes in planning policy and climate change guidance since the Level 1 SFRA was prepared in 2019;
- review the content of the SFRA in the context of the new policies and replace sections of the Level 1 SFRA where necessary; and
- discuss the impacts of the latest policies in relation to information contained within the SFRA and 'Site-specific Guidance for Managing Flood Risk' to ensure that the users of these documents follow the latest guidance and available data.

Whilst the majority of the SFRA is still relevant, the following sections of the Level 1 SFRA are partially superseded by this addendum;

- Part 1, Section 1.4 – Historic Flooding
- Part 1, Section 1.5 – Climate Change
- Part 2, Section 2.1 - Changes to Applicable Policies and Studies

With regard to the 'Site-specific Guidance for Managing Flood Risk', this addendum contains updated information in relation to the Sequential Test methodology, as outlined in 'Section 2 – Sequential Test' of the original document.

The addendum also references the Level 2 SFRA and whilst the addendum is not intended to *replace* either the Level 1 or Level 2 SFRA, all of the documents should be read in conjunction with each other.

2. Changes to Applicable Policies and Studies

The Level 1 SFRA and accompanying guidance was prepared in 2019, and since this time there have been several updates to relevant planning policies. Whilst it is considered that most of the content of the Level 1 SFRA and guidance remains valid, the sections which have been superseded are summarised below.

2.1. National Planning Policy Framework (NPPF)

The information contained within the Level 1 SFRA refers to the NPPF, prepared in 2012 and updated in 2018, and the National Planning Policy Guidance (NPPG) prepared in 2014. However, the NPPF and NPPG has since been updated in 2021. Whilst the changes to the NPPG provide additional clarification in terms of permitted development, they do not have an impact on the content and conclusions of the Level 1 SFRA.

With regard to the NPPF 2021, there have been alterations which will impact how the Sequential Test is applied on a strategic and site-specific level. The main changes since the 2018 NPPF are highlighted in bold text below and are discussed in further detail.

Paragraph 161 of the 2021 NPPF states;

*All plans should apply a sequential, risk-based approach to the location development – **taking into account 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, (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.*

Paragraphs 162 and 163 go on to state;

*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 strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.*

*If it is not possible for development to be located in **areas** with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.*

Sequential Test

Whilst the requirements for undertaking a **Sequential Test** were previously reliant on (tidal and fluvial) flood zones as defined by the EA's 'Flood Map for Planning', paragraph 161 and 162 state that all sources of flooding should now be considered when applying the Sequential Test, either as part of the site allocation process for the Local Plan, or for a site-specific flood risk assessment.

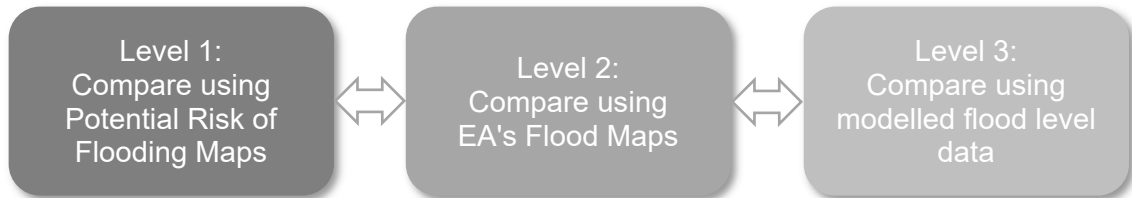
The Level 1 SFRA includes 'Site-specific Guidance for Managing Flood Risk' which sets out a process for applying the Sequential Test as part of a planning application. This guidance provides information regarding the requirements of undertaking a Sequential Test, using the 'Potential Risk of Flooding' map produced as part of the DDC SFRA. The map considers

- 'Flood Maps for Planning', showing areas which could be affected by flooding from rivers or from the sea
- 'Flood risk from surface water' map
- 'Flood risk from reservoirs' map

The SFRA guidance also states that once searches have been undertaken to find comparator sites for the Sequential Test, a more detailed analysis should be undertaken. This methodology considers a three level approach, referencing different flood information to identify the flood risk for each site.

Whilst the NPPF 2021 states that the risk of flooding should be appraised from all sources, including an allowance for climate change, it is recognised that there is currently a lack of up-to-date data available, and as a consequence, it is not possible to appraise the risk consistently across the district for all sources of

flooding. Nevertheless, applicants are encouraged to undertake a more detailed analysis of flood risk in accordance with the requirements of the NPPF 2021. This means that rather than considering the three levels sequentially, applicants should instead appraise the risk of flooding referencing all available flood data simultaneously.



