In partnership with:

Dover District Council

Site-specific Guidance for Managing Flood Risk

Dover District Council
Whitfield (Head Office)
White Cliffs Business Park
Dover
Kent
CT16 3PJ

Site-specific Guidance for Managing Flood Risk

Dover District Council

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Written by	Checked by
1	0	Draft report	18 June 2018	SMB, KT, SB, NW, SPH, AW, SR	SMB & KT
2	1	Minor revisions to text. Draft report re-issued for external consultation.	29 June 2018	KT, AW	KT & SMB
3	2	Amendments to text following external consultation. Text has been prepared as separate report. Draft report re-issued for internal consultation.	19 October 2018	AW, KT	KT & SMB
4	3	Amendments to text following external consultation. Text has been prepared as separate report. Draft report re-issued for external consultation.	04 January 2019	AW, KT	KT & SH
5	4	Amendments to text. Final report issued by email.	01 March 2019	KT	SMB

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Executive Summary

The NPPF and accompanying practice guidance emphasise the responsibility of Local Planning Authorities to ensure that flood risk is understood, managed effectively and sustainably throughout all stages of the planning process. This Strategic Flood Risk Assessment (SFRA) identifies that the Dover district is potentially at risk from a number of sources of flooding, with over 30km of coastline, low-lying marshland and several main rivers crossing the district. It is therefore evident that flooding must be a key consideration for any future development.

Consequently, the main focus of this document is to provide general advice and clear guidance for planners and developers on how to submit information relating to flood risk in support of planning applications. The main objectives are as follows:

- Providing a district wide risk map with clear accompanying guidance, to enable both the Sequential Test and Exception Test to be applied.

- To state the requirements of a Flood Risk Assessment (FRA) and to provide guidance for developers on how to prepare a compliant FRA.

- To state the requirements in relation the surface water drainage and to provide guidance for developers on how to complete the Sustainable Drainage Systems (SuDS) proforma.

This report is supplemented by a series of maps, which provide the key information required to appraise the risk of flooding, and these maps include the location of the main watercourses and defences, historic records of flooding, and a map designed to determine the potential risk of flooding across the district (to assist in the application of the Sequential Test).

Looking forwards, the information contained within this report will assist the LPA in applying a consistent approach to the Sequential Test and will provide developers with the guidance required to accurately appraise the risk of flooding as part of a planning application.

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1. What should an FRA include?

A site-specific FRA should be prepared in accordance with the requirements set out in paragraphs 30 - 32 and 68 of the Planning Practice Guidance: Flood Risk and Coastal Change. A checklist of the points to be included within a site-specific FRA can be found at the following web address:

https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section

The FRA must be appropriate to the scale, nature and location of the development. The FRA should consider all possible sources of flood risk, the effects of flood risk management infrastructure and the vulnerability of those that could occupy and use the proposed development.

The following sections of this report provide guidance on the various sections required within an FRA: application of the Sequential and Exception Test, designing to manage flood risk, and the management of surface water runoff from a development. To assist in navigation through the report, the relevant sections which are applicable for each classification of development are presented in Table 1.1 below.

	Development Classification (refer to Section 2.2 of the DDC SFRA 2019 for definitions)			
	Permitted Development (Change of use)	**Householder**	**Minor**	**Major**
Sequential Test	Not Required		Required	
Exception Test	Not Required		Required	
Analysis and management of Flood Risk	Required		Required	
Management of Surface Water Runoff	Not Required	SuDS should be prioritised unless there is clear evidence that this would be inappropriate;		SWMS required in accordance with LLFA guidance

Table 1.1 – Quick reference for the appropriate section for each classification of development.

In addition to the development classifications specified in Table 1.1 above, further development classifications have been referenced throughout this report which relate to exemptions for certain requirements. The definition of each of these additional development classifications has been described below for reference;

1.1. 'Minor Development' in Relation to Flood Risk

The NPPG outlines a definition of minor development in relation to flood risk. This definition is used by the EA to define development which is subject to different guidance on the management of flood risk (Refer to Flood Risk Standing Advice), and is used within the NPPF to identify developments which are not subject to the Sequential and Exception Test. The NPPG definition of minor development in relation to flood risk is entirely independent of DDC's definition of minor development. Minor development in relation to **flood risk** is defined as;

- minor non-residential extensions: industrial/commercial/leisure etc extensions with a footprint less than 250 square metres.

- alterations: development that does not increase the size of buildings e.g. alterations to external appearance.

- householder development: For example; sheds, garages, games rooms etc within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats.

2. Application of Sequential Test

LPAs are encouraged to take a risk-based approach to proposals for development in areas at risk of flooding through the application of the Sequential Test. The objectives of this test are to steer new development away from high risk areas, towards those at lower risk of flooding. The Sequential Test therefore requires the applicant to demonstrate that the development cannot be located in an area at lower risk of flooding by searching for alternative opportunities.

In some areas, where developable land is in short supply, it may be demonstrated that there are no alternative sites at lower risk of flooding, and that there is overriding need to build in areas that are at risk of flooding. The following guidance outlines the process of applying the Sequential Test.

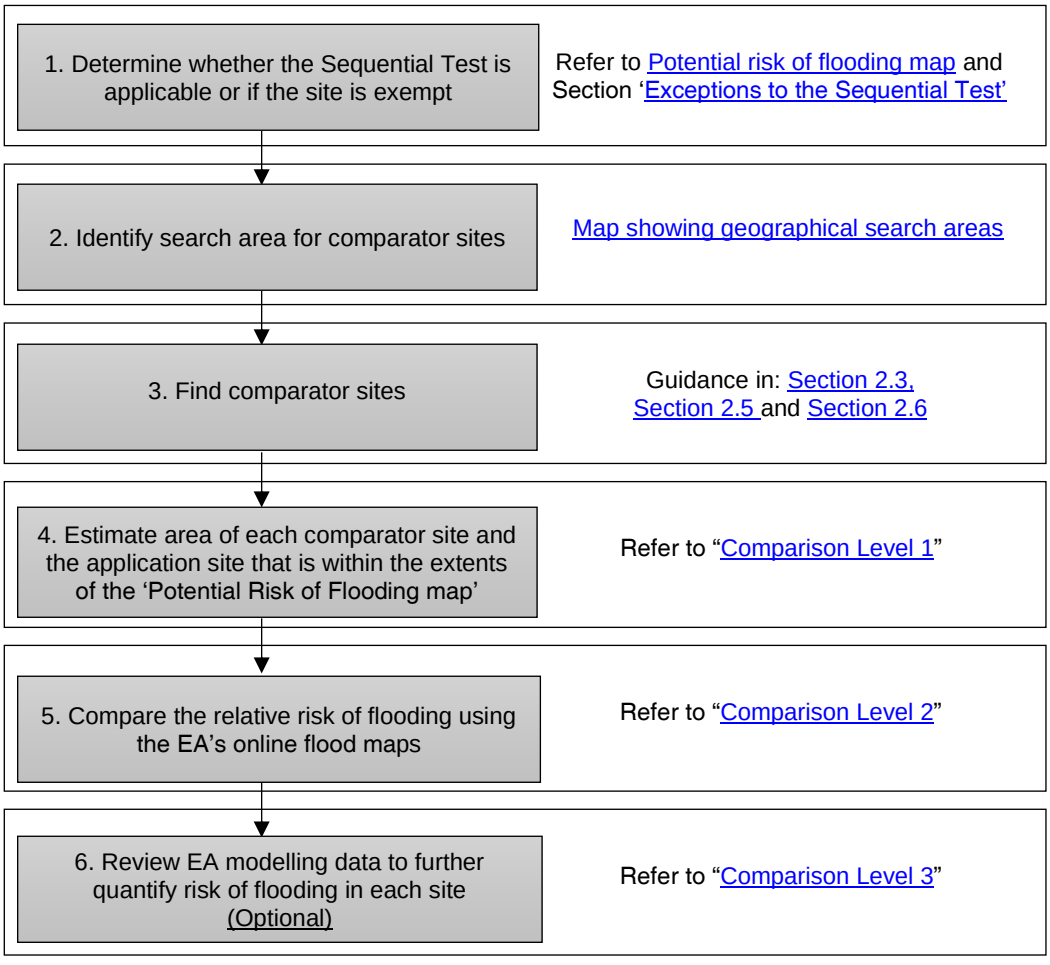


Figure 2.1 – Flow chart showing the Sequential Test process.

2.1. When is the Sequential Test applicable?

Step 1 of the Sequential Test process – refer to Flow Chart

The NPPG states that the Sequential Test is applicable for sites located within Flood Zones 2 and 3 and where possible, in other areas affected by other sources of flooding (e.g. surface water flooding). The 'Flood Maps for Planning' hosted by the EA provide an indication of areas which could be affected by flooding from Rivers or from the Sea. This mapping has been used in conjunction with the EA's 'Flood Risk from Surface Water' and 'Flood Risk from Reservoirs' mapping to produce the 'Potential Risk of Flooding' map provided in Appendix A.1.

2.2. Sites exempt from the Sequential Test

Step 1 of the Sequential Test process – refer to Flow Chart

The potential risk of flooding map does not indicate areas which are at risk of flooding from other sources such as sewers, groundwater or ordinary watercourses, as there is no readily available mapping for these sources. However, the potential risk of flooding map should be used to identify sites which are potentially at risk of flooding and therefore, are required to apply the Sequential Test.

The following developments are **exempt** from the Sequential Test;

- Development classified as 'minor development' in relation to flood risk.
- A change of use application where by the lawful planning use is changed. For example, Part 3, Class M: changing a Class A1 (shops) to Class C3 (dwelling houses). The exception is for applications for a change of use to a caravan, camping or chalet site, or to a mobile home or park site.
- A land use allocation that is in accordance with the Development Plan which has already been the subject of a Sequential Test through the Local Plan making process
- Sites located within a conservation area, where it is demonstrated through evidence that there is a need for improvements to the street scape, or that the site is dilapidated and in need of regeneration.

2.3. Comparator Sites

Step 3 of the Sequential Test process – refer to Flow Chart

In order to pass the Sequential Test, the applicant should demonstrate whether there are any alternative sites (termed 'comparator sites') available for development within an area at lower risk of flooding. The Sequential Test is a spatial planning tool for considering the risk of flooding at a strategic scale, and therefore comparator sites may be outside the ownership of the applicant. Ownership of land, or lack thereof, does not preclude the application of the Sequential Test.

2.4. Geographical Search Area

Step 2 of the Sequential Test process – refer to Flow Chart

The search for comparator sites should be undertaken within the geographical search areas defined in Appendix A.1. The four search areas comprise the urban centres of Deal, Sandwich and Dover, and the surrounding 'Rural' areas. In the case of the rural area, the geographical search area should cover the ward which the developer wishes to build in and the adjoining ward(s).

2.5. Size and Scope of Comparator Sites

Step 3 of the Sequential Test process – refer to Flow Chart

In order to ensure that a pragmatic approach is taken towards comparator sites, it will be the responsibility of the applicant to demonstrate that they are of a similar in size and scale to the development site. Comparator sites should have a capacity to accommodate a similar number of units (±10% units) when compared to the proposed scheme. For schemes of less than 10 units, applicants should round to the nearest whole number (e.g. an 8-unit scheme would require a search of 7 to 9 units). For commercial sites, applicants should search for comparator sites with a space capacity of ±10% (e.g. area in m2).

2.6. Sources of Information on Comparator Sites

Step 3 of the Sequential Test process – refer to Flow Chart

There are a number of sources of information available within DDC's evidence base for applicants to search for potential comparator sites;

- Authority Monitoring Report (AMR) - This report provides information on sites with 'extant planning permission' and allocated sites. https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/Authority-Monitoring-Report/Plan-Monitoring.aspx.

- Economic Development Needs Assessment (EDNA) - This report provides information on strategic scale employment sites and may provide information on comparator sites for large scale commercial development. https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/PDF/Dover-EDNA-Report-01.03.17.pdf

- Housing Economic Land Availability Assessment (HELAA) - The HELAA will be made public alongside the Draft Local Plan and will be an extremely useful source of potential comparator sites which should be read alongside the Council's Sustainability Appraisal/Habitats Regulations Assessment. These Reports include an assessment of the individual sites that have come forward in the HELAA process.

- Brownfield Register – The brownfield register identifies previously developed sites within the district which are considered to be suitable for housing. https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/Regeneration-and-Development-Opportunities/Brownfield-Register.aspx

If it is not possible to identify a **minimum of 2 sites for comparison** from the sources above, applicants should approach local land/property agents. Land for sale is often advertised by size not capacity, and therefore in this circumstance applicants should request information on available sites which are ±10% the size of the application site (in m^2).

2.7. Deliverability and Availability of Comparator Sites

Step 3 of the Sequential Test process – refer to Flow Chart

As referred to in Section 2.5, comparator sites should be able to accommodate a similar development use as the application site and should be reasonably acceptable in planning terms for the proposed uses (e.g. a site where a development would be contrary to the Development Plan and/or lead to unacceptable planning impacts would not be considered as a suitable comparator site). Evidence will need to be submitted by the applicant to demonstrate why a particular site has been discounted as a comparator site.

For a mixed-use scheme, it will be necessary to apply the Sequential Test for each proposed use separately (e.g. considering residential elements separately from the commercial elements), unless it can be demonstrated that each element is co-dependant for delivery of the scheme. If a viability appraisal is submitted evidence will required to demonstrate the co-dependency of uses.

In addition to considering size and scope of comparator sites, the availability and deliverability of each site should also be considered. The following criteria apply;

- Sites where the proposed use would be contrary to the Development Plan policy can be discounted as a comparator site providing reasons are clearly given by the applicant as to why a site has been discounted

- Sites which are for sale (identified through land/property agents), and sites put forward as part of the HELAA process, are both considered available for comparison.

- Sites identified from the latest AMR and brownfield register that have planning permission should also be considered for comparison if permission has expired and work has not yet started on site.

- Conversely, where an extant permission has been implemented (i.e. it can be demonstrated that work has started on site), a site can be discounted from the comparison process.

- Where evidence can be provided that the owner of the site would not make the site available the site can be discounted.

It will be the responsibility of the applicant to provide a list of the comparator sites, including the address of the site and a map identifying the location of each site in relation to the application site.

The purpose of the Sequential Test is to identify whether alternative sites are available in an area at lower risk of flooding. Consequently, once comparator sites have been identified based on the criteria above, it is necessary to determine whether any sites are at lower risk of flooding than the development site. Refer to Section 2.8 below.

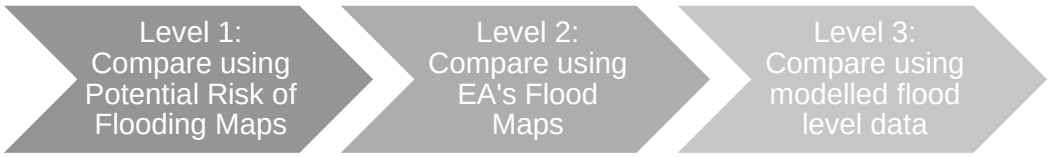
2.8. Guide to Undertaking Site Comparison

Steps 4, 5 and 6 of the Sequential Test process – refer to Flow Chart

It is recognised that the submission of a full NPPF compliant FRA for each comparator site is not considered necessary, or indeed appropriate. Consequently, the following section outlines a method for undertaking a basic appraisal of each site in support of the Sequential Test.

The guidance demonstrates that it is possible to fail the Sequential Test if any comparator sites are identified to be at lower risk of flooding. In consideration of this, it is recommended that the Sequential Test is considered at the early stages when developing a scheme. Any Sequential Test accompanying a planning application should include a detailed analysis which references the relevant levels used (outlined below).