Where detailed flood level information is available, (i.e. data which includes the appropriate allowance for climate change following the updated EA's guidance discussed in the subsequent sections of this report), this data should be used to consider the impacts of climate change. This approach will ensure that the risk of flooding is appraised from several sources, in accordance with the NPPF and as far as other constraints allow, before concluding the Sequential Test.

Exception Test

If it is identified that the site cannot be located within an area shown to be at lower risk of flooding, the **Exception Test** may be applicable. There have been no changes to the NPPF or its accompanying NPPG in relation to the requirements of the Exception Test and as such, the guidance provided as part of the Level 1 SFRA remains unchanged and relevant.

The Level 2 SFRA takes into account the changes to the NPPF, identifying whether sites considered for allocation as part of the New DDC Local Plan are considered to be susceptible to changes in climate. Consequently, as far as limitations in data availability allow, the Level 2 SFRA informs the Local Plan in accordance with the latest version of the NPPF (2021).

Mitigating Flood Risk

The 2021 version of the NPPF also provides clarification with regard to mitigating the risk of flooding. Paragraph 161 c) states that 'green and other infrastructure' should be included in the design of new development as part of an integrated approach to managing flood risk.

This approach is especially important for development classified as 'major' development (refer to Section 2.2.4 of the Level 1 SFRA), as it helps to ensure that the risk of flooding is not increased as a result of development, both onsite and offsite.

2.2. Kent County Council Drainage and Planning Policy Statement (2019)

In November 2019, a revised version of the Kent County Council (KCC) Drainage and Planning Policy Statement was adopted. The report includes further “*clarification of drainage submission requirements and revised drainage policies to reflect latest changes in NPPF and include the requirements for a verification report.*”. The KCC revised report should therefore be referenced alongside the SFRA.

2.3. The Town and Country Planning (General Permitted Development) Order 1995

The Town and Country Planning (General Permitted Development) Order 1995 was amended in May 2013 to allow householders to undertake a wide array of enlargements, improvements, and other alterations to property. This allowed for greater flexibility under permitted development for the change of use of commercial premises, without the need for a full planning permission. Since then, there have been several revisions to the Order, the latest ones in response to COVID-19. This included (but is not limited to) changes in upward extensions and the introduction of new use classes. An up-to-date summary of the class use changes which are allowed under *permitted development rights* (PDR) can be found at:

https://www.planningportal.co.uk/info/200130/common_projects/9/change_of_use/2

3. Changes to Climate Change Guidance

The Environment Agency (EA) has updated the climate change predictions for flood risk since the DDC SFRA was prepared. The new climate change allowances include changes to sea level rise and peak river flow predictions, in line with the UK Climate Projections 2018 (UKCP18). In addition, the EA has provided further guidance on how the latest allowances for climate change should be applied, based on the flood risk vulnerability classification. The relevant changes to the guidance are outlined below and supersede Section 1.5 of the Level 1 SFRA.

3.1. Peak River Flow

The Environment Agency has published new guidance on the peak river flow allowances for climate change. Recognising that the impact of climate change will vary across the UK, the allowances show the anticipated changes to peak flow by management catchment.

Management catchments are sub-catchments of river basin districts. Dover District is covered by;

- the **South East River Basin District**, as defined by the EA [‘River Basin District’](#) maps,

and as defined on the EA’s [‘Peak River Flow’](#) map, is located in both;

- the **Rother Management Catchment**, to the far southwest of the district. and
- the **Stour Management Catchment** for the remainder of the district,.

For each Management Catchment, a range of climate change allowances are provided for three different time epochs over the next century, which correlate with the planning horizons for the varying classifications of development.

For each epoch there are three climate change allowances defined. These represent different levels of statistical confidence in the possible emissions scenarios on which they are calculated. The three levels of allowance are as follows:

- **Central:** based on the 50th percentile
- **Higher Central:** based on the 70th percentile
- **Upper End:** based on the 95th percentile

With reference to this methodology, it is recognised that whilst the higher percentile allowances are possible, these events are less likely to occur.

The EA has provided guidance regarding the application of the climate change allowances and how they should be applied in the planning process, which can be seen in Table 3.1 below.

Flood Risk Vulnerability Classification	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
Essential infrastructure	↗	↗	↗
Highly vulnerable	→	x	x
More vulnerable	→	→	x
Less vulnerable	→	→	x
Water compatible development	→	→	→

Key:

↑	Upper End	→	Central
↗	Higher Central	x	Development should not be permitted

Table 3.1 – Recommended Climate Change allowance percentile based on flood risk vulnerability and flood zone compatibility. Adapted from the EA guidance ‘Flood risk assessments: climate change allowances’

The allowances for Dover cover the Rother and Stour Management Catchment. The allowances for each Management Catchment are shown in Table 3.2 below.