Three levels of method are outlined for comparing the risk of flooding across comparator sites. A level 1 comparison should be considered before level 2 etc.



The method for each level of comparison is outlined in the following pages;

Level 1: Compare using Potential Risk of Flooding Maps

QUESTION: Are there **any** comparator sites located outside of blue extent on **Potential Risk of Flooding map?**

ANSWER: Yes, at least 1 comparator site is located outside of the blue extent: A more sequentially preferable site is available and therefore, the Sequential Test is failed, and development should not be permitted.

If the **application site** is shown to be **partially located within the blue extent** on the Potential Risk of Flooding map, then either;

- The applicant needs to demonstrate that the proposals can be situated entirely outside of the blue extent (i.e. outside of the area potentially at risk of flooding); or
- The percentage of each site which is within the blue extent should be ranked to determine if there are any sites with a smaller percentage affected (i.e. at lower risk of flooding). If any sites have a smaller percentage within the blue extent, then the Sequential Test is failed. Otherwise, if the comparator sites have a larger percentage shown to flood than the application site, then the Sequential Test is passed.

Both of the above points assume that no flood mitigation measures are required.

ANSWER: No - all sites are within the blue extent: Continue to Level 2

GUIDANCE: Using the Potential Risk of Flooding map in Appendix A.1, identify the location of each of the comparator sites and record whether they are located within the blue area on the map.

Comparator Sites	Is the site located within the blue area on the Potential Risk of Flooding map? If yes, note the % of blue
Site address 1…	Yes (%) / No
Site address 2…	Yes (%) / No
etc…	Yes (%) / No

Table 2.1 – Comparison of sites using Potential Risk of Flooding Map

Level 2: Compare using EA's Flood Maps

QUESTION: Are **any** comparator sites at lower risk than the application site based on the ***EA's online* flood mapping**?

ANSWER: No - Both the application site and **all** comparator sites are located entirely in a **red box. The Sequential Test is passed.** Alternatively, both the application site and **all** comparator sites are located entirely in an **orange box. The Sequential Test is passed.**

ANSWER: Yes – The application site is located in a **red box**, but **any** of the comparator sites are located in an **orange box. The Sequential Test is failed.**

Alternatively, it is recognised that due to the strategic-level of mapping, the risk of flooding to the development could be less than inferred by the EA's mapping. The applicant can therefore undertake additional analysis as described in **Level 3**.

GUIDANCE: For each comparator site, fill out the matrix below, which shows the combined risk of flooding based on mapping hosted by the EA;

- 'Flood Map for Planning'– https://flood-map-for-planning.service.gov.uk/
- 'Flood Risk from Surface Water' – https://flood-warning-information.service.gov.uk/long-term-flood-risk/

			EA's 'Flood Risk from Surface Water' map		
			Very low	Low risk	Medium – high risk
EA's 'Flood Map for Planning'		FZ1			
		FZ2			
		FZ3			

Table 2.2 – Comparison of sites using *EA's 'Flood Map for Planning' and 'Flood Risk from Surface Water'*

Level 3: Compare using Modelled Flood Level Data

QUESTION: Are **any** comparator sites at lower risk than the application site based **site-specific modelled flood level data**? (Optional)

The risk of flooding can be further interrogated to determine whether any of the comparator sites are at a lower risk of flooding than the application site. In addition to the EA's 'Flood Risk from Surface Water' mapping, data can be obtained to more accurately quantify the risk of flooding from Rivers and the Sea.

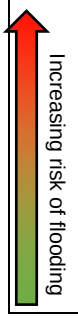
The applicant can contact the EA to request modelled flood level data for a range of flooding scenarios, this is referred to as a Product 4 data request. To request this data, contact enquiries@environment-agency.gov.uk. This information is provided free of charge and will confirm whether the site is;

- At risk of flooding during an extreme flood event (actual risk)
- Defended, but could be flooded if the defences were to fail (residual risk)
- Only at risk of flooding if the entire defence network was to be removed ('undefended scenario').

Data can be obtained for the application site only, or alternatively for both the application site and all comparator sites.

If the results of the modelling reveal that the application site is only affected by the undefended scenario and therefore, would not be flooded under the actual risk or residual risk scenarios (e.g. a breach), then the risk of flooding is deemed to be low. In this circumstance, the Sequential Test would be automatically passed.

Obtaining modelled flood level data for all of the comparator sites will enable each of the sites to be compared to the application site to confirm whether there are any sites available which are at lower risk of flooding than the application site. Using the table below, each comparator site can be ranked on the level of risk (based on the probability of occurrence).



Rank	Source of Flooding		
	Rivers and the Sea		Surface Water
	Return Period	Scenario	Return Period
6	1 in 1000 years	Actual risk scenario	1 in 100 year (medium risk)
5	1 in 100 years		1 in 1000 year (low risk)
4	1 in 1000 years	Failure of the defences (i.e. a breach scenario)	-
3	1 in 100 years		-
2	1 in 1000 years	Undefended scenario	-
1	1 in 100 years		-

Table 2.3 – Matrix for comparing probability of flooding based on modelled flood level information and *EA 'Flood Risk from Surface Water' map.*

ANSWER: No - If the application site is ranked lower than **all** of the comparator sites, then the Sequential Test is passed.

ANSWER: Yes - If **any** comparator sites are ranked lower than the application site, then there is a site available at lower risk of flooding than the application site. Consequently, the Sequential Test would be failed.

Following the guidance outlined above, it is possible to demonstrate whether any of the comparator sites identified are at lower risk of flooding that the application site. If no comparator sites are shown to be available in an area at lower risk of flooding, then the Sequential Test is passed. The next stage in the Flood Risk process can therefore be considered; the Exception Test.

3. Application of Exception Test

If following the application of the Sequential Test it is not possible, or consistent with wider sustainability objectives, for the development to be located in an area at lower risk of flooding, the Exception Test can be applied.

As with the Sequential Test, applications for 'change of use' or 'minor development' (in relation to flood risk) are exempt from the Exception Test.

As part of this process it is, however, necessary to consider the type and nature of the development. Table 2 of the Planning Practice Guidance: Flood Risk and Coastal Change (paragraph 66) defines the type and nature of different development classifications in the context of their flood risk vulnerability. This has been summarised in Table 3.1 below, which highlights the combinations of vulnerability and flood zone compatibility that require the Exception Test to be applied.

Flood Risk Vulnerability Classification	Zone 1	Zone 2	Zone 3a	Zone 3b
Essential infrastructure – Essential transport infrastructure, strategic utility infrastructure, including electricity generating power stations	✓	✓	e	e
High vulnerability – Emergency services, basement dwellings, caravans and mobile homes intended for permanent residential use	✓	e	×	×
More vulnerable – Hospitals, residential care homes, buildings used for dwelling houses, halls of residence, pubs, hotels, non-residential uses for health services, nurseries and education	✓	✓	e	×
Less vulnerable – Shops, offices, restaurants, general industry, agriculture, sewerage treatment plants	✓	✓	✓	×
Water compatible development – Flood control infrastructure, sewerage infrastructure, docks, marinas, ship building, water-based recreation etc.	✓	✓	✓	✓

Key :

✓ Development is appropriate
× Development should not be permitted
e Exception Test required

Table 3.1 - Flood risk vulnerability and flood zone compatibility

Flood Zone 3 as shown by the EA's Flood Maps for Planning is further sub-divided into Zone 3a and 3b (referred to as the functional floodplain). Clarification between Flood Zone 3a and 3b is an important differentiation that needs to be made when determining when the Exception Test is

applicable. Table 3.1 identifies that no development, other than essential transport and utilities infrastructure, will be permitted within the functional floodplain.

To determine whether a development is located within the functional floodplain, it will be necessary to consult the EA to obtain additional information on the likelihood of flooding at the application site. Based on this information (where available) the following Test should be applied;

- Do predicted flood levels show that the site will be affected by an event with a return period of 1 in 20 years or less?
- Is the site defended by flood defence infrastructure that prevents flooding under events with a return period of 1 in 20 years or greater?
- Does the site provide a flood storage or floodwater conveyance function?
- Does the site co*ntain areas that are 'intended' to provide transmission and storage of water* from other sources?

Sites which are identified within Table 3.1 as subject to the Exception Test cannot be permitted or allocated until the Exception Test is passed. There are two criteria which make up the Exception Test, both of which must be satisfied. The two criteria are listed below:

- It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared;

Applications can use the sustainability criteria that are included in the DDC sustainability appraisal, which has been undertaken as part of the HELAA and will be made available online.

If a site is located within an identified area for regeneration or regeneration strategy it is very likely that it will provide the wider sustainability benefits (e.g. Dover town centre, Coombe Valley, Dover Priory Station area and Mid Town).

- A site-specific Flood Risk Assessment must demonstrate that 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.

The following section outlines guidance on the preparation of a flood risk assessment, including how to consider appropriate mitigation measures which will help to meet the second criterion of the Exception Test.

4. Designing for Flood Risk

In accordance with the requirement of the NPPF, all development located in an area identified to be at risk of flooding is required to appraise the risk of flooding from all sources (tidal, fluvial, surface water, groundwater, sewers, artificial sources) and consider options for mitigating the risk of flooding. This is to ensure that occupants/users of the development will be safe throughout its anticipated lifetime. For development that is subject to the Exception Test, the use of appropriate mitigation measures will be necessary to ensure that the second criterion is met.

Mitigation measures should be designed to provide protection up to and including the design flood event. The NPPF defines the design flood event as the 1 in 100 year return period (1% AEP) event, with the exception of tidal flooding (i.e. rivers or sea) which is appraised against the 1 in 200 year (0.5% AEP) return period event.

To ensure that such measures remain effective, an allowance for climate change should be considered. The NPPF and supporting Planning Practice Guidance Suite state that residential development should be considered for a minimum of 100 years, but that the lifetime of a non-residential development depends on the characteristics of the development. For commercial development, a 60 year design life is typically assumed, although the LPA and Environment Agency should be consulted to determine the most appropriate design life for each development.

The EA's guidance '*Flood risk assessments: climate change allowances'* specifies predictions of anticipated change for:

- peak river flow by river basin district
- peak rainfall intensity
- sea level rise
- offshore wind speed and extreme wave height

The guidance can be accessed at; https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

The applicant can contact the EA to request modelled flood level data for a range of flooding scenarios, this is referred to as a Product 4 data request. To request this data, contact enquiries@environment-agency.gov.uk. This information is provided free of charge.

In accordance with CIRIA Report 624 - 'Development and flood risk - guidance for the construction *industry'*, certain flood mitigation methods should be considered before others, this is known as the Flood Risk Management hierarchy, which is outlined below;

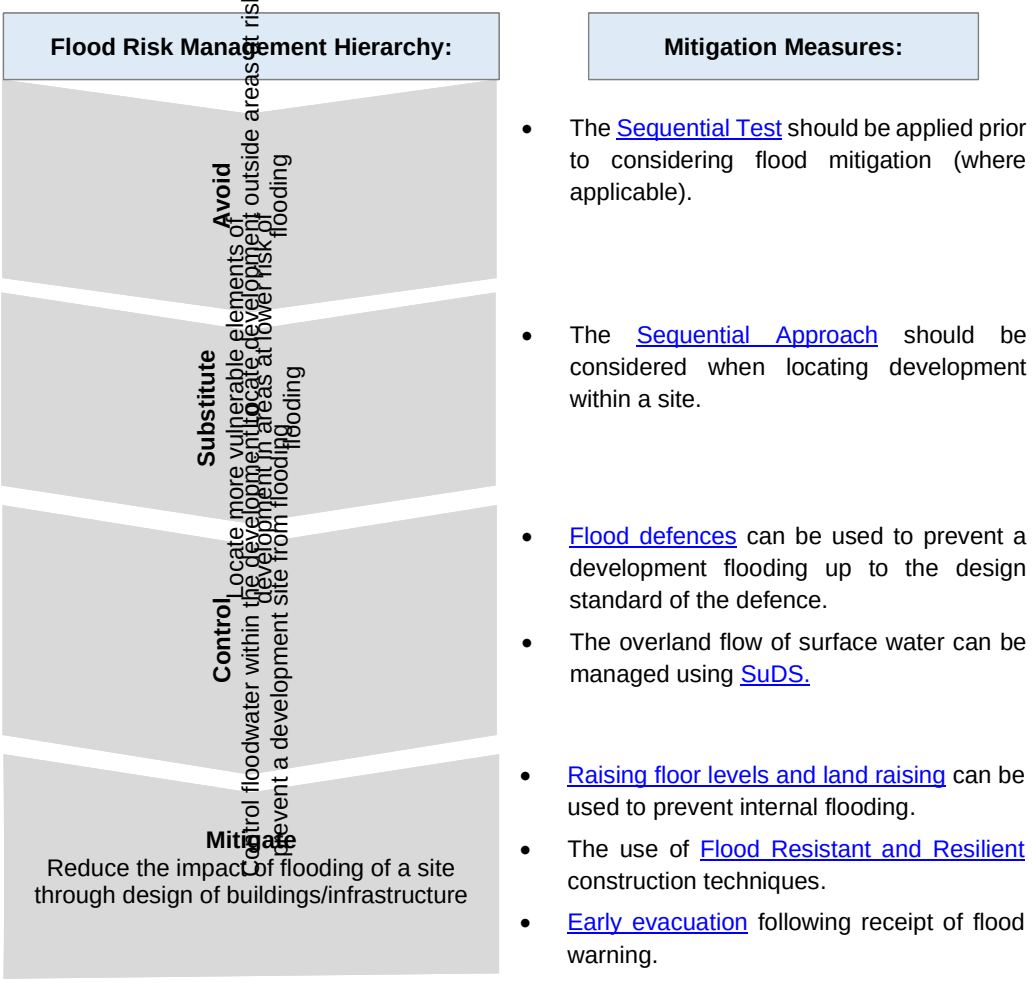


Figure 4.1 – Flood Risk Management hierarchy with associated methods of flood mitigation

Following the above hierarchy, the following section provides an overview of each mitigation measures and identifies any key points for consideration when designing a scheme. However, Appendix A.2 of this report outlines a 'matrix' which summarises the most appropriate design criteria depending on the classification of risk to the development (i.e. Flood Zones, actual/residual risk).

4.1. Sequential Approach

Following application of the Sequential Test, the **sequential approach** to locating development can be adopted on a site-based scale. For example, more vulnerable elements of the scheme should be located where the risk of flooding is lowest (e.g. on the higher parts of the site). The higher risk areas of the site (e.g. lower-lying parts of the site) should only be allocated for less vulnerable elements (e.g. parking, recreational land or even commercial buildings).

The Sequential Approach should also be applied within the design of the internal layout of the building. This would mean that more vulnerable elements such as sleeping accommodation should preferably be located above the less vulnerable elements (e.g. parking, offices, living accommodation on lower floors).

4.2. Flood Defences

Flood defences can be used to prevent floodwater from reaching a development site. Defences can be constructed on a strategic scale, as part of a flood defence scheme facilitated by the EA. An example would include the Sandwich Town Tidal Defence Scheme. Alternatively, defences can be used at a site-scale, such as the construction of an earth bund designed to manage overland flows through a development. Temporary defences may also be used to provide protection to a development in anticipation of an extreme flood event.

However, it should be recognised that flood defences will only provide protection up to the design standard of the protection, and as such, the development could still be subject to the residual risk of flooding (e.g. if the defences were to fail). The ongoing maintenance of any formal structures which are constructed will also need to be considered as part of the design of a flood defence, to ensure that the structure continues to function as designed.