Management Catchment Name (River Basin District)	Allowance Category	2015 to 2039	2040 to 2069	2070 to 2115
Rother (South East)	Upper End	29%	38%	66%
	Higher Central	19%	23%	38%
	Central	15%	16%	28%
Stour (South East)	Upper End	40%	55%	101%
	Higher Central	25%	30%	55%
	Central	18%	20%	38%

Table 3.2 – Recommended peak river flow allowances for each epoch for the Rother and Stour Management Catchment (1981 to 2000 baseline). Adapted from the EA’s guidance ‘Flood risk assessments: climate change allowances’.

The guidance further states that where the dominant source of flooding is from a neighbouring management catchment, the climate change allowances for this catchment should be used when appraising the risk of flooding.

3.2. **Extreme Sea Level**

Since the publication of the latest SFRA, the EA has published new guidance on sea level rise allowances for climate change, which are based on the UK Climate Projections 2018 (UKCP18). Reference to the guidance published by the EA specifies allowances for each River Basin District and epoch.

The predicted rates of relative sea level rise for the 'South East' River Basin District, relevant to Dover district, are shown in Table 3.3. These values correspond with the Higher Central and Upper End percentiles (the 70th and 95th percentile respectively).

Administrative Region	Allowance Category	Net Sea Level Rise (mm/yr) (Relative to 2000)			
		2000 to 2035	2036 to 2065	2066 to 2095	2096 to 2125
South east	Higher Central	5.7	8.7	11.6	13.1
	Upper end	6.9	11.3	15.8	18.2

Table 3.3 – Recommended contingency allowances for net sea level rise. Adapted from the EA guidance 'Flood risk assessments: climate change allowances'

When these values are applied to the current day predicted extreme sea levels, it can be seen that the increase in sea level is significant and is not linear. The extreme water levels under a 1 in 200 year event have therefore been calculated for time steps between the current day and the year 2125 for the 'Higher Central' and 'Upper End' scenarios. These values are summarised in Table 3.4 below.

Year	1 in 200 year extreme water level (m AODN)					
	Dover		Deal		Sandwich	
	Higher Central	Upper End	Higher Central	Upper End	Higher Central	Upper End
Current day (year 2017)	4.68	4.68	4.65	4.65	4.62	4.62
2025	4.78	4.80	4.75	4.77	4.72	4.74
2055	5.04	5.14	5.01	5.11	4.98	5.08
2075	5.22	5.38	5.19	5.35	5.16	5.32
2085	5.39	5.62	5.36	5.59	5.33	5.56
2115	5.65	5.98	5.62	5.95	5.59	5.92
2125	5.92	6.35	5.89	6.32	5.86	6.29

Table 3.4 – Climate change impacts on extreme flood levels

3.3. Offshore Wind Speed and Extreme Wave Height

Whilst the allowance for wind speed and extreme wave height have not changed since the SFRA was prepared, the EA has updated the time epochs where the allowances are applicable. Consequently, for the purpose of completeness, the following table shows the climate change allowances for the new time epoch ranges.

Parameter	2000 to 2055	2065 to 2125
Offshore wind speed allowance	+5%	+10%
Offshore wind speed sensitivity test	+10%	+10%
Extreme wave height allowance	+5%	+10%
Extreme wave height sensitivity test	+10%	+10%

Table 3.5 – Recommended climate change allowance and sensitivity ranges for offshore wind speed and extreme wave height (relative to 1990 baseline). Adapted from the EA guidance 'Flood risk assessments: climate change allowances'

3.4. Peak Rainfall Intensity

The recommended allowances for increase in peak rainfall intensity have not been updated since the Level 1 SFRA and accompanying guidance was completed. Nevertheless, for the purpose of completeness, the allowances have been included in Table 3.6 below.

Allowance Category (applicable nationwide)	Total potential change anticipated for epoch		
	2015 to 2039	2040 to 2069	2070 to 2115
Upper End	10%	20%	40%
Central	5%	10%	20%

Table 3.6 – Recommended peak rainfall intensity allowance for small and urban catchments (1961 to 1990 baseline)

Notwithstanding this, the EA has provided further clarification on the use of these allowances. The allowances stated within the table above are applicable to small catchments (i.e. less than 5km²) only.

For large (>5km²) rural catchments, the allowances for peak river flow (Table 3.1) should be used. The EA guidance goes on to state; *‘Where on-site flooding for the upper end allowance presents a significant flood hazard (for example, depths and velocities of surface water runoff cause a significant danger to people), you will need to take further mitigation measures to protect people and property (for example, raising finished floor levels). As a minimum, there should be no significant flood hazard to people from on-site flooding for the central allowance’.*

When designing Surface Water Drainage Systems, the EA currently advises that there should be no increase in the rate of runoff discharged from the site for the ‘Upper End’ Allowance.