Furthermore, the loss of flood storage from the area which is being protected may need to be offset to ensure that the risk is not increased elsewhere by directing floodwater into the surrounding flood compartment.

4.3. Land Raising and Raising Finished Floor Levels

If it is not possible to avoid floodwater reaching the development site, the finished floor levels should be raised to reduce the risk of flooding to the occupants/users of the site. If any development does involve raising finished floor levels this will need to be fully assessed and balanced against the potential landscape impact of developing, for example, a 3-storey building which may be higher than the existing development.

The requirements for raising the finished floor levels for new development located in a flood risk area are outlined in the matrix in Appendix A.2. In order to achieve the required levels, it may be possible to use a combination of the following techniques;

- Raising the internal ground floor level to the required level. Where floor levels are raised substantially above the existing ground level, consideration should be made for access to/from the building, particularly where disabled access is required.

- The use of townhouse-style development, comprising parking or other non-habitable uses on the ground floor. When proposing a sacrificial ground floor, the requirements for access/egress to/from the development should be considered. Furthermore, the addition of a sacrificial floor can have an impact on other planning requirements (i.e. ridge height limitations).

- Raising land levels to create a development platform above the design flood level. When land raising, consideration needs to be made to the potential for floodwater displacement and should be balanced against the impact on the landscape.

In addition to defining the required finished floor levels for new development, the matrix in Appendix A.2 references the EA Flood Risk Standing Advice, which applies to the following development types;

- a minor extension (household extensions or non-domestic extensions less than 250 square metres) located within flood zone 2 or 3.
- *'more vulnerable'* development located within flood zone 2 (except for landfill or waste facility sites, caravan or camping sites).
- *'less vulnerable'* development locate within flood zone 2 (except for agriculture and forestry, waste treatment, and water and sewage treatment).
- *'water compatible'* development located within flood zone 2.

Details of the requirements outlined under the EA's Flood Risk Standing Advice can be found at; https://www.gov.uk/guidance/flood-risk-assessment-standing-advice

4.4. Resistance and Resilience

For development located within a flood risk area, buildings should be designed appropriately to limit the potential impact of a flood event, and to minimise the cost and time of recovery following a flood event. The document 'Improving the Flood Performance of new buildings' provides guidance on common building material and construction methods which could be considered to reduce the impact of flooding to a building. This document can be found at;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

For flood depths up to 0.3m, the preferred approach is to minimise floodwater ingress whilst maintaining structural integrity. This is achieved through the use of flood resistance measures. Typical examples include the use of low permeability building materials (e.g. engineering bricks, solid-concrete floors), or temporary measures such as covers for doors and airbricks. The use of permanent (termed passive) flood resistance measures is preferable over temporary (termed active) measures, as they do not require action by owners/users of the site during times of flooding.

Due to the increase in hydrostatic pressure with depth, most flood resistance products are only effective to a flood depth up to 0.6m. Beyond this, the hydrostatic pressure has the potential to cause structural damage to the building. Therefore, for flood depths equal to or less than 0.6m, flood resistance measures should be used in an effort to limit the potential for floodwater ingress. Notwithstanding this, consideration should still be given to the potential for floodwater ingress into the building and in such circumstance, the building should be designed to limit the impact of a flood event. This is focussed on the time and cost of recovering from such an event. Flood resilience measures can include but are not limited to: raising appliances; boilers and other electrical fittings above the flood level; using materials such as tiles and waterproof plasterboard.

As flood depths exceed 0.6m, the design standard of most resistance measures is likely to be exceeded, resulting in internal flooding of the building. In such circumstance, flood resistance is still recommended in order to delay the ingress of water (i.e. as water levels rise outside the building). However, the emphasis is placed on using flood **resilient** design.

Applicable to householder and permitted development:

For minor development (in relation to flood risk) and change of use applications, it may not be possible to avoid internal flooding using the flood mitigation measures outlined above (e.g. the sequential approach, raising finished floor levels etc.). The current EA's Flood Risk Standing Advice advises that applicants need to *"*make sure that floor levels are either no lower than existing floor levels or 300 millimeters (mm) above the estimated flood level. If your floor levels are not going to be 300mm above existing flood levels, you will need to check with your local planning authority if you also need to take flood resistance and resilience measures".

4.5. Safe Access/Egress

The NPPG requires that new development is designed to ensure safe access/egress to/from the development is available under design event conditions. This should include provision for the emergency services vehicles to safely reach the development. The specific access requirements for different types of development are provided in the matrix in Appendix A.2.

To determine whether access/egress to/from a development is considered to be safe, the flood hazard should be quantified. The methodology for calculating flood hazard is outlined in the report 'Flood Risks to People' (R&D output FD2320/TR2) and is based on the expected depth and velocity of flooding along the anticipated access route. The flood hazard is classified into categories which show the degree of hazard;

Hazard Rating (HR)	Degree of flood hazard	Description
< 0.75	Low	Caution – shallow flowing water or deep standing water
0.75 to 1.25	Moderate	Dangerous for some, i.e. children – deep or fast flowing water
1.25 to 2.5	Significant	Dangerous for most people – deep fast flowing water
> 2.5	Extreme	Dangerous for all – extreme danger with deep and fast flowing water

Table 4.1 - Classification of Hazard Rating Thresholds.

It is recognised that it may not be possible in certain circumstances to provide safe access/egress to/from a development. The matrix in Appendix A.2 identifies developments with a combination of risk and vulnerability where it may be suitable to provide safe refuge within the development, at a location above the design flood level (e.g. an upper floor).

The EA operates a flood warning service in areas at risk of flooding from rivers or the sea. This service is based on different measurements of rainfall, river levels and tide levels and utilises in-house predictive models, rainfall radar data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

Occupants/owners of developments which are located in an area identified to be at risk of flooding should sign up to the EA's Flood Warning Service;

https://www.gov.uk/sign-up-for-flood-warnings

The matrix in Appendix A.2 identifies that a Flood Warning and Evacuation Plan (FEP) should be prepared for development with a 'high vulnerability' classification, or development designed to accommodate vulnerable people (i.e. occupants who require mobility assistance). The NPPG also requires that an FEP is prepared for *'sites used for holiday or short-let caravans and camping'*.

A FEP should provide information to owners/residents of a development on procedures to be followed on receipt of a flood alert, flood warning, or severe flood warning. This should include emergency contact numbers and a flood action plan explaining measures that residents/users of the development can take to lessen the impact of such an event (e.g. moving belongings upstairs, installing PLP measures). Other site-specific information, such as emergency access routes through the site to an area that is located above the predicted flood level (which can be used as a safe haven until floodwater recede), should be detailed within the FEP.

4.6. Floodwater Displacement and Impedance of Flows

In circumstances where a building displaces floodwater, the volume of water displaced may need to be compensated for by providing a compensatory flood storage scheme. This is to ensure that the risk of flooding is not increased elsewhere.

Notwithstanding this, compensatory flood storage is typically not required for tidal flooding. When the extent of flooding from a tidal source is considered, it can be seen that the floodplain is not confined and does in fact extend for some considerable distance. It is therefore concluded that development proposed in the tidal floodplain is unlikely to have an adverse impact on maximum surrounding flood levels and therefore, compensatory flood storage is not required.

When considering the extent of flooding from a fluvial source it is evident that the floodplain is more confined and consequently, the impact of displacing floodwater is likely to a greater impact on the flood levels in the surrounding floodplain. Therefore, under these circumstances it will be necessary to provide compensatory floodplain storage.

The measures below have been listed in order of preference and should be followed when displacement from a fluvial source is evident:

- All the buildings should be located outside the predicted flood extent on site, in accordance with the Sequential Approach.