3.5. Credible Maximum Scenarios for Nationally Significant Infrastructure Projects, New Settlements or Urban Extensions

Whilst the allowances for climate change listed above are typically considered sufficient for the purpose of appraising the risk of flooding as part of a Flood Risk Assessment, there are projects which require further consideration.

For Nationally Significant Infrastructure Projects (NSIPs), the EA states that the flood risk should be assessed from a ‘credible maximum climate change scenario’. The relevant national policy statement should be checked for further details depending on the type of project.

For other projects which include new settlements or significant urban extensions amongst others, the following allowances should be used:

- Extreme Sea Level: ‘H++’ climate change scenario should be used, which is an increase of 1.9m for the total sea level rise to 2100.
- Peak River Flow: The ‘Upper End’ allowance should be assessed.

- Offshore Wind Speed and Extreme Wave Height: The sensitivity test allowances should be used and an additional 2mm for each year on top of sea level rise allowances from 2017 should be applied for storm surges.

The climate change allowances listed above have been prepared in accordance with the latest guidance published by the EA. However, it should be noted that the EA constantly review their recommendations on how climate change should be considered and as such, all of the above recommended allowances for climate change should be used as a guideline and can be superseded.

Additionally, in the instance where flood mitigation measures are not considered necessary at present but will be required in the future (as a result of changes in climate), a “managed adaptive approach” may be adopted where development is designed to allow the incorporation of appropriate mitigation measures in the future.

3.6. Impacts of Updated Climate Change Allowances on Dover

It is recognised that the available modelling studies provided by the EA which cover the district were completed before the latest climate change allowances were released.

With regard to changes in **sea level rise**, the East Kent Coast (EKC) modelling study (2018) has been used to appraise the risk of flooding to the district from the sea. The modelling study applies the 2016 climate change allowances for sea level rise as stated within the Level 1 SFRA. Nevertheless, the EA has confirmed that the 2016 allowances for climate change “represent the high end of the range of sea level rise projected by UKCP18”, (i.e. ‘Upper End’ scenario). As such, using the model outputs to appraise the impacts of climate change is still considered acceptable and the impacts of climate change on the district will remain unchanged. The conclusions of the SFRA therefore remain valid.

In addition to changes in sea level rise, the EA has updated their allowances in relation to **peak river flow**. This predominantly relates to the River Dour, which flows through the town of Dover. Whilst the new predictions show climate change will have a greater impact on peak river flow per allowance category, the use of categories has partially changed for the vulnerability classification (refer to table 3.1).

In summary, it is acknowledged that there will be an increase in peak river flow overall as a result of climate change and therefore, the conclusions presented in the SFRA, which relate to the impact of climate change from this source, generally remain unchanged for the district and are considered appropriate at a strategic level.

4. Additional Information to Historic Flooding

Limited information on flooding incidents has been provided since 2019, with the exception of the ongoing flood risk issues at Albert Road, Deal, where the latest recorded flood incident was in December 2020.

To address the issues in relation to flood risk at this specific location within the district, it is proposed to establish a Deal Flood Water Action Taskforce (Deal-WAT). Deal-WAT will encourage dialogue between Southern Water, Dover District Council and Kent County Council to provide recommendations on how best to address the issues and subsequently, would aim to explore solutions to mitigate the risk of flooding whilst accommodating the ongoing growth plans in this area.

5. Conclusions

Herrington Consulting prepared the previous DDC SFRA in 2019, and since this time there has been a number of changes in planning policy and guidance relating to climate change allowances.

The changes to the NPPF (2021) are primarily focussed on the requirements for the Sequential Test. The previous Level 1 SFRA includes site-specific guidance, which outlines the process of applying the Sequential Test for individual sites, and as such, this addendum seeks to update the guidance referencing the latest requirements. Applicants are now required to undertake a more detailed analysis of the flood risk to a site, taking into consideration a wide range of sources of flooding. Comparator sites should reference all of these sources of flooding to determine the areas at lowest risk of flooding more accurately, based on the best information available. This approach has been adopted by DDC as part of the recent Level 2 SFRA, which has been undertaken in accordance with the latest planning policy (NPPF 2021) and is aligned with DDC's sustainability appraisal.

Climate change allowances provided by the EA have been updated since the previous SFRA was published, however, these changes in the main only affect the site-specific analysis and do not have a notable difference at a strategic level. The overall impacts of climate change on the district therefore remain unchanged and the information contained within the previous SFRA remains valid.

In summary, both the Level 1 and Level 2 DDC SFRA, together with this Addendum, ensure that the SFRA documentation is compliant with the latest planning policies and climate change allowances.