- If the buildings cannot be located outside the flood extent, compensatory floodplain storage should be provided onsite and on a level-for-level, volume-for-volume basis. An equal volume of water displaced by the development is to be provided and should be located outside of the flood extent. Floodplain storage can be provided as either a 'block' which matches the development, (i.e. covering a similar area), or alternatively floodplain storage may be distributed across the site at convenient locations (within the same flood compartment). However, an equal volume must apply at all levels between the lowest point on site and the design flood level to ensure that there is no adverse impact offsite.

It is recognised that there are circumstances where it may not be possible to provide compensatory flood storage. Whilst inappropriate development within floodplains is discouraged, sites which have demonstrated that there are no other reasonable locations for the development to be located (i.e. through the application of the Sequential Test), and it has been demonstrated that it is not possible to provide compensatory storage using the methods outlined above, then the EA should be consulted to discuss the use of undercroft void space (otherwise referred to as 'stilts'). Through the use of undercroft voids, the ground floor level can be raised above the predicted flood level to allow the storage of floodwater beneath the building.

If voids are specified, they will typically be required to be 1m in width and there should be a minimum of one void for each 5m length of wall. The underside of the flood (top of the void) should be situated a minimum of 300mm above the design flood level. The voids should be designed to allow water to flow unimpeded beneath the building and the use of anti-vandalism, or anti-vermin mesh can be considered, providing there is a maintenance schedule in place to ensure that any mesh is cleared of obstructions on a regular basis.

It may be possible to incorporate a sacrificial ground floor within the scheme design (i.e. the use of undercroft parking) which is designed to enable floodwater to be stored beneath the building during an extreme flood event.

In addition to ensuring no loss in floodplain storage, the development should be designed to ensure any identified flow paths are not obstructed as part of the development proposals. This can be achieved either by locating the development outside of the overland flow path, or by designing the scheme to accommodate the flow path. This could include landscaping the site allow water to flow around the buildings, or by incorporating a void space beneath the building to maintain the flow of water through the site.

It is important that use of any such measures are discussed with the Local Planning Authority to ensure that they are appropriate with regard to the wider public objective such as securing good quality design that is appropriate to the existing urban context.

4.7. Proximity to Watercourse

There are several bodies responsible for rivers and ordinary watercourses whose requirements would need to be taken into account according to the Water Resources Act 1991 and Land Drainage Act 1991.

- The LLFA (KCC) are responsible for the regulation of ordinary watercourses
- The River Stour (Kent) Internal Drainage Board (RSIDB) is responsible for the regulation of watercourses located in Dover District. https://www.riverstouridb.org.uk/members.php
- The EA is responsible for watercourses which are designated as 'main rivers'.

To determine whether the development site is in proximity to a main river, refer to the following website;

https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386

Maintenance and Biodiversity Easements

The EA and RSIDB drainage byelaws outline the requirements for an easement to be maintained. This 'buffer' is required to allow access for maintenance and to promote biodiversity along the river corridor.

For main rivers, the EA require that an 8m buffer zone is retained between the river bank and any permanent construction such as buildings, or car parking etc. This buffer zone increases to 16m for tidal waterbodies and sea defence infrastructure.

For development sites located in close proximity to an ordinary or RSIDB maintained watercourse, it is recommended that the responsible body is contacted to confirm the access and maintenance requirements.

Permitting and Consent

In addition to the above, it may be necessary to obtain a Flood Risk Activity Permit from the EA for works undertaken;

- on or near a main river
- on or near a flood defence structure
- in a flood plain
- on or near a sea defence

Information on which activities are subject to a Flood Risk Activity Permit can be found at; https://www.gov.uk/guidance/flood-risk-activities-environmental-permits.

For works on ordinary or IDB maintained watercourse, the Land Drainage Act requires that formal written consent is sought from the relevant body. The requirement for Land Drainage Consent is outlined in the byelaws of the relevant party, but typically applies to **any works adjacent to, or within a watercourse, that could affect in-channel flows** and is located within the buffer zone as defined by each responsible body. This includes any proposals for culverting of a watercourses.

5. Management of Surface Water Runoff

The introduction of new development has the potential to increase the risk of flooding to neighbouring sites and properties through increased surface water runoff resulting from an increase in impermeable area, preventing water from naturally infiltrating into the ground. As such, the management of surface water runoff is considered an essential element for reducing future flood risk to both a development site and its surroundings.

One of the most effective ways of reducing and managing flood risk is to maintain the existing rate of discharge of surface water runoff from development sites through the use of SuDS. The NPPF (2018) encourages the use of Sustainable Drainage Systems (SuDS) in all developments.

SuDS is a term used to describe the various approaches that can be used to manage surface water runoff in a way that mimics the natural environment. Appropriately designed SuDS can be utilised such that they not only attenuate flows, but also provide a level of improvement to the quality of water passed onto the watercourses and into groundwater table.

For all planning applications classified as **major** development, a detailed **Surface Water Management Strategy** report will need to be submitted alongside the planning application, which should evidence how SuDS can be incorporated within the proposed development. The SWMS must demonstrate compliance with the Non-Statutory Technical Standards for SuDS as well as all local planning policies related to drainage. Guidance on the completion of a detailed SWMS is set out within KCC's Drainage and Planning Policy Statement.

For all **minor** and **householder** planning applications, there are no specific requirements to provide additional supporting documentation in relation to SuDS. In accordance with Paragraph 163 of the NPPF, all development which is required to prepare a Flood Risk Assessment (refer to Section 1) will be required to incorporate sustainable drainage systems, unless there is clear evidence that this would be inappropriate. Notwithstanding this, all development will be subject to The Building Regulations requirements for drainage and waste disposal.

Where applicable, supporting evidence should be provided to accompany the planning application, which will be reviewed by the LPA. This should demonstrate how SuDS has been considered within the development proposals and that the drainage hierarchy has been followed in line with the requirements outlined in the NPPG.

5.1. Drainage Hierarchy

The NPPG sets out a hierarchy for the disposal of surface water. The hierarchy options for discharging surface water are discussed below:

Into the ground (infiltration) – The preferred method for discharging the surface water runoff from development sites is via infiltration into the ground. This method of discharge manages the water at source and allows replenishment of the groundwater.

↓

To a surface water body – Where infiltration cannot be achieved, the next favoured option is to discharge to a watercourse or a surface waterbody, as this follows the natural hydrological cycle and can help to promote biodiversity. The waterbody, or watercourse into which the development is proposed to be connected should be hydraulically linked to a river, or the sea, to ensure the risk of flooding offsite is not increased. Appropriate pollution control measures will be required if connecting to a receiving waterbody or watercourse.

↓

To a surface water sewer, highway drain or another drainage system – If the neither option for discharging via infiltration, or discharge to a watercourse are available, the discharge of runoff to a public sewer may be permitted.

↓

To a combined sewer – Ideally surface water should be discharged to a dedicated surface water sewer (where available). However, if this is not possible, a final option would be to discharge to a combined (i.e. foul and surface water) sewer. Discharge of surface water to a dedicated foul sewer is typically discouraged.

5.2. Discharging via Infiltration

For all developments where it is proposed to use SuDS which rely on infiltration as the only option for discharging surface water runoff (i.e. soakaway, infiltration drainage basin, permeable surfacing etc.), infiltration testing should be undertaken to confirm the rate of infiltration available. The results of this testing should be submitted with the planning application.

Infiltration SuDS will be prohibited if the groundwater level is shown to be located within 1m from the base of the infiltration system. In some cases where groundwater is expected to prevent the SuDS system from working effectively, the LPA may request further test results are provided to confirm the level of the groundwater at the location of the proposed SuDS, to ensure that there are suitable.

The scale of ground investigations should be proportionate to the size of the development and as such, for small developments with low groundwater, a single set of testing in accordance with BRE365 would normally be sufficient. For larger sites it may be necessary to provide evidence to demonstrate that appropriate testing has been undertaken at a number of representative locations across the site.

If infiltration is proposed, the document 'The Environment Agency's approach to groundwater protection" should be referenced;

https://www.gov.uk/government/publications/groundwater-protection-position-statements

In such circumstance, it will also be necessary to determine whether the site is located within a Source Protection Zone, as in some cases discharging via infiltration may not be considered suitable or indeed acceptable. In such circumstance, approval may be required from the EA before planning permission is granted. The Groundwater Source Protection Zone maps can be accessed at: http://magic.defra.gov.uk/

Where there is a risk of ground contamination on the existing site, or on sites which are known to have vulnerable ground conditions, additional soil analysis may be required and will need to be determined on a site by site basis. If the applicant is unsure, the LPA should be contacted to confirm whether this information is required to be provided.

The use of infiltration SuDS may be prohibited within Coastal Change Management Areas (CCMA). A copy of the maps can be found on the DDC website. In such circumstance, infiltration SuDS must be considered as a priority, in accordance with the drainage hierarchy, however, additional supporting evidence must be presented to confirm that infiltration will not have an adverse impact on the CCMA.

5.3. Discharging to a Watercourse or Surface Waterbody

When it is proposed to discharge to a main river, consent must be obtained from the EA prior to construction commencing on site.

When discharging to an ordinary watercourse, formal Land Drainage Consent is required to be obtained prior to construction commencing on site. Any application for Land Drainage Consent is normally processed following award of planning permission. Notwithstanding this, to prevent any potential delays following receipt of planning, it is recommended that the appropriate authority (e.g. RSIDB, KCC), is consulted in the development of the scheme to ensure the proposed connection is appropriate.

In all cases, the first 5mm of rainfall discharged from the site (termed the 'first flush') should be considered and ideally stored on site, to minimise the risk of pollutants being passed on to the watercourse.

Furthermore, if a connection to a watercourse requires crossing 3rd party land, evidence of a connection agreement from the 3rd party land owner must be provided by the applicant.

5.4. Discharging to a Sewer

The discharge of surface water runoff from a development to a public sewer will only be considered allowable if it can be demonstrated that the options listed above (i.e. infiltration and surface water body) are not a viable alternative. Evidence will be required to be submitted to clearly demonstrate that all of the alternative options have been exhausted first and that discharging to a public sewer is the only viable solution.

In the first instance, discharge to a dedicated surface water sewer will need to be considered. If this is deemed not feasible (e.g. no surface water sewer in close proximity to the site), the next favoured

option would be to discharge runoff from the development into a combined sewer (i.e. a sewer which receives both surface water and foul water).

Consent from the sewage undertaker must be obtained prior to construction commencing on site for all applications which propose to create a new connection to the public sewer system, and/or propose to increase the rate of discharge to the public sewer.

In locations which are known to have historic sewer flooding or sewer capacity concerns, the LPA may request additional information is presented as part of the planning application to demonstrate that discharging runoff from a development is suitable (e.g. sewer capacity checks). This may result in upgrade requirements being imposed before the development can progress to the construction phase.

Appendices

Appendix A.1 – Potential Risk of Flooding Map

Appendix A.2 – Flood Mitigation Measures Matrix

Appendix A.3 – Data Sources

Appendix A.1 – Potential Risk of Flooding Map

Potential Risk of Flooding Map

(to support application of the Sequential Test)

Dover District Council
Strategic Flood Risk Assessment

Potential risk of flooding

Dover District boundary

Sequential Test search areas

Dover

Deal

Sandwich

The 'Rural' search area covers the remainder of the district. Refer to section 2.4 of:
'Site-specific Guidance for Managing Flood Risk'.

This map is provided for the purpose of applying the Sequential Test. A number of datasets have been used in the derivation of the mapped extents. The datasets used may have been designed to be viewed at a range of map scales, and therefore this map is not designed to be viewed at a site-specific scale. Nevertheless, the extents provide an indication of areas potentially at risk of flooding from a number of sources at a strategic level. However, due to the methods used in deriving these extents, a more detailed assessment of the risk of flooding may still be required.

herrington CONSULTING LIMITED

Unit 6 & 7 Barham Business Park,
Elham Valley Road,
Canterbury,
Kent,
CT4 6DQ

www.herringtonconsulting.co.uk

+44 (0)1227 833855
enquiries@herringtonconsulting.co.uk

DOVER DISTRICT COUNCIL

Council Offices, Whitfield (Head Office)
White Cliffs Business Park
Whitfield
Dover
Kent
CT16 3PJ

Drawn:	NW	Date:	01/03/2019	Scale:	1: 56,000
Checked:	KT	Date:	01/03/2019	Original:	A3
Approved:	SMB	Date:	01/03/2019	Sheet:	1 of 2

Drawing Number:	Revision No:	Status:
Appendix A.3 North	3	FINAL

Potential Risk of Flooding Map

(to support application of the Sequential Test)

Dover District Council
Strategic Flood Risk Assessment

Potential risk of flooding

Dover District boundary

Sequential Test search areas

Dover

Deal

Sandwich

The 'Rural' search area covers the remainder of the district. Refer to section 2.4 of:
'Site-specific Guidance for Managing Flood Risk'.

This map is provided for the purpose of applying the Sequential Test. A number of datasets have been used in the derivation of the mapped extents. The datasets used may have been designed to be viewed at a range of map scales, and therefore this map is not designed to be viewed at a site-specific scale. Nevertheless, the extents provide an indication of areas potentially at risk of flooding from a number of sources at a strategic level. However, due to the methods used in deriving these extents, a more detailed assessment of the risk of flooding may still be required.

herrington CONSULTING LIMITED
Unit 6 & 7 Barham Business Park,
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Kent,
CT6 4DQ

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+44 (0)1227 833855
enquiries@herringtonconsulting.co.uk

DOVER DISTRICT COUNCIL

Council Offices
Whitfield (Head Office)
White Cliffs Business Park
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CT16 3PJ

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Checked:	KT	Date:	01/03/2019	Original:	A3
Approved:	SMB	Date:	01/03/2019	Sheet:	1 of 2

Drawing Number:	Revision No:	Status:
Appendix A.3 South	3	FINAL

Appendix A.2 – Flood Mitigation Measures Matrix

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Dover District Council – Matrix of Flood Mitigation Measure Requirements

<table>
<tr><th colspan="2">Policy Response</th><th>Zone 3b</th><th>Zone 3a
Residual Risk
(i.e. breach of defences)</th><th>Zone 3a:
Actual Risk
(e.g. wave overtopping).</th><th>Zone 2</th><th>Zone 1</th></tr>
<tr><td colspan="2">Important Considerations</td><td>Future development within Flood Zone 3b should only be considered following the application of the Sequential Test.</td><td colspan="3">Future development within Flood Zones 2 and 3 can only be considered following the application of the Sequential Test. However, as defined by Paragraph 104 of the NPPF, for change of use or minor development the Sequential Test is not applicable.
Lifetime Homes under the Disability Discrimination Act (DDA) should only be considered if it can be demonstrated that the Sequential Test has been passed. In such circumstance, pre-application advice should be sought from the Local Planning Authority and the EA.</td><td rowspan="6">It should be recognised that sites within Flood Zone 1 may be subject to flooding from other sources. New development may increase the flood risk elsewhere if not mitigated appropriately. The LPA should be consulted with in such circumstance to ensure that the development proposals are acceptable.</td></tr>
<tr><td colspan="2">Land Use</td><td>Land use should be restricted to water-compatible and essential infrastructure only.</td><td colspan="2">Land use should be restricted to water-compatible and less vulnerable development. More vulnerable development may only be considered if the Exception Test can be passed.</td><td>Land use should be restricted to water-compatible, less vulnerable and more vulnerable development. Highly vulnerable development may be considered if the Exception Test can be passed.</td></tr>
<tr><td rowspan="3">Finished Floor Levels</td><td>Highly Vulnerable Development and Development for Vulnerable People*1</td><td rowspan="5">Water-compatible and essential infrastructure should be built to operate as normal during design flood conditions.</td><td rowspan="3">Ground floor levels for living accommodation for residential development should be situated at least 300mm above the design flood level*2 following a breach, and for sleeping accommodation 600mm above the design flood level*2 following a breach.
In circumstances where other material planning requirements affect the ability to achieve these floor level requirements (e.g. ridge height limitations), the EA should be consulted to determine whether an alternative arrangement can be agreed (e.g. kitchens at ground floor level).</td><td colspan="2">Ground floor levels for residential development should be situated at least 300mm above the design flood level*2 for living accommodation and 600mm above the design flood level*2 for sleeping accommodation.
Ground floor levels of single-storey dwellings should be situated at least 600mm above the design flood level*2.
Ramped access should be considered within the design where necessary. unless the ground floor level is raised 600mm above the design flood level*2.</td></tr>
<tr><td>More Vulnerable Development</td><td>Ground floor levels for residential development should be situated at least 300mm above the design flood level*2 for living accommodation and 600mm above the design flood level*2 for sleeping accommodation.
Ground floor levels of single-storey dwellings should be situated at least 600mm above the design flood level*2.</td><td rowspan="2">Development should follow the EA's Flood Risk Standing Advice for Vulnerable development.</td></tr>
<tr><td>Less Vulnerable Development</td><td>Ground floor levels should be located as high as practicably possible. However, for developments in areas at risk of flooding from fluvial sources, it may be possible to design the ground floor of the development to flood to reduce the impact on flood risk elsewhere (i.e. as a result of the displacement of floodwater). In such circumstance, the EA should be consulted with to obtain pre-application advice.</td></tr>
<tr><td rowspan="3">Resistance and Resilience</td><td>Highly Vulnerable Development and Development for Vulnerable People*1</td><td colspan="3">Flood resistance and resilience should not be relied upon as a primary mitigation measure and should be used to complement more preferable methods of mitigation, for example locating development outside of the design flood extents*2 where possible (i.e. the Sequential Approach) and raising finished floor levels above the design flood level*2.
Flood resilient measures should be incorporated into the design to mitigate the potential damage to the property in case of flooding, guided by the document 'Improving the Flood Performance of New Buildings; Flood Resilient Construction', which can be downloaded from the Communities and Local Government website.
For flood depths up to 300mm, flood resistance measures should be used to prevent the ingress of floodwater into the building. For flood depths between 300mm and 600mm, flood resistance measures should be used to prevent water ingress, however, flood resilience measures should also be incorporated into the scheme design to limit the impact of such an event should internal flooding occur. For depths greater than 600mm, traditional flood resistance measures will not perform suitably and as such, the building should be designed to be flood resilient to reduce both the cost and time for recovery following such event.
A survey should be undertaken to specify appropriate flood resistance and resilience measures which can be retrofitted into an existing building. Details of an appropriately qualified surveyor can be found at the Blue Pages, hosted on the National Flood Forum website.</td></tr>
<tr><td>More Vulnerable Development</td><td colspan="2">Same as for Highly Vulnerable Development in Flood Zones 2 and 3a (see above).</td><td rowspan="2">Development should follow the EA's Flood Risk Standing Advice for Vulnerable development.</td></tr>
<tr><td>Less Vulnerable Development</td><td colspan="2">For developments in areas at risk of flooding from fluvial sources, it may be possible to design the ground floor of the development to flood in order to reduce the impact of flooding elsewhere as a result of floodwater displacement. In such circumstances, the building should be designed to be flood resilient to reduce both the cost and time for recovery following such event.
A survey should be undertaken to specify appropriate flood resistance and resilience measures which can be retrofitted into an existing building. Details of an appropriately qualified surveyor can be found at the Blue Pages, hosted on the National Flood Forum website.</td></tr>
</table>

Note: For 'minor development' (as defined by the EA) the EA's Flood Risk Standing Advice should be followed.
*1 Development for vulnerable people is defined as any development which is designed to accommodate occupants that require mobility assistance (e.g. care homes).
*2 The design flood level refers to either the 1 in 200 year return period event for tidal sources of flooding, or the 1 in 100 year return period event for all other sources, including an allowance for climate change over the lifetime of the development (as defined by the NPPF).

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Policy Response		Zone 3b	Zone 3a: Actual Risk (e.g. wave overtopping).	Zone 2	Zone 1
Access and Egress	Highly Vulnerable Development and Development for Vulnerable People*1	Water-compatible and essential infrastructure should be built to operate as normal during design flood conditions	Access and egress routes should be designed to ensure safe access to/from the development during the design flood event*2. A site-specific Flood Warning and Evacuation Plan should be prepared for the site, which should be used in conjunction with the EA's Flood Warning Service.		It should be recognised that sites within Flood Zone 1 may be subject to flooding from other sources. New development may increase the flood risk elsewhere if not mitigated appropriately. The LPA should be consulted with in such circumstance to ensure that the development proposals are acceptable.
	More Vulnerable Development		Access and egress routes should be designed to ensure safe access to/from the development during the design flood event*2. Only where this is not feasible, internal access to an area above the design flood level*2 must be provided to enable occupants to gain safe refuge. In such circumstance, it will be necessary to demonstrate that at least one window can be accessed by rescuers outside. Occupants/users of the site are advised to sign up to the EA's Flood Warning Service to enable them to evacuate prior to the onset of flooding.	Development should follow the EA's Flood Risk Standing Advice for Vulnerable development.	
	Less Vulnerable Development		Site specific emergency procedures must be in place to ensure that the risk to life is minimised. Occupants/users of the site are advised to sign up to the EA's Flood Warning Service, to enable them to evacuate to their permanent residence prior to the onset of flooding.		
Basements		Basement development will not be permitted for living or sleeping accommodation.	The construction of a self-contained flat or the change of use of an existing basement is prohibited. The change of use of an existing basement to or construction to a self-contained flat is prohibited. Flood resilient measures must be included for all basement developments. Development must have internal access to a higher floor (situated at least 300mm above the design flood level*2). Sleeping accommodation is not permitted at basement level. Consideration for the risk of flooding from overland flow and groundwater should be made to ensure that the occupants will be safe, and that the development will not increase the risk of flooding elsewhere.		Consideration for the risk of flooding from overland flow and groundwater should be made to ensure that the occupants will be safe, and that the development will not increase the risk of flooding elsewhere
Site Runoff		SuDS should be implemented or considered into the design (where practicable) to ensure that the risk of flooding is not increased on site or elsewhere in accordance with DDC's guidance for the management of surface water runoff for new developments.			
Buffer Zone		A minimum buffer zone between a watercourse and any permanent development must be provided for access and maintenance. The EA require an 8m buffer zone from the river bank of a 'main river'. This buffer increases to 16m for tidal waterbodies and sea defence infrastructure. For developments located adjacent to a non-main river (ordinary watercourse) the LLFA and/or IDB should be consulted with to confirm their requirements for access and maintenance. For developments located adjacent to a public sewer, Southern Water will enforce a 3m easement from the outside edge of the existing sewer and any permanent construction.			

Note: For 'minor development' (as defined by the EA) the EA's Flood Risk Standing Advice should be followed.
*1 Development for vulnerable people is defined as any development which is designed to accommodate occupants that require mobility assistance (e.g. care homes).
*2 The design flood level refers to either the 1 in 200 year return period event for tidal sources of flooding, or the 1 in 100 year return period event for all other sources, including an allowance for climate change over the lifetime of the development (as defined by the NPPF).

Appendix A.3 – Data Sources

Data Layer	Source
OS VectorMap	Ordnance Survey
OS 1:250 000 mapping	Ordnance Survey
Flood Zones 2	Environment Agency
Flood Zone 3	Environment Agency
Flood Risk from Reservoirs	Environment Agency
Flood Risk from Surface Water	Environment Agency
District boundary	Dover District Council